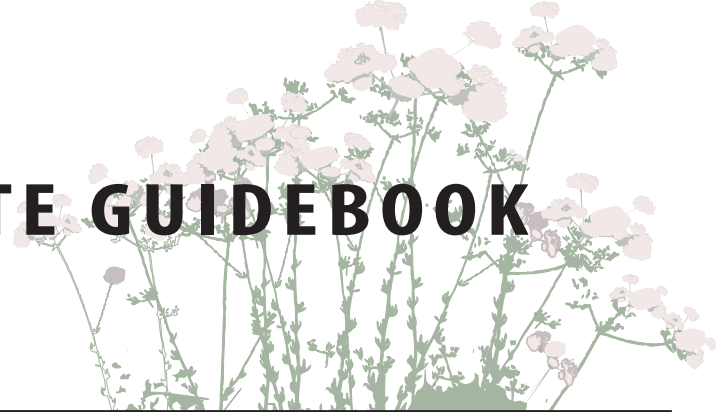




LOW IMPACT DEVELOPMENT INITIATIVE

PLANT PALETTE GUIDEBOOK



INTRODUCTION:

This document provides some ideas for bioretention planting palettes for Residential Neighborhood, Urban Commercial, and Rural Roadside areas. Bioretention systems are low impact development (LID) features that use a combination of soil, plants, and other design elements to slow, treat, retain, and infiltrate stormwater runoff to mimic the natural, pre-development hydrology of a site. While bioretention systems may look like regular landscaped areas, they are designed (engineered) to manage stormwater runoff volumes and pollutants created by urbanization.

BIORETENTION PLANTING PALETTES IN THIS GUIDEBOOK:



RESIDENTIAL NEIGHBORHOOD

- RES 1: BASIC DESIGN
- RES 2: SHOWY DESIGN
- RES 3: SPECIALTY DESIGN



URBAN COMMERCIAL

- UC 1: BASIC DESIGN
- UC 2: SHOWY DESIGN
- UC 3: PLANTER BOX DESIGN



RURAL ROADSIDE

- RR 1: BASIC DESIGN



FACILITY TYPE:

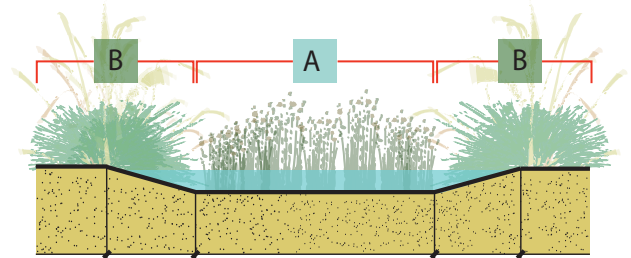
There are two bioretention design types, slope-sided and planter box style, which differ in their plant selection approach based on whether the plants will be located within or outside the ponding area.

Planting Zones

A can tolerate ponding **B** conventional landscape

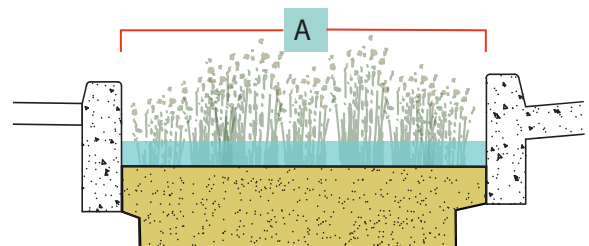
Sloped-Sided

This facility type has a lower area that ponds and conventional landscape on the side-slopes. Only plants in the functional, ponding area (Zone A) must be tolerant of periodic inundation.



Planter Box

This design type has a flat surface with consistent depth of ponding across the structure. The entire area functions for stormwater management and all plants in this facility must be tolerant of periodic inundation (Zone A).



PLANT SELECTION FOR BIORETENTION:

Specifying the appropriate plants for a bioretention system is critical to its performance and community acceptance. The planting palettes provided use a wide variety of drought tolerant and native plants to support water conservation, provide wildlife habitat, and for their ability to survive in local climate conditions. Whether located in the A or B Zone, plants chosen for bioretention facilities should meet the following criteria:

- Tolerant of varied moisture conditions (wet and dry)
- Tolerant of sandy soils and growing conditions
- Low maintenance requirements
- Low water needs
- Non - invasive weeds
- Do not have aggressive/invasive root systems
- Plant heights do not exceed 3' for visibility purposes
- Exhibit an attractive appearance
- Consider native plant species.

One common misconception is that all plants in the bioretention area must be “bioretention specific” and able to tolerate periodic stormwater ponding. While this is true for Zone A, commonly the upper edge area plants can be selected from a wider range of conventional plant choices suited to the climate, irrigation requirements, and desired aesthetic. Those creating bioretention plant lists should take care to differentiate between the A and B Zone plants to avoid plants being installed in the wrong area of the bioretention facility. Similarly, bioretention plant lists can focus only on Zone A plants and leave flexibility to the designer for Zone B.



