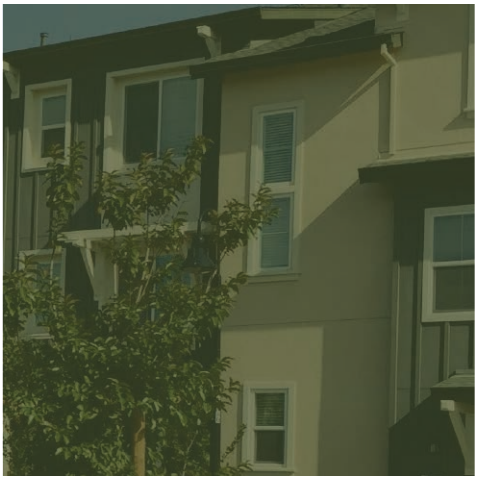
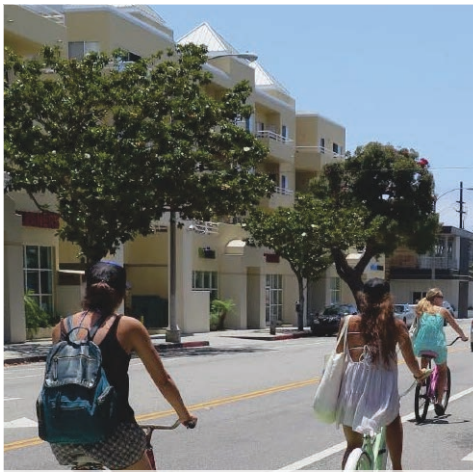
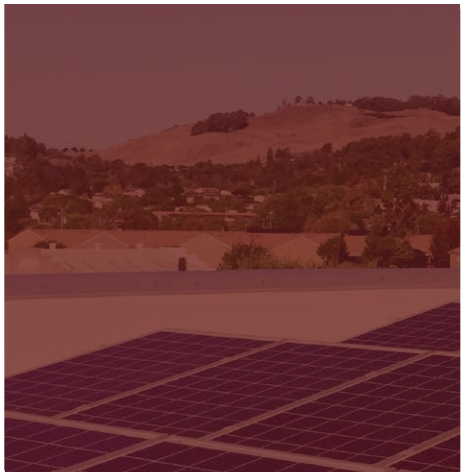




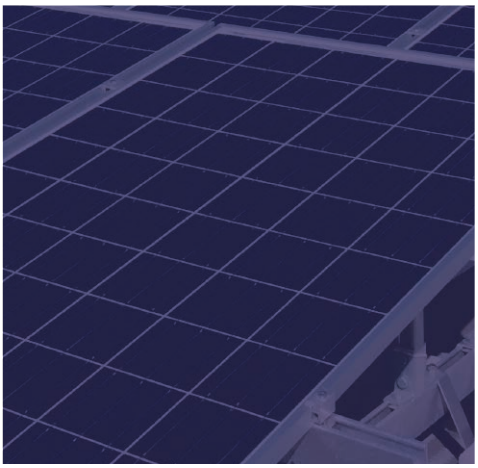
UNIFIED DESIGN MANUAL


CITY OF MERCED

Public Draft

August 13, 2015

ATTACHMENT B

TABLE OF CONTENTS

The work upon which this publication is based was funded in whole or in part through a grant awarded by the Strategic Growth Council.

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CHAPTER 1 INTRODUCTION

1.1 Context and Approach

A. Context

In October 2012, the City of Merced adopted a Climate Action Plan (CAP). The goals, strategies, and actions in the CAP support livable communities and sustainability principles. The Unified Design Manual (UDM) provides design-related guidance to projects seeking to demonstrate consistency with the City's adopted CAP and Programmatic Climate Action Plan (PCAP). The UDM shows project design options to meet the intent of the CAP.

B. Programmatic Approach

The California Environmental Quality Act (CEQA) requires each project applicant to analyze a project's greenhouse gas (GHG) emissions and impacts and to mitigate those impacts where necessary. This adds cost, time, and uncertainty to the development review process. The PCAP is designed to streamline environmental review of future development projects in Merced consistent with CEQA Guidelines Section15183.5(b). Projects that comply with the PCAP and applicable UDM measures rely on the PCAP's

Chapter TOC

programmatic analysis and methods to reduce greenhouse gases, which enables faster reviews, avoids additional costs for project analysis, and establishes predictable standards and outcomes.

With the UDM, the City seeks to provide visual guidance for key aspects of project design and siting related to reducing greenhouse gas emissions. As a result, the UDM is one of the key implementation tools of the PCAP. Together with the PCAP, the UDM provides transparency by communicating options for applicants to address existing guidance, standards, and best practices pertaining to the physical design of key components of their projects. Through a programmatic approach, the UDM and the PCAP ultimately provide development project applicants with a streamlined alternative to the current practice of assessing impacts on a project-by-project basis.

1.2 Purpose

The purpose of the UDM is to provide user-friendly design guidance to project applicants and City staff pertaining to compliance with the State's direction to analyze the impacts of projects on climate change and greenhouse gas emissions. The UDM provides an integrated and visual representation of an assortment of existing regulations that achieve greenhouse gas reductions, among other community goals. Prior to the application of the UDM, the City already locally applies several types of policies and regulations to site designs that reduce global warming impacts, including:

a. current General Plan policy;
b. existing Zoning Code;
c. mitigation measures from the City's certified General Plan Environmental Impact Report;
d. mandatory requirements of California's Building Energy Efficiency Standards and Green Building Standards Code (CALGreen); and
e. other municipal codes and standards, including the building code and street designs standards.

Design best practices in the UDM supplement existing policies and regulations to encourage the local development community to build high-quality projects. Strategies in the UDM also support projects seeking to meet the San Joaquin Valley Air Pollution Control District's (SJVAPCD) Rule 9410 (Indirect Source Review). Many types of residential and nonresidential projects are subject to fees from the SJVAPCD unless they implement on-site design measures or other improvements to improve air quality. In many instances, guidance in the UDM also provides locally appropriate examples of options for projects seeking to exceed minimum state requirements in CALGreen.

Design considerations in the UDM provide design professionals, property owners, residents, staff, and decision-makers with a clear and common understanding of the City's expectations for the planning, design, and review of development proposals to implement Merced's Programmatic Climate Action Plan.

1.3 Applicability and Process

A. Applicability

While the City encourages all project applicants to utilize the Unified Design Manual as a tool to design high-quality developments that support a variety of community goals, the UDM was crafted for projects that are subject to the California Environmental Quality Act. The CEQA Guidelines allow streamlining of the review of GHG emissions when new projects comply with a qualified GHG reduction plan that meets the CEQA criteria in Subsection 15183.5(b). With the PCAP, the City has demonstrated the PCAP's consistency with the CEQA Guidelines. Now, with this UDM, the City has developed another tool to help new development seeking to benefit from CEQA streamlining.

The UDM is designed to address the project-level impact of development projects, such as subdivisions and parcel maps, conditional use permits, site plan review, and design review. Planning-level projects, such as community plans, specific plans, annexations, General Plan amendments,

site utilization plan revisions, and zone changes, may not utilize the UDM for permit streamlining purposes, however. The potential greenhouse gas emissions impacts from these planning-level projects must be assessed through a separate environmental study consistent with the requirements of CEQA. Development that results in a compact urban form, supports infill development concepts, and/or conserves natural open space features may be deemed self-mitigating.

B. Process

The UDM was part of a comprehensive effort to establish a prequalified permitting program for purposes of GHG emissions through the identification of design and operation features that a project applicant elects to add to a project. As a means to address a project's impact to climate change, project applicants seeking streamlining with the PCAP may choose to use the UDM as a tool. The UDM provides visual guidance to further simplify the task of demonstrating PCAP consistency. Project applicants who elect to not use the UDM, or whose projects do not meet the guidance of the UDM, must demonstrate independent, project-level environmental review to meet CEQA requirements for greenhouse gas emissions.

To answer the question, "How can my project be consistent with the City's PCAP?," the City adopted a separate PCAP consistency checklist, the Project Options checklist, addressing topics both in and outside of the UDM. This comprehensive checklist includes specific references to items addressed in the UDM. In addition to UDM references, the Project Options checklist includes recommendations for other resources that can aid projects with consistency. For instance, existing state codes provide guidance for mechanical and lighting standards that are not visual elements but achieve reductions in energy use. The Project Options checklist is included in the appendices (A.1) and is organized by project type.

1.4 Organization and Use

A. Document Organization

This document is organized into different chapters based primarily on design topic. Specifically, design considerations are organized into the following chapters:

CHAPTER 1 Introduction. This chapter describes the purpose, intent, applicability, organization, and use of the Unified Design Manual.

CHAPTER 2 Community Design. This chapter includes design considerations for land use patterns and proximities, connectivity, and street design.

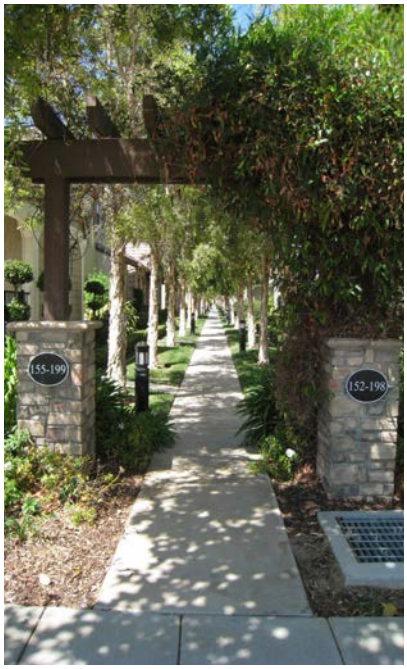
CHAPTER 3 Site Design for Mobility. This chapter identifies design considerations for special parking provisions (e.g., electric vehicles and bicycles) and on-site connections and facilities for pedestrians, cyclists, and transit users.

CHAPTER 4 Landscape Improvements. This chapter describes design considerations for water-efficient landscapes, tree canopies that provide shade on buildings and walkways, and stormwater features.

CHAPTER 5 Solar Energy Facilities and Resource Efficiency. This chapter includes design considerations for solar orientation and both building-mounted and ground- mounted solar design facilities, as well as cool pavements and roofs.

CHAPTER 6 Green Waste & Recycling Facilities. This chapter describes design considerations for food/green waste and the collection of recyclables.

APPENDICES. The appendices include a checklist to identify applicability of design provisions by land use and/or project type. They also include a list of referenced policies and regulations.



B. Chapter Organization

Each chapter is then organized into the following sections:

DESCRIPTION – Broadly explains the purpose of the design guidance presented in the chapter.

OBJECTIVES – Describes the specific aims that the design considerations are intended to achieve.

RELATIONSHIP TO THE PROGRAMMATIC CLIMATE ACTION PLAN – Identifies which of the four PCAP themes are addressed by each chapter. The following four icons are used to depict these themes:

SPECIFIC DESIGN TOPICS – Each design topic section is structured as follows:

a. Intent – Explains the purpose of the design considerations.
b. Design considerations – Identifies recommended design guidelines and a menu of design options for the physical design elements to be addressed. Design considerations include reiterations of General Plan policies and implementation measures, existing municipal codes, adopted city design standards, or suggested best design practices. The following icons are used to identify where a design consideration is a reiteration of Zoning Code standards, General Plan direction, state guidance, state requirements, and national guidance. CALGreen is a type of existing state requirement and provides additional measures and voluntary guidance highly relevant to strategies in this UDM. Accordingly, voluntary and required CALGreen references are identified throughout the plan, and

a list of each of the General Plan policy and Zoning Code references is included in the appendices (A.2)

c. Accompanying images or graphics – Illustrate each design concept.

GP Reiteration of General Plan policy or EIR mitigation measure

ZC Reiteration of Zoning Code Regulation

SR Reiteration of State Requirement

SG Reiteration of State Guidance

NG Reiteration of National Guidance

Design considerations may be in the form of recommended/ encouraged design guidelines, design targets, and/or a menu of design solutions from which to choose. This approach results in a greater measure of predictability in the development review process while maintaining flexibility and the option for creative design solutions.

1.5 Relationship to Other Plans and Policies

Development projects are subject to plans, codes, standards, and practices; for example, the City's General Plan, Municipal Code, and Standard Design Manual. As described in Section 1.2 above, the Unified Design Manual (UDM) displays design features from these documents that result in greenhouse gas emissions reductions, thereby informing applicants about design features that could be included in their development projects to be consistent with the City's Programmatic Climate Action Plan (PCAP). Projects that are consistent with the City's PCAP are determined to satisfy CEQA requirements for the purpose of assessing and mitigating GHG emissions and cumulative climate change impacts.

CHAPTER 2 COMMUNITY DESIGN

Description

This chapter provides community design considerations and strategies to encourage neighborhoods to provide an efficient street network for all modes of transportation, to design streets to be convenient and comfortable for pedestrians and cyclists, and to maintain a high quality community design aesthetic.

Chapter TOC

Objectives

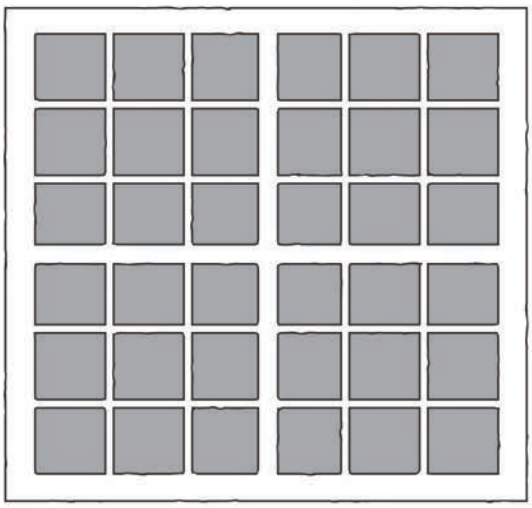
- Provide convenient and viable transportation choices for walking, biking, and transit.
- Provide orientation, safety, and comfort.
- Reduce air pollution, vehicle trips, and congestion.
- Maximize aesthetics and pedestrian comfort on all new streets.
- Ensure infill development is compatible with the surrounding context.

