



Downtown Corridors Plan



October 2016

Downtown Corridors Plan

Table of Contents

1. Existing Conditions

2. Design Guidelines

3. Conceptual Streetscape Design

Appendix A: Urban Forest Guidance

Appendix B: Conceptual Streetscape Plans (large format)





Downtown Corridors Plan Existing Conditions

November 2015

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Downtown Corridors Plan

Existing Conditions

1. Introduction	1
2. Existing Conditions	
2.1 General Character	6
2.2 The Streetside	7
2.3 The Traveled Way	15
2.4 Stormwater and Low Impact Development	22
3. Opportunities and Constraints	24





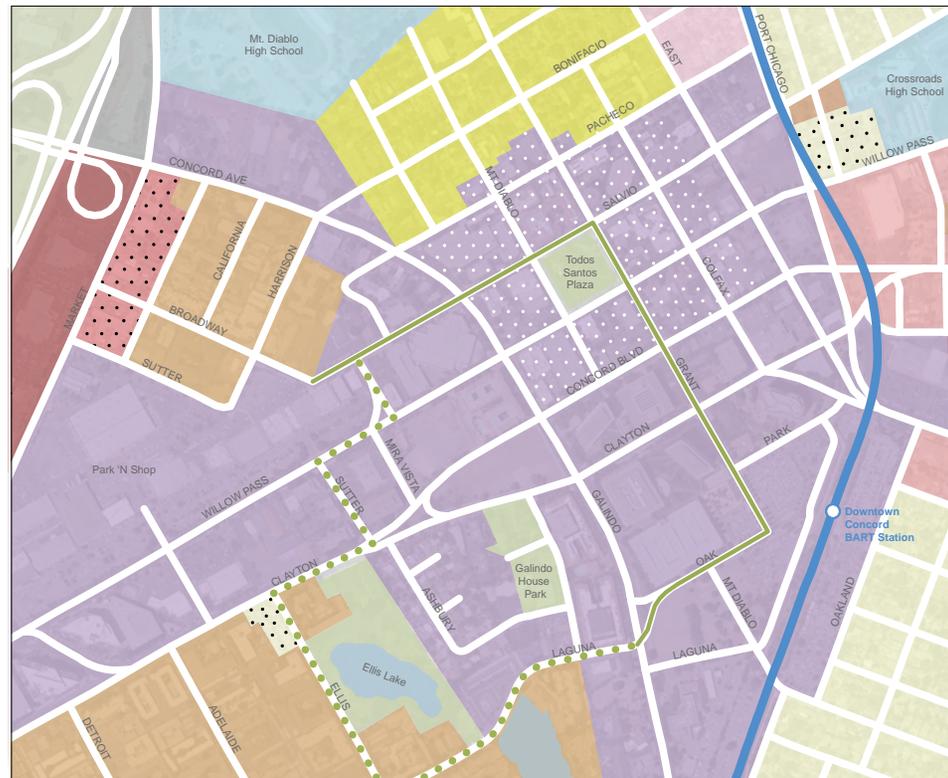
Salvio Pacheco Square provides pedestrian amenities and an active street frontage with outdoor seating.

1 Introduction

The Concord Downtown Corridors plan focuses on revitalizing Concord's downtown area by enhancing three critical corridors that connect residents and visitors to transit, retail, and employment opportunities.

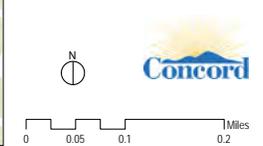
Building on the community's vision as set forth in the Downtown Specific Plan (adopted in 2014), this study focuses on enhancing the pedestrian environment in the downtown area. The three study corridors form the eastern half of the 'green frame' conceptualized in the Specific Plan: Oak Street, Grant Street from Oak Street to Salvio Street, and Salvio Street from Grant Street to Broadway. This plan will produce design guidelines and conceptual designs for the public right-of-way along the three study corridors based on the direction started in the Downtown Specific Plan.

The focus of this plan is similar to the Downtown Specific Plan, on a smaller scale. Concord has long planned for a more urban, mixed use environment around the BART station and Todos Santos Plaza. The mixed use zoning designations that pre-dated the Specific Plan are not sufficient to transform the area, to make it apparent to passengers arriving at the Concord BART station that they are in a downtown, pedestrian-friendly environment and that Todos Santos Plaza is very nearby. With zoning in place to encourage private development, the City's main focus in this study will be redesigning and transforming the public right-of-way, within the City's direct control, to support the kinds of residential, retail, and employment-generating development envisioned for the area.



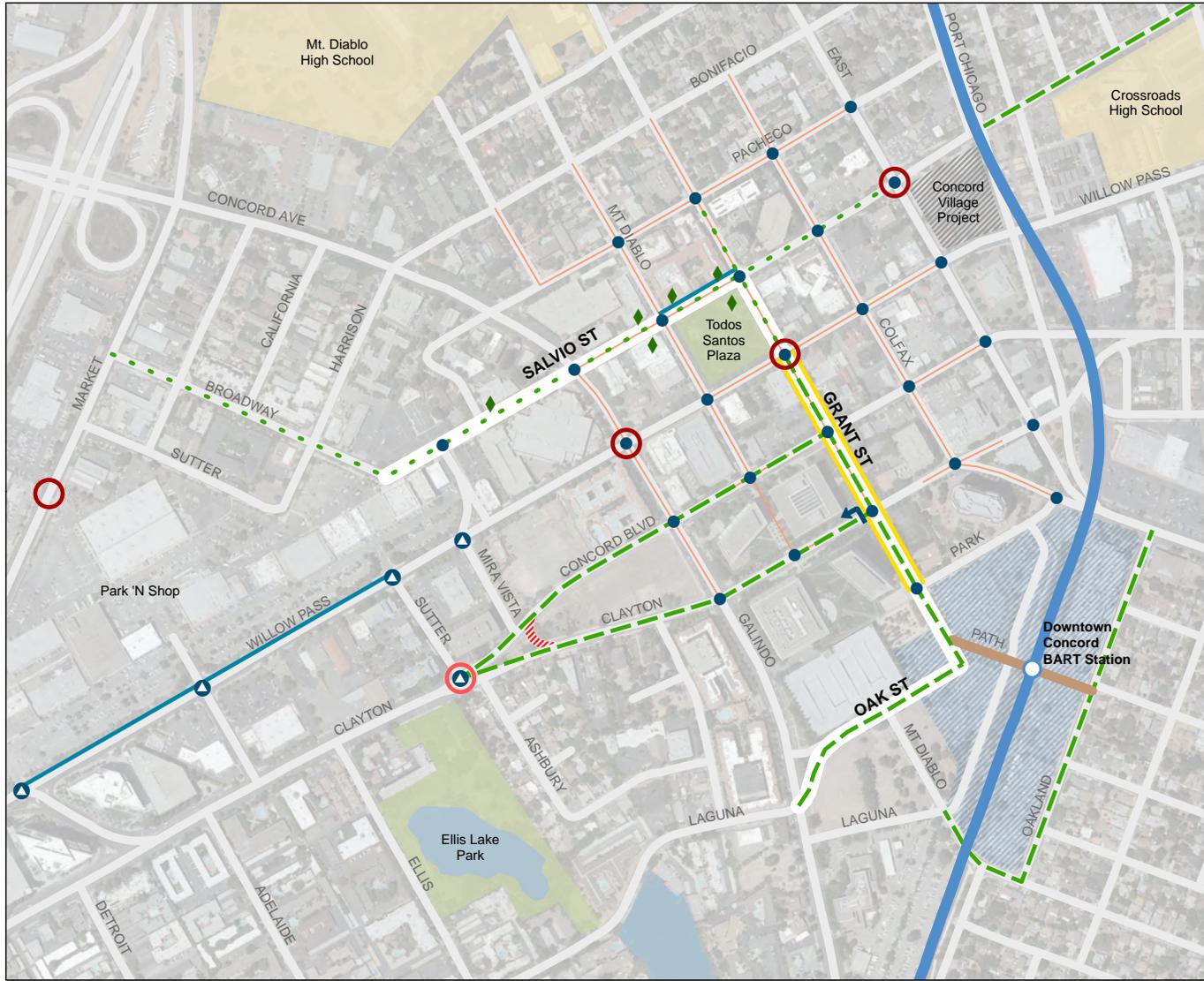
Downtown Corridors Plan Study Corridors

Zoning Designations:		Planned District (PD)	Study corridors
Downtown Mixed Use (DMX)	Single Family Residential	Residential Medium Density (RM)	BART station
Downtown Pedestrian (DP)	Community Office (CO)	Service Commercial (SC)	BART tracks
Residential High Density (RH)	Regional Commercial (RC)	Office Business Park (CBP)	Park
Public/ Quasi-Public (PQP)	North Todos Santos (NTS)		School
Remainder of Green Frame			



The study will reinforce policy from the Downtown Specific Plan, including conceptual designs for Grant Street, as well as the City's General Plan, including Complete Streets policy guidance for

all Downtown Streets (page 4), and zoning. It will also be coordinated with the progress of a number of ongoing projects and regulations (see pages 2 and 3).



Downtown Corridors Plan Ongoing Projects

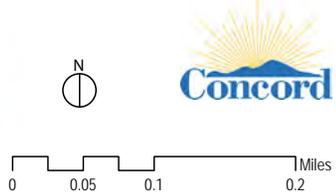
Under Planning/Design

- - - Class III Bike Route (sharrows)
- - - Class II Bike Route (bike lanes)
- Grant/Clayton left turn walk phase
- Sidewalk and landscaping upgrades
- Crosswalk upgrades
- Decorative crosswalk
- Traffic Signal Upgrades
- New Traffic Signal
- Potential Development Project
- Concord/Clayton Couplet Removal

Under Implementation

- BART Pedestrian Path
- BART Plaza Improvements
- Sewer and Streetscape Phase 2
- Tree lighting
- New bike rack

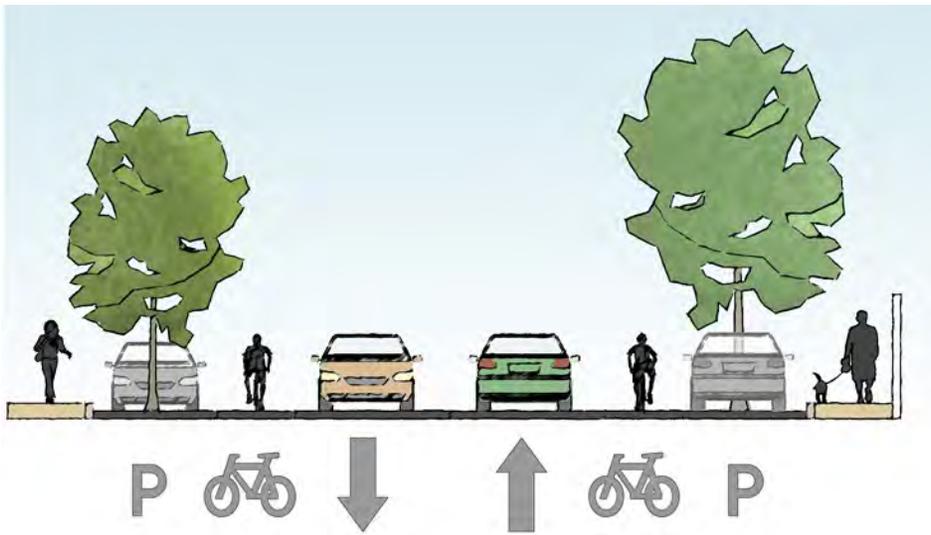
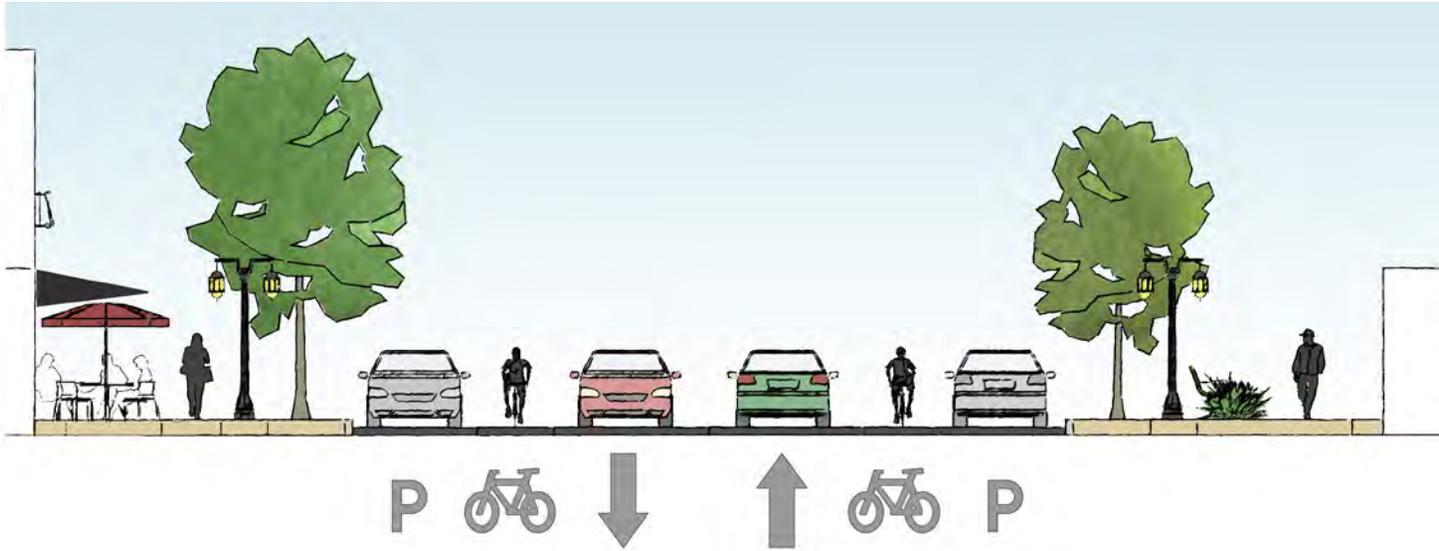
- BART station
- Park
- BART tracks
- School



