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The Uses and Reuses of Major Urban Arterials: A Study of Recycling, Revitalizing, and Restructuring "Gray Area" Transportation Corridors

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Publication Date

1996

**THE USES AND REUSES OF MAJOR URBAN ARTERIALS:
A Study of Recycling, Revitalizing, and Restructuring
"Gray Area" Transportation Corridors**

Allan B. Jacobs, Elizabeth Macdonald, Diana Marsh, and Clark Wilson

This paper is collaborative in every respect. Jacobs conceived of the study and was the overall director of the research. Macdonald administered the project. Detailed tasks were jointly organized and fieldwork was done by all four authors, usually in groups of two or three. Marsh and Wilson undertook the general historic research. Following identification of the streets to be documented, each author took responsibility for a number of streets. The comparative analysis matrix was first conceived by Jacobs but was modified by discussion and prepared in its final form by Marsh. The final form of the typologies, after joint development, was by Macdonald. For the report, Marsh and Wilson wrote the initial drafts of the history and Macdonald wrote the chapter on research methods. Individual authors prepared the text and graphics for the streets they worked on: Jacobs for streets in Cleveland, and for Chattanooga, Franklin, and Stockton Boulevards in Sacramento; Macdonald for San Francisco and Los Angeles streets; Marsh for the greater number of Sacramento streets, and for the Richmond streets with Wilson doing the final draft; and Wilson for the Oakland street. Wilson wrote the first draft of the comparative analysis of the matrix and Macdonald wrote the chapter on typologies, although the analysis and conclusions were arrived at jointly. Jacobs prepared first drafts of the introduction and concluding chapter. All four authors reviewed all drafts and Jacobs was responsible for final editing.

This paper was produced with support provided by the U.S. Department of Transportation and the California State Department of Transportation (CALTRANS) through the University of California Transportation Center

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ACKNOWLEDGMENTS

Very little is achieved alone, especially in research of this nature. Once the research has been funded, through the University of California Transportation Center, and set up in its administrative home, the Institute for Urban and Regional Development, there starts a veritable parade of people who in one form or another help the work along and without whom very little would get done. We want to thank them, by name if possible. Almost certainly, behind the people we know, there are other people, whose names will remain a mystery.

At the start, our Advisory Committee helped us, perhaps more than they know, in suggesting cities and streets to study, in responding to our work, in reacting to our graphics, in simply being a group to whom we had to present our intentions. Michael Bates of Korve Engineering, Rebecca Kohlstrand of The Duffey Company, and Professors Peter Bosselmann, Robert Cervero, Elizabeth Deakin, Michael Southworth, Marty Wachs, and Wolf Homburger, all of U.C. Berkeley, constituted the Committee.

Dr. Cortus Koehler's name appears more than once in what follows. He gave us enormous assistance in Sacramento, from arranging field visits, to lengthy and tedious historic research, to consultation in Berkeley. Almost certainly, Professor Koehler had to call in "chits" from old-time colleagues to get the information we were after, and he did much of the work himself. He taught us a lot about the ways of getting information and the places to look.

In each of the case study cities, and in some cities whose streets we did not pursue, there were people who helped us. Ann Coulter and her staff were particularly helpful in Chattanooga. They welcomed us with what must be the epitome of southern hospitality. Bill Allen provided us with traffic data that we needed. In Cleveland, Hunter Morrison, the Director of City Planning, was our key contact. His staff provided us with data, history, maps and photos, and relevant planning studies. Professor Anastasia Loukaitou-Sideris kindly shared her work on Los Angeles arterials with us and advised us on possible streets to study. Also in Los Angeles we thank Luz Echavaria and Allyn Rifkin for their advice, and Susan Bok, who talked with us about the streets and led us to the information we needed. In Oakland, Kristen Shaw was most helpful, as were personnel of the Oakland Public Library History Room. In Richmond, we thank David Sacks, Daniel Moore, Tyler Potterfield, Eric Biber, and Ralph Rhudy. The tour that was arranged for us was a most kindly and useful gesture. Ken Rich and Cheryl Liu were important San Francisco contacts and Rebecca Kohlstrand helped us as well. Many factors, not the least of which were limited time and a tight budget, conspired to keep us from doing more case studies in additional cities. But people in those cities were helpful nonetheless. So, we want to thank Peter Scarpignata of Public Works, and Richard Garver, David Carlson, and Nathalie Beauvais of the Boston Redevelopment Agency. Gloria Robinson, the Director of the Detroit Planning and Development Department, and staff members Doug Yam, Paul Rempala, and Norm Cassels assisted us, as did John Stack in Modesto.

Finally, thanks is due to Marty Wachs and Briggs Nesbit at UCTC and to all the IURD staff, particularly Barbara Hadenfeldt and Carey Pelton for administrative support, and to Christine Amado and David Van Arnam for their editorial effort.

I. INTRODUCTION

A drive south along East 14th Street from downtown Oakland, California to the nearby city of San Leandro is not one of the world's most delightful urban experiences. That six and one-half-mile drive along a street that is neither particularly wide nor narrow — from two to four lanes, usually plus parking lanes — affords a physical reminder of what once was. At the same time, it bespeaks today's physical manifestations of urban poverty, generally experienced by racial minorities, as well as it reflects their strivings for improvement.

The street starts nicely enough — an active area of small, one- and two-storey buildings that face the street. The signs are in Asian languages. Stores are mostly occupied, with a variety of uses that serve nearby residents as well as passers-through with generally low-priced goods and services. There are no trees and there are vacant lots, once occupied with buildings. Moving away from downtown, through a sequence of ethnic-racial enclaves, none wealthy, the buildings become more sparse. Some are boarded up. Fences isolate the vacant lots. Depending on location, the uses serve locals or passers-by, the latter often with auto-oriented services. None of the buildings are likely to fall down, but maintenance is marginal as is the economic state of some uses. Every now and then, at a major intersection there is a build-up of buildings and uses. A corner building was once a bank, but is no longer. Maybe it's a national shoe outlet now. Every now and then, too, there is a large vacant building that might have been a warehouse (Montgomery Ward) or a factory, or there is a large, older institution of one kind or another. There have been efforts to "bring the street back" or at least a part of it. One might see a widened sidewalk at an intersection or remnants of unified street furniture, or benches, or signs. More positively, there are some very recent medium-sized, mixed-use, housing and commercial developments that are close enough together to begin to have an impact. Overall, though, East 14th Street remains what might be called a gray area — very gray. Driving further, it seems clear that it is not now a heavily trafficked street, has volumes significantly less than its capacity. A look to the right, westward, shows both a parallel freeway and a Bay Area Rapid Transit (BART) line, of which the former relieved East 14th Street of traffic. Earlier, though, before the freeway or BART, this street had streetcars along it. They helped to open the area for development. Autos and busses replaced the streetcars, and improvements were made in the 1940s and 1950s to increase the speed of traffic to the new suburbs. Nearing San Leandro, there are more boarded-up buildings, marginal uses, and vacant property. There are trees every now and then but without much impact. The view is a horizontal one. The pavement is not well maintained, nor are the walks. Then, unexpectedly, there is a statue-gateway in the middle of the street. Closely spaced and good-sized trees start along either side. Soon, there are new civic buildings and indications of newly installed landscape works. Something is being done to East 14th Street. But the name has been changed. This is now International Boulevard and this is San Leandro.

Drives along Euclid Avenue in Cleveland, Ohio and along Martin Luther King Boulevard in Chattanooga, Tennessee are at once similar to and different from East 14th Street. Along both, it is inviting to

ponder what was as contrasted to what is. Along Euclid Avenue there remains some evidence of what was Cleveland's main, historic street. Martin Luther King Boulevard was the main street for a thriving black business/residential area. Both led to the suburbs and both were changed mightily to handle traffic during the 1950s. Euclid Avenue once was the major streetcar transit street of Cleveland. Now, both streets, as well as their companion parallel streets, run through underdeveloped gray areas which, if they are not the same as East 14th Street, can be characterized by the same color. Both of these streets, like East 14th Street, carry auto volumes well beneath their capacities. Both streets are the subject of concern in their communities and of plans for their rehabilitation. Euclid Avenue and Martin Luther King Boulevard, unlike East 14th Street, run in tandem with one or two local streets, as part of what might be termed a system. Euclid Avenue is a two-way street but is coordinated with Carnegie Avenue and Chester Avenue as it leaves downtown and travels eastward. No freeway or rapid transit line runs parallel. Martin Luther King, which works in tandem with McCallie Street as a one-way pair, is now parallel to a freeway. Both of these streets (Euclid and Martin Luther King), like East 14th Street, were changed in the period soon after World War II to handle with dispatch traffic headed to and from their downtowns, connecting with new suburban development.

This research is about the current state of streets like East 14th, Euclid, and Martin Luther King, major urban arterials that were made to accommodate big-city traffic volumes during the 1940s, 1950s and early 1960s, generally prior to widespread urban freeway construction.

Prior to large-scale construction of urban freeways in the United States, many large cities found it important to widen and otherwise improve major streets leading to and from downtowns and connecting with existing and newly developing suburban areas at their outer edges. The improvements, which included transforming two-way streets into one-way pairs, timed traffic lights, and other physical and managerial devices in addition to street widenings, were to accommodate post-World War II increases in auto and truck travel as well as to promote growth outside of older downtown areas. Sometimes the physical changes went hand in hand with a shift from streetcars to busses. Sometimes there was a national defense tune to the changes, to disburse employment and manufacturing from easily targeted central locations. These streets often passed through "gray" areas of housing, heavy commercial and sometimes inner city industrial uses, perceived to be economically marginal in nature. They may have been nothing more than minority working class areas. The heavy through traffic that they accommodated may have been a later causative factor in the change of such areas to less desirable uses and activities. Examples of such streets come easily to mind: Carnegie Avenue (associated with Euclid Avenue) in Cleveland, South Van Ness Street in San Francisco, East 14th Street in Oakland, San Pablo Avenue in Oakland and Berkeley, Broad Street in Richmond, Virginia, and lots more. Over the years, as expressways and freeway radials and circumferential routes were constructed and as travel patterns changed, often away from older downtowns, the functions of the Euclid-Carnegie corridors of many cities changed as well, not always in the same ways. Many have seen their traffic volumes reduced significantly, as the freeway and other by-pass improvements came to realize their intended purposes. But most of these are still "gray-area" roads and gray-area land use

corridors passing through marginal areas. Racial tensions, the physical upheavals that accompanied the turbulent 1960s and 1970s, disinvestment, and white middle-class flight have resulted in large areas and corridors of vacant or underutilized urban land. Although the travel and land use characteristics of these arterials and corridors have changed, rarely have the street configurations been changed or improved since the earlier changes were made. These streets represent a major use of urban land, major infrastructure investments, and major opportunities for integrated transportation and land use change in many U.S. cities.

A central hypothesis of this research is that these streets and the areas through which they pass currently represent underutilized transportation and land use resources in what are often "gray" areas of large central cities, resources that could be part of restructuring and revitalizing major urban corridors, often by the use of multi-functional roadways coordinated with adjacent land use.

These streets and their adjacent land uses may offer significant opportunities to re-balance and re-enliven relatively wide radial corridors leading out of the downtowns of central cities to close-in but peripheral residential areas. Approaching a time when new radial freeways are and will be ever more difficult to construct, these roads represent important potential resources.

The Study Objectives and General Approach

This research and this report represents the first phase of an anticipated three-phase study. The central questions to be addressed by this study are the current state and usefulness of a particular road type, major urban arteries leading out of downtowns to what were then newly developing residential areas, roads that underwent major changes prior to the freeway building period. The concern is with the transportation/land use nature and trends along such roads and with their physical design qualities. As well, we are concerned with the possible future uses and designs of these roads and the corridors through which they pass, with an eye to re-enlivening such areas. A major questions, too, is the potential of these roads and corridors as structuring and restructuring agents that give new form to urban areas. Here, in phase one, the intent has been to identify appropriate case study streets throughout the country (but with an emphasis on California), to prepare appropriate typologies of such streets, to do initial research as to their physical and transportation characteristics and the roles they play in their respective settings, and to identify in very preliminary fashion their potential transportation, land use, and community roles. This phase of the work includes: a literature search of studies, standards, and general philosophies that accompanied road improvements of the 1940s, 1950s, and 1960s; establishment of a study advisory committee to help guide and critique the work, identification of case study streets, field visits, data searches, preparation of preliminary typologies of streets, and preliminary analysis and conclusions. The development of street typologies, from the field research, has been a central part of the work to date. Essentially, it creates a vocabulary that may be used as a way to envision arterials and the many transportation-land use roles that they play in urban areas.

The second phase of the research will center on detailed case study histories of selected streets, with a focus on physical arrangements and designs, and land uses. Since the subject streets are part of areas marked by physical and economic deterioration, it has been intended to document these characteristics over time. This phase envisions detailed design alternatives to selected case study streets. And, arterial roadways that have not experienced deteriorated or marginal adjacent uses in the face of increasing traffic (such as 19th Avenue in San Francisco) might be studied in this phase.

Phase three of the initial study and research program is to explore ways — policies, programs, specific designs — to enliven underutilized arterial corridors in positive ways. The intention is to look for many design and policy alternatives and to spell out the kinds of actions that would be necessary to implement them.

As might be expected, the findings of this first phase of research have impacts on the anticipated second and third phases. These are presented at the conclusion of this report.

A Brief History of Urban Arterials

The streets that evolved into arterials were initially either urban roads connecting the business center of a city with the initial wave of suburban development, or country roads connecting adjacent towns. The physical form of these street corridors is governed largely by when their significant development period occurred. In older cities, the urban roads which later evolved into arterials tended to lie in corridors which had had important streetcar lines in the late nineteenth and early twentieth century. Such streets included business strips providing for the needs of the first suburban residents while also providing important initial income ("taxpayer strips") for the land development companies that had built the roads and transit lines. In other cities such as Sacramento, many of the roads remained rural roads until after World War Two, when they experienced a boom of auto-oriented suburban development.

While middle-class residents of suburbia enjoyed spacious homes and lots, many poorer people were left behind in urban areas, priced out or prevented from moving out of the city. Complex factors in the shift of the middle class to the suburbs such as redlining, federal home mortgages, homeowner association covenants, widespread demand for private automobiles to replace streetcars, and the increasingly auto-dependent nature of the suburbs, are well-documented in other sources¹ and do not need to be explained here. The ease of commuting by automobile into the city increased the auto traffic along arterial streets and reduced their appeal as places to live, work, and gather. Arterial streets changed from being a cared-for focal point of a community to a route for suburbanites to commute to and from the central business district. In the mid-1940s, the Bureau of Labor Statistics classified the automobile as a necessity of life. The increasing use of the automobile rather than the streetcar, combined with increasing suburbanization, created congestion along the limited-capacity urban corridors. These factors combined to precipitate a

¹See, for example, *Crabgrass Frontier* by Kenneth Jackson, *The Geography of Nowhere* by James Howard Kunstler, or *Asphalt Nation* by Jane Holtz Kay.

decline in property values, reduced maintenance, and increase in vacancies along urban arterial streets. The presence of an abandoned building or vacant lot would drag down the value of nearby buildings, starting a cycle of disinvestment and abandonment.

Prior to World War Two, city planners began to pay increasing attention to dealing with the "perils" of congestion on urban streets. It was widely believed that congestion reduced accessibility, depreciated property values, increased business overhead, and eventually led to the decentralization of businesses. Planners and engineers believed that improving traffic flow on urban arterials would allow middle-class workers to live in the suburbs and still enjoy an easy commute to central business district (CBD) jobs, helping maintain the stability of downtowns.

"Improvements" to arterial roadway capacity followed various approaches, including widening, increased turning radii, and restrictions on turning and on-street parking. In some older cities, street widening was unpopular because it involved razing tax-revenue producing properties and because of the sheer costs involved. Many cities advocated removing transit from the street level by putting it above or below grade, or removing it entirely. The few people who realized that a road can never be wide enough to carry all the traffic, and that transit is necessary for accessibility, especially for the poor, were largely disregarded. Many cities moved transit lines off the most congested streets, perhaps making it more inconvenient to use.

Some cities removed on-street parking entirely to make way for more traffic; others such as New York were loathe to do so because of the revenue that parking generated. Provision of off-street parking was seen as a way to reverse blight and revitalize central business districts. By 1946, 15 states had laws allowing cities to condemn land for the purpose of building off-street parking facilities. In some cities, the amount of land available for off-street parking increased despite a lack of coordinated planning, as building owners abandoned or tore down buildings that were tax burdens, too expensive to maintain, obsolete, or simply in the wrong place in a decentralizing country.

World War Two and its restrictions resulted in a reprieve from congestion with a return to transit usage. During this time, however, many cities prepared plans in anticipation of the expected increase in auto traffic after the War. This sudden increase did indeed occur, and more drastic measures were then implemented, including one-way street pairing and limiting local access to roadways. Street widening remained an option in areas of "blight" where the cost of land acquisition for wider rights-of-way was lowest, and was sometimes even seen as a way to reverse or erase blight. Professional sentiment reflected a desire to wipe out or reduce densities in the "slums" and eliminate the "chaotic mix" of land uses in urban areas. In some cities such as Pittsburgh, arterials were advocated as appropriate divider lines between areas of differing character and paradoxically, as a way to increase the value of land next to the arterial.

Throughout the 1930s and 1940s, faced with increasing accident rates, engineers paid more attention to designing roadways to allow fast yet safe travel, separating the different users on a street (truck loading, pedestrians, automobiles, parking), and designating different road types for different purposes

(arterials, collectors, local roads). Safety concerns also superseded urban design concerns in the streetscape; for example, street lights began to be designed to provide maximum illumination and safety rather than any aesthetic benefit.

Along rural roads that evolved to function as arterials, auto-oriented strip development popped up unchecked, greatly increasing congestion because of the in-and-out driveway activity. At first, there were rarely any policies in place to preserve their character as rural undeveloped arteries to carry people between towns; instead, they became undifferentiated commercial *strips*, and the boundary between cities and between city and suburb began to blur and merge. This type of road may occur in the west more than in the east coast, simply because these western areas developed later and during automobile-dominated times.

By the 1950s there seemed to be a general agreement that widening was not the solution because it only led to more travel, more traffic, and more congestion. Traffic control had shifted from the province of the police department to new traffic engineering departments. The role of the traffic engineer and the application of the rational, scientific method (such as origin/destination surveys and implementation of American Association of State Highway Officials highway standards) grew, superseding the power of the planner to influence streetscape and community design. For a time, engineers focused on opening up bottlenecks at intersections, the "choke points." However, since most urban streets had existed prior to the automobile and did not operate efficiently for cars, engineers began to plan for a new system to carry through-traffic and keep it from causing congestion on local roads. The new system was geared to the fastest drivers and the powerful new technology of the automobile. The 1944 Federal-Aid Highway Act called for a comprehensive network of arterials serving the major flow lines of urban traffic. New highways would keep through-traffic off local streets and divert it around congested areas. Again, however, this catering to automobile travel made it even easier for the people who could afford a car to live farther out of the city; it also facilitated the suburbanization of businesses, industry, and jobs.

Many arterial streets, including some of the streets studied here, were designated as highways at some point. Where arterials were designated as state highways, state agencies took over control of land abutting highways from local agencies. For new and for existing routes where possible, local governments used zoning to preserve large setbacks along the street as land for possible future widenings, and to control congestion along the arterial. Zoning also allowed segregation of land uses; many residences in central business areas were gradually replaced by shopping centers or office and light-industrial buildings, increasing the worker density and resulting congestion. Such changes often destroyed cohesive working-class neighborhoods.

In the 1950s, the National Highway System ensconced the notion that fast, free-flowing movement of traffic through the city is paramount. The implementation of the Highway System generally involved the creation of a belt loop around the city center, thus limiting access and theoretically reducing congestion. However, this in fact increased decentralization and congestion outside the core which, in turn, necessitated wider roads, a never-ending cycle. Soon, existing roads could no longer be widened and the

ultimate answer was believed to lie with the creation of new, limited-access roadways, "freeways," an idea that began in Los Angeles. Back in the 1930s, Los Angeles had decided that its large land area and low-density development were not conducive to a mass transit system, opting instead to pursue a system of grade-separated parkways, which were meant to relieve the surface streets of 50 percent of their traffic. However, as is well known today, the traffic level on LA freeways is horrendous, while (a lesser known fact) many of the urban arterials in poorer neighborhoods of that city have plenty of unused capacity. Today, the city is leading a new movement to manage traffic by coordinating freeway and surface street capacity, without, perhaps, considering what effect this will have on the street life.

By the late 1950s, freeways, the ultimate channelizers and aids to "through-put," were being built with earnest within many North American cities. In cities such as Boston, expressways were seen as a "surgical operation that will save the life of the greater Boston community" by reducing congestion and opening up suburban land for expansion of planned industrial developments. Engineers and planners found freeways to be a good way to separate neighborhoods of different character and "keep the slums in check." In reality, the new highways often cut through the heart of poor communities, dividing them, forcing people out of their homes, and leaving them to fend for themselves to find new places to live.

The new freeways paralleled the existing arterials and consequently removed much of the traffic volume from the streets. This brings us to the situation which many of the streets we studied face today. They have marginal land uses, considerable vacancies, and more capacity than needed to carry current traffic levels. They also have poor and working-class residents who depend on the few available businesses in their neighborhood. These streets pass through well-located central city land, and have potential to become revitalized corridors again, especially where people want to move back to the city to avoid long commutes and embrace the cultural opportunities that cities represent. As such, these urban arterial streets represent important opportunities to reclaim the street from a single-purpose, automobile-oriented use, and make them once again diverse focal areas for urban communities.

What Follows

Following Chapter II, which presents the general methodologies used in this study, Chapter III presents case studies of 22 streets found in seven cities. The cities themselves are discussed briefly to understand the contexts of the streets and then each street is presented and discussed. The descriptions include generalized land use information as well as traffic data over time. It is in this chapter that a uniform graphic is developed, to allow comparison between cities and streets. By use of a matrix and the graphics, a comparative analysis concludes this chapter. Where known, current local concerns (or lack of same) about these arterials are included, street by street. Chapter IV constitutes the basic analysis section of the research. Here, street typologies are identified, developed and discussed. The final Chapter V takes conclusions from the whole undertaking, including those related to research methods and data availability, and challenges and prospects for the future.

II. RESEARCH METHODS

This chapter describes, generally, the methods used in carrying out the study. The fruits of the research are presented in separate chapters. The objectives of this first phase of the research were several: to research the history of post-1930s road improvements affecting arterial streets; to identify appropriate case study cities and streets and undertake preliminary research on selected case study streets; to develop preliminary typologies of arterial streets; and to prepare initial conclusions. Each of these objectives is associated with one or more method of investigation and analysis.

Research on the History of Urban Arterials

One of the preliminary steps in the research was to understand the changing public and professional attitudes towards transportation, city planning, and the role and morphology of urban arterial streets during the middle part of this century in America. To do so, we adopted a context analysis approach and looked at primary data, journal articles written by engineers, planners, city officials, businessmen, and citizens from the 1930s to the 1960s, to round out our general knowledge of city planning history. We used two journal sources, *Civil Engineering* from 1935 to 1956 and *American City* from 1939 to 1960, as they correspond to the professions most directly involved in shaping streets: civil engineering and city planning and management. The dates chosen correspond to a period of major urban transportation developments; namely, increased auto use, decline of the streetcar, increased suburbanization and decentralization, implementation of the Interstate Highway System, and development of the freeway.

