H Complete Streets

Introduction

The Monterey Bay Area Complete Streets Guidebook contains sample policies and engineering best practices that can be adopted by local jurisdictions to comply with California Complete Streets Legislation (AB 1358). Various complete street types are identified and defined in the guidebook, along with sample cross-sections, associated land uses and suggested roadway user prioritization. The complete street types provide design recommendations for various roadway arrangements. Another key component of the guidebook is a complete streets project review and design checklist. The checklist is a tool that can be used in planning and public works departments to identify opportunities for complete streets and document constraints or exemptions.

A unique component of the Monterey Bay Area Complete Streets Guidebook is a framework for evaluating the possible economic effects of complete streets. The economic framework categorizes potential effects of both direct and non-direct transportation impacts on investments, business activity, property values, and government fiscal health. The complete Monterey Bay Area Complete Streets Guidebook is attached.

H Attachments

Monterey Bay Area

COMPLETE STREETS GUIDEBOOK

August 2013

ACKNOWLEDGEMENTS

PARTNER AGENCIES

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ADVISORY COMMITTEES

Monterey County	*Santa Cruz County*	*San Benito County*
Technical Advisory Committee	Interagency Technical Advisory Committee	Technical Advisory Committee
Bicycle & Pedestrian Facilities Advisory Committee	Bicycle Committee	Bicycle & Pedestrian Advisory Committee
	Elderly & Disabled Transportation Advisory Committee	

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EXECUTIVE SUMMARY

People are the lifeblood of a community, and streets are its veins and arteries. Streets are vital to daily travel, economic exchange and maintaining an acceptable quality of life. Streets connect people to important destinations and serve as destinations themselves, as places to walk with friends, ride a bicycle, view public art, or enjoy the local farmers market. Although for many years streets have primarily been designed to serve automobile traffic, they are public places to be used by all people including non-drivers.

Local and State transportation policy has evolved from planning and designing almost exclusively for the movement of cars, to an increasing focus on the movement of people and goods. Complete streets policy and design embodies this paradigm shift by recognizing that

(1) not all people travel by car, and
(2) land use affects who uses the street and how that street should function.

The Monterey Bay Area Complete Streets Guidebook builds upon best practices from across the nation and was developed to assist local jurisdictions in planning, designing and implementing complete streets projects. Tools such as talking points to engage decision-makers and community members and a project review checklist are included in the Guidebook and technical Appendix. The policies, processes and design treatments included in the Guidebook have been vetted, and refined by experts, planners, advocates and policy makers nationally and locally. The materials included in the Monterey Bay Area Complete Streets Guidebook builds on similar reports such as the Charlotte Department of Transportation Urban Design Guidelines, the Manual for Living Streets developed by the County of Los Angeles, the Smart Growth America Best Complete Streets Policy, and the Caltrans Complete Streets Action Plan. The contents of the Guidebook are summarized in the following sections.

EXECUTIVE SUMMARY

CHAPTER 1: GENERAL PLAN VISION, GOALS & POLICIES

This chapter of the Guidebook provides suggestions as to how communities can meet requirements of the Complete Streets Act (AB 1358) by incorporating complete streets policies into their general plans. Sample vision statements are provided in the chapter and complete street general plan policies can be found in Appendix B.

CHAPTER 2: COMPLETE STREET PERFORMANCE MEASURES

Performance measures indicate how well a street functions and meets the needs of all applicable users. Performance measures can also evaluate the effects of a policy or project on the performance of the system and to assess whether it has achieved its goal. The Guidebook provides a discussion of the 2010 Highway Capacity Manual methodology for calculating multimodal level of service as well as more qualitative performance measures.

CHAPTER 3: COMPLETE STREETS ACTION PLAN

The Action Plan of the Guidebook outlines strategies for coordinating intra-agency tasks to better integrate complete streets into the transportation design processes. A key component of the Action Plan involves providing complete streets design training to planners, civil and traffic engineers, project managers, plan review personnel, in-spectors and other personnel responsible for design and construction of streets. A sample Action Plan is included as **Appendix D** to the Guidebook, and integrates complete streets into every step of community development in a way that can be tailored to the needs of each jurisdiction.

CHAPTER 4: COMPLETE STREETS TYPES

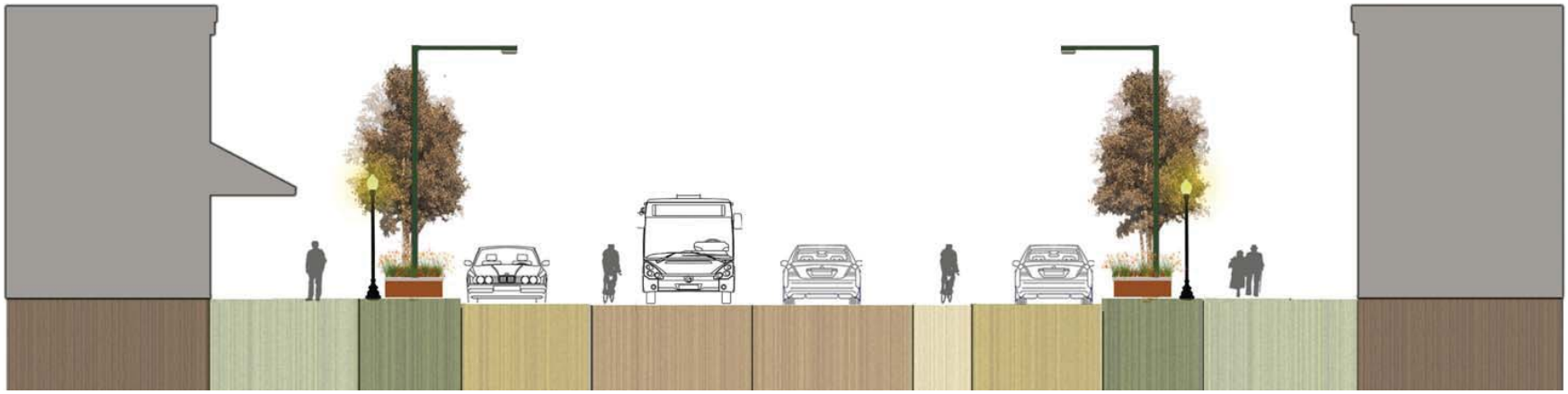
This chapter provides information to agency decision-makers on how to match the appropriate complete streets features to adjacent land uses and roadway users. This chapter introduces complete street types and a discussion of roadway user needs and design solutions.

EXECUTIVE SUMMARY

CHAPTER 5: COMPLETE STREETS DESIGN

This chapter provides best practices examples of street features to be considered when designing and engineering complete streets. Example cross-sections are included and organized by complete street type and by user zones. Additional bicycle facility treatments are shown in Appendix K.

Conceptual Cross-Section



EXECUTIVE SUMMARY

CHAPTER 6: IMPLEMENTING COMPLETE STREETS PROJECTS

The Guidebook outlines a 6-Step Process for implementing complete streets that involves defining the existing land use and transportation context, identifying deficiencies and goals for the future, determining the appropriate complete street type, considering alternative designs, and balancing the trade-offs between modes. Questions for each step of the process are included in Appendix I.
The Project Review Checklist in Appendix H of the Guidebook can be used to follow these 6-steps. The Checklist may be adopted by local jurisdictions to reveal opportunities for complete streets projects and document how the needs of all users were considered.

CHAPTER 7: TRANSITIONING TO COMPLETE STREETS

Frequently, the last steps in implementing complete streets are the most difficult, which involves enacting requirements and regulations and compiling funding to enable the development of complete streets improvements. Specific tools and strategies for addressing these challenges are described in this chapter.

CHAPTER 8: EDUCATION, ENCOURAGEMENT & ENFORCEMENT PROGRAMS

Education, encouragement, and enforcement programs complement complete street infrastructure and can play an important role in achieving community goals such as health and safety. This chapter identifies local education, encouragement and enforcement strategies.

CHAPTER 9: TALKING ABOUT COMPLETE STREETS

Complete streets are roadways designed and operated to enable safe access for all users. However, the meaning of complete street may vary between communities, applications or individuals. This chapter is intended to serve as a re-source for professionals, decision makers and the public who are interested in discussing and educating others about complete streets concepts.

INTRODUCTION

PURPOSE

The Monterey Bay Area Complete Streets Guidebook provides resources and procedures for developing streets in the Monterey Bay Area that meet the needs of all users including non-drivers of all ages and abilities. Although great strides have been made by local jurisdictions across the Monterey Bay Area to provide adequate facilities for all roadway users, many streets are not "complete" in the Monterey Bay Area due to lack of sufficient bicycle and pedestrian facilities. In recognizing that roadways have primarily been designed to serve the automobile, the Monterey Bay Area Complete Streets Guidebook highlights bicycle and pedestrian access as an essential design objective.

The policy guidance and recommendations herein may be adopted by jurisdictions to address the following:

- Ensure future changes to roadways function well for all roadway users;
- Pursuant to the Strategic Growth Council grant, meet Sustainable Communities Strategies requirements in state law;
- Comply with California Complete Streets legislation (AB 1358);
- Adopt a planning process in which all roadway users considered;
- Reduce vehicle miles traveled and reach regional greenhouse gas targets pursuant to California law (SB 375); and
- Achieve objectives identified in local Climate Action Plans.

Unlike many guidebooks, which may be more prescriptive, the Monterey Bay Area Complete Streets Guidebook places greater emphasis on process and the importance of understanding the trade-offs between different design considerations. Balancing the needs of all roadway users can be challenging in the Monterey Bay Area, where right-of-way and funding is limited. The planning processes recommended by this guidebook seek to ensure that the resulting streets provide for the safety and comfort of all users to the greatest extent possible.

Goals of the Complete Streets Guidebook

- Provide tools for transitioning streets to complete streets
- Improve safety, especially for the most vulnerable users
- Facilitate understanding the impacts on communities of implementing complete streets policies
- Identify types of improvements needed to accommodate growth and address congestion in areas of compact development
- Better integrate land use and transportation to reduce vehicle miles traveled
- Establish a collaborative process for integrating planning and designing streets
- Serve as a resource for implementing the California Complete Streets Act (AB1358)

HOW TO USE THE GUIDEBOOK

Interested parties may use the Guidebook in whole or in part to address the following:

- Practice six steps to successfully implementing Complete Streets: addressing complete streets from planning and design to implementation **(Chapter 6: Projects and Implementation)**
- Incorporate Complete Streets into community plans **(Chapter 1: Vision , Goals and Policy)**
- Measure the effectiveness of complete streets policy **(Chapter 2: Performance Measures & Targets)**
- Provide a context for how Complete Streets can affect current systems and procedures **(Chapter 3: Complete Streets Action Plan)**
- Develop projects based on land use context and street functional classifi cations **(Chapter 4: Complete Street Types)**
- Design treatments for complete streets **(Chapter 5: Design Treatments)**
- Become familiar with tools for transitioning to complete streets **(Chapter 7: Transitioning to Complete Streets)**
- Learn about programs that enhance or are improved by complete streets projects **(Chapter 8: Education,Enforcement and Encouragement)**
- Communicate the benefi ts of complete streets and engage the community **(Chapter 9: Talking about Complete Streets)**

ADOPTION

This guidebook is suitable for full or partial adoption by local jurisdictions and regional agencies to guide the planning and design of streets. Adoption of this guidebook represents an agency's commitment to incorporate complete streets into policy, project evaluation, design, implementation, training, and public involvement. Jurisdictions may also adopt a complete streets ordinance or resolution that references the Monterey Bay Area Complete Streets Guidebook.

It is recommended that local and regional agencies that adopt or use this guidebook should:

- Review their approach to street design through all stages of the process, from advanced planning through preliminary design and construction;
- Update existing design manuals and training materials to address complete streets concepts;
- Incorporate a comprehensive range of policies which address complete streets in the general plan or regional plan;
- Support training for planners and engineers in complete street concepts and design considerations; and
- Seek ongoing public input from the community.

Adoption of the guidebook, in whole or in part, is a necessary first step in ensuring complete streets are consistently developed in the Monterey Bay Area. Agencies may have to take additional steps and modify their internal processes in order to fully and successfully implement the guidebook. Tools to assist local jurisdictions in these tasks can be found throughout the Monterey Bay Area Complete Streets Guidebook.

BACKGROUND

The Monterey Bay Area Complete Streets Guidebook was developed to address complete streets on local and regional scales. In 2011, the Association of Monterey Bay Area Governments (AMBAG), which serves as the Metropolitan Planning Organization for the three county region of Monterey, Santa Cruz and San Benito Counties, in coordination with the three Regional Transportation Planning Agencies (RTPAs) in each county, received a grant from the Strategic Growth Council to conduct a complete streets needs assessment and develop a complete streets guidebook specifi c to the Monterey Bay Area. In addition to addressing regional complete streets issues, the Guidebook is a tool to help jurisdictions meet State complete streets requirements. The California Complete Streets Act (AB 1358), passed in 2008, requires that any major revision of a jurisdiction's General Plan include modifi cation to the circulation element to "plan for a balanced, multimodal transportation network that meets the needs of all users of streets, roads and highways" (California Government Code section 65302(b)(2)). Several jurisdictions in Santa Cruz, Monterey and San Benito Counties currently meet this requirement but many do not.

The Monterey Bay Area Complete Streets Guidebook will benefi t the entire region by encouraging bicycle, pedestrian and transit usage. The Metropolitan Transportation Plan (MTP) is prepared by AMBAG in cooperation with the RTPAs to plan for the long-range transportation needs of the region over the next 25 years. Pursuant to California Senate Bill 375, the MTP incorporates a Sustainable Communities Strategy and a transportation and land use strategy that will achieve regional greenhouse gas emissions reduction targets established by California Air Resources Board. The regional targets are: a 0% increase in greenhouse gas emissions by 2020 and a 5% reduction from 2005 greenhouse gas levels by 2035. Implementation of complete streets projects will contribute to reductions in greenhouse gas emissions by providing safe, convenient alternatives to driving.

The Monterey Bay Area Complete Streets Guidebook builds on best practices from across the nation. The policies, processes and design treatments included in the Monterey Bay Area Complete Streets Guidebook have been vetted, refi ned, and approved by experts, planners, advocates and policy makers nationally and locally. The materials included in the Monterey Bay Area Complete Streets Guidebook include references from similar documents such as the Charlotte Department of Transportation Urban Design Guidelines, the Manual for Living Streets developed by the County of Los Angeles, the Smart Growth America Best Complete Streets Policy, and Caltrans Complete Streets Action Plan.

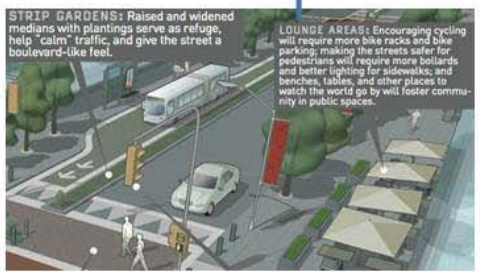
Complete streets are being incorporated into every level of transportation planning in the Monterey Bay Area from the Metropolitan Transportation Plan and Regional Transportation Plans to local plans and projects.

Metropolitan Transportation Plan/SCS

Regional Transportation Plans

Local General Plans

Area Plans



Local Projects

WHAT ARE COMPLETE STREETS?

Complete streets are roadways designed to safely and comfortably accommodate all users, including, but not limited to motorists, cyclists, pedestrians, transit and school bus riders, delivery and service personnel, freight haulers, and emergency responders. Complete streets accommodate people of all ages and abilities. Complete streets expand transportation choices by making walking, bicycling, and public transportation more convenient and safe. This includes consideration of varying levels of tolerance for traffic stress when choosing a transportation mode, particularly as it relates to bicycling.

The Monterey Bay Area Complete Streets Guidebook does not prescribe "one size fits all". Complete streets facilities should look different depending on the surrounding land use context and user needs. Each street in a complete streets network is designed to provide safe accommodation for the various intended users. This does not mean all streets must be designed to equally support all users. Instead, a diverse palette of street design options that consider the location, land uses, and multimodal transportation volumes should be considered.

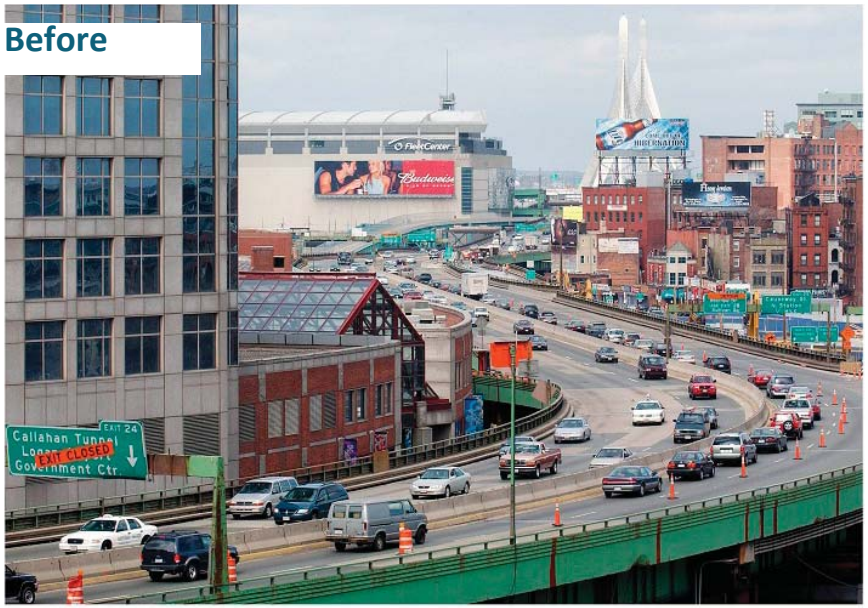
WHY COMPLETE STREETS?

More and more complete streets are being developed across California as decision-makers realize the value they add to their communities. Complete Streets projects address user needs across multiple modes, and provide numerous individual and community-wide benefits; although trade-offs between modes are often required in areas where there are right of way and funding constraints.

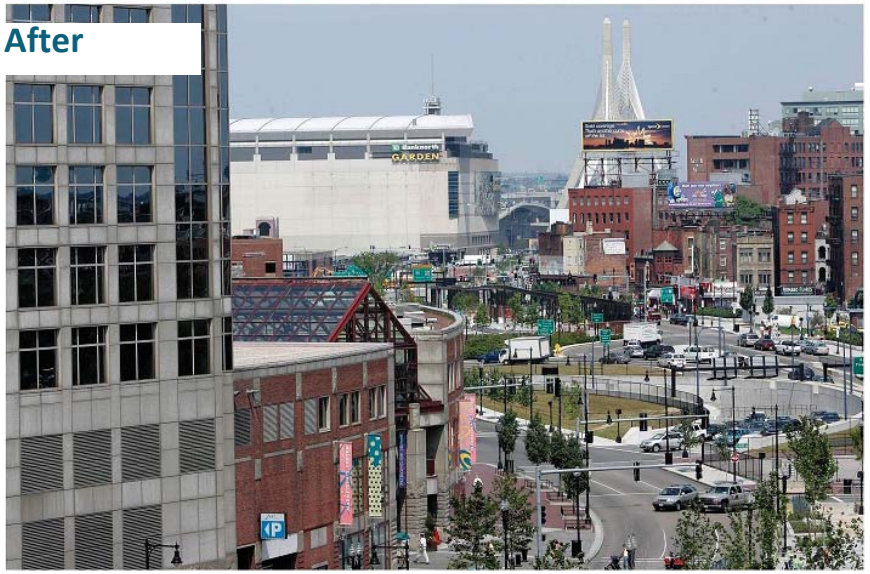
Improving access to goods and services has long been an important transportation goal and has guided transportation policy, facility design and measures of success. Historically the focus has been on accessibility for motorists to goods and services. Concentrating all efforts on one mode of transportation meets the needs of only a portion of roadway users. Complete streets can more fully improve a transportation network by increasing accessibility and mobility for non-motorized modes and addressing trade-offs between modes.

"Big Dig" Boston, MA

Before



After



User Needs

The need for diverse transportation systems has existed among non-drivers for many years. In recent years there has been an increasing demand for alternatives to the automobile from individuals who historically have chosen to drive. Young people in particular are opting to ride the bus, bicycle and walk in greater numbers and fewer young people have driver's licenses or own automobiles than previous generations.

The number of older, low-income and disabled non-drivers is also increasing, as is the need for alternative ways to get around. An aging population may mean higher demand for public transit and in particular, paratransit. Restructuring existing transportation systems to address special needs can benefit not only the users of the system but also the service provider. Monterey-Salinas Transit, for example, has started a senior shuttle service in the Carmel Valley Area to begin meeting this new demand. The smaller senior shuttle vehicles allow for increased route flexibility and lower fuel demand, which benefi ts both transit riders and Monterey-Salinas Transit.

Today, the majority of Monterey Bay Area residents use an automobile as their primary mode of transport. Congestion and safety are the two greatest concerns of automobile drivers. Like other transportation investments, complete streets may impact local automobile congestion, automobile access, traffic patterns in neighborhoods, and parking. Potential impacts are dependent on the local context, application and design timeframe.

Cost-Effectiveness

Complete streets can be affordable to users and implementing agencies. The cost of transportation is increasing relative to fuel prices. For many American households the cost of car ownership is the second largest monthly expense after housing. Households that are dependent upon daily automobile use spend more income on transportation and have less disposable income (See Figure 0-1). Rising transportation expenses have a negative effect on the local economy and particularly on low income individuals with limited mobility many of whom are seniors and those under eighteen. In the face of rising automotive transportation costs, complete streets provide more affordable transportation options such as riding the bus, bicycling and walking.

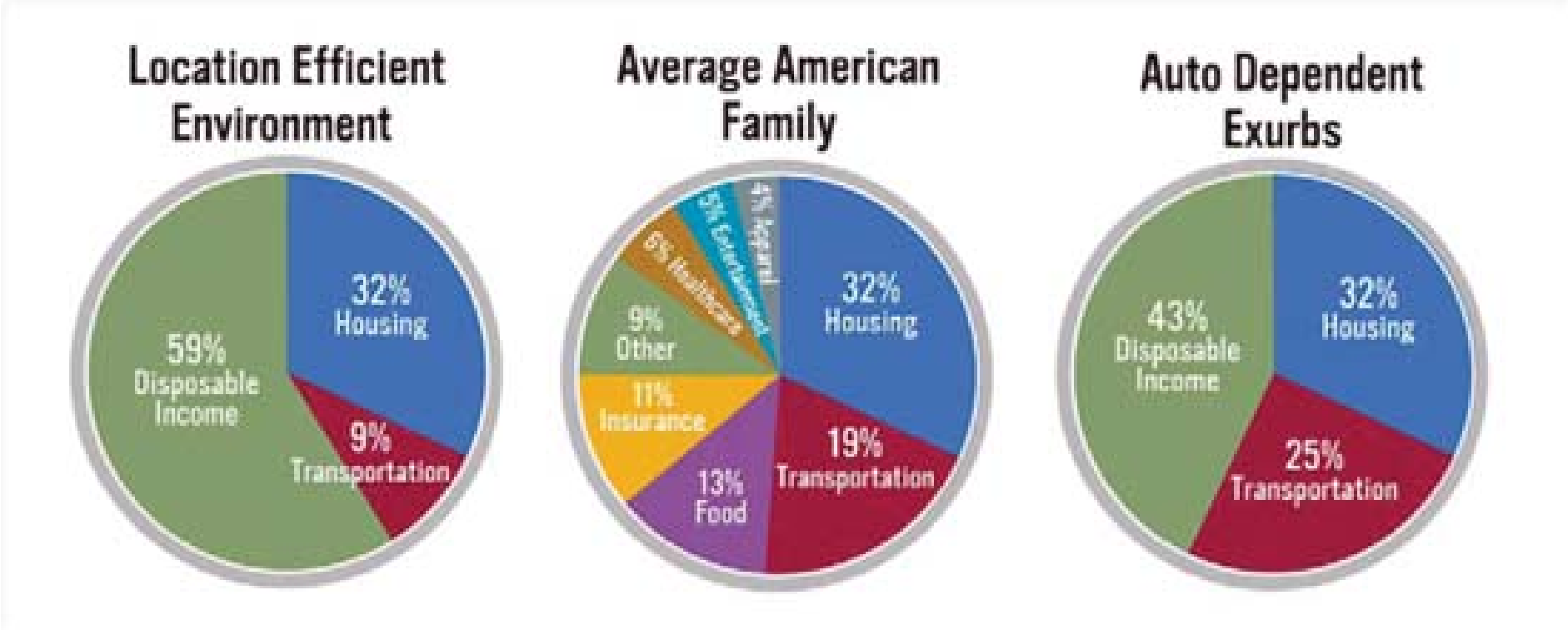


Figure 0-1: U.S. Department of Transportation

When it comes to implementing complete streets, jurisdictions can incorporate complete streets elements into currently planned projects by incorporating them in the early design stage. A cost-effective way to develop complete streets projects is to re-evaluate pending roadway projects and identify opportunities to accommodate additional users within the existing right-or-way.

For example, a standard resurfacing/restriping project could be modified to undergo a road diet or provide striping for bicycles at intersections. A road diet reduces the number of travel lanes, typically from four to two and adds a center left-turn lane and bicycle lanes or bicycle lanes and a sidewalk (Figure 0-2). Striping bicycle lanes at intersections dedicates space and indicates where the bicyclist should position themselves in order to cross more safely. These types of project can benefit all users of the roadway by providing a smoother road for drivers, decreasing conflicts between bicyclists and motorists, and creating greater separation between automobile traffic and pedestrians on sidewalks.

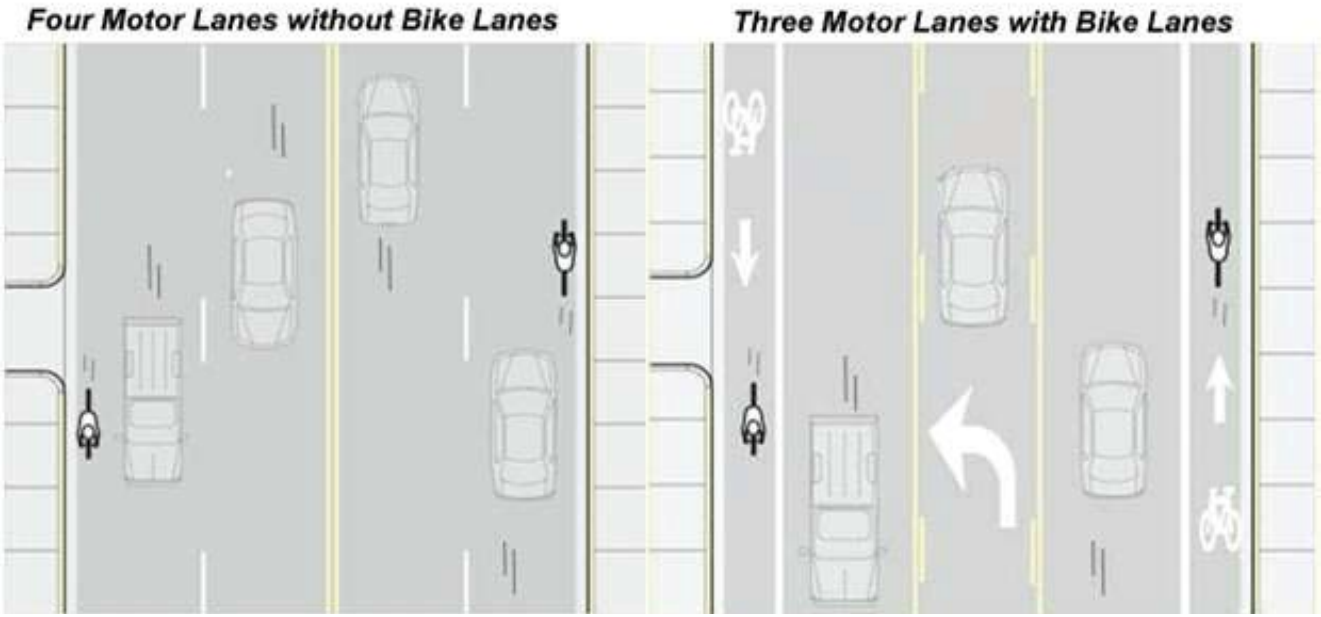


Figure 0-2: Road Diet Before and After (nozziwalkablestreets.com)

Benefits

Complete Streets can provide the following benefi ts:

Transportation Equity - Different travelers may expect varying accommodations by a street. A street design that works well for a motorist may not work well for a pedestrian or a bicyclist. People experiencing poverty or language barriers, people of color, older adults, youth, people with disabilities and other groups with limited or no access to a vehicle tend to experience a disproportionately small share of benefits from transportation investments focused on motorists. Complete street design attempts to restore equity in the transportation system by improving transportation options for non-drivers and enabling greater use of the transportation system.