PLANT ESTABLISHMENT AND CARE:

Like traditional landscapes, bioretention planting areas require care and ongoing maintenance for optimal health. Due to their functional nature as stormwater management facilities the following guidelines should be followed:

Irrigation is typically needed for two to three years following installation. After that period, native plants will need little to no supplemental irrigation to survive, however they may enter a dormant stage and appear dried up until rejuvenated by rains or supplemental irrigation.

Compost Mulch (1" - 2") may be reapplied to bioretention areas annually, or as the mulch layer breaks down. Use compost mulch (the same compost used in the bioretention soil mix) and avoid bark mulches that can float during storm events. Do not apply mulch just prior to the rainy season.

Fertilizer should not be used in bioretention areas. Instead, a compost top dressing or application of compost tea can be used to introduce nutrients and beneficial microorganisms to the soil.

Synthetic herbicides and pesticides should not be used in bioretention areas because of their potential toxicity risk to aquatic organisms. There are a variety of natural methods and products that can be used to control weeds and pests.

Weeds compete with plants for nutrients, water, and sunlight. They should be regularly removed, with their roots, by hand pulling or with manual pincer-type weeding tools. Care should be given to avoid unnecessary compaction of soils while weeding.

Replace plants that die due to unsuitable plant conditions, disease, underwatering, or other unforeseen issues. Dead and dying plants must be removed and replaced to avoid spreading disease, establishment of weeds in bare areas, and reduced LID function. Before replacing with the same species, determine if another species may be better suited to the conditions.



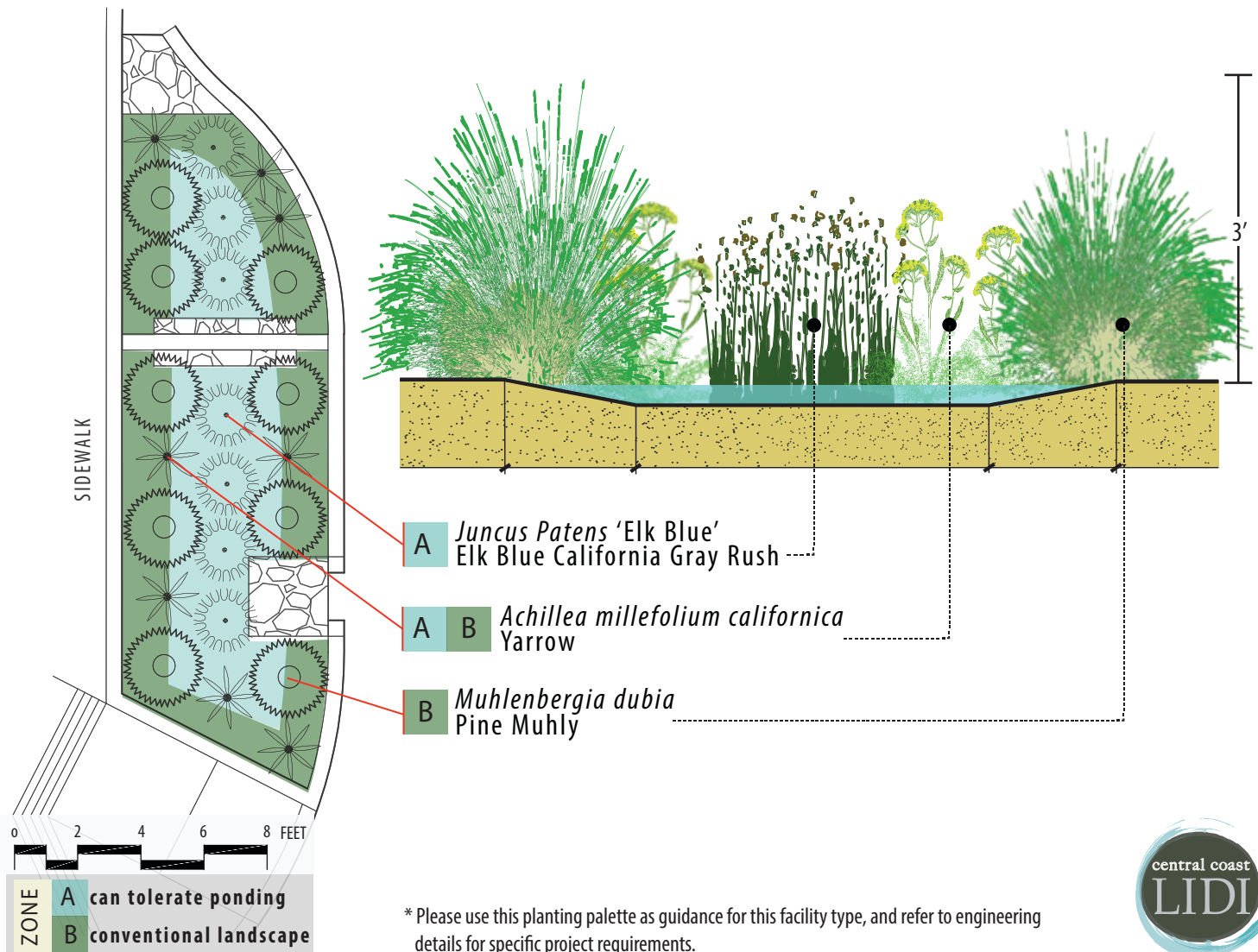
RESIDENTIAL NEIGHBORHOOD Bioretention Planting Palette