The results of this literature search were presented in Chapter I.

The Case Studies

In order to select streets and corridors to use as case studies, criteria were needed for the types of arterial streets that would be included in the study. Developing the criteria was done concurrently with the preliminary historical research and our initial investigations of particular streets. In the end, the selection criteria used was that case study streets should be major arterials leading outward from urban centers and streets on which current traffic was significantly less than existing roadway capacity allowed, whether due to parallel freeway construction or some other reason. We expected, as well, that the arterials and uses along them would be characterized as socio-economically marginal or less than well-to-do.

Identification of Possible Case Study Cities and Streets

Possible case study cities and streets were identified by a variety of means. Several streets were in mind at the conception of the study, namely the Euclid Avenue corridor in Cleveland, Ohio and E. 14th Street in Oakland, California. Others, such as 3rd Street in San Francisco and Cary Street in Richmond, came to mind quickly as the team brain-stormed about other likely possibilities known from personal experience. To assist the study team in identifying further streets, an advisory committee of professional and

academic colleagues was set up. Their suggestions, along with a review of street maps of a number of cities, were used to compile a list of possible case study cities and streets. With this list in hand, we cast a wide information-gathering net to learn what we could with a view to later narrowing down the choices. Letters were sent to a range of cities across the country to explain the intended research and to solicit and confirm appropriate streets, as well as to inquire about the availability of historic and current information. Correspondence was followed up by phone calls where that seemed appropriate. At the same time, field trips were undertaken in San Francisco and Oakland with the purpose of confirming local case study arterials, as well as to better understand the array of street types and contexts of arterial streets. These were followed by field visits to arterial streets in Modesto and Sacramento. As the research progressed, additional possible case study streets were discovered, some through chance encounter. While in Chattanooga doing other work on streets, we happened to explain the nature of this current research and were directed almost immediately to Martin Luther King Boulevard and McCallie Avenue. In Richmond, Virginia, while inquiring about Cary Street we were directed to a number of other streets one of which, Broad Street, is included in this study. Similarly, we were directed, in Cleveland, to study a number of streets in the city's west side, in addition to those of the Euclid corridor. A significant finding at this stage was that there are many, many streets across the country that are of the type that is the focus of this study. Moreover, as often as not, they are recognized by local officials as knotty problems, and in many cases local people are starting to direct energies and policy toward them.

When streets were confirmed as being the type we were interested in, we asked our contacts to gather and send us as much information about the street, its history, its current context, and its traffic and socio-economic characteristics as possible. For San Francisco and Oakland, researchers collected information personally. Officials in a number of cities responded generously with basic information about the street in question while others were less helpful or found that information was hard to come by. We asked for and generally received, or were able to eventually locate, useful data on current traffic volumes and land uses. Some cities provided scaled plans of the streets and/or aerial photos. In some cases, we received information about current or recent development plans involving the streets and, interestingly, we found that quite a few of the streets we were concerned with were the object of current planning studies or proposed development projects and some were the object of current transportation planning interest. A few streets, we learned, had been the object of development programs for some time and were described as being in the process of a socio-economic turn-around.

Much more difficulty was encountered in trying to get historical information about land use and socio-economic changes over time and especially specific information about street improvements. A few planning departments, generally those which were actively engaged in studies of the street in question, such as E. 14th Street in Oakland, had readily available general historical information and some information about street changes and dates. For most cities, however, historical information available was sketchy, and detail could only be had through extensive library and archive searches. It was particularly hard to obtain

concrete data about specific changes to streets, for instance when a widening occurred and just what was done, or when a new traffic configuration or traffic controls were implemented and what the previous configuration had been. This type of information apparently often is lost as engineering drawings are updated to reflect current conditions. Historical archives rarely retain detailed information about street reconfigurations. Given the time and money limitations of this study, we were able to get this information for only a few streets.

With great effort, extensive historical information was gathered for some of the streets in Sacramento, including the dates and nature of street modifications as well as detailed traffic and land use changes over time. In part, this was done to find out the process of gaining such information, since it will be a critical part of the second phase of work. In part, the willing assistance of a Sacramento colleague, Dr. Cortus Koehler, made this possible. An early conclusion is inescapable: it is very difficult to find historic information that will permit a clear, comprehensive picture of the causative factors attendant to the changes over time of a particular street or corridor.

Because of the difficulty encountered in gathering historical information on street improvements, strategies we used may prove helpful to future researchers. To start with, most city's records of street improvements were kept in the engineering or public works departments — generally in microfiche. Information on physical improvements (in particular, widening and traffic-control changes) have no specific heading and are intermixed with every engineering report pertaining to a particular street. Given that our streets are long corridors, the information needed to be sifted through was considerable — the proverbial "needle in a haystack." Because of this difficulty, alternative methods were employed. First, interviews with long-term city employees is invaluable. Many public works or engineering officials have been with a city for a considerable time and therefore know the history of a certain streets improvements. If the specific date is not known, the official can generally give a rough date which can assist in narrowing down the microfiche search.

The next method used was researching the history of a certain street through the city's archives or public library (most cities have a "history room"). Obviously, this is mandatory research for accessing the nature of the corridor and adjacent neighborhood, but it can also be valuable for attaining a chronology of street improvements if information is organized accordingly. Historical photographs (which sometimes are taken from one vantage point over many years) will generally reveal obvious changes to road widths and direction of traffic. Air photos (available from a library's map room) will do the same. Newspaper articles are the next source of primary data. Libraries such as the City of Oakland's have specific clipping files on headings such as "Streets" which, although again including considerable extraneous information, can give a valuable record of both the physical improvement made and also the public attitude towards the improvement. Finally, if a certain corridor is part of a state highway system, then a record of improvements will be kept within a state's transportation archives.

For researching the general history of a corridor and neighborhood, understanding how public sentiment towards a particular street has changed through time may offer insight into why certain changes were made to particular street segments and not to others. Tourist guides of a city give a unique perspective on the changing character of a street by the simple inclusion or omission of a street in a driving or walking tour. Although concerned primarily with the architecture along the street, these guides can still be a useful record of street character. Also, looking at old city plans for neighborhoods, as we were able to do for Sacramento, sheds valuable light on what approaches were favored historically.

Streets Selected for Detailed Case Studies

In the end, we choose 22 streets in seven cities to pursue as detailed case studies. These streets are located in cities where city officials were helpful and where good information was available. (Appendix A provides a list of all the cities and streets that were at one time or another considered as case studies and for which various levels of information were obtained.) Following is a list of the selected case study streets.

<u>Oakland, California</u> E. 14th Street	<u>Cleveland, Ohio</u> Cedar Avenue Lorain Avenue Euclid Avenue Carnegie Avenue Chester Avenue
<u>San Francisco, California</u> 3rd Street	
<u>Sacramento, California</u> Folsom Boulevard Broadway Franklin Street Stockton Street 16th Street 12th Street	<u>Richmond, Virginia</u> Broad Street Cary Street Main Street/Ellwood Street
<u>Los Angeles, California</u> Washington Boulevard Adams Boulevard Whittier Boulevard Vermont Avenue	<u>Chattanooga, Tennessee</u> Martin Luther King Boulevard McCallie Avenue

We cannot be sure that these streets are representative of the wide range of streets that would surely come from a more comprehensive study; their numbers could be, we sense, in the high hundreds. Nonetheless, the seven cities within which streets have been chosen range from very large (Los Angeles) to moderate in size (Richmond and Chattanooga); they are both old (Richmond) and relatively new (Sacramento); they vary in their density characteristics (San Francisco vs. Los Angeles); and they are reasonably well distributed geographically (as much as seven cities can do that in the United States). To be sure, four of the cities

belong to California (but then the funding source, i.e. the agency that says yes or no to studies like this, is in California), which in the end dictates the economic possibilities of the research. The streets, with several exceptions (Broadway and Folsom in Sacramento, Lorain Avenue in Cleveland), all run to and from the central areas of their cities, or skirt the edge of the central area. Overwhelmingly, they meet the criteria of being in "gray" areas, and that includes low income areas, most commonly of racial minorities. Most underwent changes in the decades after World War II, to the 1970s. At the same time, the streets are not alike. Some were originally prominent central streets that following World War II were widened or somehow altered to serve as major traffic carrying arterials feeding developing outlying suburbs. Others were rural roads at the turn of the century that were gradually developed and transformed into arterial streets feeding successively built outlying suburbs. The Los Angeles streets were initially built as streetcar roads, and then rapidly developed as suburban arterials. Some of the streets act as pairs of one-way streets or as part of a corridor of two or more streets, while some work alone. Many, but not all, of the streets run parallel to freeways that came after the changes were made. Most, as a result of the freeways, or for other reasons having to do mostly with central city decline, have excess traffic-carrying capacities, especially at non-rush hour times. Many of these streets, at one time or another, had streetcars on them, now replaced with buses. Two, East 14th Street in Oakland and Folsom Boulevard in Sacramento, are paralleled by a rapid transit system, an underground line in Oakland and a surface line in Sacramento. Washington Boulevard in Los Angeles carries a surface rail line for a short segment of its length where it passes adjacent to the downtown. The histories of the streets have similarities but they are not the same.

Site Visits and Field Observation

Site visits were made by the researchers to all the case study cities. The purpose of site visits was two-fold: to meet with city officials and interested professional and academic colleagues who had knowledge about the city and about particular streets, and to perform field measurements and observations. The on-site meetings with experts allowed us to elicit their views about the streets and corridors and their potentials in greater detail than was possible by phone. In several cities, experts accompanied us on tours of the streets. Field observations took up the bulk of our field visit time and included visual observations, physical measurements, and traffic counts.

Street Observations and Measurements

An understanding of each potential case-study street was gained by driving or walking along its length and making an assessment about whether it met our basic criteria. For those streets which did, we noted a number of things: the general nature of land uses, building scale, building set-backs, and socio-economic characteristics; the type of intersection controls and the presence of special traffic management features, such as restricted parking hours; the presence of bus or rail transit; and the presence or lack of significant trees or other nature features along stretches of the street. Photographs were taken along the

way, and measurements of the street right-of-way configuration were taken at places that seemed representative. Where significant changes in the right-of-way configuration occurred on a street, additional measurements were taken. At these places, and others, we got out of the car and walked a bit, or stood, and observed street activity and the street configuration in a more detailed way — pacing the spacing of trees, watching pedestrian flow, etc. When time allowed, observations were made at both rush-hour and non-rush-hour times. We also drove through surrounding neighborhoods to get a sense of the immediate city context.

Our intent with these field observations was not to do a detailed study of the street, but rather to get a general sense of its character, how it was built-up, how it was used by people in cars and by pedestrians, what the street life was like, and how and where the street changed in some respect.

Traffic Counts

To supplement official traffic counts, on-site vehicle volume counts were taken during either morning or evening rush-hour at one or two places that seemed representative along each street. Usually these counts were 15-minute counts, with one researcher counting cars going in one direction while another researcher counted cars going the other direction. Hourly counts were arrived at by multiplying 15-minute counts. Estimated ADTs were then interpolated from these counts by multiplying the peak-hour count by ten, a generally held rule-of-thumb procedure.

Data Compilation and Analysis

Information gathered on the case study streets was compiled and analyzed using several methods. As data became available for each street, it was compiled into summary written descriptions which included the location and history of the street, its nature, its traffic characteristics, and the current planning and development context. Speculations were also made, in a very general way, about the possibilities that came to mind for each street. At the same time, team members, alone and as a group, experimented with graphic notational techniques to arrive at a unified and clear way of communicating information about the natures of the streets and as a way of analyzing them. The general method used for each street was one of individual assessment followed by team discussion and analysis. As the process evolved, a graphic language describing qualitative characteristics of the streets began to emerge. One preliminary presentation was made to the study advisory committee, in order to get a sense of what techniques worked best. As the summary and graphic work progressed, it became clear that many of the streets being studied were composed of distinctly different sections, and streets were described in reference to these segments. In the end, four types of graphics were used to describe and analyze the streets: city context maps, street sections, street plans, and qualitative diagrams. As much as possible, these graphics were drawn to like scales for each street in order to keep information directly comparable. In some cases, where detailed

information was known or where the length of the street was particularly short, additional maps at a more detailed scale were included.

In order to analyze across the case studies, to understand what characteristics were common among the streets being studied and where major differences occurred, and to see what kinds of patterns were emerging, a comparative matrix was developed. This matrix lists all the case study streets, broken into appropriate segments, along with approximately 40 characteristics ranging from physical form attributes to development character and including traffic conditions and history. Analysis of the matrix led to some preliminary conclusions.

The case studies, analysis, and preliminary conclusions are presented in Chapter III.

The Typologies

Many different kinds of typologies might have been developed for arterial streets of the kind included in this study. For instance, typologies might have focused primarily on land use differences or on traffic volume differences. The approach used in this study, which derived from the qualitative analysis of the case study streets, was to focus on the qualitative natures of the streets, and on the opportunities that differently configured, differently located, and differently used streets present for development.

After much team discussion, four overlapping typological categories were identified: Character Types, Developmental Types, Traffic Rhythm Types, and Functional Context Types. Within each category, two or three different types were identified and then the characteristics generally or sometimes associated with each were listed. Drawing on examples from the case study streets, development opportunities suggested by each type were then identified and, where appropriate, some specific suggestions about development approaches were discussed.

The typologies are presented in Chapter IV.

Conclusions

In conclusion, the research methods employed in this study were exploratory in nature. Methods needed to uncover historical information about the morphology of urban arterials followed a fairly straightforward context analysis approach. However, uncovering historical information about specific changes to specific arterial streets over time was a much more complicated, learn-as-you-go process. The case study selection process itself was an exploration. At the outset, we had little idea what sort of catch our information-gathering net would yield. What we learned about arterial streets during this phase of the work, where we were led to look for possible case studies, and what information became available shaped how the rest of the study proceeded. The representation and analysis of the case study streets involved inventing the beginnings of a graphic language to describe the qualitative dimensions of arterial streets. Likewise, the typologies developed are a beginning, a step toward a new way of thinking about the development potentials of arterial streets.

III. CASE STUDY CITIES AND STREETS

This chapter consists of two parts, the presentation of the case study streets and a comparative analysis.

The Case Studies

In the case studies that follow, each street or system of streets is presented graphically at a number of scales, with accompanying text. The urban contexts of the streets are presented at a scale of 1:200,000. Section drawings of each street are at a scale of approximately 1:500 (1" = 40'), with more than one section presented when there are significant changes in street width. Plans of each street are at a scale of 1:100,000 or 1:50,000, together with appropriate analytic diagrams. The same scales are used for presentation of the streets in order to facilitate comparisons between them (Figures 1-33). The descriptive texts follow a similar format for each street, and consist of: location in the city; the nature of the street or corridor and its surroundings; a brief history; available traffic data; and some brief thoughts about the future possibilities of the street or corridor. The levels of information that were gathered differ between streets.

In one city, Sacramento, much more information was obtained for one or two corridors than for other cities. This information is presented in Appendix B. Overall, an evenness of information was not considered as essential for the phase one case studies.

Case Study #1
Oakland, California
East 14th Street

Figure 1: Urban Context Map of Oakland
Approximate Scale: 1:200,000

East 14th Street Oakland, California

(from two site visits and documents provided by city)

Location

- East 14th Street — known also as International Boulevard — is a major arterial east-west (although true compass directions would put it as a NW-SE orientation) through Oakland from Lake Merritt, on the eastern edge of the downtown Oakland, to the City of San Leandro, a distance of approximately six and one-half miles. It continues on through San Leandro to Hayward. East 14th Avenue is part of State Route 185. The Nimitz Freeway — Interstate 880 (once called the Eastshore Freeway) — runs roughly parallel on the south side, as does the BART line to Fremont.

Historic Notes — The City:

- The City of Oakland is located 7 miles east of San Francisco across the San Francisco Bay, and with a population close to 400,000 is the largest of the East Bay communities. The ethnic composition is roughly 28 percent white, 42 percent African-American, 13 percent Hispanic, 15 percent Asian.
- After the Spanish discovery in 1772, Americans began to populate the Bay Area in the 1840s.
- Major transportation and commercial development occurred during the California Gold Rush of 1849.
- Oakland was chartered as a city in 1852 and shipping wharves began being built in earnest, making Oakland a convenient terminus for the Transcontinental Railroad. Growth was steady for the remainder of the 19th century, but it was the 1906 San Francisco earthquake and fire and the subsequent relocation of people and businesses that doubled Oakland's population by 1910. Industrial and agricultural prosperity of the area through the 1920s allowed for expansion of the downtown core and development of homes south and east along existing country roads.
- The next growth of population was during the war years, when large numbers of workers and military personnel moved to Oakland to work in the local shipyards and army bases.
- Economic recessions and the growth of other Bay Area communities has taken a toll on Oakland's previous prosperity. Although this has resulted in some depressed neighborhoods and vacant businesses, many well-designed and well-kept neighborhoods and local businesses abound but are less well-known in a city that suffers more from image than reality.

Historical Notes — East 14th Street:

- Known originally in the 1800s as Hayward Road, it was the only thoroughfare between Oakland and Hayward. At that time it was a country road connecting the small towns of Fruitvale and San Antonio (now Oakland neighborhoods).
- In the early 1890s a single track electric railroad was constructed along the west side of the road. This was later moved to the center of the road and double-tracked. As well, the road bed was partly paved.
- 1922: the portion between Alice and Oak streets was widened to service the many new businesses opening (this is now part of downtown Oakland).
- 1923: the city council voted to make improvements to the street from 50th avenue to San Leandro (no specifics were given). The Oakland *Observer* lists E. 14th as "Oakland's Pet Peeve" because it is "impossible," and a plea is made for a thoroughfare between downtown and Foothills (at High) which is "free from street car traffic."
- 1924: after heated debate it was decided that East 14th could be classified as a "county highway"; widening was carried out from Jones Street to 103rd.
- 1925: the entire length of East 14th was paved to San Leandro at a cost of \$500,000.

- 1927: E. 14th, along with E. 12th and San Pablo are listed as the top three streets carrying peak load traffic (over 10,000 vehicles); Harland Bartholomew sees this as a "failure of use of parallel streets." According to map — E. 14th is over 100 feet wide from Fruitvale to San Leandro but only 80 feet from Lake Merritt to Fruitvale.
- 1928: the portion from Lake Merritt to Fruitvale is listed as "To Be Widened," and the remaining portion to San Leandro is deemed "Sufficient Width" in major street plan done by Harland Bartholomew and Associates.
- 1929: new setback lines were established from 50th to 83rd of 115 feet (existing width was 99 feet).
- 1935: a photo taken at 22nd Ave. shows near bumper-to-bumper conditions along E. 14th. There are four moving lanes and two parking.
- 1937: air photo of 62nd to 70th shows four moving lanes and two parking lanes.
- 1938: aerial photo of stretch from Lake Merritt to 19th Ave shows that E. 14th has two moving lanes (also accommodating street cars) and two parking lanes.
- 1948: stretch between 13th and 30th Ave. is widened by eight feet (setting back curbs and sidewalks) on the north side to "handle increased westward flow." A map is released which illustrates the recommendations of traffic consultant in solving the traffic problem — eight freeways and 15 major arterial (either having four or six moving lanes plus two parking lanes); E. 14th is labeled as needing four moving lanes.
- 1949: the Eastshore Freeway opens between Oak and 23rd to "provide a new thoroughfare to relieve peak jams on E. 12th and E. 14th."
- 1950: Eastshore Freeway now links San Leandro.
- 1967: aerial map looking SE on the Nimitz at 50th shows East 14th as having four moving lanes and two parking lanes — some portions show angle parking being used.

Nature of Corridor Segments

In the most general terms, the corridor can be characterized as being a commercial street that has residential neighborhoods to the north and more mixed-use commercial (predominately local-serving commercial, consisting of small retail businesses and services with much repetition in type) and industrial uses on the south, often associated with the railway. The corridor can be divided into two segments with noticeable changes in character: *1st Avenue to 42nd Avenue and 42nd Avenue to San Leandro.*

1st Avenue to 42nd Avenue

- East 14th is a four-lane arterial with parking and sidewalks on both sides. The width of the right-of-way (r.o.w.) varies between 80 feet and 85 feet from 1st to 29th and then to 100 feet from 29th to 42nd.
- The corridor is paralleled by the Eastshore freeway and BART (Bay Area Rapid Transit) tracks.
- From 1st Avenue to approximately 13th Avenue, the neighborhood (as characterized by the business types) appears primarily Asian (a mix of Korean and Chinese); after 14th Ave. (and a noticeable change of topography), the neighborhood becomes primarily Latino with new, four storey mixed residential and commercial development at 25th Ave. (the residential units seem occupied; however, the commercial can best be described as marginal); from Fruitvale Avenue (32nd Ave.) until 42nd Ave. there is the most pedestrian and commercial activity of any point along the entire corridor related to the Fruitvale neighborhood and the adjacent Fruitvale BART station two blocks west of E. 14th.
- With the exception of the large, vacant Montgomery Ward building and adjacent vacant lots at 28th Ave., parcelization is mostly small, with a typical lot having 50 feet of frontage and a 150-foot depth. Buildings are low rise, rarely over two storeys and represent a variety of ages and types.
- Street trees (primarily sycamore) are present at the commercial nodes of San Antonio and Fruitvale (generally at 80' o.c.) and sporadic in other locations.

42nd Avenue to San Leandro city limit

- After 42nd Avenue, the commercial strip along the route can be described as being low-intensity development with numerous vacant and/or underutilized properties. Parcelization seems larger with wider setbacks and more off-street parking lots. Buildings are low rise, rarely over two storeys, and represent a variety of ages and types. There is little new development and most buildings lack physical distinction. Although most buildings are built up to the sidewalk, the large number of vacant properties and front parking areas prohibits a continuous street wall.
- From 50th Ave. to 82nd Ave., the road width is consistently 110 feet; it narrows to 75 feet at 82nd Ave., at which point there is an approximately 30 degree bend in the road to the south; after 83rd Ave. it returns to a 110 feet r.o.w. until 99th Ave. at which point it narrows to a 100 feet r.o.w. until the San Leandro border.
- Due to its direction, the segment no longer closely parallels the freeway or the BART tracks (at 83rd Ave. it is the maximum distance away: one and one quarter miles east of the freeway and three quarters of a mile east of BART).
- The bend at 82nd Ave. is the location of a commercial node and community center; this is also the location of the most significant pedestrian activity of the entire corridor segment.
- A landscaped median runs from 80th Avenue to the San Leandro border. The width varies from five feet to a maximum of 15 feet; large trees are present from 84th to 100th Ave.
- Some businesses are mixed with housing or small offices in back or on the second storey. There is, however, a significantly higher number of vacancies and vacant lots than in the first segment.
- Housing along the corridor consists of moderate-density assisted housing projects and a small number of multi-unit structures in generally poor repair. There are some public schools, community facilities, and a notable number of storefront churches.
- The neighborhood is primarily African-American.

Traffic Counts

- From Lake Merritt to 54th Avenue, eastbound loads average between 8000 to 10,000 vehicles per day with peak hour loads ranging from 500 to 800 vehicles.
- Westbound loads for the same stretch are 11,000 to 14,000 per day and 700 to 1,000 per peak hour.
- From 54th Avenue to the San Leandro border, the loads east and west equalize to approximately 8,000 to 10,000 per day and 700 to 900 per peak hour.