Safe, Convenient and Attractive Travel Choices - Surveys throughout the Monterey Bay Area indicate residents desire to have a greater number of transportation choices. Typically, the primary reason given for not using non-motorized transport is safety concerns. Complete street design emphasizes safe and convenient travel choices for all modes.

Reduced Traffi c Congestion - Increasingly more people are choosing not to drive and some are moving into cities where there are more transportation options. Complete streets can provide attractive choices for individuals who desire an alternative to automobile; thereby decreasing automobile volumes.

Increased Roadway Capacity – While populations continue to grow constraints such as environmental, physical and cost limit the opportunity to increase roadway capacity with more travel lanes. Complete streets can accommodate more people if they are copmlete and support travel by bus, bicycle or on foot, instead of by car.

Healthy Communities, Economy and Environment – There is a correlation between a diversified transportation network and healthier communities, and a stronger economy and a cleaner environment. By encouraging active transportation such as walking and cycling, complete streets can result in improved health for residents. Reduced GHG and criteria pollutant emissions may result in reduced incidence of respiratory disease. These factors have the potential to keep the local workforce healthier and more productive.

Improved Access for People with Disabilities - Individuals with disabilities are more likely to use the sidewalk network and take transit. Yet, roadways are often diffi cult to navigate for people who use wheelchairs, have diminished vision, can't hear well, or for people who move slowly. Complete streets policies can have the effect of removing barriers to independent travel by designing facilities to meet the needs of all users.

Reinvestment in the Local Economy – Improved complete streets will incentivize non-automotive modes of travel which are less expensive than driving and vehicle ownership. By reducing vehicle related expenses for commuters, they will have discretionary incomes which can be invested locally.

Economic Activity- Property values, business activity, redevelopement, fiscal health of governments and economic growth can all be positively impacted by complete street investments as a result of increased trip volumes, improved trip quality, benefits to safety and health, potential reductions in construction and maintenance costs, and provisions for new public amenities. A detailed discussion of the correlation between complete streets and economic activity is included in Appendix J.

HOW TO BALANCE ROADWAY USERS NEEDS

All of the possible benefits derived from complete streets investments must be evaluated in the context of how they affect the transportation network as a whole and the tradeoffs between alternative investments. For instance, prioritizing bicycle and pedestrian facilities on neighborhood streets may have potential impacts on automobile congestion, automobile access, traffic patterns, and parking. In contrast, prioritizing automobile facilities can have impacts on bicycle and pedestrian safety, and access, and may reduce opportunities for convenient alternatives to driving. The impacts on congestion and safety for all modes must be considered in the discussion of tradeoffs between modes as it relates to complete streets planning and design.

Despite challenges, many local jurisdictions in the Monterey Bay Area have made signifi cant investments in bicycle and pedestrian infrastructure during the past two decades in an effort to serve a larger and more diverse group of roadway users. The result has been a considerable improvement in the bicycle network and pedestrian facilities. However, in many cases bicycle and pedestrian facilities are not provided when projects are constrained by right of ways or lack of funding. Prior planning practices have supported an approach to project design that emphasizes maintaining the existing roadway function first and adding bicycle and pedestrian improvements only where space and funding allow. In some cases a street may have been made more complete had alternative designs been considered. The trade-offs between investments can be challenging and the balance between modes is a result of a complex factors.

The tools provided in the Monterey Bay Area Complete Streets Guidebook, and discussed in detail below, are intended to support a transparent discussion of trade-offs amongst design features and roadway users and encourage evaluation of design alternatives. Consideration of all roadways users current and future needs using the complete streets framework promoted in the Monterey Bay Area Complete Streets Guidebook should result in cost-effective investments that provide convenient and safe facilities for all modes in the most appropriate locations.

Chapter 1: General Plan Vision, Goals and Policies

This chapter of the Monterey Bay Area Complete Streets Guidebook provides suggestions as to how communities can meet requirements of the Complete Streets Act by incorporating complete streets policies into general plans. Although the California Complete Streets Act requires complete streets policies only in the circulation element, the most effective policies are present or supported in more than one element of the general plan.

Guidance for developing a vision statement and circulation element and land use element goals are provided in this chapter and in Appendix B.

VISION

The vision statement of a general plan encapsulates community values and desires and provides inspiration for goals and policies. Developing a vision statement that considers complete streets is often a precursor to adopting complete street goals and policies. A vision statement may be included in the circulation element of the general plan focusing entirely on the community's vision, or may appear at the beginning of the circulation element. Vision statements are generally developed through a consensus-driven, collaborative community engagement process. When developing a vision statement the following questions should be considered:

- **What are the benefits of adopting a Complete Streets policy in our community?**
- **What reason for adoption (such as health, safety or providing transportation choice) will consistently rally support from the community, its transportation professionals and its leaders?**
- **What is our vision for Complete Streets?**

The model vision language below is provided to offer an example of a detailed vision statement and demonstrate the range of goals that can be considered in setting out a statement.

Sample Transportation Vision Statement

"The community of [Jurisdiction] envisions a safe, balanced and environmentally-sensitive multi-modal transportation system that supports greater social interaction, facilitates the movement of people and goods, and encourages active living, mobility independence, and convenient access to goods and services for all users including but not limited to pedestrians, bicyclists, children, seniors, persons with disabilities, motorists, movers of commercial goods and transit"

GOALS & POLICIES

Communities may include the entire sample complete streets policy in the general plan circulation element as a complete policy package, or may selectively adopt specific objectives or policies. Communities are encouraged to tailor the policy and implementation measures to local needs, concerns, and conditions, and to identify the local agency or department responsible for implementation. Most circulation elements already include goals, objectives, and policies addressing the needs of motorists and movers of commercial goods, so the suggested complete streets goals and policies focus on other types of users.

Sample general plan goals and policies are included as in Appendix B.

Chapter 2: Performance Measures

Performance measurement is an important tool in the implementation of complete streets. Performance measures can inform planners, decision makers and public how effective complete streets policies and projects are at reaching community goals. Performance measures are particularly important in today's environment where there is strong competition for limited transportation funds. In grant funded projects, results must be demonstrated using performance measures.

The Monterey Bay Area Complete Streets Guidebook provides a list of relevant performance measures for evaluating the effectiveness of complete street policies and projects. The suggested performance measures may be used in several different ways to facilitate the implementation of complete streets policies. First, performance measures can be used for needs assessment to identify problems in the system and to assess their relative severity. Second, performance measures can be used to rank projects for funding in the programming process. Third, performance measures can be used in impact assessments. In this application, the probable impact of a proposed development project on the performance of the street system is projected, and the result is used as the basis for impact fees or other exactions, such as requirements to provide bicycle and pedestrian facilities. Fourth, performance measures can be used to evaluate the effects of a policy or project on the performance of the system and to assess whether it achieved its goal.

Table 1 lists performance measures that can be used to gauge the effectiveness of five complete streets policy objectives (safety, health, access, economic benefi t and equity). These suggested performance measures support the goals of the Metropolitan Transportation Plan and the Regional Transportation Plans for Monterey, Santa Cruz and San Benito Counties.

Using consistent methodology for collecting before and after data is important when measuring performance. Best practices for data collection, such as the establishment of a consistent way of conducting bicycle and pedestrian is helpful to demonstrate changes in trends over time that may result from the implementation of complete streets. The Santa Cruz County 2012 Bike and Pedestrian Count Report aimed to standardize methodologies for bicycle and pedestrian counts done within the county using the Institute of Transportation Engineers Pedestrian and Bicycle Council recommend methods and includes templates and instructions for data collection.

MEASURES OF EFFECTIVENESS

Table 1: Complete Streets Performance Measures

	Measure	Source
Safety	Reduce colissions involving bicycles and pedestrians	SWITRS counts
	Improve speed suitability through street design	Number of bicycle routes on low speed streets
	Increase the number of local traffic calming plans	Number of traffic calming plans adopted by local jurisdictions
	Decrease the number of citations for jaywalking, reckless behavior or missing helmet (if under 18 years)	Pedestrian and bicycle observation surveys
	Reduce the number of bicycle and pedestrian hazards	Number of bicycle and pedestrian facilities repaired
Health	Increase the percent of people who walk, bike and take transit	American Community Survey or local survey
	Increase the number of students walking, bicycling or taking transit to school	Bicycle and pedestrian counts and surveys
	Increase the number of events that promote alternative transportation	Number of events held in Santa Cruz County that promote alternative transportation
Access	Number of households within 1/4 mile of transit stop	
	Increase the percent of people who walk, bike and take transit	American Community Survey
	Decrease transit headways on high quality transit corridors	Santa Cruz Metro
	Improve the quality of walk, bike, and transit trips	MMLOS or QOS
	Increase the % of population within a 30 minute walk, bike or transit trip of key destinations	GIS Street Network and Place Type Designations
Economic Benefit	Increase property values	Tax assessment
	Increase business activity	Taxable sales
	Increase investment	Number of new commercial and residential investments
	Government fiscal health	Cost per mile of transportation improvements
Equity	Increase the number of improvements completed near key destinations for transportation disadvantaged populations such as near schools, hospitals, transit stops	GIS Project Location and Key Destinations

LEVEL OF SERVICE

The traditional performance measure for street design is Level of Service (LOS). A methodology for calculating Level of Service can be found in the current version of the Highway Capacity Manual (HCM) published by the Transportation Research Board. This measure, in all its forms, is a function of the ratio of the number of cars on a road to the road's carrying capacity, and is expressed by assumed delay for each vehicle. Historically, it has been used to calculate how much road capacity is needed to serve a given volume of vehicles, and it is directly tied to the goal of reducing automobile congestion and delay. In most common use, LOS is reported on an A through F scale, with LOS A representing free-flowing automobile traffic, and F representing complete congestion. Although it has the advantage of being highly standardized and widely used, traditional vehicular LOS measurement does not account for all users of a roadway nor tradeoffs between different modes. This results in facility design based solely on the needs of automobile users often at the expense of others.

The revised version of the Highway Capacity Manual, adopted in 2010, includes methods (referred to as Multimodal LOS), for measuring the quality of travel for bicyclists and pedestrians, including comfort and sense of safety. In the absence of establish standards, communities have been developing their own methods for measuring LOS for bicycles, pedestrians, and transit. In general, bicycle, pedestrian, and transit levels of service tend to be more complex to measure than vehicle LOS.

One of the common concerns with using Multimodal Level of Service is that it requires a substantial amount of data that may not be regularly or reliably collected. If data does not exist for the study area, new data must be collected in order to utilize this performance measure, which can be time intensive and expensive. Some communities are not pursuing new LOS measures, but instead are choosing more qualitative measures of success. The Santa Cruz County Regional Transportation Commission recently tested a Quality of Service (QOS) measure to evaluate how transportation investments affected the quality and convenience of bicycle, pedestrian and transit trips (Appendix C). The performance measures recommended in Table 1 provide a range of options for evaluating the effectiveness of complete streets policies and projects while recognizing limited data and resources available to project sponsors.

Chapter 3: Action Plan

Successful implementation of complete streets requires collaboration amongst several departments and stakeholders at the policy, planning, project delivery and maintenance and operations levels. The Action Plan of the guidebook outlines the requirements for coordinating inter-departmental tasks. A key component of the Action Plan involves updating training practices for planners, civil and traffi c engineers, project managers, plan reviews, inspectors and other personnel responsible for design and construction of streets to integrate complete streets. A sample Action Plan is included as Appendix D, which integrates complete streets into every step of community development in a way that can be tailored to the needs of each jurisdiction. For example, instructions and training could be instituted for maintenance crews to assure their work complies with complete streets policies. Resources for updating specifi c manuals are also provided in Appendix D.

LEGAL STANDING OF STREET MANUAL

Local jurisdictions generally follow certain established standards for designing streets. Confusion can exist as to which standards to follow, what is merely guidance, when jurisdictions can adopt their own standards, and when they can use designs that differ from state standards. It is critical for cities and counties to understand how adopting the Monterey Bay Area Complete Streets Guidebook in part or in whole meshes with other standards and guides Appendix E discusses the myriad of accepted design documents and is based on the Los Angeles County Model for Living Streets Design Manual discussion of design documents.

Chapter 4: Complete Streets Types

Complete streets are context sensitive. The intent of this chapter is to provide information on how to match relevant street elements to the existing or desired land uses along the street and the roadway users. This chapter includes a description of complete street types to provide project sponsors with a template for roadway designs that serves all users and prioritizes modes based on the land use and transportation context.

LAND USE CONTEXT

Place types developed by AMBAG in coordination with local jurisdictions are used in th Monterey Bay Area Complete Streets Guidebook to describe the complete streets land use context. These place types were established during the development of the Sustainable Communities Strategy to create common classifi cations for similar land uses across the Monterey Bay Area.
Place types consider land use characteristics (ex. urban, town, neighborhood, suburban, and rural) as well as use (ex. residential, commercial, institutional). Each place type creates a distinct context for land use and transportation investments. Applying place types can help the guidebook user identify complete street features that fit the land uses being considered. A detailed description of place types adopted by AMBAG for use in developing the Sustainable Communities Strategy is included in Appendix F.

COMPLETE STREET TYPES

The complete streets types take into consideration various user perspectives and the surrounding land use context in addition to the street function. The complete streets types described in this chapter serve as a tool for linking street functional classifi cations and land uses. Figure 4-1 demonstrates how complete streets types relate to traditional functional classifications.

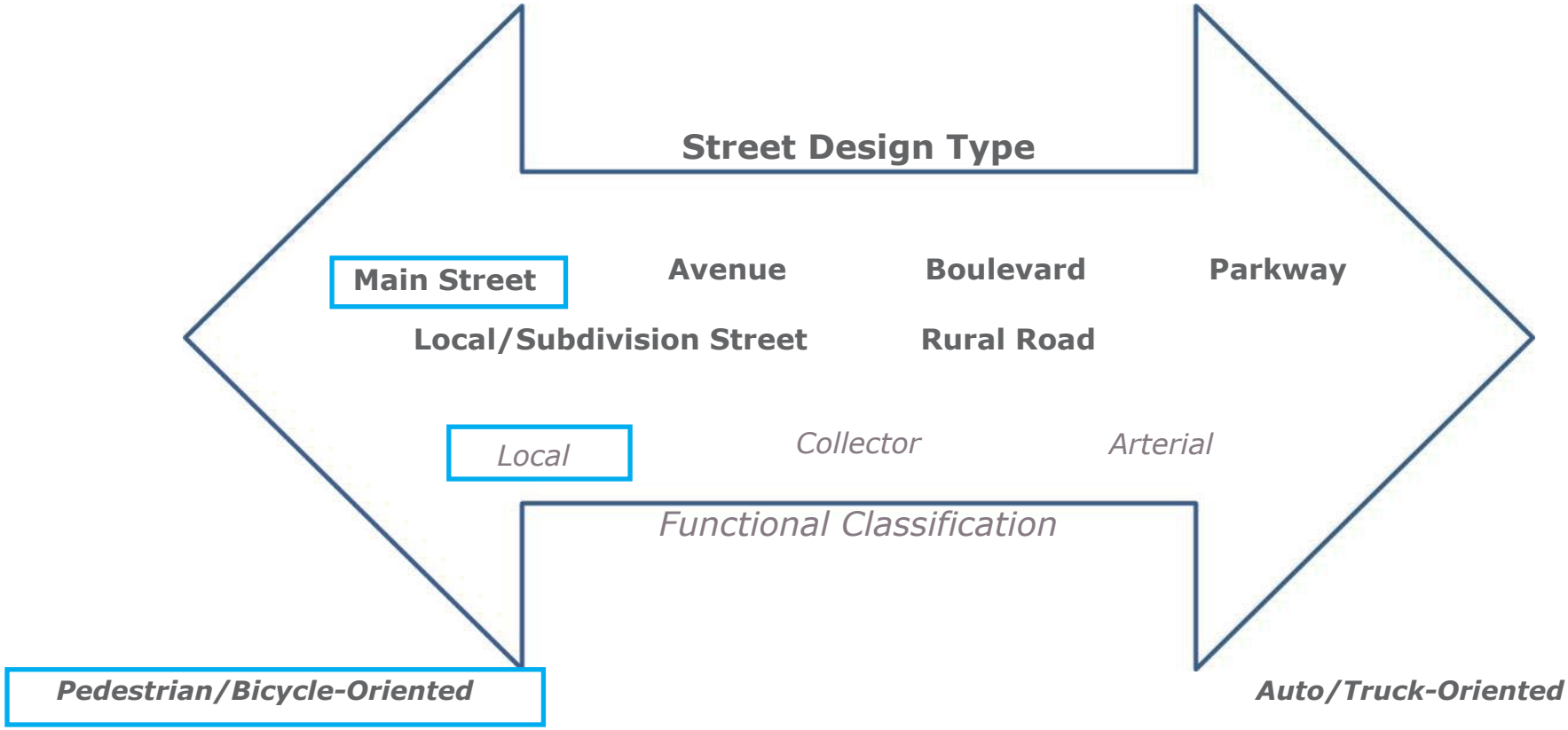


Figure 4-1 Complete Street Design Type and Functional Classifi cation

Table 2 names complete streets types and provides a description of the transportation and land use attributes associated with each type. The land use place types developed through the Sustainable Communities Strategy planning process (**Appendix F**) are also listed. Each of complete street type indicates which roadway users shold be prioritized based on land use and transportation context. Both the land use place type and complete street types should be identified early on in the process of planning and designing streets. Cross sections for each complete street type are included in Chapter 5: Complete Streets Design. Illustrative cross sections for complete streets types are based on the Charlotte Department of Transportation: Urban Street Design Guidelines, 2007.

For specific design treatments to considering when developing complete street cross sections see Chapter 5: Complete Street Design.

Main Street (Pacific Avenue, Santa Cruz)

Rural Road (Blanco Road, Monterey County)

TABLE 2: COMPLETE STREET TYPES

SEGMENT TYPE	TRANSPORTATION & LAND USE DESCRIPTION	USER PRIORITIZATION	LAND USE PLACE TYPES	EXAMPLES
Main Streets	Pedestrian-oriented "destination" streets; land uses: mixed-use, commercial, entertainment, office, civic; short blocks, grid street pattern; can be used as a flexible space for community events (ex:// .farmers markets)	1. Pedestrians 2. Bicyclists 3. Transit 4. Autos/Trucks Special accommodations for delivery trucks	Urban Commercial; Urban Mixed-Use; Town Commercial; Town Mixed-Use; Rural-Town Commercial; Institutional	Alvarado Street (Monterey); Ocean Ave (Carmel); Pacific Ave (Santa Cruz); Main St (Salinas)
Avenues (collector)	Bicycle and transit-oriented streets connect neighborhoods to job centers and commercial areas. Higher speeds than main streets; land uses: diverse mix of land uses including but not limited to residential, schools, parks, neighborhood commercial and commercial	1. Bicyclists 2. Pedestrians 3. Transit 4. Autos/Trucks Special accommodations for pedestrians (children and seniors) at crossings	Urban Multi-Family Residential; Multi-Family Residential; Neighborhood Commercial; Town Multi-Family Residential; Town Mixed-Use; Institutional; Open Space/Recreation	Sloat Ave (Monterey); California St (Santa Cruz)
Boulevards (minor arterials)	Higher speeds and volumes of automobile traffic than avenues, but more pedestrian and bicycle-friendly than parkways	1. Transit 2. Autos/Trucks 3. Bicyclists 4. Pedestrians	Multi-Family Residential; Neighborhood Commercial; Regional Commercial; Employment Center; Neighborhood Mixed-Use; Institutional; Open Space/Recreation	Munras Ave (Monterey); Capitola Rd (Live Oak/Capitola Branciforte Ave (Santa Cruz)
Parkways (major arterials)	Auto-oriented designed to move high volumes of vehicular traffic quickly; land uses: major destinations such as regional commercial, academic institutions and visitor-serving uses	1. Autos/Trucks 2. Transit (BRT/Rail) 3. Bicyclists 4. Pedestrians	Regional Commercial; Employment Center; Airport; Institutional; Open Space/Recreation	Imjin Parkway/Rd (Marina); Soquel Drive (Aptos); Canyon Del Rey (Del Rey Oaks); Ocean Street (Santa Cruz)

TABLE 2: COMPLETE STREET TYPES

SEGMENT TYPE	TRANSPORTATION & LAND USE DESCRIPTION	USER PRIORITIZATION	LAND USE PLACE TYPES	EXAMPLES
Local Streets	Low-speed and low-traffic volume shared streets (bicycle, pedestrian & auto) with on-street parking; land uses primarily residential, neighborhood commercial, office, mixed-use, schools and parks	1. Pedestrians 2. Bicyclists 3. Autos/Trucks 4. Transit	Urban Single-Family Residential; Urban Multi-Family Residential; Urban Mixed-Use; Single-Family Residential; Multi-Family Residential; Town Single-Family Residential; Town Multi-Family Residential; Rural Town Residential; Institutional; Open Space/Recreation	Cayuga (Santa Cruz); Riverview Drive, Capitola; San Miguel Ave, Salinas;
Rural Roads	Mostly auto-oriented with few bicycle facilities for agricultural workers and long-distance cyclists	1. Autos/Trucks 2. Transit 3. Special accommodations for school buses Bicyclists 4. Pedestrians	Agriculture and Rural Residential; Exurban Residential; Industrial and Manufacturing; Open Space/Recreation	Corralitos Road (Santa Cruz); West Beach St, Santa Cruz County; Old Stage Rd, Monterey County;
Scenic Roads	Mostly auto-oriented with bicycle facilities, some pedestrian facilities and access to natural resources	1. Autos 2. Bicyclists 3. Pedestrians 4. Transit 5. Accommodations for recreational cyclists and hikers	Exurban Residential; Agriculture and Rural Residential; Open Space/Recreation	Old San Jose Road (Santa Cruz); Sunset Drive, Pacific Grove; San Andreas Rd, La Selva Beach; Carmel Valley Rd, Monterey County;

USER NEEDS

New roads and road improvements should be designed to provide safe and convenient routes for all applicable users and purposes including, but not limited to:

Pedestrians (all ages and abilities)

Bicyclists (all ages and abilities)

Transit (riders and operators)

Motorists

Commercial/agricultural large vehicle drivers

Commuters

Tourists

Active/recreational users

Emergency responders

Each user group has different needs and group-specific priorities for any given roadway. These needs and priorities should be considered when designing or rehabilitating a roadway in order to accommodate all users. Table 3 illustrates the needs specific to each user group and examples of design solutions. One of the greatest challenges of planning for and designing complete streets is balancing the often conflicting needs of different roadway users in a limited space For example, motorists generally want uninterrupted quick travel, wide lanes and large turning radii whereas pedestrians prefer to travel along streets with low volumes of slow traffic, small turning radii and frequent crossings.

TABLE 3: ROADWAY USER NEEDS		
USER GROUP	**PROBLEMS ENCOUNTERED**	**DESIGN SOLUTIONS/APPLICATIONS**
Pedestrians – Commuters/Residents	Crossing delayed, few crossings, little separation from moving vehicles, high traffic volumes, few access points to destination, inadequate ADA access, little/no shade or shelter, poorly-lit walkways and crossings, slippery surface materials, obstructed routes, inefficient drainage, indirect routes	Pedestrian signal actuation and adequate crossing time, traffic calming, continuous sidewalk network, short blocks, ample width, planting strip/on-street parking, ADA ramps, street trees and pedestrian-scale lighting appropriately designed storm drains
Pedestrians – Seniors, disabled and children	Small gaps in traffic, long crossing distances, few crossings , inadequate ADA access, shade or shelter, poorly-lit walkways and crossings, slippery surface materials, obstructed routes, inefficient drainage	Adequate crossing time at signalized intersections, curb extensions, high-contrast markings, two-stage actuated crossings, medians, audible countdown pedestrian phase (signalized) and ADA ramps, street trees, pedestrian-scale lighting
Pedestrians – Visitors/Tourists	Few/no pedestrian destinations, limited/no way-finding, unmarked crossings, narrow sidewalks, little/no shade or shelter, few/no pedestrian amenities, poorly-lit walkways and crossings	Pedestrian plaza, way-finding signage, high-contrast marked crossings, wide sidewalks, on-street parking, street trees, outdoor seating, public art, public toilets, pedestrian-scale lighting
Bicyclists – Intermediate to Advanced; Commuters	Little separation from motorized vehicles (moving and/or parked), indirect routes/limited access to job centers, shopping and major destinations, bicycle detection at few/no signalized intersections, insufficient short-term and long-term bicycle parking, few/no commuter facilities	On-road facilities (Class II lanes/Class III shared roadway), well-connected bikeway network, marked bicycle detection, bicycle racks and covered/indoor bicycle parking, public or employer-provided shower facilities,

TABLE 3: ROADWAY USER NEEDS		
USER GROUP	**PROBLEMS ENCOUNTERED**	**DESIGN SOLUTIONS/APPLICATIONS**
Bicyclists – Novice; Children	Little separation from motor vehicle traffic, disjointed/incomplete bikeway network, narrow right-of-way, insufficient/no bicycle parking	Off-road facilities (Class I paths), complete bikeway network, bicycle racks, marked bike detection
Bicyclists – Recreational/Touring	Little separation from motorized vehicles, insufficient/no way-finding	Wide paved shoulders, way-finding signage and distance markers, bike racks
Transit – Riders	Limited access to and from transit stop, poorly-lit stop, poor visibility, no/insufficient transit route and schedule information, no/insufficient seating, no/insufficient shelter, no/small buffer from moving traffic	Marked pedestrian crossing, curb extensions, ADA ramps, pedestrian-scale lighting, transit shelter facing out to street, real-time traveler information, transit shelter/station
Transit - Operators	Limited space to operate transit vehicles, numerous conflicts, long delays	Large turning radius, wide travel lanes, generous merging distance, signal prioritization, street furniture setback from curb

Levels of Traffic Stress- Low Stress Users

Within each roadway user group are individuals with varying abilities and levels of experience. Ability and experience both factor into how comfortable an individual is travelling by a certain mode or on different types of transportation facilities. User ability, experience, comfort, and traffi c stress tolerance should be taken into consideration with designing complete streets. Research focused on bicycling has shown that roadway users have varying levels of tolerance for traffic stress. For instance, adults who commute by bicycle to work are more likely to feel comfortable riding in a bike lane on a busy street next to fast moving motor vehicles than those who have less experience bike riding or are unfamiliar with the street network.

Traffic stress may include a combination of perceived danger and other stresses such as noise and exhaust fumes associated with motor traffic. Several recent research efforts, including those at the Mineta Transportation Institute, have classified streets according to the stress they impose on cyclists. Although some of the classifications for level of traffi c stress vary, the general concepts are the same. Roads with the lowest level of traffic stress can be accepted by most children (who are less capable of negotiating traffic and more prone to irrational and sudden movements), and the highest level of stress is tolerated by advanced cyclists whose skill enables them to share road with motor traffic. In order to accommodate the majority of roadway users, complete street design should strive to create routes and features that support “low stress users”.

NEIGHBORHOOD SHARED STREETS

Neighborhood shared streets, or “greenways”, can be an important characteristic of the complete street network. Neighborhood shared streets are located on local streets and emphasize slow speeds and lower volumes. To achieve lower speeds and volumes, neighborhood shared streets employ some or all of the following features:

- Traffic calming features to slow vehicle speeds
- Pavement markings that signal drivers and bicyclists to share the road and show where pedestrians should cross
- Bicycle and pedestrian scale way fi nding signs to provide information about nearby amenities, such as business districts and parks
- Partial street closures that limit the number of vehicles on the
- Public spaces and amenities to encourage pedestrian and bicycle activity.

A list of Quality Criteria (Appendix G) for greenways has been developed by the City of Seattle and is included in this packet for use by project sponsors to evaluate greenway designs and locations and to facilitate public dialogue about greenways.

Neighborhood shared streets may be a helpful tool for developing “low stress” routes for bicyclists and pedestrians in the Monterey Bay Area. Neighborhood shared streets are often less costly than dedicated bicycle and pedestrian facilities, which also serve “low stress” users. Like other types of complete street type investments, impacts of neighborhood shared streets, particularly the potential for diverting traffi c to nearby neighborhood streets, should be evaluated as part of the discussion about tradeoffs. See the discussion regarding low stress users under Levels of Traffic Stress-Low Stress Users earlier in this chapter.

Chapter 5: Complete Streets Design

PURPOSE

The Monterey Bay Area Complete Street Guidebook provides examples of various street features to be considered when designing complete street facilities, so that they are utilized in the appropriate places. Copmlete street design should adhere to design principles and consider critical factors affecting design. The design features herein are organized by complete street type (i.e. Main Streets, Avenues, Local Streets, etc…) and by user zones (i.e. pedestrian, bicycle, street furniture, parking, etc…). Much of the content of this chapter has been adapted or borrowed from the Los Angeles County Model Design Manual for Living Streets.