Relationship to CAP

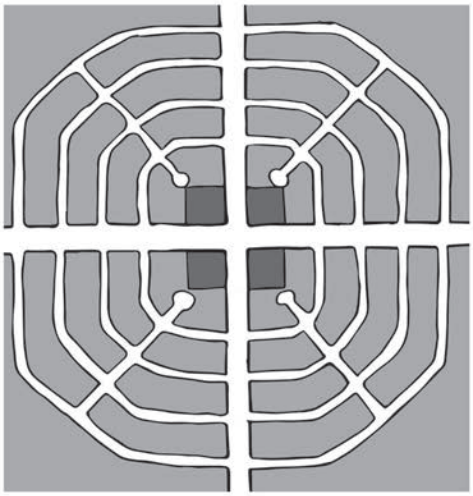
Land Use & Transportation

2.1 Connectivity
A. Circulation System

Encouraged Street Network Types



Traditional Grid Pattern



Modified Grid Pattern

Intent

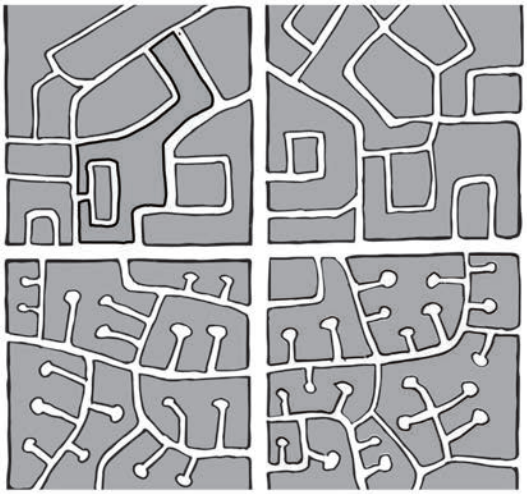
Connectivity design considerations are intended to ensure that circulation patterns are simple, efficient, legible, and memorable for all users. (GP)

Design Considerations

1. Development should be designed to accommodate the pedestrian by providing an efficient pedestrian network system of paths, sidewalks, and crossings that connect all parts of the community.
2. (GP) Street patterns should provide multiple routes to destinations to maximize flexibility, efficiency, and choice.
3. (GP) Streets should converge at common destinations to contribute to an area's unique identity.
4. New development should be designed with interconnected traditional grid or modified grid network street systems with short blocks (see Section 2.1C) to diffuse traffic and encourage pedestrian and bicycle circulation. A modified grid system is one where streets are curved slightly to produce the illusion of varied setbacks while maintaining the integrated grid pattern. This also narrows the line of sight for drivers and encourages them to slow down.
5. (GP) Curvilinear and winding roads, dead-end streets, and street patterns with cul-de-sacs (lollipop) and/or loops are discouraged for their poor connectivity of streets and land uses. Where cul-de-sacs are used,

Discouraged Street Network Types

Curvilinear Street Pattern



Loop & Cul-de-sac Pattern

they should:

a. Be limited to no more than 10 percent of the length of all streets in a subdivision map unless natural impediments such as hillside topography prevent vehicular connections.
b. Provide a walk-through path or "open end," if possible, to minimize walking distances to nearby destinations.

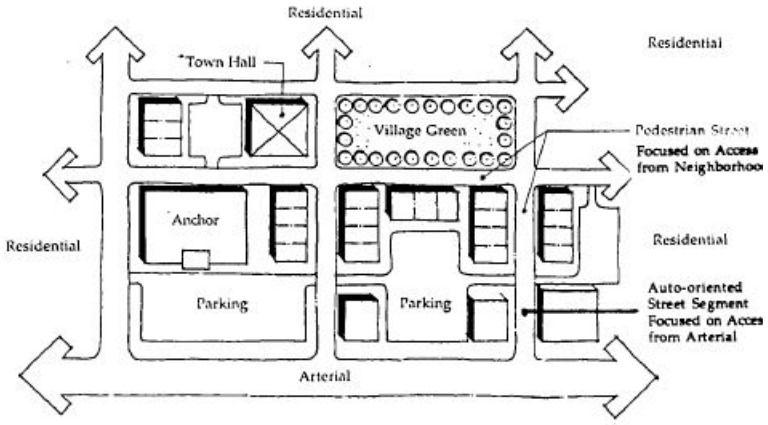
GP 6. Arterial streets should prioritize efficient conveyance of regional traffic, while collector and local streets should connect residential areas to local commercial areas, schools, and parks.

GP 7. Collectors and some local streets should be aligned along the edge of parks and open space to enhance the aesthetic character of the streets and sidewalks.

GP 8. Core commercial areas should be designed to create a pleasant and pedestrian-friendly "main street" environment, with shops and street parking oriented along the main street, and parking lots located behind shops.

GP 9. The circulation network should be designed to provide reasonably direct vehicular access to local destinations while discouraging outside traffic from

2.1 Connectivity (CAP M1)
A. Circulation System



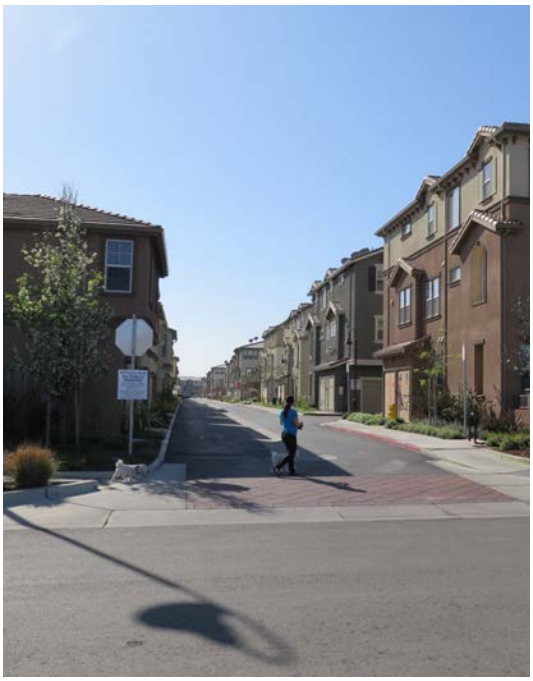
"Main Street" circulation and site plan concept

Mid-block residential pathway

taking shortcuts through residential neighborhoods.

GP 10. Residents should be able to reach public transit routes, shopping centers, schools, and recreational areas as directly and easily as possible. The following barriers should be avoided:
   a. Residential subdivision designs that require pedestrians to duplicate walking distance (double-back)
   b. Long, unbroken walls
   c. Cul-de-sacs

11. New residential developments are encouraged to include the following:
   a. A linkage between all interior cul-de-sacs of a proposed subdivision that are in excess of 300 feet in length, except where terrain or other restrictions make such design impractical.
   b. Linkages to all open space areas, parks, activity centers, schools, and transit facilities from cul-de-sacs and interior or circulatory streets of the development, except where terrain or other restrictions make such design impractical.
   c. Linkages illuminated with streetlights at entries and along routes.



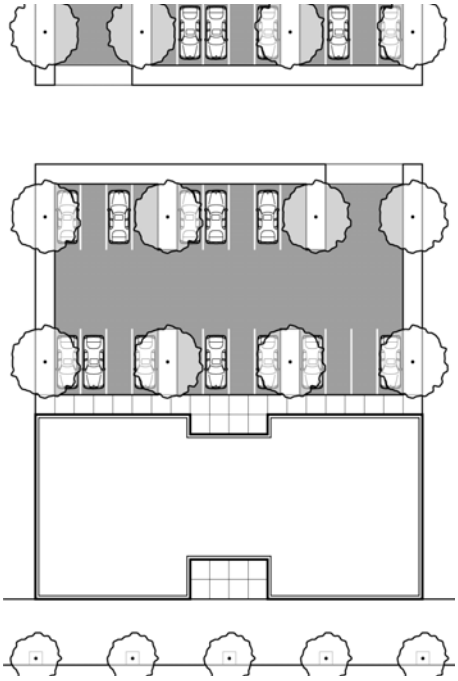
Internal circulation network connects to local street

Pedestrian linkage through cul-de-sac

12. For new subdivisions, master planned communities, and specific plan areas, bicycle routes should be incorporated into the overall design of the community through the use of both on- and off-street routes and trails. The project site should be connected to the citywide bikeway system.
13. Multi-family development with internal streets and driveways should be designed to be easy to navigate in a logical, commonsense manner so that residents or visitors can easily enter the site, park their car, and find a particular unit.

2.1 Connectivity
B. Site Access

Garages accessed from rear alley



Shared allley loaded access

Intent

Site access design considerations are intended to consolidate access points to improve safety by minimizing potential conflicts between automobiles, bicyclists, and pedestrians.

Design Considerations

GP 1. Shared access points should be created for adjoining sites, particularly for land uses fronting major streets, and driveways on opposite sides of the street should be aligned.

GP 2. Curb cuts should be minimized and limited to eighth- to quarter-mile intervals along public streets and near major intersections to reduce points of conflict and improve pedestrian safety.

GP 3. Access to parking from alleys or common driveways is encouraged.

ZC 4. For parcels served by a rear alley, new driveways that cross a sidewalk must be designed and placed to minimize impacts on pedestrians to the greatest extent possible.

5. Pedestrian pathways and sidewalks crossing a driveway should be made identifiable by the use of elevated crossings and/or alternative hardscape materials such as patterned, stamped, and/or colored concrete.

6. The majority of a street should not be dominated by driveways and curb cuts.

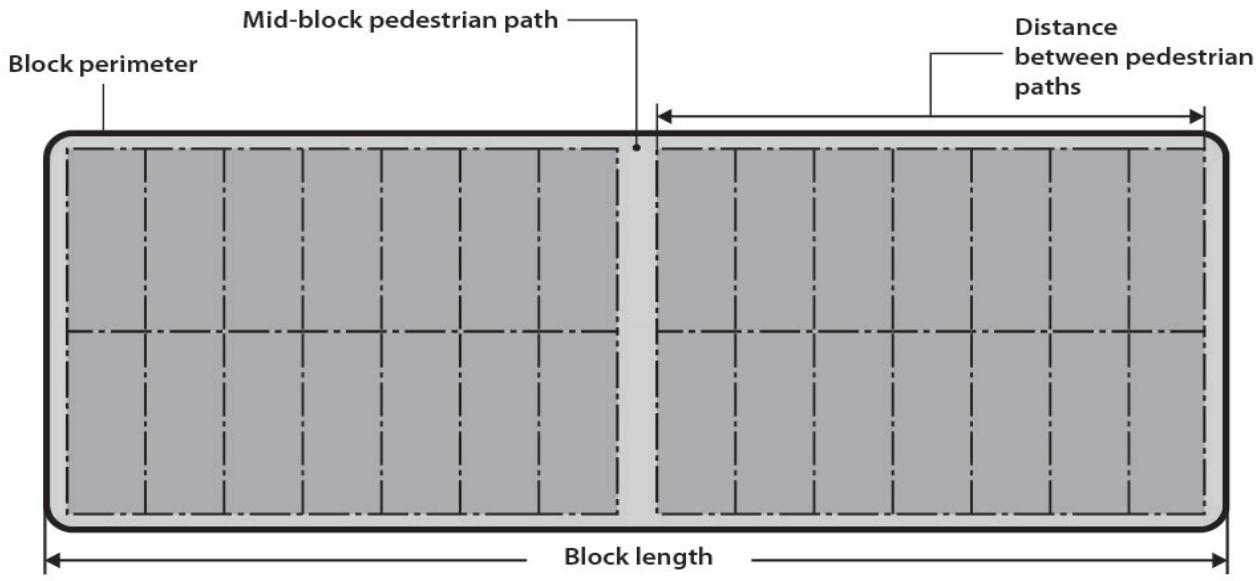
GP 7. Residential "fronting lots" should be avoided along

Driveways should not dominate the street

Shared driveway between adjoining sites

major collectors and arterials. Where residential lots front onto major roadways, alley-loaded access to homes and on-street parking should be considered to buffer residential uses from travel lanes.

2.1 Connectivity
C. Blocks and midblock connections



Block length and mid-block pathway concept

Intent

Block connection design considerations are intended to encourage walking by providing more efficient, flexible, and convenient circulation options for pedestrians.

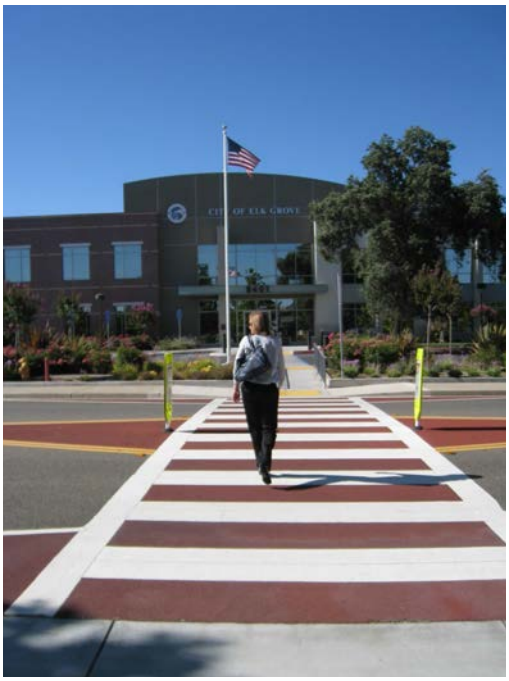
Design Considerations

1. New developments are encouraged to use small blocks, as they promote walking by creating more flexibility and options for pedestrians.
2. Block lengths should be no longer than 600 feet and cul-de-sacs should be no longer than 300 feet, in accordance with the City Municipal Code.
3. Blocks with any block face length exceeding 600 feet should be developed with midblock pedestrian connections per the guidelines in Table 1.1.

Table 1.1 Block Length & Midblock Connection Standards

Block Length	Maximum Spacing Between Bike/Pedestrian Paths	Midblock Pedestrian Connection
Less than or equal to 600'	600'	Not required
More than 600'	600'	1 every 600'

4. Midblock pedestrian street crossings should be provided to connect midblock pedestrian/bike pathways.
5. Midblock connections should be well lit with pedestrian-scale lighting and provide a 5-foot minimum circulation path with 2 feet of landscaping



Bold painted striping delineates crosswalk

Mid-block crossing

along either side of the path.

6. To ensure safe and convenient pedestrian street crossings, two or more of the following design improvements should be incorporated at each designated intersection of a midblock crosswalk:
   a. Minimize crossing distance by utilizing curb extensions (bulb-outs) at intersections.
   b. Incorporate pedestrian islands.
   c. Use signage and/or lighting to delineate crossings.
   d. Use bold painted striping.
   e. Supplement crossings with advance crosswalk warning signs for vehicle traffic.
   f. Provide street lighting on both sides of midblock crossings.
   g. Use alternative hardscape materials such as pavers or patterned stamped and/or colored concrete.
   h. Raise the crosswalk section to visually and functionally call attention to the crossing and to slow traffic.

2.2 Pedestrian- and Bicycle-Friendly Street Designs

A. Pedestrian Design

"Complete Street" featuring vehicle, bike, and pedestrians facilities

Bulbout at intersection

Intent

Pedestrian street design considerations are intended to promote walking by improving the design and safety of streets for pedestrians.

Design Considerations

GP 1. All streets should be designed as "Complete Streets," which balance the needs of all modes of transportation, including vehicles, bicycles, transit, and pedestrians. (GP)

GP 2. Sidewalks and pedestrian ways should be provided in all new residential and commercial developments. Sidewalks are also encouraged in industrial areas to assist in employee access to public transit.

GP 3. Local streets should have travel and parking lanes that are narrow enough to slow traffic, while still providing adequate access for automobiles and for emergency and service vehicles.

