

Multi-Modal Circulation, Streetscape, and Storm- water

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Multi-Modal Circulation, Streetscape, and Stormwater



This chapter describes policies, guidelines, and improvements for the Plan Area’s multi-modal transportation network and parking management system. This chapter also includes policies and guidelines that address the design of streets, sidewalks, landscape treatments, stormwater management, street furniture, and street lighting in the Plan Area.

The multi-modal transportation network for the Plan Area is designed to accommodate future residents and employers while ensuring seamless connectivity between the existing circulation network in Fort Bragg and the Plan Area. In order to achieve these goals, the multi-modal transportation network emphasizes:

- Reduced vehicle speeds;
- Improved pedestrian safety;
- Enhanced neighborhood-serving transit service;
- Supportive parking policies; and
- Convenient bike and pedestrian facilities.

As designed, the circulation network will create a high-quality walking and biking environment and will thereby expand mobility choices for existing and future residents, visitors, and employees.

3.1 Circulation Plan

The street, transit, pedestrian, and bicycle network for the Plan Area is designed to achieve the following objectives:

- Create a community with places that are easily accessible to pedestrians, cyclists, and drivers and that are well connected to other parts of Fort Bragg.
- Provide safe and convenient connections for pedestrians and bicycles through the Plan Area by establishing a network of streets and multi-use paths connecting Main Street and the Coastal Trail area.

Circulation Policies:

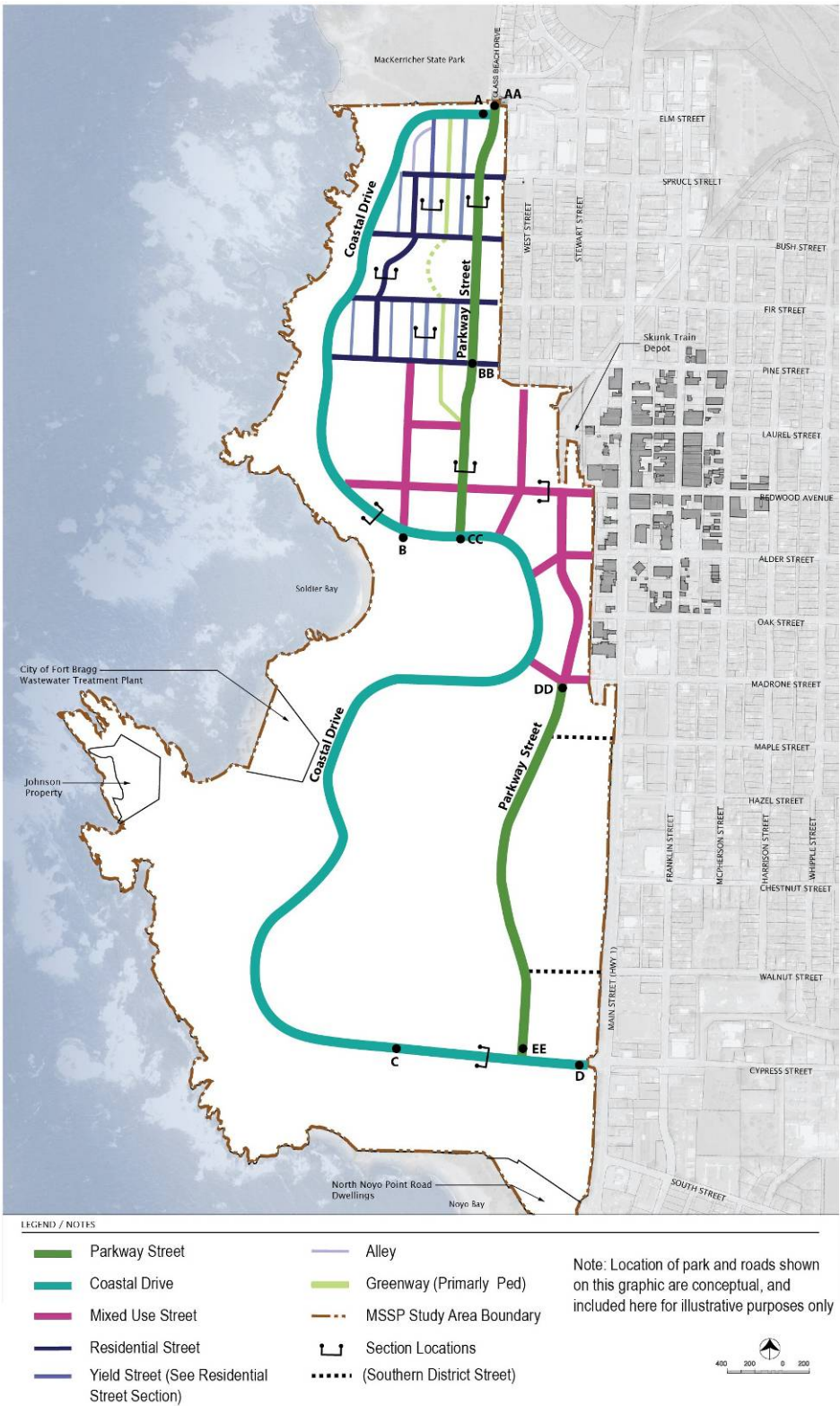
Policy MM-1. “Complete Streets.” As part of the first Master Tentative Subdivision Map for the Plan Area, the applicant shall establish a multi-modal network of “complete streets” that balances the needs for safety and comfort of pedestrians, cyclists, drivers, and transit riders and that substantially conforms to the conceptual street network design in Figure 3-1. Interior streets within each district shall be determined at the Master Tentative Subdivision Map stage for each district.

Policy MM-2. Street Connectivity. *At the Master Tentative Subdivision Map stage for each district, the applicant shall establish street connectivity that encourages pedestrian and bicycle travel and provides convenient connections to destinations in the Plan Area and Fort Bragg.*

3.1.1 CONNECTIONS AND GATEWAYS

New development in the Plan Area will be integrated with the existing street network by creating effective linkages between the two. The overall street layout is depicted in Figure 2-2 and Figure 3-1. Highway 1 generally serves as the boundary between the Plan Area and the existing developed portions of the City south of Madrone Street. Cypress Street will serve as a gateway connection between new development in the Plan Area and existing development. Other connection points will occur at Elm Street, Spruce Street, Bush Street, Fir Street, Pine Street, Redwood Avenue, and Alder Street. These connection points will be designed to provide a more seamless transition that integrates existing neighborhoods and districts with new development in the Plan Area. While not depicted in Figure 3-1, connections are also encouraged at Oak, Maple, Chestnut, and Walnut Streets if feasible. The feasibility of connections to these streets may be constrained by wetlands and/or safety concerns on Highway 1.

FIGURE 3-1 **CONCEPTUAL STREET NETWORK DIAGRAM**



3.1.2 ROADWAY NETWORK

A. New Streets and Street Connections

A number of new streets will be necessary to serve future development of the Plan Area and connection to the existing street network. A wide range of street typologies will serve the varying types of development that will occur, ranging from one-lane alleys to commercial streets with parking on both sides and generous sidewalks that allow for outdoor seating and other amenities. The overall street layout is shown in Figure 3-1.

Along the entire western edge of the Plan Area, a newly constructed coastal road (“Coastal Drive”) will serve as a major north-south connector for the site. At the southern end of the Plan Area, Coastal Drive will be accessible from Main Street at Cypress Street. At the northern edge of the site, Coastal Drive will connect at Elm Street.

In the east-west direction, the City’s existing street network will extend into the Plan Area from Alder Street (south) to Elm Street (north). A street connection at Laurel Street is not feasible due to the Skunk Train tracks; similarly, a connection at Madrone Street is inhibited by the Mendo Mill property, while a connection at Oak Street may be constrained by Pond 5. In addition, a number of new north-south small-scale residential streets and alleys will provide connections between east-west streets, creating a fine-grained block system.

Cypress Street will be extended into the site to serve as the major entry point for the southern part of the Plan Area. Maple and Walnut Streets could provide additional connectivity to the Southern District.

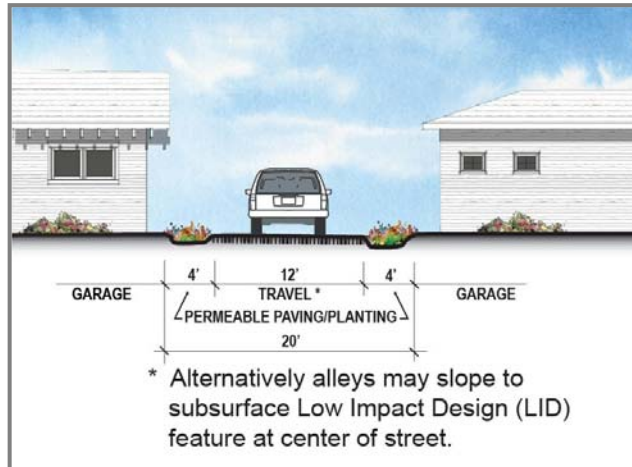
A preliminary traffic analysis was conducted based on the street standards included in Table 3-1. Given the development limitations and the density of the road network, it is likely that all on-site streets would need only one lane in each direction. Some intersections may need left-turn lanes, depending on specific development projects. It is unlikely that any on-site intersections will need traffic signals. Stop signs and traffic signals, if necessary, will be installed in accordance with the Manual of Uniform Traffic Control Devices.

A preliminary assessment of off-site intersections shows that few, if any, intersection improvements would be needed (see Appendix C). The intersection of Main Street/Pine Street will need to be signalized. Other cross-streets that intersect Main Street at un-signalized intersections may experience an increase in traffic due to the development of the Plan Area.

B. Street Typologies

The Plan Area street network is comprised of the following street types, the characteristics of which are summarized in Table 3-1:

- Coastal Drive:** This street is unique in that the southbound lane is wider than typical in order to accommodate (1) Mendocino Transit Authority (MTA) buses on the western side of the roadway, (2) a Class 1¹ bike trail that extends the length of Coastal Drive on the west side of the road, and (3) parking provided on the east side of the street and in occasional perpendicular bays on the west side of the street. The parking bays will allow motorists to park and enjoy views of the Pacific Ocean without blocking view corridors along east-west streets in the Plan Area and the rest of the city. Bicycle parking will also be provided at each bay. (See cross-section and plans in Figures 3-2A through 3-2C. The section locations are shown in Figure 3-1.)
- Residential Streets:** One of the primary objectives in residential street design for the Plan Area is to ensure low vehicle speeds. Travel lanes will be shared by motorists and cyclists. In some instances, it may be appropriate to use “yield” streets, with a single 10- to 12-foot travel lane for two-way traffic. On-street parking will be provided on both sides of the street. Streets will be designed so that motorists drive no faster than 20 miles per hour.
- Mixed-Use Streets:** In the Central District, foot traffic will be higher due to the mix of residential, commercial, visitor facility, and light industrial uses, and therefore mixed-use streets will include generous sidewalks. On-street parking will be provided on both sides of the street to accommodate visitors and shoppers. Redwood Avenue, the commercial heart of the Plan Area, will be a two-way street to ensure retail success. Special corner treatments and landscaping, similar to those in the existing downtown, will ensure very low motor vehicle speeds.
- Alleys:** In the Northern District, garages will typically be located behind residential buildings and will be accessible via alleys, which will connect to the main residential streets. The alley grid will mimic the existing grid in Fort Bragg.
- Linear Park:** A car-free green corridor will run from the northern edge of the



¹ A Class 1 path is defined in the California Highway Design Manual as “. . . a completely separated right-of-way for the exclusive use of bicycles and pedestrians with cross flow minimized.” The Class 1 segment (see Figure 3-2A) of the Coastal Trail for the A/B segment of Coastal Drive is the Coastal Trail multi-use path. The path is 12 feet wide and has an 8-foot width of natural pavement and a 4-foot-wide gravel shoulder on the western edge of the trail. In the B/C and C/D segments, the Class 1 path will be immediately west of the roadway (see Figures 3-2B and 3-2C).

Plan Area through the Northern District to the Central District. The linear park will be designed to provide stormwater treatment and a north-south pedestrian and bicycle connection from Elm Street to Parkway Street at Laurel Street within the Central District.

- **Parkway Street:** The existing Glass Beach Drive will be extended into the Plan Area to serve as a north-south connector roadway for the Northern and Central Districts.
- **Southern District Streets:** These streets will be designed to accommodate larger truck movements, with 11-foot travel lanes and more generous corner radii.

Table 3-1 lists standards for street width, parking lanes, vehicle speeds, and other features of new streets in the Plan Area.

TABLE 3-1 STREET STANDARDS

	Coastal Drive	Residential Streets	Mixed-Use Streets - Redwood Avenue	Other Mixed-Use Streets	Alleys	Parkway Street	Southern District Streets
Typical Travel Lane	11 feet southbound lane north of Redwood (for MTA bus), 10 feet elsewhere.	Up to 10 feet – no lane definition necessary.	10 to 11 feet	10 feet	Minimum acceptable to Fire Department and garbage collection.	10 feet	11 feet
Parking	7 to 8 feet on eastern side, occasional perpendicular bays on ocean side.	7 feet	8 feet	8 feet	None	8 feet	8 feet
Bike Lane	Class 1	None	5 feet optional	5 feet optional	None	5 feet	5 feet
Low Impact Development (LID) Feature	Required (see Sections 3.4 for details)						
Design Speed	25 miles per hour	20 miles per hour	20 miles per hour	25 miles per hour	15 miles per hour	25 miles per hour	25 miles per hour
Design vehicle	Passenger car	Passenger car	Passenger car	Passenger car	Passenger car	WB 40	WB 40
Control Vehicle	WB 40	WB 40	WB 40	WB 40	WB 40	Semi-trailer	Semi-trailer
Sidewalk	Required (see Table 3-2 for details)						

Source: Nelson Nygaard, 2010.

Figures 3-2A through 3-6 illustrate the street segments (plan view and elevation) shown in Figure 3-1.