Possibilities

- A high-density lineal corridor connecting downtown Oakland to, at least, Fruitvale neighborhood made possible through land assembly.
- Used for location of larger food stores to better serve the immediate neighborhoods.
- Used for location of greenspace for immediate neighborhoods, especially in association with creek crossings currently culverted.
- Provision of more pedestrian amenities (i.e. street trees) between existing pedestrian nodes to provide for a more comfortable walking environment.
- The simple maintenance of vacant lots to improve appearance (i.e. keeping clear of overgrown weeds and debris).
- Development of E. 14th as a multiple roadway boulevard to handle slow and fast traffic where the right-of-way permits.

Figure 2: Sections: East 14th Street

Figure 3: Plan and Interpretive Diagram: East 14th Street

Case Study #2
San Francisco, California
Third Street

Figure 4: Urban Context Map of San Francisco
Approximate Scale: 1:200,000

Third Street San Francisco, California

Location

- Third Street is a major arterial street that runs north-south along the eastern bay shore of San Francisco. Five and a half miles long, it starts at Market Street in the downtown and runs south through Mission Bay and the Hunter's Point area towards Candlestick Park, until it essentially ends as a freeway on/off ramp to Hwy 101.
- Interstate Highway 280 runs roughly parallel to the west for most of the streets length, as does U.S. Highway 101 further to the west.

Historical Notes — The City

- San Francisco was established in 1776 as a Spanish presidio and became part of American territory in 1846. Following the 1848 Gold Rush, the population of the city expanded rapidly, growing from 35,000 in 1850 to 150,000 in 1870. By 1930 the population had increased to 634,000. Today it stands at roughly 724,000.
- The Bay Bridge, connecting the city with the east bay, and the Golden Gate Bridge, connecting to Marin County, were opened in the mid-1930s and San Francisco began freeway planning in conjunction with the resulting increased traffic. A plan of 1937 proposed 64 miles of limited way routes in the city, including 26 miles of elevated highway, encircling and radiating from the downtown. World War II halted freeway construction, but after 1945 planning for freeways continued and construction began in the 1950s. The first structures built were through industrial and low-income residential areas, including along the embarcadero and through industrial areas near Hunter's Point. In the 1960s, as engineers prepared to build freeways through central areas and more well-to-do neighborhoods, citizens revolted and stopped freeway construction. The result was a truncated freeway plan.
- Although it experienced some post-World War II suburban "white flight," San Francisco has retained a strong and affluent population base. Today it is racially and ethnically diverse, with, among others, large Asian, Latino, and African American populations.
- Economically, the city is in very good shape. Property values are very high throughout the city. The downtown has a strong commercial base and is home to many corporate offices. Development pressure in the downtown and south of market area has recently intensified, and south of market is likely to become a major growth area.

Historical Notes — The Street

- The northern stretch of Third Street was platted as part of the south of market area in 1849 and extended as far as the Mission Bay marsh. This marsh, as well as a more southerly one at Islais creek, was filled between approximately 1858 and 1900, and an extension of Third Street (originally known as Kentucky Street from Mission Bay to Islais Creek and as Railroad Avenue thereafter) was built by 1870 as the only through road along the largely undeveloped eastern waterfront.
- Historical Land Uses: By 1900 the south of market stretch of Third Street was a warehouse/commercial/industrial area with a scattering of residential hotels/rooming houses and saloons. Beyond this, it ran through areas primarily devoted to railyards, cattle-slaughtering, and shipping. During World War II, when Hunters Point became the biggest shipyard on the West Coast, temporary housing was built in areas around the southern part of Third Street to house the huge influx of workers. After the war, this housing formed the core of a black neighborhood. During succeeding years, the Redevelopment Agency has replaced much of the temporary housing with public housing.

- Two streetcars ran the length of Third Street between 1895 to 1941, tying in with an extensive streetcar system throughout the city. The Third Street lines were the only ones running along the eastern waterfront and had no cross-connecting lines south of Brannan Street in downtown.
- By 1920 Third Street was designated a county highway, and from then on it has been a main traffic route and the subject of a number of traffic plans.
- The 1937 Limited Way Plan for San Francisco proposed it should become an elevated freeway for its entire length.
- The 1946 Master Plan of the City and County of San Francisco designated it as a major street and proposed rebuilding it as a freeway from 17th Street to Islais Creek.
- The 1951 Trafficways Plan proposed rebuilding it as a freeway from 16th Street to Army Street.
- Ultimately, no freeway was built on Third Street, but the closely parallel Interstate 280 and U.S. Highway 101 routes were built in the 1950s and 1960s.

Nature of the Street

- The street is composed of three distinct segments. It starts at the downtown, then runs sequentially through a changing fringe area, an industrial area, and a poor minority commercial/residential area. The segments are separated by two bridged channels, the Mission Creek Channel and the Islais Creek Channel.

Downtown to Mission Creek Channel

- This section has an 80' right-of-way and is one-way into downtown, with four traffic lanes and parking on both sides. The street becomes two-way just north of Mission Creek Channel, where it crosses the Lefty O'Doul drawbridge.
- Land use along Third Street is predominantly industrial with some commercial, office, and residential uses. The south of market area it runs through is currently experiencing an influx of live-work and high-tech office/production uses, as well as some upscale multi-family housing construction.
- Recently, major public construction has occurred along Third Street south of Howard Street within a redevelopment area. This has included a new Museum of Modern Art and the Yerba Buena Gardens cultural center. The museum faces onto the street, but the gardens are removed from the street and bounded by buildings that present back-sides to the street.

Mission Creek Channel to Islais Creek Channel

- This section of the street has a 100' right-of-way with three lanes of traffic in each direction and parking on both sides. A narrow center median and left-turn lanes are present in some areas.
- From Mission Creek Channel to 16th Street, Third Street runs through a largely undeveloped area known as Mission Bay, currently comprised of abandoned rail yards and scattered industrial uses, which has for some years been the object of unfulfilled development plans.
- From 16th Street to Islais Creek Channel, the street is lined with a mix of older large industrial buildings generally at the street edge or somewhat set back, vacant lots, bus/truck parking lots, and some older, small commercial buildings. Many commercial uses are auto-oriented, and some upper floor are residential. The surrounding neighborhood is mostly industrial.

Islais Creek Channel to Jamestown

- This section of the street also has a 100' right-of-way with three lanes of traffic in each direction and parking on both sides. A narrow center median and left turn lanes are present in some areas.
- Just south of Islais Creek Channel is a stretch of newer industrial parks — big buildings with set-backs and landscaping. This is followed by a newer shopping center.

- Beyond Fairfax, the street is lined with older commercial and industrial buildings, mostly at the street edge.
- From Innes to Williams is an older commercial area, with many small one- and two-storey buildings mostly at the street edge. This area is active but seems faded and worn, and many businesses seem marginal.
- Beyond Williams, the street is mostly residential. At Jamestown, it essentially turns into an on/off ramp for Hwy 101.
- Surrounding neighborhoods for this section are predominantly residential with some industrial uses mixed in. Residents are mostly African American. The median family income is well below the city average.

Traffic

- For its downtown stretch, Third Street is part of a one-way pair with Fourth Street. South of Mission Creek Channel there are no parallel arterial streets and Third Street acts alone as the only through street.
- Vehicle traffic is moderate to high, but counts show that the roadway is generally underutilized.
- *Market Street to Mission Street Channel Traffic Counts:* Daily traffic averages around 34,500 vehicles with peak loads ranging from 2,200 to 2,700 vehicles per hour. Peak hour vehicles per hour/per lane averages 550 to 680.
- *Mission Street Channel to Islais Creek Channel Traffic Counts:* Daily traffic averages around 20,000 to 26,000 vehicles with northbound peak loads ranging from 1,000 to 1,350 vehicles per hour (530 to 450 per lane) and southbound peak loads ranging from 530 to 1,480 vehicles per hour (180 to 500 per lane).
- *Islais Creek Channel to Jamestown Traffic Counts:* 24,700 ADT, with inbound peak hour loads of 840 to 1,020 vehicles (420 to 510 per lane) and outbound peak hour loads of 850 vehicles (425 per lane).
- Traffic can move very slowly on Third Street through the one-way section during morning and evening rush-hours. On the rest of the street, traffic moves quickly most of the time, although it slows down somewhat through the commercial stretch from Innes to Williams.
- Traffic is controlled by traffic lights. Blocks vary considerably in length from very short to quite long.
- Third Street is a truck route for most of its length.
- Buses run along the street, but they are often not very crowded.
- Pedestrian traffic is light to moderate in the downtown, then mostly non-existent except in the minority commercial area where pedestrian traffic is very heavy much of the day.

Current Local Plans/Thinking

- Light rail transit is being considered for the street.
- Current development proposals along and near the street include a new ballpark, urban entertainment center, and multi-family residential complex at the Mission Creek Channel; a new University of San Francisco research campus and related bio-technology industrial park in Mission Bay; and a new football stadium near Hunter's Point.

Possibilities

- Major landscaping along the whole length.
- Linear increase in density.
- Focal point development of the existing minority commercial area and in Mission Bay.
- Development into a major spine from Mission Creek Channel southward.

Figure 5: Sections: Third Street

Figure 6: Plan and Interpretive Diagram: Third Street

Case Study #3
Sacramento, California

Third Street
Broadway
16th Street
12th Street
Franklin Boulevard
Stockton Boulevard

Figure 7: Urban Context Map of Sacramento
Approximate Scale: 1:200,000

Sacramento, California

Historical Notes — The City

Sacramento, the state capital, is today a city of nearly 400,000. Much of the city's growth occurred as a result of the 1849 Gold Rush and the 1869 opening of the transcontinental railroad. The region's manufacturing sector has grown steadily since the late 1970s, spurred largely by expansion in high-technology industries. By contrast, government's proportion of the labor force has declined in the past several years.² Although agriculture remains a widely visible activity in the region, it does not employ many people.

As recently as the 1950s and 1960s, the roads in Sacramento County, outside the city, were rural roads passing through agricultural land. Since these roads developed relatively recently, the land uses along these outer stretches are automobile-oriented strip commercial and office or industrial parks. Farther out, swathes of undeveloped agricultural or floodplain land remain. Although the inner portions of the Sacramento streets have older, small-scale development, the outer portions of the streets have many gaps (vacant lots), parking lots, and large setbacks.

A review of the City of Sacramento's Community Plans from the mid-1960s revealed a near obsession with erasing "blight," spurred by Federal Urban Renewal regulations. The federal government's 1954 Housing Act required that a community, to be eligible for federal assistance in urban renewal, determine the extent, intensity, and location of blight. Calls for more off-street parking facilities were common as well. A common method to increase vehicle capacity on a street seemed to be for the city to adopt building lines for future widening of the street, as a protection against new construction within the anticipated right-of-way.

²Source: Economic Profile from the on-line Sacramento Almanac, Area Economy Section, by the Sacramento Bee, <http://www.sactoedc.org/economy/employment.html>, July 1997.

Folsom Boulevard Sacramento, California

Location

- Folsom Boulevard is a two-way road that extends east out of Sacramento and was the original Highway 50 and the road to Folsom Prison. It roughly parallels the American River.
- The street begins in Sacramento on the east side of Business Route 80 as an extension of Capitol Avenue. From there, it runs east for nearly six miles, crosses the border into Sacramento County at South Watt Avenue, and continues to the town of Folsom.
- For this research, Folsom was divided into three segments: from Alhambra Boulevard at Highway 80 to 51st Street, from 51st Street to 65th Street, and from 65th Street to Sunrise (six miles of which are within the county's jurisdiction).

Historical Notes — the Street

- The majority of the inner area was developed in the 1920s and 1930s. The 1963 Community Plan for East Sacramento described this as "a stable community of good residential neighborhoods, . . . a distinct identity, . . . a desirable place to live."
- The unincorporated outer portion of Folsom includes the Rancho Cordova Community, which developed largely in the 1950s and 1960s in response to employment opportunities at the Mather Air Force Base and related aerospace industries. This portion was built by the state in the 1930s, and was later widened.
- The East Sacramento Plan in 1963 warned against any further expansion of the already excessive amount of commercial strip zoning along Folsom, "to prevent the creation of another Broadway, Franklin, or Stockton Boulevard." Instead, the Plan recommended "some form of multiple family development properly oriented to adjacent residential neighborhoods." This suggests that strip development was considered a problem at that time.
- A 1967 East-Central General Plan for Sacramento County identified Folsom Boulevard as one of nine major thoroughfares, and mentioned the use of the Southern Pacific railroad/Folsom corridor for the future mass transit anticipated to help support the growing population and travel needs.
- The modern-day Highway 50 was opened in 1971, spurring further industrial and residential development along the outer portion of the Folsom corridor.
- East of 65th Avenue, today a new light rail runs on an old Southern Pacific right-of-way adjacent to Folsom Boulevard.

Nature of the Street

- Heading east on Folsom from Alhambra Boulevard, one passes through a well-maintained, tree-lined older residential section, the residential "place to be," with two narrow lanes in each direction, no street parking, a bike lane on one side, and old street lamps.
- The stretch approximately from 51st to 65th Streets runs through an old Italian community and includes small-scale commercial uses such as restaurants. Next, the road runs through a strip development area with large parking lots in front, a Caltrans bus yard, an electrical station, mobile home parks, and big box stores. The street is one lane in each direction with a painted median turning lane, but it feels wider because of the low buildings, big setbacks and parking lots.
- California State University Sacramento lies just north of Folsom and east of 65th Street at Evans Avenue, but because of the streets' configuration, the University is completely disconnected from Folsom.
- Farther out, east of 65th Avenue, the land uses on either side of Folsom are largely commercial and industrial. The strip of land south of Folsom and north of Highway 50 tends to be industrial use, whereas the north side of Folsom tends to be community/neighborhood commercial and offices. The street passes through a bleak area with the light-rail tracks to the right, a mix of low, often vacant

office buildings, a defunct nursery, and some old Victorians. There are stretches of small homes backing onto the light-rail line behind old wooden fences.

- Beyond where Highway 50 crosses over Folsom, the light rail joins up to run alongside Folsom for a few more miles. There are glossy new office buildings to the south, office parks built in anticipation of the light rail. However, the buildings have large surface parking lots and lack a pedestrian or physical connection to the transit stations.
- At Bradshaw, Folsom has a 100-foot wide right-of-way with two travel lanes in each direction, a center turning strip, and 6-foot sidewalks.
- Farther out, Rancho Cordova is a small community of homes to the north, built during World War II for Mather Air Force Base. There used to be jobs out here for the air force and aerospace industry, but they are gone now, leaving behind toxic sites. There is a winery with new buildings, Goethe Park, an old railroad station, and pastures. It seems to be an area of lower-income people.
- At Sunrise Boulevard, there are two tall hotels on the north side, close to an I-50 cloverleaf.
- From South Watt to Sunrise Boulevard, landscaping along the street is spotty, ranging from none at all to areas of dense mature trees and shrubs.

Traffic

- Traffic counts along Folsom by the City of Sacramento vary from about 5,000 to 22,000 vehicles per day. Peak hour traffic is 8 to 9 percent of the ADT. In general, volumes are higher farther out from the city center. During our site visit, traffic seemed light, and volumes are less than capacity along the whole boulevard.
- Most of the length of Folsom Boulevard from South Watt to Sunrise has a narrow, well-marked bike lane on both sides. In this same stretch, there is no sidewalk on the south side, but the north side has sidewalks in varying condition along most of its length. In this same section, light-rail stops and stations are spaced irregularly, from 800 feet to 7,200 feet apart.

Current Context

- It is unknown if there are any current community plans, other than an inventory of the street landscaping, transit stops, sidewalks, and other amenities.
- The light rail does not enjoy heavy ridership. The city probably chose this alignment partly due to its inexpensive right-of-way. The line does not have the density around it nor the pedestrian-oriented design to encourage its use. The stations are too close to the roadway, leaving little room to create a comfortable waiting area; however, the stations are also too far from the offices they are meant to serve — in fact, they are on the wrong side of the street for much of the development.

Possibilities

- The inner portion of Folsom is doing fine and only requires continued support and maintenance.
- The middle portion can be improved by adding density or filling in the vacant lots, steering development to the center of town instead of allowing it to go to the suburban edge.
- Infilling Folsom with residential would also take advantage of the light rail. There are homes adjacent to Folsom which theoretically provide the demand for light rail, but they have infrequent street connections to get to Folsom.
- Hypothetically, on the outer portions the existing light rail along Folsom could be used to structure the corridor, create a better walking environment and street/building relationship, and improve the light rail connection to offices. But when office workers all have free parking, as it seems they do, it is hard to switch to riding light rail.
- Improving the appearance of the outer segment presents difficult problems because of its auto-oriented land uses. It would seem that people would not really walk along such streets.

Figure 8: Plan and Interpretive Diagram: Folsom Boulevard

Broadway Sacramento, California

Location

- Broadway is a two-way six-mile long street that begins at Highway 5 just east of the Sacramento River and runs east for two miles through the southern edge of the CBD to Highway 99. Within this central area, the street is closely paralleled by Business Route 80. East of 99 and Alhambra Boulevard, Broadway changes direction to run southeast for less than a mile, then resumes a due-east course for another two miles, ending at 65th Street.

Historical Notes

- The inner portion of Broadway was one-way to 4th Avenue until 1962, when it was returned to two-way service. In 1975, Route 5 opened, connecting to the western end.
- Inner Broadway: The 1963 Community Plan for Riverside-Land Park mentioned inadequate off-street parking in the industrial area southwest of Broadway. The city made allowance for further commercial strip zoning on the north side of Broadway, south of the proposed new freeway (99/Business 80). Overall, the area had "fine homes on generously landscaped lots ... one of the better residential areas" in Sacramento. Most of the residences here were built before the 1930s. In 1963, the area was 85 percent white.
- Middle portion running northwest/southeast: The 1966 Oak Park Plan describes new regulations for additional units on "deep lots." The goal was to encourage new construction and rehabilitation of the area, eliminate the potential for blight, and make better use of existing properties.
- Outer Broadway: The community developed gradually between 1910 and 1960. By the early 1960s the area was described as a stable residential neighborhood, 98 percent white, and housing was in "generally satisfactory" condition. Originally, the state fairgrounds were between Stockton and 50th on Broadway; by the early 1960s there were already plans to move the fairgrounds elsewhere.

Nature of the Street

- Broadway seems to be an older (1930s to 1950s) commercial strip.
- Brick public housing (1950s) around 6th Street is landscaped and looks well-cared for.
- The inner portion of Broadway has older strip commercial development, the Landmark Tower Cafe at 16th Street, the city cemetery, and parking lots which break up the streetwall.
- At 35th, where Broadway crosses a grid diagonally (the "Oak Park" neighborhood), creating triangular blocks for more than half a mile, it seems to have been an important center with a grand bank building and tall palm trees in a center median.
- Coming out of Oak Park, from about 41st Street to Stockton Boulevard, it seems low-income; houses are not too well maintained.
- Farther off Broadway, streets such as Second Avenue are middle-class areas with 1930s bungalows, homes close together, and trees forming a canopy over the street.
- Farther out towards 65th, Stockton has light industrial, large office buildings, the DMV (an urban renewal area), and parcels of vacant land.

Traffic

- Traffic volumes along Broadway, obtained from the city, vary widely across time and space, without a clear pattern. With ADT ranging from 5,000 to 20,000, volumes are less than or equal to capacity.

Current Context

- No current community plans known of at this time.

Possibilities

- Not a major structuring corridor
- As with Folsom Boulevard, filling in the vacant lots (channel development to center of town instead of allowing it to go to suburban edge) would help re-establish a street wall, making the street a more interesting place to gather or walk, especially in the Oak Park area.

Figure 9: Plan and Interpretive Diagram: Broadway

12th and 16th Streets Sacramento, California

Location

- 12th and 16th Streets form a one-way pair leading north/south through the central portion of Sacramento. Broadway and Business Route 80 (aka Highway 99) form their southern border, and they come together at the American River, about two miles north. 12th Street is interrupted mid-way by the State Capitol and Capitol Park. Both streets are paralleled by Highways 5/99 about three-quarters of a mile to the west, and by Business Route 80 about 1.2 miles to the east. Together, 12th and 16th form the northern end of State Highway 160, which runs south through Sacramento all the way to Walnut Grove.

Historical Notes for the 12th and 16th Streets Corridor

- Today, the corridor is largely a mixture of run-down general commercial, offices, and multi-family. Heavy commercial and warehouse uses are concentrated in the Q and R Streets corridor where the light rail runs on what was once a freight railroad line, and in the "Industrial Park" area just south of the American River.
- The last Community Plans for the area were done in 1965, when the area was 85 to 90 percent white. Industrial zoning did not allow residential development; it was anticipated that the older homes there would be replaced by commercial and industrial uses, with only the Dos Rios Housing Project to remain. Citing the 1960 Census which said that 20 to 32 percent of the housing in the area was substandard or deteriorating and 3 to 16 percent was dilapidated, the City of Sacramento called for an accelerated enforcement program to remove "all blighted structures" and rehabilitate dwellings in need of repair. In addition, the State Capitol Plan of the 1960s called for purchase of dozens of blocks to be state-owned.
- The 1965 and 1966 Community Plans called for 15,000 additional off-street parking spaces, to be provided by multi-level garages and by lots under the new freeways, in order to free up room on the roadways and thus reduce congestion. It recommended that all public agencies provide off-street parking for their employees in the CBD.
- 12th Street was changed to one-way southbound in 1950. The 1966 Plan for "Old City" downtown proposed a change to a system of one-way couplets, and discarded the idea of boulevards which would be too expensive to develop. 16th Street, along with 15th Street, seems to have been made one-way and widened in 1968.
- Thirty years later, Sacramento has installed light rail downtown, but it must be hard to get people to take transit when the right to a parking space has been ingrained for so long.

16th Street

Nature of the Street

- This is a major one-way street carrying traffic out of the CBD to suburbs north, running from Broadway and Business Route 80 through central Sacramento for a distance of about two miles to the American River parkway, where it merges with 12th Street and becomes Del Paso Boulevard. The street has three driving lanes, parking on both sides, wide sidewalks with grass planting strips, and big trees. There is no on-street parking north of the railroad.
- The light rail crosses 16th at R.
- Probably earlier on, this street had good middle-class housing, which was converted to lower income, multi-family, and later to industrial or commercial use.
- There is some well-maintained affordable housing. Strip development includes office buildings, auto body shops, car rentals, and motels, as well as many vacant parcels. There is a lone 1890s Victorian

mansion ("the Governor's mansion"). Many buildings do not face directly onto 16th. Towards the river, there are old red brick factories or warehouses, some renovated and used for small businesses.

Traffic

- Traffic along 16th Street is of medium volume, ranging from 15,000 to 25,000 vehicles per day ADT. With three lanes of traffic along the one-way 16th Street, vehicle volumes are less than or equal to the capacity of the roadway.