Downtown Corridors Plan

Ongoing Projects

Project	Description
Central Concord Pedestrian Improvements and Streetscape Project	Rehabilitate crosswalks at 30 intersections (pothole repair, re-staining of colored concrete crosswalks), improve curb ramps on Grant and Salvio Streets, bicycle racks and lanes on Grant Street, striping and sharrows on Salvio Street, update wayfinding at BART plaza, refurbish pedestrian light poles and “twinkle” tree lighting on Grant Street.
Bicycle, Pedestrian, and Safe Routes to Transit Plan	Master plan to improve the city's bicycle and pedestrian networks and infrastructure.
Concord BART Plaza Improvements	Bicycle lanes on Grant and Oak Streets, additional pedestrian lighting along Grant Street, new pedestrian walkway from BART entrance to Grant Street, relocated taxi and Kiss ‘N Ride parking, new wayfinding signage.
Downtown Concord Bicycle Lane Improvements	Bicycle routes and lanes on Clayton Road, Concord Boulevard, Grant Street, Oakland Avenue, and Mt. Diablo Street. Sidewalk construction and widening on Clayton Road and Grant Street (east side between Concord Boulevard and Willow Pass Road).
Downtown Sewer and Streetscape Improvements	Phased replacement and rehabilitation of sewer system, street paving and striping, sidewalk repair on portions of Grant Street, selected curb replacements.
Salvio Street Improvements at Mt. Diablo Street	Remove diagonal parking along north side of Salvio Street east of Mt. Diablo Street, improved sidewalk conditions at intersection.
Salvio Street Bicycle Lanes	Bicycle sharrows on Salvio Street from Port Chicago Highway to Parkside Drive.
Willow Pass Road and Nearby Intersections Traffic Signal Upgrades	Traffic signal upgrades and new signals at a number of downtown intersections; add protected left turn phasing, ADA upgrades on Willow Pass Road.



Downtown Streets configuration options from the General Plan Complete Streets section. All three study corridors are designated as Downtown Streets, with one lane of travel in each direction, bicycle facilities, and pedestrian amenities.



Pedestrian-oriented sidewalks on Salvio Street.

2 Existing Conditions

This section describes the existing conditions along the three study corridors. Beginning with a general description of the corridors, it then discusses both the streetside (the public right-of-way extending from the property line to the curb) and the traveled way (the portion between the curbs, generally for vehicle travel).

2.1 General Character

The Grant, Salvio, and Oak Street corridors serve as important places in Downtown Concord and as multi-modal connectors that link the area to important destinations nearby. Grant and Salvio Streets host and facilitate popular community events and life, and all three corridors serve as a backbone that connects destinations such as Park 'N Shop, Todos Santos Plaza, Downtown Concord BART station, and nearby residential communities. The streets host pedestrian, bicycle, transit, and automobile traffic, and intersect a number of major arterials that move significant traffic volumes through the downtown, including Galindo Street, Concord Boulevard, and Clayton Road.

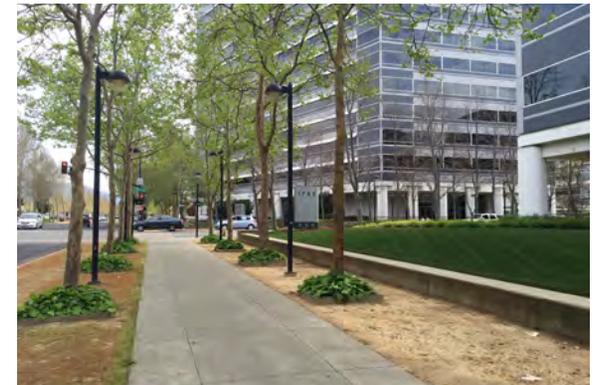
The study corridors generally include sidewalks, crosswalks, street trees, and landscaped buffers from traffic. Land uses along the corridors are mixed, and include above- and below-ground parking garages, parking lots, retail and services, eating and drinking establishments, Todos Santos Plaza, and several vacant lots. Todos Santos Plaza plays host to a number of popular community events, including a daytime farmer's

market on Tuesdays and Thursdays, a nighttime summer concert series, and a Monday night "Off the Grid" food truck festival. During Off the Grid and other events that generate heavy activity the block of Grant Street adjacent to the plaza are closed to auto traffic.

Although some portions of the corridors have well-defined street edges and continuous building frontage, particularly along the eastern portion of Salvio Street, there are many 'gaps' in the street edge where there are no active uses to generate foot traffic and vibrant street activity. This is particularly true on Oak Street, where uses include a parking garage and vacant land. The vacant land is owned by the Successor Agency to the city's former Redevelopment Agency. The land will be transferred to the City for future development, subject to the Downtown Specific Plan. Once the City is able to clear procedures required by the State of California, the City will issue a request for proposals (RFP) for a developer to build a transit-oriented project consistent with General Plan and zoning designations for the site. Gaps are compounded by numerous and large curb cuts for parking and driveway entrances.

Although multiple types of street users do use the corridor, the quality of conditions for pedestrians and cyclists varies considerably along all three corridors. Pedestrians on each of the corridors must contend with narrow, broken, uneven, and occasional missing sidewalks; long roadway crossings and auto-oriented signal timing; a lack of seating and uncoordinated street furniture; poor or nonexistent street lighting, and limited wayfinding guidance. Cyclists do not have

marked or dedicated facilities on any of the study corridors, leading many to travel on the sidewalks, and bicycle parking is limited. Transit riders face limited stop amenities, although the BART plaza project will substantially improve the area immediately around BART.



This sidewalk on Grant Street has good paving, width, lighting, shade trees, and a generous buffer from traffic.



Todos Santos Plaza is a busy, pedestrian-oriented focal point for activities in the downtown.

2.2 The Streetside

The streetside includes both sides of the street, from the curb to the property line, which often can be the building edge. The streetsides on each corridor vary in amenity and quality.

2.2.1 Sidewalk Conditions

Sidewalks on the corridors vary significantly. Generally paved in concrete, the clear path of sidewalks on the study corridors are as narrow as 4 feet or as wide as 12 feet. Sidewalks usually include buffers from street traffic. There are portions of each corridor that present challenges to pedestrians, including cracked and uneven sidewalks, as well as very long curb cuts due to driveways serving businesses along the corridors and sloped sidewalks.



Disrupted pavement like this broken bricking on Grant Street are common and are a hazard to pedestrians.



Sidewalks surrounding Todos Santos Plaza are of high quality, with smooth paving, consistent lighting, greenery, street furniture, and a sufficient buffer.



Cracked and uneven sidewalks, as shown here on Oak Street, are common along the study corridors.

2.2.2 Landscape Character

Prominent street trees within the project corridor include *Carpinus fastigiata* (European Hornbeam), *Koelreuteria paniculata* (Golden Rain Tree), *Liriodendron tulipifera* (Tulip Tree), and *Platanus racemosa* (California Sycamore). Smaller ornamental trees such as *Lagerstroemia indica* (Crape Myrtle) are used to define gateways and add vertical vegetation in raised planting areas. The majority of street trees are planted without a tree grate, using crushed fines or soil as a topdressing within the paving cutout. Thoughtful pruning of mature trees occurs throughout the corridor. Some die back and branch failure was detected in trees that display signs of irrigation reduction. *Koelreuteria paniculata* (Golden Rain Tree) displays significant drought stress in most areas, however the trees planted with tree grates appear to be in greater health. Some root girdling occurs on trees where planter space is limited and soil compaction has occurred due to pedestrian traffic.

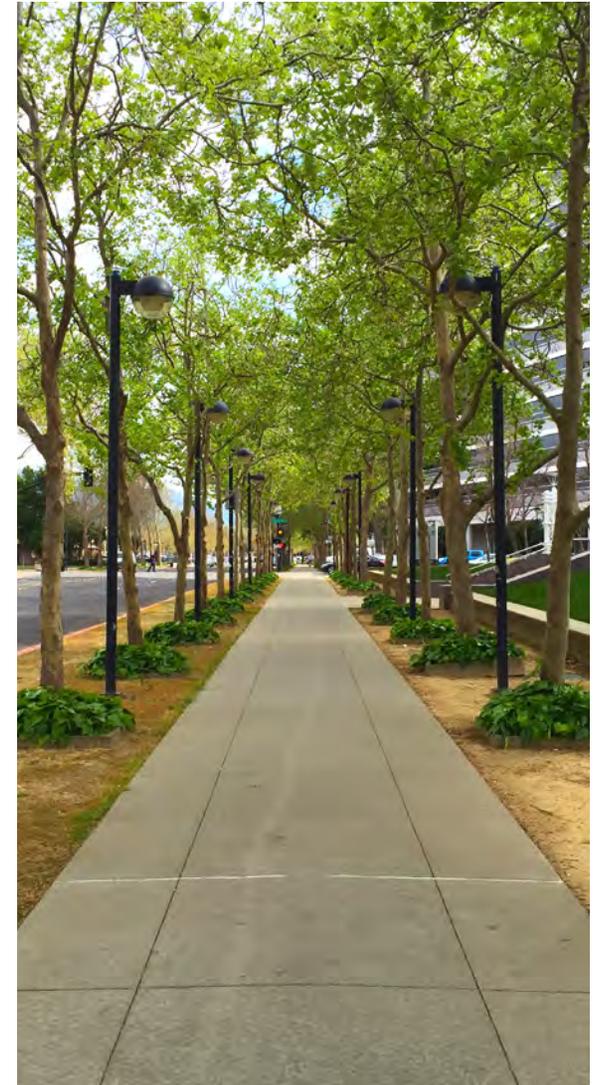
Prominent existing groundcover types along the project corridor include *Hedera helix* (Ivy), *Hemerocallis* sp (Day lily), carpet roses, *Ficus pumila* (Creeping Fig). Groundcover planting scale remains relatively low to the ground, allowing the tree planting to be the main vertical element. Many planting areas along the sidewalks have been cleared of groundcover and shrub vegetation and replaced with decomposed granite or similar material, leaving only tree planting.



Permanent planters on Salvio Street.



Common large planter style.



Trees surrounded by decomposed granite along Grant Street.

2.2.3 Wayfinding and Signage

The study corridors feature two types of wayfinding signs. Near the BART station, prominent midnight-blue fixtures point towards destinations such as Todos Santos Plaza or the BART station. Atop these distinctive fixtures are globe street lights. Closer to the plaza, decorative wayfinding kiosks list the surrounding businesses, highlight Downtown activities, and provide large lockable display cases. However, this large amount of information can make wayfinding difficult.

BART is finalizing the redesign of their plaza to improve the experience for pedestrians and bicyclists, including additional wayfinding. Construction is expected to begin in early summer 2016.



Three dark blue wayfinding signs on the BART property direct pedestrians to locations nearby.



Modern wayfinding sign near Todos Santos Plaza, including a business directory and map.

2.2.4 Lighting

All three study corridors have, at a minimum, street lighting focused on the vehicle portion of the street. There are pedestrian-scale (lower, facing the sidewalk) lights on several of the blocks on the corridors. As shown on the facing page, there is a variety of street and pedestrian lighting on the blocks in the study corridors.



Type 2 - 'Flat-round' pedestrian-scale light.



Type 4 - 'Modern' pedestrian-scale light at Todos Santos Plaza.