FIGURE 3-2A COASTAL DRIVE – SEGMENT A TO B

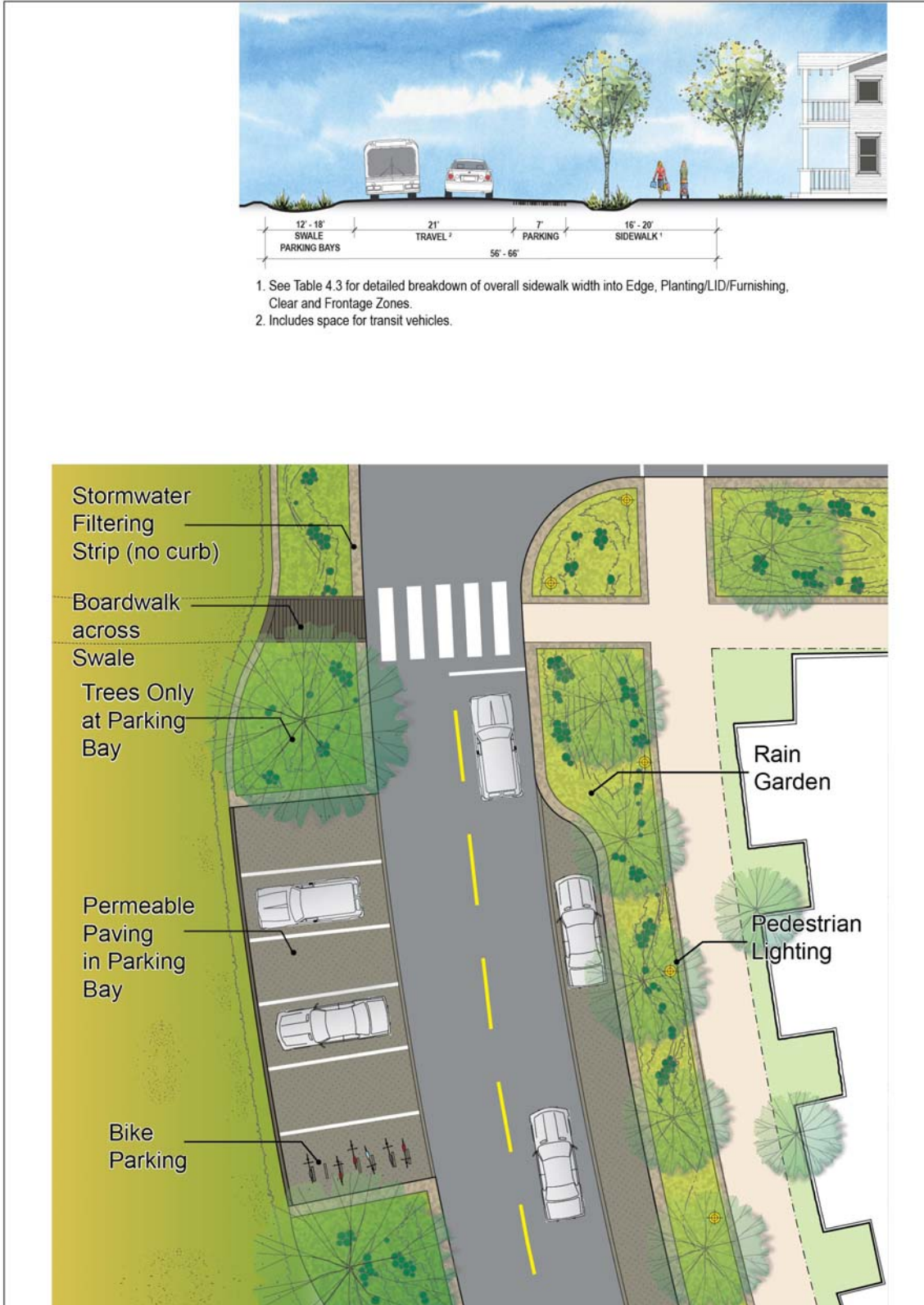


FIGURE 3-2B COASTAL DRIVE – SEGMENT B TO C

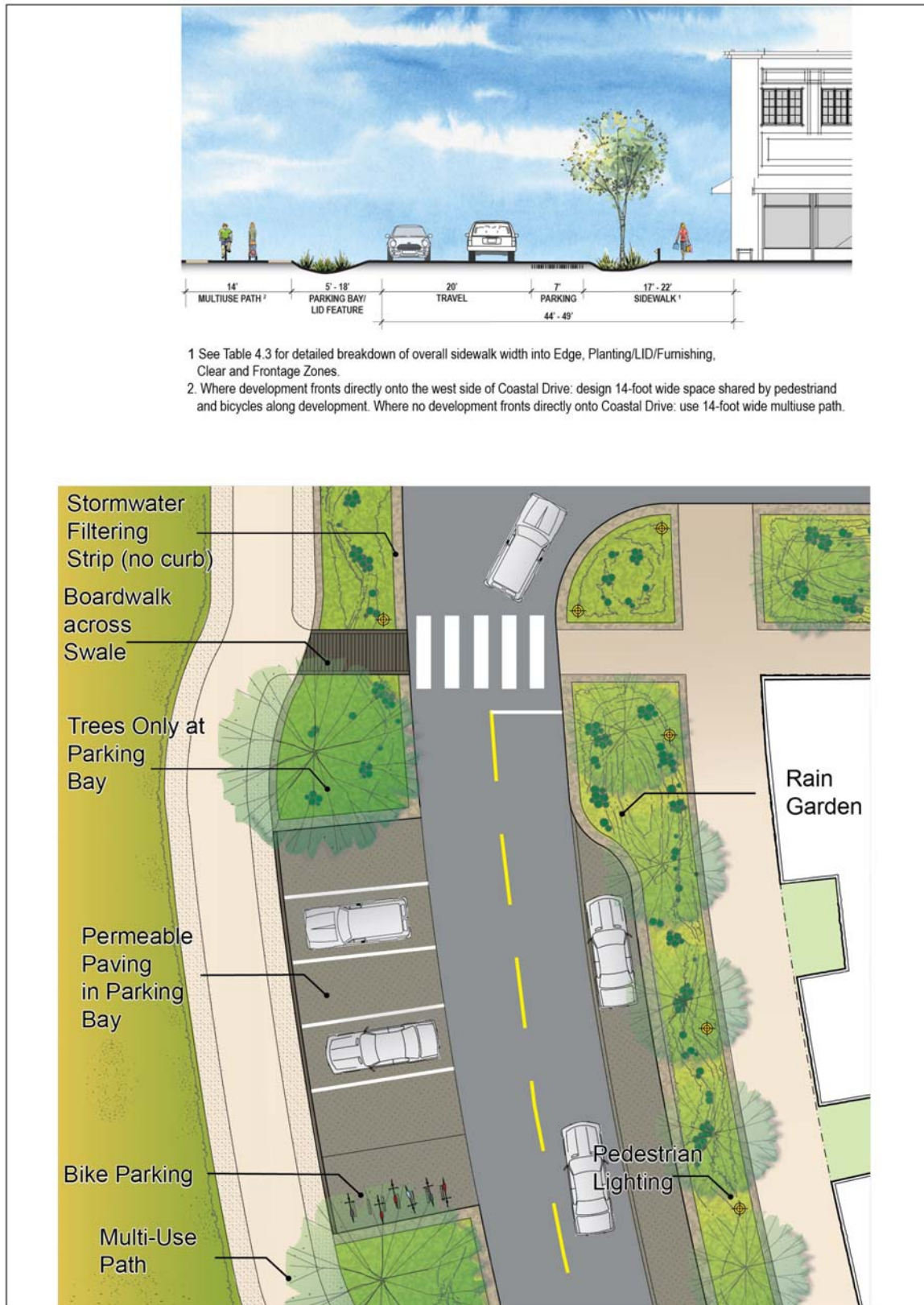


FIGURE 3-2C COASTAL DRIVE – SEGMENT C TO D

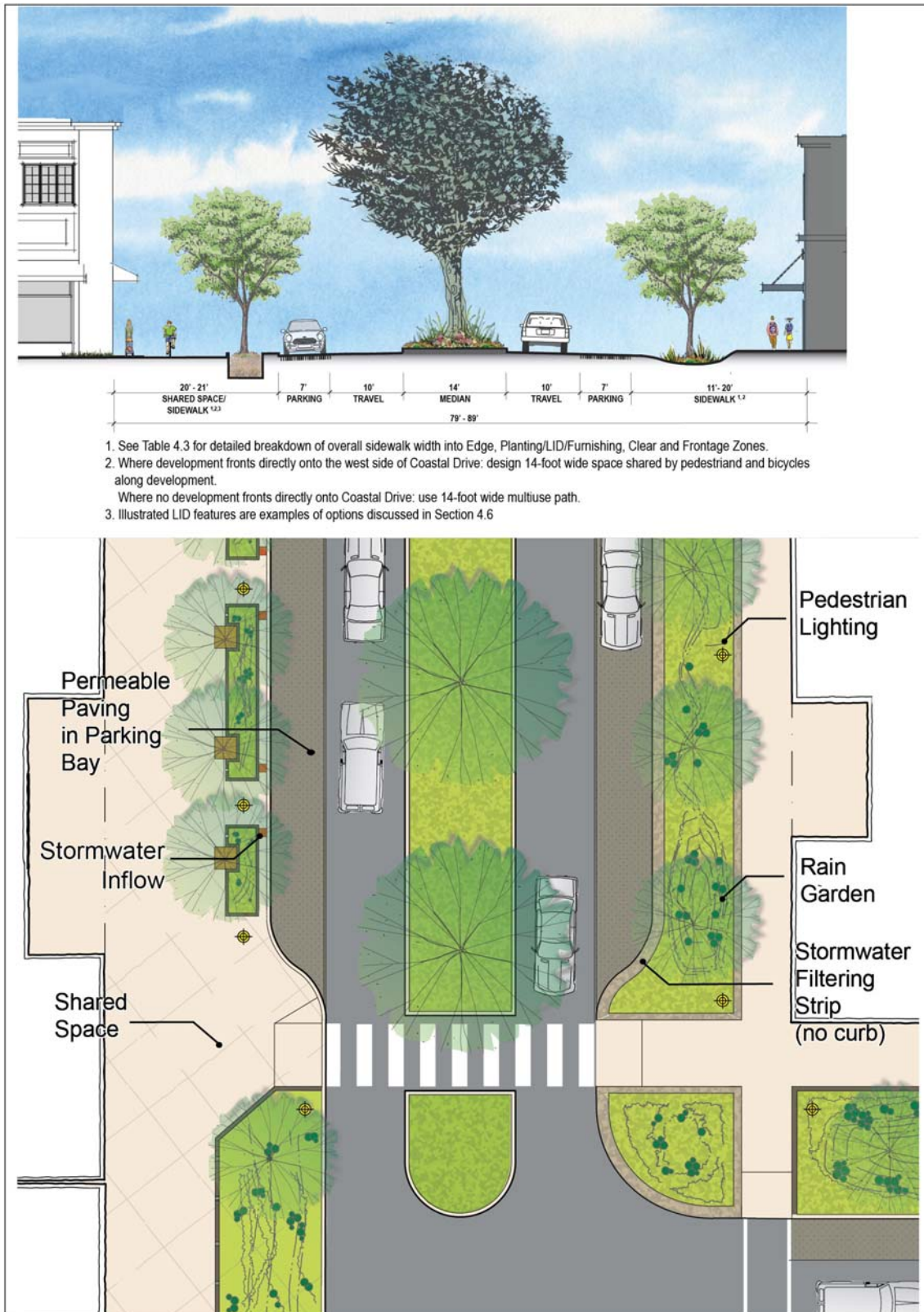


FIGURE 3-3A MIXED-USE STREET/REDWOOD AVENUE ALTERNATIVE 1 (WITH STORMWATER PLANTERS)