EXCEPTIONS

The design elements and engineering best practices described in this chapter may not be appropriate for use in all jurisdictions. Local policy must be adhered to and engineering judgment applied; for example, the City of Monterey restricts the use of speed bumps/humps and uses other methods and measures to calm traffi c.

DESIGN PRINCIPLES

Design for all users

Street design should accommodate all users of the street, including pedestrians, bicyclists, transit users, automobiles, and commercial vehicles. A well-designed traveled way provides appropriate space for all street users to coexist.

Design with the network in mind

Streets should be well connected and provide access to land uses for a diverse group of users.

Design intuitively

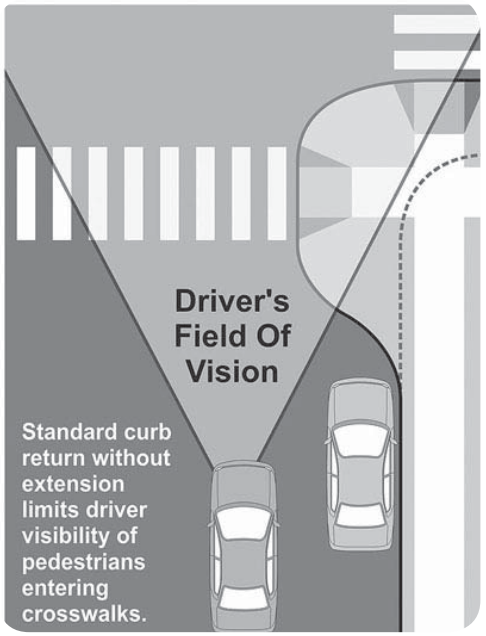
Street design should be intuitive for the users and require minimal signage and markings.

Design using the appropriate speed for the surrounding context

The right design speed should respect the desired role and purpose of the street, including the type and intensity of land use, urban form, the desired activities on the sidewalk, such as outdoor dining, and the overall safety and comfort of pedestrians and bicyclists. The speed of vehicles impacts all users of the street and the livability of the surrounding area. Lower speeds reduce crashes and injuries.

Design for safety

The safety of all street users, especially the most vulnerable users (children, the elderly, and disabled) and modes (pedestrians and bicyclists) should be paramount in any design of the traveled way. The safety of streets can be dramatically improved through appropriate geometric design and operations.



FACTORS AFFECTING DESIGN

Design To Accommodate All Users

Providing safe and convenient routes for all users is a core goal of complete street design. Therefore, it is important to identify and consider the needs of all potential roadway users. Since most modern roadways have been designed for motorists, complete streets design often puts more emphasis on other users such as pedestrians, bicyclists and transit.

Everyone is a pedestrian at some point every day, even if they drive, take the bus or ride a bicycle for the bulk of their trip. Areas that draw pedestrians such as downtowns generate activities that support the community and contribute to a higher quality of life. A recent survey of Monterey Bay Area residents concluded that more people would like to walk and to have nicer pedestrian facilities in their community. Despite some efforts to improved facilities, much more can be done to improve pedestrian conditions.

Studies have shown that most pedestrian crashes occur when a person crosses the road, and the most common crash type is a confl ict between a crossing pedestrian and a turning vehicle at an intersection. Vehicle speed is directly related to the severity of injuries in collisions involving pedestrians. The severity of pedestrian injuries and risk of death in a collision with a motorized vehicle dramatically increases as the impact speed increases above 25 miles per hour (see Figure 5-1). Traffic calming can significantly improve pedestrian safety by slowing motor vehicles, especially in areas where there are high rates of pedestrian crossings.

Although incredibly important, pedestrian facility design should not be solely focused on improving safety, but should also consider factors that improve comfort and walking for pleasure. The two most effective methods to achieve these goals are to minimize the footprint dedicated to motor vehicle traffic and to slow down the speed of moving traffic. This approach allows the designer to use features that enhance the walking environment, such as trees, curb extensions, and street furniture, which in turn slow traffic, resulting in a virtuous cycle. All streets should have sidewalks except for rural roads and shared-space streets.

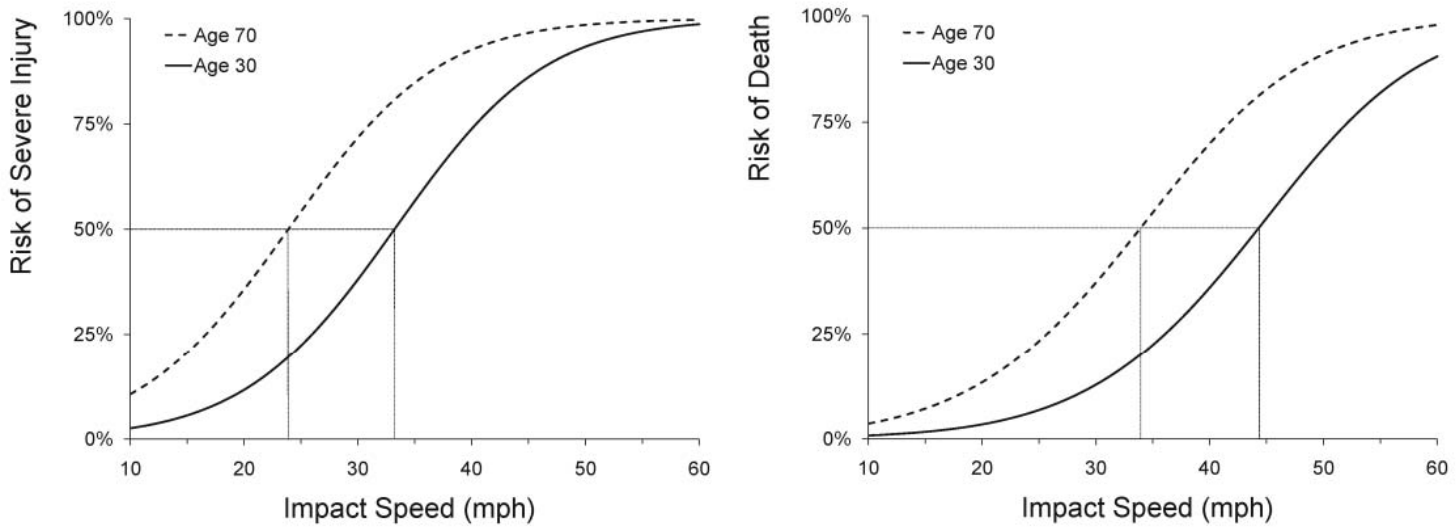


Figure 2: Risk of Pedestrian Injury or Death vs. Vehicle Impact Speed (AAA Foundation for Traffic Safety, 2011)

Accomodating all users also requires considering different needs within each user group. For instance, conditions arise in sidewalk networks that may create trip and fall hazards. Although these conditions, such as such as broken and raised pavement, slopes, vegetation intruding into the walkway, vehicles obstructing sidewalks, and signs, poles, stands or benches that obstruct or narrow the path are a danger for all pedestrians, the elderly, and others with impairments that affect vision and balance, are more susceptible to such hazards. In recognition of the negative impacts poor sidewalk conditions can have on elderly and disabled individuals in particular, the Santa Cruz County Regional Transportation Commission Pedestrian Safety Work Group developed a Program Model for Sidewalk Network Maintanence.

Another example of differenting between needs of users within each user group is the range of experience in bicycle users. Adults who commute by bicycle to work are more likely to feel comfortable riding in a bike lane on a street with higher vehicle volumes and speeds; whereas less experienced bike riders, including children, may feel more comfortable on a bike facility buffered from motor vehicles.

How Streets are Sized

The size and geometric design of a street (including lane width, corner radii, median nose design, and other intersection design details), is determined in large part by the design vehicle, or the typical vehicle considered for use on that particular roadway. Designing for a larger vehicle than necessary is undesirable, due to the potential negative impacts larger dimensions may have on pedestrian crossing distances and the speed of turning vehicles. On the other hand, designing for a vehicle that is too small can result in operational problems if larger vehicles frequently use the facility.

For design purposes, the wheel-base 40 feet (WB-40) is appropriate unless larger vehicles are more common. On bus routes and truck routes, designing for the bus or large WB-40 type truck may be appropriate, but only at intersections where these vehicles make turns. For example, for intersection geometry design features such as corner radii, different design vehicles should be used for each intersection or even each corner, rather than a one-size-fits-all approach, which results in larger radii than needed at most corners. The design vehicle should be accommodated without encroachment into opposing traffic lanes. It is generally acceptable to have encroachment onto multiple same-direction traffic lanes on the receiving roadway.

Furthermore, it may be inappropriate to design a facility by using a larger control vehicle, which uses the street infrequently, or infrequently makes turns at a specific location. An example would be a vehicle that makes no more than one delivery per day at a business. Depending on the turn frequency, under designing the control vehicle can make streets more appropriate for multimodal use by reducing lane and right-of-way widths, without having to encroach on sidewalks and ramps, while allowing larger vehicles to encroach on opposing traffic lanes or make multiple-point turns.

Design Speed

In contrast to the high-speed design approach, the goal for complete streets is to establish a roadway design speed that creates a safer and more comfortable environment for motorists, pedestrians, and bicyclists. The complete streets approach also increases access to adjacent land, thereby increasing its value, and therefore is more appropriate for the surrounding context. For most complete streets, design speeds of 20 to 35 mph are desirable. Alleys and narrow roadways intended to function as shared spaces may have design speeds as low as 10 mph.

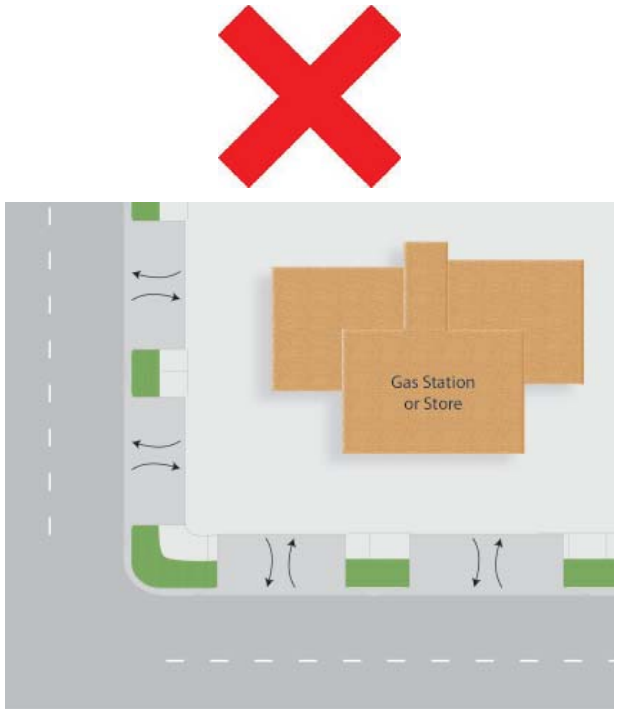
Design speed does not determine nor predict exactly at what speed motorists will travel on a roadway segment. Rather, design speed determines which design features are allowable or mandated. Features associated with high-speed designs, such as large curb radii, straight and wide travel lanes, ample clear zones , and guardrails, degrade the walking experience and make it difficult to design complete streets. Ultimately, designing roads which encourage high speeds creates a vicious cycle. A slower design speed allows the use of features that enhance the walking environment, such as small curb radii, narrower sections, trees, on-street parking, curb extensions, and street furniture, which in turn slow traffic, creating a virtuous cycle.

A narrow roadway with sharrow markings encourages slower speeds and is more comfortable for bicyclists.

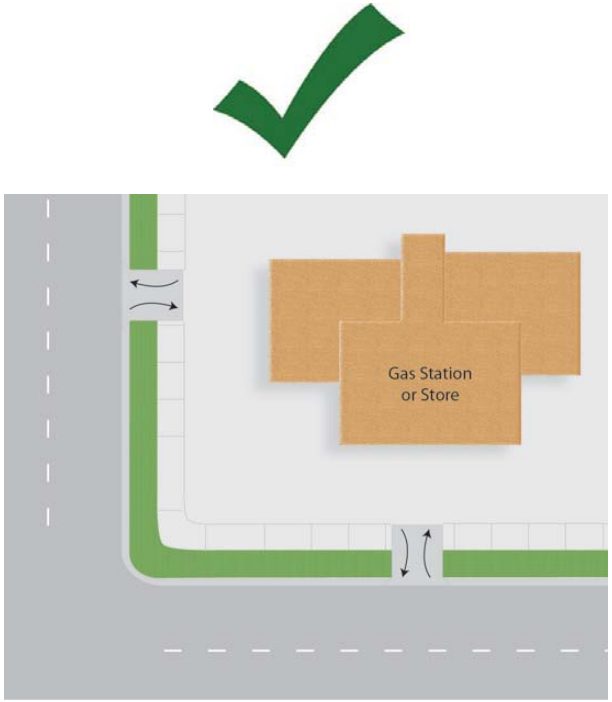
Parkways or expressways are designed for higher speeds which can also benefit transit and bicycle commuters if appropriate facilities are provided.

Access Management

A major challenge in street design is balancing the number of access points to a street with the need for multiple users to enter the facility. There are many benefits of well-connected street networks; on the other hand, most conflicts between users occur at intersections and driveways. The presence of many driveways in addition to the necessary intersections creates many conflicts between vehicles entering or leaving a street and bicyclists riding or pedestrians walking along the street. Particularly in commercial zones, new driveways should be minimized and old driveways should be eliminated or consolidated, and raised medians should be placed to limit left turns into and out of driveways.



Corner with many wide driveways
(Credit: Michele Weisbart)



Reconstructed corner with fewer, narrower driveways (Credit: Michele Weisbart)

COMPLETE STREET TYPES CROSS SECTIONS

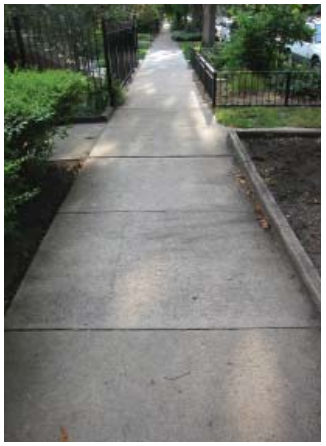
Complete street type cross sections represent example roadway designs that take into consideration the convenience and comfort of all roadway users based on land use and transportation context. Complete street types cross sections should serve as a starting point when designing for complete streets and should not be interpreted as design requirements. Existing roadways undergoing improvements may not have suffi cient right-of-way to accommodate all of the design features shown in the complete street cross sections.

The advantage of starting with a complete street type cross section when designing projects is that it provides project sponsors and stakeholders with a vision of a complete street, which prioritizes roadway user needs based on land use and transportation context, before moving into the discussion about constraints and trade-offs. In many cases the final project design will not replicate what is shown in the complete street type cross sections, but that the project design will maintain the balance of roadways user needs as illustrated in the cross sections using the resources, skills and techniques available.

For example, a rural roadway, which is primary designed for truck/agricultural vehicles and private automobiles, and where vehicle lanes cannot be reduced to provide exclusive bicycle or pedestrian facilities, utilizing sharrows to indicate bicycle use of traffic lane and/or providing a wide paved shoulder to allow pedestrian access may be considered when evaluating roadway designs.

User Zones

The complete street types identify the roadway characteristics by mode using “user zones” with the preferred dimensions of elements along the street. The complete street type cross sections go beyond street functional classification by considering bicyclists and pedestrians, not only automobile movement. The specific function of zones may vary by complete street type. However, generally the zones can be defined as follows:



Pedestrian zone: Includes unobstructed sidewalks with appropriate widths based on demands generated by adjacent land uses and pedestrian facilities, as appropriate.

Street Furniture zone: Includes pedestrian, bicycle and transit supportive amenities such as transit shelters, seating, lighting, bicycle parking, signage, kiosks and public art.

Green zones: Includes landscaping or hardscape amenity zones. Supports pedestrian zone by maintaining comfortable pedestrian travel by providing a buffer from motorized zone or by shortening pedestrian crossings through establishing an “island” in the roadway. Can also support traffic calming and neighborhood livability.

Parking zone: Includes parking to serve adjacent businesses. The parking zone also can serve to calm traffic and provide a buffer to the pedestrian zone. Parking zone may be utilized as intermittent transit and bicycle lanes often referred to as "business access and transit lane" (BAT) and/or floating bicycle lanes.

Motor vehicle zone: Includes a variety of possible lane configurations to accommodate desired motorized vehicle speed and volumes.

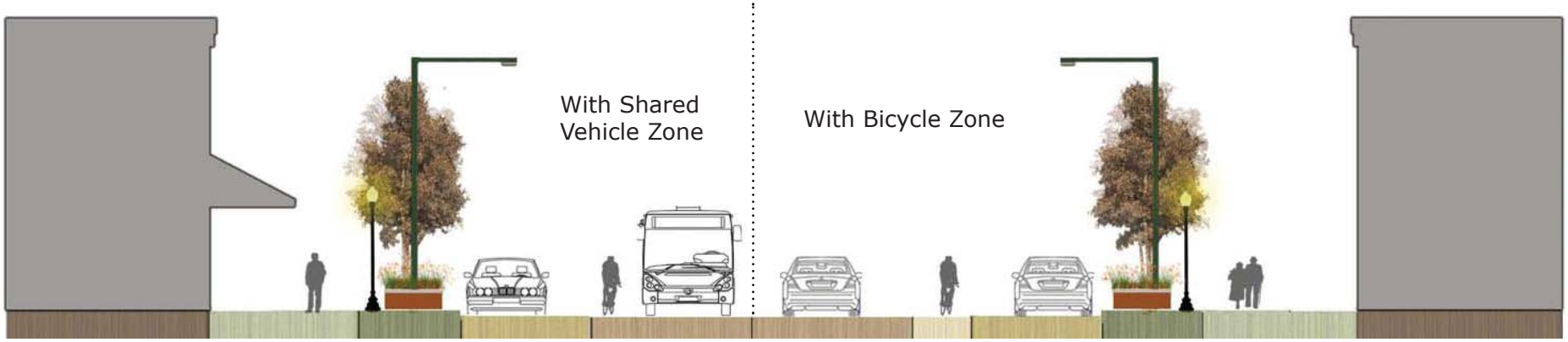
Bicycle zone (exclusive zone): Includes dedicated bicycle facilities on typically on higher speed and volume roadways and may include additional buffering from other modes. Bicycle treatments can be found in **Appendix K.**

Bicycle zone (mixed vehicle zone): Includes shared facilities with motorists typically on low volume and speed roadways and pavement markings, where appropriate.

Emergency vehicle zone: No specific zone is exclusive to emergency vehicles. Together, motor vehicle and bicycle zones will be meet the California Fire Code that requires public streets to have an unobstructed travel way of at least 20 feet, unless an exception is made.

Main Street Zones

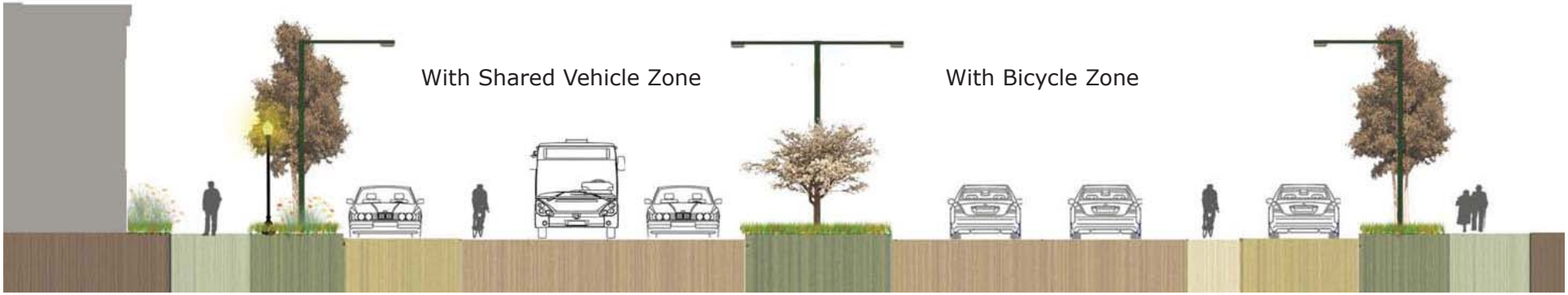
- **Design Speed** – Less than 30 miles per hour
- **User Prioritization**– Pedestrians & Bicyclists
- **Land Use Place Types** - Urban Commercial; Urban Mixed-Use; Town Commercial; Town Mixed-Use; Rural-Town Commercial; Institutional



Pedestrian	Street Furniture	Green	Motor Vehicle	Bicycle	Parking
Main Streets generate high levels of pedestrian traffic and pedestrians should be prioritized over other modes. The unobstructed pedestrian zone should be at least 10' wide and extend to the building frontage.	Pedestrian amenities such as seating, lighting, wayfinding signage, public art, kiosks, and bicycle racks near store entrances are encouraged	Street trees add character to the street and provide shade and shelter from the rain. Trees with deep roots should be selected over those with shallow roots to avoid uplifted sidewalk which can become a tripping hazard	Travel lanes should be 13' if shared with bicyclists; otherwise travel lanes should be narrowed to 10' to provide space for 6' bicycle lanes. Images for each zone	Shared bicycle facilities are appropriate due to low vehicle speeds. Markings ("sharrows") that position bicyclists away from the "door zone" of parked vehicles are recommended as they reduce the risk of injury to bicyclists.	On-street parking is encouraged and acts as a buffer between pedestrians and the motor vehicle zone. Parallel parking is preferred, however angled parking is acceptable. Parking meters should be places as to not block access to the pedestrian zone.

Avenues

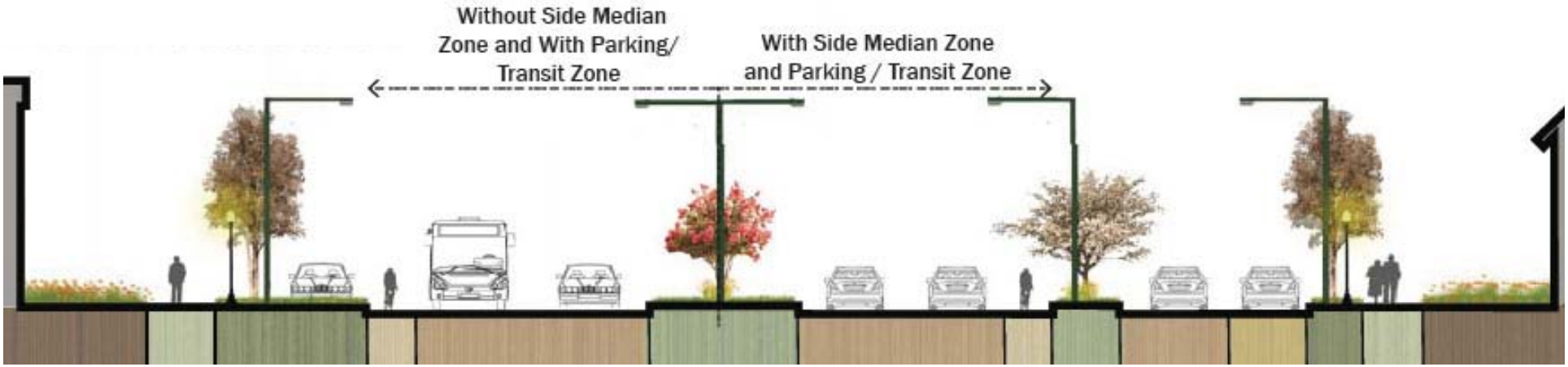
- **Design Speed** – 25-35 miles per hour
- **User Prioritization** – Bicycles, Pedestrians & Transit
- **Land Use Place Types** - Urban Multi-Family Residential; Multi-Family Residential; Neighborhood Commercial; Town Multi-Family Residential; Town Mixed-Use; Institutional; Open Space/Recreation
- **Local Examples**: Sloat Avenue (Monterey); Branciforte Avenue (Santa Cruz)



Pedestrian	Street Furniture	Green	Motor Vehicle	Bicycle	Parking
Avenues serve a variety of land uses and thus generate medium to high levels of pedestrian activity. The unobstructed pedestrian zone should be at least 6' wide but 8' or 10' is preferred.	Amenities such as transit shelters, seating, pedestrian-scale lighting, wayfinding signage, public art, kiosks, and bicycle racks near store entrances are encouraged.	Permeable hardscaping, landscaping and street trees are desired. The green zone should be a minimum of 8' to provide adequate buffer between pedestrians and motorists.	Travel lanes should be 13' if shared with bicyclists; otherwise travel lanes should be narrowed to 10' to provide space for 6' bicycle lanes. Images for each zone	Shared bicycle facilities are appropriate on streets with low vehicle speeds 6' bike lanes are recommended on streets with a posted speed of 30 mph or more. The gutter pan is not considered part of the lane width or bicycle lane width.	On-street parking may be provided. One benefit to parking is that it acts as a buffer between pedestrians and the motor vehicle zone. However, on streets with limited right-of-way there may not be room for both parking and a dedicated bike lane.

Boulevards

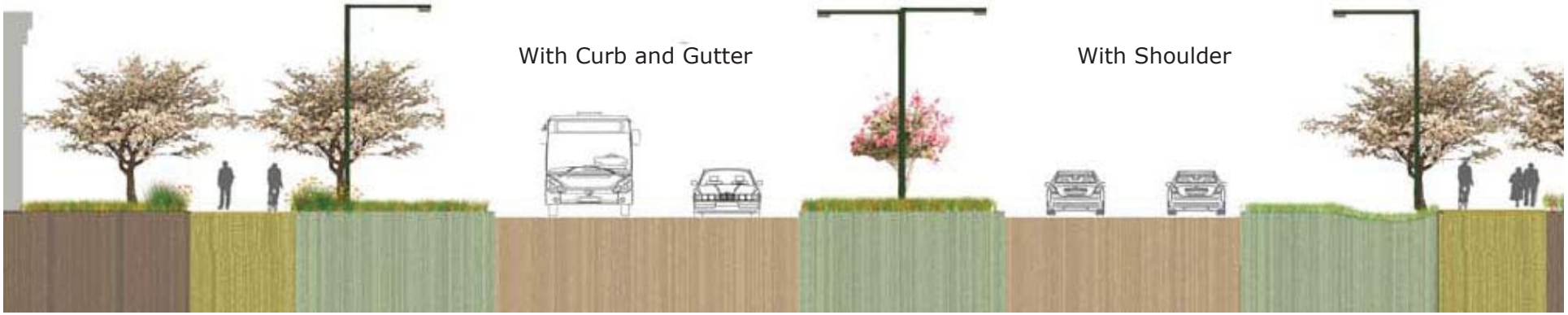
- **Design Speed** – 30-40 miles per hour
- **User Prioritization** – Transit, Autos/Trucks & Bicycles
- **Land Use Place Types** - Multi-Family Residential; Neighborhood Commercial; Regional Commercial; Employment Center; Neighborhood Mixed-Use; Institutional; Open Space/Recreation
- **Local Examples**: Munras Avenue (Monterey); Capitola Road (Live Oak/Capitola)



Pedestrian	Street Furniture	Green	Motor Vehicle	Bicycle	Parking
The unobstructed pedestrian zone should be at least 6' wide but 8' or 10' is preferred. The pedestrian zone should also be set back from the street. to mitigate discomfort generated from greater volumes of fast-moving vehicles.	Amenities such as transit shelters, seating, pedestrian-scale lighting, wayfinding signage, public art, kiosks, and bicycle racks near store entrances are encouraged	The green zone should be a minimum of 8' to provide adequate buffer between pedestrians and motorists. Medians should be landscaped and permeable but remain accessible to pedestrians.	The outside travel lanes should be 14' if shared with bicyclists; otherwise travel lanes should be 11'-12'. Boulevards should not have continuous left-turn lanes but instead be separated by a median wherever feasible. Medians should be a minimum of 8' wide.	6' bike lanes are recommended. The gutter pan is not considered part of the bicycle lane width.	On-street parking is not required but allowed where appropriate. Off-street parking is desired.