Bioretention facilities located in the residential street right-of-way function to capture, treat, and infiltrate stormwater runoff from the surrounding impervious surfaces such as rooftops, driveways, and streets. Examples of applications include curb-bulb extensions and street edge planting strips. In addition to the environmental function, these facilities can provide an aesthetic amenity for the neighborhood. Bioretention plants can be selected to blend in with the existing neighborhood aesthetic and provide seasonal interest in foliage color and flowers. However, bioretention facilities located in residential areas tend to receive only minimal maintenance, and the landscape designer needs to take this factor into consideration when selecting the bioretention plant palette.

RES 1: BASIC DESIGN

- This simple, low maintenance design makes use of California native plants. Plants are chosen for functionality and some color variation. The palette can be further simplified by choosing only one Zone A and one Zone B plant.
- Plants will survive on rainwater after established. Plant species are adapted to periods of prolonged drought, but supplemental watering will improve survival and appearance.
- This design assumes a low maintenance approach such as annual shearing or mowing all plants to the ground in late spring.

FACILITY TYPE: sloped sided





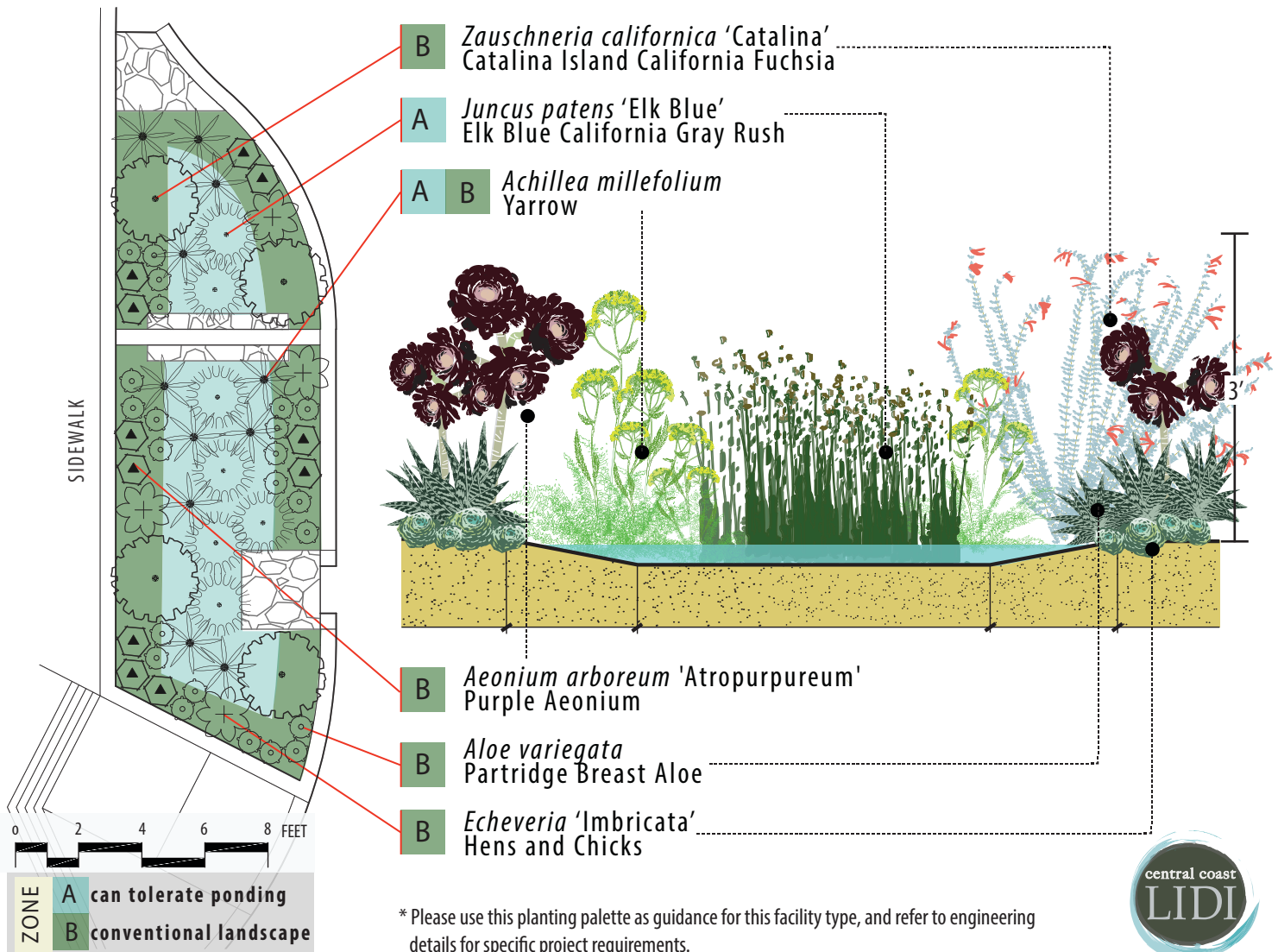
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Bioretention facilities located in the residential street right-of-way function to capture, treat, and infiltrate stormwater runoff from the surrounding impervious surfaces such as rooftops, driveways, and streets. Examples of applications include curb-bulb extensions and street edge planting strips. In addition to the environmental function, these facilities can provide an aesthetic amenity for the neighborhood. Bioretention plants can be selected to blend in with the existing neighborhood aesthetic and provide seasonal interest in foliage color and flowers. However, bioretention facilities located in residential areas tend to receive only minimal maintenance, and the landscape designer needs to take this factor into consideration when selecting the bioretention plant palette.