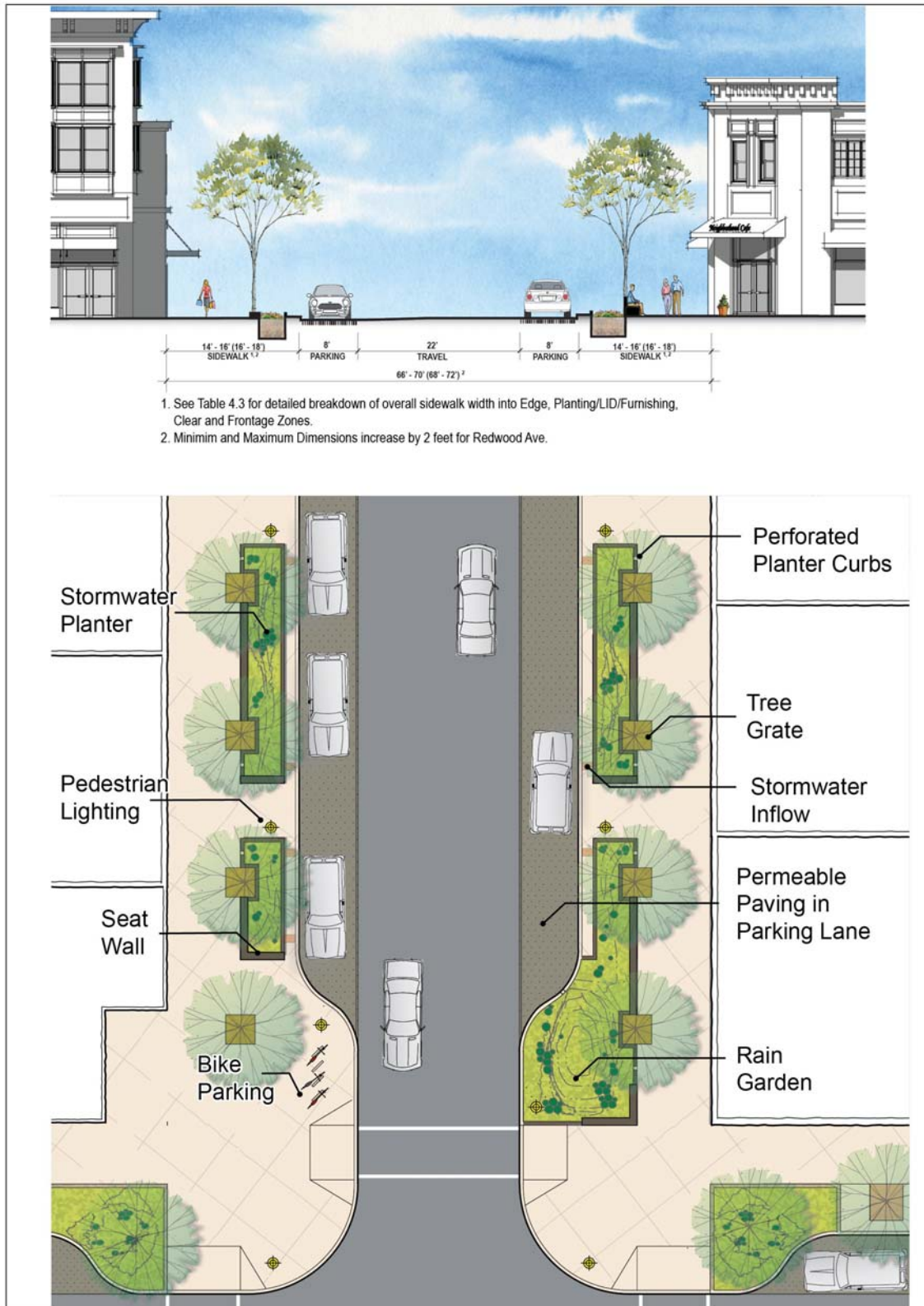
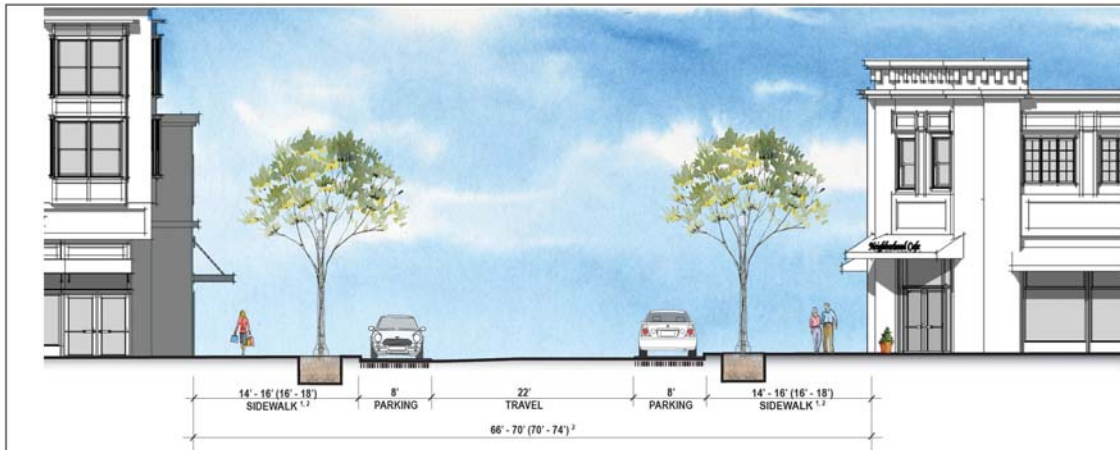


FIGURE 3-3B MIXED USE STREET/REDWOOD AVENUE² – ALTERNATIVE 2 (TREE WELLS ONLY)



1. See Table 4.3 for detailed breakdown of overall sidewalk width into Edge, Planting/LID/Furnishing, Clear and Frontage Zones.
2. Minimum and Maximum Dimensions increase by 2 feet for Redwood Avenue.

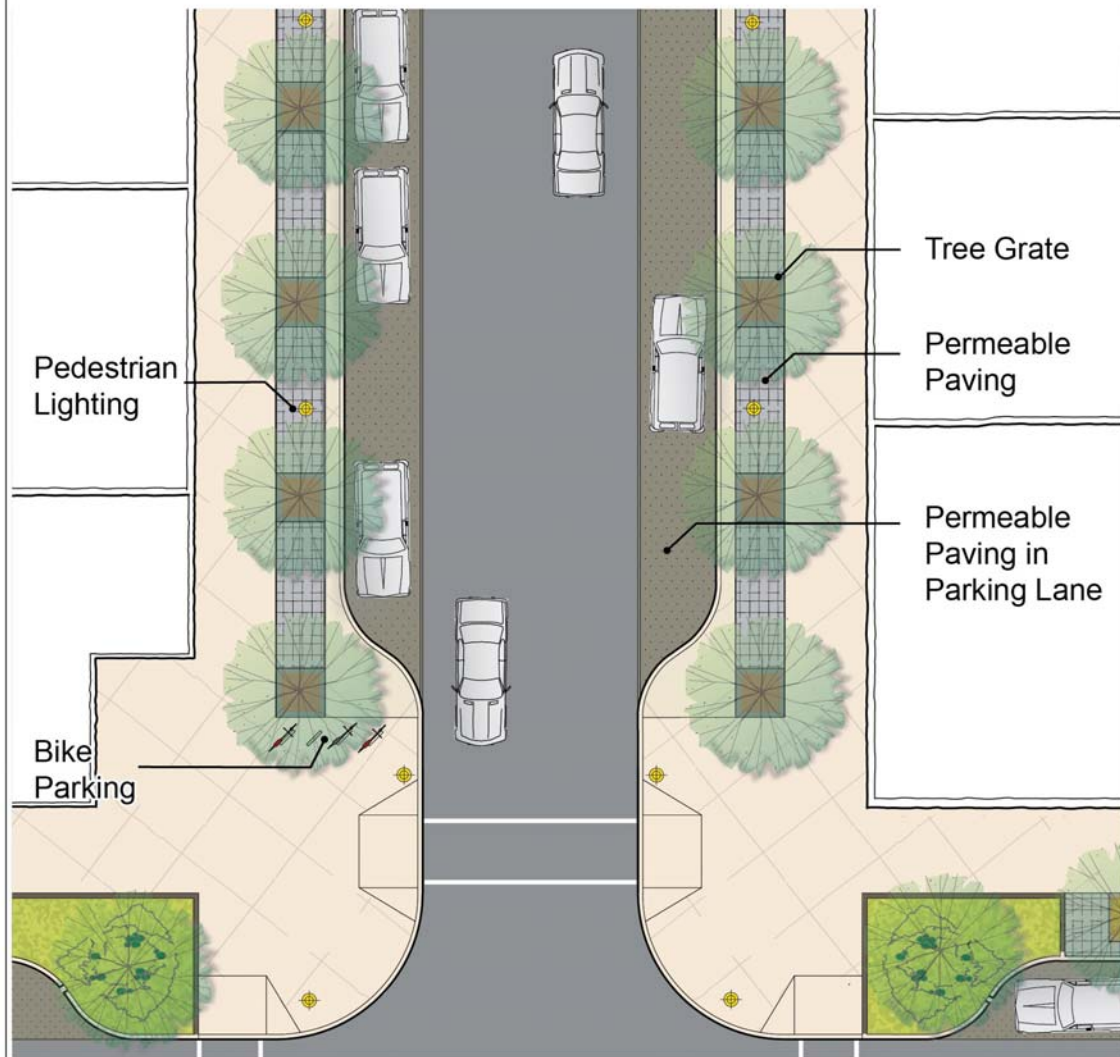


FIGURE 3-4A PARKWAY STREET – NORTH OF PINE STREET AND SOUTH OF MADRONE STREET (AA TO BB AND DD TO EE)

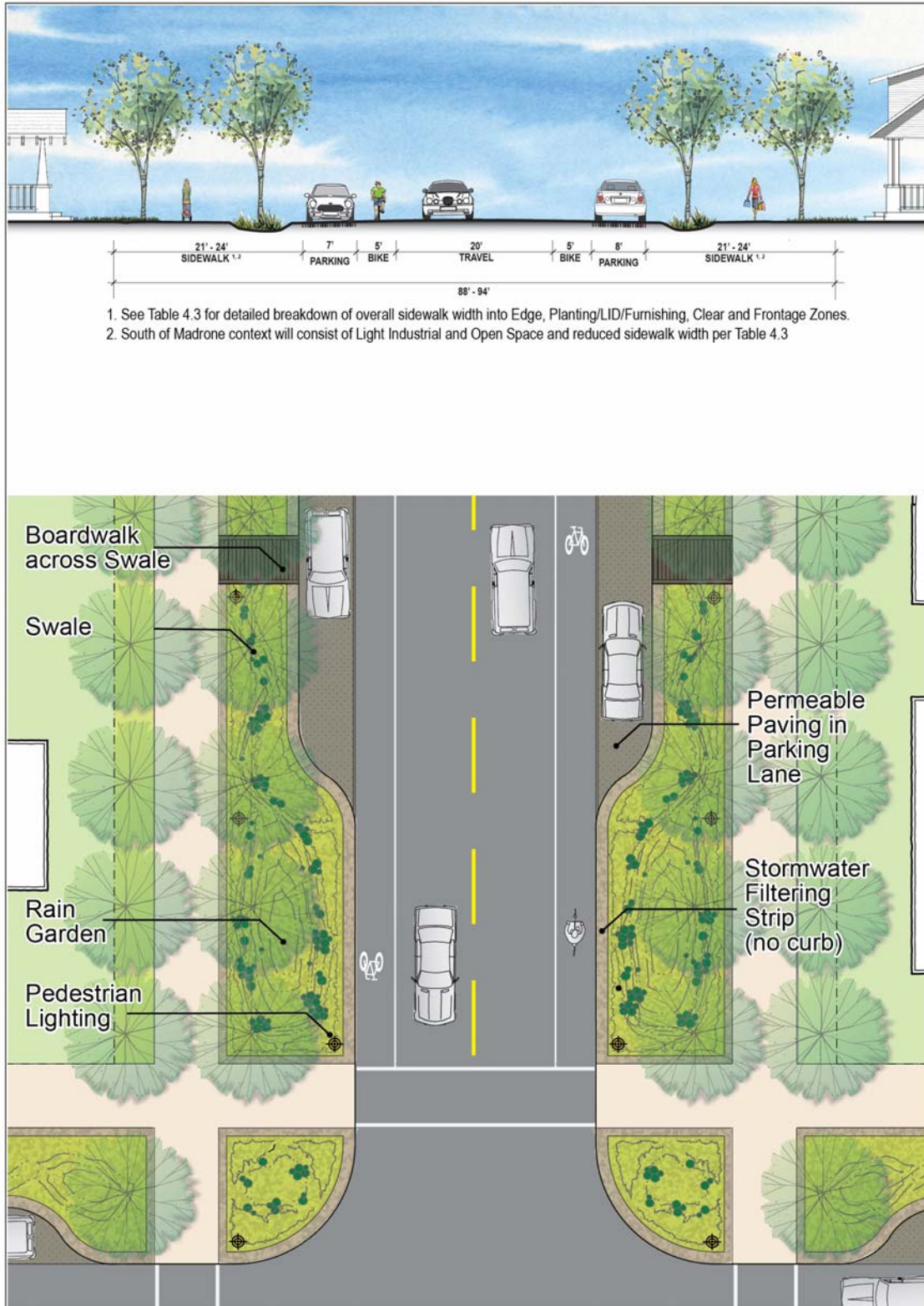


FIGURE 3-4B PARKWAY STREET – BETWEEN PINE AND ALDER STREETS (BB TO CC)

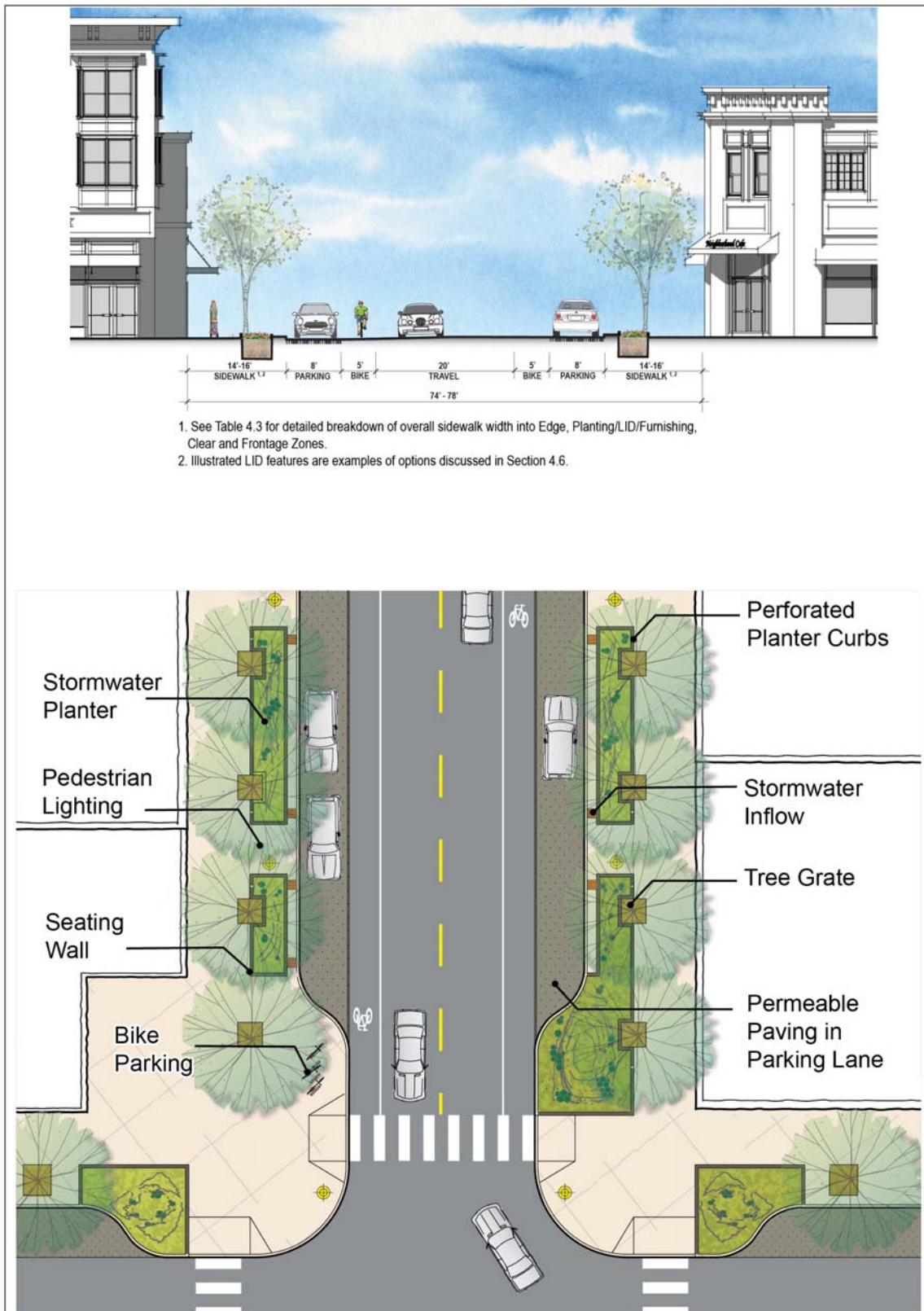


FIGURE 3-5A STANDARD RESIDENTIAL STREET – ALTERNATIVE 1 (WITH SWALES)