Parkways

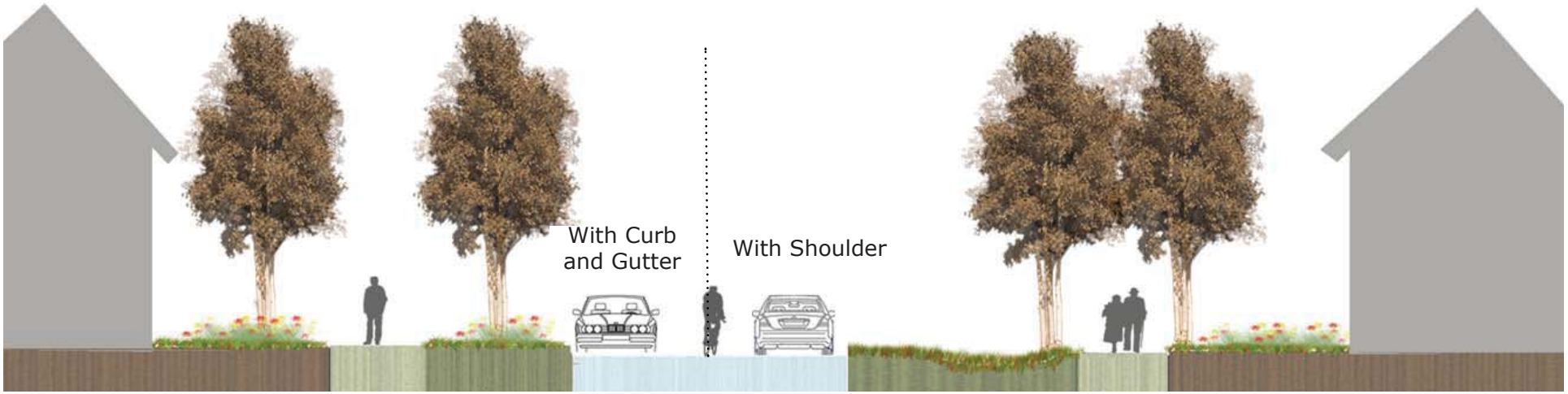
- **Design Speed** – 35-45 miles per hour
- **User Prioritization** – Auto/Trucks, Transit & Bicycles
- **Land Use Place Types** - Regional Commercial; Employment Center; Airport; Institutional; Open Space/Recreation
- **Local Examples** - Imjin Parkway/Rd (Marina); Soquel Drive (Aptos); Canyon Del Rey (Del Rey Oaks)



Pedestrian	Street Furniture	Green	Motor Vehicle	Bicycle	Parking
Preferred accomodation for pedestrians is a multi-use path set back from the street.	Amenities such as transit shelters, seating, pedestrian-scale lighting, wayfinding signage, public art, and kiosks are desireable. Transit stops should connect to the sidewalk and/or multi-use trail.	The green zone should be a minimum of20' to accomodate the "clear zone" and to provide adequate buffer between pedestrians and motorists. Medians should be landscaped and permeable but remain accessible to pedestrians.	Travel lanes should be 11'-12' wide. Parkways should not have continuous left-turn lanes but instead be separated by a median wherever feasible. Medians should be a minimum of 17' wide. Shoulders are allowable on an urban parkway if appropriate.	Preferred accomodation for bicyclists is a multi-use path set back from the street. 6' bike lanes are also appropriate and may better serve experienced bicyclists. The gutter pan is not considered part of the bicycle lane width.	On-street parking should not be permitted along parkways. Instead park and ride lots served by transit should be provided.

Local Streets

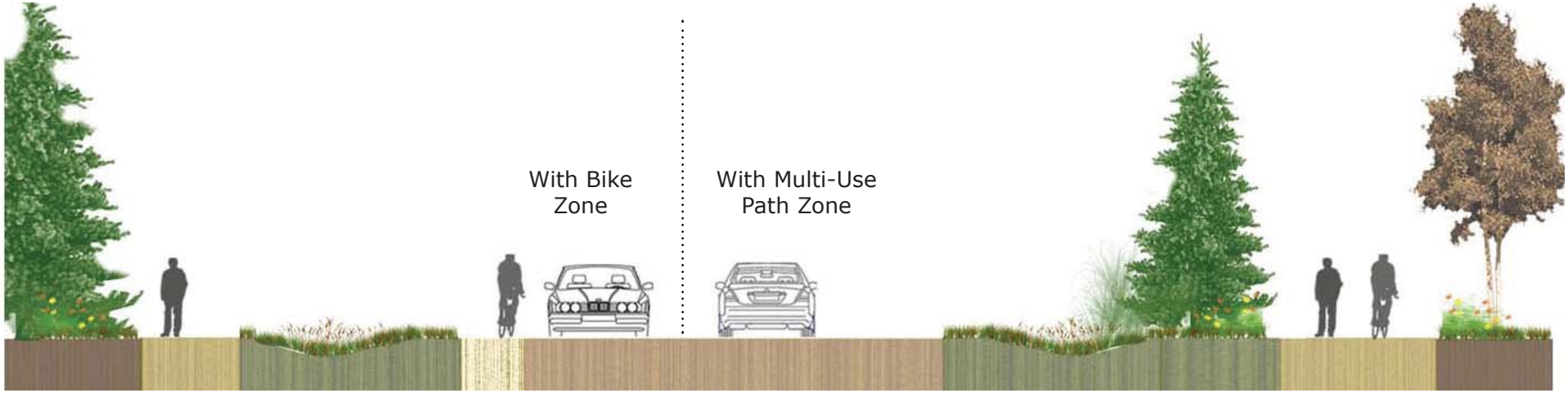
- **Design Speed** – < 25 miles per hour
- **User Prioritization** – Pedestrians, Bicycles & Autos/Trucks
- **Land Use Place Types** - Urban Single-Family Residential; Urban Multi-Family Residential; Urban Mixed-Use; Single-Family Residential; Multi-Family Residential; Town Single-Family Residential; Town Multi-Family Residential; Rural Town Residential; Institutional; Open Space/Recreation



Pedestrian	Street Furniture	Green	Motor Vehicle	Bicycle	Parking
Unobstructed pedestrian zone should be a minimum of 5' with a vertical curb (rolled curbs allow parked cars to encroach in the pedestrian area). Streets with very low traffic volumes may not require sidewalks and instead function as a shared street or "Woonerf ".	Pedestrian-scale lighting and some bicycle/pedestrian wayfinding signage for destinations such as community centers, parks and schools	The green zone should be a minimum of 4' to accomodate landscaping/trees. Bioswales and raingardens may also be appropriate in the green zone.	Travel lanes should be a minimum of 9'-10' with a 4' shoulder. Medians are not typically provided on local streets with the exception of partial medians which can be used for traffic calming and aesthetic purposes	Shared bicycle facilities are appropriate due to low vehicle speeds and traffic volumes. Neighborhood shared streets should have additional amenities such as bicycle boulevard signage, sharrows, partial street closures and traffic calming features.	Parallel on-street parking is recommended along local streets. The parking serves as a buffer between pedestrians and motorists.

Rural Roads

- **Design Speed** – Varies
- **User Prioritization** – Autos/Trucks, Transit & Bicycles
- **Land Use Place Types** –Agriculture and Rural Residential; Exurban Residential; Industrial and Manufacturing; Open Space/Recreation
- **Local Examples** – Corralitos Road (Santa Cruz)



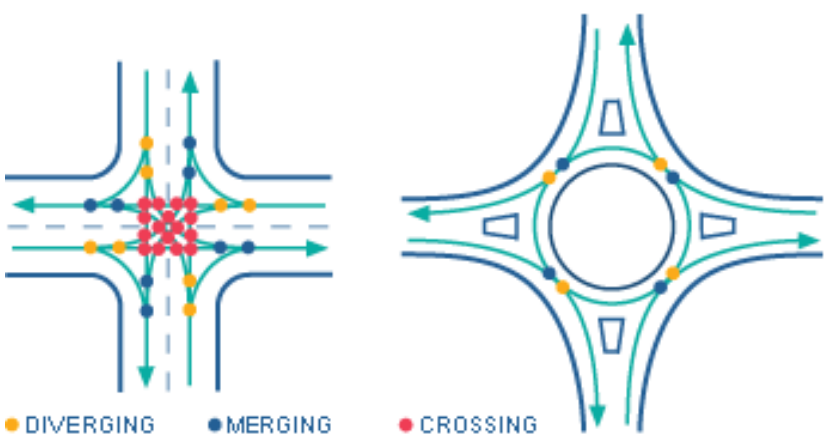
Pedestrian	Street Furniture	Green	Motor Vehicle	Bicycle	Parking
A wide paved roadway shoulder can accomodate both pedestrians and bicyclists in a rural setting. A sidewalk or multi-use path outside of the clear zone may also be appropriate (especially if it provides access to a community resource such as a school).	Pedestrian-scale lighting, amenities at transit stops and some bicycle/ pedestrian wayfinding signage for destinations such as community centers, parks and schools near rural town centers.	The green zone consists of the roadway shoulder and ditch. This area may be paved at intersections to reduce the amount of dirt, mud and debris carried onto the roadway by agricultural vehicles.	A wide paved roadway shoulder can accomodate bicyclists. Multi-use paths ouside of the clear zone may also be appropriate.	Travel lanes should be a minimum of 10’-12’ with a 6’-8’ shoulder.	On-street parking is not recommended on rural roads.

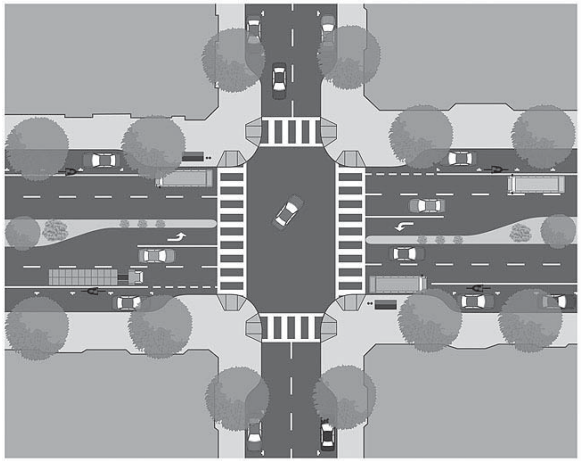
INTERSECTIONS

Principles

The following principles apply to all users of intersections:

- Good intersection designs are compact.
- Unusual conflicts should be avoided.
- Simple right-angle intersections are best for all users since many intersection problems are worsened at skewed and multi-legged intersections.
- Roundabouts reduce points of conflict and severity of potential collisions compared to signalized or stop controlled intersections.
- Access management practices should be used to remove additional vehicular conflict points near the intersection.
- Signal timing should consider the safety and convenience of all users and should not hinder bicycle or foot traffic with overly long waits or insufficient crossing times.





Signalized Intersections

To improve livability and pedestrian safety, signalized intersections should:

- Provide signal progression at speeds that support the target speed of a corridor whenever feasible.
- Provide short signal cycle lengths, which allow frequent opportunities to cross major roadways, improving the us ability and livability of the surrounding area for all modes.
- Ensure that signals detect bicycles.
- Place pedestrian signal heads in locations where they are visible.
- At locations with many crossing pedestrians, time the pedestrian phase to be on automatic recall, so pedestrians do not have to seek and push a pushbutton.
- Where few pedestrians are expected and automatic recall of walk signals is not desirable, place pedestrian push buttons in convenient locations, using separate pedestals if necessary. Use the recommendations regarding push button placement for accessible pedestrian signals found in the Manual on Uniform Traffic Control Devices (MUTCD).
- Include pedestrian signal phasing that increases safety and convenience for pedestrians.

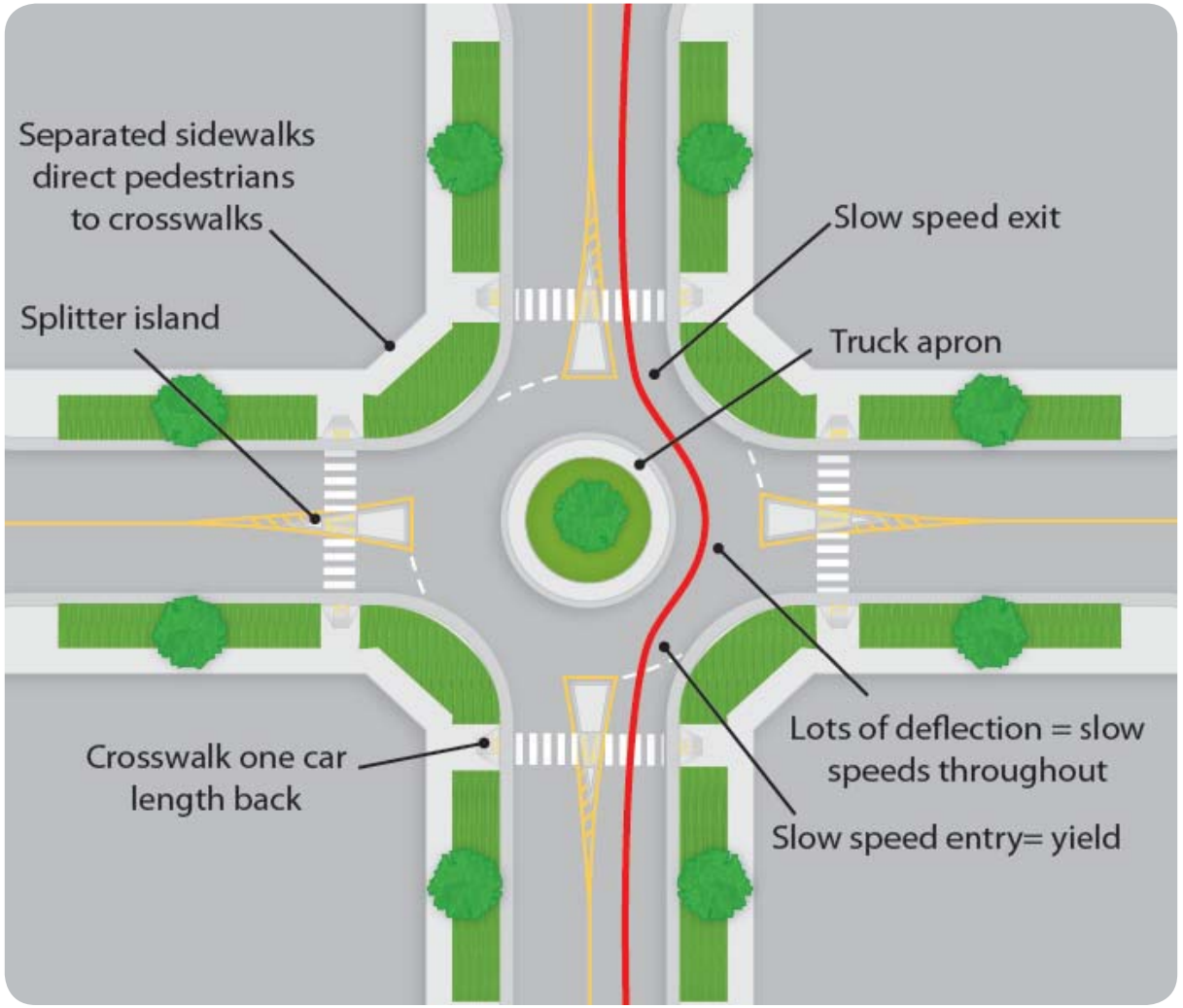
Yield and Stop-Controlled Intersections

Most intersections are either stop-controlled or yield-controlled. In general, stop signs are overused and often mistakenly used for traffic calming. Stop signs are not a traffi c calming device. An intersection must meet warrants set forth in the Manual of Uniform Traffic Control Devices (MUTCD) before stop controls may be installed. Intersection control options include the following:

- Yield control, which is under-utilized and should be considered to reduce unnecessary stops caused by the overuse of stop signs.
- Uncontrolled intersections are yield controlled by default.
- Two-way stop control, the most common form of intersection control. This is also an overused device. At many intersections a neighborhood traffi c calming circle is a preferable and more effective option.
- All-way stops are often overused, incorrectly, to slow traffic. The use of all-way stops should be consistent with the MUTCD. At many intersections a neighborhood traffic calming circle is a preferable and a more effective option.

Roundabouts

Roundabouts reduce vehicle-to-vehicle and vehicle-to-pedestrian conflicts and, thanks to a substantial reduction in vehicle speeds, reduce all forms of crashes and crash severity. In particular, roundabouts eliminate the most dangerous and common crashes at signalized intersections: left-turn and right-angle crashes.



Other benefits of roundabouts include the following:

- Little to no delay for pedestrians, who have to cross only one direction of traffic at a time.
- Improved accessibility to intersections for bicyclists through reduced conflicts and vehicle speeds.
- A smaller carbon footprint. Less lighting is required for operation and fuel consumption is reduced as motor vehicles spend less time idling and don't have to accelerate as often from a dead stop.
- Opportunity to reduce the number of vehicle lanes between intersections. For example, a five-lane road may be reduced to a two-lane road due to increased vehicle capacity at intersections.
- Little to no stopping during periods of low fl ow.
- Significantly reduced maintenance and operational costs required by signals and lights
- Reduced delay, travel time, and vehicle queue lengths.
- Lowered noise levels.
- Less fuel consumption and air pollution.
- Simplified intersections.
- Facilitated U-turns.
- The ability to create a gateway and/or a transition between distinct areas through landscaping.
- Light rail can pass through the center of a roundabout without delay because rail has the right of way, although gates may be required

The primary disadvantage of a roundabout is that sight-impaired people can have difficulty navigating around large roundabouts. However, this difficulty can be mitigated with ground level wayfinding devices.

Before starting the design of a roundabout it is very important to determine the following:

- The number and type of lane(s) on each approach and departure as determined by a capacity analysis.
- The design vehicle for each movement.
- The presence of on-street bike lanes.
- The goal/reason for the roundabout, such as crash reduction, capacity improvement, speed control, or creation of a gateway or a focal point.
- Right-of-way and its availability for acquisition if needed.
- The existence or lack of sidewalks.
- The approach grade of each approach.
- Transit, existing or proposed.

UNIVERSAL PEDESTRIAN ACCESS

The following design principles inform the recommendations made in this chapter and should be incorporated into every pedestrian improvement:

- The walking environment should be safe, inviting, and accessible to people of all ages and physical abilities.
- The walking environment should be easy to use and understand.
- The walking environment should seamlessly connect people to places. It should be continuous, with complete sidewalks, well-designed curb ramps, and well-designed street crossings
- The walking environment should not be obstructed.

Legal Framework

Under Title II of the Americans with Disabilities Act (ADA) of 1990, state and local governments and public transit authorities must ensure that all of their programs, services, and activities are accessible to and usable by individuals with disabilities. They must ensure that new construction and altered facilities are designed and constructed to be accessible to persons with disabilities. State and local governments must also keep the accessible features of facilities in operable working condition through maintenance measures including sidewalk repair, landscape trimming, work zone accessibility, and snow removal.

Under the ADA, the U.S. Access Board is responsible for developing the minimum accessibility guidelines needed to measure compliance with ADA obligations when new construction and alterations projects are planned and engineered. These guidelines for public rights-of-way are found in draft form in the Public Rights-of-Way Accessibility Guidelines. The U.S. Department of Transportation has recognized this document as current best practices in pedestrian design and has indicated its intent to adopt the fi nal guidelines.

In addition, Title II of the ADA also requires states and localities to develop ADA Transition Plans that remove barriers to disabled travel.

ADA Transition Plans are intended to ensure that existing inaccessible facilities are not neglected indefinitely and that the community has a detailed plan in place to provide a continuous pedestrian environment for all residents.
These plans must:

- Inventory physical obstacles and their location.
- Provide adequate opportunity for residents with disabilities to provide input into the Transition Plan.
- Describe in detail the methods the entity will use to make the facilities accessible.
- Provide a yearly schedule for making modifi cations.
- Name an official/position responsible for implementing the Transition Plan.
- Set aside a budget to implement the Transition Plan.

Obstructions can make passage difficult or impossible for wheelchair users. (Credit: Michael Ronkin)

User Needs

Wheelchair and scooter users are most affected by the following:

- Uneven surfaces that hinder movement.
- Rough surfaces that make rolling diffi cult and can cause pain, especially for people with back injuries.
- Steep uphill slopes that slow the user.
- Steep downhill slopes that cause a loss of control.
- Cross slopes that make the assistive device unstable.
- Narrow sidewalks that impede the ability of users to turn or to cross paths with others.
- Devices that are hard to reach, such as push buttons for walk signals and doors.
- The lack of time to cross the street.

Walking-aid users are most affected by the following:

- Steep uphill slopes that make movement slow or impossible.
- Steep downhill slopes that are difficult to negotiate.
- Cross slopes that cause the walker to lose stability.
- Uneven surfaces that cause these users to trip or lose balance.
- Long distances.
- Situations that require fast reaction time.
- The lack of time to cross the street.

Prosthesis users often move slowly and have difficulty with steep grades or cross slopes.

People with visual impairments include those who are partially or fully blind, as well as those who are colorblind. Visually impaired people face the following difficulties:

- Limited or no visual perception of the path ahead.
- Limited or no visual information about their surroundings, especially in a new place.
- Changing environments where they rely on memory
- Lack of non-visual information
- Inability to react quickly
- Unpredictable situations, such as complex intersections that are not at 90 degrees
- Inability to distinguish the edge of the sidewalk from the street
- Compromised ability to detect the proper time to cross a street
- Compromised ability to cross a street along the correct path
- Need for more time to cross the street

People with cognitive impairments encounter difficulties in thinking, learning, and responding, and in performing coordinated motor skills. Cognitive disabilities can cause some to become lost or have difficulty finding their way. They may also not understand standard street signs and traffic signals. Some may not be able to read and benefit from signs with symbols and colors.

Children and many older adults don't fall under specific categories for disabilities, but must be taken into account in pedestrian planning. Children are less mentally and physically developed than adults and have the following characteristics:

- Less peripheral vision.
- Limited ability to judge speed and distance.
- Difficulty locating sounds.
- Limited or no reading ability, so do not understand text signs.
- Occasional impulsive or unpredictable behavior.
- Little familiarity with traffic.
- Difficulty carrying packages.

The natural aging process generally results in at least some decline in sensory and physical capability. As a result, many older adults experience the following:

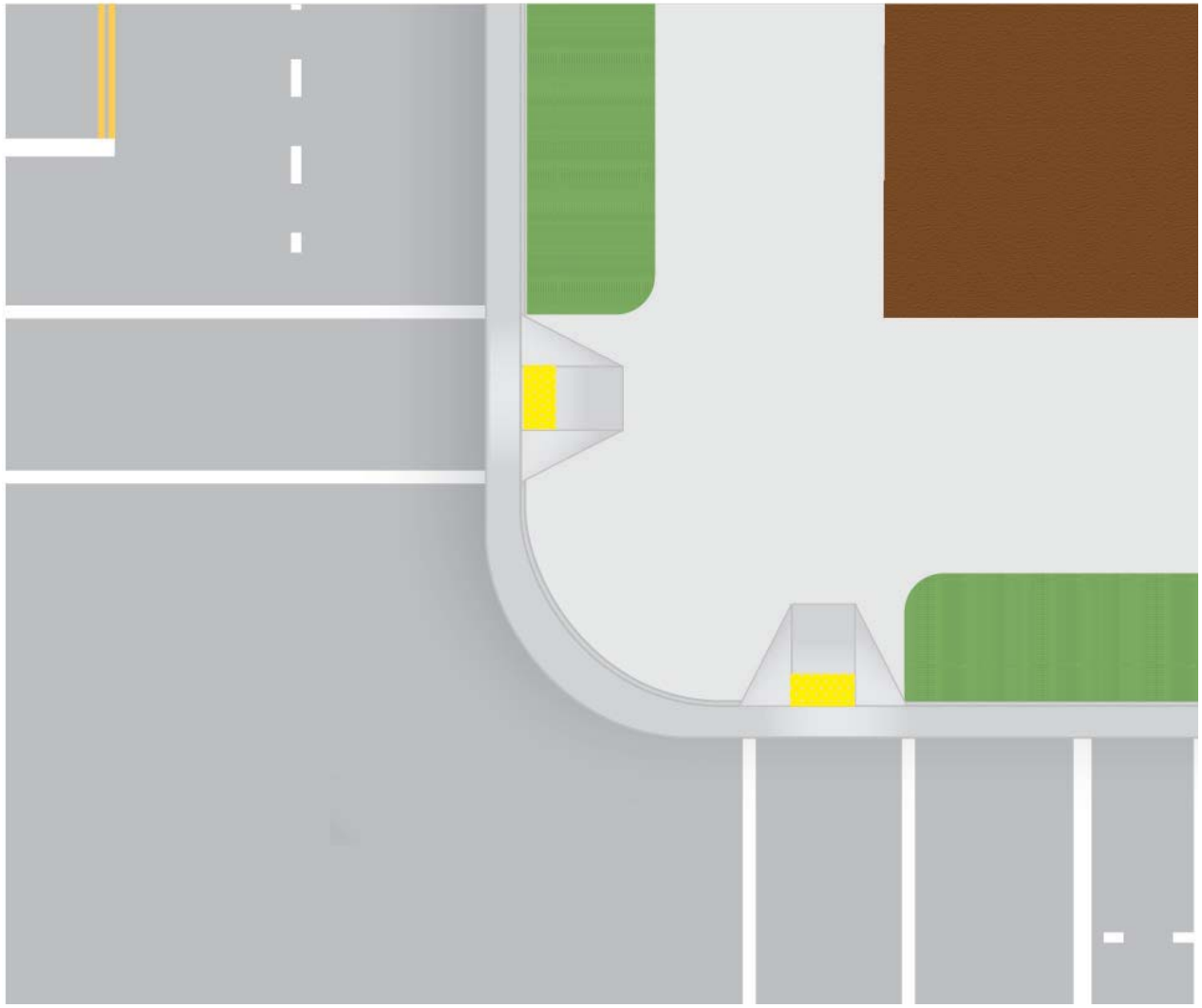
- Declining vision, especially at night.
- Decreased ability to hear sounds and detect where they come from.
- Less strength to walk up hills and less endurance overall.
- Reduced balance, especially on uneven or sloped sidewalks.
- Slowed reaction times to dangerous situations.
- Slowed walking speed.

Accessible Pedestrian Facility Best Practices

Crosswalks and ramps at intersections should be placed so they provide convenience and safety for pedestrians. The following recommended practices will help achieve these goals:

- Allow crossings on all legs of an intersection, unless there are no pedestrian accessible destinations on one or more of the corners. Closing a crosswalk usually results in a pedestrian either walking around several legs of the intersection, exposing them to more conflicts, or crossing at the closed location, with no clear path or signal indication as to when to cross.
- Provide marked crosswalks at signalized intersections.
- Place crosswalks as close as possible to the desire line of pedestrians, which is generally in line with the approaching sidewalks.
- Provide as short as possible a crossing distance to reduce the time that pedestrians are exposed to motor vehicles. This is usually as close as possible to right angles across the roadway, except for skewed intersections.
- Ensure that there are adequate sight lines between pedestrians and motorists. This typically means that the crosswalks should not be placed too far back from the intersection.
- When a raised median is present, extend the nose of the median past the crosswalk with a cut-through for pedestrians.
- Provide one ramp per crosswalk, or two per corner for standard intersections with no closed crosswalks. Ramps must be entirely contained within a crosswalk. The crosswalk can be flared to capture a ramp that cannot be easily relocated. Align the ramp run with the crosswalk when possible, as ramps that are angled away from the crosswalk may lead some users into the intersection.

At intersections where roads are skewed or where larger radii are necessary for trucks, it can be difficult to determine the best location for crosswalks and sidewalk ramps. In these situations, it is important to balance the recommended practices above. Tighter curb radii make implementing these recommendations easier.



One curb ramp per crosswalk should be provided at corners. Ramps should align with sidewalks and crosswalks. (Credit: Michele Weisbart)

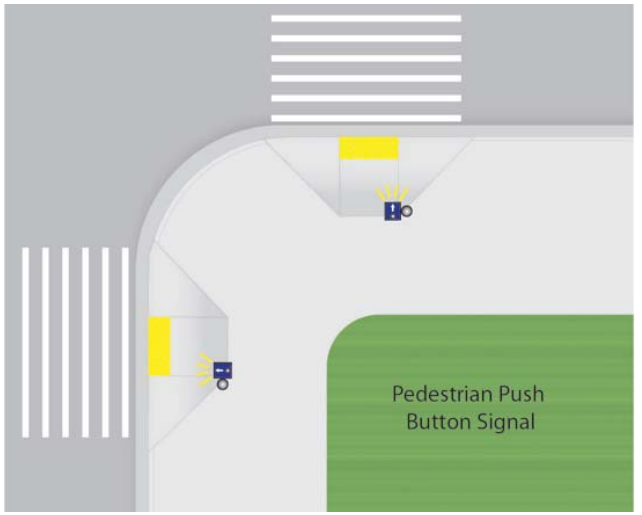
Crossing Times

In planning for people with disabilities, slower speeds must be considered. This is critical in setting the timing of the walk phase of signalized intersections. The Manual on Uniform Traffi c Control Devices requires that transportation agencies use an assumed walking speed of 3.5 feet/second for signal timing. In situations where a large number of older adults or persons with disabilities cross, this may be inadequate to meet their needs. Some cities instead use 2.8 feet/second.