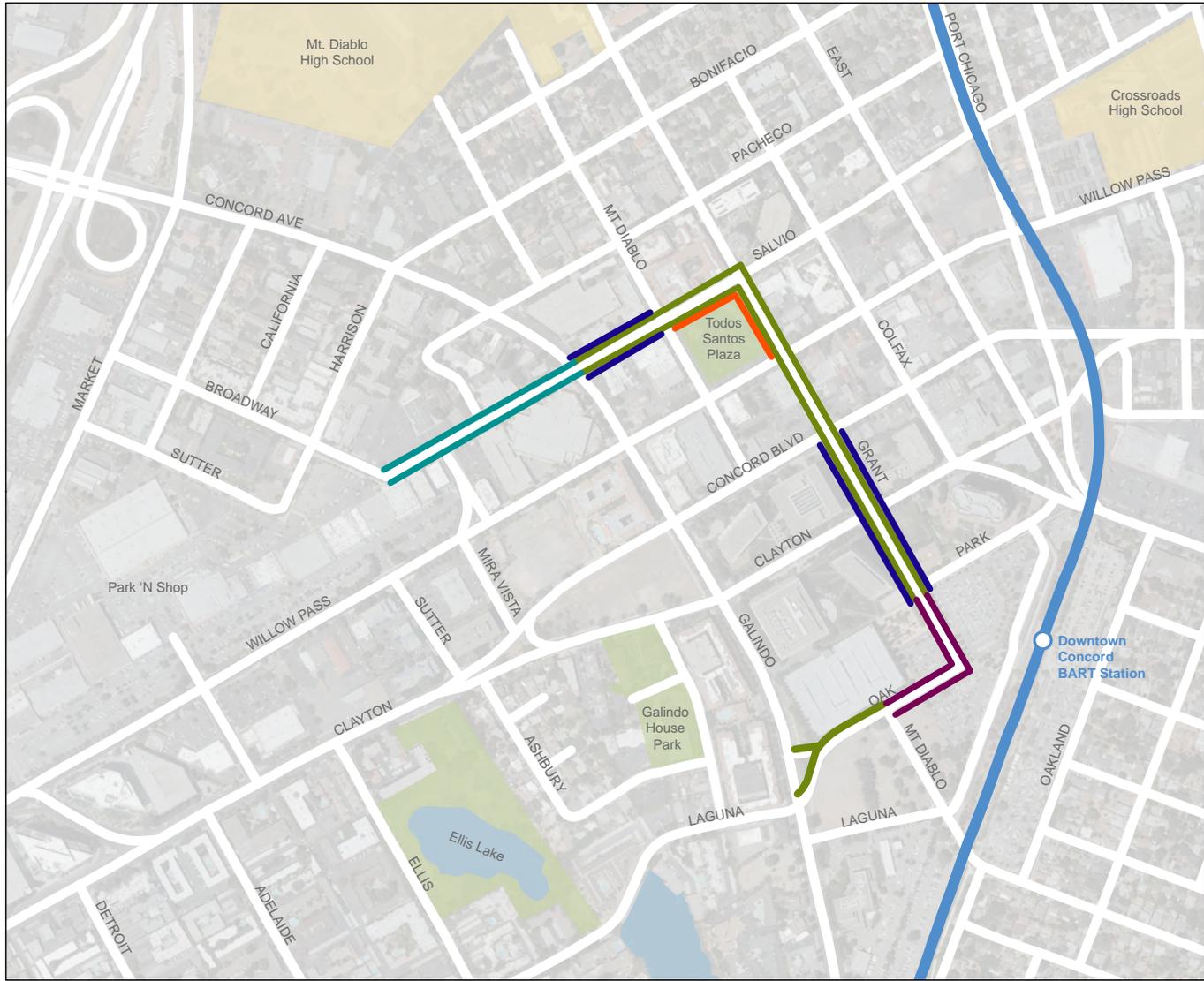
Type 1 - Cobra street light on Salvio Street.



Type 3 - 'Globe' pedestrian-scale light on Grant Street.



Type 5 - 'Half-globe' combined street and pedestrian-scale light in the BART station area.



Downtown Corridors Plan Lighting

- Street Lighting**
- Type 1 - Cobra
 - Type 2 - 'Flat-round'
- Pedestrian Lighting**
- Type 3 - 'Globe'
 - Type 4 - 'Modern'
- Combined Street and Pedestrian Lighting**
- Type 5 - 'Half-globe'
- BART station
— BART tracks
■ Park
■ School
■ Water

N

Miles
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2.2.5 Street Furniture

Most of the street furniture in the study corridors is clustered on the sidewalks near Todos Santos Plaza. Immediately surrounding the plaza, benches, tables, water fountains, and the iconic clock invite passersby to slow, sit, and relax. Many of the businesses lining the plaza enliven the sidewalk with tables, planters, and signs. Farther away from the plaza, street furniture becomes sparser. The occasional planter beautifies the streetscape and may act as ad hoc seating. Trash receptacles are provided at some intersections. In general, however, street furniture is limited on Salvio Street and Grant Street and is lacking entirely on Oak Street.

Multiple types of movable street planters occur. The most prominent type is a circular grey concrete planter with blue tile inlay detailing, found mostly toward intersections and sidewalk enlargements or bulb outs. In some cases planters impede path of travel. Smaller concrete planters within the corridor in earth tone or terra cotta colors offer cohesiveness to existing architectural color palettes.



Street furniture at Todos Santos Plaza is well-used. Benches in this area are ornate metal in a deep blue finish.



Water fountain and trash receptacle at Todos Santos Plaza.



The iconic clock in Todos Santos Plaza enhances the ambiance of the area.



Salvio Street behind Park 'N Shop has limited pedestrian amenities (tree wells have been removed) and faces the 'back side' of the building.



Sidewalk café seating, common near Todos Santos Plaza, enlivens the street.



A common planter along the study corridors, typically near intersections in sidewalk enlargements or bulb-outs. In some cases, planters impede the path of travel.



Street furniture and active uses become more sparse on the southern end of Grant Street.



With more active uses and more inviting street furniture, this connecting pathway between Salvio Street and Park 'N Shop could become vibrant and busy.

2.2.6 Accessibility

Accessibility for persons with disabilities is important for the Downtown to ensure access to shopping, transportation, and services. However, it is also important for others – people with strollers, the elderly, and all people who value a comfortable pedestrian experience benefit from an accessible place, and Downtown business owners benefit from the potential for additional customers. Currently, the study corridors vary substantially in their level of accessibility and none provides a smooth, easily-navigable path from end to end. Most, but not all street corners have curb ramps however in some cases both the curb ramps and the signal buttons do not line up appropriately with the crosswalks. This condition can make it difficult for people with low or no vision to be certain they are crossing in a safe portion of the roadway. In addition, signal buttons are found at most signals intended for the visually impaired, but some signals are equipped with older models not intended to assist the visually impaired with navigation. While many intersections include truncated domes to indicate to visually impaired pedestrians that they are approaching an intersection, not all intersections have these, and not all are lined up correctly with crosswalks to assist with navigation into the crosswalk. In addition, at some private driveways along Grant and Salvio Streets there are strips of truncated domes. Since the standard is to put such warnings near places that are unsafe, these strips could cause confusion for visually impaired walkers.



Moving around this bus shelter on Concord Boulevard and Grant Street can be hazardous with the narrow passage and jagged pavement.



Not all intersections have curb cuts.



The alignment of the signal button, ramp, and crosswalk here all support navigation for visually impaired walkers.

2.3 The Traveled Way

2.3.1 Pedestrian Crossings

There are three main types of crosswalks in Downtown Concord: colored pavement, parallel painted lines, and high-visibility ladder design. Around Todos Santos Plaza, most of the crosswalks are created with colored pavement, giving drivers a visual alert that they are entering a pedestrian space. Surrounding the Downtown Concord BART station, some are high-visibility ladder crossings, and the remainder are parallel painted lines. Beyond the immediate area around Todos Santos Plaza and the BART station, crosswalks vary widely, and primarily consist of parallel lines. At some intersections, the crosswalk consists of white concrete standing out somewhat from the darker road.

Auto traffic generally has priority along the study corridors, including signal timing at major crossings such as Galindo Street, Clayton Road, and Concord Boulevard resulting in substantial waits for pedestrians traveling on the three study corridors. If pedestrians do not press the walk signal button there will be no walk signal, making walkers feel less welcome and sometimes extending a walk trip to last longer than necessary.

Surrounding Todos Santos Plaza are the most comfortable pedestrian crossings in the three corridors. Many of these crossings feature bulb-outs to slow traffic, reduce the time and distance for crossing, and increase pedestrian visibility. Some include alerts painted in the street for drivers.



Bulbouts reduce pedestrian crossing distances and improve safety.



Colored pavement crosswalk.



This crossing at Oak and Galindo is the longest of the study corridors, at over 200 feet. Crossing from the apartments opposite takes nearly three minutes, and some choose to cross directly—and illegally—instead.



Painted lines crosswalk, with ladder striping for added visibility.

2.3.2 Transit Service

The study area is served by Bay Area Rapid Transit (BART) regional commuter trains, and by County Connection. Riders of both systems access transit via the study corridors – from the west/Monument neighborhood via Laguna Street to Oak Street, and from the north via Grant Street from Todos Santos Plaza and other Downtown destinations. For this reason, both BART and County Connection are also interested and supportive of improving pedestrian, bicycle, and bus access to the BART station and nearby destinations.

BART provides service throughout the region from the Concord station, which is on the Pittsburg/Bay Point line. Service starts early on weekday mornings (just after 4 a.m.) and concludes just after midnight, with frequencies of less than ten minutes at peak commute hours and 15 minutes in the middle of the day. Service on weekends is generally every 20 minutes.

BART is currently preparing a ‘last mile’ study to facilitate access by modes other than single-passenger autos, building on its 2003 BART Station Access Guidelines, which establish a hierarchy placing walking at the top of the list, followed by transit, bicycles, pick-up/drop-off, and vehicle parking. BART expects to have some funding in the future to support access to stations following that hierarchy. The BART Plaza project mentioned in Section 1 will complement the corridor improvements proposed by the Downtown Corridors Plan, primarily through a redesign of the plaza to provide a direct

pedestrian line of travel between the station and Grant Street, as well as a more comfortable pedestrian environment and improved wayfinding in the immediate vicinity of the station.

Several County Connection transit routes run along or near the study corridors, converging at the BART station, which serves as a transfer point between routes and to the BART system. Most routes have long headways, ranging between 30 and 60 minutes, with Routes 11 and 20 attracting the most riders. Buses to Diablo Valley College are full at peak hours. Eight all-day and commuter weekday lines and three weekend lines serve the corridors. Some of these routes provide service between the BART station and Todos Santos Plaza, but with low frequency service often making it quicker to walk downtown. Transit patrons may not realize they are within a few blocks of the Plaza, due to limited signage. New signage will be installed as part of the BART plaza project.



The only bus shelter on the study corridors encroaches into the sidewalk.

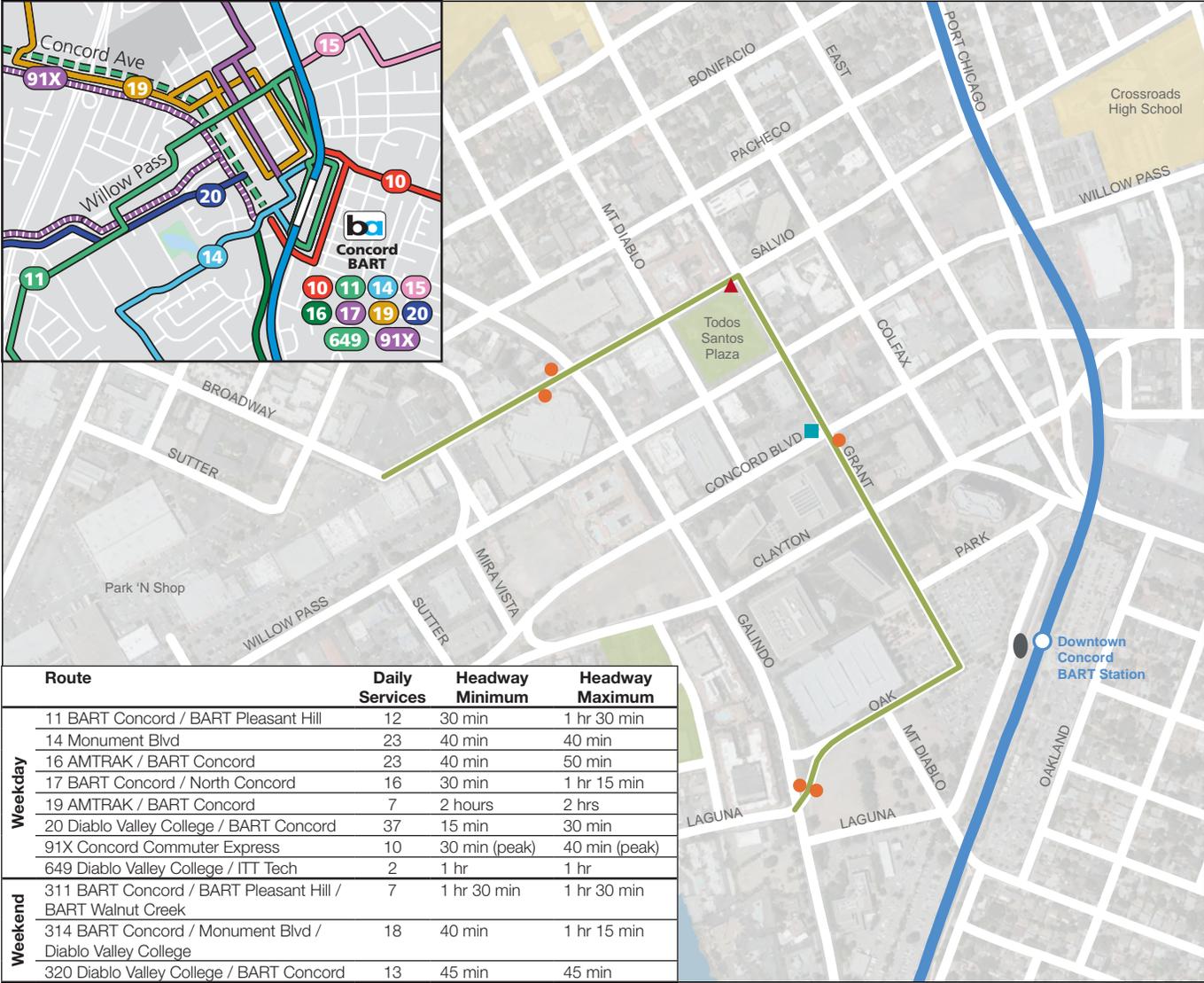


Signpost stop on Oak Street.



Bus stop including bench at Todos Santos Plaza.