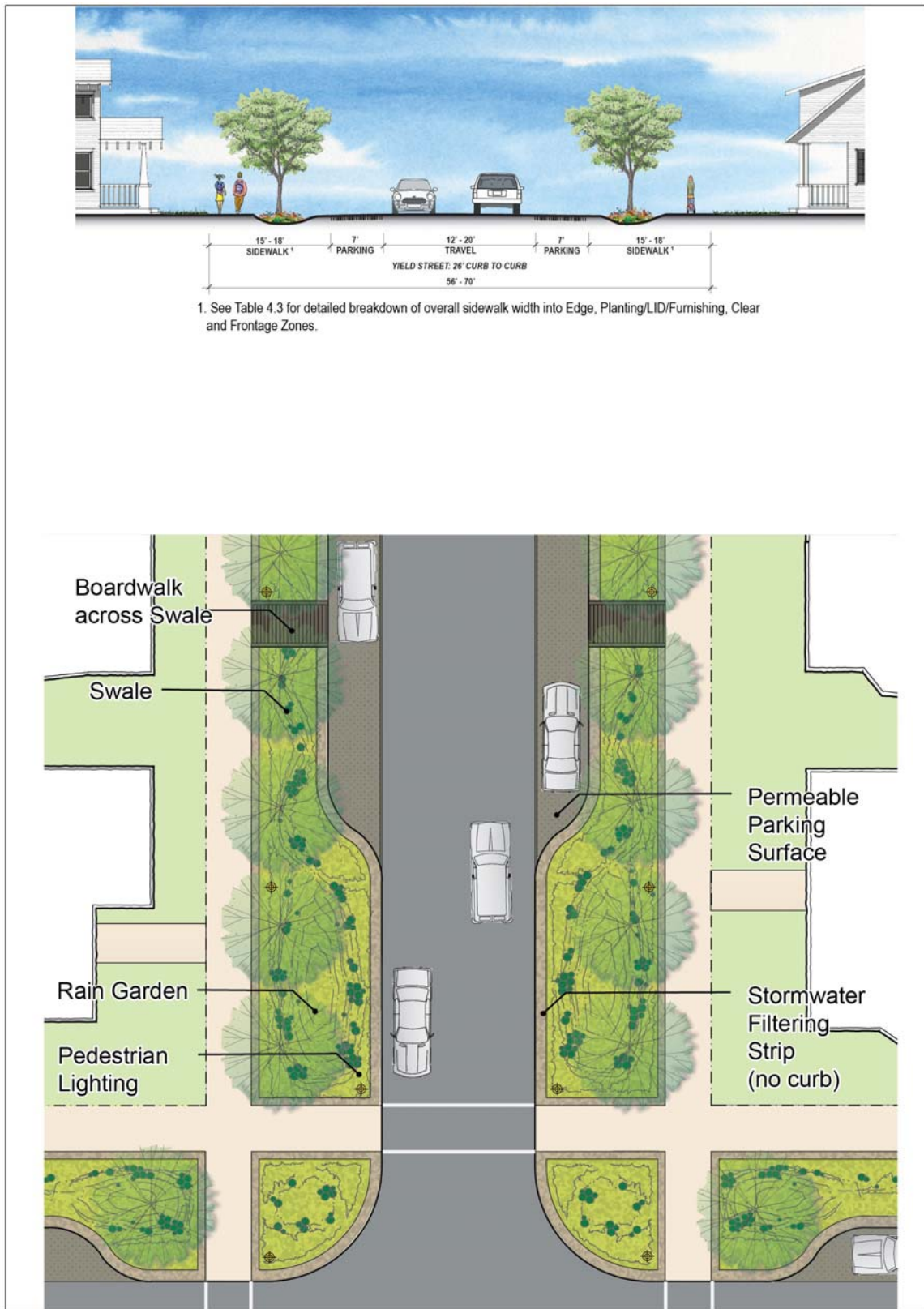


FIGURE 3-5B STANDARD RESIDENTIAL STREET – ALTERNATIVE 2 (WITH CURB/NARROW LID)

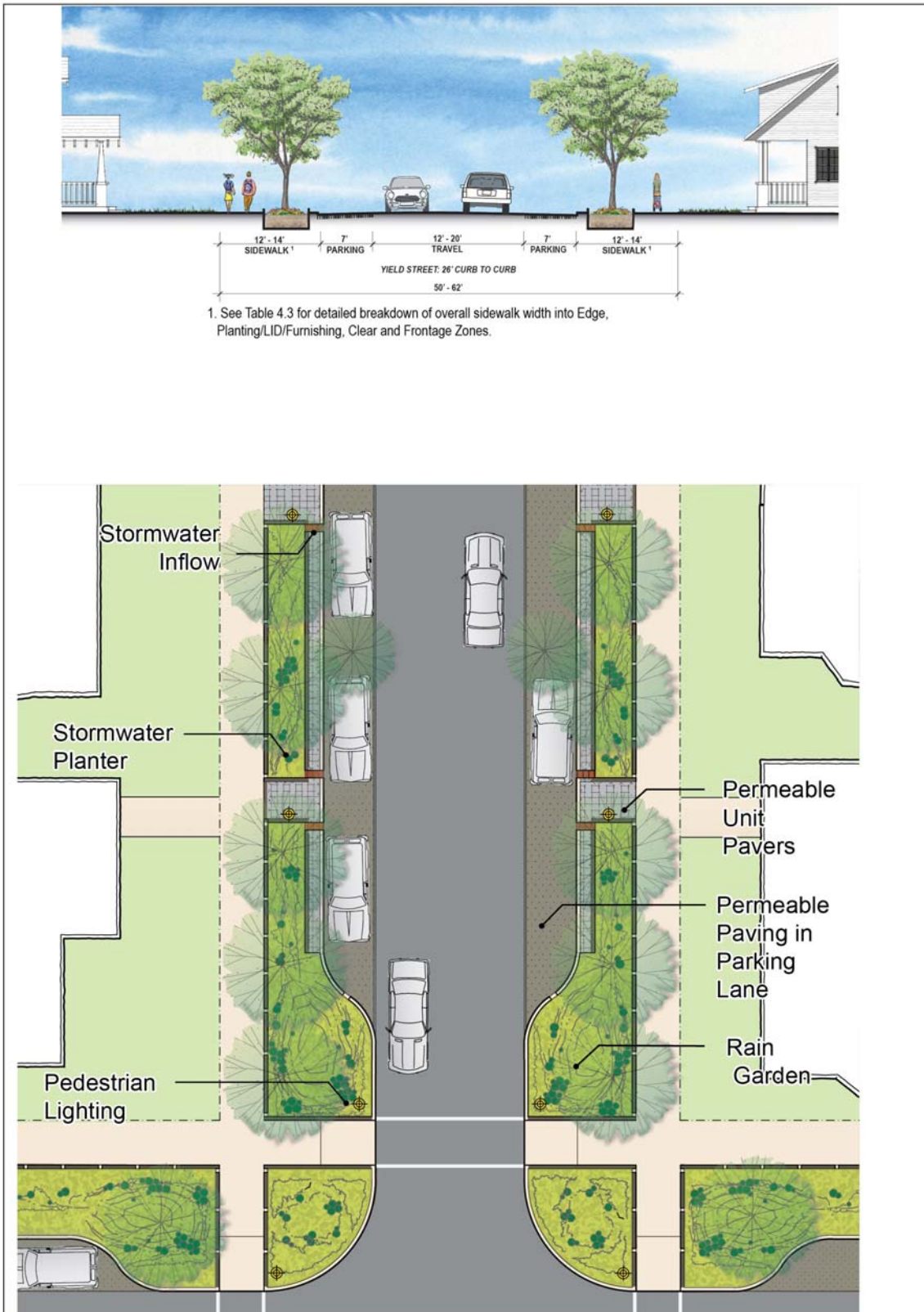
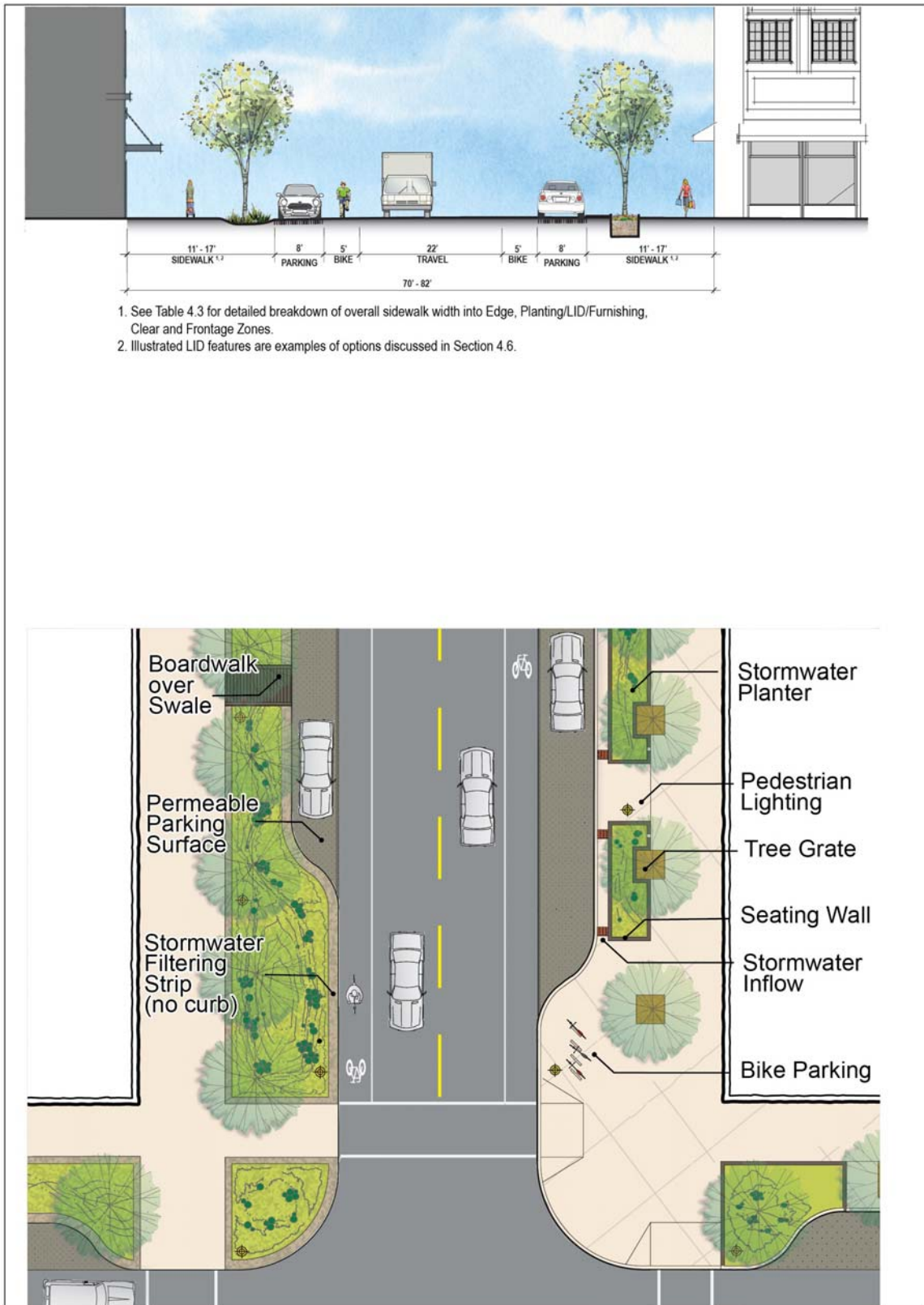


FIGURE 3-6 SOUTHERN DISTRICT STREETS



Roadway Policies:

Policy MM-3. Connectivity. The roadway network shall include facilities for all modes of transportation generally consistent with Figure 3-1. In the Northern and Central Districts, block size and roadway pattern shall be similar to the existing city grid, and the existing alley along the eastern edge of the district shall be maintained. The east-west streets shall extend into the Plan Area in alignment with the existing city grid where feasible. In addition, the north-south West Street and Glass Beach Drive shall continue into the Plan Area.

Policy MM-4. Cypress Street Gateway. Cypress Street shall serve as the major entry point for the southern part of the Plan Area and as the primary access point to a potential hotel/resort and a research and education center, as well as future employment uses. Therefore, the gateway shall be designed to highlight these potential uses in the Southern District and include clear and visible signage.

At Cypress Street, the existing scale of development on Main Street is oriented toward automobiles. It is anticipated that this portion of Main Street will become more oriented toward pedestrians and cyclists. Nevertheless, under current conditions, the scale of the gateway treatment must compete with the larger commercial signage nearby. As a result, the Cypress Street gateway shall be more monumental in character than that of other connections. Also, Cypress Street is a key gateway for cyclists linking to the Coastal Trail multi-use path, so the design of its intersection with Main Street shall be welcoming and appropriate for accommodating cyclists.



Illustrative rendering of Coastal Drive at Cypress Street.

Policy MM-5. Cypress Street Bridge. A vehicular bridge shall be installed over the restored Maple Creek.