12th Street

Nature of the Street

- This is a one-way street running south through central Sacramento for about two miles, from the American River to Business Route 80, interrupted by the State Capitol and Capitol Park. It is a major street carrying traffic into the CBD from areas north.
- Traffic is fast and seems faster than on 16th. There is no on-street parking north of the Capitol Mall, where the light rail runs in the left two lanes. There are three auto driving lanes on the right side, but cars are not prohibited from driving on the light-rail tracks in the two left lanes. The light-rail stations have colorful banners which are repeated along the street
- Closer to the Capitol Mall, there are only two driving lanes and the road is two-way, with no parking. Taller buildings and smaller setbacks announce downtown.
- The street is characterized by strip commercial with many vacant lots, light industrial, and gas stations. There is a large abandoned decrepit factory building "Globe Mills," as well as abandoned Victorians. As on 16th Street, there are some brick factory/warehouse buildings, some renovated, some vacant.

Traffic

- Traffic volumes along 12th Street are from low to medium, ranging from 7,000 to 20,000 ADT.

Current Context

- No current community plans for the two streets are known of at this time.

Possibilities

- 16th and 12th Street form a well-located, transit-served corridor which might appeal to young professionals working in state government offices downtown, as well as artists seeking to live in a downtown environment.
- Encourage the continued renovation of brick factory and warehouse buildings as offices and live/work lofts. With a growing CBD population, there would then be more demand for retail services, spurring the renovation of other properties along the streets.
- As demand leads to infill, require that any parking be under or behind the buildings, hidden from the street, to re-create a streetwall.

Figure 10: Section: 16th Street

Figure 11: Plan and Interpretive Diagram: 12th and 16th Streets

Stockton Boulevard and Franklin Boulevard (south of Broadway) Sacramento, California

Location

- Both streets run in a generally north–south direction from central Sacramento and are roughly parallel, about 1.6 miles apart.
- Franklin runs very close to Route 99 from Broadway to about 47th Avenue, then continues south beyond the new residential development of Laguna West to the town of Franklin. The distance from Broadway to Laguna West is about nine miles. Stockton Boulevard extends from 16th Street, turns southeasterly, and continues to the city of Stockton. Route 99 parallels Franklin Boulevard to 47th Avenue, then angles toward Stockton Boulevard to south of Mack Road and is parallel (very close) to Stockton for many miles running south.
- Because of irregular boundaries, both streets run into and out of the city and county.

Possible History (based in part on observations)

- It seems likely that these were roads that provided the initial structure for development of surrounding areas: initially they were "country" roads from the south.
- Linear, more dense areas near to the downtown may have been associated with streetcars.
- Early development nearer to the center of Sacramento generally faced the street, and was urban in character. These were not "strip" commercial streets as that term is generally used today.
- As time passed, early uses along the streets (farms, occasional houses and/or stores) were replaced by auto-oriented uses and auto-oriented commercial services — maybe in the 1940s.
- Small early strip developments then occurred, fragments of which remain.
- Later, moving south, what were formerly rural roads were widened and became the basic structure for suburban developments off of them.
- The residential area immediately south of 47th Avenue was developed after World War II. Much of the land was annexed to the city in the early 1960s, when it was still farmland.
- In time, these streets became a focus for large-scale "strip" developments.
- These streets and the uses along them weren't torn apart or undone by development or by bypass routes (Route 99). Rather, they were the framework for sequential suburban development.
- In 1968, the so-called Franklin-Stockton Corridor, south of Mack Road, was agricultural in nature, with a growing number of subdivisions. Plans called for shopping centers at selected major intersections, on one corner rather than four.

Franklin Boulevard History

- From 1955–1964, four lanes were built southward from Sacramento city limits.
- Widening of Franklin Boulevard in the 1960s eliminated front parking lots along some areas of strip development.
- The physical structure of Franklin Boulevard has not been changed since it was transferred from the state to the county.

Nature of the Streets

- Stockton Boulevard in its most urban section, north of 14th Avenue, has a right-of-way of about 70 feet with two moving lanes in each direction, a turn lane in the center, and two parking lanes.
- Franklin Boulevard, at about 26th Avenue, is arranged similarly to Stockton Boulevard.
- Both streets change with distance from downtown, with fewer uses oriented *to* the streets.

- The area along Stockton Boulevard (near Oak Park) seems to house lower-income people than along Franklin Boulevard.
- Oak Park area off of Broadway has a more complicated, irregular street pattern than generally found along these streets.
- The commercial area north of 12th Avenue along Stockton Boulevard is more densely developed than along Franklin Boulevard.
- South of 12th Avenue, both Franklin Boulevard and Stockton Boulevard are similar.
- Areas closer in are more densely developed, with a mix of housing and commercial uses.
- Housing along both streets is modest and closely located: the units are modest.
- Moving away from downtown, Stockton Boulevard is characterized by early suburban malls, some of which are mostly marginal or semi-vacant (E. B. Weinstocks, J. C. Penny).
- Off Franklin Boulevard, the Campbell soup canning operation has been there for a long time.
- There are large concentrations of modest-income people — especially Asians (Laotian, Thai, etc.) or Latino (Franklin) — at the older urban edge before the most recent (1970s, 1980s) larger housing tracts start. In the mid-1960s, this area had a relatively small percentage of whites, about 59 percent.
- Further down Franklin Boulevard, a lower-income black area exists.
- With distance from the center, there are fewer street intersections. Development occurs off the roads and traffic moves more rapidly.

Traffic

- The streets each act alone to carry traffic; neither is part of a system.
- Vehicular volumes along Franklin Boulevard since 1976 show a steady rise from 13,500 per day in 1976 to 1993, when they reached 17,700 per day. The 1990 counts were 19,650 — the only "blip" in a constant rise over the 17-year period of less than 2 percent.
- Pedestrian travel along the street is minimal and is generally limited to area shopping complexes at more inlying cross-streets.
- Traffic is noticeable at major intersections where there are shopping complexes.

Current Community Thinking

- Unknown if there is any.

Possibilities

- Given the long length of each street, it is likely that each can and will play many roles along its length, and that significantly different designs may be appropriate for segments of each: seam, divider, nodes of development at selected intersections.
- As long as adjacent development is at low densities along the streets and there is a reluctance to coordinate land use development with transportation, transit-oriented travel/land use seems unlikely.
- Along selected segments of these streets definitive treatments of their edges — curbs, walks, trees — could improve these streets.
- Tree planting and landscape improvement would be significant improvements.

Figure 12: Sections: Stockton Boulevard and Franklin Boulevard

Figure 13: Plan and Interpretive Diagram: Stockton Boulevard and Franklin Boulevard

Case Study #4
Los Angeles, California
Washington Boulevard
Adams Boulevard
Whittier Boulevard
Vermont Avenue

Figure 14: Urban Context Map of Los Angeles
Approximate Scale: 1:200,000

Los Angeles, California

Historical Notes — The City

- Los Angeles was founded in 1781, and for its first 100 years was a provincial outpost. Following a migration boom after railroad linkages were established, the city had a population of 50,000 by 1890. By 1940, the population had grown to 1.5 million and following W.W.II and another wave of immigration, it grew to 2.4 million by 1960. Today, the 470 square mile city has a population of about 3.5 million people.
- Downtown Los Angeles, developed in the late 1880s/early 1900s, has an urban character with a compact grid of streets, but the rest of the city was developed in a low-density suburban manner. In general, vast stretches of Los Angeles are structured by a rough grid of major streets, spaced about 1/2 mile apart, with single-family residential neighborhoods in-between. A number of these major streets, many designated as boulevards, radiate from the downtown into outlying areas and often connect with the downtown's of the several cities that lie wholly within Los Angeles, such as Beverly Hills, West Hollywood, and Culver City. Others run at some distance from the downtown. Most of the major streets once held street car lines, but these were removed in the 1940s and 1950s as Los Angeles built its extensive freeway network.

Washington Boulevard and Adams Boulevard Corridor Los Angeles, California

Location

These two east-west arterial streets run roughly parallel to each other about 1/2 mile apart, passing several miles south of downtown Los Angeles, and, through their central sections, are separated by the parallel Santa Monica freeway (Interstate 10). Washington Boulevard is the more northerly and longer of the two streets. Through Los Angeles it is approximately 18 miles long, extending from Venice Beach in the west to the industrial cities of Vernon and Commerce in the east, and then continuing on and on. Along the way it passes through Culver City. The section of the street that was studied is from Culver City to Vernon. Adams Boulevard is eight miles long, running from Culver City to the edge of Vernon.

Although the two streets are close together and run parallel, they are not integrated with each other to any large degree. Each street is described separately below.

Washington Boulevard

Historical Notes

- Washington Boulevard originally carried a streetcar line that ran from Culver City to the downtown. (Likely, the streetcar also ran along Washington beyond Culver City to the beach.)
- The 1924 Major Traffic Street Plan (prepared by Frederick Law Olmsted, Jr.) described Washington Boulevard as the most important through route to Venice and also carrying heavy local traffic. The plan shows that at this time, the street had an inconsistent right-of-way width. The central portion of the street, from Hoover to Crenshaw, carried eight traffic lanes in a 74' roadway, while other sections were narrower and "in need of widening." The plan also shows that the street ended before reaching what is today the city of Vernon.

Nature of the Street

The section of Washington Boulevard that was studied is composed of four fairly distinct segments. From east to west it runs sequentially through the historic downtown of Culver City and a warehouse district, a run-down older commercial area, a light industrial area, and a heavy industrial area.

Culver City to Hauser

- This section has a right-of-way of 80' with two lanes of traffic in each direction and parking both sides.
- Land use along Washington Boulevard through the center of Culver City is primarily office, commercial uses with some public buildings, and at least one movie studio.
- After this, land use is primarily medium-scale warehouses (perhaps associated with the movie business) set close to the street.
- Surrounding neighborhoods are primarily residential and seem fairly well-to-do.

Hauser to the Harbor Freeway

- This section also has a right-of-way of 80' with two lanes of traffic in each direction and parking both sides.
- The Santa Monica freeway runs parallel to this section and many freeway ramps feed onto it.
- The street is lined primarily with low-scale older commercial buildings, mostly one-storey high and generally built to the street edge. Many windows are boarded up and there are scattered empty lots and out-of-business signs. Many commercial uses are auto-oriented.
- At some intersections, clusters of newly built multi-family housing occur, some of it trying to be upscale. Some of these projects are set back somewhat from the street.
- Around Vermont are some newly built commercial buildings, evidence of the expanding Koreatown to the north.
- Surrounding areas are mostly older single-family residential neighborhoods. Some are marginal-looking; however, on the slight rise around Western there is the remnant of a former wealthy neighborhood of large homes. This area is well-maintained. Some of the houses may have been divided into multi-family units.

The Harbor Freeway to Alameda

- This section has a right-of-way of 90' with two lanes of traffic in each direction, parking both sides, and central two-way street car tracks for a surface streetcar line (part of a very long metro line connecting the downtown with the city of Long Beach to the south).
- Land uses in this section are a mix of small commercial and medium-sized industrial buildings. There is a general run-down feeling.
- Surrounding areas are a mix of light industrial uses and older, marginal-looking residential neighborhoods with a largely black population.

Alameda to the City of Vernon

- This section was not measured but has a cross-section and traffic configuration similar to the previous section, although without the streetcar tracks.
- Beyond Alameda, where Washington Boulevard runs just north of the city of Vernon and its extensive industrial rail yards, land use is heavy industrial. There is a mix of container yards, refineries, and grain elevators. Most buildings are substantially set back from the street with loading docks and parking lots in front. Rail tracks cross the street in several locations.
- Surrounding areas are by and large industrial with a small scattering of residential.

Traffic

- From Culver City to the Harbor Freeway, Washington Boulevard is a part of L.A.'s extensive arterial street grid — parallel arterials run at approximately 1/2-mile intervals and are connected by numerous cross-streets. For the rest of the street, there are a few parallel arterials but they are more distant and less well-connected.
- On its middle section, from approximately Hauser to the Harbor Freeway, a special traffic management feature is in place, consisting of restricted roadway parking during rush hours.
- Vehicle traffic is moderate, and counts show that much of the roadway is underutilized.
- *Culver City to Hauser Traffic Counts:* 17,000 ADT, with inbound peak hour loads of 820 vehicles (410 per lane) and outbound peak hour loads of 630 to 1,040 vehicles (315 to 520 per lane).
- *Hauser to Harbor Freeway Traffic Counts:* 21,600 to 23,100 ADT, with inbound peak hour loads of 525 to 1,000 vehicles (175 to 330 per lane) and outbound peak hour loads of 690 to 1,290 vehicles (230 to 430 per lane). Note that these figures include use of parking lanes as through lanes during rush hour.
- *Harbor Freeway to the City of Vernon Traffic Counts:* 23,000 ADT, with inbound peak hour loads of 870 to 1,000 vehicles (435 to 330 per lane) and outbound peak hour loads of 840 to 1150 vehicles (420 to 575 per lane).
- The street is a major truck route east of the Harbor Freeway.
- Traffic moves quickly most of the time, although it slows down east of the Harbor Freeway because of the truck traffic.
- Pedestrian traffic is light to non-existent all along the street. The heaviest concentration is in downtown Culver City, but this is still almost nothing.
- Bus lines run along the street.
- Through its middle section, where it parallels the freeway, the street is part of the recently put-in-place Santa Monica Freeway Smart Corridor program, an inter-agency traffic monitoring/information system that directs freeway drivers onto parallel arterial streets when the freeway gets backed up. (The program includes five parallel arterials and 15 major cross-streets.)

Current Local Plans/Thinking

- Washington Boulevard is currently perceived as an underutilized arterial street, which is why it has been included in the Smart Corridor program. No other development plans were identified for the street.

Possibilities

- Gateways that identify different neighborhoods along the street.
- Major tree planting, especially from Culver City to the Harbor Freeway.

Adams Boulevard

Historical Notes

- Like Washington, Adams Boulevard was built before the turn of the century as a streetcar road intended to open up new areas for suburban development. Such development proceeded rapidly, and areas around the street were well populated by the 1920s.
- The 1924 Major Traffic Street Plan described Adams Boulevard as an important thoroughfare to the west, and indicated that it was generally "in need of widening." At this time, for part of its length, around Crenshaw, it carried eight lanes of traffic within a 74' roadway.

Nature of the Street

Adams Boulevard can be divided into four segments with distinctly different characters. Moving from west to east, the street runs sequentially through a run-down older commercial area, through an older, well-kept residential area on a slight rise, through a less run-down and newer commercial area, and finally through a low-income minority residential area.

Culver City to Crenshaw

- The right-of-way varies from 65' to 80', and there are two lanes of traffic in each direction with parking lanes on both sides.
- This is the section of the street that most closely parallels the freeway, and many on and off ramps feed into it.
- In this segment, the street is lined primarily with older one-storey commercial buildings that are by and large run-down in appearance, although some buildings would once have been quite nice. Some buildings look abandoned. Many businesses are auto-oriented.
- Surrounding areas are primarily single-family residential with some multi-family buildings.

Crenshaw to Western

- The right-of-way is generally 80', and there are two lanes of traffic in each direction with parking lanes on both sides.
- On the rise between Crenshaw and Western, the street is lined with large older houses, mostly set back somewhat from the street, and a number of churches. Properties are well-cared-for. Some of the houses may have been divided into multiple units.
- Surrounding neighborhoods are primarily single-family residential. The population living here includes blacks and students from the University of Southern California.
- The neighborhood to the north is part of the same nice neighborhood that occurs off of Washington — it was split in half by the freeway.

Western to Broadway

- The right-of-way is 80', and there are two lanes of traffic in each direction with parking lanes on both sides.
- From Western to Broadway, Adams runs just north of the USC campus. Here, the older commercial buildings are somewhat run-down but there are also pockets of newer multi-family housing and newer commercial establishments such as fast-food chains and restaurants as well as a large office complex. Buildings are mostly at the street edge or somewhat set back with parking or landscaping in front of newer buildings.
- At Vermont, there is evidence of an ethnic concentration of Koreans. There is also a recently built supermarket which seems to be a neighborhood focal point.
- Surrounding neighborhoods are mostly single-family residential and areas of student housing.

Broadway to Nevin

- The right-of-way is 80', and for most of this section there are two lanes of traffic in each direction, with parking lanes on both sides. The last several blocks of the street carry only one lane in each direction, with a center turn lane.
- After Broadway, the street is lined primarily with older, single-family and multi-family residential buildings, with concentrations of older commercial buildings at some intersections. Some stretches of the street have large well-maintained older bungalow houses.

- The last mile is a low-income Black and Latino neighborhood of small single-family houses. Various small- and medium-sized recycling business are mixed in along this section. Surrounding neighborhoods are mostly single-family.

Traffic

- Adams Boulevard is part of an extensive arterial street system with parallel arterials running at 1/2-mile intervals.
- Vehicle traffic is moderate, and traffic counts show that much of the roadway is underutilized.
- *Culver City to Crenshaw Traffic Counts*: 11,650 ADT, with inbound peak-hour loads of 300 to 460 vehicles (150 to 230 per lane) and outbound peak hour loads of 700 to 910 vehicles (350 to 455 per lane).
- *Crenshaw to Western Traffic Counts*: 21,000 ADT, with inbound peak hour loads of 800 to 960 vehicles (400 to 480 per lane) and outbound peak hour loads of 670 to 870 vehicles (335 to 435 per lane).
- *Western to Broadway Traffic Counts*: 21,500 ADT, with inbound peak hour loads of 790 to 800 vehicles (395 to 400 per lane) and outbound peak hour loads of 820 to 1290 vehicles (410 to 645 per lane.)
- Traffic moves quickly most of the time.
- Pedestrian traffic is light to non-existent, although it picks up a little around USC.
- Like Washington Boulevard, the street is part of the recently put-in-place Santa Monica Freeway Smart Corridor program, an inter-agency traffic monitoring/information system that directs freeway drivers onto parallel arterial streets when the freeway gets backed up.

Current Local Plans/Thinking

- Like Washington Boulevard, Adams Boulevard is currently perceived as an underutilized arterial street, which is why it has been included in the Smart Corridor program. No other development plans were identified for the street.

Possibilities

- Major tree-planting along the length of the street.
- Development of a medium- to high-density mixed use corridor through the commercial areas of the street.

Figure 15: Sections: Washington Boulevard and Adams Boulevard

Figure 16: Plan and Interpretive Diagram: Washington Boulevard and Adams Boulevard

Whittier Boulevard Los Angeles, California

Location

- Whittier Boulevard is one of several major arterial streets that run east out of the downtown into nearby adjacent communities. It starts at the edge of the downtown and runs through the Boyle Heights neighborhood and into the community of East Los Angeles then continues on. The part that was studied is the seven-mile stretch from downtown through about mid-way into East Los Angeles.
- Whittier Boulevard is paralleled and crisscrossed by several freeways. The Pomona Freeway (State Hwy 60) and the Santa Ana Freeway (Interstate 5) run roughly parallel on either side for most of the length of the street, and the Long Beach Freeway (Interstate 710) and the Hollywood Freeway (US Hwy 101) cross it.

Historical Notes

- Boyle Heights was one of the first suburbs of Los Angeles. Originally an exclusive residential area, by the 1920s its major streets were built and most of the surrounding area was subdivided. A bridge was built over the Los Angeles River, connecting the area with downtown, in the 1920s. After World War II, industry from surrounding areas on the west and south expanded into former residential areas.
- Boyle Heights and the neighboring city of East Los Angeles were settled by successive waves of immigrants. By the 1950s, half the population was Mexican American. Presently, it is approximately 80 percent Mexican American.
- A streetcar line ran on Whittier Boulevard as far as the East Los Angeles city limit until at least the mid-1940s, connecting with a trolley car running along the street in East Los Angeles.
- In the early part of the century, Whittier Boulevard was designated as U.S. Route 101.
- Four freeways were constructed through the area, two in the 1940s and two more in the 1960s. For 20 years the area was subject to constant construction, massive housing removal, and demolition. Neighborhoods were divided and access was substantially reduced.
- The 1924 Major Traffic Street Plan described Whittier Boulevard as very congested. It shows that at the time the street where it passed through Boyle Heights had six lanes of travel within a 56' roadway, and described the street as "needing to be widened" where it ran through East Los Angeles.

Nature of the Street

The section of Whittier Boulevard included in the study is made up of three distinctly different segments. Beginning in a Latino area of the downtown, it runs from west to east through a heavy industrial area, a loosely structured commercial area in Boyle Heights, and through an older, dense commercial area in East Los Angeles.

Alameda to Boyle

- The right-of-way through this area was not measured, but it is similar in width to the rest of the street (65'-70').
- Between the downtown and the long bridge over the channelized Los Angeles River the street is lined with large industrial buildings, mostly set-back behind loading docks.
- There are a number of homeless encampments between buildings. Surrounding areas are also industrial.

Boyle to Ford

- The right of way is 70', with two lanes of traffic in each direction and parking both sides.
- Between the Hollywood Freeway overpass and the Long Beach Freeway overpass, uses along the street are primarily commercial. Some buildings are older, some are newer. Buildings are generally spread out, and some are at the street edge while many are set-back. Newer buildings, some in small shopping centers, are often set-back behind parking lots.
- Near the border with East Los Angeles, the street passes by several large and well-kept cemeteries.
- Surrounding areas are older residential neighborhoods of single-family house and small multi-family complexes. The population is primarily Latino.

Ford to Atlantic

- The right of way is 65', with two lanes of traffic in each direction and parking both sides.
- After the Long Beach Freeway overpass, the street passes through a dense, older commercial area of about a dozen blocks. Buildings are generally one storey in height and at the street edge. They are well maintained and contain many small shops.
- The street is planted with tall palm trees and there are regularly spaced special light fixtures and poles sporting colorful banners. Towards the middle of this section, a metal gateway arches over the street proclaiming "Whittier Boulevard: East Los Angeles."
- Surrounding areas are once again residential and primarily Latino.
- The commercial area stands out as a very vibrant place with obvious care for the street.

Traffic

- Whittier Boulevard was once strongly a part of a grid system of arterial streets; however, after the many surrounding parallel and crossing freeways were constructed, it became substantially cut off from the other arterials. At this point, it can be said to act alone.
- Vehicle traffic is moderate.
- *Alameda to Boyle Traffic Counts:* 11,650 ADT, with inbound peak hour loads of 820 vehicles (410 per lane) and outbound peak hour loads of 630 to 1,040 vehicles (315 to 520 per lane).
- *Boyle to Ford Traffic Counts:* 15,800 to 29,000 ADT, with inbound peak hour loads of 820 to 1,040 vehicles (410 to 520 per lane) and outbound peak hour loads of 630 to 820 vehicles (315 to 410 per lane).
- Traffic generally moves quickly, although it becomes congested in the dense commercial area during rush hours.
- Pedestrian traffic is light through the industrial area and the spread-out commercial area in Boyle Heights, but very heavy in the dense commercial area in East Los Angeles.

Current Local Plans/Thinking

- The second phase of the metro red line east-side extension (funded in 1995) is planned to have three stops in the East Los Angeles stretch of Whittier Boulevard. No other major development plans were identified for the street.

Possibilities

- Strengthen what is already good about this street by encouraging the development of more walkable commercial development through the Boyle Heights section.
- Concentrate higher-density development near the locations of the future metro stops in the East Los Angeles section.

Figure 17: Sections: Whittier Boulevard

Figure 18: Plan and Interpretive Diagram: Whittier Boulevard

Vermont Avenue Los Angeles, California

Location

- Vermont Avenue is a major arterial that runs north-south approximately two and a half miles west of the downtown. It is approximately 24 miles long, extending from Griffith Park in the north to the city of San Pedro in the south and continuing on. The section of the street that was studied is the seven miles from roughly opposite the downtown to the beginning of the Watts neighborhood (from Olympic Boulevard to 88th Street).
- The Harbor Freeway (Interstate 110) runs parallel about 3/4 of a mile to the east for most of the studied length.