Downtown Corridors Plan Transit Stops and Signage



- Transit Stop Type:**
- Bus Stop Sign Post, Typical
 - Bus Shelter
 - ▲ Bus Bench
 - Bus Transfer Station
- Study corridors
- BART station
- BART tracks
- Park
- School

0 0.05 0.1 0.2 Miles

2.3.3 Bicycle Facilities

There are no designated bicycle facilities within the corridors, although cyclists regularly visit the downtown area. Cyclists accessing downtown either ride on-street, without designated facilities, or, more frequently, on the sidewalk. For those cyclists who ride on-street, intersections present a particular challenge because right and left turns prioritizing auto movements across busy streets do not leave clear locations for cyclists to wait for lights to change or make turns themselves. A current project to provide bicycle parking in several locations along the study corridors will begin to address the lack of bicycle parking. As noted in Section 1, Concord is currently completing a bicycle, pedestrian, and last mile to transit study. The community input survey identified citywide issues for cyclists, some of which appear applicable to the Downtown area:

- Needs for: continuous, dedicated space on arterials, improved access to BART, bicycle parking at key destinations, and bicycle wayfinding.
- Important destinations included: transit, stores, parks, community centers, schools, and work.
- Primary factors discouraging cycling: lack of dedicated space and concerns about safety.

Some of the projects described in Section 1 are advancing design of bicycle facilities on the study corridors and throughout the downtown.



Cyclists have parked their bicycles with their kickstands.

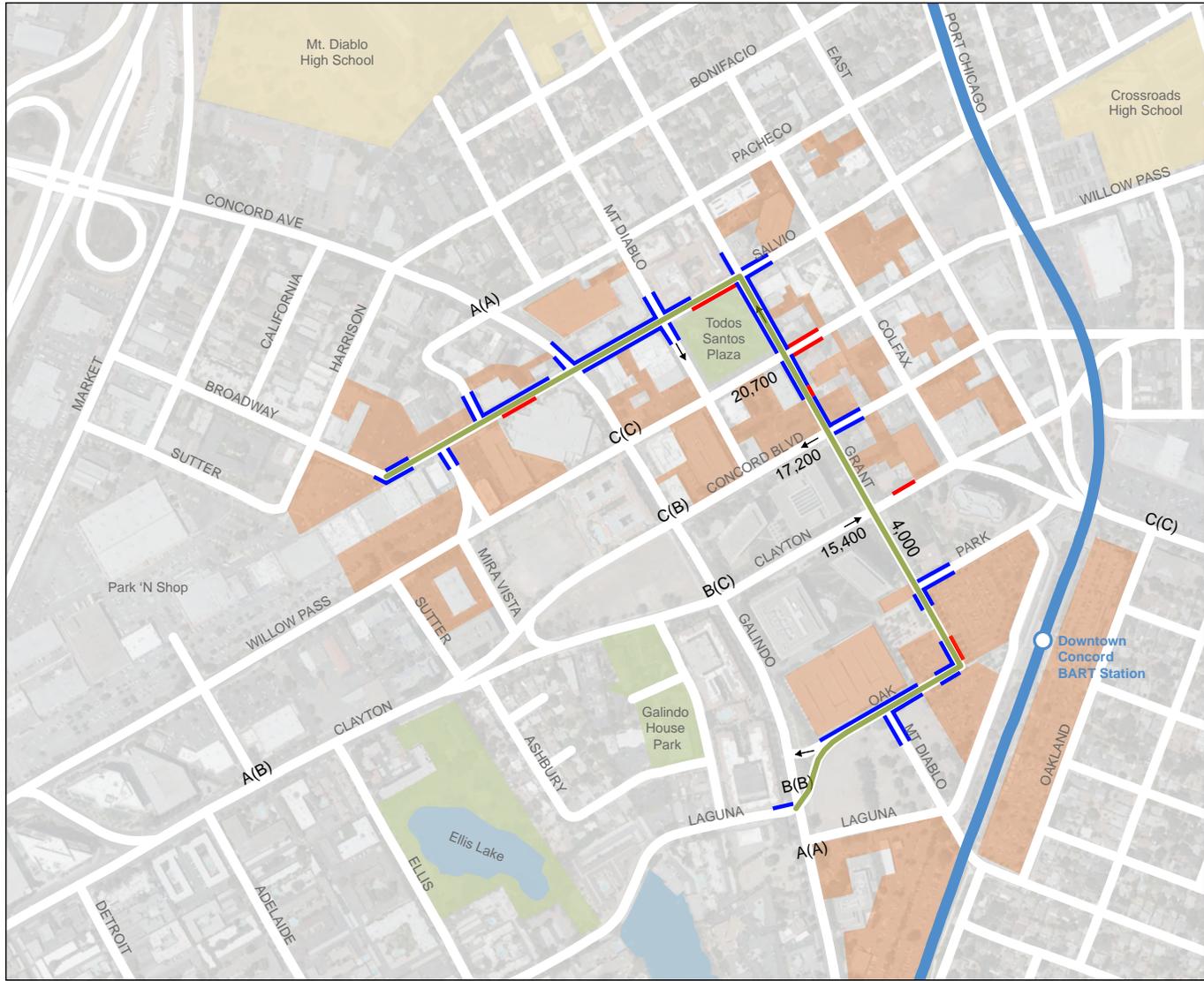


Bicyclist using the sidewalk.

2.3.4 Auto Facilities

All three study corridors are two-way, except for Grant Street on the block between Willow Pass Road and Salvio Street, framing Todos Santos Plaza. This configuration slows traffic and highlights the pedestrian uses in and around the plaza. Grant Street also intersects a one-way couplet: Concord Boulevard and Clayton Road are three-lane thoroughfares with daily traffic volumes of around 16,000 vehicles each. Grant Street has two vehicle travel lanes in each direction from where it begins at the BART station up to the short section framing the Plaza. A recent study of Grant Street counted an average of 4,000 vehicles per day. Galindo Street, which runs parallel to Grant Street and provides more connectivity, has levels of service C or better at the AM and PM peak traffic periods, according to the Downtown Concord Specific Plan Transportation Assessment (2014).

Parking is abundant along the study corridors, and throughout the Downtown area, as shown in the following Auto Movement and Parking Map. Along most streets both right lanes are reserved for non-metered parking, in some cases with a posted two-hour time limit. Within or near the corridors are several public and private parking lots and garages. Parking capacity is stretched during regular special events, such as evening concerts in Todos Santos Plaza during the Music and Market summer series.



Downtown Corridors Plan Auto Movement and Parking

Parking, Roadway and Service Designations:

- ← One-Way
- Blue line On-Street Parking
- Red line Restricted On-Street Parking
- Orange line Off-Street Parking
- X(X) Existing Level of Service: AM peak (PM peak)
- XX,XXX Average Daily Traffic Count
- Green line Study corridors
- Blue circle BART station
- Blue line BART tracks
- Green circle Park
- Yellow circle School

Traffic data source: Downtown Concord
Specific Plan Transportation Assessment 2014

2.3.5 Safety

Pedestrian, bicycle, and traffic safety is an important issue in Downtown Concord, where high-volume streets with 30-35 mph speed limits, such as Galindo Street, Clayton Road, Concord Boulevard, Willow Pass Road, and Port Chicago Highway, result in an elevated risk of accidents and injuries. Based on the California Highway Patrol's traffic records system (SWITRS), there were over 50 collisions along the study corridors in the period from 2008 through 2012. Of these, nearly 1/3 involved a cyclist and/or pedestrian. Study corridor intersections with the most accidents of all types include:

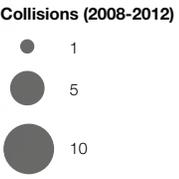
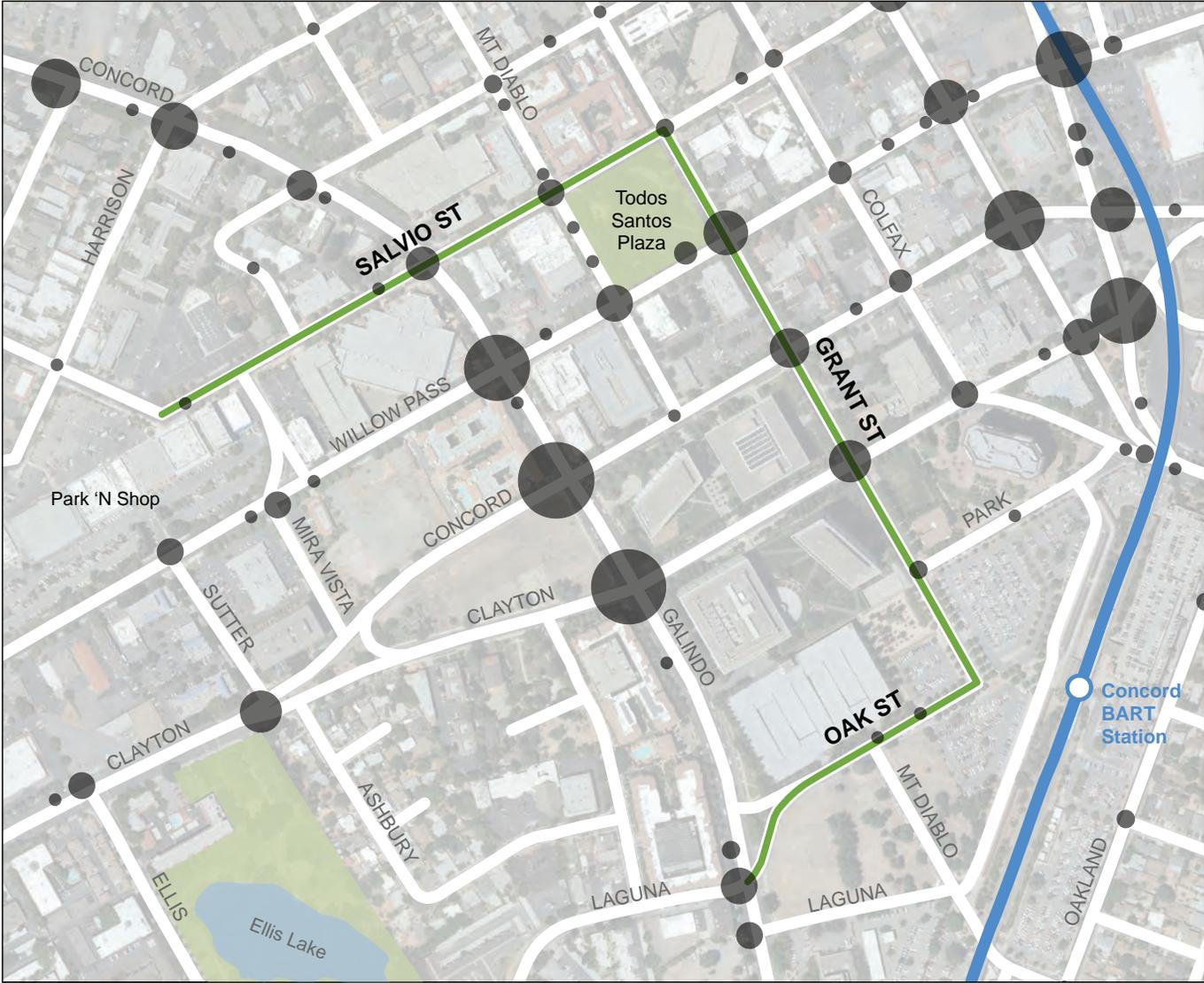
- Salvio Street at Galindo Street (6)
- Salvio Street at Mt. Diablo Street (4)
- Grant Street at Willow Pass Road (10)
- Grant Street at Concord Avenue (8)
- Grant Street at Clayton Road (9)
- Oak Street at Galindo Street (7)

Of the three study corridors, Grant Street had the most collisions, illustrating the importance of safety features for cyclists and pedestrians at Willow Pass Road, Concord Boulevard, and Clayton Road. Salvio Street had a greater incidence of accidents involving pedestrians, but fewer overall collisions of all types. The intersection of Oak and Galindo Streets was also a hotspot for accidents, including three involving bicycles.

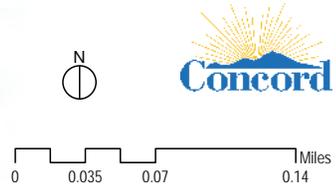


Pedestrian and cyclist using the crosswalk to cross Willow Pass Road at Grant Street.

Downtown Corridors Plan Collisions 2008-2012



Source: California Highway Patrol SWITRS



2.4 Stormwater and Low Impact Development

Concord is subject to the federal Clean Water Act, which regulates discharges from municipal separate storm sewer systems (MS4s) through National Pollutant Discharge Elimination System (NPDES) permits issued to local governments in the Bay Area via the San Francisco Bay Regional Water Quality Control Board. The Bay Area's MS4 permit is currently being revised in preparation for a re-issue in the near future, but if passed in its current form would require Concord to take several additional steps beyond current practice. These include a requirement to develop Green Infrastructure Plans to define a long-term approach to retrofit from 'gray to green' infrastructure. This means transitioning from existing impervious (water cannot absorb into it) surface and storm drains to green infrastructure that slows runoff by distributing it to rain gardens and other green spaces, allowing some or all of the water to percolate into the ground or evaporate. In addition, the City would be required to take additional measures to reduce trash loads in stormwater, and implement standards for pervious (allowing water to absorb) paving.

Drainage for the three study corridors consists of standard curb and gutter systems, in conjunction with crowned roadways. These facilities appear to be sufficient to avoid flooding, and staff report no recurrent flooding issues in the downtown area. However, if the MS4 permit is renewed in a form similar to that described above, the City's storm drainage system will need to be re-evaluated. The locations of stormwater drains and water flow are shown opposite. As shown in the photos on this page, there are a range of opportunities for green stormwater facilities, which can also provide attractive greenspaces.