GP 4. The use of traffic calming devices should be considered that reduce the length/distance of pedestrian street crossings such as:

   a. Bulbouts/curb extensions
   b. Bollards
   c. Median strips/pedestrian safety islands
   d. Narrow lanes

5. Traffic control devices and pedestrian/bike refuges are encouraged at midblock crossings.

GP 6. City and utility equipment such as streetlights,

Widened sidewalks and seating

Pedestrian refuge island

street signs, and fire hydrants should be located such that they do not obstruct sidewalks and other pedestrianways.

GP 7. Pedestrian links such as plazas, malls, arcades, and walk-throughs are encouraged in high-traffic areas.

GP 8. Rest areas with seating should be provided along major pedestrianways to create an inviting pedestrian environment.

GP 9. Street trees should be planted along roadways, trails, and bikeways to form a pleasing canopy over the street/pathway, buffer pedestrians from travel lanes, and provide relief from summer heat.

GP 10. On-street parking should be provided along collector and local streets to narrow the street and provide a buffer between pedestrians and vehicular travel.

11. City street standards dictate a 5- to 6-foot sidewalk and a 6- to 7-foot landscape buffer along most streets. Widened sidewalks are encouraged in areas of more intense pedestrian activity, as follows:
    a. 7 feet where the sidewalk is not separated from the roadway
    b. 8 feet in front of schools, universities, hospitals, and commercial and mixed-use development

2.2 Pedestrian- and Bicycle-Friendly Street Designs

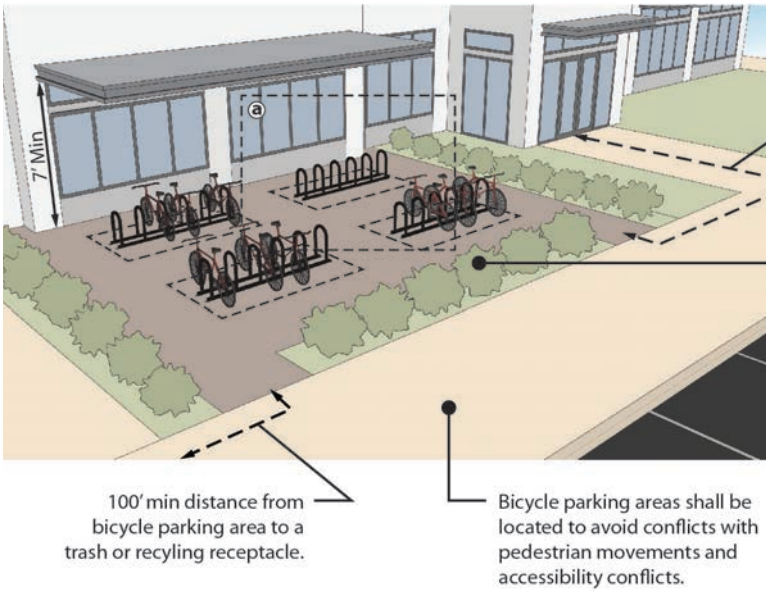
A. Pedestrian Design

Wide sidewalks accommodate outdoor dining

Sidewalk widened for outdoor seating

c. 10–12 feet along intensely used commercial and downtown areas
d. 15 feet adjacent to restaurant uses to provide seating along the sidewalk (can be accomplished with setbacks)

Bike lane positioned left of right-turn lane



Bicycle parking located next to building entrance

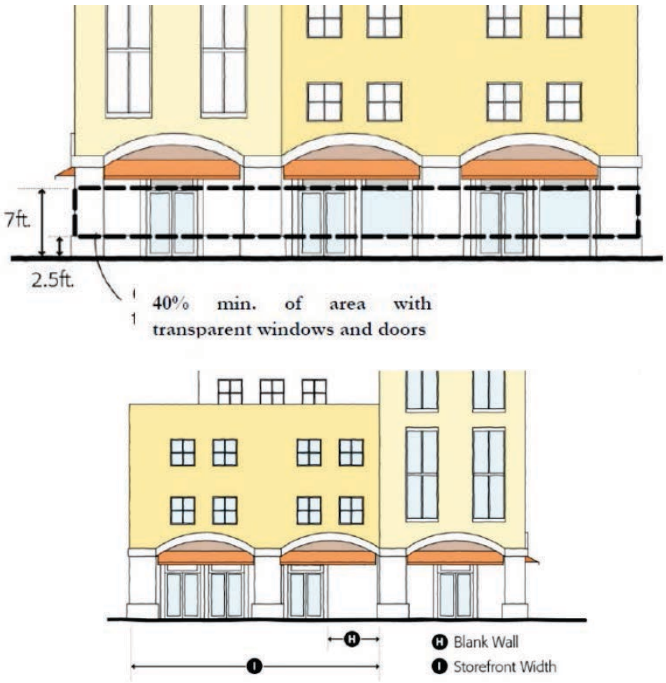
Design Considerations

GP 1. On-street bikeways should utilize existing or proposed major streets that provide the quickest, shortest, and safest route to take for bicyclists.
2. Bike lanes should be a minimum of 5 feet wide.
3. Bicycle lanes should extend up to the intersection stop bar or crosswalk. If right-of-way is a constraint, appropriate markings and signs should be used to end bicycle lanes prior to the intersection.
4. At intersections with exclusive right turn lanes, the bicycle lane should be transitioned to the left of the right turn lane. If right-of-way is a constraint, appropriate markings and signs should be used to end bicycle lanes prior to the intersection.
5. Bicycle racks should be located conveniently for the user in proximity to entrances and must not obstruct the pedestrian right-of-way.

Intent

Bicycle street design considerations are intended to promote bicycling by improving the design and safety of streets for cyclists.

2.2 Pedestrian and Bicycle Friendly Street Designs
C. Building Interface



Minimum 40% building transparency & blank wall guidelines

Corner entrance features special architectural details

Intent

Building interface design considerations are intended to enliven street edges and encourage interaction with pedestrians and other street users.

Design Considerations

1. Building entries should be set back or recessed to prevent conflicts with pedestrians.
2. (ZC) The ground-floor street-facing building walls of nonresidential uses shall provide transparent windows or doors with views into the building for a minimum of 40 percent of the building frontage located between 2.5 and 7 feet above the sidewalk. Fifty percent of the transparent windows or doors area shall remain clear to allow views into the building.
3. (ZC) The maximum length of an unarticulated/blank building wall shall be 10 feet in the D-COR zoning district and 25 feet for all other downtown zoning districts, unless otherwise approved with a Minor Use Permit. Architectural articulation shall have a similar pattern to other adjacent buildings to provide cohesive design in the neighborhood.
4. (ZC) Unarticulated/blank building walks should be avoided, particularly in commercial and downtown areas. Building and wall articulation may be provided through the use of:
   a. Doors, windows, and other building openings.
   b. Building projections or recesses, doorway and

Awnings provide shelter

Large commercial building designed to look like narrow storefronts

window trim, artwork displays, and other details that provide architectural articulation and design interest.

c. Varying wall planes, heights, or contrasting materials and colors.

d. Awnings, canopies, or arcades to reinforce the pedestrian scale and provide shade and cover from the elements.

5. Weather protection and a clear sense of entry should be provided along buildings and primary walkways to building entrances through the use of:
   a. Awnings, building overhangs, trellises, canopy trees, and recesses on building facades adjacent to walkways.
   b. Transparent surfaces (windows) that allow views into and out of buildings.
6. Large footprint retail stores should be lined with multiple narrow retail storefronts.
7. Special attention should be paid to the design of project and building corners as an opportunity to create visual interest and provide easy access to adjacent properties. This can be accomplished through building placement, entrances, public

C. Building Interface

Residential entrance highlighted by columns and archway

Porch entrance

plazas, or small parks that tie the building to the public street.

8. Residential entrances should be clearly identified with two or more of the following treatments:
   a. Oriented to face the street
   b. Porch or stoop
   c. Change in roof form
   d. Change in setbacks
   e. Special architectural articulation

Similar scale and character between residential and non-residential uses

Commercial building architecture matches adjacent residential neighborhood

Design Considerations

GP 1. Design of buildings in scale with adjacent development and harmonizing with the character of the area or neighborhood is encouraged.
2. To establish continuity between land uses, all new developments in the project area, regardless of size or use, should reflect a similar urban form that is human scale and pedestrian-oriented, with strong physical and visual connections to fronting streets.
3. Development on either side of streets (facing each other) should be designed with a compatible scale and massing to encourage a comfortable pedestrian environment and maintain a sense of visual cohesion along the street.
4. Positive transitions in scale, massing, height, setback, and character are encouraged at the interface between residential and nonresidential land uses, and between new and existing adjacent buildings.
5. Site planning should consider compatibility with surrounding neighborhoods by providing proper transition of density, increased setbacks, and architectural compatibility along common boundaries, particularly on infill sites adjacent to

Intent

Infill compatibility design considerations are intended to maximize compatibility with the neighboring context to the greatest extent possible. Compatibility is based on ensuring the massing and scale of structures are complementary from one project to another. Compatibility design considerations are also intended to buffer potentially incompatible uses.

2.3 Infill Compatibility Design

New development transitions in height and density

New development does not match scale of existing buildings

lower densities.

6. The mass of an infill structure should relate to the context of nearby structures. This may be accomplished by stepping back upper floors and by using vertical and horizontal articulation to divide larger building masses into forms that are similar in scale to structures seen in the immediate vicinity.

GP 7. Large buildings should not appear to dominate an entire street or block. Articulation and variety in floor levels, facades, and rooflines can be used to create the appearance of several smaller projects.

8. Infill development that is one or more stories taller than adjacent buildings should include upper-story stepbacks to provide visual relief and to minimize shading and loss of solar access to adjacent buildings.

9. Upper-story stepbacks or partial indentations should be used for upper-story features, such as balconies.

10. For multi-story buildings adjacent to single-family homes, the upper floors should be stepped back from adjacent property lines by 5 feet for every story.

11. Facades that front a street should be articulated to improve the quality of the building design and

Multi-family residential buildings designed to look like lower density townhomes

Articulation of roofline and facade

accentuate the ground floor. Appropriate methods of articulation include a combination of the following:

a. Varying the height or roofline.
b. Breaking up large smooth surfaces with projections, molding, or changes in texture and color.
c. Adding depth and detail to the cornice or roof parapet.
d. Providing front porches, entry porticos, window recesses, shutters, dormers, projections, or other unique design features at the front entrance and/or corners.

ZC 12. Infill of secondary dwelling units must fit within the same building envelope as the primary building and shall be compatible in height, materials, and colors.

13. Infill of secondary dwelling units is encouraged on corner lots to provide secondary site access to the structure.

CHAPTER 3 SITE DESIGN FOR MOBILITY

Description

This chapter provides site design considerations for mobility of pedestrians, cyclists, and transit users to and through developments. By following the requirements and suggestions outlined in this chapter, developments can be designed to direct users from sidewalks, transit stops, and parking areas to and between buildings in a safe, convenient, and efficient manner. Circulation to the site and between neighborhoods is addressed in Chapter 2. These design considerations are applicable to mixed-use, nonresidential, and multi-family residential project types.

Objectives

- Increase safety, comfort, and convenience for pedestrians, cyclists, and transit users.
- Minimize conflicts between pedestrian circulation and vehicular traffic.
- Ensure a safe, comfortable, convenient, and easy to navigate system of walkways.
- Provide convenient parking for fuel-efficient vehicles and bicycles.
- Minimize street frontages dominated by fields of surface parking.

Chapter TOC

Relationship to CAP

Land Use & Transportation

3.1 Site Planning for Transit, Bike, & Pedestrian Access

A. Building Orientation and Entries

Building fronts the sidewalk and provides

Intent

Design considerations for building orientation and entries are intended to provide a compatible relationship between buildings and the public sidewalk system. These considerations are applicable to primary building entries to mixed-use and nonresidential development or key entrances to residential neighborhoods or multi-family sites.

Design Considerations

1. Buildings should be encouraged to be located at the minimum setback assigned for the district to maximize the convenience of pedestrians and transit users. Deep front setbacks and driveways that separate the front door of buildings from the public sidewalk should be avoided.
2. Buildings should be arranged to define, connect, and activate sidewalks and public spaces. See Chapter 2 for design considerations to enliven building frontages through the use of defined entrances, display areas, changes in massing and facade setbacks, and outdoor seating.

GP 3. Primary ground-floor commercial building entrances should orient to plazas, parks, or pedestrian-oriented streets, not to interior blocks or parking lots.

GP 4. Anchor retail buildings may have their entries from off-street parking lots if pedestrian access to the entry is provided from the street and if pedestrians are not required to walk through the parking lot to enter the store.

GP 5. Buildings with multiple retail tenants should have numerous entries to the street.

3.1 Site Planning for Transit, Bike, & Pedestrian Access

A. Building Orientation and Entries

Buildings located at minimum setback

Building entries open on to the street with porches

GP 6. In residential areas, the front door and guest entry should orient to the street. Private back door entries can provide access from alleys, garages, and parking lots. Ancillary units and upper floor units in multi-family or apartment complexes may be accessed by rear or side entries.

7. Main building entries should open on public streets and be clearly defined with signs or architectural treatment.

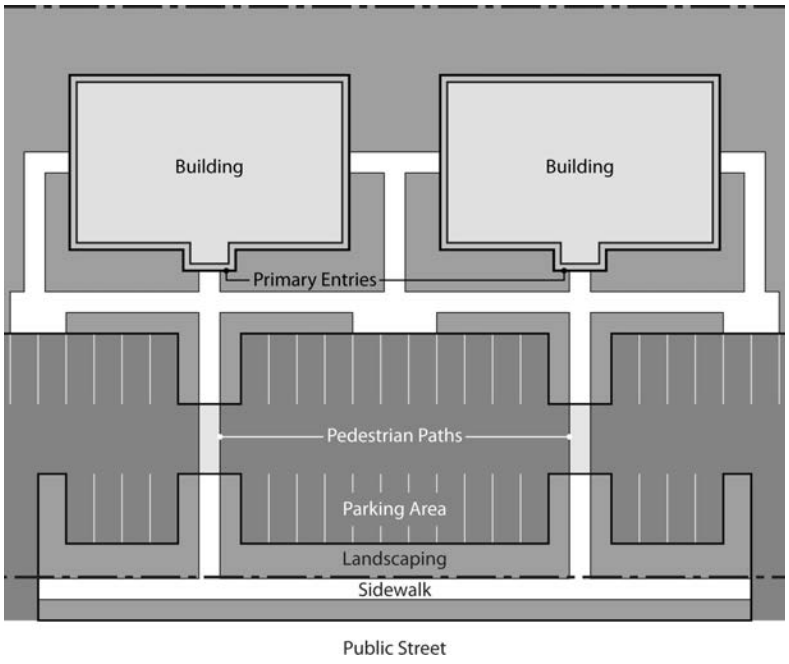
8. A number of the following features should be incorporated to accentuate primary building entries and to attract and protect pedestrians: canopies, porticoes, overhangs, recesses/projections, arcades, raised cornice parapets over the door, peaked roof forms, porches, arches, outdoor patios, display windows, and architectural details such as tile work and moldings.