Cities may also use Pedestrian-User-Friendly-Intelligent traffi c signals to ensure that all pedestrians have adequate time to cross. Pedestrian-User-Friendly-Intelligent crossings use infrared monitors to detect the presence of pedestrians in the crosswalk, and will hold the signal red for cross traffic until the pedestrian has left the crosswalk. Pedestrian-User-Friendly-Intelligent crossings help slower pedestrians, but also help the fl ow of traffic because they allow the normal pedestrian design speed to be set at a higher level.

Pedestrian-Activated Push Buttons

Pedestrian-activated traffic controls require pedestrians to push a button to activate a walk signal. As noted in Chapter 7, “Pedestrian Crossings,” pedestrian-activated signals are generally discouraged. The walk signal should automatically come on except under circumstances described in that chapter. Where pedestrian-activated traffic controls exist, they should be located as close as possible to curb ramps without reducing the width of the path. The buttons should be at a level that is easily reached by people in wheelchairs near the top of the ramp. The U.S. Access Board guidelines recommend buttons raised above or flush with their housing and large enough for people with visual impairments to see them. The buttons should also be easy to push.

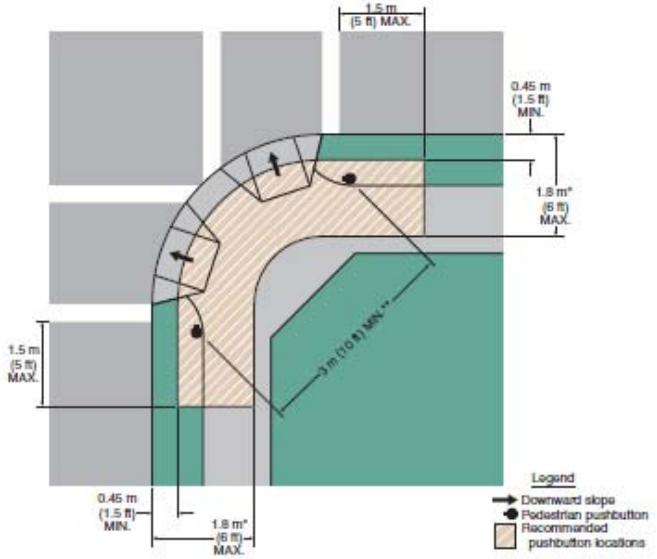


Pedestrian push button placement
(Credit: Michele Weisbart)

Accessible Pedestrian Signals

Wayfinding for pedestrians with visual impairments is significantly improved with the use of Accessible Pedestrian Signals at signalized intersections. In fact, Accessible Pedestrian Signals are the most commonly requested accommodation under Section 504 of the Rehabilitation Act of 1973. Accessible Pedestrian Signals communicate information about pedestrian timing in non-visual formats such as audible tones, verbal messages, and/or vibrating surfaces. Verbal messages provide the most informative guidance.

These devices should be installed close to the departure location and on the side away from the center of the intersection. Since they are typically only audible 6 to 12 feet from the push button, 10 feet should separate two devices on a corner. If two accessible pedestrian pushbuttons are placed less than 10 feet apart or on the same pole, each accessible pedestrian pushbutton shall be provided with a pushbutton locator tone, a tactile arrow, a speech walk message for the WALKING PERSON (symbolizing WALK) indication, and a speech push button information message. Volumes of the walk indication and push button locator tone shall automatically adjust in response to ambient sound.



Chapter 6: Six-Step Implementation Process

The purpose of this chapter is to explain how the perspectives of all stakeholders interested in or affected by existing or future streets can be incorporated into the review for planning and designing streets. The recommended process is summarized in Appendix H, Complete Street Project Review Checklist. This process was modeled after the work completed in the Charlotte Department of Transportation Urban Streets Design Guidelines, and San Francisco Bay Area, Routine Accommodation Checklist.

PROCESS FOR PLANNING AND DESIGNING COMPLETE STREETS

The six step process outlined below emphasizes coordinating city planning, urban design, and transportation planning activities by establishing a sequence of fact finding and decision-making steps. Applying this process to planning and designing streets is intended to support the creation of more streets which meet the needs of more people.

Six-Step Process

The process described below provides a great deal of flexibility to those involved in the decision-making process. This flexibility is intended to foster creative solutions by ensuring that land use planners, engineers, transportation planners, transportation system users, and others work together to think through the implications of alternative street designs. The six-step process will play an important role in addressing the signifi cant challenge of retrofitting streets with limited right-of-way by means of completing a tradeoff analysis.

The six step processes below was vetted and carefully refined through a process lead by the Charlotte Department of Transportation in North Carolina. Since its adoption, the process has been credited was accomplishing complete streets goals and avoiding the need for costly redesign and preventing missed opportunities.

The following three assumptions are built into the six-step process:

- The process will involve a variety of stakeholders. The number of stake holders and discussions will vary, depending on the magnitude of the project(s).
- The resulting street will be as "complete" as needed and possible, given the context of the facility.
- The complete streets evaluation will clearly document the major tradeoffs made among competing design elements, how those were discussed and weighed against each other, and the preliminary and final outcomes. Thorough documentation will ensure that all stakeholders' perspectives are adequately considered in the final design.

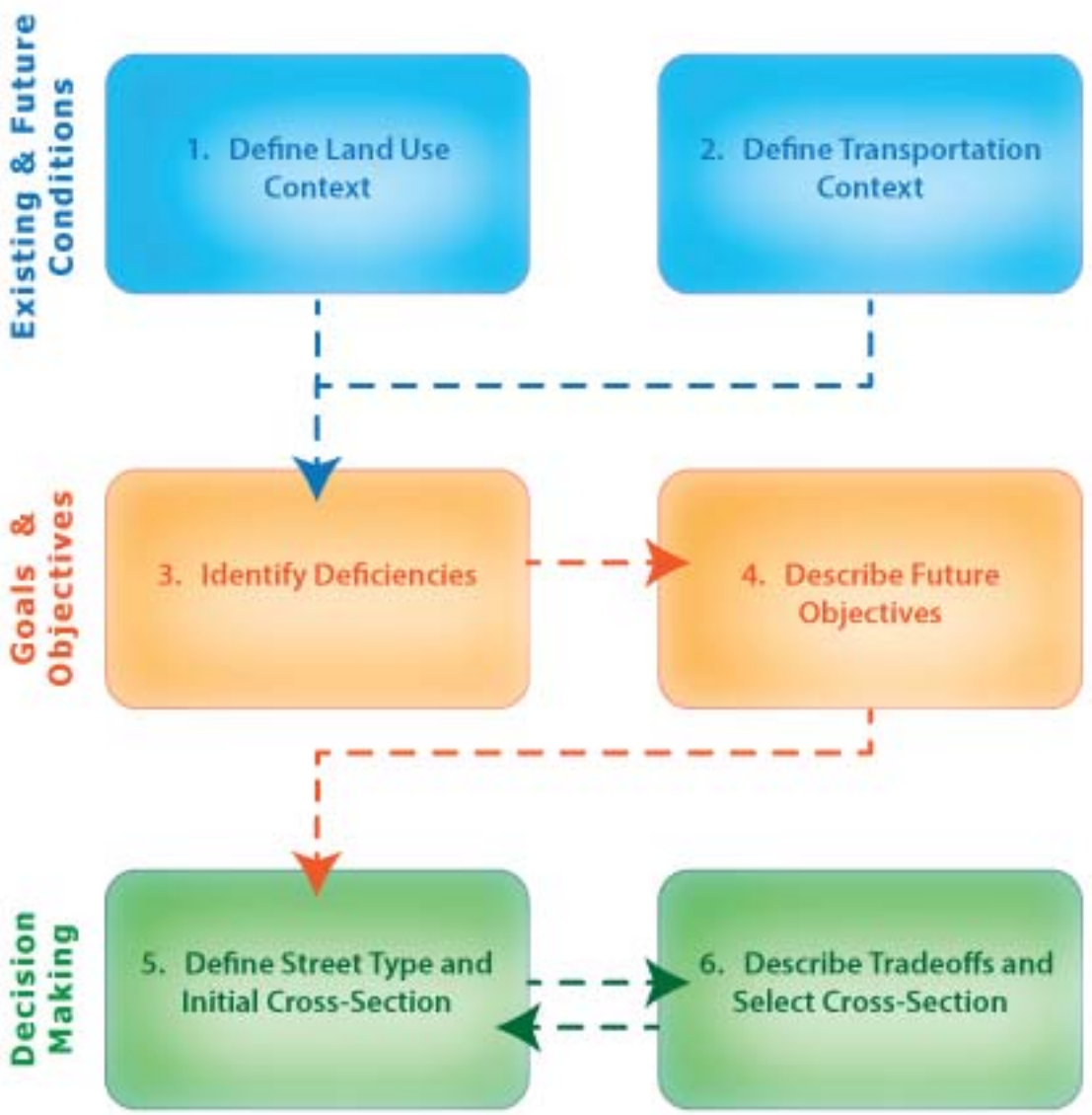


Figure 6-1 Six Step Process

Figure 6-1 shows the review steps to be included in applying the Monterey Bay Area Complete Street Guidebook. Each of the six steps is defined in more detail later in this chapter. The steps described below can be applied either to a single street or to a collection of streets in an area, such as when an area plan is being developed.

Step 1: Define the Existing and Future Land Use and Urban Design Context

The classification and ultimate design of any street should reflect both the existing and expected future land use contexts. These contexts should be considered from the area wide level down to the immediately adjacent land uses. For example, a street is likely to be classified and/or designed differently if it is in an area slated for higher density development, such as a transit station area, versus in a neighborhood of single family houses, where very limited development changes are anticipated.

Step 2: Define the Existing and Future Transportation Context

The transportation assessment should consider the existing and expected future conditions of the transportation network adjacent to the street to be designed. The design should not be strictly related to capacity on a segment in isolation. Rather, the design should reflect the entire transportation context, including function, multimodal features, and form. The Complete Streets Project Review Checklist (Appendix H) should be used to assess and document existing and future conditions. Questions to facilitate dialogue and consideration of existing and future conditions are included in Appendix I.

Step 3: Identify Deficiencies

Once the existing and future land use and transportation contexts are clearly defined and understood at the area wide level, the design team should be able to identify and describe any potential deficiencies. This step should consider the relationship between different modes and the land use context. Use the Complete Streets Project Review Checklist (Appendix H) to identify and document deficiencies. Questions to facilitate dialogue and consideration of deficiencies are included in Appendix I.

Step 4: Describe Future Objectives

This step synthesizes the information from the previous steps into defined objectives for the street project. Objectives could be derived from the plans and/or policies for the area around the street, as well as from the list of deficiencies identifi ed in step three. The objectives will form the basis for the future street classifi cation and design. Sample questions that can be used to facilitate dialogue about potential issues can be found in Appendix I.

Step 5: Recommend Street Type and Initial Cross-Section and Constraints

The plan/design team recommends the appropriate complete street type(s), and cross-section design based on previous steps. The rationale behind the classification should be documented using the Complete Streets Project Review Checklist in Appendix H. Table 3 provides a reference for matching land use place types and street typologies and sample cross-sections. This step should also include a recommendation for any necessary adjustments to the land use plan/policy and/or transportation plan for that area. Since the street type and the design are influenced by the land use context, subsequent land use decisions should reflect and support the agreed-upon street type and design.

At this point, any constraints to the provision of the initial preferred cross-section should be clearly identifi ed. These may include:

- Lack of right-of way,
- Existing structures,
- Existing trees or other environmental features,
- Topography, and
- Location and number of driveways.

Step 6: Describe Tradeoffs and Select Complete Street Type

Most likely the initial cross-section will need to be refined to better address the land use and transportation objectives, given the constraints identifi ed in step five. If the technical team develops more than one alternative design, these multiple alternatives should be presented to the stakeholders, and made available to the public. Any refinements to the cross section should result from a through consideration of tradeoffs among competing uses of the existing or future public right-of way.

EXCEPTIONS

The Federal Highway Administration (FHWA) (2000) lists three exceptions to providing accommodations for bicycle and pedestrian travel on all streets. They follow the FHWA's guidance on accommodating bicycle and pedestrian travel and identifi ed best practices frequently used in existing complete streets policies. Project sponsors may find it beneficial to consider these exceptions when evaluating trade-offs.

- Accommodation is not necessary on corridors where specific users are prohibited, such as interstate freeways or pedestrian malls.
- Cost of accommodation is excessively disproportionate to the need or probable use. It is unnecessary to attach a percentage to define "excessive" as the context for many projects will require different portions of the over all project budget to be spent on the modes and users expected. Additionally, costs may be difficult to quantify. A cap on amount spent for roadway improvements may be appropriate in unusual circumstances, such as where natural features (e.g. steep hillsides, shorelines) make it very costly or impossible to accommodate all modes. Any such cap should always be used in an advisory rather than absolute sense. A documented absence of current and future need. This exception can be problematic if the method for determining future need is not defined. Ensure that a qualified individual or committee is tasked with approving this exception. Many communities have included other exceptions that the National Complete Streets Coalition, in consultation with transportation planning and engineering experts, also feels are unlikely to create loopholes.
- Transit-specific facilities, such as bus shelters, are not required where there is no existing or planned transit service.
- Routine maintenance of the transportation network that does not change the roadway geometry or operations, such as mowing, sweeping, spot repair, or when interim measures are implemented in temporary detour or haul routes. Be sure to check your internal procedures and policies regarding these activities so that facilities such as bike lanes are swept in a timely manner".

MONTEREY BAY AREA COMPLETE STREETS ASSESSMENT

As part of the development of the 2014 Monterey Bay Area Sustainable Communities Strategy, staff from the regional transportation agencies in the tri-county area worked with key stakeholders from each jurisdiction to develop criteria for evaluating how well streets meet the needs of all users. The goal of this complete streets needs assessment was to identify deficiencies in the existing transportation networks and opportunities for improvements, which would provide safe mobility for all users including bicyclists, pedestrians, transit riders and motorists, particularly in areas identifi ed for increased density and diversity of land use as part of the Sustainable Communities Strategy. Key components of the Monterey Bay Area Complete Streets Assessment are discussed further in this section and can serve as a model inventory for project sponsors and stakeholders.

Complete Streets Inventory

Compiling an inventory of complete street transportation attributes was the first step in conducting the Monterey Bay Area Complete Streets Assessment. This inventory identified the existing mobility context and documented complete streets facilities and considered gaps in the transportation network and services. It is recommended that project sponsors and stakeholders utilize the inventory provided in Appendix A in whole or in part when developing complete street projects for inclusion in local plans.

To support the complete streets needs assessment, RTPA staff worked with regional transit agencies to identify current and future “high quality transit routes” and “major transit stops” as defined by SB375. Identifying high quality transit routes and major transit stops, which serve 15 minute headways during peak periods, were important in order to identify potential priority areas for pedestrian investments, since the majority of transit trips begin with a roadway user walking to the transit stop.

Complete Streets Project List

The result of the Monterey Bay Area Complete Streets Assessment included a list of transportation projects that would support multi-modal facilities, improve connectivity and reduce vehicle miles traveled within each area. For each project, opportunities were identified to develop low stress routes which emphasize the quality, comfort, convenience and safety of bicycle, pedestrian and transit facilities. Each project list was considered by the respective regional transportation planning agencies for inclusion in the regional transportation plan.

Complete streets projects typically fell into one of the following categories:

- Bicycle/pedestrian enhancements (ex. bicycle lane treatments such as painted or buffered bike lanes and pedestrian buffers such as landscaping, bicycle actuation at traffic signals, pedestrian scale lighting, wider side walks)
- Pedestrian crossing improvement (ex. raised cross walks, enhanced striping contrast, cross walk beacon, bulbouts and pedestrian islands)
- Bike/pedestrian network filler (ex. new bicycle lane or sidewalks which eliminates gap in existing network)
- Bike intersection improvement (ex. bike boxes, bike signal priority)
- New bike/ped connection (ex. new bike/ped path not located on current transportation facility)
- Bike parking facilities (ex. bicycle racks)
- Neighborhood shared streets (ex. pavement markings, wayfinding, traffi c control on local streets to give priority to bicycles and pedestrians and reduce vehicle speed and volume)
- Pedestrian place/universal street (ex. roadway or alley with restricted vehicle access which often is serves as a plaza for assorted businesses)
- Crosswalk frequency (ex. new/additional cross walks to reduce spacing between cross walks)
- Commercial area bike/ped access (ex. pavement treatments, tactile strips and wayfinding)
- Traffi c calming (ex. bulb outs, landscaping)
- High Occupancy Vehicle/transit priority (ex. signal priority for transit and carpool lanes)
- Bus pullouts
- Wayfinding (ex. pedestrian and bicycle scale signage providing information about surrounding amenities)
- Information and incentives for bicycling, walking and transit

Chapter 7: Transitioning To Complete Streets

COMPLETE STREETS TRANSITION PLAN

Implementing complete streets begins with adoption of polices, plans and designs described in this guidebook. Frequently, the last steps in implementing complete streets are the most difficult and involve enacting requirements and regulations and providing funding for complete streets improvements. Specifi c tools for addressing these challenges are described in this chapter.

Providing all of the ingredients for implementing complete streets will take a signifi cant investment in some communities. Below are some tools that local jurisdictions may want to consider to facilitate the transition of motor vehicle oriented street towards streets that provide a greater range of safe and convenient choices for all users.

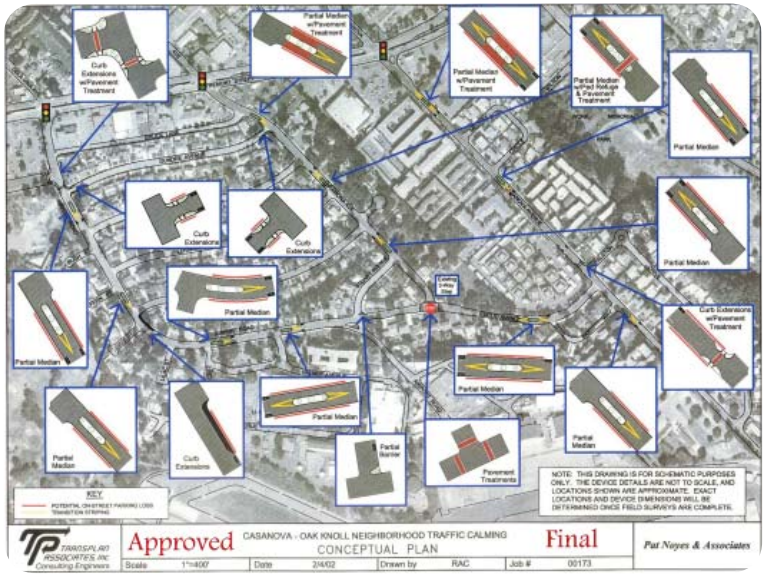
Zoning Ordinance Review

Zoning ordinance, subdivision ordinance, and municipal code may need to be reviewed to identify where policy is weak in establishing standards. The following zoning ordinance features will support implementation of complete streets:

- Requirements for access management and transit-oriented development;
- Regulations that support recommended complete street characteristics and non-motorized site design for development sites, setbacks, and building entrances;
- Regulations promoting higher density and multi-use developments, which encourages walking and bicycling between destinations;
- Regulations that require easements for bicycle and pedestrian facilities and require new development to make improvements consistent with bicycle, pedestrian, transit, and traffi c calming plans.
- Incentives for developments that provide enhanced bicycle, pedestrian and transit facilities.

Local Area Plans

Local area specific plans can be helpful in developing a complimentary set of investments which support a systems approach to complete streets. In some cases, local area specific plans may have strong potential for implementing complete streets policies by taking a comprehensive approach to ensuring consistency with higher level plans, while at the same time providing detail which is responsive to specific local area evidence-based needs. In the early 2000s, the City of Monterey worked with residents to develop neighborhood traffic calming plans. Since their adoption, the City has successfully implemented the majority of these plans.

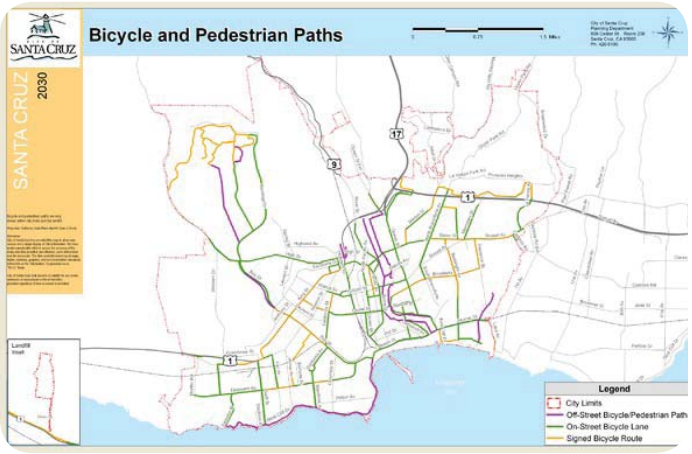


City of Monterey Neighborhood Traffic Calming Plan

Bicycle and Pedestrian Plans

Bicycle transportation plans and pedestrian master plans should also be utilized to develop complete streets projects. Ensuring that complete streets projects are consistent with these mode specific plans is an effective way to support the development of a network of complete streets. Establishing a network of complete streets is important because roadway users typically utilize several transportation facilities and more than one mode when traveling between their origin and destination.

Ensuring that new projects are consistent with bicycle and pedestrian plans can be utilized as strategy for transiting to complete streets, particularly to improve connectivity. For example, the Tahoe Regional Planning Council worked closely with local jurisdictions to establish zoning ordinances for its bicycle and pedestrian plan. These ordinances require new developments to implement bicycle and pedestrian facilities identified in the plan if they are located within or along a proposed development parcel.



FUNDING COMPLETE STREETS

Funding for complete streets project remains a challenge in the Monterey Bay Area where transportation needs far out-weigh available transportation funds. Complete streets projects are currently being considered in the development of the Monterey Bay Area Sustainable Communities Strategy as part of a suite of projects to reduce vehicle miles traveled in areas identified for growth and more intensified use. Although many complete streets projects may be identified to receive funding in the long-range transportation plan and sustainable communities strategy, they will need to compete for limited transportation resources.

Existing Funding Sources

- Transportation Development Act Funds
- Regional Surface Transportation Program
- Neighborhood Improvement Program (City of Monterey)
- Bicycle Transportation Account
- Office of Traffic Safety
- Highway Safety Improvement Program
- Transportation Alternatives Program (formerly Transportation Enhancement funds)
- Regional Development Impact Fees

Potential New Funding Sources

Active Transportation Program: Legislation is currently under consideration at the state level to consider consolidating the federal Transportation Alternatives Program, the state Bicycle Transportation Account, the state and federal Safe Routes to Schools and the Environmental Enhancement and Mitigation program into a single statewide competitive program.

Multimodal Impact Mitigation Fees: Development impact fees are now being assessed and applied to bicycle, pedestrian and transit projects. Like traditional impact fees, multimodal impact fees are used to mitigate the cost of new demands on the transportation system resulting from trips incurred by new development. Local jurisdictions with multimodal impact fees are using model projections, multimodal level of service thresholds, or multimodal trip generation rates by land use type, (such as those developed by the Institute of Transportation Engineers), as the mechanism for assessing the mitigation payment amount. Fees are them applied to investments that are reasonably connected to the development impacts. Multimodal impacts fees work in areas where there is already pedestrian, bicycle and transit activity or in areas that could potentially benefi t from and support diverse transportation options.

Local Transportation Sales Tax Measure: Over 85% of California residents live in a region with an approved transportation measure which dedicates sales tax funding to transportation projects. Local transportation measures are applied to projects identifi ed in an approved expenditure plan and currently require a two-thirds majority vote.

Public and private grant programs focused on improving health by reducing greenhouse gas emissions, improving air quality and reducing obesity through physical activity may also play a role in funding complete streets projects.

REGIONAL COMPLETE STREETS PHASING PLAN

The tools provided in the Monterey Bay Area Complete Streets Guidebook support a transition from streets that are primarily auto-oriented to streets which safely and comfortably accommodate all users. The Monterey Bay Area Complete Streets Guidebook takes the approach that by incorporating complete streets into policy, plans, and design, streets will begin to become more complete in stages, beginning in the short-term (2020) and continuing into the long-term (2035).

Given the significant need for road rehabilitation throughout the Monterey Bay Area , complete streets improvements that can be coupled with roadway rehabilitation projects are more likely to be completed in the short-term (2020), such as complete street features that can be realized primarily through roadway restriping. Other projects expected to be completed in the short-term are those funded by continuous funding sources such as Transportation Development Act funds, which frequently support curb ramp improvements, and Safe Routes 2 School funds which support bicycle, pedestrian and traffic calming around schools. The projects which require a greater amount of resources will be implemented closer to the 2035 horizon if current funding trend continue.

Short-term projects such as bicycle lane striping

Long-term projects such as the Monterey Branch Line Light Rail Service and Stations

Chapter 8: Education, Encouragement & Enforcement

Education, encouragement, and enforcement programs complement complete street infrastructure programs and can play an important role in achieving complete streets objective.

EDUCATION

Developing complete streets is a critical step in providing alternatives to driving. However, to achieve an actual shift from driving to walking, bicycling or taking transit requires a change not only in the safety and reliability of those alternatives, but also a change in an individual's preference, perception and behavior. Many local jurisdictions around the Monterey Bay Area are implementing marketing campaigns to encourage healthy and active lifestyles. Obesity and sedentary lifestyles are on the rise for both adults and children in America, and daily exercise needs to be integrated into American lifestyles. In the Monterey Bay Area region, marketing campaigns, such as Bike Week, add support to existing messages of getting more exercise while promoting complete streets principles.

A telephone survey conducted in the AMBAG region in May 2013 provided information regarding travel preferences. Throughout the region, survey participants overwhelmingly indicated that they rely on their cars to travel; however, they felt that if it were more convenient or more comfortable, they would like to walk or bicycle to shopping or recreation destinations. Integrating Complete Streets features into our transportation system can help this desire to become a reality.

Complete Streets policies are viewed as an important element for achieving Safe Routes to School goals, as children are one of our most vulnerable transportation users. Safe Routes to School programs have become tremendously popular not only across the country, but within the Monterey Bay Area. These programs benefi t from Complete Streets policies that can help turn all routes into safe routes. Examples of Safe Routes to School Programs include:

- Safe Routes to School Maps
- Bike/Walk to School Day
- Walking School Buses
- Bicycle Train
- Bike to School Day Resource Guide:
- Monterey County: (http://www.tamcmonterey.org/bikeweek/breakfast.html)
- San Benito County: (http://sanbenitorideshare.org/schools/safe-routes-to- school/)
- Santa Cruz County: (http://bike2work.com/s_cruz/)

Training

Another critical component of a successful education program is providing decision makers and project designers with information on the latest approaches to roadway design to help establish a common level of understanding and facilitate discussions complete streets. Planners are encouraged to hold workshops or provide their elected governing bodies and advisory committees with presentations on facility design and other topics related to bicycling and walking as a means to understand Complete Streets principles. Agencies may want to consider “certifying” staff members as complete streets specialists when a specific level of training in complete streets concepts is completed. Several resources for this type of training are available, including:

- The UC Berkeley Tech Transfer Program
- The Transit Cooperative Research Program (TCRP)
- The National Complete Streets Coalition
- The National Rural Transit Assistance Program

More informal training may involve meeting with local jurisdictions who have experience implementing complete streets policies or hosting roundtables for project sponsors to discuss lessons learned. The regional transportation planning agencies can help educate city and county project planners and designers to ensure that Complete Streets concepts are well understood and can be incorporated into future projects.

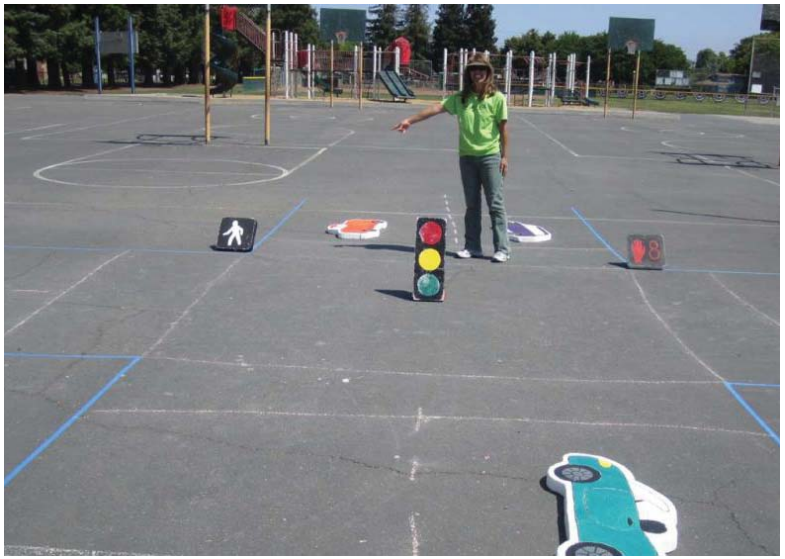
Walking Audits

Walking audits are a tool that can be very useful to educate users about the needs on a particular street. Walking audits can be completed individually or as a group. The auditor(s) should use a checklist to note the overall quality of their travel on the street and identify gaps in the pedestrian network, safety or accessibility concerns, areas needing repair, and other opportunities to enhance the corridor to make it more comfortable for all users.