Policy MM-6. Redwood Avenue Gateway. The extension of Redwood Avenue from the existing Central Business District (CBD) into the Central District of the Plan Area shall serve as a direct physical connection between existing and future commercial development. Redwood Avenue shall (1) be a two-way street to ensure the success of retailers; (2) include special corner treatments and landscaping, similar to those in the existing downtown; and (3) be designed to ensure low motor vehicle speeds.

Policy MM-7. Laurel Street. Recognizing that the existing Skunk Train Depot and tracks prevent through automobile traffic from the terminus of Laurel Street at the historic Skunk Train Depot, a walkway shall be created south of the depot and west around the train tracks to the Plan Area.

Policy MM-8. Glass Beach Drive and Elm Street. The street shall be designed to be compatible with the adjacent residential neighborhood and to provide appropriate bicycle and automobile access to Coastal Drive and Parkway Street.

Policy MM-9. Connections at Spruce, Bush, Fir, and Pine Streets. The street connections shall be designed to ensure that vehicle speeds and volumes are kept low and that the connection itself is compatible with the existing neighborhood and the proposed development.

Policy MM-10. Alder, Oak, Maple, Walnut, and South Streets. Entries to the Plan Area for vehicles shall be accommodated at Alder Street. Connections at Oak, Maple, and Walnut Streets should be considered and completed if feasible. A connection at South Street is not recommended due to its proximity to Cypress Street and the Noyo Bridge. The design of the Southern District shall accommodate future pedestrian crossings of Main Street at every cross street.

Policy MM-11. Redwood Ave. The northern sidewalk of Redwood Ave shall have a minimum width of 18 feet to facilitate solar access and the southern sidewalk shall have a minimum width of 10 feet. Special corner treatments, pedestrian refuge crosswalks, landscaping, and valley gutters similar to the existing downtown, shall be installed.

Policy MM-12. Parkway Street. Parkway Street as shown in Figure 3-1 shall be offered for dedication to the City as part of the Master Tentative Subdivision Map. Parkway Street shall be constructed by the developers of the Northern, Central, and Southern Districts consistent with the Utility Master Plan.

Policy MM-13. Linear Park. A car-free green corridor shall run from the northern edge of the Plan Area through the Northern District to the Central District. The greenway shall be designed to provide stormwater treatment and convergence and shall provide a north-south pedestrian and bicycle connection to Parkway Street/Glass Beach Drive within the Central District.

Policy MM-14. Complete Streets. All streets shall be designed as complete streets for the safety and comfort of cyclists and pedestrians, including children, the elderly, and people with disabilities, consistent with US Department of Transportation complete streets guidelines.

Policy MM-15. Well-Designed Streets. All streets shall be designed and improved consistent with the standards included in Table 3-1, the street sections and plans detailed in Figures 3-2 through 3-6, and the guidelines in Table 3-2. Exceptions may be granted by the review authority, if it is determined that safe and adequate public access and circulation for all modes are preserved by such an exception.

Policy MM-16. Safe Streets. The design speed of streets in the Central and Northern Districts shall not exceed 25 miles per hour, with typical operating speeds below 20 miles per hour. In the Southern District, design speeds may be as high as 30 miles per hour, with typical operating speeds below 25 miles per hour. Streets shall be designed to optimize pedestrian safety and comfort, with the minimum number of travel lanes necessary to accommodate their traffic function at Level of Service E or better, averaged over the midweek peak one hour. If unacceptable traffic congestion is identified, traffic shall be redistributed onto additional streets, or accommodated with a right- or left-turn pocket, rather than by adding a travel lane.

Policy MM-17. Gated Communities. Gated communities are prohibited.

Policy MM-18. Alleys and Garages in the Northern District. The alley grid shall be similar to the alley grid in the remainder of the Fort Bragg. Except where infeasible, garages shall be located behind residential buildings and shall be accessible via alleys connecting to the main residential street.

Policy MM-19. South District Streets. The streets in the Southern District which serve commercial or industrial uses shall be designed to accommodate larger truck movements,

3.1.3 BICYCLE SYSTEM

Its largely flat terrain, compact development pattern, and mild climate make Fort Bragg an ideal place for bicycling. Bicycling in Fort Bragg is already popular for recreational purposes and as a transportation mode to destinations both within the city and in surrounding communities. The City's current bicycle network is comprehensive, and the Plan Area offers the opportunity to tie into the City's existing bicycle routes and connect them to the ocean, providing an extraordinary system for utility and recreational riding.

Bicycle Policies:

Policy MM-20. Bike-Friendly Streets. Streets shall accommodate cyclists, either through dedicated bicycle facilities or through traffic calming sufficient to ensure that motor vehicles travel at bike-compatible speeds.

Policy MM-21. Recreational Path Connections. Multi-use paths that connect with the Coastal Trail, Glass Beach, Cypress Street, Noyo Harbor, and the Noyo Bridge are encouraged within the Plan Area and may in some cases be required by the California Coastal Act.

Policy MM-22. Parking. Bicycle parking shall be provided throughout the Plan Area in accordance with the requirements of the Coastal Land Use Development Code. Bicycle parking shall be installed at locations that have significant potential for increasing bike travel, such as visitor attractions and community facilities.

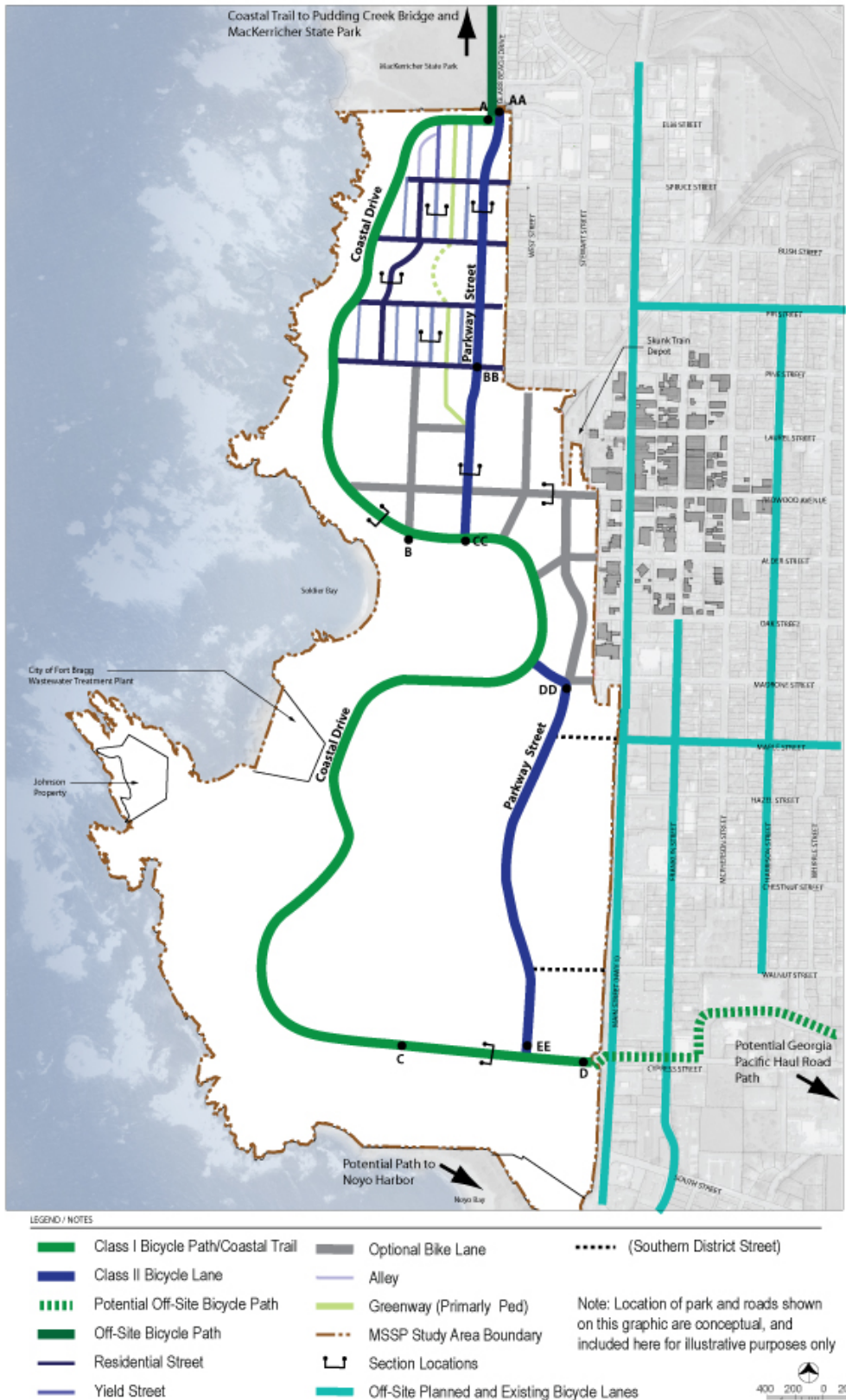
The City's multi-use coastal trail will extend the length of the City's Coastal Trail property adjacent to the ocean and will connect with existing coastal trails at MacKerricher State Park (to the north) and Pomo Bluffs Park (to the south). The multi-use coastal trail will connect 4½ miles of new trails with seven miles of existing trails to the north and south of the Plan Area.

The Specific Plan bicycle network includes the following improvements, shown in Figure 3-7:

- A multi-use path or cycletrack connecting the coastal trail to Cypress and Main Streets, with the potential to connect to the GP Haul Road just east of Franklin Street;
- A Class 1 bike path on the western side of Coastal Drive, separate from the multi-use coastal trail;
- Bicycle lanes on Parkway Street;
- A multi-use trail along the western edge of the Caltrans right-of-way from Noyo Point Road to Madrone Street;
- Shared space (bicycles and vehicles) on residential streets and mixed use streets; and
- A car-free off-street path or greenway, connecting the Central and Northern Districts.

These improvements will connect several gaps in the existing bicycle network by providing additional north-south bike connections, integrating and expanding east-west bike routes into the Plan Area and to the coast, and creating a more continuous recreational and utility biking network.

FIGURE 3-7 CONCEPTUAL BICYCLE NETWORK



3.1.4 PEDESTRIAN SYSTEM

All streets in the Plan Area are designed to maintain motor vehicle travel at a speed that optimizes safety for all users, including cyclists and pedestrians.

A. Traffic Calming Elements

By providing compact intersections and travel lanes, small blocks, abundant landscaping, and sidewalk-oriented development, the design for the Plan Area sends a clear message to motorists that they have left the highway and entered a pedestrian-oriented neighborhood. Specific traffic calming elements included in the site design include:

- Corner “bulb-outs” at most intersections, ensuring low-speed turning movements and improving pedestrian safety;
- Ample landscape along the roadway edge;
- Small blocks and stop signs at most intersections; and
- Bicycle lanes on the wider streets.

As a result of all these features, more conventional traffic calming features like speed bumps, raised intersections, and chicanes should not be necessary in order to achieve the desired operating speeds. If speeds exceed desired levels, however, these traffic calming interventions may be warranted.

All new streets in the Plan Area (except the west side of Coastal Drive) will be equipped with sidewalks to ensure that future residents, visitors, and employees can safely and comfortably walk throughout the site at all times of day and night.

Pedestrian Policies:

Policy MM-23. Safety and Security. Streets in the Plan Area shall be designed to be safe at all times of day and night for pedestrians through compliance with the design guidelines identified for the Specific Plan’s “sidewalk zones” (see Table 3-2.) The minimum sidewalk width for all streets within all districts shall be 6 feet.

Policy MM-24. Pedestrian-Oriented Buildings. All future buildings in the Plan Area shall be oriented toward sidewalks rather than parking lots. No parking shall be placed between building front doors and the street they face.

Policy MM-25. Pedestrian Connectivity. To the extent feasible, where streets are discontinuous for cars, pedestrian connections shall be made.

Policy MM-26. Wayfinding. Destination-oriented, pedestrian-scale signage shall be provided to help pedestrians find their way toward key destinations throughout the Central Business District.

Policy MM-27. Crosswalk Design. Base geometric design of crosswalks on residential streets shall follow the guidance of the Institute for Transportation Engineers' *Traditional Neighborhood Development Street Design Guidelines: An ITE Recommended Practice or Residential Streets, Third Edition* or update. Geometric design of crosswalks for Redwood Avenue, other street segments with mixed-use development, and street segments with light industrial development shall follow the guidance of the Institute for Transportation Engineers' *Designing Walkable Urban Thoroughfares: A Context Sensitive Approach: An ITE Recommended Practice*.

Policy MM-28. Intersection Design. Intersections shall be designed at the tightest turn radii to accommodate the design vehicle, to slow turning vehicles as they cross the pedestrian realm. The "control vehicle" – larger vehicles such as delivery trucks and fire engines that only occasionally use the street – may cross the center line to make turns.

Policy MM-29. Raised Crosswalks. Raised crosswalks and/or high visibility intersections shall be installed along Redwood Avenue and in the Central Business District extension to slow vehicles and reduce conflicts with crossing pedestrians.

Policy MM-30. Accent Paving. Accent paving in crosswalks on Redwood Avenue shall be installed to improve crosswalk visibility and aesthetics.

Policy MM-31. Bulb-Outs. Corner and mid-block curb bulb-outs shall be incorporated to narrow crossing distances, increase pedestrian visibility, and slow motorists on Redwood Avenue.

Policy MM-32. Additional Traffic Calming Measures. The City engineer may require additional traffic calming features where necessary to ensure pedestrian safety.

B. Sidewalk Zones

The pedestrian realm is defined as the area between the edge of the roadway and the property line. The overall width of the pedestrian realm is determined by a variety of factors, including the space required to accommodate the expected pedestrian volumes and activities, the space needed to buffer pedestrians from moving traffic, the space desired for the accommodation of street furniture and low impact development (LID) features, and the character of sidewalk-adjacent land uses. Based on the combination of these characteristics, the width of the pedestrian realm and the arrangement of streetscape elements may vary along the length of a given street.