9. Secondary commercial entrances should have minor detailing that adds architectural distinction to that portion of the facade.

10. Developments that are set back from the street should use the area between the right-of-way and the building to create a plaza court, planter area, benches, bicycle parking, or another amenity.

3.1 Site Planning for Transit, Bike, & Pedestrian Access

B. Connections to the Sidewalk System



Direct pathways connect building entrances to sidewalk and parking

Direct pedestrian pathway from sidewalk to park

Intent

Design considerations for connections to the sidewalk system are intended to provide clear and designated paths of travel between buildings and the public sidewalk system.

Design Considerations

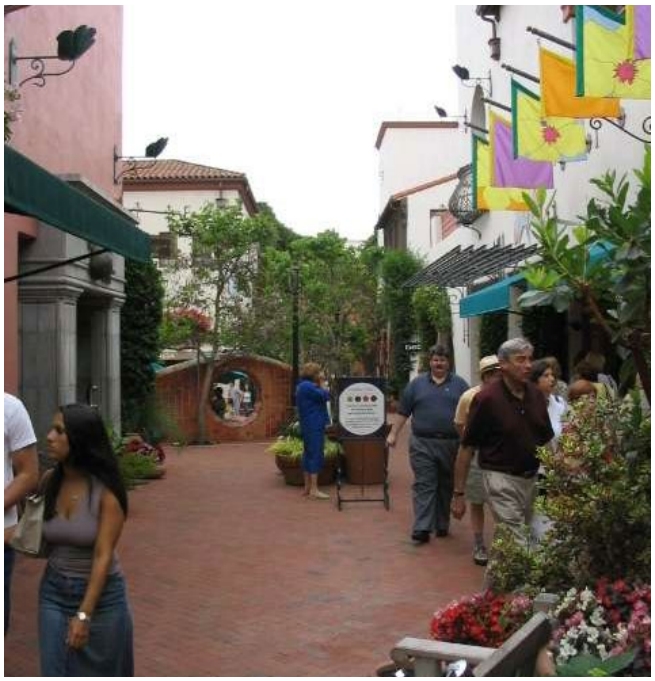
ZC 1. Convenient and direct pathways must be provided to accommodate pedestrian circulation from every primary building entrance to the public sidewalk system, adjacent trails, adjacent buildings, parks, plazas, open spaces, transit stops, bike lanes, bike and vehicle parking, and adjacent developments. This pedestrian network should enhance a campus-like appearance of the development site.

2. Multi-family residential projects should provide direct pedestrian connections from individual and common entries to the public sidewalk system.

GP 3. Where possible, the primary pedestrian path system should coincide with the street system along sidewalks or be visible from streets.

4. Internal pedestrian walkways should be a minimum of 6 feet in width and designed with special paving, landscaping, pedestrian-scale lighting, and street trees.

Building entrances face the paseo


Flags, landscaping and awnings along the paseo

5. Internal pedestrian walkways that are lined with retail shops, also referred to as paseos, are encouraged in commercial areas. They should be designed as follows:
   a. Have visibility from one end to the other.
   b. Be straight with minimal angles and turns to disrupt visibility.
   c. Buildings facing the paseo should have windows and/or side entrances to provide a higher level of visibility onto the paseo.
   d. Planting and site furnishings such as benches should be incorporated.
   e. Outdoor dining and outdoor retail displays are encouraged.
   f. Artwork such as banners, fountains, flags, and sculptures are encouraged.
   g. Paseo entrances should be designed to provide a sense of welcome at both ends of the paseo and to provide visual cues for pedestrians that these are unique spaces.

3.1 Site Planning for Transit, Bike, & Pedestrian Access
C. Connections to the Transit System

Path leads from transit stop to shops

Enhanced crossing leading to transit stop

Intent

Design considerations for connections to the transit system are intended to provide a clear and designated path of travel between buildings and transit stops.

Design Considerations

1. The pedestrian network should serve transit by providing direct and convenient pedestrian paths from building entries to transit stops.
2. GP Paths to the transit stop should be lined with activities and be shaded. The configuration of parking, shopping, and pedestrian routes should reinforce access to transit.
3. Designated connections from transit stops to major destinations, such as shopping centers, should be highlighted with special paving, enhanced crossings, and pedestrian-scale lighting.
4. The convenience of transit use should be increased by incorporating the following site design techniques:
   a. Place transit facilities and supportive commercial uses (coffee house, news stand, etc.) in close proximity whenever possible.
   b. Where possible, incorporate transit stops into attractive public spaces and plazas that act as a node between the project and the stop.
   c. Provide easy access from transit stops to the front door of buildings.

3.1 Site Planning for Transit, Bike, & Pedestrian Access
D. Connections to the Bicycle System

Intersection of bike path, pedestrian path, sidewalk and bicycle parking

Bicycle path connection from street to shopping center

Design Considerations

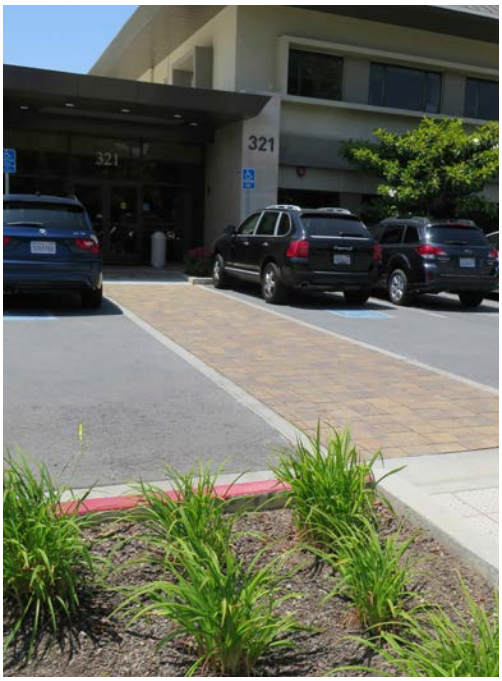
1. A linked system of bicycle paths should be provided throughout the project site by:
   a. Connecting to the regional bicycle system (streets with bike lanes, open spaces with bike paths, etc.).
   b. Continuing bicycle routes to the property boundary to connect to existing systems on adjacent development or to allow future connections when adjacent properties develop.
   c. Providing bicycle facilities as part of roadways/ driveways with painted lanes and signage or providing a separate bicycle path system.
   d. Connecting bicycle parking areas with bike paths and pedestrian paths that lead to building entrances

Intent

Design considerations for connections to the bicycle system are intended to provide a clear and designated path of travel between buildings and bicycle routes.

3.1 Site Planning for Transit, Bike, & Pedestrian Access
E. Connections to Parking Areas

Designated path with archway and landscaping



Special paving and raised walkway

Intent

Design considerations for connections to parking areas are intended to provide a clear and designated path of travel between buildings and parking lots.

Design Considerations

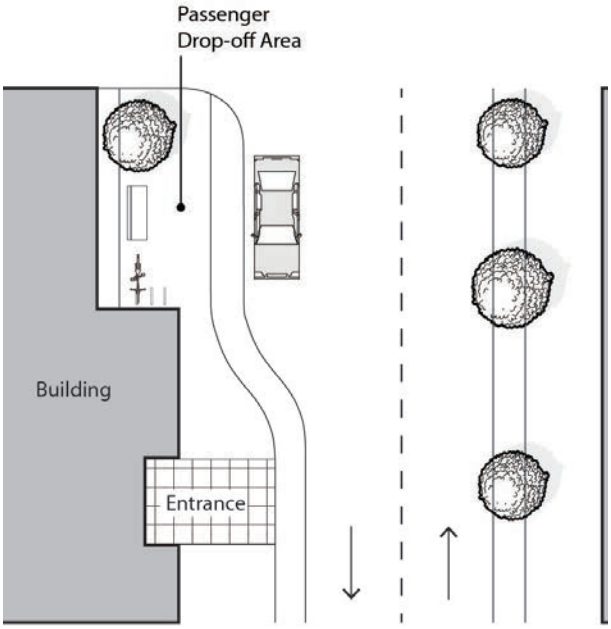
ZC 1. Parking areas should provide safe pedestrian passage by creating a continuous designated walking path that connects the primary entrances of the structure(s) on the site to the associated parking area.

2. Safe and comfortable pedestrian routes should be designed through parking areas with the use of landscaping, special pavers, raised walkways, bollards, arches, trellises, and other design elements to alert drivers to potential conflicts with pedestrians.

3. Where walls and/or landscaping are used to screen parking areas, breaks should be provided at least every 60 feet (minimum one per lot) to provide pedestrian access from the parking area to the public sidewalk.

3.1 Site Planning for Transit, Bike, & Pedestrian Access

F. Passenger Loading & Unloading Areas at Destinations



Designated passenger drop-off area

Passenger drop off area designated with special paving

Design Considerations

GP 1. The provision of designated off-street passenger drop-off and pick-up zones should be considered at major destinations, such as shopping centers and schools, for transit users, pedestrians, and cyclists.

2. Amenities should be provided for passenger waiting areas such as shade trees, shelters, benches, newspaper vending machines, and lighting.
3. The placement of public transit/bus drop-off areas should be considered within project sites for convenient pick-up and drop-off.
4. Passenger loading and unloading areas are encouraged to be co-located with public open spaces such as plazas to allow use of their amenities.
5. Land uses with over 100 parking spaces are encouraged to provide a designated passenger loading turn-out area located at the main entrance, unless another entrance serves as the main point of access from the parking area to the building or use.
6. Loading areas should be designed with special paving and/or bollards to distinguish from the street or sidewalk.
7. Drop-off areas should not interfere with the circulation of other users within the parking area or at building entrances.

Intent

Design considerations for passenger loading and unloading areas are intended to create safe and comfortable zones for pedestrians to embark and disembark from public transit, private vehicles, and bicycles.

3.1 Site Planning for Transit, Bike, & Pedestrian Access
G. Access Between Adjacent Developments

Opening in fence provides pedestrian access

Painted crossing, landscaping and arbors provide inviting access between sites

Intent

Design considerations for access between adjacent developments are intended to create clear and inviting designated access points and travel paths between adjoining developments.

Design Considerations

1. Adjacent land uses should be connected through trails, public sidewalks, or other designated pedestrian pathways.
2. (GP) Safe and inviting pedestrian connections should be provided between adjoining compatible uses, particularly at pedestrian destinations such as sports facilities, schools, parks, government facilities, and public open space areas.
3. (GP) Multiple pedestrian links are encouraged from pedestrian activity areas such as schools, parks, and government centers to the nearby street and/or trail system.
4. (GP) Development should minimize the use of walls, fences, hedges, or other barriers that limit the connections between uses. Where it is necessary to develop fences or perimeter walls as visual screens or sound barriers, openings for pedestrian and bicycle access in such walls are encouraged at regular intervals.

3.1 Site Planning for Transit, Bike, & Pedestrian Access
G. Access Between Adjacent Developments

Separate pedestrian access

Arch gateway features highlights access between developments

5. Pedestrian access between compatible uses should be designed with the following features to be safe, visible, and inviting:
   a. Enhanced landscaping
   b. Lighting
   c. Direct designated path with special paving
   d. Gateway feature, such as an archway or arbor
6. Gates as entryways into subdivisions are strongly discouraged, as they tend to create an unwelcome feeling and discourage interaction among neighborhoods. However, when the City approves gated entrances, such entrances should include separate vehicular and pedestrian access gates.

3.1 Site Planning for Transit, Bike, & Pedestrian Access
H. Transit Facilities

Benches, news racks shelter and signage at transit stop

Shelter design matches aesthetics of area

Intent

Design considerations for transit facilities are intended to create comfortable and inviting waiting areas for passengers taking public transit.

Design Considerations

1. The following amenities should be provided at each transit stop located adjacent to major destinations:
   a. Shelter
   b. Benches
   c. Lighting
   d. Shade trees
   e. Clear signage and schedules
   f. Marked crossings
   g. Wider sidewalks
   h. Trash and recycling receptacles
2. Transit stops are encouraged to be designed to contribute to project and area-wide identity. This can be achieved by:
   a. Using special paving materials.
   b. Integrating public artwork into the design.
   c. Ensuring that the shelter/shade structure and bench design match the aesthetics of the area or development.
   d. Installing special landscaping.

H. Transit Facilities

Shelter and signage at bus stop

Overhangs, benches and railings integrated into building architecture

3. Transit signage should provide clear information on bus route numbers, schedules, and fares to facilitate transit ridership. Where bus stops include a passenger shelter, additional information displays such as route maps should be provided. Transit stop signage should be well lit.
4. More opportunities for sitting and leaning should be provided at heavily used bus stops by integrating benches and leaning devices such as railings into the building architecture adjacent to bus stops. The portion of the building facade that integrates amenities for transit riders should be clearly differentiated and separate from the main entrance to prevent conflicts with pedestrians entering/exiting the building.
5. Developments at bus stop locations are encouraged to provide architectural features integrated into the building facade such as awnings, arcades, and galleries to provide overhead protection for passengers waiting for the bus.
6. Bus stops are encouraged to be located adjacent to but not directly in front of main building entrances to prevent conflicts with those entering and exiting the building.

H. Transit Facilities

Transit stop located within a shopping center

Bus stop co-located with a plaza

7. The placement of public transit/bus drop-off areas are encouraged within project sites at popular destinations, such as shopping centers, for convenient pick-up and drop-off.
8. Bus stops are encouraged to be co-located with plazas to allow use of the amenities for transit riders. At busy downtown bus stops, passengers can wait in the plaza area rather than crowd the sidewalks.
9. GP Public transit route transfer points should be located at one point, such as in conjunction with a major commercial area, so that passengers can go from one route to another with minimal inconvenience.

3.1 Site Planning for Transit, Bike, & Pedestrian Access
I. Wayfinding for Alternative Travel Modes

Directory sign

Gateway feature

Design Considerations

1. Pedestrian signs, maps, and kiosks should be placed in appropriate locations throughout large projects to direct visitors to local businesses, community amenities, major transit stations, and parking areas.
2. Pedestrian-oriented signs and maps should be located at key pedestrian activity nodes, such as transit stops, plazas, and shopping areas.
3. Gateway features should be used to provide a sense of arrival and transition to unique places in the city. Entrance features may consist of a combination of plant materials, archways, trellises, special paving, and/or signage. Gateways can provide an opportunity for architectural features, monuments, murals, banners, and lighting features that serve as identifiable community landmarks.
4. Wayfinding signage should be co-located with other streetscape furniture, such as light standards and transit shelters, where possible, to enhance visibility and reduce visual clutter in the public realm.

Intent

Design considerations are intended to direct pedestrians, bicyclists, and transit users around sites and to key destinations.