RES 3: SPECIALIZED DESIGN

- While selection is somewhat limited for the ponding zone, the landscape designer can be more creative in the B Zone that surrounds the A Zone plantings. This Specialized Design uses succulents and drought tolerant native species that are reminiscent of the California Mediterranean climate and can be used to fit the character of community landscapes in arid regions. If considering a similar palette, consider additional cost and the slow growth associated with succulents.
- This palette's use of succulents minimizes maintenance and water requirements. Plant succulents on upper edges above the ponding level.
- Watering required once every 4 weeks during summer months.
- Maintenance requirements such as annual cutback of succulent flower heads, and shearing of *Zauschneria*.

FACILITY TYPE: sloped sided





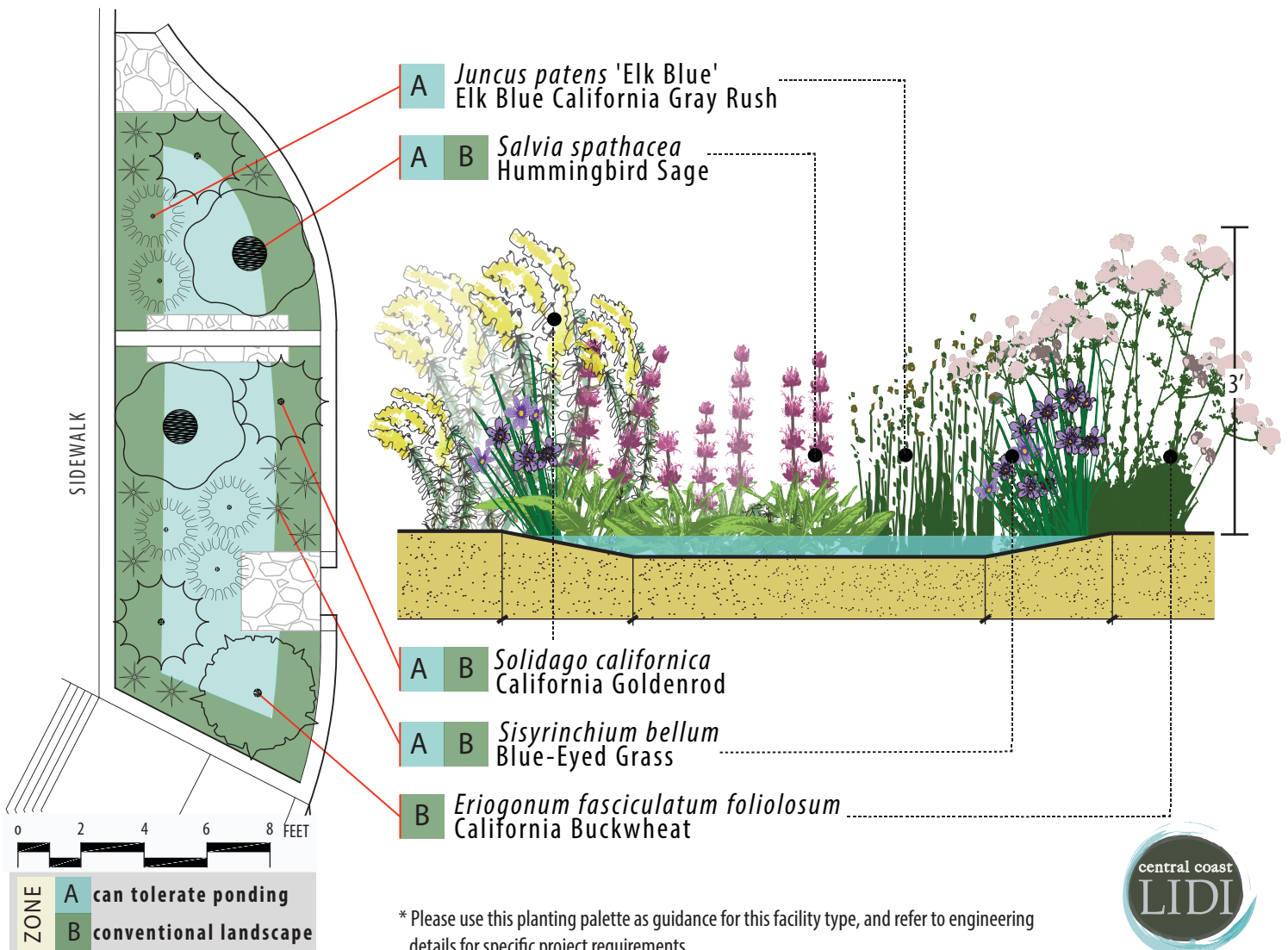
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RES 2: SHOWY DESIGN