Historical Notes

- Vermont Avenue was largely built by the 1920s. Surrounding neighborhoods were well established by the 1950s.
- A streetcar line ran on the street up until at least the mid-1940s.
- The 1924 Major Traffic Street Plan described Vermont Avenue as the most important north/south thoroughfare in the western half of the city. At the time, it was generally 80' wide and carried six lanes of traffic within a 56' roadway.

Nature of the Street

The section of Vermont Avenue that was studied divides into three fairly distinct different sections. From north to south it runs sequentially through a vibrant, developing ethnic commercial area known as Korea Town, past the University of Southern California, through a marginal commercial area with some pockets of new development/upgrading, and through an older run-down commercial area where it has a multiple roadway boulevard configuration (center lanes of fast-moving through traffic and side access roads for local traffic, separated by medians).

Olympic to Adams

- The street has a right-of-way of 65' to 80', with two lanes of traffic in each direction and parking both sides.
- Through this section, the street is lined with a mix of older and newer commercial buildings. Many of the newer buildings are somewhat set-back from the street and have landscaping and parking lots in front. Signage is large and colorful and mostly in Korean. The area seems to be thriving.
- Surrounding areas are mostly residential neighborhoods with primarily Korean populations.

Adams to Gage

- This section of the street generally has a right-of-way of 80', with two lanes of traffic in each direction and parking both sides.
- This street is primarily commercial. There is a new shopping center with a supermarket near USC, but most of the commercial buildings are older and somewhat run-down with the exception of a spruced-up commercial area around Adams (the Adams/Vermont Retail District) and one between Vernon and Slauson (the Vermont Square District). These areas have new tree-planting and signage, including colorful banners, and buildings are newly painted and some have had facade improvements.
- Activity, even in the fixed-up areas, seems to be fairly light.

- USC campus buildings and Exposition Park occupy one side of the street for about one mile.
- Surrounding neighborhoods, other than the campus, are primarily residential. Most houses are small and single-family. Most of the population is African American.

Gage to 88th

- This section of the street has a multiple roadway boulevard configuration in a multiple roadway 165' right-of-way. There are three lanes of fast moving traffic in each direction in the center and access roadways along both sides, each having one lane of slow traffic and two lanes of parking.
- The street is lined with older commercial buildings built to the street edge. Most are run-down, some show signs of damage and/or abandonment. (These buildings were in the path of the Watts riots.) Most of the businesses look marginal.
- The center median is planted with trees but they are straggly and uncared for. The side medians have no planting.
- Surrounding neighborhoods are residential. They look poorer as one moves to the south where the street parallels the Watts neighborhood.

Traffic

- As with most arterial streets in Los Angeles, Vermont Avenue is part of a grid system of regularly spaced arterials. Parallel arterial streets occur at approximately 1/2-mile intervals and are well connected by cross streets.
- Vehicle traffic is moderate, and much of the roadway is underutilized.
- *Adams to Gage Traffic Counts*: 23,000 ADT, with inbound peak hour loads of 920 to 960 vehicles (460 to 480 per lane) and outbound peak hour loads of 660 to 960 vehicles (330 to 480 per lane).
- Traffic moves quickly most of the time.
- The bus line running on Vermont Avenue is currently the most traveled line in the city.
- Pedestrian traffic is light to non-existent most of the time.

Current Local Plans/Thinking

- A recent study looked at making the street a surface HOV (high occupancy vehicle) lane, but this was not implemented.
- The street is one of three streets included in Professor Loukaidos-Sideris's UCTC-funded research project on urban arterials.
- Improvements to the two revitalized commercial areas in Segment #2 were recently done and used public funding. Support for the Vermont Square District was provided by LANI (Los Angeles Neighborhood Initiative), whose goal is to "improve transportation and economically stimulate transit neighborhoods."

Possibilities

- Landscaping along entire length, especially major tree planting in the side medians of the multiple-roadway boulevard section.
- Medium- to high-density transit-oriented linear development.
- Higher density mixed-use developments at neighborhood commercial nodal points.

Figure 19: Sections: Vermont Avenue

Figure 20: Plan and Interpretive Diagram: Vermont Avenue

Case Study #5
Cleveland, Ohio
Euclid Avenue
Carnegie Avenue
Chester Avenue
Cedar Avenue
Lorain Avenue

Figure 21: Urban Context Map of Cleveland
Approximate Scale: 1:200,000

Cleveland, Ohio

Historical Notes — The City

- An older industrial manufacturing city with strong roots as an ore handling port city, a rail center, steel production, diverse heavy and light manufacturing, and attendant financial office and administrative activities.
- The University Circle area, today, is the location of four major medical centers, the campus of Case Western Reserve University, and many major cultural facilities; as a result it is the region's principal concentration of institutional uses.
- A city of strong neighborhoods, often ethnically or racially based.
- Dramatic shifts in where people live started in the late 1940s — a classic case of flight to the suburbs — and continue today. The city reached its population peak in 1950 with 914,000 residents. By 1985, it had lost 40 percent of its population. Projections expect a continuing decrease to 460,000 people by the year 2000. Most of the people moved to the suburbs, but the population is declining there, too, with 870,000 people expected in the year 2000, down from 912,000 in 1985.

Euclid Avenue, Carnegie Avenue, Chester Avenue, and Cedar Avenue Cleveland, Ohio

Location

The four streets run parallel to each other from downtown Cleveland eastward to the University Circle area, some three miles from the U.S. Route 90 Inner Belt Freeway. This freeway, the "starting point," is another mile from Public Square, the city's center at the western edge of downtown. At University Circle, Carnegie and Cedar Avenues head east and southeast to the Cleveland Heights and Shaker Heights suburbs. Chester Avenue joins Euclid and heads northeast to East Cleveland and beyond.

Historical Notes — The Euclid–Carnegie–Chester–Cedar Corridor

- Euclid Avenue, the central street of the corridor, was an early route along the Lake Erie coast to northern New York state and to Buffalo.
- Euclid Avenue in the late 1930s was an elegant street lined with major mansions of the wealthy, including that of John D. Rockefeller. It has long been the central commercial–shopping street of downtown Cleveland.
- Into the 1950s, Euclid was a major streetcar route carrying lines from East Cleveland and Cleveland Heights. Cedar Avenue, a mixed residential–commercial–industrial street with a largely black population by the late 1940s, was another streetcar route into the 1950s.
- Until the 1960s, the commercial area at E. 105th Street and Euclid Avenue was the city's second largest commercial concentration with at least five movie houses and many thriving stores.
- Carnegie Avenue had a concentration of industrial and heavy commercial uses (e.g., Warner and Swazey Turret Lathes) centering on E. 55th Street, where the Pennsylvania railroad crossed. West and east of this concentration were a mix of service–commercial uses (including automotive) and residential buildings for lower-income people. Medical offices concentrated at E. 105th Street. This became an express bus route in the late 1950s.
- Chester Avenue existed as far east as East 55th Street in the 1930s, and was envisioned as a major auto carrier from downtown to the east. It was extended in the 1940s, a major undertaking at the time.
- Into the 1960s, E. 55th Street and Euclid Avenue was the location of the main Pennsylvania railroad station in Cleveland.

- Chester Avenue and Carnegie Avenue, flanking Euclid, were organized as major traffic carriers in the 1940s and 1950s, especially to carry traffic to the eastern suburbs. Timed traffic lights to favor peak-hour travel and drastic lane reversals on Carnegie Avenue during peak periods were the methods employed.
- Completion in the 1960s of the Cleveland rapid transit system's (RTA) eastern line with a stop at Cedar Hill provided the rationale to reorganize the transit system — most notably to take major streetcar service off of Euclid and Cedar to be replaced with downtown-oriented rapid transit that bypassed Euclid and saw bus service on the street.
- By the late 1960s, the Euclid Avenue corridor was losing businesses and population, and much of the corridor went into steep decline accompanied by racial riots and considerable arson.
- Today, the corridor is best described as "quiet," with much vacant land and with one very strong economic force, the Cleveland Clinic, along with some other institutions. Also very importantly, there is a sense of hope.
- The corridor itself is nonetheless characterized as a very-low-income area.

Nature of the Corridor

- The four parallel streets are different from each other, and each has some identifiable segments and concentrations not always coincident with the others.

Euclid Avenue

- Euclid Avenue changes at least three times between Public Square and the Inner Belt Freeway: run-down, old, marginal buildings and stores with major vacancies from Public Square to about E. 9th Street; a more upbeat segment of banks, hotels, and preserved historic movie houses to E. 18th or E. 19th Streets; and Cleveland State University campus to the freeway. The Euclid Avenue public right-of-way is 99 feet wide to E. 55th Street, with two travel lanes in each direction and two parking lanes.
- From the freeway, Euclid is characterized by modest-sized, two- to four-storey office buildings, an occasional old historic building, and a new, large suburban-type office headquarters (Bearings) centrally situated on a large property with large setbacks from the streets.
- Approaching and immediately after E. 55th Street toward E. 79th Street, are large, two- to four-storey older manufacturing and warehouse structures abutting the street right-of-way and largely vacant.
- Toward 79th on Euclid Avenue, there is a mix of vacant land, vacant or partially vacant buildings, religious buildings, and industrial buildings.
- There is a relatively new, small suburban-type shopping center at Euclid Avenue and E. 79th Street, set back from the street.
- East of E. 79th Street, Euclid Avenue is a mix of older buildings and religious institutions, a new housing development (Beacon Place), vacant land, and a major presence of the Cleveland Clinic, which owns most of that land. The housing is on small lots and "neo-traditional" in style. Cross streets have been removed or blocked around the clinic.
- Ronald McDonald house is located at E. 105th Street, set back and generally isolated from the sidewalk.
- The Euclid Avenue right-of-way is mostly 80 feet beyond E. 55th Street.

Chester Avenue

- Chester Avenue from downtown to E. 55th Street is a combination of medium-sized commercial buildings with a housing presence at E. 55th Street.
- Beyond E. 55th Street, toward E. 105th Street, Chester Avenue may be characterized as a "go" street with a right-of-way of approximately 120 feet to E. 90th Street, where it narrows to 86 feet. There are three moving lanes in each direction separated by a median of up to 16 feet. There is no parking. Buildings do not front on this segment of Chester Avenue, they front onto side streets. Trees exist but

their 60-foot spacing keeps them from being a presence. Many cross streets do not cross the median. This is a divider street.

Carnegie Avenue

- Carnegie Avenue has an 86-foot right-of-way to E. 55th Street and an 80-foot right-of-way after that. There are six traffic lanes, and these are controlled via overhead electric directional signals that can give all but one lane to one-way flow during peak hours. Trees are not a presence.
- Parking along Carnegie is not permitted.
- Uses along Carnegie Avenue west of E. 55th Street are of an industrial and automotive service nature, with a few residential streets off of the southern side. Shortly east of E. 55th Street, the Cleveland Clinic is the defining use of Carnegie Avenue. There are either large buildings set back from the street or blank walls (garages) along it. Orientation is not to the street and there are overhead passageways that connect buildings to each other and to parking structures. There are large areas of undeveloped land here, owned by the Clinic. A major exception is the Cleveland Playhouse, around E. 86th Street, a major cultural institution of long standing.

Cedar Avenue

- Cedar Avenue has a 66-foot right-of-way along its length. It may be characterized as an area of small, old buildings — many residential in character, with a mix of marginal commercial uses, almost all catering to a very-low-income, black population.
- Many cross streets (north–south) are not continuous, and it appears that some have been closed over time.

Traffic

- Vehicular volumes on Euclid Avenue are significantly lower than they were in 1956, about two-thirds of what they were, more in some sections, less in others. They have been relatively steady for the last eight to ten years, at about 15,000 vehicles per day west of E. 105th Street and at about 30,000 per day northeast of University Circle.
- Chester Avenue carries about 37,000 vehicles per day — somewhat more than the 30,000 on Carnegie Avenue.
- Daily traffic on Cedar Avenue is from a low of 5,000 to a high of 10,000 depending on location.
- Carnegie Avenue is generally agreed to have a surplus capacity of at least one lane. Euclid Avenue likewise has more capacity than needed. Chester Avenue is not generally considered to have excess capacity.
- None of these streets has a large pedestrian presence.

Current Community Thinking

- This corridor is the subject of considerable current interest: one focus is on the downtown and on Euclid Avenue as the city's now deteriorated main street; a 1997 study of the "Midtown" area ("Midtown 2000 by City Architecture") centers on the corridor from E. 30th Street to E. 79th Street, and envisions Euclid Avenue as a boulevard lined by transit-oriented development, transit being either busses or light rail; a so-called "Dual Hub" plan (1993) envisions downtown and University Circle as the hubs, connected by a light-rail or bus corridor of moderate-density development; the Cleveland Clinic Foundation's 1994 "Campus Master Plan" covers much of the acreage east of E. 79th Street and is exactly what it says — a campus plan with large land areas, fewer streets than exist, and secondary orientation to the main streets.

- New residential development of moderate densities at E. 82nd Street and Euclid Avenue appear to be successful, and officials look to more of the same to re-enliven the corridor. These developments, however, are insulated from the corridor; they turn inward.
- Generally, officials see future development in the city as being of low-density intensity. The word "suburban" is often used. The new Bearing building is an example, as is almost all of the development associated with the Cleveland Clinic.

Possibilities

- The corridor would seem natural as a high-density transit-oriented, form-giving focus of development. The soft development history, a generally anti-urban point of view, and recent history make this possibility unlikely. On the other hand, the success of recent housing developments in the city, on Euclid Avenue and near to the new Jacobs Field ballpark, suggest the possibility of attracting middle-income people back.
- There are many design possibilities for Euclid Avenue, including multi-lane boulevard treatment if desired.
- Chester Avenue with its wide right-of-way could have side access lanes and uses that face them.
- All of the four major streets could benefit by major landscape design projects.

Figure 22: Sections: Euclid Avenue

Figure 23: Sections: Carnegie Avenue and Chester Avenue

**Figure 24: Plan and Interpretive Diagram: Euclid Avenue, Carnegie Avenue,
Chester Avenue, Cedar Avenue**

Lorain Avenue Cleveland, Ohio

Location

- Lorain Avenue runs in a west–southwesterly direction from where it crosses the Cuyahoga River and connects with Carnegie Avenue, near the Jacobs Field baseball stadium in downtown Cleveland. It proceeds southwesterly toward Elyria, Ohio.
- The arterial nature of the street starts at W. 25th Street (at the market located there) and the Market Square Historic District.
- Interstate I-90 crosses Lorain Avenue at West Boulevard.

Historical Notes — Lorain Avenue

- Started as a transportation route from the western banks of the Cuyahoga River to Elyria.
- It also served farmland southwest of Cleveland.
- The market at its eastern end dates from the 1840s.
- Horse-drawn streetcars (1860s) and electric trolleys (1890s) made this a major commercial corridor.
- Automobiles began to have an impact in the 1920s.
- A slow decline in commercial and then residential quality started after World War II.
- Two historic districts center on the street and it is the location of many historic buildings, many dating from the mid 1800s and some into the 1930s. Antiques (furniture) and crafts are part of the historic legacy. The neighborhood markets itself as an antiques shopping area.

Nature of the Corridor

- The street runs for about eight miles in Cleveland. The right-of-way is about 65 feet wide.
- Immediately west of W. 25th Street, small two- and three-storey buildings — mostly brick — line the street at the property line. Uses are marginal and many buildings are boarded up. There are trees, often at 30-foot centers, but they are small and often irregular. Buildings have many vacancies. Moving west toward W. 117th Street, the uses become less marginal (but are not thriving) and buildings are less dense with vacant parcels between them.
- There is a large shopping center beyond W. 110th Street.
- The further west one goes (such as near W. 130th Street), the more the area and streets off Lorain pick up, from an economic point of view.
- Generally, intersecting streets are close together, making Lorain Avenue a natural spine to surrounding development, a role perhaps diminished by the marginality of uses along it.

Traffic

- Vehicular traffic on Lorain Avenue is significantly lower than it was in 1956 by more than one-third, but has held relatively steady in the last eight to ten years. Depending on location, it can be as low as 10,000 vehicles per day at W. 25th Street and as high as 20,000 at West Boulevard.
- The nearby freeway has taken traffic from Lorain Avenue and leaves it with excess capacity.
- There are, generally, two wide moving lanes and two parking lanes. The street seems to handle the traffic with ease.
- Busses serve the street.
- Pedestrian volumes are very low except at two or three nodal points that are somewhat few and far between.

Community Interest and Thinking

- There do not seem to be major transportation plans for the street, though there is an awareness of its depressed nature.
- There is a focus on historic preservation as a tool for upgrading the street.

Possibilities

- Dismissing large-scale clearance and redevelopment as a viable or wise possibility and given the non-growth nature of Cleveland, a major maintenance and beautification program would seem to offer the best alternative.

Figure 25: Section: Lorain Avenue

Figure 26: Plan and Interpretive Diagram: Lorain Avenue

Case Study #6

Richmond, Virginia

Broad Street

Main Street/Ellwood Avenue

Carey Street

Figure 27: Urban Context Map of Richmond
Approximate Scale: 1:200,000

Richmond, Virginia

General History and Description of Richmond

- Captain Christopher Newport first led English explorers in 1607 to the site they later named Richmond after a suburb of London, England. Until that time, Indian tribes of the Powhatan Confederacy had inhabited the area. By 1644, the construction of Fort Charles began attracting many new settlers. Soon, the community grew into a popular trading post for furs, hides, and tobacco. Richmond was founded in 1737 by Colonel William Byrd II. His friend, William Mayo, made a map of Richmond and the first lots were sold. There were only 250 people living in Richmond when it became a town in 1742. In May, 1782, the General Assembly wanted a central location less exposed than Williamsburg to British incursions and moved the State Capitol to Richmond. On July 19 of that same year, Richmond's first City Charter was legalized.
- Economic prosperity for the city reached its peak between 1900 and 1930; iron and tobacco production was the mainstay of the city's economy and population reached 85,000 people, making it the fourth largest southern city.
- Today, Richmond is a city of approximately 205,000 people, 55 percent African-American and 43 percent white. It has a civilian labor force of 105,000 with a 5 percent unemployment rate and a median household income of \$23,500.
- Downtown Richmond is still a strong employment base (60,000 jobs) and is the major center in the region. The city can be characterized by a radial road network with higher density along major highways and arterials. City plans public transit to remain as bus service (i.e. not light rail), taking advantage of expressways and providing access from outer regions to the CBD. The Master Plan also stresses the need to increase residential development in the central area.

Broad Street Richmond, Virginia

Location

- Broad Street runs approximately west north west from the CBD to Henrico County and forms the northern edge of the Fan District.
- The street section studied is from Belvidere to the city limits and, due to a noticeable change of character, is broken down into two segments, Belvidere to Boulevard and Boulevard to city limits.

History of the Street

- Broad Street was shown as the most northern of the streets in the earliest plan of Richmond drawn by Colonel Mayo in about 1744. When Thomas Jefferson drew the plan for the city he name the street "H Street," drew it the same width as the other streets in the grid and indicated that it was the city street that most closely approximated the course of the original east-west route of the area.
- In 1793, there was an effort (eventually unsuccessful) to establish a market in the central median of Broad at 12th and therefore required widening of the street. This unusual width caused the street to be renamed "Broad Street" in 1845 and also permitted the accommodation of the right-of-way of the tracks for the Richmond, Fredericksburg and Potomac Railroad in 1834. Its station remains at Davis Street and serves as the Science Museum of Virginia.
- The major north-south and east-west routes of the 19th century converged on Broad Street, thus establishing the street's role as the most important traffic artery in the city.

- In the late 1900s a streetcar ran along the corridor but was eliminated in 1948. The street does, however, remain the hub of the metropolitan area's transit system (currently serving 12 bus routes and 1,500 riders a day).
- Construction of the interstate highway system and other multi-lane highways has reduced the significance of the street as a regional traffic carrier. In central Richmond (east of the study segments), however, it remains heavily traveled.
- Since the early 1970s much of the commercial activity along Broad Street has shifted westward within Henrico County, resulting in a marked decline of intensity of use within Richmond's city limits.
- Since 1980 two major car dealerships, an anchor department store, and numerous small retail establishments closed their Broad Street operations, especially between Belvidere and Boulevard. (Source: "Broad Street Corridor Study; Belvidere to Boulevard," City of Richmond, 1995).

Nature of the Street

- West Broad Street is designated US Highway 250 and 33 (west of Lombardy) and carries over 25,000 vehicles a day.
- It can be characterized as a major thoroughfare with unattractive commercial buildings, signs, and deteriorated properties with no consistent architectural style.
- Due to the speed of the traffic, it is quite noisy.
- The street forms a dividing line between industrial and vacant lands to north and residential area to south.
- Street parking is usually prohibited during peak periods.

Current Attitudes towards the Street

- City's 1983 Master Plan promotes additional commercial and industrial development in the northern area and states a need for consolidation of uses and conscious urban design and planning.
- Small pockets of residential use in this northern area will probably transition to non-residential use eventually.
- The City of Richmond has identified Broad Street as a primary arterial, meant to carry high volumes of through traffic, in areas not well served by expressways.

Segment #1 -Belvidere to Boulevard

Nature of the Street

- The street has a r.o.w. width of 120', with three travel lanes in each direction, two parking lanes, and a concrete median six feet wide.
- Approximately 25 percent of the 157 buildings along this segment are vacant (at least one per block), and the second storey of nearly all the buildings is also either vacant or used as storage.
- Along the south side of the street, the businesses can be characterized as either retail/office, automotive services, or warehouse and storage. The buildings are generally closer to the street edge. On the north side there are also retail businesses, but on a larger scale with larger setbacks. Light industrial and manufacturing businesses are also present on this side.
- Pedestrian traffic is sparse.
- According to a 1995 Broad Street Corridor Study, there is a perception that parking may be a problem because of restrictions; however, it has been ascertained by a task force that, with minor exceptions, parking appears to be adequate in the area.
- West of Belvidere, VCU is constructing a large recreation complex. The university seems to be expanding northward and potentially along Broad Street.

- At Davis Avenue is the Science Museum of Virginia, housed in the former Richmond, Fredericksburg and Potomac Railroad Broad Street Station. Designed by John Russell Pope, the station was finished in 1919 and represents Richmond's architectural contribution to the golden age of rail travel.

Traffic Counts

- According to 1995 traffic data, the ADT for Broad Street at Lombardy (roughly in the center of the study segment) is 25,350, which is down from a 1968 total of 31,500.

Possibilities

- Visible improvements such as trees and property upgrades are needed, given the deterioration of the street.
- The majority of buildings that are vacant or underutilized are generally in fair structural condition and provide an opportunity for additional businesses through the implementation of carefully orchestrated programs to encourage a more intensive use.
- With a r.o.w. of 120', there is an opportunity for the implementation of a multi-lane boulevard which would allow access and parking for potential adjacent retail while still providing for fast-moving commuter traffic.