Vehicle Code

Pedestrians and bicyclists should be educated about vehicle codes related to their transportation mode. The Traffic Safe Communities Network in Santa Clara County has produced a guidebook for this purposes that can be found at: http://www.ots.ca.gov/pdf/BicyclePedSafetyBrochure.pdf.

The guide includes references to the California Vehicle Codes that establish safe practices for bicycling and walking. This is a tool that can be used by local jurisdictions to ensure that those walking and bicycling for transportation are informed about their rights and responsibilities.



ENCOURAGEMENT

Communities can encourage the development of complete streets projects by demonstrating the need for and benefits of active transportation and transit. Some activities may include conducting organized community bike rides, walking events and providing transit access to community gatherings. A community may also focus on breaking down barriers to active transportation and transit by producing user-friendly bike maps and transit schedules, providing commuting incentives and bike share programs and offering discounted transit passes. The Monterey Bay area has several events and programs aimed at encouraging walking and biking, including the following:

- Bike Week, including Bike to Work & Bike to School Events
- Walk to School Week
- Condor Classic
- Sea Otter Classic
- Community bicycle rides

In addition, an integral partner in promoting and implementing Complete Street efforts are colleges and universities within the Monterey bay Area. Local jurisdictions may work to share resources and leverage opportunities to educate the public and leadership on the value and implementation of complete streets within the region.

Elementary and high schools are also taking an active role in Complete Streets by helping promote more active lifestyles, such, as encouraging children to walk or bike to school. Bike to School Day and Walk to School Day educational campaigns have been tremendously successful in the region as Complete Streets make it easier for students to get around by all modes of transportation, providing more choices for those who want them. The Transportation Agency for Monterey County offers a Bike to School Day 2012 Resource Guide online at tamcmonterey. org.

ENFORCEMENT

Enforcement emphasizes the complete streets connection between the law enforcement community and project planners and designers. Often times, communities have an established relationship with a liaison within the local police department or California Highway Patrol to monitor and promote safe bicycling and walking. This relationship builds on local efforts to prevent bicycle theft, enforcement campaigns to encourage cyclists and motorists to share the road safely, and understand the California Vehicle Codes addressing safe bicycling and walking.

Enforcement agencies should be encouraged to understand the concepts of Complete Streets planning and design, and work closely with planners, engineers, and policymakers to ensure that users are comfortable when travelling. The rights of both vehicles and non-motorized transportation should be understood by all users, as well as planners and engineers, to ensure that Complete Streets projects can be appropriately enforced.

Code enforcement is another tool that can be used to support the maintenance of safe sidewalks or other maintenance of the traveled way. These codes should be considered by planners and designers when implementing Complete Streets projects.

Chapter 9: Talking About Complete Streets

The accepted definition of complete streets is: roadways designed to meet the needs of all users regardless of mode choice, age or ability. However, the meaning of complete street may vary by community, application or individual. This chapter is intended to serve as a resource for professionals, decision makers and the public who are interested in discussing and educating others about complete streets concepts.

SIMILAR CONCEPTS

The complete streets terminology is similar to terms such as “livable streets”, “context sensitive solution”, “sustainable transportation”, and “transit oriented developed”. All of these concepts give greater emphasis to alternatives to driving alone than traditional transportation planning concepts which primarily focused on vehicle transportation. Each of these newer terms reveal an approach to planning and designing transportation facilities which takes into consideration transit, bicycling and walking and the demands and desires of each community. Unlike the other terms, “complete streets” is the most encompassing phrase associated with this approach and conveys the need for streets to have all the necessary and appropriate parts to achieve its objective, as opposed other concepts that place greater emphasis on one particular transportation design such as transit accommodations, or pedestrian scale facilities.

COMMUNITY VALUE

In order to facilitate dialogue about complete streets between various stakeholders, this section provides some suggestions for talking about complete streets in way that resonates with roadway users not familiar with in transportation planning terminology. Groups that may be engaged in complete streets discussion include, but are not limited to policy makers, advocacy groups, schools, law enforcement, neighborhood associations, and business groups.

When encouraging dialogue about complete streets amongst with stakeholders, begin with a common understanding of complete streets. See Chapter 1: What are Complete Streets, Why Complete Streets? When talking about the benefi ts of complete streets, consider the following:

What does improved access mean?

- Increasing people's ability to meet most of their daily needs (ex. shopping, school, services, work) without having to drive.
- Improving the convenience of walk, bicycle and transit by designing facilities that provide shorter routes that are not obstructed and reduce weight times at intersections.
- Improving the comfort of walk, bicycle, and transit by designing facilities that are buffered from high traffi c volumes or speeds, reducing pedestrian exposure to traffi c at intersections and providing lighting and shade.

What does economic benefit mean?

- Reinvesting money in the local economy by reducing fuel consumption and vehicle related expenses.
- Reducing household cost by not spending it on fuel and other vehicle-related expenses
- See Appendix J, Economic Framework for Evaluating Complete Streets.

Why care about safety?

- Traffi c crash injuries can result in severe and/or permanent health damage, affecting quality of life and at a great cost to individuals and societies.
- Bicycle and pedestrians are disproportionately negatively impacted by collisions.
- Increasing the number of people of walking, biking, and public transportation use result in lower rates of chronic disease (including cancer, diabetes, stroke, and heart disease) and mortality.
- Slower vehicle speeds have a positive correlation with improved safety for all modes.

Why is equity important?

- People experiencing poverty or language barriers, people of color, older adults, youth, and people with disabilities tend to experience a disproportionately small share of benefits from transportation investments, particularly because traditional transportation investment prioritize vehicles. These groups are overrepresented in households without access to a vehicle.
- Other elements of the transportation system, such as lack of ADA compliance or safe street crossings also create extra barriers that may prevent these groups from experiencing the full benefit of transportation investments

How are the environment and complete streets related?

- The street is a system: a transportation system, an ecosystem and a system of social and economic interactions.
- Improve habitat in right-of-ways.
- Increase tree canopy in rights-of-way which can increase habitat and reduce the urban heat island affect.
- Treat storm water volumes and flow to improve water quality and reduce run off.
- Avoid impacts to natural areas.
- Reduce greenhouse gas emission and fossil fuel consumption by reducing the number and length of vehicle trips and improving the flow of traffic (and minimizing motor idling).

ADDRESSING SPECIFIC USER GROUPS

Consult the following fact sheets developed by Smart Growth American when addressing specific user groups or topics. Go to www.smartgrowthamerica.com to download pdf or view web versions of fact sheets. Smart Growth American offers the following fact sheets:

Children
People with Disabilities
Older Adults
Health
Public Transportation
Climate Change

Economic Revitalization
Gas Prices
Safety
Lower Transportation Costs
Create Livable Communities
Equity

Ease Traffic Woes
Costs of Complete Streets
Change Travel Patterns
Complete and Green Streets
Networks of Complete Streets
Rural Areas and Small Towns

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Appendices

APPENDIX A: Complete Streets Needs Assessment Matrix

COMPLETE STREETS & CORRIDORS																								
	LIMITS		MOBILITY CONTEXT																	LAND USE CONTEXT	PLANNING			
CS CORRIDOR/STREET BY PRIORITY AREA	1	2	DISTANCE (MI)	Daily Traffic	Functional Classification	# of Lanes	Speed Limit	Signalized Intersections	Four Way Stop	Signal Synchronization	Block Length (Ft)	Poor Pavement Condition	On-Street Parking (type)	Traffic Calming Devices	Truck Route	Quality Transit Corridor (2035)	Bike Route	SRTS	Wayfinding Signage/ Traveler Information	PLACE TYPES SERVED	COMPLETE STREET TYPE	ISSUES	RECOMMENDED SOLUTIONS	COMMENTS
Pleasure Point																								

PEDESTRIAN NEED/FACILITIES																										
			CONNECTIVITY & COMFORT			CROSSINGS															SAFETY	GAPS	PLANNING			
STREET	Limit 1	Limit 2	Sidewalks	Paved Sidewalk Width	Buffer	Cross Street	Signalized Intersections	Audible Countdown	Walk Phase Timing	Uncontrolled Crossing	Crossing Distance	# Lanes	Median	Crosswalk Signage	Crosswalk Visibility	School Crossing	ADA Ramps	Detectable Warning	Curb Extensions	Lighting	Collision History	Sidewalk Gaps	Proposed Facilities	ISSUES	RECOMMENDED SOLUTIONS	Comments
																									New sidewalks on southside or [illegible] New connections between 38th and 41st	
																							Sidewalk buffer needed	Overall pedestrian environment could be more attractive.		

BICYCLE NEED/FACILITIES

			CONNECTIVITY & COMFORT				CROSSINGS		SAFETY	GAPS	PLANNING			
Street	Limit 1	Limit 2	Bicycle Facility Type	Bicycle Lane Width	Bicycle Parking	Route Signage	Bicycle Detection (Signalized Intersections)	Uncontrolled Crossings (Class I)	Collision History	Bikeway Gaps	Proposed Facilities	ISSUES	RECOMMENDED SOLUTIONS	COMMENTS

TRANSIT NEED/FACILITIES

	CONNECTIVITY & COMFORT											GAPS	PLANNING			
	STOPS & STATIONS							SERVICE								
Street	Cross Street	ADA Access	Bicycle Racks	Distance to Marked Pedestrian Crossing	Shelter	Lighting	Amenities	Routes	Peak Hour Headways	Existing Transit Capacity (along corridor)	Link to Key Destinations	Transit Travel Speeds	Transit Gaps	Proposed Facilities	ISSUES	RECOMMENDED SOLUTIONS	COMMENTS

APPENDIX B: Sample Goals & Policies

Communities may include the entire sample complete streets policy in the general plan circulation element as a complete policy package, or may selectively adopt specific objectives or policies. Communities are encouraged to tailor the policy and implementation measures to local needs, concerns, and conditions, and to identify the local agency or department responsible for implementation. Most circulation elements already include goals, objectives, and policies addressing the needs of motorists and movers of commercial goods, so the package below focuses on other types of users. In tailoring the package for your jurisdiction you may wish to include the entire package as a separate policy set with cross-references to other pre-existing provisions of the circulation element, or you may choose to use some or all of the goals, objectives, and policies below for amendments to existing provisions.

Goal C1: Provide streets that are safe, comfortable, and convenient routes for walking, bicycling, and public transportation to increase use of these modes of transportation, enable active travel as part of daily activities

Objective C1.1: Integrate Complete Streets infrastructure and design features into street design and construction to create safe and inviting environments for people to walk, bicycle, and use public transportation.
"The City will promote context-sensitive streets (i.e., by designing transportation projects within the context of adjacent land uses to improve safety and neighborhood livability, promote transportation choices and meet land use objectives), consistent with the City's Urban Street Design Guidelines." – City of Charlotte

Implementing Policies:

C1.1.1. In planning, designing, and constructing Complete Streets:

- Reference existing planning documents such as the Monterey Bay Area Complete Streets Guidebook and Checklist, local bicycle and pedestrian master plans, specific plans, transit master plans and neighborhood traffic calming plans.
- Include infrastructure that promotes a safe means of travel for all users along the right of way, such as sidewalks, shared use paths, bicycle lanes, and paved shoulders.
- Include infrastructure that facilitates safe crossing of the right of way, such as accessible curb ramps, crosswalks, refuge islands, and pedestrian signals; such infrastructure must meet the needs of people with different types of disabilities and people of different ages.

o Ensure that sidewalks, crosswalks, public transportation stops and facilities, and other aspects of the transportation right of way are compliant with the Americans with Disabilities Act and meet the needs of people with different types of disabilities, including mobility impairments, vision impairments, hearing impairments, and others. Ensure that the [Jurisdiction] ADA Transition Plan includes a prioritization method for enhancements and revise if necessary.

o Prioritize incorporation of street design features and techniques that promote safe and comfortable travel by pedestrians, bicyclists, and users of public transportation, such as traffic calming circles, additional traffic calming mechanisms, narrow vehicle lanes, raised medians, dedicated transit lanes, transit priority signalization, transit bulb outs, road diets, high street connectivity, and physical buffers and separations between vehicular traffic and other users.

o Ensure use of additional features that improve the comfort and safety of users:

Provide pedestrian-oriented signs, pedestrian-scale lighting, benches and other street furniture, bicycle parking facilities, and comfortable and attractive public transportation stops and facilities.

Encourage street trees, landscaping, and planting strips, including native plants where possible, in order to buffer traffic noise and protect and shade pedestrians and bicyclists.

Reduce surface water runoff by reducing the amount of impervious surfaces on the streets.

C1.1.2. In all street projects, include infrastructure that improves transportation options for pedestrians, bicyclists, and users of public transportation of all ages and abilities.

COMMENT: This provision, which requires that all street projects on new or existing streets create complete streets, is a fundamental component of a commitment to complete streets.

o Ensure that this infrastructure is included in planning, design, approval, construction, operations, and maintenance phases of street projects.
o Incorporate this infrastructure into all construction, reconstruction, retrofit, maintenance, alteration, and repair of streets, bridges, and other portions of the transportation network.
o Incorporate multimodal improvements into pavement resurfacing, restriping, and signalization operations where the safety and convenience of users can be improved within the scope of the work.
o Develop systems to implement and monitor incorporation of such infrastructure into construction and reconstruction of private streets.
o Allow exclusion of such infrastructure from street projects only upon written approval by [the City Manager or a senior manager of an appropriate agency, such as the Department of Public Works], and only where documentation and supporting data indicate one of the following bases for the exemption: (a) use by a specific category of users is prohibited by law; (b) the cost would be excessively disproportionate to the need or probable future use over the long term; (c) there is an absence of current and future need; or (d) signifi cant adverse impacts outweigh the positive effects of the infrastructure.

COMMENTS: This provision provides crucial accountability in the exceptions process by requiring documentation, a transparent decision-making process, and written approval by a specified offi cial. Other exceptions can also be included in this list.

In evaluating whether the conditions of (b) and (c) are met, a jurisdiction may need to conduct latent demand studies, which measure the potential level of use by bicyclists, pedestrians, and others should appropriate infrastructure be provided. Such projections should be based on demographic, school, employment, and public transportation route data, not on extrapolations from current low mode use.

o Provide an annual report to the [City Council/Board of Supervisors] listing the street projects undertaken in the past year and briefly summarizing the complete streets infrastructure used in those projects and, if applicable, the basis for excluding complete streets infrastructure from those projects.

C1.1.3. Develop policies and tools to improve [Jurisdiction]'s Complete Streets practices:

- Develop a pedestrian crossings policy, addressing matters such as where to place crosswalks and when to use enhanced crossing treatments.
- Develop policies to improve the safety of crossings and travel in the vicinity of schools and parks.
- Consider developing a transportation demand management/commuter benefits ordinance to encourage residents and employees to walk, bicycle, use public transportation, or carpool.
- Develop a checklist for [Jurisdiction]'s development and redevelopment projects, to ensure the inclusion of infrastructure providing for safe travel for all users and enhance project outcomes and community impact.
- As feasible, [Jurisdiction] shall incorporate Complete Streets infrastructure into existing public [and private] streets to improve the safety and convenience of Users, construct and enhance the transportation network for each category of Users, and create employment.

C1.1.4. Encourage transit-oriented development that provides public transportation in close proximity to employment, housing, schools, retailers, and other services and amenities.

C1.1.5. Change transportation investment criteria to ensure that existing transportation funds are available for Complete Streets infrastructure.

C1.1.6. Identify additional funding streams and implementation strategies to retrofit existing streets to include Complete Streets infrastructure.

Objective C1.2: Make Complete Streets practices a routine part of [Jurisdiction]'s everyday operations.

Implementing Policies:

C1.2.1. As necessary, restructure and revise the zoning, subdivision, and [insert by name references to other relevant chapters of the city or county code such as "Streets and Sidewalks" or "Motor Vehicles and Traffic"] codes, and other plans, laws, procedures, rules, regulations, guidelines, programs, templates, and design manuals, including [insert references to all other key documents by name], in order to integrate, accommodate, and balance the needs of all users in all street projects on public [and private] streets.

C1.2.2. Develop or revise street standards and design manuals, including cross-section templates and design treatment details, to ensure that standards support and do not impede Complete Streets; coordinate with related policy documents [such as Pedestrian/Bicycle Plans, insert other relevant documents].

Assess current requirements with regard to road width and turning radii in order to determine the narrowest vehicle lane width and tightest corner radii that safely balance other needs; adjust design guidelines and templates to refl ect ideal widths and radii.

C1.2.3. Make training available to planning and public works personnel and consultants on the importance of Complete Streets and on implementation and integration of multimodal infrastructure and techniques.

C1.2.4. Encourage coordination among agencies and departments to develop joint prioritization, capital planning and programming, and implementation of street improvement projects and programs.

C1.2.5. Encourage targeted outreach and public participation in community decisions concerning street design and use.

C1.2.6. Establish performance standards with measurable outcomes to assess safety, functionality, and actual use by each category of users; include goals such as:

- By [2020], facilitate a transportation mode shift so that [20] % of trips occur by bicycling or walking.
- By [2015], reduce the number of injuries and fatalities to bicyclists and pedestrians by [__]%.
- Reduce per capita vehicle miles traveled by [__]% by [insert year].
- Provide a high proportion of streets ([__]%) with sidewalks, low design speeds, tree canopy, and street furnishings.
- Increase the miles of bicycle lanes and other bikeways by [__]% by [insert year].
- Increase the miles of sidewalks by [__]% by [insert year]

COMMENT: Other standards could include user satisfaction, percentage reductions in greenhouse gas emissions, and reduction in gaps in the sidewalk network.

C1.2.7. Establish measures of effectiveness for the performance of the circulation system and the effects of new projects on the system, taking into account all modes of transportation including walking, bicycling, and public transportation. Ensure that measures address relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and public transportation; use these measures for planning and in lieu of automobile level of service standards for environmental review.

C1.2.8. Collect baseline data and regularly gather follow-up data in order to assess impact of policies.

- Collect data for each category of users regarding the safety, functionality, and actual use of the neighborhoods and areas within [Jurisdiction].
- Track public transportation ridership numbers.
- Track performance standards and goals.
- Track other performance measures such as number of new curb ramps and new street trees or plantings.
- Require major employers to monitor how employees commute to work.
- All initial planning and design studies, health impact assessments, environmental reviews, and other project reviews for projects requiring funding or approval by [Jurisdiction] shall: (1) evaluate the effect of the proposed project on safe, comfortable, and convenient travel by bicyclists, children, persons with disabilities, pedestrians, users of public transportation, seniors, youth, and families, and (2) identify measures to mitigate any adverse impacts on such travel that are identifi ed.

Objective C1.3: Plan and develop a comprehensive and convenient bicycle and pedestrian transportation network.

COMMENTS: Jurisdictions with existing bicycle or pedestrian plans may have already addressed the policy/action items under this objective. In such jurisdictions, it is not necessary to restate these policy and action items verbatim. Such plans should be reviewed, and, if necessary, revised to complement the complete streets approach. If existing plans address this objective sufficiently, a jurisdiction may incorporate its bicycle and pedestrian plans with language such as: “The provisions set forth in the [Pedestrian/Bicycle Plan] are incorporated into this plan.” If this approach is used, be sure that the incorporated plan is internally consistent with the remainder of the general plan.

For jurisdictions that have not developed a detailed bicycle or pedestrian plan, the policies and actions in this section provide a good way to begin addressing those needs in an integrated fashion.

Implementing Policies:

C1.3.1. Develop a long-term plan for a bicycle and pedestrian network that meets the needs of users, including bicyclists, children, persons with disabilities, pedestrians, users of public transportation, seniors, youth, and families.

- Conduct a demand analysis for each category of user, mapping locations that are already oriented to each mode of travel and type of user and those for which there is latent demand.
- For each category of user, map out a preferred transportation network with routes that will enable safe, interconnected, direct, continuous, and efficient travel from each major origination area to each major destination area.
- Encourage public participation in community decisions concerning the demand analysis, preferred route network, and street design and use to ensure that such decisions: (a) result in streets that meet the needs of all users, and

(b) are responsive to needs of individuals and groups that traditionally have not participated in public infrastructure design. Include bicyclists, children, persons with disabilities, motorists, movers of commercial goods, pedestrians, users of public transportation, seniors, youth, families, low-income communities, communities of color, and other distinct social groups, and their advocates. Establish ongoing advisory committees and public feedback mechanisms.

- Identify and prioritize necessary changes in order to implement the preferred network; prioritize neighborhoods with the greatest need and projects that significantly alleviate economic, social, racial, or ethnic inequities.
- Ensure that the networks provide ready access to healthy sources of nutrition.
- Explore the use of non-standard locations and connections for bicycle, pedestrian, and public transportation facilities, such as easements, restored stream corridors, and railroad rights-of way.

C1.3.2. Evaluate timeline and funding of the plan.

- Assess the degree to which implementation of the plan can be coordinated with planned reconstruction of streets, development projects, utility projects, and other existing funding streams.
- Develop funding strategies for addressing additional needs; actively pursue funding from state, federal, and other sources.
- Explore imposing development impact fees and dedication requirements on new development to create paths and other Complete Streets infrastructure.

C1.3.3. In collaboration with [appropriate local agencies and regional transportation planning agencies/metropolitan planning organizations], integrate bicycle, pedestrian, and public transportation facility planning into regional and local transportation planning programs and agencies to encourage connectivity between jurisdictions.

C1.3.4. Develop programs to encourage bicycle use, such as enacting indoor bicycle parking policies to encourage bicycle commuting, or testing innovative bicycle facility design.

Objective C1.4: Promote safety of bicyclists, pedestrians, and public transportation.

> COMMENT: As noted for the previous objective, jurisdictions with existing bicycle or pedestrian plans may also choose to omit these items if already addressed in those plans and instead reference those plans.

Implementing Policies:

C1.4.1. Identify physical improvements that would make bicycle and pedestrian travel safer along current major bicycling and walking routes and the proposed future network, prioritizing routes to and from schools.

C1.4.2. Identify safety improvements to pedestrian and bicycle routes used to access public transportation stops; collaborate with [public and private transit agencies operating within Jurisdiction] to relocate stops where advisable.

C1.4.3. Identify intersections and other locations where collisions have occurred or that present safety challenges for pedestrians, bicyclists, or other users; consider gathering additional data through methods such as walkability/bikeability audits; analyze data; and develop solutions to safety issues.

C1.4.4. Prioritize modifications to the identified locations and identify funding streams and implementation strategies, including which features can be constructed as part of routine street projects.

C1.4.5. Collaborate with schools, senior centers, advocacy groups, and public safety departments [insert additional specific departments as appropriate] to provide community education about safe travel for pedestrians, bicyclists, users of public transportation, and others.

C1.4.6. Use crime prevention through environmental design strategies to increase safety for pedestrians, bicyclists, and other users.

C1.4.7. As necessary, public safety departments should engage in additional enforcement actions in strategic locations.

Objective C1.5: Make public transportation an interconnected part of the transportation network.

Implementing Policies:

C1.5.1. Partner with [public and private transit agencies operating within Jurisdiction] to enhance and expand public transportation services and infrastructure throughout [Jurisdiction] and the surrounding region; encourage the development of a public transportation system that increases personal mobility and travel choices, conserves energy resources, preserves air quality, and fosters economic growth.

C1.5.2. Work jointly with [public and private transit agencies operating within Jurisdiction] to provide destinations and activities that can be reached by public transportation and are of interest to public transportation-dependent populations, including youth, seniors, and persons with disabilities.

C1.5.3. Collaborate with [public and private transit agencies operating within Jurisdiction] to incorporate infrastructure to assist users in employing multiple means of transportation in a single trip in order to increase transportation access and fl exibility; examples include, but are not limited to, provisions for bicycle access on public transportation, secure bicycle racks at transit stops, access via public transportation to trails and recreational locations, and so on.

C1.5.4. Ensure safe and accessible pedestrian routes to public transportation stops; relocate stops if safe routes are not feasible at current location.

C1.5.5. Work with [public and private transit agencies operating within Jurisdiction] to ensure that public transportation facilities and vehicles are fully accessible to persons with disabilities.

C1.5.6. Explore working with [public and private transit agencies operating within Jurisdiction] to provide travel training programs for seniors and persons with disabilities, and awareness training for vehicle operators.

C1.5.7. Explore creation of public transportation priority lanes to improve travel time.

C1.5.8. Partner with [public and private transit agencies operating within Jurisdiction] to collect data and establish performance standards related to these steps.

i. Note that many types of accommodations for people with disabilities are mandated by federal law under the Americans with Disabilities Act.

ii. A road diet is a transportation technique in which the number or width of lanes dedicated to motor vehicle traffic is decreased, often by combining the two central lanes into a single two-way turn lane, in order to create additional space within the right of way for features such as bicycle lanes, sidewalks, or buffer zones.

iii. Connectivity describes the directness of routes and density of connections in a street network. A street network with high connectivity has many short links, numerous intersections, and few dead-end streets. As connectivity in-creases, travel distances decrease and route options increase, allowing more direct travel between destinations.

iv. Crime prevention through environmental design (CPTED) involves designing the built environment to deter criminal behavior. CPTED aims to create environments that discourage the commission of crimes by influencing offenders to not commit a contemplated crime, usually due to increased fear of detection.

APPENDIX C: Multimodal Network Quality Analysis

MULTIMODAL NETWORK QUALITY ANALYSIS

Some communities are not pursing new Multimodal Level of Service measures as defined in the Highway Capacity manual because collecting the new data required can be resource intensive. Instead, some communities are choosing more qualitative measures of multimodal effectiveness. The Santa Cruz County Regional Transportation Commission rested tested a Multimodal Network Quality of Service measure to evaluate how transportation investment affected the quality and convenience of bicycle, and pedestrian trips. The methodology used was developed as a cooperative effort with the Sustainable Transportation Council, the agency responsible for developing the Sustainable Transportation Analysis and Rating System. The analysis methods used are based on the multimodal network quality of service measures applied in Burien, Washington.

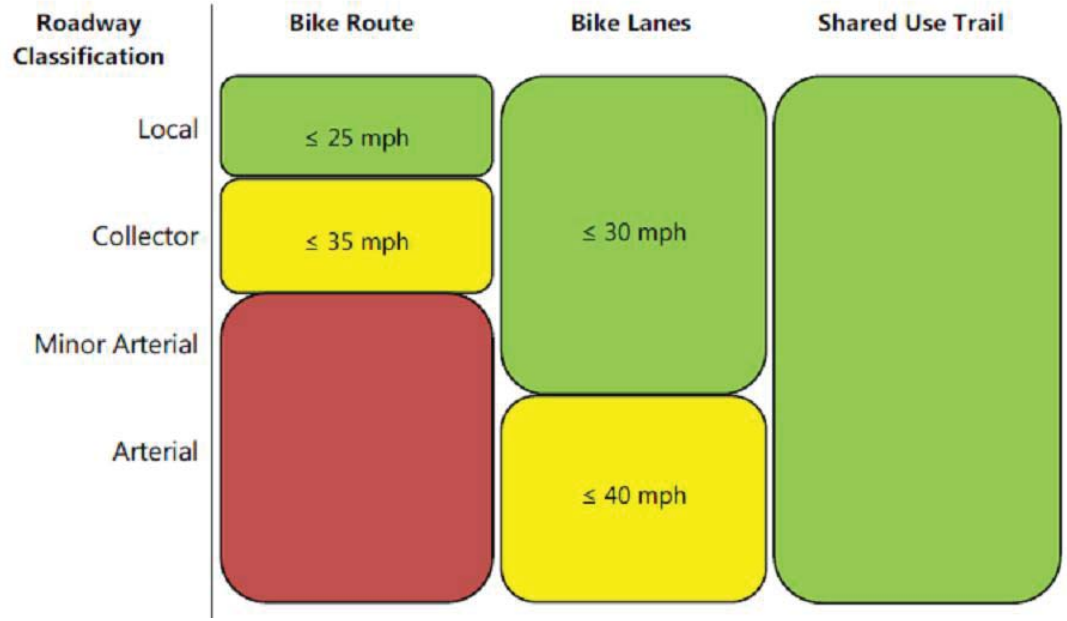
PEDESTRIAN SYSTEM SCORE METHODOLOGY

Pedestrian network quality standards utilize scoring criteria for sidewalks/paths. The criteria focus on the factors that make a good pedestrian environment based on the character of the street. Therefore there are different thresholds for arterials/collectors and local roads. The service score designations are show as green, yellow, and red. A green score is defined as a high quality pedestrian route. A yellow score indicates acceptable conditions, while a red score would not be attractive to many potential pedestrians (Table 1).