- This showy palette requires more care than the Basic Design; and includes more plant diversity with seasonal flowering, which attracts beneficial pollinators.
- Watering required every 3 to 4 weeks during summer months.
- Maintenance such as seasonal pruning of perennials is required to remove dead flower stalks, and shearing of grasses to encourage healthy new growth.

FACILITY TYPE: sloped sided



* Please use this planting palette as guidance for this facility type, and refer to engineering details for specific project requirements.





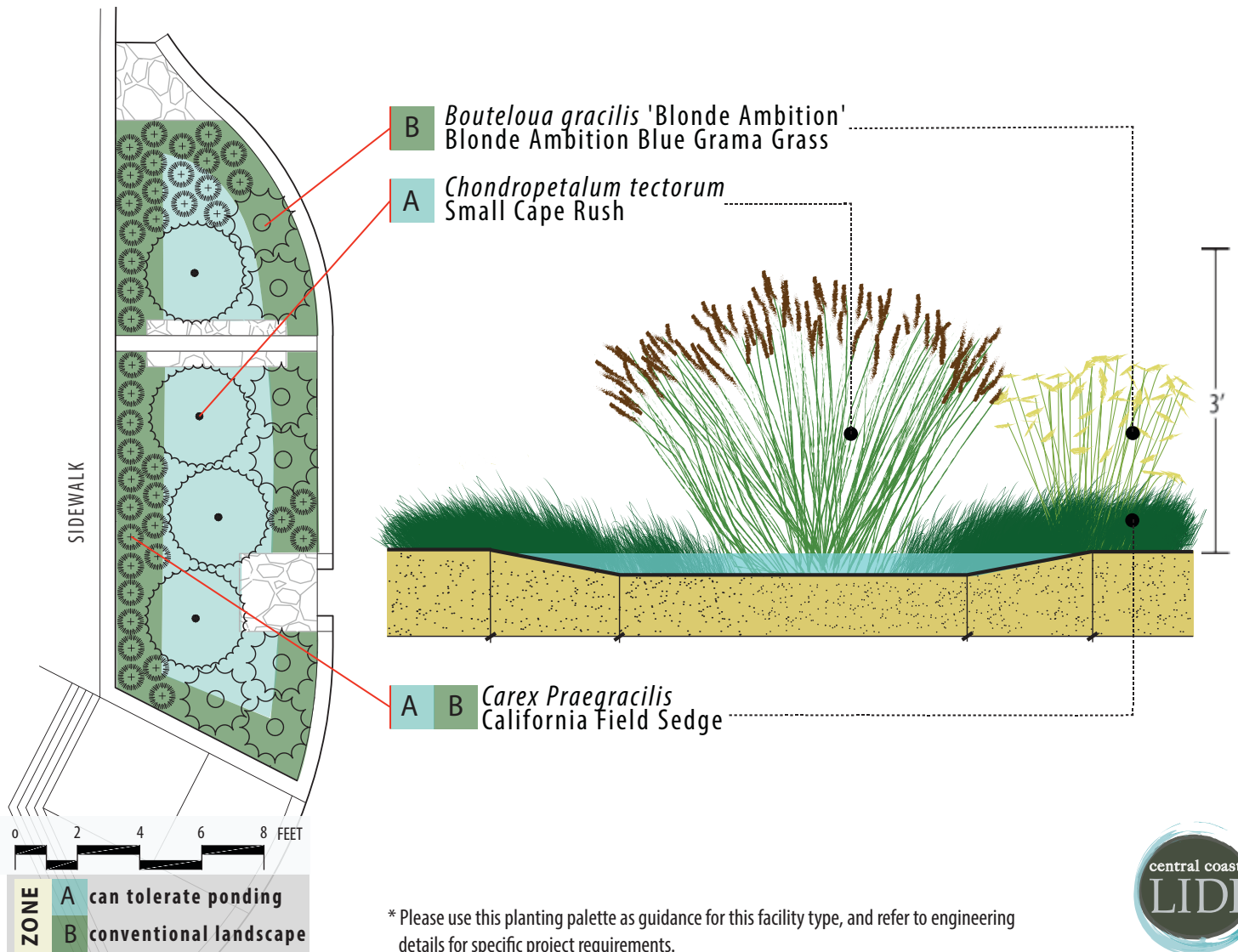
URBAN COMMERCIAL Bioretention Planting Palette