The Specific Plan describes functional and design standards for the pedestrian realm according to the concept of "sidewalk zones."² This concept is based on the segmentation of the overall sidewalk into zones located between the sidewalk curb and the property line. The Specific Plan distinguishes among the following four sidewalk zones:

² Institute for Transportation Engineers' *Designing Walkable Urban Thoroughfares: A Context Sensitive Approach: An ITE Recommended Practice*.

- Edge Zone:** An area between the curb and the planting/furnishing zone that provides space to prevent vehicle overhangs from hitting vertical objects located near the sidewalk edge. The Edge Zone provides clearance for large mirrors on delivery trucks and allows the opening of passenger side doors of parked vehicles and the safe exiting of passengers onto the sidewalk.
- Planting/LID/Furnishings Zone:** An area with street trees and other landscaping (including LID features for stormwater collection and treatment), street furniture, fire hydrants, bicycle racks, wayfinding signs, and other street furniture. Portions of this zone act as a buffer between moving traffic and activities on the sidewalk.
- Clear Zone:** An area of the sidewalk intended for pedestrian travel and that must comply with all applicable Americans with Disabilities Act (ADA) requirements. The width of this zone increases where higher levels of pedestrian volumes and activity are expected.
- Frontage Zone:** An area between the Clear Zone and the property line. It establishes the transition between the Clear Zone and sidewalk-adjacent use. Along mixed-use streets, this zone may be used for outdoor displays and seating when a clear passage that meets ADA standards is still provided.

Table 3-2 provides an overview of the sidewalk zone width guidelines for all street types in the Plan Area. The streetscape characteristics of sidewalks are addressed in Section 3.3.

TABLE 3-2 SIDEWALK ZONES

Street Type		Overall Sidewalk Width in Feet ¹		All Dimensions in Feet			
		Required Minimum	Recommended Maximum	Edge ²	Planting ³ / LID Feature ⁸ / Furnishings	Clear	Frontage
Coastal Drive Segment A to B	East	16	20	0	10 - 12	6 - 8	0
	West	no sidewalk/ only LID feature		0	12 - 18 ⁴	NA	NA
Coastal Drive Segment B to C	East	17	22	0/2	5 - 12	8 - 10 ⁵	0 - 2 ⁵
	West	23	32	0/2	5 - 18	14 ⁶	0 - 2 ⁵
Coastal Drive Segment C to D	East	11	20	0/2	5 - 12	6 - 8	0 - 2 ⁵
	West	20	21	2	4 - 5	14 ⁶	0 - 2 ⁵
Parkway Street Segment AA to BB		21	24	0/2	10 - 12	6 - 8	5 ⁷
Parkway Street Segment BB to CC		14	16	2	5 - 6	6 - 8	1 - 2
Parkway Street Segment DD to EE		17	24	0/2	10 - 12	6 - 8	1 - 5 ⁷
Residential Streets (ALT 1 - curbless w/swales)		15	18	0	10 - 12	6	0 - 1
Residential Streets (ALT 2 - w/curbs, narrow LID)		12	14	2	5 - 6	6	0 - 1

Mixed-Use Streets (ALT 1 and ALT 2)	14	16	2	4 - 5	6 - 8	2
Redwood Avenue	16	18	2	4 - 6	8 - 10	2
Southern District Streets	11	17	0/2	5 - 12	6-8	1
Alleys - All Districts	20-foot right-of-way/shared space					

Note: All see street sections in Figures 3-2 to 3-6.

- (1) The Overall Sidewalk Width column includes minimum dimensions for the total width of the sidewalk area and recommendations for the upper end of the range that should not be exceeded. The upper end of the range is not expressed as a maximum because the final dimension of potentially employed LID features is determined at the preliminary engineering stage (also see Note 4). NOTE: the maximum width does not represent a sum of all upper values provided for individual sidewalk zones. In order to avoid excessively wide sidewalks, the overall sidewalk width should bring into balance the functional and comfort goals associated with the individual zones.
- (2) Where two figures are provided in the “Edge” column, the first applies to street designs that include curbless LID features directly adjacent to parking or travel lanes, and the second applies to streets with curbs.
- (3) Final sizing of LID features, where applicable, may exceed recommended dimensions for this sidewalk zone. Sizing of LID features will occur when accurate calculations of stormwater runoff volumes are available.
- (4) The 18-foot dimension is only applicable at parking bays.
- (5) The upper end of the range should be used for sidewalk segments along commercial frontages.
- (6) Where development fronts directly onto the west side of Coastal Drive, a 14-foot-wide “Shared Space” should be designed along the development that is shared by pedestrian and bicycles (see Figure 3-2C, Coastal Drive - Segment C to D). Where no development fronts directly onto Coastal Drive, a 14-foot-wide multi-use path should be provided (see Figure 3-2B, Coastal Drive - Segment B to C).
- (7) The 5-foot dimension is applicable where a second row of trees is accommodated on the development side of the sidewalk.
- (8) Where employed, curbless LID features adjacent to parking lanes are required to include a 1½-foot-wide flat area that can accommodate passengers exiting from parked vehicles.

3.1.5 TRANSIT ACCESS AND TRANSIT NEEDS

The City of Fort Bragg is currently served by the Mendocino Transit Authority (MTA), and its existing service may be seamlessly extended into the Plan Area.

Transit Policies:

Policy MM-33. Transit Design. The design of Coastal Drive and Redwood Avenue shall accommodate Mendocino Transit Authority (MTA) transit buses and stops.

Policy MM-34. Transit Amenities. Future bus stops located adjacent to, or on, development sites within the Plan Area shall include bus shelters with the following features: seating, trash receptacles, adequate coverings to protect riders from inclement weather while maintaining transparency, maps and schedules, and lighting at night.



An example of a transit stop incorporated into a development site.

3.2 Parking Management and Design

The Plan Area is designed to be pedestrian-oriented. Applying conventional parking requirements to development in the Plan Area will result in too much surface parking, excessive construction costs, and reduced development. In vibrant, mixed-use downtowns along the West Coast, peak cumulative parking demand rarely exceeds two spaces per 1,000 square feet of commercial development—as long as parking is shared among different uses.³ This figure applies even in intensely successful retail districts with limited transit, like the downtowns of Palo Alto, Santa Monica, and Santa Barbara, California, and Bellevue, Washington. So little parking is needed in these downtowns because customers park once and visit several destinations. To provide for a successful mixed-use downtown extension, the Specific Plan’s approach to parking follows the example of these successful, walkable downtowns, rather than more auto-dependent locations.

The Specific Plan parking requirements seek to ensure adequate parking for all users. The standards will also prevent the problems that would arise if too much parking were provided and land uses were too far apart for the downtown extension to remain walkable.

Parking Policies:

Policy MM-35. “Park Once” District. *The Central District shall be designed and managed as a “Park Once” district, where visitors, residents, and employees park once and walk to various destinations without moving their cars.*

Policy MM-36. Focus on Availability. *Public and on-street parking throughout the Plan Area shall be managed to spread parking demand and achieve a target of 15 percent of spaces being available at all times along all block faces and in all parking lots. This target may be achieved through installation of parking meters, parking time limits, or other mechanisms.*

Policy MM-37. Shared Parking. *Shared parking, particularly in the Central District, shall maximize the use of parking spaces and minimize spaces that are reserved for individual commercial tenants. In all districts, adjacent parking lots shall be connected with driveways. In the Central District, individual commercial tenants or property owners shall be restricted from reserving for their own use more than two spaces or 10 percent of project spaces, whichever is greater. New commercial and residential development in the Plan Area shall be required to share parking to take advantage of differential peak parking periods for*

³ In 2010, parking studies were compiled for downtown Santa Monica, Ventura, Walnut Creek, and Palo Alto, California; Bellevue, Washington; and other small, mixed-use downtowns. Each study measured peak, cumulative parking demand, total parking supply, and total built floor area. In each case, including cities where vehicle mode share is high, shoppers, employees, and visitors tended to park once and visit a few destinations, allowing one shared parking space to substitute for several private parking spaces.

residential, industrial, retail, restaurant, and office uses that enable parking to be shared throughout the day.

Policy MM-38. Coastal Access. *On-street parking shall be provided along the east side of Coastal Drive. On-street parking shall also be provided in bays of ten or fewer, with perpendicular parking on the west side of Coastal Drive, in order to reduce the visual impact of parking and to allow motorists to park and enjoy the view while remaining in their vehicle. These bays shall be provided every other block or as needed in order to provide sufficient coastal access. To protect the viewsheds to the ocean, these bays shall not be located at the termination of any east-west street.*

Policy MM-39. Parking Management Plan. *A parking management plan shall be prepared for the Central District by the applicant for the first development proposal in the district. Each subsequent development shall be required either to prepare a summary of how the development will comply with the Central District Management Plan or to update the plan. The Central District Management Plan shall include the following elements:*

- *Current/proposed parking supply by block;*
- *Current parking utilization by block, including, at a minimum, counts at weekday midday, weekday evening, and Saturday midday;*
- *Estimated observed and proposed parking demand by land use;*
- *Recommended sites for shared parking facilities;*
- *Recommended time restrictions;*
- *A financing plan for the development and management of shared parking facilities; and*
- *A management plan for meeting parking availability targets, including parking time limits.*

3.3 Streetscape Design

The streetscape design standards are designed to achieve the following objectives:

- Create a cohesive public realm that includes streets, parks, squares, trails, community gardens, and other open spaces to link future development in the Plan Area with the coastal trail and existing portions of Fort Bragg.
- Reduce watershed pollution by developing standards for collecting, conveying, and treatment of storm water runoff that take advantage of and respect the limitation imposed by the site's natural hydrology.
- Establish a tree canopy within future rights-of-way and open spaces that are appropriate to the coastal setting.

3.3.1 GENERAL STREETScape DESIGN

Depending on the specific land use context of a neighborhood or district within the Plan Area, activities may vary along the length of a street and sometimes between segments of the same street. The design of residential streetscapes will therefore look and function differently from commercial or industrial streetscapes. In addition, the integration of traditional streetscape design elements, such as street trees, street furniture, and street lighting with landscape-based storm water management techniques (LID), will require the particular attention by the designers and engineers involved in the final streetscape design process.

Streetscape Policies:

Policy MM-40. Creating “Place Identity.” Streetscapes in the Plan Area shall contribute to the overall place identity and district character.

Policy MM-41. Creating User Appropriate Streetscapes. Streetscapes in the Plan Area shall be designed to promote walking; support pedestrian comfort; and accommodate the needs of residents, visitors, restaurant or shop patrons, and commercial businesses and their employees.

Policy MM-42. Integration of Low Impact Development (LID). Development projects shall incorporate LID features, and subdivision or development projects that include street improvements shall incorporate LID features into the public rights-of-way when feasible.

Policy MM-43. Streetscape Master Plan. The City will require or prepare one Streetscape Master Plan for each district (prior to approval of the first development within the subject district). The plan(s) shall comprehensively describe the design of public rights-of-way, including proposed sidewalk layouts, street trees species and other plant materials, selection of low impact development (LID) features, paving materials, wayfinding signage, gateway treatments, and the style and color of street furniture, and street lighting.

3.3.2 DESIGN OF THE PEDESTRIAN REALM

This section includes policies related to several critical areas for creating streetscapes that are functional and comfortable for the pedestrian. These critical streetscape areas include:

- Landscape Elements
- Parking Lane and Curb Extension Treatments
- Street Furniture
- Lighting

This section provides policies for where specific streetscape design elements will be located and how the elements will relate to one another. Additionally, the streetscape design policies in this section closely relate to the street typology established in Section 3.1.2. This section

also addresses the proposed greenway in the Northern District. Table 3-2, Sidewalk Zones, and the street cross-sections and plan views in Figures 3-2 to 3-6 illustrate the standards and recommendations described below.

A. Landscape Elements

Landscape elements, especially trees, greatly contribute to establishing the streetscape character for individual districts or individual streets. Trees add soft textures and colors, provide shade from the sun, act as a windbreak, introduce a pleasing visual rhythm, and create a positive sense of spatial enclosure for pedestrians. Incorporation of shrubs, grasses, and perennials in the LID features required along the majority of streets will help create pedestrian scale while effectively treating and conveying stormwater.

Fort Bragg's coastal climate (Climate Zone 17) limits the selection of plants that will survive and thrive in the Plan Area. The use of trees in the swales for stormwater management in the public rights-of-way (residential east-west streets, Coastal Drive, and portions of Parkway Street) presents an additional challenge for the plant selection process, as these trees will need to tolerate the coastal climate and wet conditions in their root zones. Appendix B includes a table of tree species, shrubs, and perennials that can survive and thrive in Fort Bragg's climate.

Landscape Elements Policies:

Policy MM-44. Use of Appropriate Plant Material. Trees and other plant material used in the streetscapes of future streets shall be appropriate to Fort Bragg's coastal climate. The final plant selection process shall balance the desire to use native plants to the degree feasible with selection criteria associated with the design of functioning stormwater planters and streetscape aesthetics.

Policy MM-45. Consistency with Streetscape Master Plan(s). Trees and other plant material used within the public right-of-way shall be consistent with the requirements described in the Streetscape Master Plan(s).

Policy MM-46. Native Plants. Plants shall be carefully selected to emphasize native plants in order to provide habitat, use minimal water, and reflect the natural community of the area.

Policy MM-47. Minimizing Potable Water Use for Landscaping. Landscaping within the streetscape shall minimize the use of potable water, either by including plantings that do not require irrigation or by using drip irrigation systems where irrigation is required.

Policy MM-48. Street Trees. Street trees shall be:

1. *Appropriate for Fort Bragg's coastal climate (see Appendix B).*
2. *Selected to create a visual distinction between streets within the North, Central, and Southern Districts in order to provide drivers with an additional "clue" of the type of*

environment they are passing through and cause them to adjust their driving behavior and travel speed accordingly.