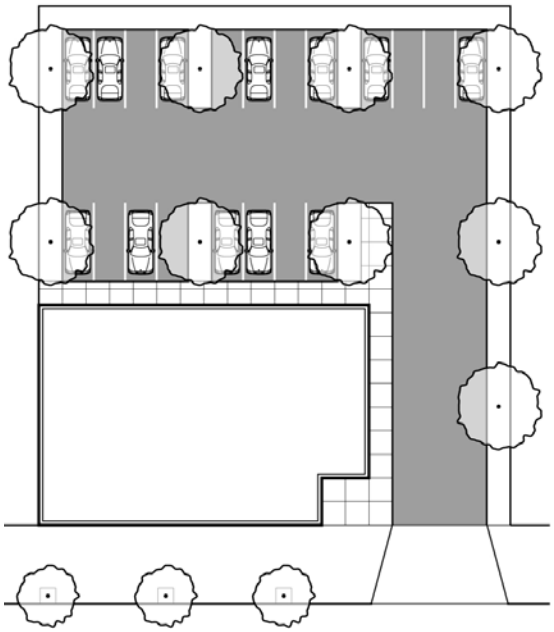
3.1 Site Planning for Transit, Bike, & Pedestrian Access
I. Wayfinding for Alternative Travel Modes

Directional sign to major transit station

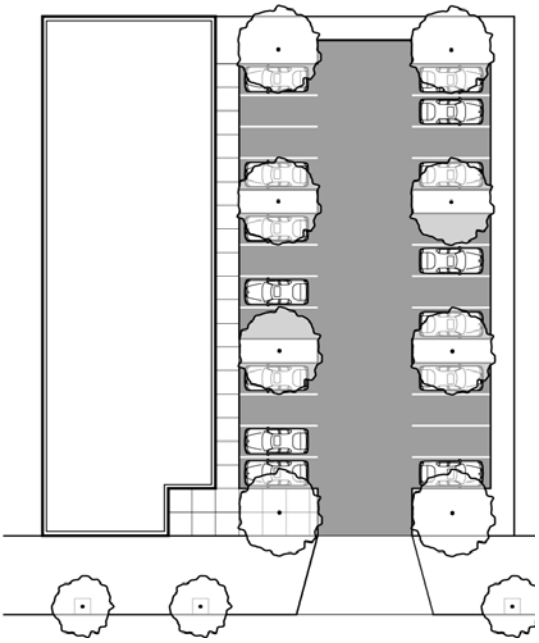
Directory sign at multi-family complex

5. Wayfinding should be used to help facilitate connections to and from major transit stations and other key destinations in the city. Directional and information signs that are attractive, clear, and consistent in theme, location, and design should be provided.
6. Large developments, such as multi-family complexes, should provide on-site directional or directory signs to help orient and direct the pedestrian around the site. Other effective wayfinding designs include color-coded buildings, pedestrian signage, and landscape accents.

3.2 Off-Street Parking
A. Location of Parking



Parking located behind the building



Parking located to the side of the building

Design Considerations

GP ZC 1. In order to reduce public views of parking areas, a significant amount of a development's parking area should be located beside or behind the building that it serves with short, pleasant passageways leading to the pedestrian-oriented street and primary entrances.

ZC 2. Surface parking areas should be divided into smaller units to decrease visual impacts associated with large expanses of pavement and vehicles.

3. Access to parking areas should be provided with driveways or through an alley if practicable. Also see Section 2.1.B.

Intent

Off-street parking design considerations are intended to reduce the visual impacts of parking on public streets and to provide convenient locations for the parking of bicycles and fuel-efficient vehicles.

3.2 Off-Street Parking
B. Designated Parking for Fuel-Efficient Vehicles

Electric vehicle parking and charging stations

Carpool parking

Intent

Design considerations for designated parking are intended to clearly identify parking for fuel-efficient vehicles and to locate these spaces in convenient locations to encourage their use.

Design Considerations

1. Designated parking for fuel-efficient vehicles is encouraged per CALGreen for 10 percent of the total designated off-street parking spaces. Fuel-efficient vehicles include any combination of low-emitting, fuel-efficient, and carpool/van pool vehicles (excluding neighborhood electric vehicles).

SR 2. Signage should be provided to clearly identify designated fuel-efficient parking stalls. In nonresidential areas, CALGreen requires painting the following characters such that the lower edge of the last word aligns with the end of the stall striping and is visible beneath a parked vehicle: "CLEAN AIR VEHICLE".

SG 3. For each electric vehicle parking space, one 120 volt AC 20 amp (level 1 charger) and one 240 volt 40 amp (level 2 charger) rounded AC outlets or panel capacity should be provided, along with the installation of conduit for future outlets. These are voluntary CALGreen guidelines.

4. Electric vehicle charging stations are encouraged at locations where visitors may park for long periods of time, such as movie theaters, shopping centers,

Designated parking for electric vehicles

Electric vehicle charging station

grocery stores, business parks, and multi-family developments.

5. Electric vehicle charging stations (EVCS) for public use should meet the following design considerations:
   a. Be located in a manner which will be easily seen by the public for informational and security purposes, and should be illuminated during evening business hours.
   b. Be located in desirable and convenient parking locations that will serve as an incentive for the use of electric vehicles.
   c. EVCS pedestals should be designed and protected as necessary to prevent damage by automobiles and vandalism.
   d. One standard sign may be posted for the purpose of identifying the location of each cluster of EVCS.
   e. One Level 2 charger should be provided for each space through a 240 volt AC plug and a dedicated 40 amp circuit. Level 2 charging equipment is compatible with all electric vehicles and plug-in electric hybrid vehicles. Level 2 chargers have a cord that plugs directly into the vehicle in the same connector location used for

3.2 Off-Street Parking
B. Designated Parking for Fuel-Efficient Vehicles

Neighborhood electric vehicle

Parking for neighborhood electric vehicle

Level 1 equipment. Level 2 charging generally takes 4 to 6 hours to completely charge a fully depleted battery.

6. Neighborhood electric vehicles (NEVs) or "low-speed vehicles" are encouraged for use in making short-distance trips along local streets with a maximum speed of 25 mph or on private streets in campus-like settings.
7. NEV parking spaces should be 15 feet long by 7 feet wide.

Covered parking provided near building entrance

Bicycle repair equipment and signage

Design Considerations

GP 1. On-site bicycle parking and/or storage facilities should be:
   a. Provided in well-lit, visible areas.
   b. Visible from streets or parking lots.
   c. In close proximity to building entries.

GP 2. Bicycle parking facilities should be provided at shopping, employment, transit, and recreational destinations.

3. Bicycle parking should be clearly marked and located close to building entrance areas where they are visible.

4. Bicycle parking is encouraged to be integrated into the design of the project.

5. Bicycle repair equipment, such as tire pumps, are encouraged to be co-located with bicycle parking.

GP 6. Bicycle parking should be protected and should be more convenient than that provided for cars.

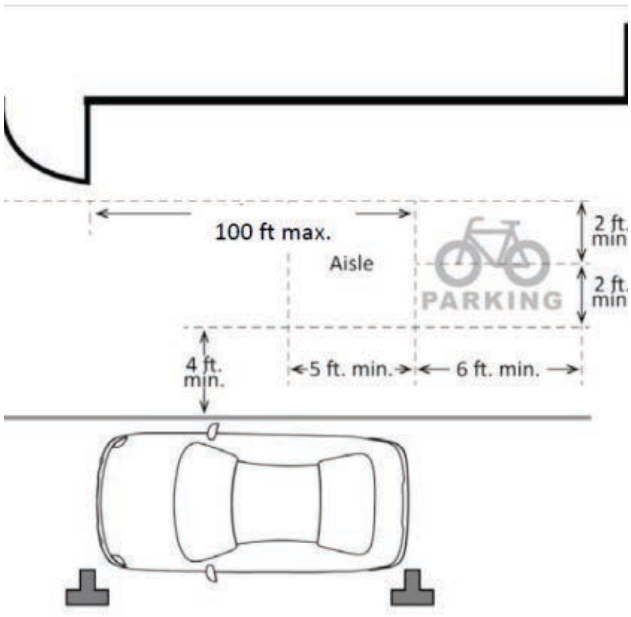
GP 7. Employers are encouraged to provide end-of-trip facilities, such as bike lockers, bike rooms, and shower facilities, to encourage bicycle commuting.

Intent

Bicycle parking design considerations are intended to clearly identify parking for bicycles and to locate these spaces in convenient and visible locations to encourage their use.

3.2 Off-Street Parking
C. Bicycle Parking

Bicycle parking located adjacent to the entrance



Bicycle parking requirements per the Zoning Code

8. Decorative bicycle racks should be used that allow the user to lock both the bicycle frame and the front tire to a permanent fixture.

ZC 9. Short-term Class II bicycle parking and long-term Class I bicycle parking must be provided in accordance with the Zoning Code parking ratio requirements. Short-term parking is intended to provide visitors who generally park for two hours or less a convenient and readily accessible place to park bicycles. Long-term Class I bicycle parking provides employees, residents, visitors, and others who generally stay at a site for several hours a secure and weather-protected place to park bicycles.

ZC 10. Short-term bicycle parking must be located within 100 feet of the primary entrance of the structure or use it is intended to serve and be readily visible to passers-by. At least 25 percent of required short-term bicycle parking spaces are required to be covered.

ZC 11. The following standards are recommended for long-term bicycle parking:

a. Location. Long-term bicycle parking must be located in highly visible, well-lighted areas that are convenient to the street and users.

Lockers provided for long-term bicycle parking

Inverted U-shaped bicycle rack

b. Cover. A minimum of 75 percent of required long-term bicycle parking spaces must be covered.

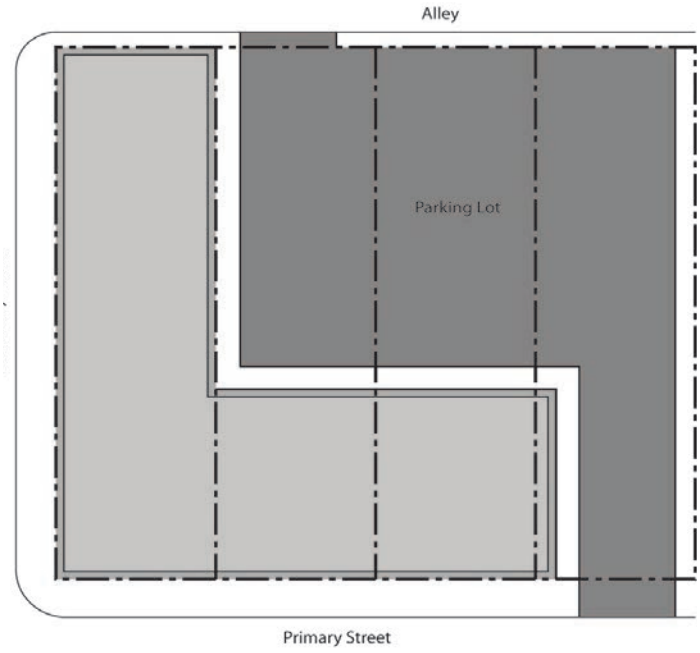
c. Parking Facilities. Long-term bicycle parking spaces must be secure and may include covered, lockable enclosures with permanently anchored racks for bicycles; or lockable bicycle rooms or areas with permanently anchored racks; or lockable, permanently anchored bicycle lockers.

ZC 12. Minimum dimensions for bicycle parking, aisles, and clearance must be provided in accordance with Zoning Code requirements.

ZC 13. Bicycle racks must be capable of locking both the wheels (one wheel with a U-type lock), providing at least two points of contact with the frame of the bicycle and supporting bicycles in an upright position. "Inverted U" bicycle racks are highly recommended.

14. Required cover for bicycle parking spaces must be permanent, designed to protect the bicycle from sun and rainfall, and be at least 7 feet above the floor or ground.

3.2 Off-Street Parking
D. Shared Parking



Parking shared amongst multiple properties

Directional signs at exits to surrounding streets

Intent

Shared parking design considerations are intended to provide convenient locations for parking and to minimize the amount of land devoted to parking lots.

Design Considerations

ZC 1. Multiple land uses on a single parcel or development site may use shared parking facilities when operations for the land uses are not normally conducted during the same hours, or when hours of peak use differ. Requests for the use of shared parking may be approved if:
   a. The total number of parking spaces required for the land uses does not exceed the number of parking spaces anticipated during periods of maximum use.
   b. The proposed shared parking facility is located no farther than 400 feet from the primary entrance of the land use(s) which it serves.

2. Multi-use developments with shared parking should have effective signage, including:
   a. Directional signs at entrances to the development from all public streets
   b. Signs at development exits giving direction to streets surrounding the site
   c. Information that directs parkers to and from their destination

Designated pedestrian links

Directional signage at entrance

3. Themed wayfinding systems and memorable graphics are encouraged in shared parking facilities to assist pedestrians in finding their vehicles upon returning to the facility.
4. Shared parking facilities should provide pedestrian links to destinations, particularly within a multi-use complex. Pedestrian links should be short and direct, safe, well-lit, and attractive. See also Section 3.1.E.
5. Parking spaces should be located close to building and stairwell/elevator cores to help orient visitors.

CHAPTER 4 LANDSCAPE IMPROVEMENTS

Description

This chapter provides landscape design considerations and strategies to maximize shade and water-efficient planting and manage stormwater. Trees and vegetation offer many benefits to the environment. By following the requirements and suggestions outlined in this chapter, developments can be designed to reduce temperatures while conserving water and maximizing aesthetics and comfort.

Chapter TOC

Objectives

- Plant trees along pedestrian paths and sidewalks that maximize shade, are easy to maintain, and do not conflict with pedestrian mobility.
- Design parking areas that maximize planted areas to reduce the heat island effect.
- Locate trees to minimize heat gain in hot months and maximize heat gain and light access in cool months.
- Maximize aesthetics and pedestrian comfort.
- Direct, detain, and minimize stormwater runoff.

Relationship to CAP

Land Use & Transportation

Water & Wastewater

Energy

4.1 Shade Trees

A. Along streets in new subdivisions and large projects

Tree grates used in commercial areas

Curbed tree wells between parking spaces

Intent

Street tree design considerations are intended to maximize tree canopy along street medians and sidewalks to provide shade for pedestrians and reduce the heat island effect.

Design Considerations

When planting required street trees in new subdivisions and large multi-family, nonresidential, and mixed-use projects with internal streets, the following items should be incorporated into the project design as applicable:

GP 1. Trees should be spaced a maximum of 40 feet on center.

GP 2. Trees should be located in planter strips between curbs and sidewalks and also in median strips.

3. Tree species should be selected that are climate appropriate, easy to maintain, and with canopies which can maximize shade.

4. Two or more tree species should be planted along each street to increase biodiversity and minimize the potential spread of disease.

5. Ornamental trees should be used to draw attention to and enhance prominent intersections, gateways into the city, and/or driveway entrances into projects.