Landscaping in urban commercial areas can vary from a minimalist planting approach that provides a structured, “clean” look to designs that include a great deal of diversity in the type, color and overall “showiness” of the palette. Generally, there are more plant palette options available to the bioretention landscape designer in urban commercial areas because these landscapes will likely receive on-going maintenance such as pruning, mulching, plant replacement, and even some low-level irrigation. Plants chosen for Urban Commercial palettes function to filter and slow runoff from urban streets, parking lots and buildings. Additionally, they provide an attractive landscape amenity for a business district or shopping center. Examples of applications include street edge planters and parking lot bulbs.

UC 1: BASIC DESIGN

- This palette is designed to include a selection of plants that add interesting forms and textures, while keeping to a basic, non-flowering planting design. This palette can be further simplified by choosing only one Zone A and one Zone B plant.
- Watering required every 1 to 2 weeks during summer months, and during prolonged winter drought.
- Minimal maintenance required. Annual pruning required to maintain plant vigor and appearance.

FACILITY TYPE: sloped sided



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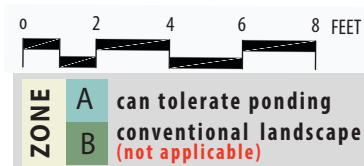
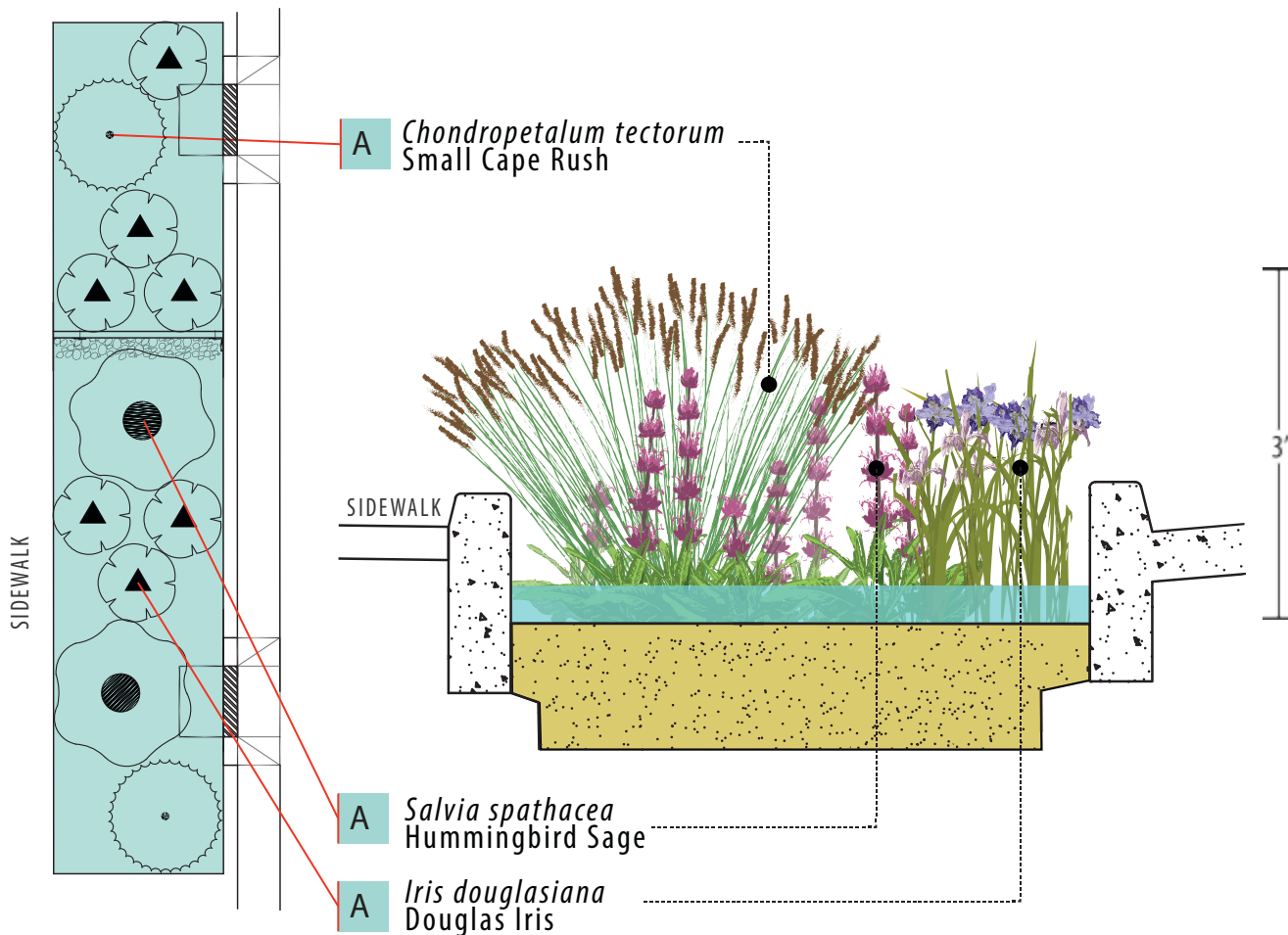
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UC 3: PLANTER BOX DESIGN