Segment #2 — Boulevard to city limits

Nature of Street

- As with the first segment, this segment has a r.o.w. width of 120', with three travel lanes in each direction, two parking lanes, and a concrete median.
- Land uses are characterized primarily by typical suburban commercial strip development: auto services, fast food establishments, etc., with large setbacks and parking either in front or alongside, abutting the street. Therefore there is very little sense of a street wall.

Traffic Counts

- According to 1995 traffic data, the ADT for Broad Street at Blacker (near the westernmost end of the segment) is 27,812 which is down from a 1968 total of 34,100.

Possibilities

- The same possibilities for segment #1 are also pertinent for this segment.

Main/Ellwood and Cary Streets (Belvidere to Thompson)

- Given their close proximity and similar characteristics, Ellwood/Main and Cary Streets will initially be described together. Description of the individual streets will follow.

Location of the Streets

- The corridor is located in the "Fan District," which is one of Richmond's oldest neighborhoods. It is located west of the downtown core.
- Main Street becomes Ellwood west of Boulevard and is one-way westbound. Cary Street runs parallel to Main/Cary one block south and is one-way eastbound (into the downtown core).

History of the Streets

- The Fan District grew up along a late 19th century trolley line (which ran along Main Street until November 29, 1949). Most buildings were constructed between 1880 and 1925. It is considered to be one of the largest, intact Victorian neighborhoods in the country, with over 2,000 townhouses and small shops and restaurants. It is called the Fan District because the streets fan out from Monroe Park at its eastern border.
- Since the mid-1940s, only about 175 buildings have been built in the Fan District. Most of these buildings have been modern duplexes constructed as infill on undeveloped parcels or recently subdivided lots and are generally incompatible with their surroundings in building material, height, mass, and design.

Nature of the Streets

- Main/Ellwood and Cary form a one-way pair — each having two lanes plus parking within a 66 feet r.o.w.
- Typical lot sizes along the streets are 50 feet wide and 150 feet deep.
- The buildings lining the streets are typical of the Fan District; generally detached brick and frame dwellings and rowhouses, usually with a uniform setback from the street. Service alleys, bordered by small brick and frame garages, a few carriage houses, and other outbuildings, extend behind the residences.
- Closer to the CBD (east of Meadow), Main/Ellwood and Cary run through a mixed-use area of residential, commercial, and medium-density offices. Portions of these streets have deteriorated properties along them.

Current Attitudes Towards the Streets

The city's 1996 West Cary Area Plan includes recommendations to:

- Increase the single-family residential uses; protect them from commercial encroachment.
- Upgrade deteriorated housing, address "blight."
- Upgrade street lighting, repair sidewalks and granite curbing.
- Increase open space. Construct planting areas and street trees at corners of intersections and at mid-block.
- Institute design standards to reduce high-speed travel through residential areas; selectively close public rights-of-way and redirect traffic to arterial streets; reduce speed along Main/Cary one-way pair.
- Relocate existing overhead power distribution and wiring to alley rights-of-way.
- Reconstruct alleys in certain blocks.

Other stakeholders:

- The Fan District Business Association would like to see both streets reverted to two-way traffic.
- A citizen's group called Uptown Your Neighbors, along with the Virginia Commonwealth University's Department of Urban Studies and Planning and the Cary Street Housing Group, has also developed a plan for the area.

Main/Ellwood

Nature of Street (proceeding one-way west of Belvidere)

- In general, Main/Ellwood is a mix of residential and commercial uses.
- At Belvidere the character of the street is dictated by Monroe Park and many Virginia Commonwealth University buildings; although some abut the street, many of the newer buildings (1970s and 1980s) have large setbacks and appear fortress-like.

- At Harrison, there is a healthy commercial neighborhood related to the university, including a stretch of newly renovated building painted very bright colors (appearing inconsistent with existing streetscape).
- West of Shields, building maintenance is declining.
- At Thompson (end of study segment), more large-scale commercial buildings with parking lots and blank facades are present.
- Bicycle lanes along Grove and Floyd (just north of Ellwood) are heavily used, especially by students.

Traffic Counts

- According to 1995 traffic data, the ADT for Ellwood at Sheppard Street is 12,618, which is greater than the 1968 total of 9,900.

Cary Street

Nature of Street (proceeding one-way east of Thompson)

- As with Main/Ellwood, Cary Street is best characterized as a mixed-use commercial and residential street although it has a stronger commercial feel than Main/Ellwood.
- West of Thompson and the 195 freeway (beyond our study segments), Cary Street is called Cary Street Road. It is a narrow two-lane road experiencing severe congestion during commute hours. In the 1970s, construction of the I-195 Downtown Expressway helped reduce local street traffic. But by 1983, traffic had increased beyond the capacity of I-95 and thus was burdening the local streets once again. The city identifies the need to direct traffic to major arterials such as Monument Ave. and Broad St. and to I-95 Downtown Expressway. This area is largely single-family residential, well-maintained older homes, mature street trees; some apartments, well-maintained.
- At Thompson, Cary has newer, large shopping centers with parking lots and large setbacks.
- West of Sheppard St., Cary is a thriving, small-scale commercial street; at Auburn is a 1930s shopping center, Cary Court surrounding a large parking lot abutting Cary; the city is considering giving the shopping center a heritage designation. Street trees have a strong presence.
- Cary Street west of the Boulevard is newer, less dense, with row houses and detached homes. Restoration proceeding here.
- Proceeding east of Boulevard, there are pockets of residential in varying states of maintenance. It appears, though, that there is an emphasis on restoration that is fitting with the existing context.
- East of Belvidere (the terminus of the study segment), Virginia Commonwealth University has a predominant presence — fraternity houses, parking lots, school buildings, student-related commercial, and many pedestrians.

Traffic Counts

- According to 1995 traffic data, the ADT for Cary Street at Rowland (at roughly the midpoint of the segment) is 10,964, which remains consistent with the 1968 ADT of 10,200.
- At the western end of the segment at Crenshaw, the 1995 ADT is 13,004 (there is no 1968 data specifically for this portion of the segment).

Possibilities for the Streets

- The present trend along both streets seems to be towards renovation and construction sensitive to the existing context. This is having a positive affect on the vitality of the corridor and should be continued.
- Higher density residential and commercial units do not seem appropriate for this corridor.

Figure 28: Sections: Broad Street

Figure 29: Sections: Main Street/Ellwood Avenue and Cary Street

**Figure 30: Plan and Interpretive Diagram: Main Street/Ellwood Avenue, Cary Street,
Broad Street**

Case Study #7

Chattanooga, Tennessee

Martin Luther King Boulevard/Bailey Avenue

McCallie Avenue

Figure 31: Urban Context Map of Chattanooga
Approximate Scale: 1:200,000

Martin Luther King Boulevard/Bailey Avenue and McCallie Avenue Chattanooga, Tennessee

Location

- Martin Luther King Boulevard/Bailey Avenue and McCallie Avenue operate as a one-way pair in a generally east-west direction between downtown Chattanooga and Missionary Ridge to the east, a distance of slightly under three miles.
- Interstate 24 runs in a roughly parallel direction about one mile to the south.
- Chattanooga is a city of about 150,000 people.
- The topography of the city is hilly and the surrounding mountains are responsible, it seems, for a micro-climate that is very rainy.

Historical Notes — The City

- A trading post in the early 1800s.
- In the mid 1800s, railroads made the city a transportation gateway to the west. Railroads were followed by textile mills, metal foundries, munitions works.
- A major battle area in the Civil War, the city is surrounded by historic battle fields.
- Once extremely polluted — air and water — but major efforts at environmental improvement seem to have been successful.
- As in many other older, central cities following World War II, many old brick industrial and warehouse buildings were cleared via federally initiated urban renewal projects, but many remain.
- Pollution control, a new aquarium, a new TVA headquarters, a downtown movie complex, a riverside housing development, and downtown improvement programs are part of a concerted effort to reactivate the central city. New central housing developments are being proposed. The University of Tennessee, Chattanooga, abuts McCallie Avenue near downtown and is a growing presence.
- Population growth in the city today is slow.

Historical Notes —

Martin Luther King Boulevard/Bailey Avenue and McCallie Avenue Pair

- The streets were converted from two-way traffic to a one-way pair in 1957.
- Earlier — in 1948 — a Highway and Transportation Plan prepared for the city recommended a one-way pair that matched McCallie Avenue with Oak Street, the distance to Martin Luther King Boulevard (then Ninth Street) from McCallie Avenue being considered too great. A new two-way tunnel was envisioned at Missionary Ridge.
- Martin Luther King Boulevard between downtown and Central Avenue was the spine of a thriving black commercial area and a cultural center with a "heyday" of major growth and development from the late 1800s until the 1920s.
- Decline of the area started after World War II, and deterioration has continued.
- Martin Luther King Boulevard, from Houston Street to University Street, is an historic district. Generally, the buildings are of modest scale — two to three storeys high — and usually of brick. There are other historic buildings in the corridor.
- The Chattanooga National Cemetery abuts Martin Luther King Boulevard at the point where it becomes Bailey Avenue.
- A 1993 Martin Luther King Boulevard Area Task Force report notes the continuing decline of the area, by then a redevelopment area under state law.
- West of Central Avenue, population has declined steadily, has aged, and has very low incomes.

Nature of the Corridor

- While the two streets are themselves relatively level, surrounding areas have rolling hills and the streets cross a major rail corridor at Central Avenue.
- Within the corridor, two segments can be identified with some ease: from the start at Georgia Avenue (downtown) to Central Avenue; and from Central Avenue to where the two streets join before entering the tunnel at Missionary Ridge. The second segment is somewhat longer than the first.
- Martin Luther King Boulevard is a four-lane, one-way street outbound with on-street parallel parking in many sections and six signalized intersections to Central Avenue, and less frequent signals east of Central Avenue where it becomes Bailey Avenue. McCallie Avenue is a four-lane, one-way street in-bound, without on-street parking, and with seven signalized intersections along the first, close-in segment.
- The two streets, Martin Luther King Boulevard and McCallie Avenue, are approximately 900 feet apart.
- Along the inner segment of Martin Luther King Boulevard, development is characterized by one- to three-storey, older brick buildings (many historic) but with gaps of vacant parcels between some buildings. Buildings are built to the front property line. A state office building and the Bessie Smith Hall (music and community center) are large buildings, set back from the street, presumably intended to enliven the area socially and economically. Uses in the buildings are a variety of commercial services on the ground floors with residences, offices, and vacancies above. Economically, the street is depressed. Largely, this section of Martin Luther King Boulevard may be characterized as in generally poor repair, the remnants of a once-strong area populated by black people of very modest means. Development becomes more sparse toward Central Avenue.
- The first segment of McCallie Avenue, in-bound of Central Avenue, has similarities and differences to Martin Luther King Boulevard. The similarities are in some older one- to three-storey brick structures facing onto the street. The differences attend the University of Tennessee, Chattanooga, campus as well as other public and institutional uses along the street. Newer uses tend to be in larger buildings and set back from the street.
- The two to three blocks between Martin Luther King Boulevard and McCallie Avenue are sparsely developed, with signs of older residential buildings that have been cleared. The character is almost rural, with meadow-yard, old trees, and unpaved alleys.
- From Central Avenue eastward, the two streets are more similar than different. There is a mixture of older and newer development, the newer less likely to be housing than the older and of a somewhat larger scale. Buildings tend more to be set back from the street. Small office buildings occur, and a small hotel-motel. Residential development south of Martin Luther King Boulevard is modest in scale and probably houses modest-income people. The National Cemetery along Bailey Avenue is a major presence.
- Between the two main streets, along Duncan Avenue and Chamberlain Avenue, there is considerable residential development of a modest, single-family nature.
- The grid street pattern is closer knit along the second segment of the corridor than along the first.

Traffic

- Traffic volumes along the corridor have been relatively stable over the last decade, lower than they were 10 years ago. Near Central Avenue, the average daily traffic in 1996 is reported to be about 14,500 vehicles. These volumes are consistent with 15-minute spot counts made in the field in 1997.
- From observation on the two streets, there is a rush of traffic for a relatively brief period each day — less than one hour — followed by modest traffic flows the remainder of the day.
- Present vehicular capacity of the corridor is significantly over the volumes. A recent report, *Martin Luther King Boulevard and McCallie Avenue: One-Way Pair Analysis*, by Neel-Schaffer, Inc., 1996, concludes that returning the streets to two-way traffic could handle the volumes.

- Our own brief analysis suggests that a total of three lanes in each direction — two on one street and one on another — would also be adequate.
- Pedestrian volumes on the street are generally low, but are greater with proximity to downtown, particularly along Martin Luther King Boulevard.

Current Community Interest and Thinking

- There is a general understanding that the traffic-carrying capacity of the corridor is greater than the volumes presently or likely. Equally, most people feel that the current one-way pairs are and have been harmful to the livability of these streets.
- Present thinking seems to be to return the streets to their original two-way arrangement, but only as far east as Central Avenue.
- New or renovated housing close to downtown seems to have a strong market.

Possibilities

- Besides the obvious possibility noted above, one alternative is to keep the streets as a one-way pair, but to change their designs to one-way, multi-roadway boulevards that could provide for both fast and slow traffic.
- Another alternative is to change Martin Luther King Boulevard to a two-lane, two-way street and McCallie Avenue to a four-lane, two-way street.
- A serious beautification plan would be helpful.
- Given the minimal growth of Chattanooga, development of the corridor as a higher-density core of development seems unlikely.
- Conversion to two two-way streets could continue east of Central Avenue.
- Provide more housing along the corridor.

Figure 32: Sections: Martin Luther King Boulevard/Bailey Avenue and McCallie Avenue

Figure 33: Plan and Interpretive Diagram: Martin Luther King Boulevard/Bailey Avenue and McCallie Avenue

Comparative Matrix and Analysis

From the information gathered about each of the case study streets, it has been possible to organize a chart, or matrix, that permits compilation and comparisons of salient characteristics of the streets and their immediate surroundings. The following matrix is a comparison of essential characteristics of each street and corridor included in the study. The matrix is an essential element that permits development of the arterial typologies that follow in Chapter IV,

The following symbols are used in the matrix:

- Definitely applies
- Somewhat applies

1/8

3/8

4/8

5/8

7/8

Comparative Analysis

The following is a summary of the preceding matrix of the 22 streets in the seven case study cities. Each street has been broken down into specific segments which reflect major changes in the street character (the rationale for each of these is explained in the individual street profiles). The resulting 45 segments were analyzed and information recorded in 39 categories. The following analysis is a tally of the broad patterns found in each category. It provides a basis for the typologies described in Chapter IV.

As indicated on the matrix, categories have been broken down into the following topics:

1. History
2. Physical Characteristics and Context of the Street
3. Traffic Characteristics
4. Characteristics of Development Along the Street
5. Social Characteristics of Development Along the Street
6. Characteristics of the Surrounding Neighborhood
7. Typologies

1. History

With the exception of nearly all the streets in California, the arterials studied can be characterized as having been predominantly urban roads prior to the Second World War. The exceptions were either rural roads that did not become suburbanized until after World War II (in Sacramento), or streetcar roads laid out before World War II to structure rapid suburban development (in Los Angeles). Information obtained indicates that three roads were widened in the 1920s and 1940s along portions. Five streets (or portions thereof) were incorporated into a system of one-way pairs in the 1950s, and three streets were treated as a part of a special traffic management strategy in the 1940s and 1990s, such as by integration with an adjacent freeway. Other streets may have had some improvements made, but our research did not uncover these details. However, most of these streets were affected by construction of parallel freeways. It seems more common in east coast cities for arterials to still be designated as highways today. Overwhelmingly these streets at one time or another had streetcars on them, suggesting that uses along them were oriented to the streets.

2. Physical Characteristics and Context of the Street

All the streets have generally straight alignments, but the length of the streets studied varies greatly from about 2.7 miles (McCallie in Chattanooga) to over 13 miles (Folsom Boulevard in Sacramento and Washington Boulevard in Los Angeles). Some of the streets continue farther beyond the areas studied, often extending into adjacent towns. Nearly all the streets have a normal configuration (no medians), although portions of three streets have a center median, and only one street, a segment of Vermont Avenue in Los Angeles, has a multiple roadway boulevard configuration (with a center median as well as side medians separating side access road and parking lanes from the center travel lanes). Many (14) of the

streets have a right-of-way (roadway plus sidewalks) width of less than 80 feet along all or part of their length; eight streets are between 80 and 99 feet in places, three are between 100 and 120 feet in places, and four streets have portions that are over 120 feet. In spite of their rather narrow rights-of-way, many (11) of the streets have four lanes along all or part of their length, and most streets (17) have parking on both sides. Eighteen streets have segments with intersections at least every 400 feet, and only eight streets have relatively infrequent crossings in some segments. Fourteen of the streets have no significant tree presence in some segments, nine streets have areas with a sporadic tree presence, and six streets have a significant presence of trees in some segments (Folsom and 16th in Sacramento, Whittier in Los Angeles, Chester in Cleveland, and Main/Ellwood and Cary in Richmond).

In terms of context, all segments run through flat terrain with the exception of portions of Adams Avenue in Los Angeles and 3rd Street in San Francisco. Eleven streets are closely paralleled by a freeway along all or nearly all of their length, and of these, two (in Los Angeles) were integrated with the freeway as part of a traffic planning strategy in the 1990s. Seven streets run parallel to a freeway but are largely considered "distant" from the freeway. Choosing whether the street had a "closely parallel" or a "distant parallel" freeway was a judgment call and varied for the context of each city, taking into account factors such as amount of development between the arterial and the freeway; ease, distance, and speed of getting from one to the other; and whether the freeway seemed to provide the single, obvious, alternate route to the arterial. Only four streets (all in Cleveland) have no relationship to a freeway along their entire length. In relation to adjacent streets, 15 streets act as part of a system with nearby arterials along all or most of their segments. Seven of these are part of an "engineered" pair, meaning that two streets were designed (or redesigned) to work together in terms of traffic flow. Seven streets are isolated, not part of a system along most of their length, due to topography or disconnected adjacent streets patterns.

What stands out is that most of these streets are not very wide and generally have frequent cross streets. Few have any significant street planting on them. Almost all provide parking. Finally, most are paralleled by a freeway and in some way work as part of system.

3. Traffic Characteristics

Seven streets had one-way traffic (part of the one-way pairing of streets previously mentioned in the history section). Only one street, Carnegie Avenue in Cleveland, had a varying traffic direction given the time of day (four or five of the six lanes heading into downtown in the morning and up to six leading out of downtown in the late afternoon). Essentially all streets have traffic lights as their primary means of traffic control. In terms of automobile traffic volume, although the volumes vary along different segments of the streets, it can generally be said that 12 streets have an ADT (average daily traffic count) of less than 15,000 along all or most of their length, 12 streets are largely in the medium range of 15,000–30,000, and only four streets have volumes exceeding 30,000. The nature of the traffic flow in relation to time of day was analyzed where data was available. Patterns were split between constant flow (six streets) and strong

peaks (10 streets) associated with commuter traffic during peak periods. In the calculations of vehicle capacity, it was determined 600-700 vphpl (vehicles per hour per lane) would be the threshold for determining capacity. Only two segments of the 44 street segments had volumes that exceeded road capacity, and eight segments of the roads had volume equal to capacity. Pedestrian volumes were predominantly low for all segments, with the exception of specific commercial nodes on segments such as Oakland's Fruitvale district, Los Angeles' Whittier Boulevard commercial neighborhood, and Cary Street in Richmond. Again, in terms of time of day, the nature of the pedestrian traffic appears to be predominantly constant during the entire day; however, conclusions are difficult given the low volumes and lack of opportunity to observe through the entire day. Almost all the segments have a form of public transit, most commonly buses, but three streets have light rail within or adjacent to parts of their right-of-way, and segments along 3rd Street in San Francisco have light rail proposed. Only one segment of Oakland's East 14th Avenue parallels closely the underground heavy rail public transit (BART — Bay Area Rapid Transit).

Given the low to medium range of traffic volumes, the majority of the segments can be characterized as having excess capacity. This analysis is crucial in determination of appropriate opportunities for the street. The roadway itself could be modified, or, conversely, land uses along the street could be changed to take advantage of the excess traffic capacity (for example, by building higher density housing).

4. Characteristics of Development Along the Street

The land uses along the street vary considerably, although retail/service uses are most predominant (on 20 streets). Other characteristic land uses include warehouse/industrial and auto service businesses. There is a noticeable lack of public institutions or single-family residential uses along the streets. The nature of the streetwall, in terms of how buildings relate to the street edge, is mixed, in some cases due to vacant lots among what used to be a more continuous streetwall. Twelve streets generally have development abutting the right-of-way directly, 11 streets have development "somewhat" removed (generally within 20 feet, with small parking lots or yards in front), and six streets have development that tends to be removed from the street edge (often this is to accommodate large parking lots). The scale of buildings along the streets varies, but they are predominantly small-scale and low density.

Most of the streets have a continuous, lineal nature of development; only a few (East 14th in Oakland, Main/Ellwood in Richmond, and portions of Broad in Richmond and Euclid in Cleveland) are strongly punctuated at nodes. What stands out is the general low intensity/density of development along the streets researched, which means a great deal of potential exists for rethinking and reshaping these streets to play a more important, structuring, role in their communities and cities.

5. Social Characteristics of Development Along the Street

What stands out in this series of categories is that the majority of the street sections have development along them that is generally considered to be less than thriving, and residents and patrons of a racial minority and lower income status. However, it is important to note that we consciously chose to look at streets in marginal or less than affluent neighborhoods. Some of the streets, such as Euclid Avenue in Cleveland, were originally prestigious addresses for the wealthy of a city.

6. Characteristics of the Surrounding Neighborhood

This section of the matrix looks not at the streets, but at the surrounding neighborhoods. Some streets act as a dividing line, such as Broad Street in Richmond, which separates industrial from residential areas. However, most streets have the same type of development on both sides. Most of the surrounding neighborhoods are low density or intensity (defined partially with respect to the rest of each city).

The next chapter looks at a system of classifying the arterials into "typologies" as an aid to understanding their different roles and potential, and looks at examples drawn from each of the case study streets.

IV. STREET TYPOLOGIES

The analysis and comparison of the case-study streets led to the identification of qualitative typologies in four different categories: Character Types, Development Types, Traffic Rhythm Types, and Functional Context Types. These typologies offer ways of thinking about "gray area" arterial streets in urban design terms. They focus attention toward the qualities of these streets other than just their traffic movement functions. The typologies, in turn, suggest opportunities and development approaches for improving these streets. It should be noted that the four typological categories are not exclusive but rather overlapping. For instance, a given arterial street can likely be identified as a type within each of the four categories, although sometimes more easily so within one category than another. In addition, the characteristics which identify a street as a particular type within one category may also contribute to it being a particular type within another category. Importantly, sometimes the opportunities suggested by a type within one category include developing it into a particular type within one of the other categories. This may sound a little confusing, but what is meant will, hopefully, be clarified in the following discussion.

What follows are, first, definitions of the types within each typological category, a brief analysis identifying how the case study streets fall into the typological categories, presented in matrix form, and finally a discussion of the opportunities presented by each type, illustrated with examples from the case studies.

Definitions of the Typological Categories

Character Types

In a broad sense, "gray area" arterial streets have a general character which either helps to bring people and activities together or helps to separate them. In other words, within their immediate context arterial streets may act as seams or as dividers, sometimes strongly so, sometimes weakly. Both seams and dividers have the potential to structure a community as spines. Spines are major transportation/development corridors usually associated with a strong linear transit route and an intensity of land use development that is much greater than surrounding areas. The concept of seams and dividers as spines will be discussed in greater detail in the opportunities section that comes later.