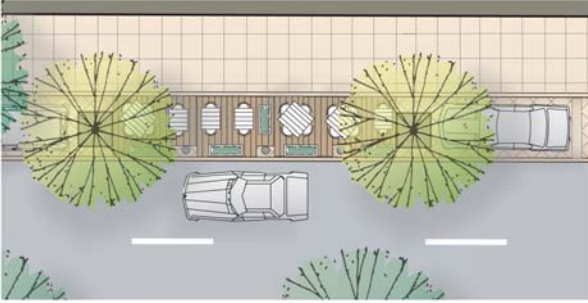
3. Used to complement street lighting, street furniture, and other amenities to create a distinct design character for districts or individual streets, and placed in order to avoid conflicts between tree canopies and street lighting.
4. Accommodated in species-appropriate soil volumes in individual tree wells, or with other landscaping in continuous landscape strips, stormwater planters, or swales located in the Planting/LID Feature/Furnishings Zone of the sidewalk (see Table 3-2). Trees may also be accommodated in curb extensions or landscape planters in the parking lane.
5. Planted between 20 to 30 feet on-center, depending upon species and the desired canopy coverage. Along Coastal Drive, planting trees in clusters rather than rows is preferred. Trees shall only be planted on the east side of Coastal Drive.

Policy MM-49. Plant material used in LID features, such as stormwater planters, vegetated swales, or rain gardens, shall be consistent with recommendations for plant material included in the most current best management practices (BMPs) available for such facilities and appropriate for the Plan Area climate. Native plant material shall be used in the landscaped strip of streets to the extent practicable.

B. Parking Lane Treatment


Parking lanes create an important buffer between pedestrians on adjacent sidewalks and moving traffic in the roadway. Parking lanes can also include low impact development (LID) features, such as permeable paving, and can be used to increase the space available for pedestrian-oriented streetscape elements. The latter requires configuration as a flexible parking lane in which temporary or seasonal use of the parking lane for pedestrian-oriented activities is allowed. See the illustration below showing the seasonal use of a parking lane for outdoor dining.

‘FLEX’ LANES FOR PARKING & CAFÉ/ RESTAURANT SEATING



Detail Plan

- Trees, movable bollards, & planters define café area
- Removable platforms accommodate tables & chairs
- Allow more space for pedestrians



Example:

- Castro Street, Mountain View

Parking Lane Treatment Policies:

Policy MM-50. Use of Parking Lane. The use of parking lanes for parking shall be balanced with the need to accommodate low impact development (LID) and other landscape features in parking lanes.

Policy MM-51. Flexible Parking Lanes. Use of flexible parking lanes is encouraged as an option for Redwood Avenue.

Policy MM-52. Engineered Soils. The engineered soils that detain and convey stormwater that infiltrates the permeable paving in parking lanes shall be tied to other low impact development (LID) features of the comprehensive, landscape-based stormwater management system.

Policy MM-53. Use of Rain Gardens and Planters. Rain gardens, stormwater planters, or a series of tree planters may be required in the parking lane in order to provide additional capacity for stormwater management and to visually narrow the roadway for speed management.

Policy MM-54. Extent of Rain Gardens and Planters. Rain gardens and stormwater planters incorporated into the parking lane shall not extend beyond the depth of the parking lane.



A “two-step” curb that links the parking lane and sidewalk.

Policy MM-55. Parking Lanes on Redwood Avenue/Other Mixed-Use Streets. Parking lanes on these streets shall conform to the following requirements:

- Colored or textured paving shall be used to offset the flexible parking lane on Redwood Avenue from the adjacent roadway.
- A 1- to 2-inch level change shall be provided between the flexible parking lane and the adjacent roadway.
- The curb along the flexible parking lane shall be designed to provide an in-between step between the parking and sidewalk levels.

C. Curb Extension Treatment

Curb extensions (or bulb-outs) can be used to narrow the roadway and extend the sidewalk into the parking lane at street corners and in mid-block locations. Curb extensions provide additional space for pedestrian activities, bicycle parking, café seating, or the accommodation of LID features like rain gardens. They also reduce the crossing distance for

pedestrians, increase a pedestrian’s visibility at crosswalks, and can be effectively used for traffic calming.

Curb Extension Treatment Policies:

Policy MM-56. Curb Extensions. *Corner curb extensions shall be installed at all intersections unless determined by the City Engineer to be infeasible due to transit bus turning requirements or other location-specific geometric intersection constraints.*

Policy MM-57. Curb Extension Treatments. *Curb extension treatments shall comply with the following:*

- *The length of curb extensions shall be determined by balancing the need for parking with the need for added space dedicated to pedestrian activities, bicycle parking, and stormwater management (e.g., rain gardens).*
- *Curb extensions shall extend the full width of the parking lane.*
- *Width requirements for the Edge Zone shall be applied to the edge of curb extensions.*
- *Curb extensions shall not extend into travel lanes unless the extensions are specifically intended and designed to act as a traffic calming devices.*
- *The geometric design of curb extensions should follow the guidance of the Institute for Transportation Engineers’ Designing Walkable Urban Thoroughfares: A Context Sensitive Approach: An ITE Recommended Practice.*
- *On streets with curbsless LID features such as swales, the geometry of “curb” extensions shall follow the same standards as if a curb were present.*



An example of a curb extension with a stormwater planter in Portland, Oregon.

D. Street Furniture

Pedestrian-oriented amenities, if well selected and located, can enrich the walking experience by adding functionality and visual interest to the pedestrian realm. Street furniture includes public seating, trash and recycling receptacles, drinking fountains, news racks, bicycle parking, restrooms, information kiosks, and pedestrian-scale retail stands.

Street Furniture Policies:

Policy MM-58. Consistency with Streetscape Master Plan(s). *Street furniture within the public right-of-way shall be consistent with the requirements described in the Streetscape Master Plan.*

Policy MM-59. Street Furniture Requirements. Development within the Plan Area shall comply with the following street furniture requirements:

1. All public street furniture shall be located in the Planting/LID Feature/Furnishings Zone (see Table 3-2). The Edge Zone (see Table 3-2) shall remain free of any vertical objects.
2. Amenities along streets within a particular district or along streets for which a unified streetscape character across district boundaries is envisioned—such as Coastal Drive, the linear park, or Parkway Street— shall be selected to form a group of amenities coordinated in style and color so as to visually reinforce the street and district identity.
3. Street furniture placement shall be closely coordinated with the design of LID features discussed in Section 3.4.1 the striping of parking stalls, and breaks in stormwater planters required for pedestrian circulation between the parking lane and the Clear Zone of sidewalks (see Table 3-2).
4. No sidewalk amenity shall reduce the clear width of a sidewalk or walkway path to less than 4 feet. All street furniture, wayfinding signs, and other amenities shall comply with Americans with Disabilities Act (ADA) requirements.
5. All street furniture and other amenities shall be made of durable, high-quality materials. Materials and finishes shall be specifically selected to withstand exposure to Fort Bragg’s coastal climate.



An example of a coordinated set of street furnishings, light fixtures, and street trees.

Policy MM-60. Appropriate Street Furniture by Street Type. All street furniture shall be consistent with the specifications listed in Table 3-3, Appropriate Streetscape Furniture by Street Type.

Policy MM-61. Street Furniture in the Central District. Public seating shall be incorporated into the Redwood Avenue extension and considered on other mixed-use streets in the Central District. Seat walls and seating may incorporated into buildings, landscape features, and stormwater planters, as an alternative to freestanding benches.

TABLE 3-3 APPROPRIATE STREET FURNITURE BY STREET TYPE

Street Type	Trash/ Recycling Receptacles	Seating	Newspaper Racks ¹	Wayfinding Signage ²	Bicycle Parking
Coastal Drive All Segments	Yes	Yes	No	Yes	At Parking Bays
Parkway Street	No	Optional	No	No	Central District Only
Residential Streets	No	No	No	No	No
Mixed-Use Streets	No	Yes	Yes	Yes	Yes
Redwood Avenue	Yes	Yes	Yes	Yes	Yes
Southern District Streets	No	No	No	No	Yes
Alleys – All Districts	No	No	No	No	No

(1) Only consolidated, decorative newspaper racks are allowed.

(2) All wayfinding signage shall be non-commercial in nature and shall not conflict with the off-site signage prohibition in the Coastal Land Use and Development Code (Coastal LUDC).

E. Lighting

High-quality lighting helps create a positive streetscape and district character during the day and at night. Street lighting increases the sense of safety for all users of a street. By day, the light fixtures establish a rhythm along the street and can unify the street design. At night, pedestrian-scaled light fixtures define the visual nighttime experience of a streetscape, path, plaza, or park. Street lighting can also use significant energy, and poorly placed or designed street lights can result in light pollution and an unsightly visual experience.

Lighting Policies:

Policy MM-62. Pedestrian-Friendly Lighting. To encourage pedestrian activity at night, all streets shall include pedestrian-scale lighting that promotes walking .

Policy MM-63. Consistency with Streetscape Master Plan(s). Light fixtures and poles within the public right-of-way shall be consistent with the Streetscape Master Plan(s).

Policy MM-64. Energy-Efficient Lighting. All street lighting shall be energy-efficient. All lighting in the public realm shall be fitted with energy-efficient lamps, such as Metal Halide, LED, or other energy-efficient lamp technology, as well as optical systems that reduce energy use. Light operation shall be managed to reduce energy use by reducing or turning off lighting when activity levels decrease at night (typically after midnight).

Policy MM-65. Lighting Safety and Comfort. All new street lighting shall comply with the following requirements:

- Lamp wattage, optics, and fixture mounting height shall be selected to mitigate glare and to make streets and pathways safe and comfortable.

- *Light level and uniformity ratio requirements for street and pedestrian lighting as well as crosswalks shall follow the standards described in the American National Standard Practice for Roadway Lighting (RP-8) published by the Illuminating Engineering Society of North America (IESNA). See Table 3-4 for an example of how these standards can be applied to the proposed streets in the Plan Area.*
- *Sky glow shall be mitigated by selecting “dark sky”-friendly light fixtures that direct most of the emitted light downward.*
- *Lamps shall have a high Color Rendering Index (CRI).*

Policy MM-66. Central District Lighting. *Central District lighting shall be compatible with existing Central Business District lighting.*

TABLE 3-4 EXAMPLE OF LIGHT LEVELS AND UNIFORMITY RATIOS FOR LIGHTING

Street Type	Horizontal Light Level Range ¹ At Ground ² Minimum Maintained Average ³ (Unit: Footcandle)	Uniformity Ratio Range ^{1,2} Average/Minimum
Northern Coastal Drive	0.3 to 1.2	4 to 6
Central Coastal Drive	0.4 to 1.2	3 to 4
Southern Coastal Drive	0.3 to 1.2	4 to 6
Parkway	0.4 to 1.2	3 to 4
Mixed-Use Streets – Central District (IESNA roadway classifications: Major/Collector)	0.5 to 1.7	3 to 6
Residential Streets – Northern District (IESNA roadway classifications: Collector/Local)	0.3 to 1.2	4 to 6
Southern District Streets (IESNA roadway classifications: Major/Collector/Local)	0.3 to 1.7	3 to 6
Alleys – All Districts		
Urban Trails – All Districts (IESNA roadway classification: Alley)	0.3 to 0.5	4 to 6
Pedestrian Accessways – All Districts (IESNA classification: Pedestrian Walkway)	0.3 to 1	4 to 6

(1) Recommendations based on the Illuminating Society’s ANSI approved RP-8 document (“Roadway Lighting”).
 (2) Light levels listed in the table are provided in ranges, as the determination of the specific required minimum maintained average light level requires the verification of variables such as traffic and pedestrian volumes as well as pavement classifications. (The latter are related to the amount of light reflected by a given pavement.)
 (3) The “minimum maintained average” is the lowest accepted value of an average light level calculated with a light loss factor.

Policy MM-67. Lighting Section in Streetscape Master Plan(s). The Streetscape Master Plan(s) shall include a section on lighting that describes the required unified palette of fixture styles to be used and standards for appropriate fixture spacing, lamping, and other technical criteria.

Policy MM-68. Lighting of Public Rights-of-Way. Roadway and pedestrian-scale lighting shall be provided, as appropriate, on all new streets and pathways in accordance with the following guidelines and with applicable City standards not superseded by these guidelines.

1. The characteristics of pedestrian activity, such as slow travel speeds, frequent stopping and standing, and the need for human scale, shall be taken into account in the light fixture selection process as well as in the fixtures' day and nighttime design characteristics.
2. Light fixtures along streets shall be located in the Planting/LID Feature/Furnishings Zone (see Table 3-2).
3. Light fixtures shall efficiently direct light to the desired area of the roadway, sidewalk, and/or pathway, avoiding excessive glare, the shedding of light onto adjacent private properties, and sky glow.
4. The preferred height of pedestrian-scale light fixtures is between 12 and 15 feet (to light source).
5. The use of light fixtures with light sources at heights of 20 feet or more shall be limited to locations where the required lighting levels cannot be met by solely using pedestrian-scale fixtures. The use of "cobra head" fixtures is not acceptable.
6. Fixtures may be staggered or placed symmetrically on both sides of the street depending on lighting and uniformity requirements.
7. Light fixtures shall be spaced with as consistent a rhythm as feasible.
8. Light fixture and tree spacing shall be closely coordinated to prevent tree canopies from blocking the light emitted by the fixture.
9. Light fixtures along Coastal Drive shall be restricted to the eastern side of the street and shall minimize light intrusion onto the Coastal Trail property.
10. Light fixtures along Coastal Drive shall be coordinated in style and color with other streetscape design elements used along the entire length of Coastal Drive.
11. In the Northern District, light fixtures shall be placed near boardwalk, bermed, or paved crossings across swales
12. Light fixtures along the Northern District greenway shall be coordinated in style and color with other design elements along the entire length of the greenway.
13. In mixed-use and commercial environments that include restaurants, theaters, or other uses frequented during evening hours, appropriate lighting shall be designed to enhance the access to and experience of activities into the night.

14. *The City of Fort Bragg’s standard, decorative downtown pedestrian-scale light fixture shall be used throughout the Central District.*
15. *On Redwood Avenue, banner arms and banners shall be attached to light poles to further identify this street as a commercial street integral to Fort Bragg’s downtown.*
16. *The location and spacing of light fixtures shall be coordinated with those of low impact development (LID) features, street trees, and street furniture along Redwood Avenue to properly accommodate the higher pedestrian volumes and circulation needs expected on this street.*

3.4 Stormwater Management

The vision for sustainable development of the Plan Area considers water, including stormwater runoff, an important natural resource of the site. This section calls for an approach to the management of stormwater runoff in the Plan Area that uses “green infrastructure” and low impact development (LID)⁴ strategies. These strategies meet the legal requirements for flow control and pollution prevention relevant to stormwater runoff from public rights-of-way.