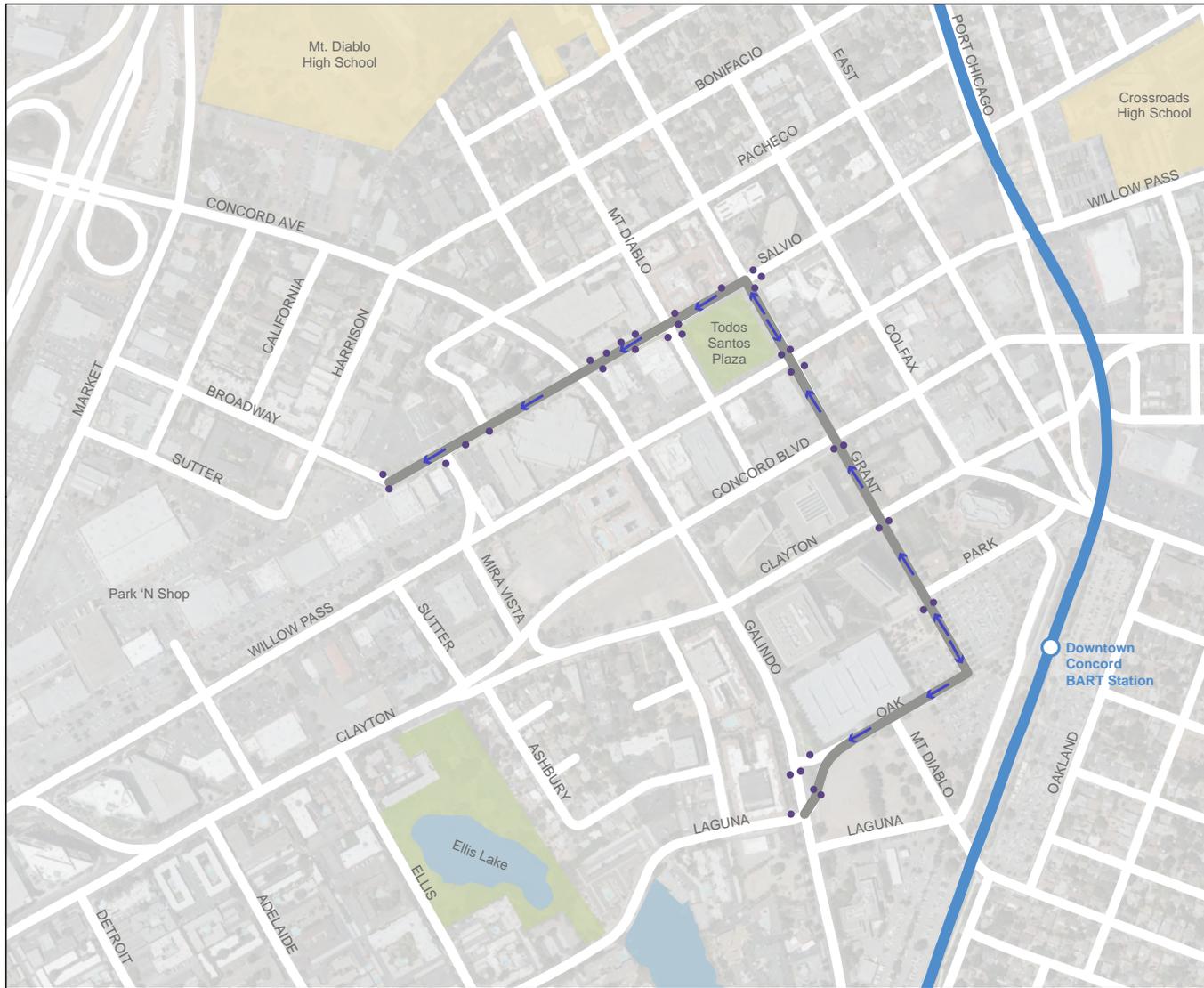
Wide corner at intersection of Salvio and Broadway Streets, at a low spot where water will tend to drain.



Existing storm drain near permeable and impermeable surfaces that present opportunities for bio-retention.

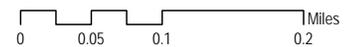


The roadway island at Oak and Galindo Streets could help mitigate potential flooding by absorbing stormwater.



Downtown Corridors Plan Existing Drain Inlets

- Observed stormwater drain inlet
- ➔ Presumed general flow direction by block



3 Opportunities and Constraints

Through the process of drafting this summary of existing conditions, as well as discussions with key stakeholders, the following opportunities for the study corridors have been identified, as well as constraints that the City will need to be aware of in developing designs for the study corridors.

3.1 Opportunities

1. Use coordinated design and other approaches to establish a sense of place for the three corridors as part of an overall strategy to implement the Downtown Specific Plan. Street design must be complementary to BART plaza design and address the current inconsistent character, which does not contribute to a sense of place in the Downtown.
 - a. Create new street furniture 'catalogue' to offer a fresh look and additional amenities to the Downtown pedestrian area.
 - b. Improve wayfinding along the corridors with elements like better directional signage, posted walking travel times, and coordinated branding.
 - c. Upgrade and install pedestrian-oriented lighting along the corridors to improve safety, security, and reduce risk of injury.
2. Build upon Todos Santos Plaza's current range of successful programming to encourage a wide array of activities in the Downtown and along the three study corridors; this includes events requiring temporary street closures.
3. Improve sidewalks for accessibility and safety.
 - a. Reconstruct and, where possible, widen sidewalks to correct sidewalk uplift, cracking, and deteriorated brick work.
 - b. Widen existing tree wells and incorporate tree grates and/or pervious pavers.
4. Implement low-impact landscaping and stormwater features to reduce water runoff, reduce maintenance, and plan for anticipated stormwater regulation changes.
 - a. Install signature landscape features that will help detain, filter, and process storm water.
 - b. Install permeable pavement in select streetside parking areas.
 - c. Identify tree and other plant species needing lower levels of maintenance.
5. Improve pedestrian crossings.
 - a. Upgrade crosswalks.
 - b. Install new pedestrian signals and curb ramps to comply with current practice for persons with disabilities.
 - c. Adjust signal timing to prioritize pedestrians at key pedestrian-focused intersections.
6. Enhance safety, security, cleaning and landscape maintenance throughout the Downtown area, including the three study corridors. This could be provided by a business improvement district, modifications to the existing maintenance district, or other mechanisms. Services could also include programs such as an ambassador service.
7. Activate Grant Street with programming to improve connection to BART station.
 - a. Implement temporary uses and events along Grant Street where wide right-of-way appears to provide more capacity than needed.
 - b. Implement bicycle facilities along the corridor to better connect to Todos Santos Plaza.
8. Establish a Downtown Circulator (shuttle) to connect BART, Todos Santos Plaza, Park-and-Shop, and other key destinations via free or low-cost, easy-to-use transit service.
9. Investigate the reconfiguration of Oak Street along the City's Successor Agency parcel to improve walking and cycling connections to residents and amenities across Galindo Street.
10. Capitalize on the Downtown's appeal as a citywide cycling destination by ensuring it is a well-connected node in Concord's bicycle network and creating a cohesive approach to cycling within the three corridors, consistent with the findings of the Bicycle, Pedestrian, and Safe Routes to Transit Plan.
11. Work with County Connection to provide additional bus shelters and other street furniture designed to improve the experience of transit riders.
12. Coordinate the design of both the public and private realms, considering the local context and the Todos Santos Design Guidelines.

3.2 Constraints

1. Balancing pedestrian and cyclist activity with automobile circulation.
 - a. Limited right-of-way is available to accomplish all desired objectives.
 - b. Major streets are barriers to pedestrians and cyclists.
2. Numerous curb-cuts for driveways serving existing businesses that interrupt pedestrian paths.
3. Some existing buildings are oriented away from the street or are designed wide with setbacks that do not contribute to a lively street experience.
4. Limited near-term potential for development of privately-owned vacant parcels.
5. High-traffic volume intersections that result in difficult pedestrian crossings at major and wide roadways such as Galindo Street, Concord Boulevard, and Clayton Road.
6. Complexity of existing utilities and lack of survey data for all streets.
7. Lack of dedicated funding source for capital improvements.
8. Safety and security are a concern, particularly at night, along the corridors and at Todos Santos Plaza.





Downtown Corridors Plan
Existing Conditions

November 2015



Downtown Corridors Plan Design Guidelines



October 2016

Acknowledgements

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Downtown Corridors Plan

Design Guidelines

1. Introduction	1
2. Opportunities	3
3. Streetscape Design Guidelines	4
3.1 Zones	5
3.2 Components of the Street.	15
4. Pop-up and Temporary Use Guidelines.	36
5. Accessibility Guidelines	42
6. Implementation	46





Todos Santos Plaza

1 Introduction

Concord envisions a lively, pedestrian- and bike-friendly downtown area, with shops, restaurants, and events in Todos Santos Plaza. The Plaza is currently very welcoming and surrounded by successful retailers. In the future, the area around the Plaza—connecting to BART and other key community destinations—could be a much more pleasant place to stroll, to bike, and to visit. Such a transition requires streetscape design that is both comprehensive and responsive to the unique downtown character.

The Downtown Corridors Plan builds on the community vision established in the 2014 Downtown Specific Plan and aims to enhance the pedestrian environment in Downtown Concord. The plan focuses on three study corridors that form the eastern half of the ‘green frame’ conceptualized in the Specific Plan: Oak Street, Grant Street from Oak Street to Salvio Street, and Salvio Street from Grant Street to Broadway.

Concord has long planned for a more urban, mixed-use environment around the BART station and Todos Santos Plaza. The mixed-use zoning designations that pre-dated the Specific Plan were not sufficient to transform the area or make it apparent to passengers arriving at the Downtown Concord BART station that they were in a walkable downtown and that Todos Santos Plaza was nearby. With zoning in place to encourage private development, the City aims to transform the public right-of-way to support the kind of residential, retail, and employment-generating development envisioned for the area.

This document provides design guidelines for the three study corridors. The guidelines are intended to support the vision established in the Downtown Specific Plan, building upon the opportunities and constraints identified in the plan’s Existing Conditions report for the study (published in November 2015). The first opportunity identified in the report is to “use coordinated design and other approaches to establish a sense of place for the three corridors as part of an overall strategy to implement the Downtown Specific Plan.” Other opportunities provide more specifics, which these guidelines are intended to document as direction for physical changes to the three study corridors.

These guidelines express a cohesive vision supported by the community, business- and property-owners, and decisionmakers. They provide direction to City staff members charged

See Also

DOWNTOWN CORRIDORS PLAN APPENDIX A: URBAN FOREST GUIDANCE

The Plan’s Urban Forest Guidance appendix introduces design options to consider when addressing common issues observed within the study area, such as tree root uplift.

with improvements to the public right-of-way, while retaining a modest level of flexibility to respond to changing conditions. While the focus is on the three study corridors, many of the components of the street identified in these guidelines could readily be applied to other streets in the vicinity of Todos Santos Plaza. The corridor design guidelines for public space will also intersect with the design guidelines currently underway for the private realm in the vicinity of Todos Santos Plaza.

The next step of this plan is to prepare conceptual designs for the public right-of-way along the three study corridors, furthering these design guidelines. The designs will provide enough detail for the City to seek funding for implementation, moving closer to implementation of the Downtown Specific Plan.



Salvio Street sidewalk

2 Opportunities

The three study corridors present a range of opportunities to reflect the community's vision for the Downtown Area. This vision was expressed through the Downtown Specific Plan and builds on the success of Todos Santos Plaza.

These guidelines are in turn guided by the opportunities found in the Existing Conditions report, as follows:

1. Use coordinated design and other approaches to establish a sense of place for the three corridors as part of an overall strategy to implement the Downtown Specific Plan. Street design must be complementary to BART plaza design and address the current inconsistent character, which does not contribute to a sense of place in the Downtown.
2. Build upon Todos Santos Plaza's current range of successful programming to encourage a wide array of activities in the Downtown and along the three study corridors; this includes events requiring temporary street closures.
3. Improve sidewalks for accessibility and safety.
4. Implement low-impact landscaping and stormwater features to reduce water runoff, reduce maintenance, and plan for anticipated stormwater regulation changes.
5. Improve pedestrian crossings, such as restriping and resurfacing.
6. Enhance safety, security, cleaning and landscape maintenance throughout the Downtown area, including the three study corridors.
7. Activate Grant Street with amenities and activities to improve connection to BART station.
8. Establish a downtown shuttle to connect BART, Todos Santos Plaza, Park-and-Shop, Sun Valley Mall, and other key destinations via free or low-cost, easy-to-use transit service.
9. Investigate the reconfiguration of Oak Street along the City's Successor Agency parcel (property southwest of the BART station) to improve walking and cycling connections to residents and amenities across Galindo Street.
10. Capitalize on the Downtown's appeal as a citywide cycling destination by ensuring it is a well-connected node in Concord's bicycle network and creating a cohesive approach to cycling within the three corridors, consistent with the findings of the Bicycle, Pedestrian, and Safe Routes to Transit Plan.
11. Work with County Connection to provide additional bus shelters and other street furniture designed to improve the experience of transit riders.
12. Coordinate the design of both the public and private realms, considering the local context and the Todos Santos Design Guidelines.

3 Streetscape Design

The Salvio, Grant, and Oak Street corridors in the future will be safe and welcoming public spaces that encourage travel throughout the Downtown Area.

The street design guidelines serve as a guide to future streetscape improvement projects in the public right-of-way. The guidelines consist of two parts: a description of the four unique 'zones' along the study corridors, and a 'toolkit' of streetscape elements that are appropriate for use in the different zones. Each zone has a different set of key elements; not all elements are appropriate for use in each zone.