6. In commercial areas with heavy foot traffic, tree grates should be used to protect trees and reduce safety hazards.

4.1 Shade Trees

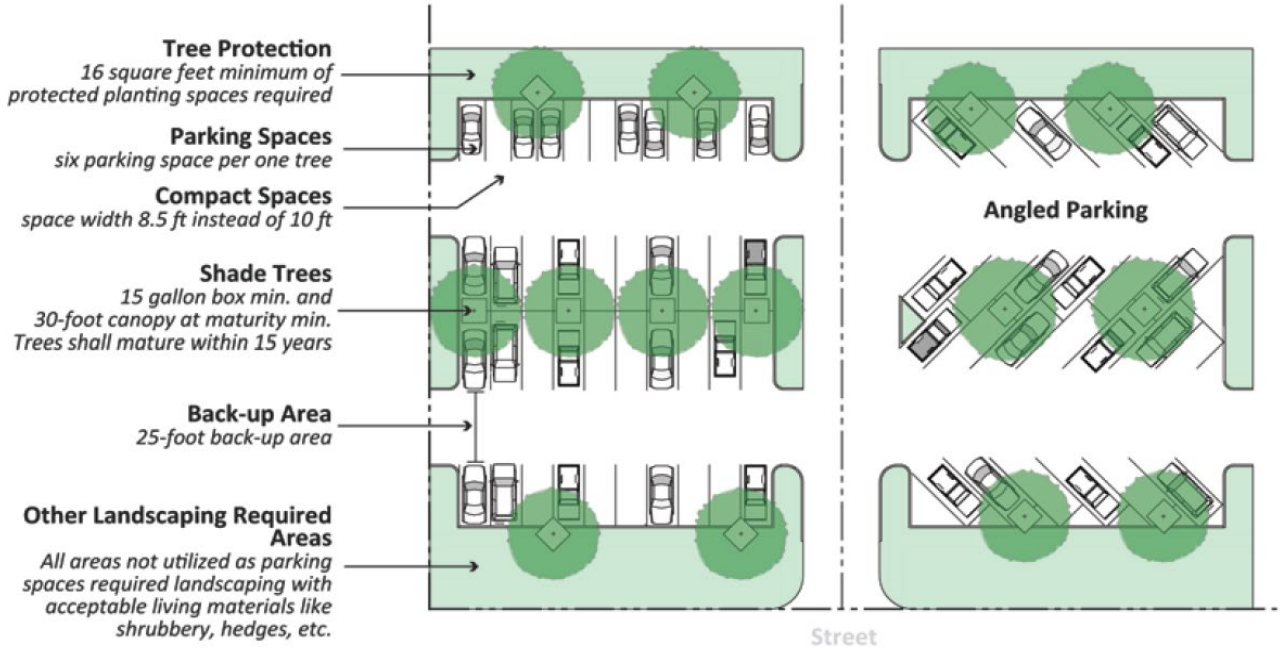
A. Along streets in new subdivisions and large projects

Narrow canopy trees along multi-story building

Broad canopy tree along residential street with larger setback

7. For areas that do not require planter strips, trees should be planted between on-street parking spaces in curbed tree wells.
8. Trees with a narrow form (canopy) should be favored in urban areas with multistory buildings and shallow setbacks. Conversely, broad-canopy trees could be favored along residential streets with deep setbacks.
9. Tree well size should be a minimum of 4 feet by 4 feet.
10. Street trees should be a minimum 15-gallon box size.

4.1 Shade Trees
B. Shade trees in parking lots



Intent

Design considerations for shade trees in parking lots are intended to maximize tree canopy to provide shade and reduce the heat island effect in parking areas. Tree canopies also create a more inviting environment.

Design Considerations

When designing parking lots, the following items should be incorporated into the project design as applicable:

ZC 1. A minimum of one shade tree should be provided for every six parking spaces in a parking lot.

ZC 2. Shade trees should be a minimum 15-gallon box in size and provide a minimum 30-foot canopy at maturity.

ZC 3. Shade trees should be of a type/variety that can reach maturity within 15 years of planting and be selected from a City-approved list of canopy tree species.

ZC 4. Shade trees should be arranged in a parking lot to provide maximum shade coverage (based on a 30-foot canopy) on August 21 to represent typical summer foliage. The arrangement should approximate nearly 50 percent shade coverage.

GP 5. Tree canopies in commercial parking lots should be trimmed to retain shade while allowing building visibility.

6. When parking areas face a public street, trees should be planted around the perimeter of parking areas.

C. Along buildings and paths

Shade trees along pedestrian paths

Shade trees adjacent to buildings

Design Considerations

When planting trees, the following items should be incorporated into the project design as applicable:

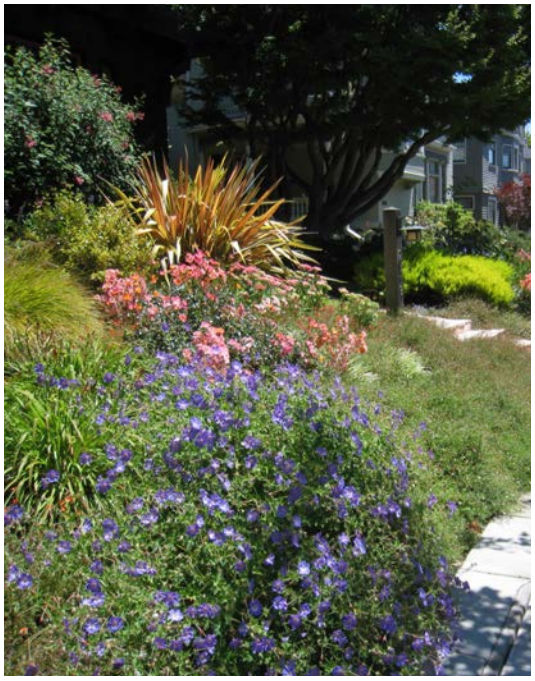
1. For pathways, trees with canopies that can provide maximum shade should be selected.
2. For pathways, tree species without fruit should be selected to avoid creation of a slippery surface.
3. Shade trees should be planted on the south and west sides of new or renovated buildings (per the General Plan Sustainability Element). A minimum of one tree should be placed approximately every 25 linear feet along the south and west sides of the building, with a minimum of two trees per side.
4. Evergreen trees should be selected where foliage is desired throughout the year, such as to provide shade, screening, and/or shelter from wind.
5. Deciduous trees should be selected for areas where shade is desired in the summer and sunlight is desired in the winter when they lose their leaves.
6. Deciduous trees should be planted on the southern side of a property to provide solar access to south-facing buildings.

Intent

Design considerations for shade trees alongside buildings and paths are intended to maximize shade for buildings and pedestrians and reduce heat gain in buildings as well as energy costs.

4.2 Water-Conserving Landscape

A. Drought-tolerant and/or native planting



Native plant species along pedestrian paths

Drought-tolerant landscaping

Intent

Design considerations for drought-tolerant and/or native plantings are intended to plant attractive landscapes with drought-tolerant and/or native California plants to conserve water, provide habitat, and reduce use of pesticides.

Design Considerations

When selecting drought-tolerant and native plantings, the following items should be incorporated into the project design as applicable:

ZC 1. Landscape designs should incorporate a minimum of 90 percent of plants and trees that are drought-tolerant, non-invasive species.
2. Landscape designs should support a diverse range of native/drought-tolerant plant species to bring interest and beauty to the landscape, support biodiversity, and reduce the need for pesticides.
3. The plant palette for each project should include a variety of colors, textures, and heights. Species that attract beneficial insects, such as bees that pollinate plants, are strongly encouraged.
4. All non-turf planting areas, except areas covered by groundcover, should be mulched on a regular basis to retain moisture, suppress weeds, and moderate soil temperature. A minimum of 2 inches of mulch should cover bare soil.

4.2 Water-Conserving Landscape
A. Drought-tolerant and/or native planting

Area around plants is mulched to retain moisture

Drought-tolerant landscaping

5. An Integrated Pest Management (IPM) approach should be set up and adopted. IPM is a process used to solve pest problems while minimizing risks to people and the environment. Chemicals, pesticides, and/or herbicides should not be used.

4.2 Water-Conserving Landscape
B. Minimize turf areas

Drought-resistant Mexican Feather Grass

Limited turf area combined with shrubbery

Intent

Design considerations for minimizing turf areas are intended to conserve water and reduce associated maintenance costs.

Design Considerations

When planting turf, the following items should be incorporated into the project design as applicable:

ZC 1. Turf areas should be limited to 50 percent of the landscaped area. The Planning Commission may approve larger areas as part of discretionary review if the lawn area provides functional open space (per Draft Zoning Code Section 20.36.060). OR turf areas should be limited to 30 percent of the total landscaped area. (Per the WELO)

ZC 2. Where turf is proposed, drought-resistant grass species are required.

ZC 3. Turf should not be used on berms, slopes, or median islands where runoff drains directly to paved surfaces used for circulation of any type.

4. Small, irregularly shaped turf areas that are difficult to maintain should be avoided. Such areas should be landscaped with drought-tolerant plants and mulch.

5. Turf should not be planted on slopes exceeding 20 percent or in areas narrower than 8 feet.

6. Turf areas should be located, sized, and shaped to minimize irrigation overspray into hardscaped areas.

Artificial turf sports field

Turf should be avoided in small, irregularly shaped areas

7. As an alternative to turf in high-use pedestrian zones, the use of permeable hardscape features, such as patios and walkways, should be considered. Permeable hardscape materials include interlocking permeable pavers and pervious concrete. (See also Section 4.3F, Permeable Paving.)
8. Artificial turf may be installed in high activity or foot-traffic areas, such as sports fields. Where artificial turf is installed, it should be designed and maintained as follows:
   a. Trees should be kept a minimum of 10 feet away from turf areas.
   b. Artificial turf should be maintained free of moss, mold, algae, and fungi growth.
   c. No chemical agents or contaminated water should be applied to artificial turf.
   d. A turf groomer should be used to maintain the distribution of the infill material in the turf and to raise the turf fibers. Brushing should be performed every couple weeks, raking of the turf should be performed once a month, and cleaning/sanitizing should be performed once a year.

4.3 Stormwater Considerations
A. Roof Downspout Planters

Roof downspout empties into planter

Downspout is directed under pavement into a rain garden

Intent

Roof downspout design considerations are intended to redirect roof rainwater from the sewer onto pervious surfaces such as planted areas, swales, or rain gardens to soak into the ground.

Design Considerations

1. Roof rainwater should be directed to a storage device or a permeable surface like a lawn, garden, or infiltration system.
2. Stormwater should not be directed onto an impermeable surface like a driveway, sidewalk, or paved path.
3. Flow should be directed away from the property foundation, approximately 5 feet away.
4. A splash pad should be provided below the downspout so that the strong current of water does not erode the soil.

B. Green Roofs

Vegetation on a sloped roof ensures proper drainage

Design Considerations

Green roofs come in two types, intensive and extensive, each with different access, area, and depth requirements. Extensive green roofs consist of a thin layer of planting medium (generally less than 8 inches) and vegetation and are generally not intended for people to access. Intensive green roofs include highly engineered structural components, irrigation and drainage, much thicker layers of growing medium (generally 8-24 inches), and are intended to support park-like landscapes accessed by people.

1. The type of green roof should be chosen based on project goals. Consideration should be given to:
   a. water-retention requirements
   b. structural requirements
   c. planting palette
   d. desired access
2. Green roofs should only be located on structures with roof slopes less than 25 percent to ensure proper drainage while still providing stormwater retention capacity. Intensive roofs are suitable for flat roofs or roofs with a mild slope of up to 3 percent.

Intent

Green roof design considerations are intended to offer multiple benefits including stormwater management, water filtration, habitat enhancement, recreational open space, and improved aesthetics.

4.3 Stormwater Considerations
B. Green Roofs

Extensive green roof

Green wall

3. Roof strength must be adequate to hold 10–25 pounds per square foot above the requirements for a basic roof.
4. The roof design should include overflow structures such as drains or downspouts.
5. If the roof includes grasses or other annual plants, dry vegetation should be occasionally cut and removed to ensure that combustible material does not accumulate.
6. Modular systems, or pre-grown self-contained units, are discouraged for their poor long-term vigor of plants and poor stormwater retention performance.
7. Green roofs are encouraged to be designed as habitat elements to support urban open space and provide habitat for birds and native pollinator species including bees, butterflies, and hummingbirds. Accessible green roofs are encouraged to support urban agriculture.

C. Stormwater Planters and Rain Gardens

Stormwater planter with grasses

Stormwater planter between curb and sidewalk

Design Considerations

1. Rain gardens and planters should consist of a splash pad to slow the velocity of runoff and a slightly depressed planting bed or container to allow shallow ponding (approximately 6 inches deep).
2. Planters and rain gardens should be planted with native and climate-appropriate grasses and shrubs to increase the effectiveness of the bioretention facility. A minimum of two species should be planted.
3. Wildflowers are encouraged to add color to rain gardens and planter boxes. The installation should be planned to place low-water flowers at higher elevations.
4. The type of bioretention facilities should be selected based on the context. Rain gardens are typically applied in more suburban settings, while planter boxes are a more urban treatment located between a sidewalk and planting strip to absorb runoff from sidewalks, parking lots, and streets.
5. Trees should be planted on raised surfaces adjacent to bioretention areas or on raised terraces within them. Trees' extensive root systems will allow them to reach water supplies from the rain garden and reduce requirements for irrigation.

Intent

Design considerations for stormwater planters and rain gardens (bioretention facilities) are intended to effectively mimic natural hydrological features to absorb rainwater into gardens, filter out pollutants, and slow water before it enters natural waterways.

4.3 Stormwater Considerations
C. Stormwater Planters and Rain Gardens

Raingarden with a variety of plant species

Trees planted on raised surface adjacent to garden

6. The size of the rain garden should be increased and amendments should be added to the soil in areas with clay or other low permeability soil types. Soil amendments may include compost, pumice, or perlite 0.5 to 2 feet below the ponding area. Mason or ball field sand may not be used, and compost should be mixed in to a depth of 3 inches on the surface.
7. For installations separated by a curb, curb cuts should be utilized to allow stormwater to drain into the garden, rather than into the storm sewer.
8. Rain gardens are encouraged to be located where vegetation will provide maximum desired benefit, such as shading hardscape for cars, calming traffic, or creating community gathering spaces.
9. Where possible, sites should be chosen where adequate runoff is available to reduce the need for long-term irrigation of vegetation.
10. When designing rain gardens, the mature size of plants should be considered. Planting too densely based on the size of young plants can create overgrown landscapes.

D. Vegetated Bioswales

Vegetated bioswale with plants and pebbles

This bioswale does not provide enough vegetation

Design Considerations

1. Bioswale channels should be landscaped with plants and materials such as crushed rock, pebbles, and stone to provide treatment and retention as they move stormwater from one place to another.
2. Vegetated swales are particularly suitable along streets and parking lots.
3. Filter strips should have a minimum slope of 1 percent and a minimum length of 20 feet to be most effective in slowing and filtrating stormwater.
4. Shrubs are best planted on the slope of a basin/ swale or on a raised platform just above the level of extended inundation, where they are low enough that their roots can easily reach moisture in the soil but not so low that they will be inundated for extended periods.
5. Grasses should be planted in the bottom of bioswales, as they survive both inundation and extended drought quite well and provide the best benefits in cleaning stormwater.