Table 1. Pedestrian MMNQ Score

Network Score	Along Arterials and Collectors	Local Roads
	6′ Sidewalk and 3′ buffer or tree wells on both sides	Sidewalks on both sides
	Sidewalk on both sides	Sidewalk on one side
	No Sidewalk on one or both sides	No Sidewalk

Table 2. Bicycle MMNQ Score



The scoring system for the bicycle network depends on the type of bicycle facility provided: bike route, bike lane, or shared use trail. As shown in Table 2, roadway classification and speed are intended to guide the determination of which bicycle facility type is most appropriate for a given roadway. Unlike with the pedestrian MMNQ analysis, bicycle MMNQ analysis is not performed on every street. Only the streets identified as having a facility are included in this analysis, since some streets may not be appropriate for cycling.

DATA REQUIREMENTS

Data related to roadway functional class, sidewalk width, presence of buffer, bicycle facility type (route, lane, path) and roadway speed were all taken into account when evaluating the MMNQ score.

APPENDIX D: Complete Streets Action Plan Template

NAME: [Jurisdiction] DATE:

COMPLETE STREET ACTION PLAN				
IMPLEMENTATION ACTION*	TIMELINE			LEAD DEPARTMENT
	Short	Long	Ongoing	
General Plan Vision				
General Plan Policy & Goals				
Transportation Plan Policy & Goals				
Performance Measures				
Planning Guidance Manual				
Street Design Standards & Specifications				
Transportation Analysis/ Impact Guidelines				
Maintenance Manuals				
Funding Guidelines				
Training Standards				

*Titles and actions may vary by jurisdiction. This list is meant to serve as an example only.

APPENDIX E: Legal Standing of Street Manual

Note: The discussion included in this Appendix was adopted from the Los Angeles County Model Design Manual for Living Streets, 2011.

Local jurisdictions generally follow some established standards for designing streets. Much confusion exists as to what they must follow, what is merely guidance, when they can adopt their own standards, and when they can use designs that differ from existing standards. The text below untangles the myriad of accepted design documents. It is critical for cities and counties to understand how adopting this manual meshes with other standards and guides. The most important of those standards and guides are the following:

- The American Association of State Highway and Transportation Officials' (AASHTO) A Policy on Geometric Design of Highways and Streets (the "Green Book")
- The California Highway Design Manual
- Local manuals or street design standards
- The Manual on Uniform Traffic Control Devices (MUTCD)
- The California Fire Code
- The California Streets and Highways Code and California Vehicle Code

A discussion of the federal-aid roadway classification system helps to frame the requirements of each of these documents. Local governments that wish to use certain federal funds must use a street classification system based on arterials, collectors, and local streets. These funds are for streets and roads that are on the federal-aid system. Only arterials and certain collector streets are on this system. In Chapter 3, "Street Networks and Classifications," this manual recommends an alternative system. To maintain access to these federal funds, local jurisdictions can use both systems. The federal aid system encourages cities to designate more of these larger streets, and to concentrate modifications along these larger streets. Nevertheless, for the purposes of understanding design standards and guides, this is the existing system of street classification for federal funding.

AASHTO GREEN BOOK

The Green Book provides guidance for designing geometric alignment, street width, lane width, shoulder width, medians, and other street features. The Green Book applies only to streets and roads that are part of the National Highway System (NHS). These are Interstate Freeways, principal routes connecting to them, and roads important to strategic defense. These streets and roads comprise about 14 percent of all federal-aid roadway miles in California, and about 4 percent of all roadway miles (Urgo, J., Wilensky, M., and Weissman, S., Moving Beyond Prevailing Street Design Standards, The Center for Law, Energy, and the Environment at the Berkeley Law School, 2010). Although the Green Book's application is limited to these streets, some cities apply its recommendations to all streets.

Further, the Green Book provides guidance that cities often unnecessarily treat as standards. The Green Book encourages flexibility in design within certain parameters, as evidenced by the AASHTO publication A Guide to Achieving Flexibility in Highway Design. For example, 10-foot lanes, which cities often shun out of concerns of deviating from standards, are well within AASHTO guidelines.

CALIFORNIA HIGHWAY DESIGN MANUAL

The California Highway Design Manual (HDM) applies only to State Highways and bikeways within local jurisdictions. If cities deviate from the minimum widths and geometric criteria for bikeways spelled out in Chapter 1000 they are advised to follow the exemption process or experimental process as applicable. The HDM does not establish legal standards for designing local streets. However, like the Green Book, some cities apply HDM guidance to all streets.

As of the writing of this manual, Caltrans is in the process of revising the HDM to meet Caltrans' commitment to Complete Streets in Deputy Directive 64-R1.

LOCAL STREET MANUALS

Local jurisdictions follow the Green Book, the HDM, or design guidance from organizations such as the Institute of Transportation Engineers (ITE) out of liability concerns. Neither federal nor state law mandates adoption or adherence to these guides. However, municipalities often adopt them to protect themselves from lawsuits. Further, many don't have the resources to develop their own standards and practices, so they adopt those in the Green Book, the HDM, or another previously adopted manual, or those of other cities,

A question often posed by plaintiffs' attorneys in traffic-related crashes is, "Did they follow established or prevailing designs, standards, and guidance?" If the attorneys can prove that the local jurisdiction deviated from these, they enhance their chances of winning a judgment against the jurisdiction. Therefore, protection from liability is paramount.

Cities are authorized to adopt or modify their own practices, standards, and guidelines that may reflect differences from the Green Book and the HDM. If these changes generally fall within the range of acceptable practice allowed by nationally recognized design standards, the adopting agencies are protected from liability to the same extent they would be if they applied the Green Book or the HDM. Most changes to streets discussed in this manual fall within the range of the guidelines or recommended practices of nationally recognized organizations such as AASHTO, ITE, Urban Land Institute (ULI), and Congress for the New Urbanism (CNU).

Working within previously established regional guidelines generally should result in a design that is protected from liability. The Green Book and the HDM are silent on many design features, and do not consider the needs within unique contexts. In these cases, cities can develop their own guidelines and standards and incorporate international equivalents or practices from other cities. Cities may adopt the guidance in this manual, which compiles best practices in creating living streets. This manual could, in effect, become the legal prevailing standard by which liability would be assessed.

Cities can also utilize designs that fall outside the ranges specified by nationally accepted guidelines and standards, but these practices can potentially increase liability unless done with great care. When agencies elect to utilize designs that fall outside the guidelines of nationally recognized documents, they need to use additional care to ensure they do not expose themselves to liability.

To minimize liability, local jurisdictions either need to adopt their own standards (which should be based on rationale or evidence of reasonableness), or they can conduct an experimental project. When conducting an experimental project, agencies need to show that they are using the best information that is reasonably available to them at the time, document why they are doing what they are doing, use a logical process, and monitor the results and modify accordingly. This is because the agency may be required in the future to show that its design is reasonable, and the agency may not be able to cite a nationally published guideline or recommendation to support its local action. Often, these experimental projects are conducted because the design engineer has reason to believe that the new or evolved design will be safer or otherwise more effective for some purpose than if the project had prevailing standards and guides been used. These reasons or rationales are based on engineering judgment and should be documented to further minimize exposure to liability.

Unless otherwise noted, everything in this manual can readily be adopted and incorporated without fear of increased liability. In addition, this manual carries the credibility of the many top-level experts who produced it.

In some cases, AASHTO design guidelines may not provide information on innovative or experimental treatments that have shown great promise in early experiments and applications. Since AASHTO is a design guide, agencies have some flexibility to use designs that fall outside the boundaries of the AASHTO guide. Deviation from the range of designs provided in the AASHTO guide requires agencies to use greater care and diligence to document their justification, precautions, and determination to deviate from the guidelines. In California, the precautions to establish

"design immunity" should be followed. These include consideration/analysis and approval by a registered engineer qualified to sign the plans, and certifi cation by the city council or reviewing body clearly indicating the agency's intent. This process documents the engineering judgment that went into the design.

Many cities today use various traffi c calming measures to slow traffic and to improve neighborhood livability. Traffic calming measures are not traffic control devices and therefore the state exercises no jurisdiction over them.

Local agencies may currently use many other reports and documents to guide their roadway design and transportation planning. Other documents provide valuable procedure and reference data, but they do not set standards. They can be referred to and defined as standards by local agencies, but the local authority often has the flexibility to selectively endorse, modify, or define how these informational documents can be used or incorporated into its engineering and planning processes. Also, newer versions of these documents have additional information that can conflict with the local historical approach.

The expected results of the design approaches presented in this document are generally intended to improve safety and/or livability. As a result, implementation of these features should generally reduce liability and lawsuits. There is no way to prevent all collisions or lawsuits, but adopting policies, guidelines, and standards and doing experimental projects with reasonable precautions is a defensible approach.

MUTCD

The MUTCD provides standards and guidance for the application of all allowed traffic control devices including roadway markings, traffic signs, and signals. The Federal Highway Administration oversees application of the MUTCD. California cities must follow the California MUTCD, which generally mirrors the federal MUTCD, but not always.

The rules and requirements for the use of traffic control devices are different than for street design criteria. Local agencies have limited flexibility to deviate from the provisions of the California MUTCD in the use of traffic control devices due to the relationship between the MUTCD and state law. The California MUTCD does provide flexibility within its general provisions for items such as application of standard traffic control devices, use of custom signs for unique situations, traffic sign sizes, and sign placement specifics. In contrast, agencies do not generally have the flexibility to

develop signs that are similar in purpose to signs within the manual while using different colors, shapes, or legends. Agencies are also not authorized to establish traffic regulations that are not specifically allowed or are in conflict with state law. The provisions of the California MUTCD and related state laws thus make it difficult to deploy new traffic control devices in California. This can result in complications, especially in the areas of speed management, pedestrian crossings, and bikeway treatments.

The State of California and the Federal Highway Administration have procedures that allow local agencies to experiment with traffic control devices that are not included in the current MUTCD. Such demonstrations are not difficult to obtain from the Federal Highway Administration for testing of new devices, especially as they relate to pedestrian and bicycle facilities, but the requesting agency must agree to conduct adequate before-and-after studies, submit frequent reports on the performance of the experimental device, and remove the device if early results are not promising. The State process can be more difficult for obtaining approval. Federal approval must be obtained first. The California Traffic Control Devices Committee advises Caltrans, which must then agree to allow the experiment to be conducted and determine that the experiment is not in conflict with State law. Once approval is granted for the experiment, the city has been given some legal immunity from liability suits. Since the California Vehicle Code is written to mirror the MUTCD, provisions within the Vehicle Code may not allow the experiment to proceed. The need to modify the Vehicle Code can complicate obtaining State permission to experiment.

Both the federal and California MUTCD are amended through experimentation. After one or more experiments have shown benefit, the new devices are sometimes adopted into these manuals. In California, the Vehicle Code must be changed first if the Vehicle Code prevents use of the new device.

The federal MUTCD and California MUTCD establish warrants for the use of some traffic control devices. For example, stop signs, traffic signals, and flashing beacons are expected to meet minimum thresholds before application. These thresholds include such criteria as number of vehicles, number of pedestrians or other uses, distance to other devices, crash history, and more. These warrants often prevent local engineers from applying devices that, in their opinion, may improve safety. For example, trail and/or pedestrian crossings of busy, high-speed, wide arterial streets may need signals for user safety, but they may not meet the warrants.

As with street design guidelines, cities may establish their own warrants or modify those suggested by the California MUTCD to suit their context in order to use some traffic control devices. In special circumstances that deviate from their own warrants, cities need to document their reasons for the exception. For example, they may say the trail crossings or school crossings qualify for certain traffic control devices.

CALIFORNIA FIRE CODE

The California Fire Code can impede street design in limited circumstances. The state legislature has adopted the National Fire Code. The National Fire Code is written by a private agency and has no official legal standing unless states or municipalities adopt it, as has been done in California. The primary barrier caused by this adoption is the requirement for a minimum of 20 feet of an unobstructed clear path on streets. To comply with this, streets with on-street parking on both sides must be at least 34 feet wide. This prevents municipalities from designing "skinny" and "yield" streets to slow cars and to make the streets safer, less land consumptive and more hospitable to pedestrians and bicyclists.

There are ways around this requirement. If the local jurisdiction takes measures such as installing sprinklers and adding extra fire hydrants, or the adjacent buildings are built with fire retardant materials, it may be able to get the local fire department to agree to the exception.

Alternatively, the state legislature could repeal its adoption of the 20-foot clear path requirement due to

- The arbitrary and unresearched nature of the provision
- The safety problems associated with the resulting excessively wide streets
- The contradiction that this provision causes with properly researched guidelines and standards by ITE, CNU, AASHTO, and others for streets under 34 feet wide
- The potential liability that the 20-foot clear provision creates for designers who maintain, modify, or design streets that do not provide 20-foot clear paths

It is likely that the state legislature was unaware of these issues when it adopted the code in its entirety.

CALIFORNIA STREETS AND HIGHWAYS CODE AND CALIFORNIA VEHICLE CODE

The California Streets and Highways Code and the California Vehicle Code include laws that must be followed in street design. These are embodied in the California MUTCD. Changes to the Streets and Highways Code and the Vehicle Code may cause the California MUTCD to change.

APPENDIX F: Land Use Place Type Matrix

Urban Place Types

	Intensity	General Characteristics		Examples
		Land Use	Transportation	
U-1 Urban Single-Family Residential 	Low to Medium Intensity (6 to 18 units per acre)	Single-family homes in close proximity to urban centers, typically laid out in a grid block pattern. Includes occasional duplexes, accessory units, and/or small multi-unit buildings. Compact development pattern with small lots, limited setbacks, and close proximity of structures.	Short blocks, grid street pattern, and proximity to destinations support non-motorized modes of transportation. Complete sidewalks and bicycle infrastructure typically present. Neighborhoods served by bus service with typical 30-minute headways; occasional proximity to multi-modal, regional, or intercity transit stations.	Chestnut Street, Santa Cruz Hellam Street, Monterey
U-2 Urban Multi-Family Residential 	Medium Intensity (12 to 30 units per acre)	Small and large apartment buildings, duplexes, accessory units, and limited single-family homes in close proximity to urban centers. Well-integrated into the surrounding urban fabric. One- to five-story residential buildings on small to medium lots with minimal setbacks from property lines and adjacent structures. Building entrances typically oriented to the street.	Short blocks, grid street pattern, land-use diversity, and proximity of destinations support non-motorized modes of transportation. Complete sidewalks and bicycle infrastructure typically present. Neighborhoods served by bus service with typical 30-minute headways; occasional proximity to multi-modal, regional or intercity transit stations.	Clay Street, Monterey 3rd Street, Santa Cruz
U-3 Urban Commercial 	Low Intensity (FAR 1.0 or less)	A high concentration of retail, service, and office uses organized in a grid block pattern. A pedestrian-friendly environment supported by active ground floor building frontages, entrances oriented to the street, parking located to the rear of lots, and buildings placed at or near property lines.	Short blocks, grid street pattern, land-use diversity, and proximity of destinations support non-motorized modes of transportation. Wide sidewalks support pedestrian circulation; motorists frequently park once to visit multiple destinations. Multiple bus routes typically with 30-minute headways; occasional presence of multi-modal, regional or intercity transit stations.	Downtown Santa Cruz Downtown Monterey

U-4 Urban Mixed Use 	Medium to High Intensity (FAR greater than 2.0)	Commercial, office, and residential uses in medium- to large-scale buildings. Vertical mixed use with residential or office above ground floor retail is typical. A pedestrian-friendly environment supported by active ground floor building frontages, entrances oriented to the street, parking located to the rear of lots, and buildings placed at or near property lines.	High-quality pedestrian infrastructure supports pedestrian circulation. Short blocks, grid street pattern, land-use diversity, and proximity of destinations support non-motorized modes of transportation; motorists frequently park once to visit multiple destinations. Transit typically includes modest to robust bus service, with headways averaging 15 to 30 minutes.	Downtown Santa Cruz Downtown Monterey

Suburban Place Types				
	Intensity	General Characteristics		Examples
		Land Use	Transportation	
S-1 Single-Family Residential 	Low Intensity (3 to 8 units per acre)	Single-family homes in self-contained residential neighborhoods. One- to two-story buildings typically on 5,000 to 15,000 square foot lots with moderate to large setbacks.	Automobile-oriented with resident-serving local, collector, and occasionally arterial streets. Limited local transit service and park-and-ride lots. Sidewalks and bicycle facilities for recreational use.	Cliffwood Heights neighborhood, Capitola Deer Flats neighborhood, Monterey Hillcrest neighborhood, Hollister
S-2 Multi-Family Residential 	Low to Medium Intensity (10 to 25 units per acre)	Duplexes, apartment complexes, subdivided houses, and mobile home parks in a generally low-density setting. Generally one- to four-story buildings on lots of varying sizes, often inward-oriented.	Automobile-oriented, most often found along collector or arterial streets. Limited local transit service and park-and-ride lots. Sidewalks and bicycle facilities for recreational use.	Bay Tree Apartments, Scotts Valley Capato Court, Hollister Footprints on the Bay, Monterey

S-3 Neighborhood Commercial 	Low Intensity (FAR less than 0.5)	Stand-alone retail buildings, strip malls, local-serving big-box stores, and smaller-scale offices or office parks. Usually one story buildings occupying low proportion of total lot area; offices in some instances are multi-story. Typically set far back from street.	Automobile-oriented with large parking areas and limited pedestrian access; usually found along arterial streets. Limited local or, in rare instances, intercity transit service. Sidewalks and bicycle facilities usually absent or limited.	Forest Ave-Fairway Shopping Center, Pacific Grove McCray-Meridian Shopping Center, Hollister Kings Village Shopping Center, Scotts Valley
S-4 Regional Commercial 	Low Intensity (FAR less than 0.5) or occasionally Moderate Intensity (FAR 1.0 to 2.0)	Large-scale retail or entertainment uses with a regional draw, including shopping malls, national-chain big-box stores, and tourist destinations. Most frequently occurs as large retail stores with substantial surrounding parking areas, but may also include more pedestrian-oriented or urban forms, especially for tourist destinations.	Automobile oriented, with most shoppers or visitors arriving by car; usually found along arterial streets or in core commercial areas. Transit access varies by setting, but in most instances includes only limited local or, in rare instances, intercity transit service. Except when located in core commercial areas, pedestrian and bicycle access and amenities tend to be limited or absent.	Capitola Mall Cannery Row, Monterey Airline Highway Shopping Center, Hollister Sand Dollar Shopping Center, Sand City
S-5 Employment Center 	Low to Medium Intensity (FAR from less than 1.0 to 2.0)	Office and research-oriented industrial land uses with medium to high employment densities. Buildings typically have low to moderate lot coverage; may have multiple stories or higher lot coverage. Suburban-style office parks, with multi-story office buildings and large parking lots are typical, as are stand-alone office buildings with surrounding parking.	Usually auto-oriented with large areas of surface parking, or occasionally parking garages. May in limited instances include internal pedestrian-oriented features. Transit service is reflective of surrounding place types, but is typically similar to other suburban place types, with limited service and frequency. Larger employment centers may feature private shuttle services.	Tres Pinos Road and Rancho Drive, Hollister Ryan Ranch Office Park, Monterey
S-6 Neighborhood Mixed Use 	Medium Intensity (25 or more units per acre; FAR usually 2.0 or greater)	Multi-family, mixed-use developments with ground-floor, neighborhood-serving retail or office uses. Usually found in newly built traditional neighborhood developments or as infill along existing commercial corridors. Buildings usually have high lot-coverage, with no setbacks and pedestrian-oriented entrances directly fronting the street.	Pedestrian, bicycle, and transit oriented with bicycle parking, limited or tucked-away car parking, and pedestrian amenities. Transit service typically similar to other suburban place types, but with greater potential for increased transit service and facilities.	Capitola Beach Villas Greenfield Village

Town Place Types

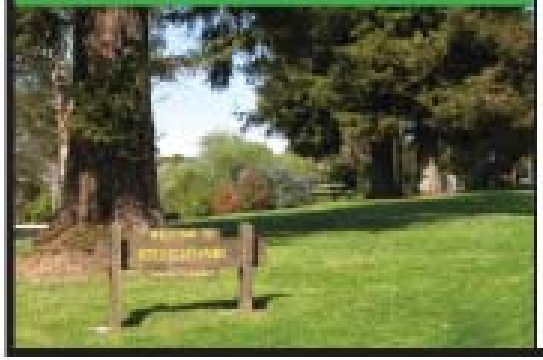
	Intensity	General Characteristics		Examples
		Land Use	Transportation	
T-1 Town Single-Family Residential 	Low to Medium Intensity (6 to 15 units per acre)	Single-family homes in close proximity to town centers or pedestrian-oriented commercial corridors, typically laid out in a grid block pattern. Includes some duplexes, accessory units, or small multi-unit buildings. Compact development pattern with small lots, limited setbacks, and close proximity of structures.	Short blocks, grid street pattern, and proximity to destinations support non-motorized modes of transportation. Complete sidewalks often present; bicycle infrastructure typically limited. Neighborhoods served by bus service with 30-minute or more headways; occasional proximity to regional or interity transit service.	Jewel Box, Capitola Maple Street, Salinas 6th Street, Hollister
T-2 Town Multi-Family Residential 	Medium Intensity (12 to 30 units per acre)	Combination of apartment buildings, duplexes, accessory units, and some single-family homes. Usually located in areas with traditional street patterns. One- to three-story residential buildings, typically with small setbacks from the street and property lines.	Short blocks, grid street pattern, and proximity to destinations support non-motorized modes of transportation. Complete sidewalks often present; bicycle infrastructure typically limited. Neighborhoods served by bus service with 30-minute or more headways; occasional proximity to regional or interity transit service.	Laine Street, New Monterey Neighborhood East Riverside Drive, Watsonville
T-3 Town Commercial 	Low intensity (FAR 1.0 or less)	Pedestrian-oriented commercial uses in town core commercial areas or along commercial corridors. Usually in areas with traditional street patterns. One-story buildings, often with no setbacks and sometimes with full lot coverage. Entrances usually face the street. Lots occasionally include parking, usually located at rear.	Short blocks, grid street pattern, and nearby residential uses support non-motorized modes of transportation. Complete sidewalks often present; bicycle infrastructure typically limited. Transit typically includes limited local service, with headways as short as 30 minutes. Many visitors arrive by car, particularly when traveling long distances.	Bay and Misstion Street, Santa Cruz Downtown Carmel

T-4 Town Mixed Use 	Low to Medium Intensity (FAR 1.0 to 3.0)	Small-scale, mixed-use buildings typically in core commercial areas or along commercial corridors. Usually in areas with traditional street patterns. Vertical mixed use buildings common with residential and office above ground-floor commercial. Buildings typically built to property lines; parking may be included, usually to the rear of buildings.	Short blocks, grid street pattern, and nearby residential uses support non-motorized modes of transportation. Complete sidewalks often present; bicycle infrastructure typically limited. Transit typically includes limited local service, with headways as short as 30 minutes. Many visitors arrive by car, particularly when traveling long distances.	Capitola Village 5th Street, Hollister Lighthouse Avenue, Pacific Grove

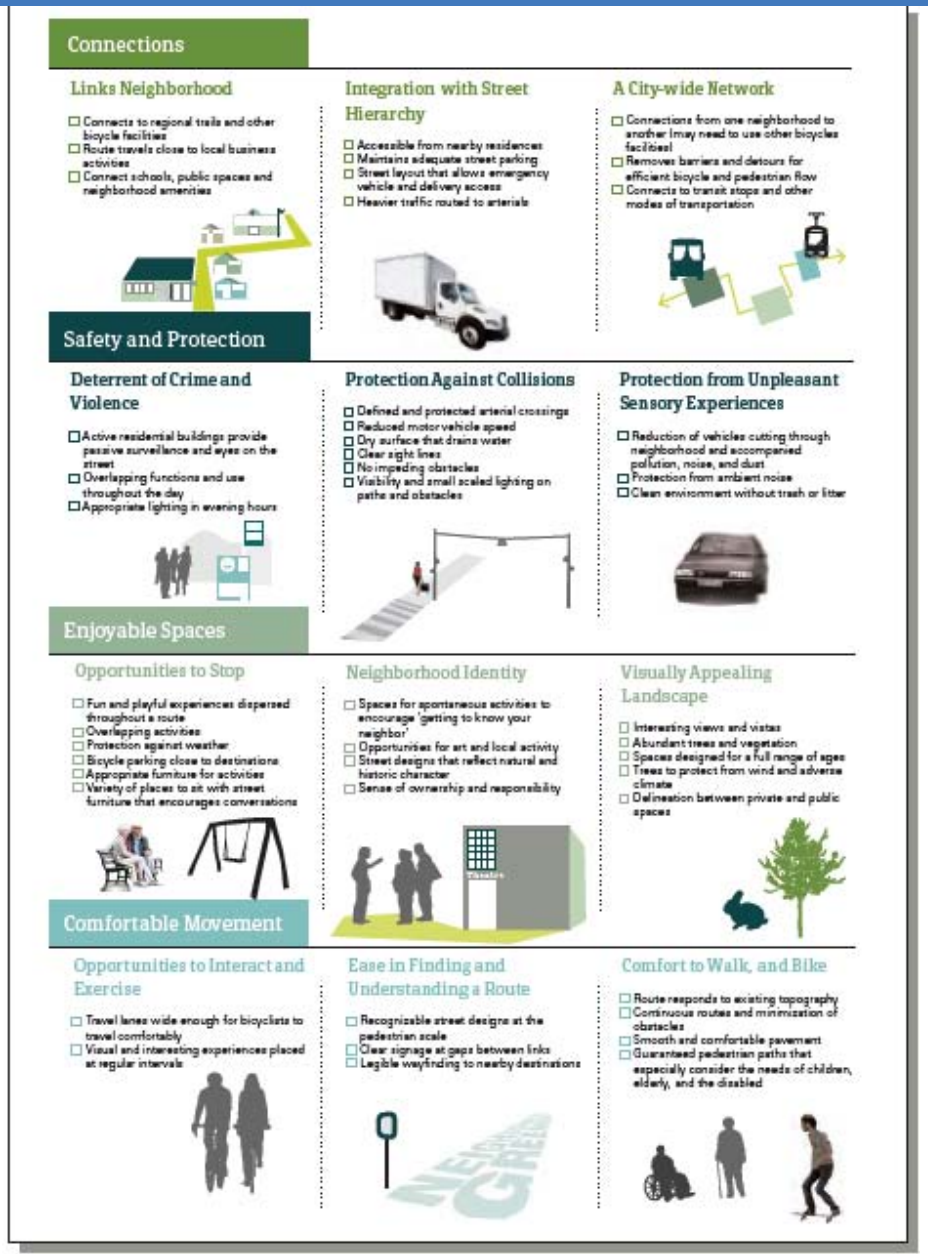
Non-Urban Place Types				
	Intensity	General Characteristics		Examples
		Land Use	Transportation	
NU-1 Agriculture and Rural Residential 	Very Low Intensity (1 unit per acre or less)	Isolated single-family homes, farm houses, and other agriculture-related structures in an agricultural or rural setting. Various building heights and sizes, frequently 2-stories or less, often with expansive setbacks from roads and property lines.	Automobile dependent with widely-spaced, generally rectilinear road patterns. Transit absent or restricted to limited and infrequent regional or inter-city service. Sidewalks and other pedestrian/bicycle infrastructure usually absent.	Outlying portions of Greenfield Outlying portions of San Juan Bautista
NU-2 Rural-Town Commercial 	Low Intensity (FAR usually less than 1.0, up to 2.0 in rare instances)	Variety of small commercial buildings usually located in centers of compact, rural towns. Buildings usually one-story with parking at front or rear. In some cases may not include parking and may include second story with upstairs use.	Mixture of pedestrian- and automobile-oriented. Short blocks, grid street pattern, and nearby residential uses support non-motorized modes of transportation; however, cars may be more commonly used, especially by visitors traveling regionally. Transit absent or restricted to limited and/or infrequent regional or inter-city service. Sidewalks generally present, but may be absent in some cases. Dedicated bicycle infrastructure usually absent.	3rd Street, San Juan Bautista Merritt Street, Castroville Alta Street, Gonzales

NU-3 Rural-Town Residential 	Low Intensity (3 to 8 units per acre)	Single-family homes in areas with grid street patterns; close proximity to central areas of compact, rural towns. May include small multi-family buildings such as duplexes or homes with accessory units. One- or two-story buildings on small- to medium-sized lots. Homes have variable setbacks from property lines and other buildings.	Short blocks, grid street pattern, and proximity to local destinations support non-motorized modes of transportation for intracity trips; however, cars may be more commonly used, especially for regional trips. Transit absent or restricted to limited and infrequent regional or inter-city service. Sidewalks may be absent, but generally low traffic may promote non-motorized transportation. Dedicated bicycle infrastructure usually absent.	6th Street, San Juan Bautista Scott Street, Chualar 9th Street, Gonzales
NU-4 Exurban Residential 	Very Low to Low Intensity (usually 1 unit per acre or less, on rare occasions up to 6 units per acre)	Single-family homes located in neighborhoods on urban fringe. Usually characterized by non-grid street patterns and relatively long distances to noncontiguous urban or town centers. One or two story buildings on large lots with deep setbacks. In rare instances may include smaller "suburban" style lots located far from central areas of towns or cities.	Automobile oriented, often with long distances separating different land uses. Non-grid, typically low-connectivity street patterns discourage non-motorized transportation for non-recreational trips. Transit absent or restricted to limited and infrequent express or regional service; park-and-rides occasionally present. Sidewalks and dedicated bike paths typically for recreational use.	Pasadera Neighborhood, Monterey Fairview Road, Hollister Crescent Drive, Scotts Valley

Other Place Types				
	Intensity	General Characteristics		Examples
		Land Use	Transportation	
IND Industrial and Manufacturing 	Various Intensities (FAR from less than 1.0 to 4.0 or higher)	Various industrial and manufacturing uses, including factories, storage facilities, industrial and commercial suppliers, and some research and development uses. Street patterns and building forms vary, ranging from traditional blocks and pedestrian-oriented configurations to isolated facilities inaccessible by non-motorized transportation.	Transportation characteristics vary, with both pedestrian- and auto-oriented development patterns Availability of transit, pedestrian access, and bicycle infrastructure vary depending upon setting.	Industrial Drive, Hollister Los Coches Road, Soledad Estates Drive, Aptos

AT Airport 	N/A	Airports.	Transportation characteristics vary.	Monterey Peninsula Airport Hollister Municipal Airport
INS Institutional 	Various Intensities (FAR from less than 1.0 to 4.0 or higher)	Various institutional, civic, public, educational, hospital, and utilities uses located in various settings. Built forms vary by specific use and location.	Transportation characteristics vary, with both pedestrian- and auto-oriented development patterns Availability of transit, pedestrian access, and bicycle infrastructure are all variable, depending upon setting.	UC Santa Cruz Salinas High School Public Libraries Wastewater Treatment Plants
OSR Open Space / Recreation 	N/A	Open space and recreational uses, including local and regional parks, nature preserves, and beaches.	Transit characteristics highly variable. Isolated regional parks or wilderness areas may lack transit connections and pedestrian/bicycle access. Parks in urban centers may have frequent transit service and complete bicycle/ pedestrian infrastructure.	Village Green, Greenfield Ramsay Park, Watsonville Calaveras Park, Hollister

APPENDIX G: Greenway Quality Criteria



Green Futures: Research and Design Lab, Scan Design Foundation ,GEHL Architects. *Seattle Neighborhood Greenways: Seattle Tool Kit 2012*

COMPLETE STREETS PROJECT REVIEW CHECKLIST

Purpose
This checklist was developed to assist project sponsors in defining and developing projects and local plans using the Monterey Bay Area Complete Streets Guidebook. The checklist is a mechanism for incorporating the perspectives of all stakeholders into the planning and design process for projects. Use of the checklist will result in projects that are consistent with local, regional and state complete street policies, consider adjacent land uses and meet the needs of all users of the roadway.