The prime objective of LID is to reduce and treat stormwater close to its source. Traditional urban stormwater management systems are designed for fast and concentrated evacuation of stormwater, while LID-based systems reuse, slow, spread, and infiltrate stormwater to minimize the quantity of runoff and improve stormwater quality. When LID systems use natural processes and native plants, they are called “green infrastructure.” Green infrastructure features, such as swales, stormwater planters, permeable paving, mulched landscape areas, and retention and infiltration ponds, are used to detain, convey, infiltrate, and treat stormwater (see Table 3-5). They also generally reduce the amount of impervious surfaces in the public right-of-way.

The green infrastructure approach to stormwater management in the Plan Area is sustainable, meets applicable stormwater regulations, and creates a site design element that ecologically and aesthetically connects the future developed and undeveloped portions of the Plan Area. Green infrastructure (or other LID) features will be systematically integrated

⁴ Low impact development (LID) is a landscape-based approach to on-site stormwater management that emphasizes the use of best management practices (BMPs) integrated into a building, site, or street to treat stormwater and detain stormwater runoff. BMPs are strategies or structural devices used to reduce volume, peak flows, and/or pollutant concentrations of stormwater runoff through one or more of the following processes: evapotranspiration, infiltration, detention, filtration, and biological and chemical actions. In addition to minimizing specific negative environmental effects of the built environment, the LID approach is focused on how BMPs can create more aesthetically pleasing stormwater management solutions that contribute to placemaking.

into the design of public streets, sidewalks, parking areas, and plazas in the Plan Area’s developed area.

TABLE 3-5 FUNCTIONS OF LOW IMPACT DEVELOPMENT (LID) STORMWATER FACILITIES

	Detention	Retention	Infiltration	Conveyance	Water Quality
Permeable Paving	X	X	X		X
Stormwater Planters	X	X	X		X
Swales	X		X	X	X
Rain Gardens	X	X	X		X
Subsurface Trenches	X	X	X	X	X

3.4.1 STORMWATER MANAGEMENT

This section of the Specific Plan discusses green infrastructure strategies for application within public rights-of-way in the Plan. Please note that stormwater management requirements for development outside of the public right of way is regulated by the CLUDC. These strategies, which include the use of permeable paving materials coupled with landscaped detention and conveyance systems, are aimed at reducing the peak flow of stormwater runoff from public rights-of-way and treating the runoff for pollutants. In addition, LID features contribute to a more verdant and attractive urban environment that will complement Fort Bragg’s unique natural setting and create a comfortable and visually attractive pedestrian environment.

The final size, location, and number of stormwater detention, conveyance, and infiltration areas and elements will need to be designed to ensure both that water is retained and treated and that sufficient flood control measures are in place to handle even large storm events with no crossover from the storm sewers to the sanitary sewer system.

The following policies apply to the treatment of stormwater runoff from public rights-of-way and all associated best management practices (BMPs) and build upon Coastal LUDC Chapter 17.64, Stormwater Runoff Pollution Control (which regulate stormwater management associated with private development within the Coastal Zone and on the Mill Site.

Stormwater Management Policies:

Policy MM-69. Stormwater as a Resource. *Stormwater shall be treated as a resource of the Plan Area that is reused, infiltrated into the groundwater, and integrated into natural hydrological flows, where feasible.*

Policy MM-70. Low Impact Development: A Low Impact Development (LID) approach to stormwater management that integrates landscape and natural processes into aesthetically pleasing stormwater solutions shall be incorporated into all designs.

Policy MM-71. Runoff into Public Rights-of-Way. Runoff into the public rights-of-way shall be minimized to the degree feasible and treated via bio-retention to remove pollutants to the maximum extent practicable.

Policy MM-72. Stormwater Connections to Coastal Trail and Mill Pond Complex. Plans for all Plan Area stormwater systems that connect to stormwater conveyance systems on the Fort Bragg Coastal Trail property and/or the Mill Pond Complex area shall analyze and address through system design any cumulative downstream impacts on the trail and Mill Pond Complex facilities to ensure that the trail, parkland, ponds, and wetland functions are not degraded or damaged.

Policy MM-73. Low Impact Development (LID) in Streetscape. LID features shall be integrated with the streetscape to allow roadway or sidewalk runoff to collect and infiltrate via bio-retention.

Policy MM-74. Low Impact Development (LID) in Landscaping Design. LID features shall integrate attractive landscaping design that provides both a functional and aesthetic amenity with minimal maintenance requirements.

Policy MM-75. Use of Native and Adapted Landscaping in Low Impact Development (LID). Native and suitable adapted landscaping shall be used to the maximum extent practicable in LID features.

Policy MM-76. Educational Signage in Stormwater Management Features. Educational signage about climate, natural water and stormwater patterns, native landscaping, and other applicable topics shall be integrated into stormwater management features in public locations where appropriate.

Policy MM-77. Swales. Swales to convey



Swales are linear depressions adjacent to the streetscape that can detain and convey stormwater along their length.



Rain gardens are landscaped planters that are more extensive than storm water planters and typically are designed to infiltrate storm water. They can be located in or adjacent to the street.

stormwater shall be provided where practical. Where infiltration is possible, swales shall be designed with a subsurface infiltration trench to allow infiltration. Along streets with driveway and on-street parking, swales shall include crossings for pedestrian access to parking and vehicular crossings for proper driveway access.

Policy MM-78. Rain Gardens. Rain gardens shall be installed in curb extensions as discussed in Sections 3.3.2 and 3.4.2 , street-adjacent open spaces, and other places where educational opportunities and adequate space exist. Rain gardens shall be designed to maximize stormwater infiltration as permitted by local soil conditions.



Stormwater planters allow roadway runoff to flow into and out of adjacent landscaping, where the stormwater is detained and treated.

Policy MM-79. Permeable Paving. Permeable paving materials, such as permeable asphalts and concretes, decomposed granite surfaces, and unit paver systems, are preferred over asphalt and concrete where technically feasible. Permeable paving shall be used in parking lanes, paths, alleys, and paving surfaces in plazas, where feasible. All permeable paving surfaces shall be Americans with Disabilities Act (ADA)-accessible.

Policy MM-80. Tree Wells and Streetscape Planters. Tree wells and streetscape planters shall include roadway curb cuts and planter curb cuts to allow roadway or sidewalk runoff to collect in them and infiltrate.

Policy MM-81. Streetscape Landscape Features as Temporary Reservoirs. The soil and subsurface composition of streetscape landscaping shall allow landscape features to serve as temporary reservoirs, where water is treated and detained for later slow release or infiltration.

Policy MM-82. Subsurface Trenches. Subsurface trenches shall only be installed in locations where infiltration is advisable. A perforated pipe or other outlet leading to a detention pond or other facility that has the capacity to accommodate overflow in case of major storm events shall be included in all subsurface trenches. Where trenches are located under hardscape surfaces, permeable paving shall be used if possible.

Policy MM-83. Engineered Soil Matrix. Engineered soil matrix of sand, compost and mulch shall required for bio-retention facilities as determined by the City Engineer.

The applicability of each policy to specific street types is detailed in Table 3-6. The street sections and plans presented earlier in this chapter (Figures 3-2 through 3-6) illustrate examples of how LID features listed in Table 3-6 can be integrated into future Plan Area streets.

3.4.2 SITE-WIDE AND DISTRICT STRATEGY

Stormwater that falls on public rights-of-way—as opposed to private property—will be managed in each district based on local environmental, land use, and site design considerations. Due to limited infiltration potential resulting from a high groundwater table in much of the Plan Area, stormwater will need to be detained temporarily to reduce peak flows and allow sediment settlement and initial pollutant removal through bio-filtration before it is conveyed to subsequent facilities. Where possible, BMPs should be designed to allow infiltration. The majority of stormwater from the public right-of-way will ultimately join with stormwater from development in detention ponds and infiltration areas for gradual infiltration to groundwater, discharge into the ocean via culverts, or evaporation.

TABLE 3-6 POTENTIAL APPLICABILITY OF STORMWATER STRATEGIES TO SPECIFIC STREET TYPES

Street Type	Permeable Paving	Stormwater Planters	Swales	Rain Gardens	Subsurface Trenches
Coastal Drive Segment A to B	In parking lane and/or sidewalk.	Not applicable.	Adjacent to street on ocean side or both sides.	In curb extensions and adjacent to parking bays on ocean side.	Installed under other measures as necessary to provide reservoir volume for treatment, infiltration, detention, and conveyance.
Coastal Drive Segment B to C Segment C to D	In parking lane and/or sidewalk.	Where adjacent land uses front directly onto street.	Adjacent to street on ocean side or both sides.	In curb extensions and adjacent to parking bays on ocean side.	Installed under other measures as necessary to provide reservoir volume for treatment, infiltration, detention, and conveyance.
Parkway Street Segment AA to BB	In parking lane and/or sidewalk.	Not applicable.	Between parking and sidewalk.	In curb extensions.	Installed under other measures as necessary to provide reservoir volume for treatment, infiltration, detention, and conveyance.
Parkway Street Segment BB to CC	In parking lane and/or sidewalk.	Within sidewalk or curb extensions.	Not applicable.	In curb extensions.	Installed under other measures as necessary to provide reservoir volume for treatment, infiltration, detention, and conveyance.
Parkway Street Segment CC to DD	In parking lane and/or sidewalk.	Within sidewalk or curb extensions.	Between parking and sidewalk (<u>along open space only</u>).	In curb extensions.	Installed under other measures as necessary to provide reservoir volume for treatment, infiltration, detention, and conveyance.
Mixed-Use Streets (East-West Streets) Redwood Avenue	In parking lane and/or sidewalk.	Within sidewalk or curb extensions.	Not applicable.	In curb extensions.	Installed under other measures as necessary to provide reservoir volume for treatment, infiltration, detention, and conveyance.
Residential Streets – Northern District (East-West and North-South Streets)	In parking lane and/or sidewalk.	Within sidewalk or curb extensions.	Between parking and sidewalk.	In curb extensions.	Installed under other measures as necessary to provide reservoir volume for treatment, infiltration, detention, and conveyance.

TABLE 3-6 POTENTIAL APPLICABILITY OF STORMWATER STRATEGIES TO SPECIFIC STREET TYPES

Street Type	Permeable Paving	Stormwater Planters	Swales	Rain Gardens	Subsurface Trenches
Southern District Streets	Not applicable.	Within sidewalk or curb extensions.	Between parking and sidewalk.	In curb extensions.	Installed under other measures as necessary to provide reservoir volume for treatment, infiltration, detention, and conveyance.
Alleys – All Districts	Full alley treatment; in a strip down center of alley, with alley crowned to drain to center; or in strips down edges with street crowned to drain to edges.	Not applicable.	Not applicable.	Not applicable.	Installed under other measures as necessary to provide reservoir volume for treatment, infiltration, detention, and conveyance.

It is the responsibility of future Plan Area developers and their engineers to determine the specific LID components, details, and capacities involved in implementing the stormwater management approach required by the Specific Plan. Figure 3-8 illustrates the use of recommended LID features in future public rights-of-way. Further hydrological analysis, required as part of each infrastructure phasing study (see Chapter 8), will be required to determine the feasibility of these strategies. The general strategy for each district is as follows:

- **Northern District.** Stormwater collected in swales and stormwater planters will be detained and gradually conveyed to east-west-running residential streets in this district. Swales or wide stormwater planters on these streets will establish a gradual, westward flow of the collected stormwater. Conveyance of the collected stormwater through rain gardens and temporary detention in ponds or subsurface detention and infiltration facilities will allow for ongoing bio-filtration of pollutants and allow portions of the stormwater to gradually seep toward the groundwater, evaporate back into the atmosphere, or be collected in a proposed storm drain system after appropriate contact with bio-filtration methods described in the Specific Plan.
- **Central District.** Stormwater will be collected in stormwater planters and conveyance structures, such as structural soils beneath permeable pavers and conventional storm drain systems. Together, these conveyance facilities will allow stormwater to travel gradually toward the lowland wetland, where it will collect and gradually discharge into the ocean. As described for the Northern District above, the employed BMPs will allow stormwater to infiltrate into the groundwater, evaporate back into the atmosphere, or be collected in a proposed storm drain system after appropriate contact with bio-filtration methods described in the Specific Plan.
- **Southern District.** Stormwater will collect in swales and stormwater planters and be conveyed into detention ponds for temporary detention and bio-filtration, reducing both peak volume and pollutant loads. The collected stormwater will be retained, infiltrated, and discharged in a manner consistent with the strategies described above, depending on which district the street traverses.

The site-wide stormwater management plan is in the Master Utility Plan for the site.

Per Article 17.64.020, Stormwater Runoff Water Quality and Discharge Management, of the Coastal LUDC, any number of BMPs may be selected from the California Stormwater Quality Association (CASQA) Stormwater BMP Manual.

FIGURE 3-8 LOW IMPACT DEVELOPMENT IN PUBLIC RIGHTS-OF-WAY



LEGEND / NOTES

- | | | | | | |
|--|---|--|---|--|--------------------------|
| | Curbless streets with landscaped swales; Parking lane includes permeable paving and rain gardens (Coastal Drive and portions of Parkway). ¹ | | Curbed mixed-use streets with curbed, stormwater planters or connected flow-through tree wells. | | MSSP Study Area Boundary |
| | Residential Streets curbed or curb-less with landscaped swales or wide landscaped stormwater planters. Parking lane includes permeable paving/rain gardens in parking lane. | | Alleys with permeable paving | | Section Locations |
| | Curbed residential streets with landscaped stormwater planters. | | Greenway (not a street) with a large central swale, rain gardens, and walkways on either side | | |

Note: Location of park and roads shown on this graphic are conceptual, and included here for illustrative purposes only.

¹Where development fronts directly onto the Coastal Drive or the Parkway in the Southern District, curbs may be introduced and swales be substituted with landscaped flow-through planters of different designs.