Intent

Vegetated bioswale (bio-filtration facilities) design considerations are intended to create attractive landscapes while conveying, slowing, and filtrating stormwater.

4.3 Stormwater Considerations
E. Retention of Existing Natural Vegetation

Preserve established trees in good health

Existing vegetation provides habitat for wildlife

Intent

Design considerations for protecting trees and natural vegetation are intended to mitigate the water quality and flooding impacts of urban stormwater while providing natural beauty and recreational opportunities for city residents.

Design Considerations

1. Established trees in good health should be preserved for the visual, cultural, and ecological benefits that the trees provide.
2. Species should be preserved that are well suited to present and future site conditions and/or preferred by wildlife for food, cover, and nesting.
3. Tree removal should be considered as a last resort. If removal of trees is approved, the loss should be mitigated by planting comparable replacement trees at a ratio of 1 to 1.
4. Site design should preserve, to the greatest extent feasible, high-value existing vegetation and greenbelts.
5. Existing trees greater than 6 inches in diameter, measured 3 feet above grade, within a development should be preserved to the extent reasonably feasible.

E. Retention of Existing Natural Vegetation

Tree is not properly protected from construction

Existing tree has been preserved and incorporated into parking lot

6. Prior to removal, it is recommended that a certified arborist analyze the reasons for removal, the condition of the tree with respect to disease, general health, damage, and structural integrity, and the effect of tree removal on soil stability/erosion, particularly near watercourses or drainage ditches, or on steep slopes.
7. Highly visible and strong barricades and signs should be posted around the trees and areas to be protected.
8. The root zone extends horizontally from the tree for a distance at least equal to the tree's height. At least 50 percent of the root system should be preserved to maintain a healthy tree. Avoid trenching or excavating the soil within the root zone.
9. Construction traffic and material storage should be kept away from tree root areas. Wood chips should be applied to a depth of 4 to 6 inches around all protected trees to help reduce compaction from vehicles that inadvertently cross the barricades.

4.3 Stormwater Considerations
F. Permeable Pavement

Permeable paving used in parking areas

Residential driveway with permeable paving

Intent

Permeable pavement design considerations are intended to create context-appropriate, attractive pathways and hardscaping areas that absorb rainwater where it falls.

Design Considerations

1. Permeable pavements may be constructed from durable pervious concrete, porous asphalt, permeable interlocking pavers, grass pavers, and several other materials. Permeable pavement, asphalt, and pavers all mimic their conventional counterparts.
2. Permeable pavement has a lower load-bearing capacity than conventional pavement and should only be used in very low-speed, low-volume traffic areas, such as pedestrian pathways, plazas, patios, residential driveways, alleys, parking stalls, and overflow parking areas.
3. Grass pavers, which are open pavers planted with turf, are not suitable for everyday, all-day parking locations because the grass will get insufficient sunlight. This type of permeable paving is better for use as occasional overflow parking.

CHAPTER 5 SOLAR ENERGY FACILITIES AND RESOURCE EFFICIENCY

Description

This chapter provides design considerations for solar access and solar energy facilities. By following the applicable development and design provisions outlined in this chapter, projects can be designed to reduce reliance on non-renewable energy sources while maintaining an aesthetically pleasing environment.

Chapter TOC

Objectives

- Design projects to conserve energy and minimize impacts on natural resources.
- Site buildings to take advantage of natural heating and cooling.
- Site solar energy facilities to maximize solar access and minimize visual nuisance.
- Enhance aesthetics of solar energy facilities.

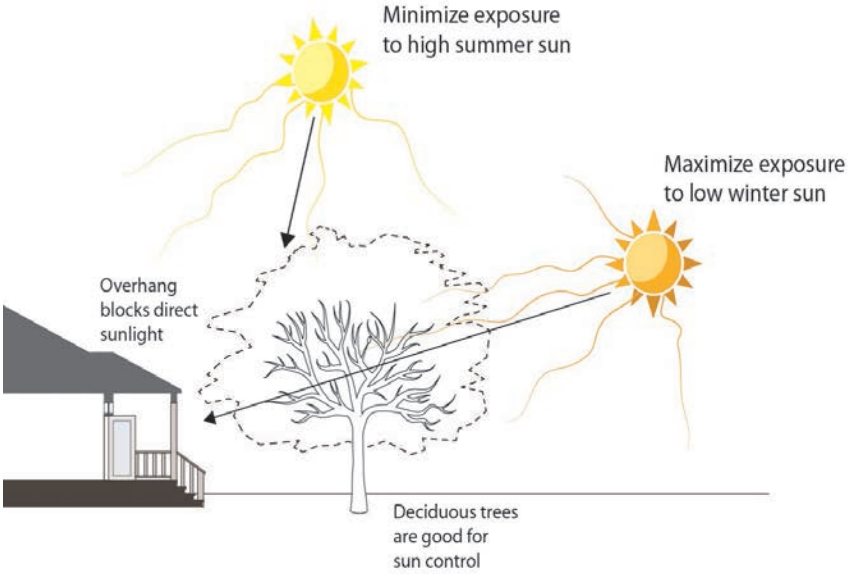
Relationship to CAP

Energy

5.1 Solar Orientation and Solar Energy

A. Solar Orientation and Passive Solar Design

Buildings elongated on east-west axis



Intent

Design considerations for solar orientation and passive solar heating and cooling are intended to control sun exposure to reduce energy consumption and to provide a comfortable environment.

Design Considerations

When orienting buildings and building features on a site, the following items should be incorporated into the project design as applicable:

GP 1. Buildings and windows should be oriented to the south, and buildings should be placed on the site to maximize winter sun exposure.
2. Buildings should be elongated along their east–west axis for increased winter sun exposure. The long face of each building should orient within 20 degrees of true south.
3. To minimize full direct sun exposure in summertime, exterior shading devices for south- and west-facing windows and for plazas and pedestrian hardscape areas should be utilized. These devices may include trees, overhangs, awnings, porches, and trellises to block direct light and heat.
4. Buildings and openings should be arranged to allow cool air to enter and hot air to leave the building during summertime.
5. Tall buildings should be sited to the north of shorter ones to maximize solar access.

5.1 Solar Orientation and Solar Energy
B. Roof-Mounted Solar Energy Design and Siting

Solar panels integrated into roof tiles

Solar panels integrated into glazing

Design Considerations

When designing roof-mounted solar energy facilities, the following items should be incorporated into the project design as applicable:

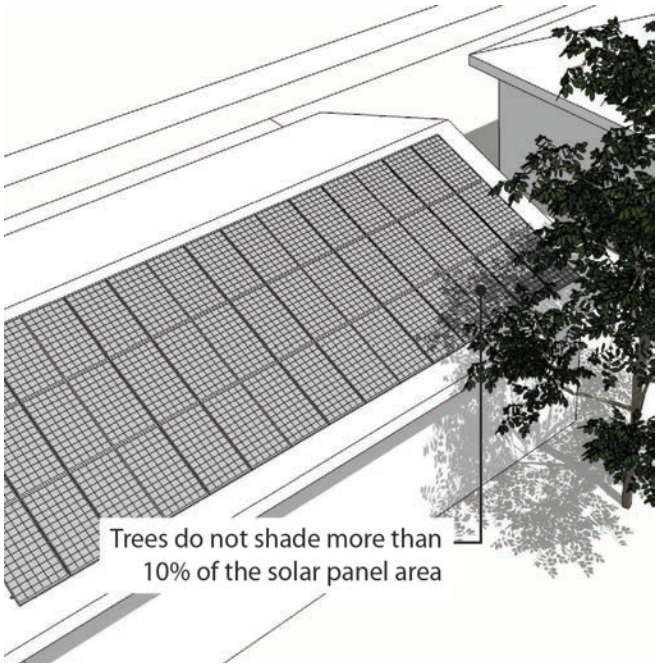
1. The City encourages the use of solar arrays or other types of solar-based energy generation on all new roofing structures.
2. Roof-mounted photovoltaic solar panels should meet the height requirement of the designated zoning district, but may be allowed to extend higher in accordance with the California Building Code. ZC
3. Whenever feasible, photovoltaic solar panels should be integrated into the structure design as one of its architectural elements. Building integrated photovoltaics are visually attractive and can be incorporated into roof tiles or glazing for awnings or glass roofs. ZC
4. The pitch of roofs and the orientation of the building should be considered when designing the project so as to maximize solar energy generation.
5. Solar panels and equipment on flat roofs can be elevated and rotated to maximize solar orientation.

Intent

Design considerations for energy design and siting are intended to encourage aesthetically designed solar energy facilities that protect and enhance the natural environment.

5.1 Solar Orientation and Solar Energy

B. Roof-Mounted Solar Energy Design and Siting (continued)

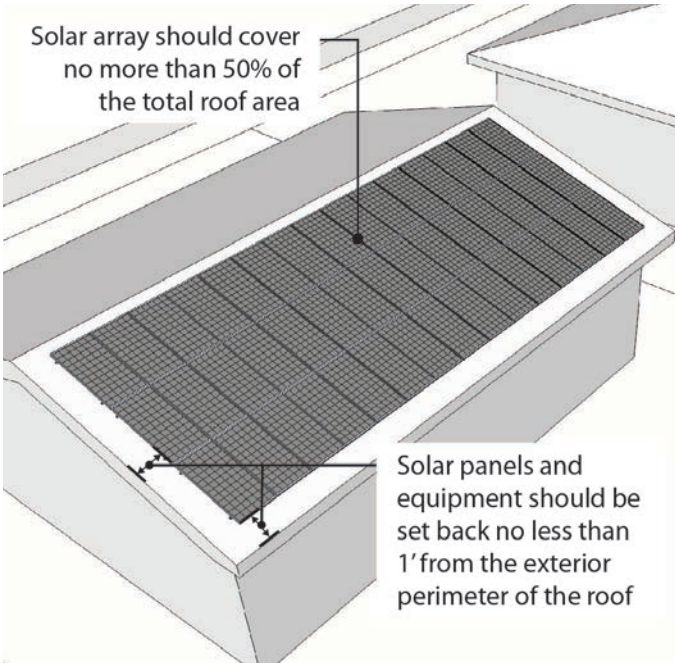


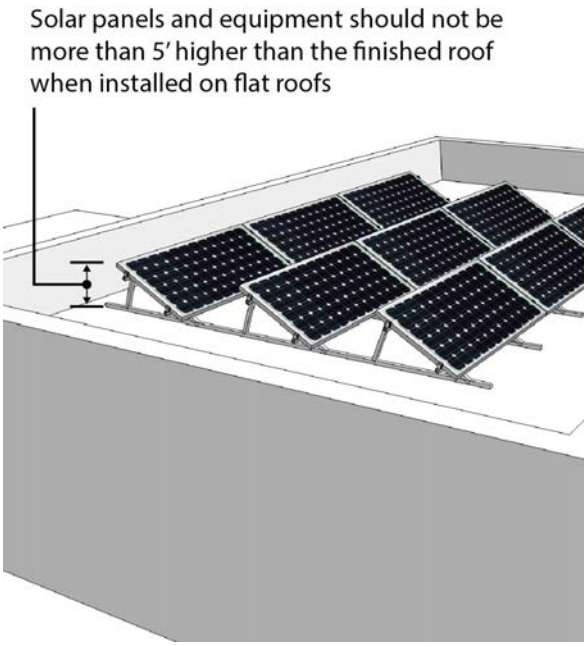
Brick tower element screens solar panels from the street

SG Elevated panels on flat roofs should not extend more than 5 feet above the finished roof surface when installed on flat roofs, measured perpendicular to the roof surface.

6. Solar panels on sloped roofs should either be integrated or flush-mounted parallel to the roof plane with a 2- to 10-inch gap between the underside of the module and the finished roof surface.
7. Solar panels should not extent beyond the edge of the roof. Solar panels and supporting equipment SG should be set back no less than 1 foot from the exterior perimeter of the roof.
8. The solar array should not cover more than half of the total roof area (all roof planes).
9. Tree species and planting locations should be selected to minimize shade on solar energy systems. Trees should be placed so as not to cast a shadow greater than 10 percent of the solar energy system's absorption area. Calculate shade coverage on the summer solstice at noon local standard time.
10. Structures should be designed and located on the property so that they will not shade the solar energy facility.

B. Roof-Mounted Solar Energy Design and Siting (continued)





11. For flat roofs, architectural styles and features should be incorporated to screen the solar energy facilities. A parapet or tower architectural feature can effectively and attractively screen solar energy system.
12. For sloped roofs, visual clutter should be reduced by avoiding breaking up the array into multiple irregular-shaped areas. Instead, match the shape and proportions of the array with the shape and proportions of the roof.
13. Solar panels should be designed with nonreflective coatings and nonreflective surfaces on exposed frames and components to minimize glare.
14. Solar panels should be angled and oriented to minimize glare on neighboring windows and, to the extent possible, away from public areas.
15. To allow the future installation of solar facilities, one section of the roof should be designed with at least 300 square feet of space for solar installations that is south-facing, and where all mechanical equipment and skylights are absent.

5.1 Solar Orientation and Solar Energy

C. Ground-Mounted Solar Energy Design and Siting

Building height panels serve as shade

Solar panels serve as shade structures in parking lots

Intent

Design considerations for ground-mounted solar energy design and siting are intended to encourage appropriate installations while minimizing the visual impacts of solar panel shade facilities on adjacent properties and the streetscape environment.

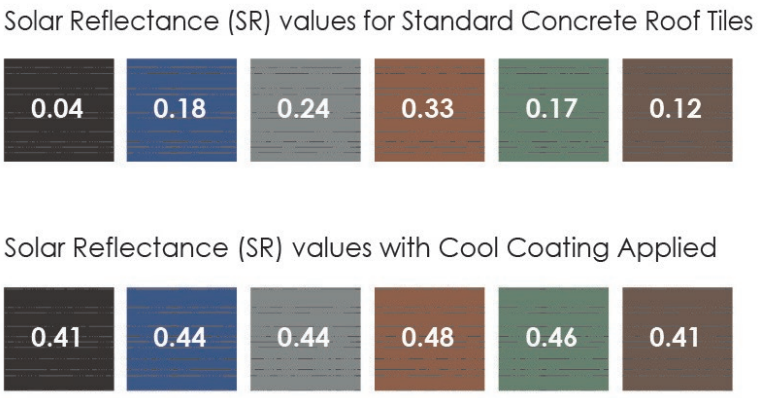
Design Considerations

When installing ground-mounted solar energy systems, the following items should be incorporated into the project design as applicable:

ZC 1. Ground-mounted photovoltaic solar panels should be screened from public view.
2. The ground-mounted solar energy system should not be located within a required front yard area.
3. The solar energy system is encouraged to serve as a shade structure in parking lots.
4. Ground-mounted solar energy structures should not exceed the height of the main structure on the parcel and must comply with all applicable height restrictions.
5. At maximum tilt, the ground-mounted solar energy structure should not exceed the maximum height allowed in that zoning district for accessory buildings.
6. Solar panels should be designed and located to prevent glare on the adjacent public right-of-way as well as on any adjacent inhabited structure.