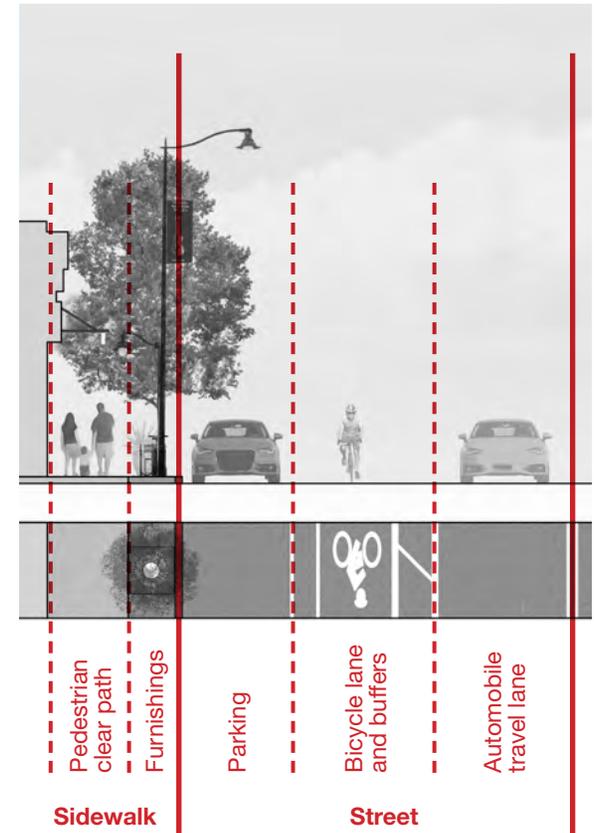
The guidelines address both the street and sidewalk realms, which each consist of several parts.

Street realm

- Parking
- Bicycle lane
- Automobile travel lane

Sidewalk realm

- Pedestrian throughway, or 'clear path'
- Furnishings and landscape



Components of the street

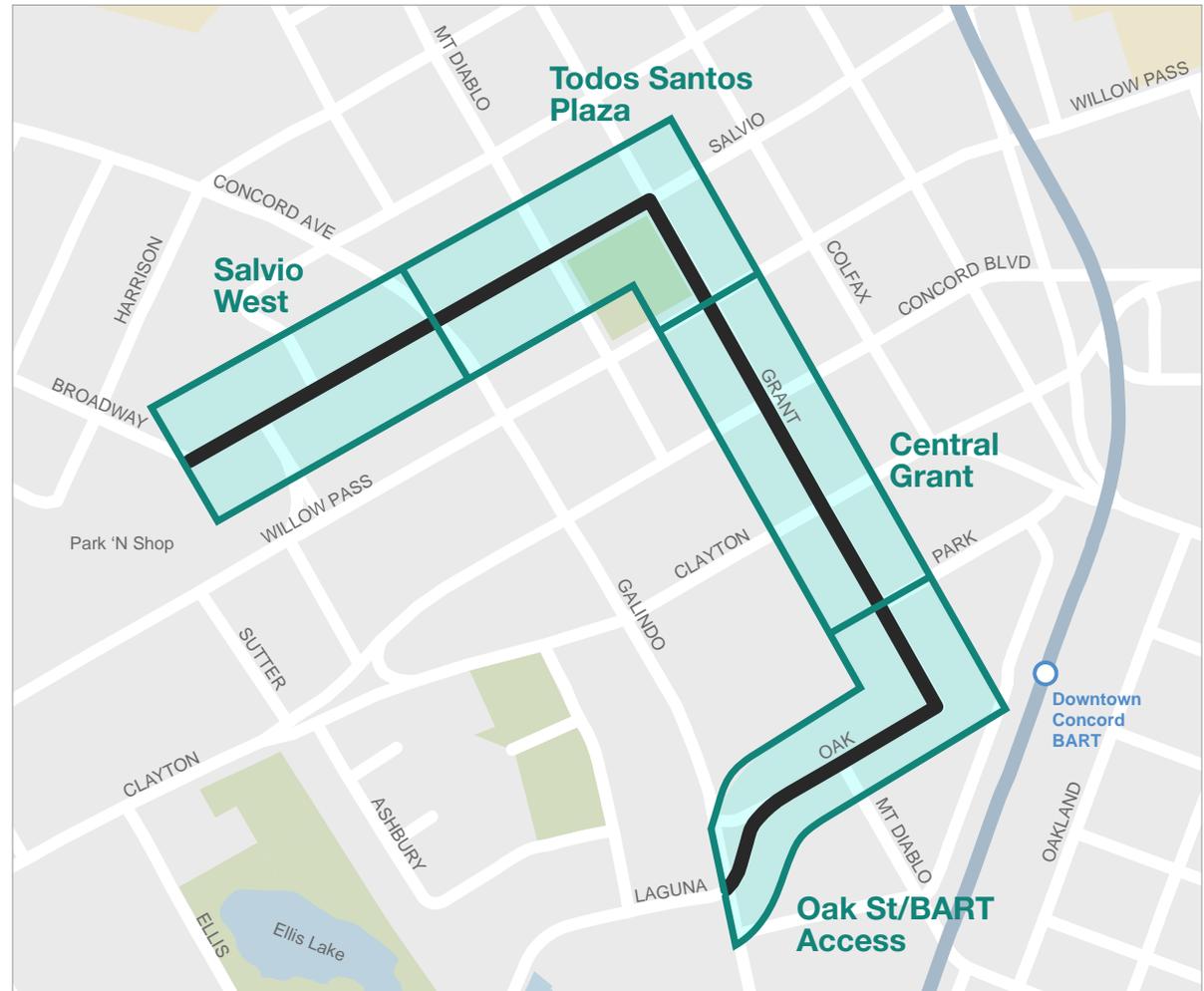
3.1 Zones

The three study corridors have been divided into four zones, based on the character and function of the streets and adjacent land uses. The zones are:

1. **Salvio West:** Salvio Street from Broadway Street to Galindo Street
2. **Todos Santos Plaza:** Salvio Street from Galindo Street to Grant Street, Grant Street from Salvio Street to Willow Pass Road
3. **Central Grant:** Grant Street from Willow Pass Road to Park Street
4. **Oak Street/BART Access:** Grant Street from Park Street to Oak Street, Oak Street from Grant Street to Galindo Street.

The following pages describe each zone, list desired features, and illustrate the desired 'typical' cross-section.

Conceptual designs, to be completed in the next phase of this study, will provide more specifics for each corridor, responding to the range of existing street conditions and building contexts.



Zone 1: Salvio West



Salvio West will serve as a pleasant connection for residents and visitors entering Todos Santos Plaza from Park 'N Shop and other locations to the west. The character will be similar to that of the plaza area, making a clear visual connection to that popular destination.

Description

Salvio West should provide a seamless and welcoming connection between the neighborhoods surrounding Park 'N Shop and Todos Santos Plaza and the downtown core. Currently, this zone has limited pedestrian amenities, and pedestrians find themselves walking along large parking lots or the back sides of buildings. The zone varies in traffic volume, crossing multi-lane arterials and weaving through mixed density commercial areas. It has no bike lanes and crosswalks are minimal.

The Downtown Specific Plan envisions residential and retail uses in this zone, transforming many of the existing surface parking lots into residential structures. In the future, the street and sidewalk will balance vehicle access, transit accommodations, and pedestrian and bicycle mobility and safety. The redesigned street will create a boulevard feel for travelers in which sidewalk buffers, decorative crosswalks, a bike lane, and well-defined paths bring all street and sidewalk users safely together. The resulting street provides comfortable access to local and surrounding destinations for pedestrians, cyclists, transit riders, and drivers.

Desired Features

The following features are unique to this zone. Please see Section 3.2, Components of the Street, for complete guidance.

PARKING

Parallel on north side of Salvio Street

Parallel on south side of Salvio Street to west of Mira Vista Terrace

BIKE FACILITY

Buffered bike lanes

In-pavement loop bicycle signal detection

SIGNAL TIMING AND PHASING

Automatic pedestrian crossing signals with activation buttons for auditory alerts

CROSSWALKS

Decorative crosswalks with full ADA features

High visibility crosswalks at Concord Avenue/Galindo Street intersection

Midblock crossing with pedestrian crossing warning system at Adobe Street

CURBS

Driveways – minimize width

Typical Street Cross-section: Salvio West Zone

BUS FACILITIES

Stop furniture – shelters

WAYFINDING

For all modes, focusing on connection between Park 'N Shop and Todos Santos Plaza, as well as community-wide destination (such as BART or nearby schools)

STREET FURNITURE

Bike racks on each side of the street near Brenden Theatres and the street-fronting retail between Adobe Street and Concord Avenue and at the bend into Broadway Street when the property is redeveloped in the vision of the Downtown Specific Plan

Trash bins – at Concord Avenue/Galindo Street intersection

Lighting – new pedestrian and street lighting, add 'twinkle' tree lights



Zone 2: Todos Santos Plaza



Todos Santos Plaza will continue to be the primary destination in Downtown Concord. Its character connects the surrounding streets and buildings to create a welcoming public space that can be expanded upon in the future.

Description

Arranged in a grid along small retail blocks, streets in this zone emphasize pedestrian mobility and economic activity at the sidewalk level. With a range of events from farmers' markets to music to festivals to food truck nights, the sidewalk and plaza accommodate a wide variety of activities.

Consistent with the Downtown Specific Plan activities around Todos Santos Plaza will expand with housing mixed with small-scale retail surrounding the plaza. The plaza will be even more walkable and aesthetically appealing with decorative street furniture, formal landscaping greening the streetscape, and wide sidewalks accommodating seating for businesses. Consistent and distinctive pedestrian lighting coupled with twinkling lights in the trees highlight the plaza as a destination. Some parking buffering the plaza from traffic will remain, but portions of the parking lane can be used for a variety of purposes, including temporary parklets, vending and food trucks, decorative bicycle parking, informal landscaping, and more.

Streetscape improvements surrounding Todos Santos Plaza will be coordinated with improvements to the plaza itself, creating a cohesive overall look so that the plaza and the streetscape are seamless.

Desired Features

The following features are unique to this zone. Please see Section 3.2, Components of the Street, for complete guidance.

PARKING

Grant Street: Parallel parking (both sides)

Salvio Street (Mt. Diablo Street to Grant Street): Parallel on south side only

Salvio Street (Galindo Street to Mt. Diablo Street): Angle parking

BIKE FACILITY

Grant Street: Contra-flow bicycle lane (southbound), buffered bicycle lane (northbound)

Salvio Street: Sharrows

In-pavement loop bicycle signal detection

SIGNAL TIMING AND PHASING

Automatic pedestrian crossing signals with activation buttons for auditory alerts

CROSSWALKS

Decorative crosswalks at intersections with full ADA features

High visibility crosswalks at Grant Street & Willow Pass Road, Salvio Street & Galindo Street intersections

CURBS

Driveways – very limited driveways

Typical Street Cross-section: Todos Santos Plaza Zone at Grant Street

BUS FACILITIES

Stop furniture – Shelters with wayfinding and other traveler information

WAYFINDING

For all modes, focusing on connections between Todos Santos Plaza, BART, and Park 'N Shop, as well as further-afield locations (such as nearby schools) reachable by the different modes

STREET FURNITURE

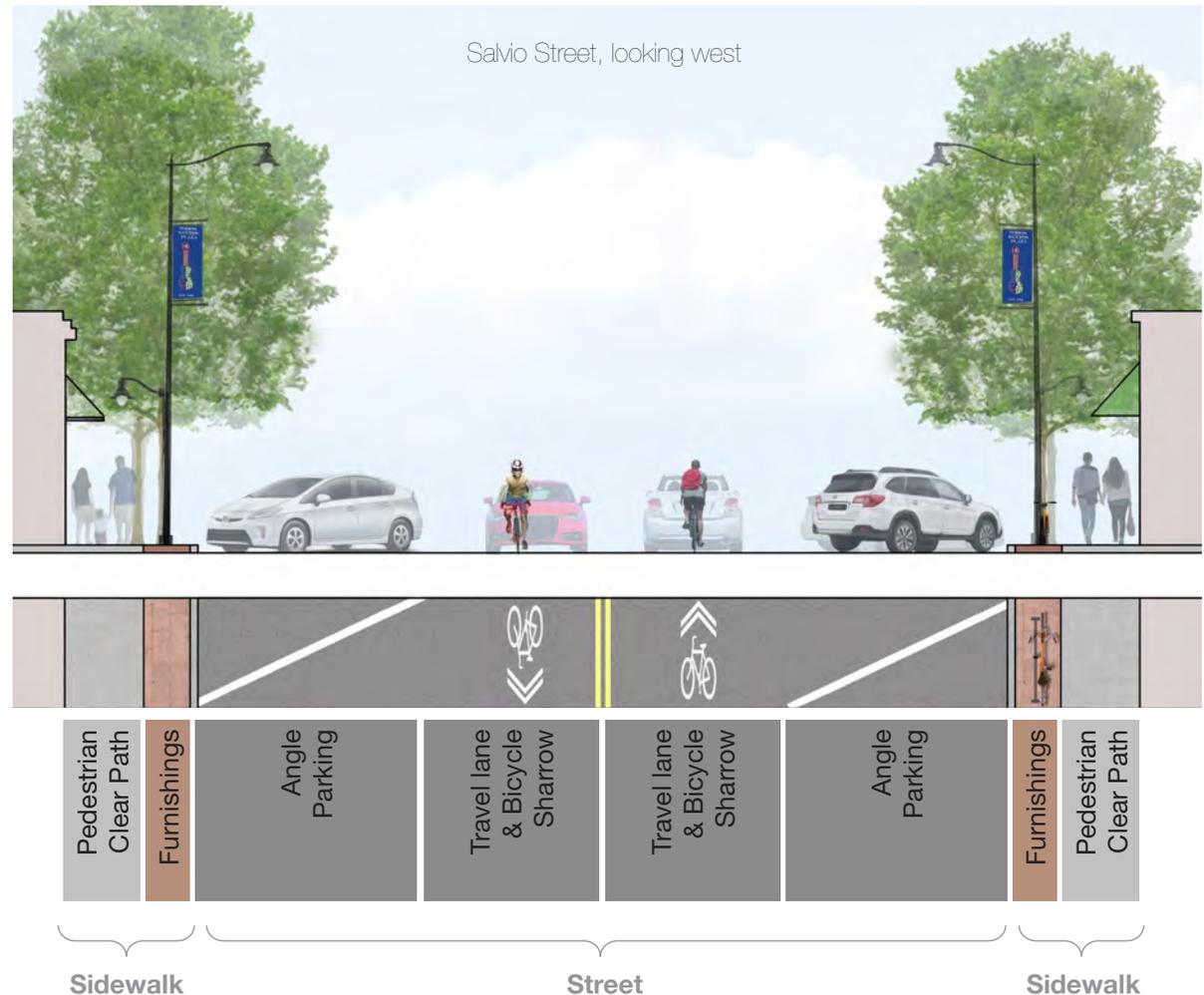
Bike racks – on every block, both sides of the street