Seams

Arterials which are seams tend to have the following characteristics:

- There are frequent opportunities to get to the street, for instance via closely spaced cross streets or mid-block pedestrian linkages.
- The street can be crossed relatively easily by both pedestrians and vehicles.
- Traffic speed is somehow mitigated so that the presence of heavy or fast traffic, when it occurs, does not overwhelm the street to the extent that other activities suffer.
- Buildings are oriented to the street and there are usually many entrances.
- There are uses along the street which are active and which draw people to them, and pedestrians are often present.
- They generally have a greater development density along them, at least in some locations, than surrounding areas.
- Land uses, in general, are similar on either side of the street or at least not hugely dissimilar.
- They tend not to be overly wide, usually with less than a 100' right-of-way.

Dividers

Arterials which are dividers tend to have the following characteristics:

- There are infrequent opportunities for access to the street, for instance widely spaced cross streets and/or few entrances from buildings on to the street.
- They are difficult to cross for pedestrians and vehicles. Reasons for this may include long blocks, priority given to through traffic movement, and signal phases too short for pedestrians to cross the street before the light changes.
- Sometimes, cross streets are off-set, making through cross movements difficult for both vehicles and pedestrians.
- There is usually a strong and unmitigated traffic presence. From the drivers point of view these streets are often convenient to use because they tend to be fast.
- Buildings are often not oriented to the street.
- There are few activity draws along the street and most of the time it is relatively unpeopled.
- Often there is either no on-street parking or parking is prohibited at certain times of the day when parking lanes become traffic lanes.
- Sometimes, they are particularly wide and bleak.
- Sometimes the street itself is run-down while surrounding areas are not.

Development Types

Arterial streets tend to have one of two patterns of development. Some exhibit fairly constant lineal development, while others are punctuated at various locations by development or activity "nodes." On some streets these patterns are obvious while on others they are relatively subtle.

Lineal Development

Arterials which have a lineal development nature tend to have the following characteristics:

- Continuous and relatively uniform development, or lack of development, in terms of land use, density, and scale.
- Development along the street often changes in type or density gradually rather than abruptly.

Nodal Development

Arterials which have a nodal development nature tend to have the following characteristics:

- Some locations have a markedly different form, scale, or intensity level than the rest of the street. Often the land use is different at the nodes than elsewhere and the activity level is markedly greater.
- Nodes usually occur at intersections, often at major intersections, and often extend along the cross streets to some extent.
- The traffic flow is likely to be interrupted or slowed down at the nodes, for instance because of increased traffic volume, pedestrian activity, and/or increased parking activity.
- There is a strong cross-street presence and connection at the nodes.

Traffic Rhythm Types

Different arterial streets exhibit distinctly different traffic patterns. On some, the flow of vehicle traffic throughout the day is relatively steady and constant. On others, there is a definite short-term "rush-hour" pulse of traffic followed by long stretches of light traffic. On some streets with a traffic pulse, the vehicle pulse is followed or preceded by a period of heavy pedestrian activity. Within each traffic rhythm type, the degree of the flow or the pulse, the volume and speed of the traffic, can vary considerably and hugely influences the opportunities presented by the street.

Constant Vehicle Traffic

Arterials which have a constant traffic rhythm tend to have the following characteristics:

- Relatively steady traffic flow throughout the day, or peaks that are hardly noticeable because volumes are low.

- There may be no special traffic management features in place that channel traffic on the street at certain times.
- There is usually no distinct change in traffic composition during the day.

Vehicle Traffic Pulse

Arterials which have traffic pulses tend to have the following characteristics:

- Periods of heavier traffic, usually related to special traffic configurations and controls such as one-way pairs, followed or preceded by periods of light traffic.
- Sometimes there is a distinct change in traffic composition, for instance heavy trucks using the street in the early morning, followed later by commuters.

Alternating Vehicle Traffic/Pedestrian Pulse

Arterials which have alternating vehicle traffic pulses and pedestrian pulses tend to have the following characteristics:

- Short periods of heavy vehicle traffic flow, followed or preceded by long periods of light traffic during which time the pedestrian traffic flow becomes heavy. The pedestrian activity is usually associated with active uses along the street
- Often, special traffic management features are in place that channel traffic onto the street during the rush-hour pulse(s), for instance restrictions against on-street parking which make extra lanes available.

Functional Context Types

There are two distinct functional contexts for arterial streets: some function as part of a system of closely related arterial streets (or have the potential to do so) while others work singularly as isolated through streets.

System

Arterials which are part of a system tend to have the following characteristics:

- They are closely related to one or more parallel arterial streets.
- There are frequent connections between the parallel arterial streets.
- Sometimes, the parallel arterial streets have coordinated traffic management features; for instance, a set of streets may be configured as a one-way pair.

Isolated

Arterials which are not part of a system tend to have the following characteristics:

- The street works alone to carry through traffic.
- The street may be isolated because of topography, because of the presence of a nearby limited access freeway which cuts off cross connections with other through streets, or because surrounding areas contain only local or disconnected streets.

The Typologies and the Case Study Streets

The matrix on the next page presents a matrix of the case study streets, showing how they fall into the typological categories presented above. It should be noted that for some streets, or sections of streets, where information was lacking or where characteristics were ambiguous, it was not possible to identify a type within each category.

Opportunities Presented by Arterial Streets of Each Type

Each street type suggests different opportunities for approaching development.

Character Types

Seams

When arterial streets are seams, it is important to recognize that they serve community functions as well as traffic functions and that the community function is valuable. On such streets, the traffic functions should not be allowed to overwhelm the community function. When "gray area" streets are not currently acting as seams, but where their configuration is such they might, with some care, become seams, this in itself represents a major opportunity.

The primary opportunity provided by streets that are seams, or those which have the potential to become seams, is to reinforce them in this role. The following are general ways in which this might be done.

- Introduce, or improve, local serving transit lines on the street and place stops adjacent to activity draws in order to encourage people to spend time on the street.
- Allow on-street parking.
- Orient development to the street in order to create a pedestrian-oriented environment. If on-site parking is necessary, this suggests locating it to the rear.
- Understanding and reinforcing the existing context — in other words, assessing which existing development characteristics contribute to making the street a seam and make sure that future development is in accordance.
- Making crossing the street easy, for instance by introducing wide and clearly marked crosswalks at intersections; controlling side-street traffic with lights instead of stop signs. Where long blocks exist, introduce mid-block pedestrian crossings.
- Providing easy access to the street, for instance by keeping and encouraging frequent intersections. Where long blocks exist, mid-block pedestrian paths between buildings might be considered.
- Encourage building uses that provide many entrances on the street.
- Encourage a good pedestrian environment and provide buffers between pedestrians and moving cars. The best way to do this is with closely spaced trees planted at the sidewalk edge.

Whittier Boulevard, in Los Angeles, is a good example of an arterial street that functions as a seam. The street is relatively narrow and is lined with commercial buildings, most strongly so where it passes through East Los Angeles. In this section, buildings abut the sidewalks and there are many small shops on both sides of the street. Intersections are frequent, and it's relatively easy to cross the street. Traffic is slow because of the congestion caused by people looking for parking places and because there is a great deal of pedestrian activity. People from the surrounding neighborhood flock to the street, especially, it was observed, for after-work shopping. Although sidewalks are not wide, the pedestrian realm, and the specialness of the street, is enhanced by a number of elements at the sidewalk edge: tall and regularly spaced palm trees, colorful banners on poles, and closely spaced pedestrian-scale light fixtures. The character of the street as a seam is further enhanced by a large decorative metal sign spanning the street, in the center of the East Los Angeles shopping area, that proudly announces the name of the street.

Martin Luther King Boulevard, in Chattanooga, is an example of a street that could serve as a seam, as apparently it once did. Traffic is lighter than it once was and comes in short, morning bursts. A starting point would be returning the street to two-way traffic or at least reducing the present number of one-way lanes, and requiring new development to face and, preferably, abut the street. Cary Street, in Richmond, might be a model for Martin Luther King in this regard. Cary Street, along with Main/Ellwood, serves as a corridor through the Fan District, and is the primary commercial street of the neighborhood. With the exception of brief peak periods, the traffic volume is low (with an ADT less than 15,000). The street is relatively narrow with development directly abutting the street edge, which could account for the relatively slow speed of traffic. These characteristics result in a street which is quite comfortable for pedestrians and drivers to cross and, because of the similarities of scale and land uses on both sides, encourage mid-street crossings (further slowing traffic). Consequently, Cary Street serves the role of a focal spine of the Fan District as well as a seam that effectively knits together the neighborhoods on either side.

An additional opportunity presented by a street that is a seam is that it may be developed into a transportation/development spine, for instance through making it a major transit route. The key, again, is to not allow the spine function to overwhelm the community function of the street. For instance, when an arterial street is a seam and where there is the desire to develop it into a transportation spine, transportation configurations which are divisive — such as wide roadways for cars — should not be introduced. On the other hand, a surface transit line on the street, or metro stops on the street, will tend to enforce the street as both a seam and a spine.

Dividers

When "gray area" arterial streets are functioning as dividers, and where the opportunity to turn them into seams does not exist or is not worthwhile, they may be approached in different ways depending on the city context and whether or not growth is occurring. With any approach taken, an important consideration is providing a sensitive transition zone between the arterial street and surrounding neighborhoods, for instance

by creating a buffer zone or slow traffic zone between moving cars and pedestrians. If growth is occurring, there may be an opportunity to develop the street into a major transportation and development spine by directing growth to it and intensifying its transportation function. If the street is part of a system, more spine configurations are possible. If little growth is occurring, there is the opportunity to simply landscape the street so that it is at least an attractive street to drive along. In either case, there may be an opportunity to develop the street into a throughway for other types of through traffic as well as cars, for instance with bicycle lanes and pedestrian promenades developed in conjunction with linear parks.

By way of example, Broad Street, in Richmond, serves as a strong edge on the northern side of the Fan District. Its width (over 100 feet), and the fact that it carries six lanes of fast-moving traffic, make it a difficult street to cross comfortably. In addition, the land uses on each side are noticeably different; larger-scale industrial on the north and residential to the south, which means there is generally little incentive for pedestrians to cross the street. Commercial uses occur along the south side of the street and serve as a transition to the residential neighborhood. Therefore, any pedestrian from the Fan District neighborhood wanting to patronize businesses along Broad Street would have no reason to cross. Opportunities that would arise from recognizing this would be to acknowledge the strong divider line and emphasize the pedestrian experience along the southern edge of the street, while accepting (and perhaps visually enhancing) the rest of the roadway as primarily a domain for cars.

Development Types

Lineal

Streets that have lineal development along them may be either sparsely developed or continuously developed, or somewhere in between. The type of existing development suggests different opportunities for development. "Gray" arterial streets with sparse lineal development on them may best be initially approached by concentrating development in certain areas, in order to create activity nodes which can begin to improve the sense of the street and encourage more complex use. (It should be kept in mind that sparse development may be of two kinds: either "holes" in an existing fabric caused by building removal, as may occur in older urban areas, or vacant lots between strip development, as may occur in more recently developed areas.) On the other hand, streets which have relatively continuous lineal development along them offer the opportunity to strengthen that lineal development, for instance by creating a high-density development spine associated with a transit line.

Vermont Avenue, in Los Angeles, is an example of an arterial street which is linearly developed but on which the development is sparse. Recently, several commercial areas have received attention in the form of publicly assisted building and street improvements. Although observed activity in these areas was not high, they have the potential to become focal points along the street and could be developed into strong nodes. A starting point would be concentrating activity draws in these areas, such as new community-oriented

public or private services, new food shopping facilities, or new entertainment facilities. In addition, these nodes could be developed as minor transportation hubs — for instance where bus line transfers can be easily made. It also might make sense to concentrate new, higher-density housing in close proximity to these areas.

Euclid Avenue, in Cleveland, might be a street for this kind of development if accompanied by an insistence of uses that face the street, higher density uses located here, and increased transit. In some areas the right-of-way is wide enough to accommodate a multi-roadway boulevard, ideal for lineal development.

Nodal

Streets which have nodal development along them offer a variety of opportunities, again depending on the strength of the existing development at the nodes. If nodes exist but are weakly developed, it is probably best to start by encouraging development within them, including new activity draws and, if possible, high-density housing. If existing nodes are strongly developed but very widely spaced, an approach may be to encourage the development of some new nodes. In general, it may be easier to uplift "gray" streets, by developing the nodes until some kind of critical mass is reached. However, if the nodes are fairly strong, the opportunity exists to start linking them up along the street, for instance with simple street planting and maintenance followed by land use changes.

East 14th Street, in Oakland, is an example of a street with identifiable nodes on it but which are widely spaced. Originally linearly developed, currently the bright spots along the street are at two major intersections, one of which is near a BART station. These nodes are vibrant and active, containing many community draws. Along with strengthening these nodes through additional commercial and multi-family residential development, as is already occurring, it may be reasonable to identify additional places along the street where nodal development would be beneficial to the neighborhood. For instance, places lacking nearby food shopping facilities could be identified, and such facilities could form the basis for a new nodal development. In addition, the linear nature of the street as a transportation and commercial spine through the area would be greatly enhanced by a planting program of large trees along its length.

Traffic Rhythm Types

Constant Vehicle Traffic

The degree of traffic, its speed and volume, tempers the opportunities inherent in these types of arterial streets. Streets with continuous, heavy, and fast traffic flow are often dividers in their communities. The negatives associated with such traffic can be tempered by closely planted trees along curbs that separate walkways and the pedestrian realm from traffic. If a street has activity draws along it and if there is room in the roadway, a street with constant a constant heavy flow of traffic might be reconfigured as a multiple roadway boulevard, which would allow traffic in the center to move fast while at the same time establishing a slow-moving pedestrian realm along the side where activities occur.

On the other hand, streets with low volumes of traffic and on which peaks are not great may offer the opportunity of reclaiming some of the roadway for non-auto-traffic uses, such as transit lines or widened sidewalks.

Carnegie Avenue, in Cleveland, is an example of a street with a relatively constant flow of fairly heavy traffic. It could be a pleasant street to drive along, and even walk along in some sections. To this end, large trees on a 20 feet to 25 feet spacing rhythm, that did not stop short of corners, would be a positive addition.

Vehicle Traffic Pulse

Again, the opportunities presented by a street with a traffic pulse at some time during the day are tempered by the degree of traffic. If the traffic pulse is very heavy or very fast, less opportunities may exist than if the pulse is light and/or slow. In either case, the general approach is to consider what could happen on the street during the times other than the vehicle traffic pulse. Martin Luther King, in Chattanooga, a one-way street out of the downtown, is an example of a street with a heavy rush-hour pulse of traffic, in this case in the evening. During the rest of the day, the street is relatively quiet and it might be possible to develop activity draws along it oriented toward morning or mid-day usage.

Alternating Vehicle Pulse/Pedestrian Pulse

Where this condition occurs, the dual nature of the pulse should be recognized and the vehicle traffic function should not be allowed to overwhelm the other uses of the street. Cary Street in Richmond is the example of an alternating pulse. On this one-way commercial street, the rush-hour traffic pulse is in the morning. Later in the day, when the traffic is relatively light, shopping activities predominate on the street, and there is much pedestrian activity. This street should be considered as a multi-functional street, and future development could be oriented toward day-time and evening activities.

Functional Context Types

System

When arterial streets are part of a system of arterial streets, there are opportunities to coordinate different modes of travel and different types of land uses on parallel streets through creating an integration of uses. For instance, a system of closely related arterial streets offers the possibility of creating a major transportation spine in a city. A triplet of streets might be configured so that one of the peripheral streets carries auto traffic into the downtown, and another carries auto traffic out of the downtown, while the central street carries an intensive bus or rail transportation line. Land uses could be coordinated with this transportation configuration so that high density development occurs around the central transit line while lower density development occurs beyond the auto streets. (This is the type of spine that occurs in Curitiba, and which has been used to very successfully structure the development of that city.)

Of the case study streets, Euclid Avenue and the two streets that run parallel with it from University Circle to the downtown, have evolved from their original role as both a major spine and seam of Cleveland into a corridor that is a divider between the neighborhoods along either side. These streets could again function as a coordinated system of arterials, as they did in the past. Prior to the demise of streetcars in Cleveland, Euclid was a transit-oriented spine with uses lining it to which people from both sides were drawn. Chester and Carnegie Avenues were the parallel auto-oriented streets which, together with Euclid, formed a major seam of the east side of the city. Today, with not much in the way of land uses oriented to Euclid, with large parcels of land vacant or being held by institutional users, with fewer local streets crossing the corridor, but with fast traffic remaining on Chester and Carnegie, the system of streets and uses is more of a divider running through the city. By directing intense future urban development to focus along Euclid, coupled with transit and purely local auto traffic, this could be a lineal system that functions as a major organizing seam of Cleveland. Chester and Carnegie would be, as they are now, the peripheral auto traffic streets. The key here would be high-intensity street-oriented uses on Euclid combined with first rate surface public transit service.

Isolated

When arterial streets are isolated, the fact that the orientation of surrounding areas must be to some extent directed toward them presents an opportunity. An important way to think about isolated arterial streets is that they should be multi-functional because, in effect, they are all there is.

Third Street, in San Francisco, is an isolated arterial street: isolated by topography (adjacent hills on one side and San Francisco Bay on the other side), by parallel freeways that act as barriers, and by a disconnected pattern of streets in surrounding neighborhoods. It is the only substantial north/south through street for surrounding neighborhoods for a section over four miles in length. And there are few cross streets that penetrate the adjacent freeway barrier. It is also the only commercial street in the area. It is important to think of such a street as more than just an arterial. It is an important community space that needs to serve many functions, all the more so because it passes through a poor area where people are more likely to need and use local services than in wealthier areas.

Folsom Boulevard, in Sacramento, is another example of an isolated arterial street, one that has the potential to be a major spine structuring growth in the city. There are no parallel streets, and it is isolated from surrounding neighborhoods because there are not many cross streets connecting it to the modern subdivisions on either side. Residents of those subdivisions constantly use Folsom to get to other destinations, but the street itself is relatively neglected. Folsom has the potential to act as a transportation spine because for a three-mile distance it is paralleled by a relatively new light-rail line which runs along an old railway right-of-way. However, as built, the light-rail line does not have a good pedestrian connection to Folsom, and office buildings recently built along the street are set back a distance from the rail line. Indeed, the new buildings along Folsom have a suburban layout with ample parking, so why would employees ride the light

rail? In the bigger picture, rethinking a role for the Folsom Boulevards of this country requires understanding their functional context as isolated streets. Unlike a system of arterial streets that forms a corridor and thus allows differentiation of uses or functions on each street, an isolated arterial must play many different roles, for instance carrying auto traffic, transit, bikes, pedestrians, and containing multiple land uses. On Folsom, where there is unused capacity, the roadway could be narrowed and the existing, spotty bike lane could be improved. The parallel light rail line could be better integrated with the future adjacent land uses by requiring buildings to be built to a build-to line, to create a streetwall. Farther in towards central Sacramento, vacant lots and low-quality strip development could be replaced with higher-density mixed use and multifamily buildings. For streets like the outer portions of Folsom (or Broad Street, in Richmond), which tend to have different pattern of uses on each side of the street (in both cases residential on one side and industrial on the other), it might be appropriate to use a wide allee of trees and landscaping on one side of the street to help reinforce that side as the pedestrian, bike, and transit side, while the other side of the street remains an auto-traffic carrier.

Conclusions

The typologies identified and discussed above represent a beginning, the start of a new approach to thinking about arterial streets in a qualitative manner. The examples given of the opportunities presented by the case study streets show how thinking in typological terms can be a very useful approach when considering "gray area" arterial streets.

V: CONCLUSIONS AND FUTURE WORK

Introduction

This research is about arterial streets coming out of central business districts, streets that have been bypassed. They have been bypassed in many ways, more than by freeways or the out-migration of people and their jobs. They are often out of sight and out of mind as well. They are the gray webs of many cities: they pass through marginal places that many would rather not see. They are a bit uncomfortable.

A simple conclusion of the research to date is that it is easy to find such streets, in many cases the historic main streets leading into and out of town. Most large cities have such streets. At one level, their characteristics are similar:

- Generally, they have excess roadway capacity;
- they run through areas of lower-income people;
- the buildings along them are seldom in the best condition and there may be many vacant lots;
- often, businesses are not thriving;
- the streets themselves are not overly wide;
- trees and landscape are not a significant presence.
- buses travel on the streets but their ridership may be low.

At another level, the streets display many differences. Some are, or were, spines or seams to which people and side roads are (or were) oriented. Some are boundaries between areas on either side. Some work in tandem with other streets while others are singular in nature. The amounts and timing of traffic along the streets are different. The cities themselves are different, physically, socially, economically, and in the stages of their development. So, there are "types" of arterials and we have started to sort them out as a basis for future work.

More than was expected, these arterials are "problem" streets (often in problem areas) and recognized as such. The problems associated with them are knotty ones, and immediate opportunities for restructuring and revitalizing are not as great as one might hope. Perhaps the greatest problem is in getting people to think comprehensively about such streets and corridors and act cooperatively.

To witness the streets, in person, is not only to see problems, but also to think of possibilities. Ideas, large and small, for a better future come almost as fast as seeing what is wrong. We have allowed ourselves to develop, at this early stage of work, scenarios that suggest themselves.

Conclusions are most easily arranged in one of three broad categories: under "research conclusions," in preparation for further work, are those findings most relevant to the ways in which the study was carried out, including the types of information and the level of detail likely to be found in future inquiries; the "conceptual conclusions" focus on ways of thinking about the arterials and on establishing a framework for analysis and future planning; the "substantive conclusions" are those that deal with the streets themselves.

The Research Conclusion

Historical Research — Availability of Data

While it may be relatively easy to identify arterial streets of the type that are the concern of this study, experience during this phase of the work shows:

- Detailed historical information on improvements and changes to arterials is difficult to find, particularly in regard to non-physical changes, like light-timing.
- Traffic volume data, over time, is somewhat easier to access, but count locations rarely stay the same over a long period, and it is not always clear as to the context of the counts.
- The history of land uses and building conditions along a street is more difficult to find, and matching land use changes with traffic data is harder yet.
- Staffs in cities, while desiring to be helpful, may not have the time to find or send historic data, particularly if it is located in scattered places.
- The archival data, once found, is very useful. At the same time, there seems to be a tendency for it to get lost or discarded, particularly as budgets become lean and storage becomes more costly. The initial reflexes of professionals, to arrange and to store this information properly, is often thwarted by monetary constraints.
- "Old Timers," people who have been in a place for years, are very important sources, to advise where information may be found and for their memories of what happened when and why.
- Because data is difficult to find in ways one might like, and because the variables associated with changes along a street are considerable, it is difficult to conclude, with assurance, what was cause and what was effect. At the same time, significant changes to streets did not generally take place in upper-income areas and are more usually associated with areas in decline.
- This type of research is time-intensive.