- This facility type, which allows stormwater ponding across the entire surface, requires all plants to be Zone A plants. For a Showy Design, multiple Zone A plants can be chosen (as shown), or a Basic Design can be accomplished with only one plant.
- Watering required every 2 to 3 weeks during summer months, and during prolonged winter drought.
- No maintenance required. Optional pruning of dead flower stocks and browning leaves.

FACILITY TYPE: planter box



* Please use this planting palette as guidance for this facility type, and refer to engineering details for specific project requirements.





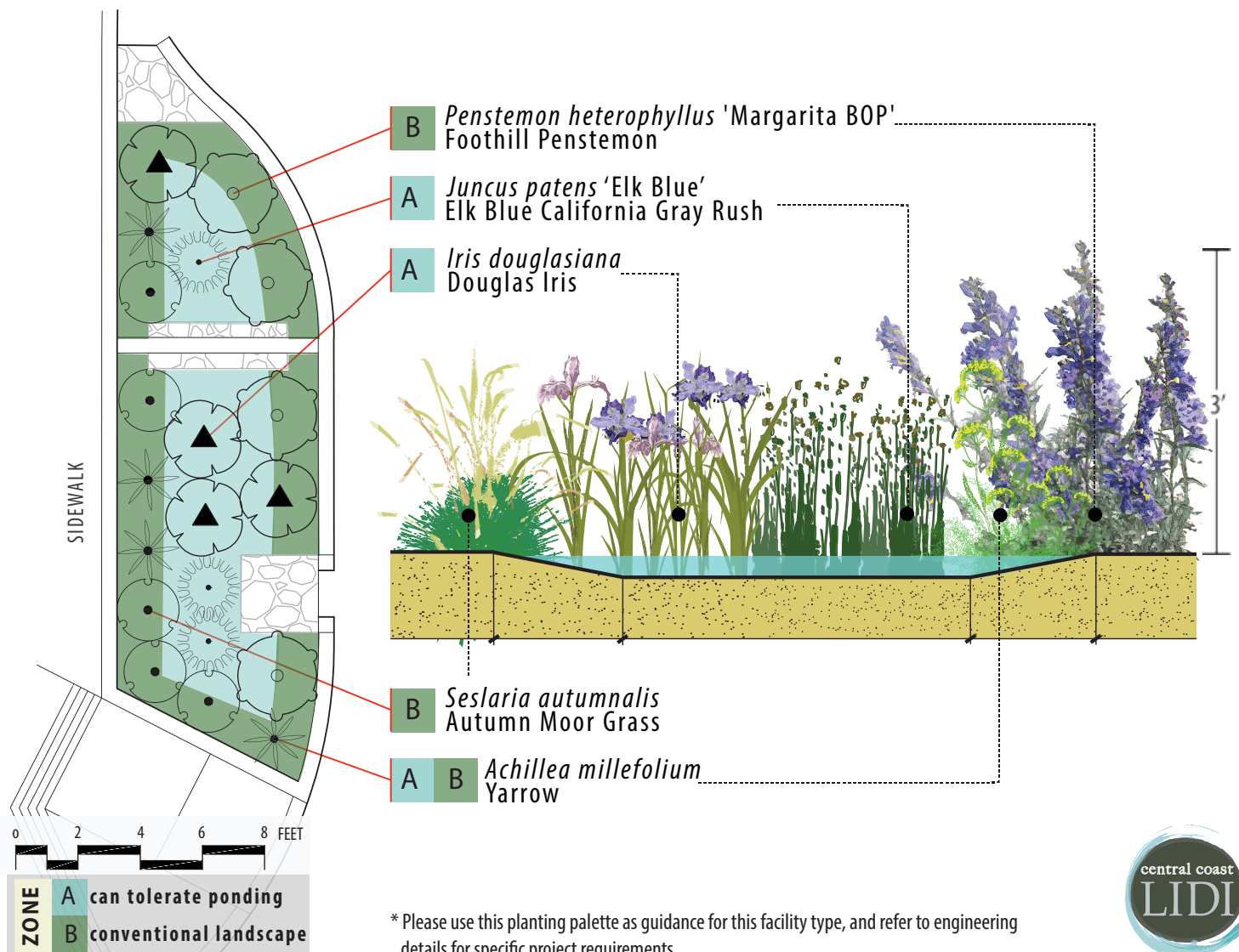
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UC 2: SHOWY DESIGN