How to Use the Checklist
The checklist enables project sponsors to document how each existing and future roadway user was considered and accommodated throughout the project development process. Project sponsors are encouraged to reference the Monterey Bay Area Complete Streets Guidebook while going through the checklist for complete streets applica-tions and roadway design ideas.

Public Works and Planning departments should use the checklist to review projects within or affecting the public right-of-way. If projects do not incorporate complete streets design treatments, project sponsors should document why not and what accommodations will be provided for pedestrians, bicyclists and/or transit users unless the project is exempt.

Threshold Requirements
The Complete Streets Project Review Checklist should be used to review the following types of projects:

1. Street improvements requiring permits or approvals by the Department of Planning and/or Public Works which requests a change of the public right of way ; or

2. Public Works Department capital projects that alter or maintain the public right of way prior to the issuance of any permit or approval

Such that any one or more of the following apply:

- A traffic study is required
- A signalized intersection is affected
- Repaving/restriping needed
- Rehab/maintenance needed

CHECKLIST - Exemptions

Projects Exempt from Using the Complete Streets Project Review Checklist

* Roadways that restrict bicycle and pedestrian access (ex// Freeways)

* Documented absence of current and future need

Projects in which it is not appropriate to accommodate all users but may be appropriate to accommodate more than one user group should use the checklist to identify which users should be considered in the project design.

Projects Exempt from CEQA

Some complete streets projects may be exempt from the provisions of the California Environmental Quality Act. The following exemptions may apply:

* ***Projects that are built within the existing right-of-way 15301(c)***

* ***Re-striping projects (per Section 15282(j))***

If the project is exempt from CEQA further explanation and documentation is needed to comply with California law. The project sponsor should draft a memo describing why the project is exempt and file a notice of exemption.

CHECKLIST - General Project Information

Date

1. Project Title

Project Description

Project Location

Department Review Only

Project #:

2. Contact Information

Implementing Agency

Contact Person

Phone

Fax

Email

3. Project Schedule (**Circle** Current Project Phase)

Project Milestone	Date Started/Anticipated End Date
Planning	
Preliminary Design	
Final Design	
Construction	

PHOTO

CHECKLIST - Existing Conditions

4. Existing Land Uses (check all that apply)

Residential	☐	Park/Open Space	☐
Mixed Use	☐	Visitor-Serving/Commercial	☐
Institutional/School	☐	Senior Housing	☐
Civic/Public Facilities	☐	Rural/Agricultural	☐

5. Safety (***See Complete Streets Needs Assessment Matrix & http://tims.berkeley.edu/***)

Are there percieved safety/speeding issues in the project area? ☐ Yes ☐ No

Is there a history of collisions in the project area?

☐ Pedestrian ☐ Bicyclist ☐ Motorist

6. Congestion

Does the roadway experience congestion? ☐ Yes ☐ No

If so, at what time(s) is it congested? ☐ AM Peak ☐ PM Peak

7. Existing Roadway Conditions/Context

ROW Width	Ft
Roadway Pavement Width	Ft
# of Lanes	NB/EB: SB/WB:
2-Way Center Turn lane	☐ Yes ☐ No
Sidewalk Width	Ft
Landscaping/Parking	☐ Yes ☐ No
Shoulder Width	Ft
Bike Lane Width (<5')	☐ Yes ☐ No
Intersection(s)	☐ Signalized ☐ Unsignalized
Pavement Condition	Poor Fair Good
Posted Speed Limit	
Tr olumes (AADT)	
Transit Route/Stops	☐ Yes ☐ No
Truck Route	☐ Yes ☐ No

CHECKLIST - Future Conditions

8. Future Roadway Conditions

Are there planned transportation & land use projects that could affect circulation in the project area? ☐ Yes ☐ No

If so, please list the project(s)

Are planned projects anticipated to increase travel demand in the area? (mark yes or no for each mode)

	Car		Transit		Bicycle	Pedestrian
	☐ Yes	☐ No	☐ Yes	☐ No		

9. Stakeholder Outreach (check all that apply)

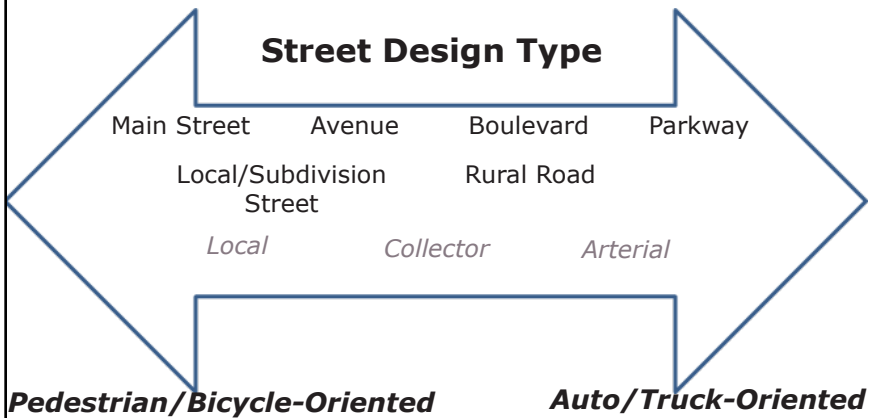
Please indicate which stakeholder groups provided input on project scope and design:

Neighborhood Group	☐	Bicycle Committees	☐
Business Association	☐	Pedestrian Committee	☐
School	☐	Senior Group	☐
Property Owners	☐	Transit Agency	☐
Environmental Group	☐	Transportation Disadvantaged	☐

y ☐ Yes ☐ No

stakeholders?

10. **Circle** the Complete Street Design Type - (***See Table 2 of Guidebook***)



11.

Facilities

cle

edes-

trian Facilities

Bicycle/Pedestrian Connectivity

Facilities

ransit

for seniors

for students/youth

Service

ransit

for disabled

Given the Existing and Future Conditions the project area is a candidate for:

Road Diet (3 or more lanes; AADT<20,000; bicycle collisions)	Yes	No
Tr	Yes	No
Roundabout	Yes	No
Transit-Oriented Development/Transit Corridor (15 min headway)	Yes	No
Neighborhood Shared Street	Yes	No
Pedestrian Place	Yes	No
Transit/Bicycle/Pedestrian Prioritization at Intersections	Yes	No

CHECKLIST - Design

The purpose of this section is to ensure all users have been considered in the design of the project. Complete street design is context-sensitive and a complete street in a rural area may look different than one in an urban area. Refer to safet existing and future conditions sections. The Monterey Bay Area Complete Streets Guidebook Chapter 5 contains design best-practices and sample accomodations for these users.

12. Pedestrian Design

Which, if any, of the following is provided or improved through the project design?

Minimize Driveways	☐ Yes	☐ Existing
Sidewalk/Path	☐ Yes	☐ Existing
Landscaping/Parking Buffer	☐ Yes	☐ Existing
ADA Access	☐ Yes	☐ Existing
Street Trees	☐ Yes	☐ Existing
Crossing Treatments	☐ Yes	☐ Existing
	☐ Yes	☐ Existing
	☐ Yes	☐ Existing
Audible Countdown	☐ Yes	☐ Existing
Other (Describe)		

13. Bicycle Design

Which, if any, of the following is provided or improved through the project design?

Bicycle Lanes	☐ Yes	☐ Existing
Shared-Lane Markings	☐ Yes	☐ Existing
Multiuse Path	☐ Yes	☐ Existing
Signs	☐ Yes	☐ Existing
Bicycle Parking	☐ Yes	☐ Existing
Bicycle Detection	☐ Yes	☐ Existing
Bicycle Box	☐ Yes	☐ Existing
Color-Treated Bike	☐ Yes	☐ Existing
Floating Bike Lanes	☐ Yes	☐ Existing
Other (Describe)		

14. Transit Design

Which, if any, of the following is provided or improved through the project design?

Priority Bus Lane	☐ Yes	☐ Existing
Bus Bulbs/Pull-Outs	☐ Yes	☐ Existing
Shelter	☐ Yes	☐ Existing
Real Time Bus Arrival Info	☐ Yes	☐ Existing
ITS/Signal Priority	☐ Yes	☐ Existing
Transit Service (15 min headways)	☐ Yes	☐ Existing
Wi-Fi	☐ Yes	☐ Existing
Stop/Station Amenities*	☐ Yes	☐ Existing
Other (Describe)		

*** Transit Amenities include: Bench, lighting, trash can, route information/maps, concessions, music, and public art.**

CHECKLIST - Trade-Offs & Exemptions

15. Project Trade-Offs

Is the recommeneded complete street cross section/design supportable? ☐ Yes ☐ No

If not, explain why:

Lack of ROW width ☐ Existing Structures ☐ Other_____

Trees/Environmental Features ☐ Other_____

Have alternative designs been considered? ☐ Yes ☐ No

Removed/partial zones (Ch. 5) for : Pedestrians ☐ Bicyclists ☐ Landscaping ☐ Vehicles ☐

Parking ☐

Considered alternative routes/locations for Pedestrians ☐ Bicyclists ☐ Landscaping ☐ Vehicles ☐

Parking ☐

16. Exemptions (Refer to Ch. 6 of the Guidebook)

Is the project exempt from accomodating certain users? ☐ Yes ☐ No

Cost of accomodation is excessively disproportionate to the need or probably use? ☐ Yes ☐ No

Documented absence of current and future need? ☐ Yes ☐ No

Other_____

APPENDIX I: Questions to Support Six-Step Process

APPENDIX- QUESTIONS FOR SUPPORTING SIX-STEP PROCESS

Six Steps

Step 1: Define the Existing and Future Land Use and Urban Design Context

- What does the area look like today?
- What are today's land use mixtures and densities?
- What are the typical building types, their scale, setbacks, urban design characteristics, relation to street, any special amenities, etc...?
- Are there any particular development pressures on the area (the nature of this may vary
- according to whether the area is a "greenfield" versus an infi ll area and this type of information
- is particularly important in the absence of an area plan)?
- What are the "functions" and the general circulation framework of the neighborhood and adjacent areas?
- Is there a detailed plan for the area?
- If so, what does the adopted, detailed plan envision for the future of the area?
- Does the plan make specifi c recommendations regarding densities, setbacks, urban design, etc.?
- Are there any other adopted development policies for the area?
- If so, what do those policies imply for the area?

Step 2: Define the Existing and Future Transportation Context

- What is the character of the existing street? How does the street currently relate to the adjacent land uses?
- How does the street currently function? What are the daily and hourly traffi c volumes? Operating and posted speeds? What is the experience for pedestrians? Cyclists? Motorists?
- What are the current design features, including number of lanes, sidewalk availability, bicycle facilities, traffic control features, street trees, etc.?
- What, if any, transit services are provided? Where are the transit stops?
- What is the relationship between the street segment being analyzed and the surrounding network (streets, side walks, transit, and bicycle connections)?
- Are there any programmed or planned transportation projects in the area that would affect the street segment?
- Are there any other adopted transportation policies that would affect the classifi cation of the street segment?

Step 3: Identify Deficiencys

- Gaps in the bicycle or pedestrian network near or along the street segment;
- Gaps in the bicycle or pedestrian network in the area (which may increase the need for facilities on the segment, because of the lack of alternative routes);
- Insufficient pedestrian or bicycle facilities (in poor repair, poorly lighted, or not well buffered from traffic, e.g.);
- Gaps in the overall street network (this includes the amount of connectivity in the area, as well as any obvious capacity issues on other segments in the area);
- Inconsistencies between the amount or type of transit service provided along the street segment and the types of facilities and/or land uses adjacent to the street;
- Inconsistencies between the existing land uses and the features of the existing or planned street network.

Step 4: Describe Future Objectives

- What existing policies might or should influence the specific objectives for the street?
- What conditions are expected to stay the same (or, more importantly, what conditions should stay the same)?
- Would the community and the stakeholders like the street and the neighborhood to stay the same or to change?
- Why and how would the community and the stakeholders like the street and the neighborhood to change?
- Given this, what conditions are likely to change as a result of classifying the street (exactly how will the street classifi cation and design support the stakeholders' expectations)?

Step 5: Recommend Street Classification and Test Initial Cross-Section

- What is the recommended cross section?
- Is the cross section supportable considering:
    * right-of way,
    * Existing structures,
    * Existing trees or other environmental features,
    * Topography, and
    * Location and number of driveways.

Step 6: DescribeTradeoffsandSeclectCrossSections

- Where alternative design scenarios considered?
- What refinements to the cross section were needed ?
- What was the justification for selecting the final design scenario?

APPENDIX J: Economics of Complete Streets

Summary of Economics of Complete Streets

An important question about complete streets is, Are the benefits greater than the costs; are complete streets a good investment? The economic impact of transportation project is particularly important in an environment where regions are pursuing a variety of economic development strategies to improve the quality of life for residents and resources for transportation investments are scarce.

Careful evaluation of the benefits of costs can reveal some of the downstream effects complete streets have on economic activity. However, isolating the economic impacts of a concept as broad and indefinite as complete street makes simple conclusions difficult. The diversity of complete street types and specific implementations suggests a diversity of effects. Moreover, the effects depend on the development, market, and socioeconomic environment in which a complete street is implementing.

The White Paper on the Economics of Complete Streets presents a framework for evaluating the economic impacts of complete streets. The paper was prepared by ECONorthwest, a consulting firm specializing in economics, finance, and planning. ECONorthwest's findings recognize that complete streets are a relatively new concept and that attempts to rigorously evaluate their economic impacts are limited. ECONorthwest's research relies heavily on case studies rather than controlled time-series or cross-section studies. While case studies are excellent tools to confirm or challenge theory, to generalize their results into implementable policies comes with risk because one case study's conditions may or may not be comparable to another.

Approach to Evaluating Economic Benefits of Complete Streets

Transportation systems should aim to do an efficient job of getting people and goods to many desired places safely and quickly. The efficiency of the system is typically evaluated in terms of congestion. Although complete streets investments may address congestion, through managing demand and better use of the existing system, determining the economic impacts of complete streets must go beyond looking at its impacts on congestion. Furthermore, secondary economic impacts can result from transportation investments.

ECONorthwest groups complete street impacts by direct transportation impacts including: trip volume, trip duration, trip quality, safety and construction and maintenance cost, and indirect transportation impacts including: access to amenities, health, and transportation costs, in additional to congestion. ECONorthwest then evaluates the economic effect of the impacts relative to investments, business activity, property values, and government fiscal health.

The white paper notes several points important to the interpretation of its findings. Factors such as existing conditions, transportation geography, time period, perspectives, distribution of impacts, and exogenous trends should be considered when applying the economic framework. The transportation and non-transportation effects of complete streets depend on the details of how complete streets are designed and implemented and on the modes they attempt to influence.

Economic effects of Complete Streets

Given the transportation effects and the non-transportation effects of complete streets, what are the likely effects on economic activity (employment, output, value added, sales, payroll/income, and property values) when measured through investment, business activity, property values and fiscal impacts?

There are some good theoretical reasons for believing that complete streets can have positive effects on the regional or local economy. The limited literature suggests that, in some instances, measures of economic activity have changed with implementation of complete streets. Because the literature is limited, due to the limited empirical work on the

topic, the anecdotal nature of the work, little known about the distributional impacts it does not support unambiguous statements like, “If complete streets are built, the net economic effects will be x.”

Investment

Do the levels and composition of public and private investment change with the introduction of complete street?

Transportation investments play an important role in the redevelopment of a center or corridor. Some research suggests that complete street accompany increases in investment for an area. It is reasonable to presume that as a street’s safety, health, and amenities improve, private and public entities will be more willing to invest in the area. But complete street may be part of broader redevelopment efforts that included other public investments. Such investment makes it difficult to separate out the unique effects of complete streets. For instance, it is possible that decisions to invest in complete streets makes areas more competitive for the awarding of such development funds. On the other hand it may be true for any type of transportation project. Theory and case studies support the conclusion that complete street can be an important part of a public investment policy that can change the distribution of economic activity within a region.

Business Activity

Do measures of business activity (e.g., business creation, employments, wages/income, sales, revenues) change around complete streets? Do consumes spending patterns change because of complete streets?

Some instances of complete streets have led to more business activity around them. However, an increase of jobs and businesses after the implementation of complete streets does not, by itself, give any indication of how much of that increase is attributable to complete streets. For example, other market forces and location, the amount of new public investment, or pre-development losses such that any new development would have increased measures of business activity.

Consumption patterns could be impacted by a change in the total number of consumers, the cost of goods to consumers, and a change in land values as a result of complete streets. One should expect more economic activity the greater the density and better access. The number of consumers could increase due to potential growth in trip volumes and proximity. Although the number of consumers may increase due to a potential for a growth in trip volumes and proximity, cost of goods may decrease because the transportation cost to the consumer may decrease,

and the higher densities and land values may result in higher rents and higher prices, none of these factors are expected to be affected in a big way. It is unlikely that complete streets decrease consumption. Research reveals that non-motorized consumers are competitive consumers. Although case studies suggest that complete street-type policies may improve bottom lines, it is possible that these kinds of changes will be primarily distributional. A possible exception to the distribution issues is the case where more isolated cities in recreational areas could increase the regional economic activity if they can create "Main Street" environments that are attractive to tourists.

Property Values

Do property values change with the introduction of complete streets?

People choose to live in a certain area, in part, because of the amenities it offers. If people value the effects of complete streets they are more likely to choose to live in or near complete street areas. In the event that complete streets increase amenity and travel by non-auto modes, and do not decrease the effectiveness of the automobile too much, complete streets could be correlated with increased property values. However, even if traffic calming features reduce vehicle volume, several studies show property values still increase. The role of improving walkability on increasing property values is depending upon densities and destinations. For example, making a five-lane road servicing commercial strip complete and walkable may have little effect on walking, transit and auto travel, while making a desirable shopping district more walkable cold raise property values.

Social engagement would also be increased if complete streets lead to more people use alternative modes of transportation and allowing users to interact more, which may also affect property values.

Increased property values would likely be a benefit to landowners, as their incomes would increase. Increased property values could be a cost to businesses and residents already operating and living there, as the increase could make the area unaffordable to them.

Government Fiscal Health

What is the net fiscal effect of complete streets on local governments and agencies?

In terms of revenues, while there are solid theoretical arguments and some empirical work for specific cases which explain why complete streets as a type of smart growth policy, could improve fiscal health due to increase sales tax, there is no way to tell that other factors aren't responsible for the increase in tax revenue and sales tax alone do not tell the story of fiscal health.

As a type of transportation investments, complete streets will involve expenditures in public and private funds. Complete streets may increase the up-from implementation costs since they may be above and beyond existing project design improvements. In a 2012 analysis, City of Charlotte Department of Transportation staff found that complete street components, specifically bike lanes and sidewalks, only slightly increase the cost of a project (on the order of 3-5%). In cases where complete street design elements replace larger automotive infrastructure requires, the cost may remain constant or decrease.

If complete streets cause users to shift away from cars, then complete streets could have some maintenance cost savings. However the savings may be minimal because heavy vehicles cause a disproportionate share of road ware. On the other hand, complete street may create a more complicated environment to maintain and higher standards for maintenance, which would generate a higher maintenance cost.

Effects of Health on Economic Growth

Complete streets design frequently incorporates some element of traffic calming which can reduce the number of collisions. Though the safety impacts are worth pursing for their moral merits alone, reducing the number of deaths and injuries has tangible economic benefits. Given the documented potential for complete streets improvements to reduce the number and severity of crashes, it is possible that the safety benefits alone justify complete streets as a policy.

Beyond gains in safety, complete street could facilitate health improvements by increasing activity levels, and reducing noise. If complete streets contribute to healthier people, the economic benefits of that improved health could be measured as longer life expectancy, improved productivity and reduced costs for health care. Although, complete streets could improve health outcomes for some, it could worsen health outcomes for those who remain automotive uses and are whose trip times could increase and for those who experience injuries, such as a sprained ankle from switching to other modes.

Economic Framework for Evaluating Complete Streets

Categories of Economic Activity	Direct and Non-Direct Transportation Impacts	Effect on Economic Activity			
		Possibly Negative	Possibly None	Possibly Positive	Possibly Very Positive
Business Activity	Access[1]			●	●
Business Activity	Trip Volume		●	●	
Business Activity/ Investment	Trips Duration[2]	●	●	●	
Fiscal Impact	Construction[3]	●	●	●	●
Fiscal Impact	Maintenance		●	●	
Property Values/ Investment	Amenities		●	●	
Economic Growth	Health[4]			●	●

Notes:

1 New facilities for non-automobiles are likely to have a larger positive impact on economic activity than improving existing facilities.

2 An increase in trip duration for automobiles may negatively impact economic activity, while a reduction in trip duration for non-automobiles may result in a positive impact on economic activity.

3 Construction of new facilities may have significant economic impacts, while adding new elements may have no to little economic impacts.

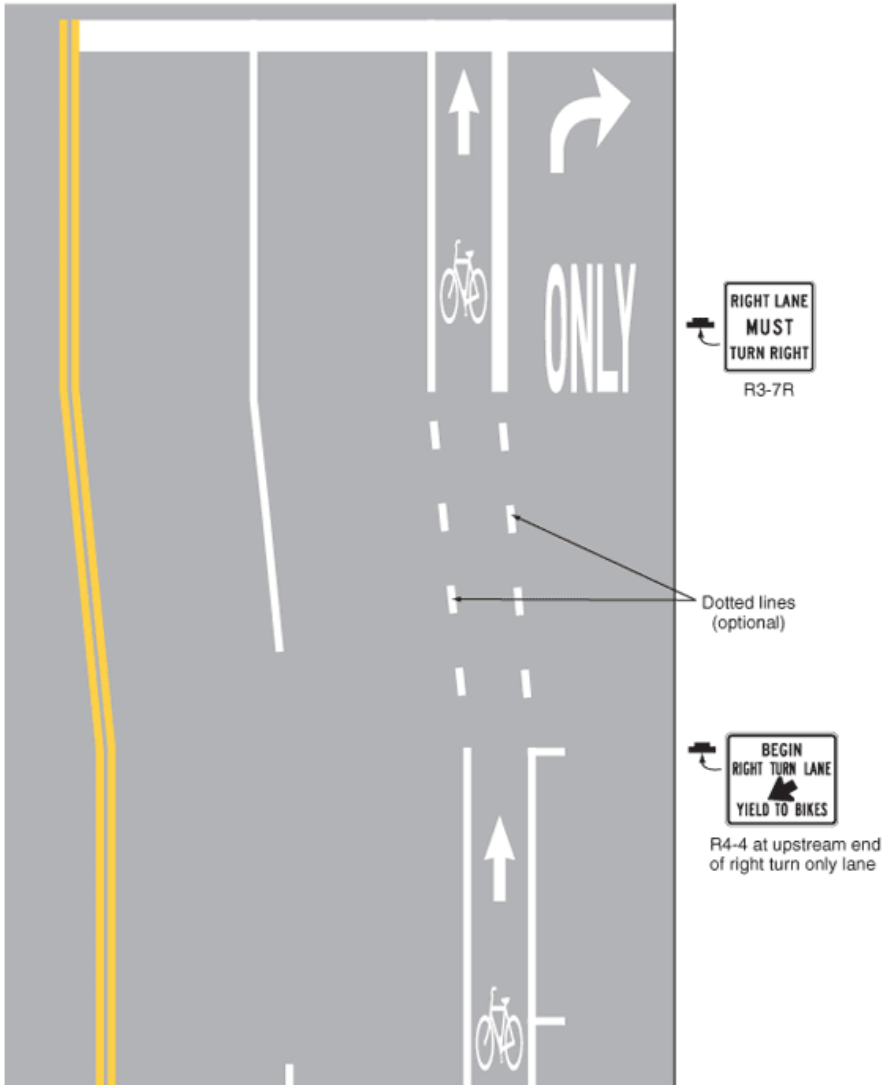
4 If complete streets contribute to healthier people by encouraging regular physical activity, Complete Streets could positively impact the economic activity by

INTERSECTION TREATMENTS

Bike Box

Bike Signal

Figure 9C-5. Example of Bicycle Lane Treatment at Parking Lane into a Right Turn Only Lane



Right Turn Lane Treatment, MUTCD

BICYCLE DETECTION

Video Camera

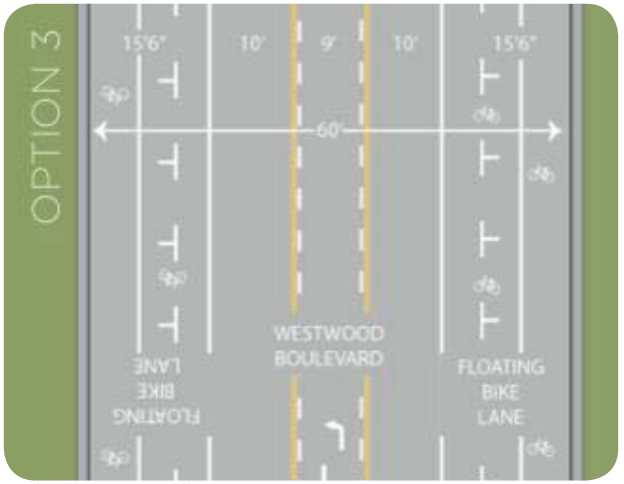
Inductive Loop

ROADWAY TREATMENTS

Green Lane

Buffered Bike Lane

Cycle Track



Floating Bike Lane

BICYCLE AMENITIES

Wayfinding Signage

Fix-it Station

Angled Parking

Racks on Transit