Seating – benches and seating surrounding Todos Santos Plaza located in well-lit areas, near activity, near amenities and other street furniture, and in both sun and shade

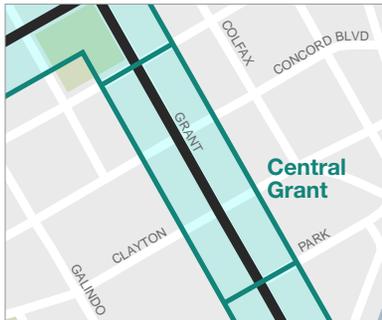
Trash bins – at the plaza and at wider intervals away from the plaza

Lighting – new pedestrian and street lighting with an emphasis on pedestrian lighting, 'twinkle' tree lights on east side of Grant Street

Drinking fountains – at the plaza



Zone 3: Central Grant



Central Grant will serve an important function: making the transition from the BART station to Todos Santos Plaza pleasant, ensuring pedestrians and cyclists know they are on their way to a vibrant downtown destination.

Description

As the primary path between the Concord BART Station and Todos Santos Plaza, Central Grant should offer a pleasant and comfortable walking environment. Currently, Central Grant has four vehicle lanes, despite having low traffic volumes. The street has limited street parking and no bike lanes, but does have wide planting strips, mostly consisting of unplanted soil or decomposed granite. The developed land along Central Grant is predominantly office and commercial uses that are set back from the curb by landscaping or parking.

The Downtown Specific Plan envisions Central Grant to be mixed use space in which residential buildings sit atop ground floor retail in a mixed-use environment complementing the existing office buildings. In the future, Central Grant will prioritize buffered bike lanes. Wide sidewalks and landscaping will create a comfortable pedestrian experience. Twinkling lights in the street trees will guide travelers down the street, creating a seamless connection between BART and Todos Santos Plaza.

Desired Features

The following features are unique to this zone. Please see Section 3.2, Components of the Street, for complete guidance.

PARKING

Grant Street (Willow Pass Road to Concord Boulevard): Parallel

Grant Street (Concord Boulevard to Park Street): None

BIKE FACILITY

Buffered bike lanes

Bicycle boxes at signalized intersections

Two-stage turn boxes where necessary to facilitate turns

Intersection bicycle crossing markings

In-pavement loop bicycle signal detection

SIGNAL TIMING AND PHASING

Automatic pedestrian crossing signals with activation buttons for auditory alerts

CROSSWALKS

Decorative crosswalks with full ADA features

High visibility crosswalks at Willow Pass Road, Concord Boulevard, and Clayton Road intersections

CURBS

Driveways – minimize width

Typical Street Cross-section: Central Grant Zone

BUS FACILITIES

Stop furniture – Shelters with wayfinding and other traveler information

WAYFINDING

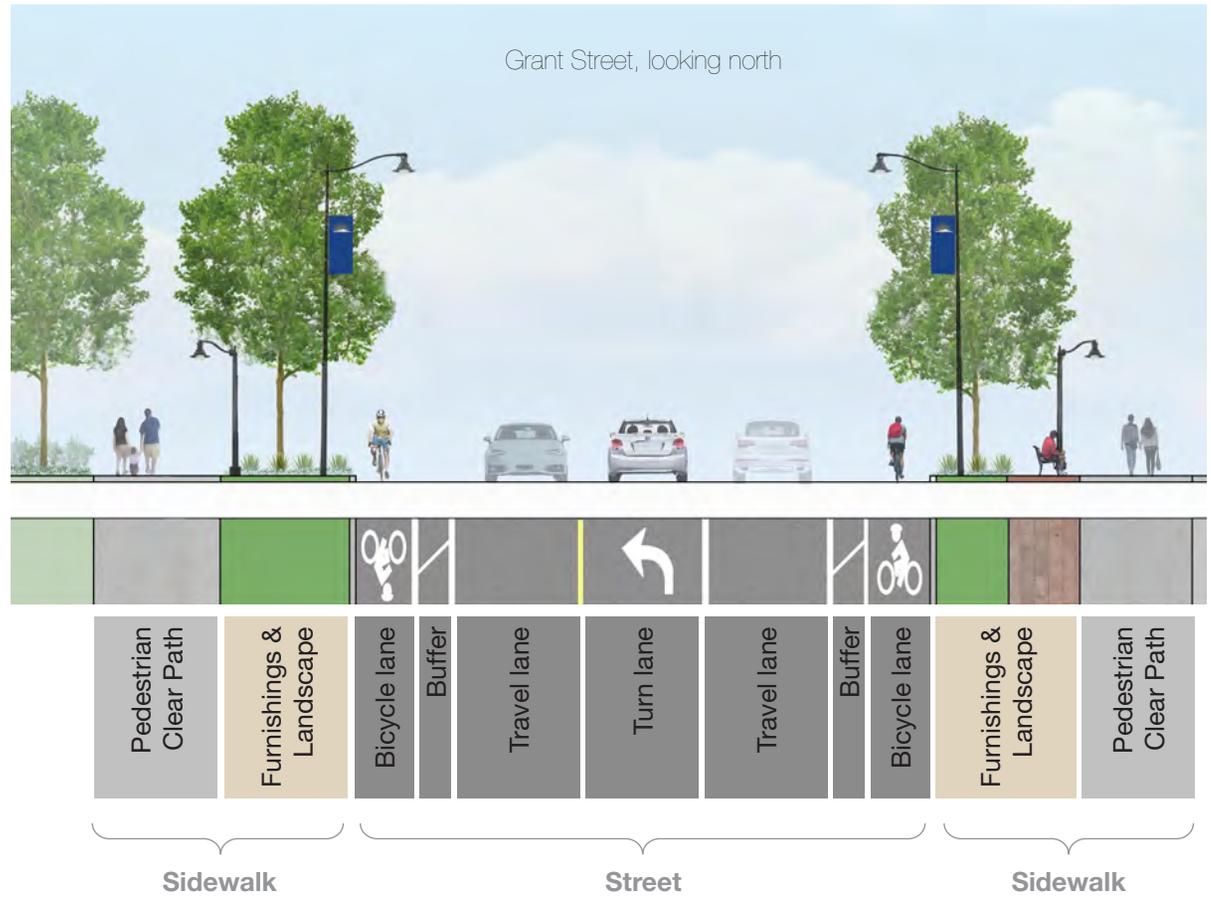
For all modes, focusing on connection between BART and Todos Santos Plaza, as well as further-afield locations reachable by the different modes

STREET FURNITURE

Bike racks – when new retail or residential uses are built, add bike racks to the sidewalk

Trash bins – at intersections with Clayton Road and Concord Boulevard

Lighting – new pedestrian and street lighting, add 'twinkle' tree lights



Zone 4: Oak Street/BART Access



BART riders will arrive at Concord Station and experience a welcoming transition through the BART Plaza to nearby streets and destinations.

Description

The Concord BART Station provides rapid, high frequency transit service to dozens of communities throughout the region. Only a half-mile from Todos Santos Plaza, the BART station is an important connection to the heart of Downtown Concord and the neighborhoods surrounding the station. The area is split between undeveloped fields and parking lots or garages. The intersection of Oak, Galindo, and Laguna Streets at the western extent of this zone is inhospitable to pedestrians with long signal delays and crossing distances exceeding ninety feet. There are no bike lanes.

The Downtown Specific Plan envisions a complete transformation of this zone with the development of vacant parcels and parking lots into residential structures wrapped with ground floor retail. Bike lanes and well-lit sidewalks will allow safe and comfortable passage for active travelers. Transit stops will be sheltered and fully equipped with real-time arrival and wayfinding information. Although auto parking will remain, bike lanes, wide sidewalks, and comfortable transit stops will make multimodal access to the station area comfortable, pleasant, and visible.

Desired Features

The following features are unique to this zone. Please see Section 3.2, Components of the Street, for complete guidance.

PARKING

Grant Street (Park Street to Oak Street): Parallel
Oak Street (Galindo Street to Mt. Diablo Street): Parallel on south side along straight portion of roadway
Oak Street (Mt. Diablo Street to Grant Street): Parallel on south side until taxi zone

BIKE FACILITY

Buffered bicycle lanes
Intersection bicycle crossing markings
In-pavement loop bicycle signal detection at Oak Street signal

SIGNAL TIMING AND PHASING

Automatic pedestrian crossing signals with activation buttons for auditory alerts

CROSSWALKS

Decorative crosswalks with full ADA features

CURBS

Driveways – minimize width
Sidewalk widening on south side of Oak Street

Typical Street Cross-section: Oak Street/BART Access Zone

BUS FACILITIES

Stop furniture – shelters with real-time arrival and wayfinding information

WAYFINDING

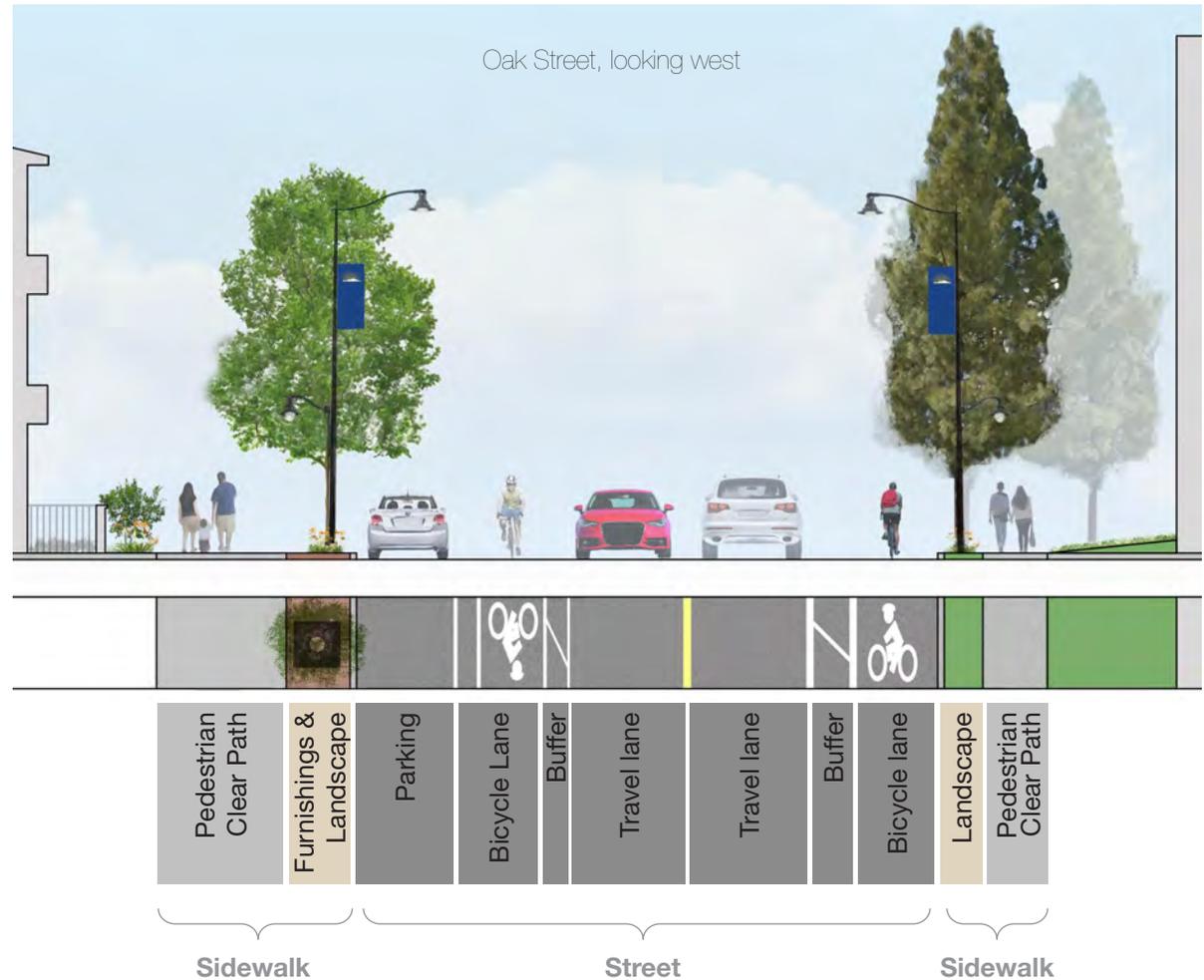
For all modes, focusing on connection between BART and Todos Santos Plaza, as well as further-afield locations reachable by the different modes