5.2 Cool Materials
A. Cool Roofs

Applying liquid cool roof coating



Cool roofs come in a broad range of colors

Design Considerations

When selecting roof materials, the following items should be incorporated into the project design as applicable:

SR 1. Roofing materials for non-residential buildings and high-rise residential buildings and hotels/motels must comply with the Title 24 requirements for solar reflectance (SR value) and thermal emittance.

SG 2. The voluntary guidelines in the CALGreen code for high solar reflectance (indicated by the SR value) should be considered for residential rooftops.

3. The surrounding context and where the reflected sunlight will go should be considered. Limit bright, reflective roof coatings on low-rise buildings that could reflect light and heat into taller neighboring buildings.

4. Roof colors should be selected based on the roof slope, with darker colors on steep pitched roofs to minimize glare. State requirements are less stringent for steep sloped roofs and cool colors can be applied.

5. Roofing materials should be selected for their compatibility with the building architecture. A variety of materials and colors can be used to achieve Title 24 and CALGreen reflectance requirements.

Intent

Design considerations for light-colored reflective materials on rooftops, sometimes referred to as "cool roofs" are intended to minimize the heat island effect through use of materials that minimize heat gain while preventing glare.

Common Roofing Materials and Cool Options

Roof Type		Roof Slope	Cool Roof Options	Cool Roof Solar Reflectance
	Asphalt Shingle	Steep-Sloped	"white" (actually light gray) or cool color shingle	0.25
	Built-Up Roof	Low-Sloped	with white gravel	0.30 – 0.50
			white smooth coating	0.75 – 0.85
	Clay Tile	Steep-Sloped	terracotta (unglazed red tile)	0.40
			color with cool pigments	0.40 – 0.60
			white	0.70
	Concrete Tile	Steep-Sloped	color with cool pigments	0.30 – 0.50
			white	0.70
	Liquid Applied Coating	Low- or Steep-Sloped	smooth white	0.70 – 0.85
	Metal Roof	Low- or Steep-Sloped	white painted	0.55 – 0.70
			color with cool pigments	0.40 – 0.70
	Modified Bitumen	Low-Sloped	white coating over a mineral surface (SBS, APP)	0.60 – 0.75
	Single-Ply Membrane	Low-Sloped	white (PVC or EPDM)	0.70 – 0.80
			color with cool pigments	0.40 – 0.60
	Wood Shake	Steep-Sloped	bare	0.40 – 0.55

Cool paving and shading device

Cool paving materials and shaded hardscape areas

Design Considerations

When selecting hardscape and paving materials, the following items should be incorporated into the project design as applicable:

1. Light-colored reflective materials with a minimum solar reflectance value of 0.28 should be used for a minimum of 50 percent of all site hardscaped areas, such as sidewalks, pathways, plazas, driveways, and parking areas.
2. Cool pavements may include any of the following high-reflectance materials: asphalt pavements treated with a high reflectance material, concrete pavements, resin based pavements, white topping of concrete over existing asphalt, light-colored aggregates, slag/fly ash cement, and light-colored colored concrete.
3. Hardscape areas should be designed and located so that approximately 50 percent of the area is shaded by vegetation, buildings, trellises, umbrellas, or other features or shading devices. Calculate shade coverage on the summer solstice at noon.
4. Permeable paving should be used for sidewalks,

Intent

Design considerations for cool pavements are intended to minimize the heat gain in the urban environment through the use of aesthetically pleasing paving materials.

5.2 Cool Materials

B. Cool Paving (continued)

Turf block pavers used in parking area

Permeable paving in parking area

pathways, plazas, and parking areas to allow for air, water and water vapor into the voids of the pavement for cooling. Permeable paving includes porous concrete/asphalt, open-jointed pavers, and turf blocks.

CHAPTER 6 GREEN WASTE & RECYCLING FACILITIES

Description

This chapter provides design considerations for the collection areas of dry recyclable materials and green waste (garden and food waste). By following the applicable development and design provisions outlined in this chapter, mixed-use, multifamily, and nonresidential projects can be designed to encourage greater participation in the services provided and reduce waste generation while maintaining a development's aesthetic appeal.

Chapter TOC

Objectives

- Provide adequate space for and access to collection and storage areas for green waste and recycling.
- Site services to maximize ease of use.
- Enhance aesthetics and minimize negative impacts.

Relationship to CAP

Waste

6.1 Location & Access

Enclosure is located to the side of the primary building, with a clear path for mechanical pickup

Intent

Location and access design considerations are intended to balance the following objectives: convenience to residents and collectors, space, access, noise, security, and site integration.

Design Considerations

The following best practices should be considered when deciding where to locate communal recycling and green waste storage areas:

ZC 1. In commercial areas, enclosures should be located away from main entry drive ways, if feasible.
2. Location of rolling bins should be convenient to residents. Conveniently located bins are more likely to be used appropriately by residents.
3. Communal rolling bins should be in a high pedestrian traffic area to encourage good housekeeping, ease of access, and convenience, so that disposing of recyclables can occur as part of daily routine. Bins located in rarely frequented areas tend to attract dumped rubbish and encourage poor practices.
4. If collection of rolling bins is from the curbside, the waste storage areas should be as close to the curb as possible. The distance to move bins from storage areas to the collection point should be minimized to reduce potential safety risks and the time required to take bins out for collection and bring them back. However, bins stored too close to the street can be subject to vandalism.

Storage area is appropriately distanced from residential units

Clear pathway of access adjacent to enclosure

5. Storage areas should be located an appropriate distance from dwellings to reduce the impact of odor and noise during bin use and collection.
6. Commercial and multi-family residential trash and recycling bins stored outdoors should be in enclosures. Trash and recycling bins should be located in the same enclosure.
7. The location of, proximity to, and space allocated to the storage areas for garbage and recyclables should be considered.
8. The path of access should be considered for both users and collection vehicles:
   a. Clear pathways, free from steps, should be provided for movement of bins.
   b. The path of travel from building to rolling bin should be free of stairs, textured surfacing, and other impediments.
   c. An appropriate collection point that is free from obstacles and traffic hazards should be considered.
   d. Collection points should be provided that enable the mechanical pickup of rolling bins or dumpsters.

6.1 Location & Access

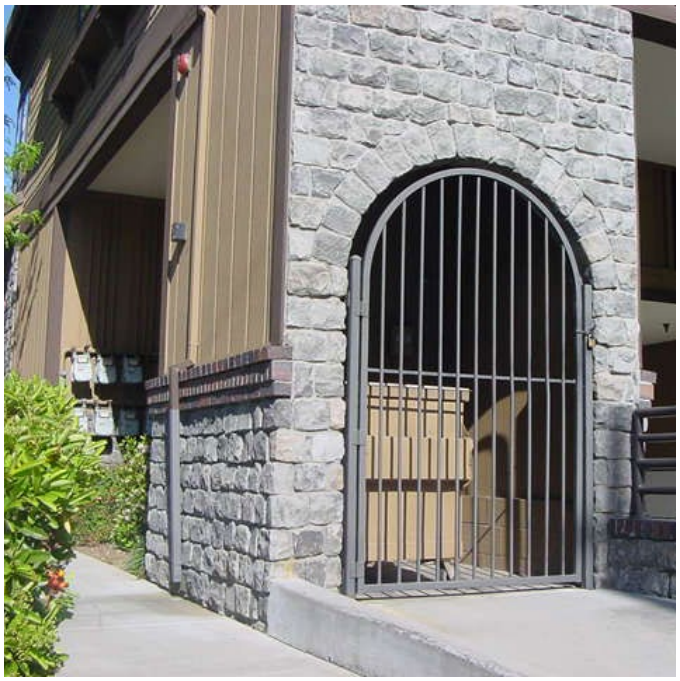
Recycling and garbage are located in the same enclosure, but separated from each other

Waste enclosure is within 150 feet of units

9. Recycling should be located adjacent to garbage facilities and should never stand alone. Although located near each other, garbage and recycling bins should be kept separated within the storage area and not intermingled.
10. Enclosures should not be:
    a. Located along any frontage streets or roadways.
    b. Visible from residential properties, except for those it serves, except those it serves.
    c. Adjacent to or along a property line shared with single-family and multi-family residential properties.
11. Commercial waste enclosures should be a maximum distance of 250 feet from the nearest point of the building served.
12. Residential waste enclosures should be within 150 feet of the building to be served/from all units served by the enclosure.
13. Containers should not be located within any street or be placed in required open space areas or in areas where they will block sidewalks, trails, required parking spaces, or loading spaces.

6.2 Design and Construction of Enclosures

Materials and landscaping blend in with surroundings



Walls constructed of masonry

Design Considerations

All enclosures should be designed and constructed consistent with the following:

ZC 1. Enclosures should be constructed of durable materials, with color, texture, and architectural detailing that is consistent with the overall site and building design.
2. Storage areas should blend in with the surrounding buildings and landscape.
3. Enclosure walls and doors should be a minimum of 6 feet high and fully screen all materials and containers from public view. Enclosures should be built of noncombustible materials (wood is not permitted).
4. Each enclosure should have four sides, one of which should include a service door.
5. A pedestrian access, separate from primary service access, is recommended.
6. Concrete surfacing is recommended in all access and service areas, and a reinforced concrete pad should be constructed in front of each enclosure to withstand the weight of the collection vehicle.
7. One of the following two protective measures should be used to protect enclosure walls from damage:

Intent

Enclosure design considerations are intended to ensure that trash, green waste, and recycling storage areas are of safe and durable construction and are designed to be compatible with the surrounding architecture.

6.2 Design and Construction of Enclosures

Concrete pad in front of enclosure

Curb and metal bollards to protect enclosure

a. Installation of a 6-inch-out and 8-inch-high curb around the perimeter of the inner enclosure wall.
b. Installation of wood or metal bumpers to interior enclosure walls. Bolts or screws should be inset on bumpers to avoid injury to the collector or user.

Green wall screens the enclosure from view

Trellis screens the enclosure from upper stories

Design Considerations

ZC 1. In residential areas, the perimeter of trash enclosures shall be planted with landscaping, such as shrubs or climbing evergreen vines, unless otherwise required by the City.

ZC 2. In commercial areas, bins should be located within a trash enclosure at all times and screened from public view. Gates are to remain closed and secured except during pickup.

3. Landscaping and screening in all areas should be included to help visually buffer the loading area and enclosures. Storage areas should be out of sight or well screened from the street and not affect the aesthetics of the development.

4. Containers should be located within an enclosed area consistent with the architecture of the project with a surrounding wall at least 6 feet high and not higher than 8 feet.

5. Roofs or trellises are recommended for all enclosures to screen the interior of enclosures from upper-floor view.

ZC 6. In residential complexes, enclosures should have a decorative pedestrian gate with walk-in access for tenants.

Intent

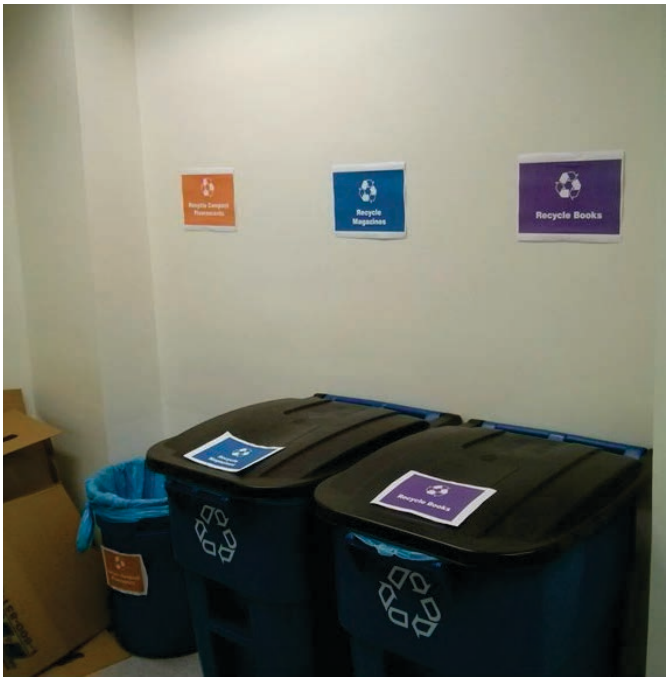
Screening design considerations are intended to minimize visual impacts and screen trash, green waste, and recycling enclosures from public view.

6.3 Screening

Screening is consistent with the surrounding architecture

Decorative iron pedestrian gate

7. Gates should be 2 inches off the ground and hung on the outside so that when open, gates are out of the bins' way. Gates should be able to open more than 90 degrees and should be equipped to prevent accidental swinging, which can result in injury to persons or equipment. Gates made of chain-link fencing with wooden/plastic slats are prohibited.
8. ZC Screening for waste is to be provided in accordance with the zoning ordinance.



Instructional signage minimizes intermingling of materials
Source: https://bpcnewsletter.files.wordpress.com

Signage on dumpsters

Design Considerations

1. Trash, green waste, and recycling services should be safe, convenient, simple to use, and as intuitive as possible to maximize recycling and minimize intermingling of trash and recycling.
2. Trash, green waste, and recycling services should be designed to:
   a. Ensure residents can use them with ease.
   b. Be equally convenient for all residents.
   c. Ensure collection crews can easily access and service them.
3. A well-designed enclosure system should have:
   a. Sufficient space to move among bins and carts.
   b. A lever-style door handle that can be operated with hands full.
   c. Wall space for instructional signage.
   d. A smooth floor that can be swept or mopped if necessary.
   e. Wheel stops near walls to prevent damage to walls.
   f. The area inside and around the enclosure must be adequately lit for visibility of signs and for safety reasons.

Intent

Trash, green waste, and recycling services should be as simple as possible to use in order to maximize source separation and recovery of recyclables.

6.5 Interior Enclosure Space

Trash, recycling, and green waste bins are organized and separated; Source: http://www.zoningplus.com/regs/valparaiso

Intent

Space design considerations are intended to ensure that trash, green waste, and recycling bins are accessible and provide sufficient space to accommodate storage of generated waste and recyclables and prevent intermingling.

Design Considerations

1. Storage areas should provide space for trash, recycling, and green waste.
2. At least two-thirds of the enclosure space should be designated for recycling and green waste. Actual dimensions may vary based on projected usage.
3. Adequate storage space should be provided for easy maneuvering of bins within the property and to and from the storage area. Enclosures should be approximately an area that is 150 percent of the sum of the bin and cart footprints.
4. The enclosure should be no less than 2 feet higher than the tallest bin to allow for opening the bin lids.
5. Enclosures should have appropriate overhead clearance. Enclosures with dumpsters serviced by vehicles need to allow enough clearance for collection service equipment.
6. Sufficient space should be provided to keep garbage, recyclables, and green waste bins separate within the storage area and to prevent intermingling. However, bin storage areas that are too large may encourage dumping of bulky items.