- This selection of flowering plants will provide year round color and interest for a more showy design, without adding excessive water requirements and maintenance needs.
- Watering required every 3 to 4 weeks during summer months, and during prolonged winter drought.
- Some maintenance required, such as removal of brown leaves and dead flower heads as needed.

FACILITY TYPE: sloped sided





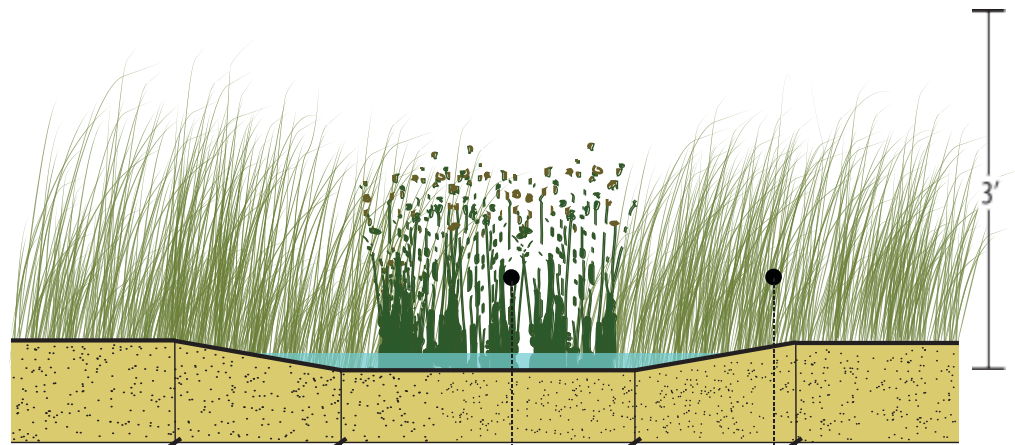
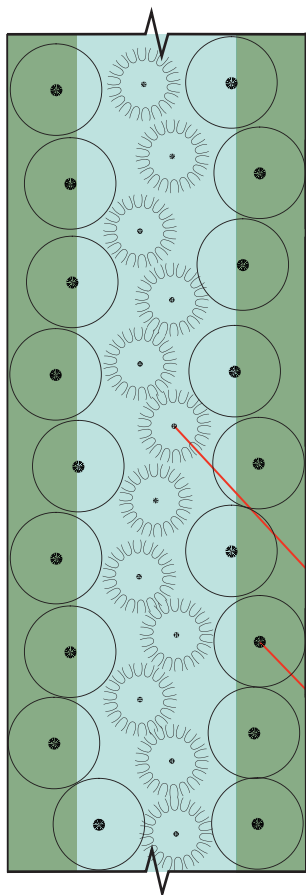
RURAL ROADSIDE Bioretention Planting Palette

Plants chosen for Rural Roadside Bioretention facilities function to slow runoff and reduce sediment and pollution from entering waterways from roadsides, agricultural lands, or recreational areas. Bioretention designs in Rural Roadside areas tend to receive little to no maintenance with the exception of mowing and clearing once or twice a year. As with other street-edge designs, plants chosen for this location need to allow adequate vehicular, cyclist and pedestrian visibility.

RR 1: BASIC DESIGN

- Use of all California native plants, and is a simple low input design. Alternate species can be substituted that fit within the sites specific native habitat and meet bioretention plant species requirements.
- Summer drought tolerant – little to no irrigation after plants are established.
- Low maintenance requirements – optional annual shearing, or mowing all plants to the ground, and removal of invasive plants is sufficient for satisfactory performance.

FACILITY TYPE: sloped sided



- A *Juncus Patens* 'Elk Blue'
Elk Blue California Rush
- A B *Leymus triticoides* 'Gray Dawn'
Gray Dawn Creeping Rye

0 2 4 6 8 FEET

ZONE	A	can tolerate ponding
	B	conventional landscape

* Please use this planting palette as guidance for this facility type, and refer to engineering details for specific project requirements.