Observation as a Research Method

Careful on-site observation of streets, traffic and land uses is extremely important to an understanding of history, current state, trends, and possibilities in research of this nature. The field visits that included looking, measuring, counting, sketching, and picture-taking were important to understanding the roles and dynamics of the arterials. Examples include the impact of a strong tree planting and beautification program on E. 14th Street in the City of San Leandro; understanding the revitalization of the Main/ Cary corridor in Richmond; and seeing what truly diminished traffic means in Chattanooga, gaining an understanding of the differences between street-oriented buildings and those that are not, which was central to the analysis and typologies that followed.

The comparative street diagrams would have been nigh impossible without the on-site observations.

Case Studies as a Research Method

The case study approach, with all of its problems — getting to the cities, finding the data and histories, determining an appropriate sample that will permit generalizations, etc. — is useful. It is doubtful that enough case studies can be carried out to permit the kinds of encompassing conclusions one might like,

but it is possible, from a limited number of cases, to start developing a graphic language to describe these streets and to develop useful typologies from them that can help plan for future change and improvements.

Drawing and Mapping

Drawing and mapping the case study streets has been an important part of the research method. Of particular value is the convention of drawing all of the streets at comparable scales, as much as possible. The arterials studied are vastly different in their scales, particularly lengths — compare a Los Angeles street with the Chattanooga pair, for example — and the consequent differences are best understood when visual comparisons are possible. The same holds true for the cross-section drawings.

Conceptual Conclusions

Arterials as a Subject of Current Interest

From our correspondence and team discussions with professionals in the various cities, it seems clear that bypassed or underutilized arterials in "gray" areas of cities are a subject of interest and concern. There are many Martin Luther King Boulevards and many Lorain Avenues, and people — not only professionals — know that they need improvements but are rarely secure in knowing what is desirable or possible. We sensed, for example, that if we could find a meaningful approach to Lorain Avenue, in Cleveland, that we would be minor heroes.

Defining the Arterials

The determination of what is and what isn't an arterial street appropriate for this kind of research is not always self-evident. We thought, in our initial inquiries to cities, that we had made clear the nature of the streets we were seeking. But the words mean different things to different people, and as a result, a variety of street types was suggested as possibilities. This was not altogether bad because we were forced to re-evaluate our criteria and, in some cases, to broaden our concerns. Most notably, there are differences between some arterial streets in western cities than in older eastern ones. Arterials in the west may never have gone through some earlier stages of development experienced along streets in the east, or in other older cities. The Sacramento streets are clearly different than those of Cleveland, Oakland, San Francisco, and others. Just as some of the cities are in different stages of their development, so are their major streets. Franklin Boulevard, in Sacramento, is evolving and going through stages that Euclid Avenue in Cleveland went through long ago, in different ways, largely due to the influence of the automobile. These differences make the matrix at the conclusion of Chapter III and the typologies developed in Chapter IV important as a means of understanding the current state and the future possibilities of arterials.

Arterials are Rarely a Focus for Arranging the Physical Form of the City

While the arterial streets in question are recognized as problems, the concern rarely goes very far beyond that of traffic movement and the quality of buildings and uses that face directly on the street. The corridors through which one or more arterials pass are seldom conceived of as a whole, or as a series of complex movements, or uses and activities that can work together. Just as a multi-functional approach to street design is not the way transportation planning is usually done, neither is a multi-functional view of arterial corridors taken. In part, the Euclid Avenue corridor is an exception.

There is, of course, a larger conceptual possibility, that of looking at inner city arterials, especially when there are more than one of them, and especially when they can be integrated with public transit, as a land use/transportation framework for structuring or restructuring much of an urban complex. The basic plan of Curitiba, in Brazil, widely recognized as a great success story in urban land use/transportation planning, is one of integrated high-density multi-functional corridors tied to a strong center. We have not experienced that type of thinking in relation to the arterials studied, at least not in an overt way.

The matrix of analysis and the typologies are intended as starting points to help conceptual thinking about arterials in a multi-functional, complex context. The typologies permit more than a numbers approach to city design. There, use incorporates qualitative dimensions into street and corridor design.

Substantive Conclusions

The Case Study Streets Are Not Attractive

Regardless of what they once were, with few exceptions — the Richmond pair, a small section along E. 14th in Oakland, and a section of Whittier Boulevard in Los Angeles — the arterials are not attractive. This is especially so when the buildings are located at a distance from the roadway, with large parking lots along the street frontage. Mostly, these streets are uninteresting, as an inspection of their cross-section drawings suggests. They are without interest for pedestrians and drivers alike.

Beautification Can Count, If Done Well

There have been so many ill-fated attempts to revitalize arterial streets via beautification that a jaded view of such proposals is understandable. Economic revitalization is the key to turning a street around and with it pleasant design, not vice-versa. Accepting that point of view and that approach does not, however, invalidate a comprehensive physical upgrading program, as at least one of the case study streets suggests. Everything about East 14th Street changes as it enters San Leandro, not just its name change to International Boulevard (it is now so-named in Oakland, too). While public investments in San Leandro community uses along that street have helped to revitalize sections of it, there are other stretches where no new private investment has taken place. Nonetheless, the nature of the street and responses to it changes abruptly at the city border. All of a sudden it is a nice street on which to be. The trees alone, large (though newly planted) and well-spaced make a real difference. These rather straightforward physical improvements go

hand in hand with good maintenance. While the jury may still be out on this very direct way of changing the nature of a street and its use to help restructure community, our bet is that the consequences will be long-lasting and positive. To believe them, it is important to experience such improvements.

Knowing Can Help

The studies thus far make it clear that professionals, at least, are aware of the problems associated with arterial streets in many cities, as are citizens, and are making efforts to start to address them. Inquiries associated with this research were met with interest and requests for assistance and knowledge. It is a reasonable conclusion of this study that a number of case studies, preferably documented and published in one place, that spelled out situations and actions taken would be a help to those contemplating what to do with streets of this type.

Knowing, in part, comes from seeing, from experiencing. Certainly this study has benefited from direct observation of a limited number of arterials. A more complete accounting of these kinds of streets, especially of success stories, could direct those concerned as to where to go and whom to talk with to see and learn from case studies.

Clearance and Redevelopment

Large-scale clearance and redevelopment carries with it the prospect of a long period of time before there will be new development, all the more so if a city is experiencing limited growth. The Euclid Avenue corridor, in Cleveland, provides an example of this and so, perhaps, does the Chattanooga street pair. At the same time, the experience of the few cases explored suggests that the approach may not be accompanied by a major urban restructuring, either from a transportation or land use viewpoint. Indeed, given prevailing approaches to U.S. urban development, the redevelopment approach is likely to be accompanied by land assembly and street closings and little or no restructuring of the major transportation network, public or private. The Cleveland case suggests as much, as there the transportation corridor functions more as a divider of areas within the city than as a seam — witness the large-scale development of the Cleveland Clinic area that largely shuns the main streets. There may be an alternative.

Patience as an Improvement Strategy

The Main Street/Cary Street corridor, in Richmond, Virginia, is a very important case study. Seeing it in Spring 1997, after a period of over 10 years, it was difficult to equate the street with earlier memories. Indeed, it was the memory of the corridor as a particularly run-down pair of streets on the edge of the then-improving Fan District, with a new, parallel freeway that drained the traffic from these local streets that brought us to Richmond looking for cases. What we found, instead, is a vibrant corridor of improved old houses (some very old), shopping segments of small stores and restaurants that are thriving in old townhouses and storefronts, and newly rehabilitated housing for minority people of modest incomes and some new

housing that matches the old. This case, it seems, is the "after" of what a series of well-considered recommendations might bring about. Had the example been available and known to cities like Chattanooga and its Martin Luther King Boulevard/McCallie Avenue pair, perhaps the clearance and de-population might not have occurred. Maintaining, keeping, rehabilitating, and waiting can be appropriate strategies, especially if the basic urban structure is reasonably sound to start. Knowing that many older urban structures are sound is, of course, the trick. Racing to public action that involves clearance of large areas might not be the best policy. Waiting for and encouraging revival might be better. We suspect that will be the successful approach on East 14th Street, in Oakland. In the Richmond case, the pulse of traffic is important. The incoming morning traffic rush is both early and short, so that it need not impact the local shops and housing negatively. The same is true, in the evenings, on Main Street.

Excess Roadway Capacity and Inertia

We have noted that on most of the case study streets there is unused street capacity. In many cities, as well, this situation is recognized. Peak periods of traffic, on some streets, such as in Richmond and Chattanooga, are rather short. At the same time, there appears to be a reluctance on the part of city officials to making changes that might reduce the capacities of streets, the more so if such change would mean a reduction in curb-to-curb width (understandable for cost concerns). The change being considered on Martin Luther King Boulevard and McCallie Avenue, in Chattanooga, back to two-way streets, is only for one segment, whereas the complete length of these streets might have been considered. Although widened sidewalks on Prospect Avenue in Cleveland are deemed to have been a success, similarly reducing the cartway on Carnegie Avenue is held to be more problematic. Perhaps there is a belief that larger volumes will return and must be accommodated. In any case, we sense that there will be reluctance to reconfigure streets even if their capacities cannot be justified.

The Challenge of Coordination

In a number of cities and along a number of streets, it became apparent that a major stumbling block to reactivating arterial streets as foci for development and as structural frameworks of the city lies with coordination of transportation and land use policies. As an example, it seems clear that Sacramento's light-rail system, at least along Folsom Boulevard, has not and is not likely to be associated with development of its corridor with relatively intense land uses that would significantly increase transit patronage. Apparently, it has not yet been possible to insure that development occurs here, as opposed to other areas, notably along freeways located elsewhere. Nor does the precise location of the line in relation to Folsom permit either lineal or nodal development of a nature that would create a strong urban structure. The issue seems to be one of non-coordination of agencies within a city as well as non-coordination between government jurisdictions. This would seem to be a problem in Los Angeles as well. Absent an aggressive, transit-land use point of view that is multi-jurisdictional, development corridors will be most difficult to

achieve. The challenge is all the more difficult (and important) in communities of slow or non-growth. The Euclid corridor in Cleveland, a seeming natural as a high-density spine to structure the city and to help revive it, is a case in point. We address the related issue of slow-growth cities below.

Public Housekeeping-Maintenance

If a clean slate is neither desirable nor possible, a clean street is. To put it simply, an unkempt, unclean, uncared-for street is depressing enough in its own right to keep people away and, we suspect but cannot prove, an impediment to new investment. Many of the streets studied — Third Street in San Francisco, E. 14th Street in Oakland, many of the Cleveland streets, the Chattanooga streets, the Los Angeles streets — are characterized, at least in part, by lengths of marginality and private disinvestment; vacant and boarded up buildings, vacant lots, unmaintained streets. Given a choice, new businesses or people might not want to go to those areas. On the other hand, observation suggests that rather simple, straightforward maintenance makes a difference — clean walks and roads, good paving, fenced vacant lots that are clear of debris and with grass, even neatly boarded-up windows and buildings (parts of East 14th Street). These rather simple housekeeping initiatives, public and private, suggest that someone is watching, thinking, and caring for the street or corridor.

Focusing Development is Difficult When There's Not Much to Focus

A major starting point of this research has been the possibilities that underutilized major urban arterials present for recycling, revitalizing, and restructuring the areas through which they pass. Given the case study cities and their streets, it is difficult to avoid the conclusion that it will be difficult to direct growth and positive change to such streets in communities and metropolitan areas that are experiencing slow growth, no growth, or decline. Cleveland, Oakland, Richmond, and Chattanooga are all such cities. It is hard to direct growth where there isn't any. A high-density, focused, transit-oriented corridor will be difficult at best in Cleveland, a suburbanizing city that has lost a large part of its population. Young people, it seems, want to move back to the Euclid area, even at moderate densities. But it will take higher densities, if not higher buildings, and more activities for Euclid to restructure this part of Cleveland.

On the other hand, there is and *will* be change in such cities and there are potentials. The conclusion is only to recognize the difficulty of using arterials streets as development corridors, not to suggest that it can't be done.

A Brief Recap

The anticipated work program and research of this Phase I of the study have been carried out, largely as anticipated. Briefly, as anticipated in the initial application and approval, we have:

1. Established an Advisory Group of researchers, administrators, and professionals to help guide the work and to review and critique findings as they progress.

2. Identified potential cities, streets, and corridors for study.
3. Carried out a literature search of studies, standards, and general philosophies that accompanied arterial road improvements in the 1930s, 1940s, 1950s, and 1960s.
4. Made contacts with a large number of cities, through their professionals, to gain information and data on arterials of the nature being studied.
5. Identified potential case study streets.
6. Conducted initial field visits to case study streets. Prepared a preliminary typology of types of streets and associated land uses, considering the streets as parts of corridors.
7. Prepared a preliminary analysis and conclusions that focus on the present and potential roles of these streets.

Next Steps

At this stage, it is not altogether clear that the generalized work programs anticipated for Phases II and III of this overall work program are the best ways to proceed. Phase II was to concentrate on detailed histories of existing and evolving transportation/land uses of the cases already chosen, and detailed studies of selected blocks along those streets, over time. A second set of case studies was to be carried out on arterials that serve through-traffic functions but have not experienced deteriorated or marginal adjacent uses. The second group of case studies would seem to be a worthwhile effort. However, given the difficulty and cost of gaining historic information on land uses and traffic, we are not sure that such work would be as useful as would be expanding the existing list of case study cities and streets and gaining existing data and histories to a level presented in this report. A larger sample of case study streets may be more useful than using fewer streets with more detailed histories. As to the detailed studies of the design characteristics of specific blocks of streets, that may be useful to convey an understanding of why such streets are problems, and could be used as "before" examples that can be contrasted with ideas for the future.

For sure, more time and effort in a second phase of work would be given to a further development of the typologies. A greater sample of case study streets would help this effort along.

The anticipated third phase of the work, possible futures for these roadways in terms of function, adjacent land uses, and design, probably in the form of guidelines associated with the typologies, remains the logical conclusion of this work.

More immediately, the next step in the research is to gain feedback from advisory committee members and from professionals of the case study cities, and other professionals in cities not yet studied, on the work to date. Copies of this report will be circulated with that end in mind.

It will be noted that no application for funding Phase II of this research has been submitted for 1997-98. Our intent is to use this academic year to get the feedback on the work to date and to use it as the basis of our next steps.

APPENDIX A: Cities and Streets Considered as Possible Case Studies for This Research

Cities are listed alphabetically and the selected streets are indicated with an asterisk (*). As often as not, the decision to not pursue a street as a case study was determined by a lack of information or budget constraints.

Bakersfield, California

Union / Golden State

Boston, Massachusetts

Boston Post Road
Commonwealth Avenue
Cambridge Street

Chattanooga, Tennessee

* McCallie Street
* Martin Luther King / Bailey Avenue

Chicago, Illinois

Cleveland, Ohio

* Euclid / Carnegie / Chester corridor
* Lorain Avenue
West 25th Street
Kinsman Avenue

Denver, Colorado

Broadway
Detroit, Michigan
Telegraph Avenue
Grand River Avenue
Woodward Avenue

Fresno, California

Broadway

Houston, Texas

North Main corridor
Franklin/Jensen corridor
Pole/Telegraph corridor
Washington / Hempstead corridor
Westheimer corridor
Bissonet / Richmond / Alabama corridor

Kansas City, Missouri

Independence Avenue corridor

Los Angeles, California

* Olympic Boulevard

* Vermont Avenue

* Whittier Boulevard

Huntington Drive

Santa Monica Boulevard

Sunset Boulevard

Wilshire Boulevard

Pico Boulevard

Venice Boulevard

* Washington Boulevard

* Adams Boulevard

Imperial Boulevard

Miami, Florida

Flagler

Minneapolis

Lake Street

Hennepin Street

Modesto, California

McHenry Street

Ninth Street

Yosemite Boulevard

New York City, New York

Webster Avenue

Atlantic Avenue

Metropolitan Avenue

Northern Boulevard

Oakland, California

* E. 14th Street

MacArthur Boulevard

Washington Boulevard

Phoenix, Arizona

North Central Avenue

Pittsburgh, Pennsylvania

5th / Forbes corridor

Richmond, Virginia

* Main Street / Cary Street corridor

* Broad Street

Riverside, California

Magnolia Avenue

Roswell, New Mexico

Main Street

Sacramento, California

* Folsom Boulevard

* Broadway

* 12th and 16th Streets corridor

* Franklin / Stockton corridor

J & K Streets

Auburn Boulevard

San Diego, California

Fourth / Fifth Streets

Market Street

El Cajon Boulevard

San Francisco, California

San Jose Avenue

Alemany Boulevard (San Jose Avenue)

* Third Street (Bayshore Boulevard)

Potrero Avenue

San Jose, California

Monterey Avenue

Stockton, California

Wilson Way

APPENDIX B: Sacramento Case Study: Additional Interpretive Diagrams

APPENDIX C: Matrix of Traffic Counts for the Case Study Streets

Appendix C, Matrix of Traffic Counts for the Case Study Streets

City & Street	segment	CROSS STREET(S)	ADTs (or peak hour where noted)	Available historic data on traffic levels. Often, there is no clear pattern of increase or decrease in traffic. Sometimes, an apparent pattern may simply reflect that there are not enough data to really understand what is happening.				
Oakland <u>East 14th Street</u>	1	2nd Avenue	12,200 (1977)	12,600 (1986)	13,400 (1990)	<u>1997 ADT from field counts</u>		<u>pattern:</u> small increase
		40th to 42nd Avenues	21,900 (1977)	22,500 (1994)		23,200		small increase
	2	62nd to 64th Avenues	19,600 (1977)	13,000 (1991)				decrease
		87th Avenue	16,200 (1976)	19,000 (1978)	18,500 (1989)			increase
		101st to 102nd Avenues	15,200 (1977)	20,100 (1978)	18,800 (1991)			increase
Oakland--traffic levels increasing somewhat in outer portions of E. 14th								
San Francisco <u>3rd Street</u>	1	Howard	28,845 (1992, 1-way)	34,463 (1994, 1-way)		<u>1997 ADT from field counts</u>		<u>pattern:</u> increase
	2	20th St	14,756 (1977)	22,126 (1983)	26,342 (1991)			increase
	3	various streets	17,729 (1978)	8,532 (1983)	26,410 (1991)	24,680 (1996)	17,300 @ Kirkwood, est. fr. pm peak	increase
San Francisco--increasing traffic in all segments of 3rd Street								
Sacramento <u>Franklin Boulevard</u>		11th Avenue				19,908 (1994)		<u>pattern:</u>
		Fruitridge				9,580 (1990)		
		n/o 47th Avenue	13,462 (1976)	15,890 (1984)	16,929 (1988)	19,644 (1990)	17,731 (1993)	increase
		Florin				29,615 (1995)		
		Mack				22,985 (1995)		
<u>Broadway</u>		8th St./ Muir			9,310 (1988)	5,033 (1988)		decrease
		10th/Riverside			15,252 (1988)	12,228 (1988)		decrease
		Alhambra/32nd	5,360 (1976)	6,130 (1981)	7,113 (1988)			increase
		1st Avenue				8,545 (1990)	9,791 (1994)	increase
		50th/53rd					12,741 (1994)	
<u>Stockton</u>		no counts available						
<u>Folsom Boulevard</u>		Alhambra (closest to CBD)		8,418 (1996)				
		55th		9,700 (1995)				
		56th		10,398 (1995)				
		Julliard/Florin Perkins		17,905 (1993)				
		Watt		12,000 (1990)				
Sacramento, continued								

<u>12th St</u>		C/D						21,831 (1994)	
		K/L						7,156 (1992)	
<u>16th St</u>		C/D						25,462 (1992)	
		Capitol/N						17,952 (1992)	
		Broadway/X						11,719 (1992)	
Sacramento--no clear trends, except for Broadway where traffic levels are increasing farther out from town and decreasing closer to town									
Los Angeles									
<u>Washington</u>			<u>1937</u>	<u>1990s</u>				<u>1997 est. ADT from field counts</u>	<u>pattern:</u>
	1	Fairfax	12,000	16,940 (1996)					increase
	2	Western	22,500	23,110 (1995)				10,500 est. from 9:30 am count	increase
	3	Alameda	20,000	22,960 (1994)					increase
	4	23rd	15,000	18,354 (1994)					increase
<u>Adams</u>	1	Fairfax	17,300	6,350 (1994)	11,640 (1996)			8,400 est. from 10 am count	
	2	Western	16,600	20,940 (1995)					increase
	3	Figueroa	15,500	21,476 (1996)					increase
	4	Broadway to Nevin	3,000 - 10,000	N/A					
<u>Whittier</u>	1	Alameda to Boyle	17,000	11,630 (1996)					decrease
	2	Boyle to Ford	15,500	19,040 - 28,940 (1995)					increase
	3	Ford to Atlantic	15,300	N/A				17,800 est. from 4 pm count	
<u>Vermont</u>	1	6th	27,000	44,710 (1995)					increase
	2	Slauson	18,400	23,120 (1995)					increase
	3	Florence	18,500	N/A				N/A	
Los Angeles--traffic levels mostly increased over last 60 years, as would be expected									
Cleveland									
<u>Euclid Avenue</u>			<u>1956</u>	<u>1976</u>	<u>1984</u>	<u>1988</u>	<u>1992</u>	<u>1997 field counts, est. fr. peak hour unless otherwise noted.</u>	<u>pattern:</u>
		E. 14th St.(CBD)	20,650 (1956)		11,900	12,450	12,640		decrease
		E. 30th St.	23,290 @ E. 55th	19,040	14,760	18,510	15,550		decrease
		E. 79th St.		16,170	15,960	19,210	16,140	11,700 @ E. 82nd, est. fr. noon count.	
		Mayfield			23,200	28,130	26,540		increase
		E. 115th	> 30,000	21,640	18,740	22,570	22,640	10,900 @ E. 105th, est. fr. 10 am count.	
<u>Lorain Avenue</u>		W. 25th	17,320	14,040	11,320	11,500	10,720	10,800 @ Fulton.	decrease
		Denison	16,320	14,190	10,580	11,390	11,890		decrease
		West Boulevard				17,090	19,690	11,300 @ W. 117th.	decrease
		Rocky Rlver Drive				21,000	17,310		decrease
Cleveland--traffic levels do not follow a clear pattern over the last 40 years									

Richmond		<u>1966-1968</u>	<u>1995</u>	<u>1997 field counts</u>	<u>pattern</u>	
<u>Main/Ellwood</u>	Cherry	12,600	15,538		increase	
	Sheppard	9,900	12,600		increase	
<u>Cary</u>	Rowland	10,200	10,964	910/hour am peak @ E. Addison		
	Crenshaw	N/A	13,000	800/hour am peak @ Thompson		
<u>Broad</u>	Allen	31,500	25,350	15,200 @ Boulevard, est. from am peak	decrease	
Richmond--Traffic has increased on Main/Ellwood and decreased on Broad.						
Chattanooga		<u>1985</u>	<u>1990</u>	<u>1995-1996</u>	<u>1997 field counts</u>	<u>pattern</u>
<u>MLK/Bailey</u>	University PI (CBD)	11,330	11,777	11,800		
	Spruce St	14,350	14,840	14,500	1,900/hour pm peak @ Central	
	Kelly St	13,280	13,350	14,702		increase
<u>McCallie</u>	Lyerly St	16,470	17,368	16,201	1,250/hour am peak @ Douglas	
	Central Ave	16,290	15,374	14,800	2,630/hour am peak @ Central	decrease
	Baldwin St (CBD)	14,500	13,769	12,592		decrease
Chattanooga--no clear pattern across last 10 years.						

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