STREET FURNITURE

Bike racks – add racks at corner of Grant Street and Oak Street, add racks to sidewalk along new development on Oak Street when built

Trash bins – in the area immediately around the BART station, and at the intersection of Grant Street and Park Street

Lighting – new pedestrian and street lighting, add 'twinkle' tree lights on Grant Street and the south side of Oak Street



Summary of Zones

	Feature	Zone 1 Salvio West	Zone 2 Todos Santos Plaza	Zone 3 Central Grant	Zone 4 Oak Street/BART Access
Street	Parking	Parallel or no on-street parking	Parallel or angle parking	Parallel or no on-street parking	Parallel or no on-street parking
	Bike facilities	Buffered bike lanes, bicycle detection loops	Bike sharrows, contraflow bicycle lane on Grant Street, bicycle detection loops	Buffered bike lanes, bicycle detection loops	Buffered bike lanes, bicycle detection loops
	Bus facilities	Shelters for all bus stops (where space permits), improved stop signage	Shelters for all stops	Shelters for all stops	Shelters for all stops
Intersections	Signal timing and phasing	Automatic pedestrian signals with activation buttons	Automatic pedestrian signals with activation buttons	Automatic pedestrian signals with activation buttons	Automatic pedestrian signals with activation buttons
	Crosswalks	Decorative crosswalks, high-visibility midblock crossing at Adobe Street, high-visibility crosswalks at Galindo Street	Decorative crosswalks, high-visibility midblock crossing at Todos Santos Plaza	High-visibility crosswalks	Decorative crosswalks, high-visibility crosswalks at Galindo Street
	Curbs	Minimize driveway width, curb extensions where possible, minimize curb radii	Minimize driveway width, minimize curb radii	Minimize driveway width, curb extensions where possible	Minimize driveway width, minimize curb radii, sidewalk widening on south side of Oak Street
Sidewalk	Wayfinding	For all modes, focusing on connection between Park 'N Shop and Todos Santos Plaza	For all modes, focusing on connections between Todos Santos Plaza, BART, and Park 'N Shop	For all modes, focusing on connection between BART and Todos Santos Plaza	For all modes, focusing on connection between BART and Todos Santos Plaza
	Lighting	New pedestrian and street lighting; add 'twinkle' tree lights	New pedestrian and street lighting with an emphasis on pedestrian lighting; add 'twinkle' tree lights	New pedestrian and street lighting with an emphasis on pedestrian lighting; add 'twinkle' tree lights	New pedestrian and street lighting; add 'twinkle' tree lights
	Street furniture	Bike racks and some trash bins	Bike racks, benches, trash bins, and drinking fountains	Bike racks and some trash bins	Bike racks and some trash bins
	Low-impact development	See Components of the Street: Low-Impact Development and Stormwater (page 33)			

3.2 Components of the Street

Streets are made from a range of key elements. These elements work together to create a cohesive visual experience and physical environment.

Organized into several categories, this 'toolkit' provides greater detail on the streetscape elements for use along the green frame corridors, as outlined by Zone. The key elements described here are appropriate for different zones, based on the street and development context. The toolkit is organized into the following sections:

1. Street realm
2. Intersections and Crosswalks
3. Sidewalk Realm
4. Wayfinding Signage
5. Landscaping
6. Low-Impact Development & Stormwater



Grant Street at Salvio Street

Components of the Street: Street Realm

The table below lays out the elements that can transform the study corridors into multimodal streets.

Multimodal streets balance the needs of multiple users and create safe places to walk, cycle, and drive. High-quality bicycle facilities, including buffered bike lanes where possible, provide protected and connected bicycling. Well-placed transit stops enable safer access to and from the stops, and bus bulbs minimize merging in and out of traffic. On-street parking and auto wayfinding facilitate smooth driving in Downtown Concord. With these components integrated, the downtown

area gains a network of complete streets that balance the needs of all modes of travel.

Some features of the street discussed herein are defined as ‘experimental’ traffic control devices by the Federal Highway Administration (FHWA)—as noted. To use these features, the City must request to conduct an experiment, which must be accompanied by a monitoring and evaluation plan.

Component	Function	Guidance	Illustration
Street			
Parallel on-street parking	Provides additional parking capacity and access to parking for land uses with limited parking supply.	Use when on-street parking is necessary to either provide parking for businesses or public spaces; it can also serve to buffer a bicycle lane from vehicular traffic.	
Angled on-street parking		Install when more on-street parking is needed than can be provided with parallel parking and when there is sufficient width to transfer more than one travel lane to parking. If considering back-in angle parking, note that it is not compatible with Accessible Parking.	
Automobile wayfinding	See Wayfinding Signage - Automobile wayfinding, page 27.		

Component	Function	Guidance	Illustration
Bus stop	Provides a comfortable, safe place to wait for the bus and an opportunity to provide weather protection. Enables riders to clearly identify bus stop location.	<p>Stop location: Near key destinations, on the far side of intersections so disembarking passengers do not have to cross in front of the bus and passengers removing bicycles from front-mounted racks are positioned away from the intersection.</p> <p>Bus bulb: When located adjacent to a parking lane, the curb can be extended into a bus bulb so the bus does not have to merge in and out of traffic. Must be designed to be compatible with bicycle facility.</p> <p>Furniture: Install a bench and trash bin at a minimum, full transit shelter preferred.</p>	

Bicycle Facilities

Conventional bike lane	Designates an exclusive space for cyclists that is marked with an unbroken white painted line. Within the lane, a painted arrow and bicycle symbol indicate the direction of travel.	Install bike lanes on both sides of the road where there is two-way vehicle travel. Each bike lane should be 5-7 feet wide and can be painted green for greater visibility. Paint a 6-8 inch white line bordering traffic lanes and a 4 inch white line bordering parking, if present. Use conventional bike lanes only when the road is too narrow for buffered bike lanes.	
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Component	Function	Guidance	Illustration
Buffered bike lane	Designates an exclusive space for cyclists separated from vehicle traffic by a buffer.	Lanes should be 5-7 feet wide with a 2 foot or greater buffer where possible. Lanes can be painted green for greater visibility. See Manual on Uniform Traffic Control Devices (MUTCD) figure 9C-3 for painted bicycle icon. Buffer types include physical barriers (such as planters boxes or bollards) and painted stripes or cross-hatching.	  <p data-bbox="1654 639 1944 659">Source: Dianne Yee, 2014 (via Flickr)</p>
Contra-flow bike lane	Designates an exclusive space for cyclists to ride safely against traffic. Within the lane, a painted arrow and cyclist symbol indicate the direction of travel.	Install contra-flow bike lane on a one-way street segment to provide a continuous bike facility on key routes. Separate the lane from vehicles with a double-yellow line and buffer if possible. Bicycle traffic signal heads may be added and signage at intersecting streets should warn drivers of oncoming bicycle traffic.	 <p data-bbox="1430 989 1719 1008">Source: Greg Griffin, 2013 (via Flickr)</p>
Sharrow (shared lane marking)	Designates a shared lane for both cyclists and vehicles with the bicycle sharrow icon painted in the middle of the travel lane. Also called shared lane markings.	Use when a road is too narrow for full bicycle lanes. Use only on streets with speed limits below 35 mph. Sharrows should be placed a minimum of 11” from the curb or parking lane, and ideally toward the center of the travel lane. Locate after intersections and every 250 feet thereafter. “Super sharrows” add dashed lines on either side or green paint behind the sharrow icon (an ‘experimental’ treatment per the FHWA) to enhance visibility.	  <p data-bbox="1717 1338 1944 1357">Source: MUTCD figure 9C-9</p>

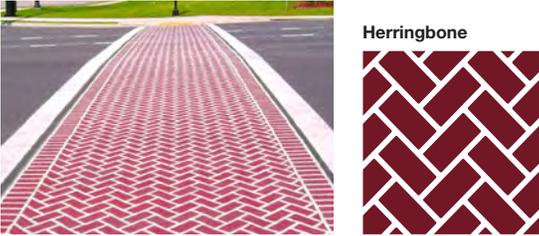
Component	Function	Guidance	Illustration
Bike box	Designates space in front of stopping vehicles at a signalized intersection where cyclists can be more visible to nearby drivers while waiting for the signal cycle. Facilitates left turns and crossing intersections.	Install box (14' minimum recommended) with a cyclist icon backed by green paint. Include an advance stop bar for vehicles, full-time “no turn on red” restriction, and set back from crosswalk. A pedestrian countdown signal is required if the box covers more than one lane. Bike boxes are ‘experimental’ treatments per the FHWA, but have been implemented successfully in nearby jurisdictions.	 <p data-bbox="1434 651 1713 670">Source: MUTCD figure 9C-3A or B</p>
Bicycle intersection crossing markings	Painting across intersection to ensure cyclists have exclusive space and alerts drivers to the presence and path of bicycles.	Install in conjunction with a bike lane. Indicates the continued bicycle path through an intersection with arrows, sharrows, or cyclist icons painted on the pavement.	 <p data-bbox="1299 1000 1850 1019">Source: National Association of City Transportation Officials (NACTO)</p>
Bicycle signal detection	Detectors sense cyclists at an intersection to activate a green signal.	Install bicycle signal detection (using in-pavement loops, video, or other means) where possible to decrease risky or illegal behavior while increasing travel efficiency for cyclists.	 <p data-bbox="1507 1320 1640 1339">Source: NACTO</p>
Bicycle wayfinding	See Wayfinding Signage - Bicycle wayfinding, page 28.		

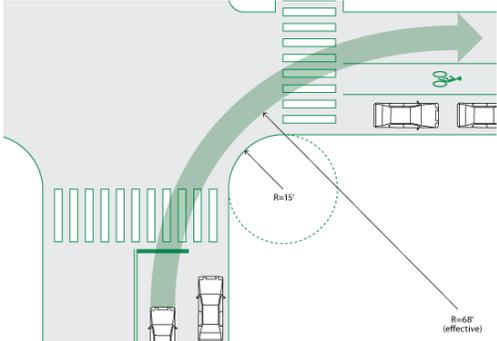
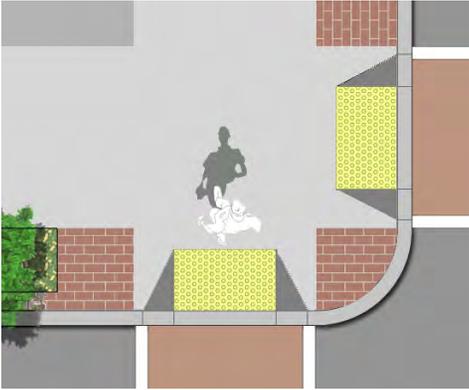
Components of the Street: Intersections and Crosswalks

The table below provides the tools to redesign intersections along the study corridors to emphasize safe pedestrian crossings with minimal delay.

Decorative crosswalks highlight pedestrian crossings throughout, and can be added to intersections where there are currently no crosswalk markings. Full-featured curb ramps allow crosswalks to be accessible to pedestrians of all abilities. Reconfigured intersection signal

cycles minimize pedestrian delay, boost pedestrian confidence that the signal will soon change, and reduce risky pedestrian behavior.

Component	Function	Guidance	Illustration
Intersections and Crosswalks			
Decorative crosswalk	Markings at intersections that facilitate pedestrian crossings.	Install two white retro-reflective thermoplastic stripes marking the edge of the pedestrian walking area and a thermoplastic herringbone brick pattern and coloring. Crosswalk should be at least as wide than sidewalk. Shown: Ennis-Flint Traffic Patterns Herringbone TP22. Alternative, 'special' crosswalk designs will be considered on a case-by-case basis.	 <p data-bbox="1499 938 1650 959">Source: Ennis-Flint</p>
High-visibility crosswalk	Longitudinal stripes at intersections facilitate safer pedestrian crossings due to being more visible to motorists than transverse lines.	Install 'continental' style crosswalks of parallel white stripes at major intersections, where higher speeds, turning traffic volumes, and pedestrian volumes warrant. Position stripes to avoid wheel paths to reduce maintenance needs. Crosswalk should be at least as wide as the sidewalk.	

Component	Function	Guidance	Illustration
Corner radius	Influences vehicle turning speeds, pedestrian crossing distances, and curb ramp alignment.	Minimize curb corner radius; in urban settings, NACTO recommends a radius of 15 feet or less. Any corner radius changes must be designed to ensure sufficient effective turning radius for the appropriate design vehicle.	 <p>Source: NACTO</p>
Curb ramp location and specifications	General specifications regarding the transition from the sidewalk to the crosswalk.	Install a curb ramp at every crosswalk in the direction of travel. Affix truncated domes to each ramp to alert the pedestrian of the transition into traffic. Per the <i>State Of California Department Of Transportation Standard Specifications (73-1.02B)</i> , truncated domes should be yellow. The texture and color of the curb ramps should match the sidewalk's clear path. Use darker gray paving on ramp flares for contrast with truncated domes.	
Curb extension	Enhance pedestrian safety and comfort by narrowing the roadway, extending the sidewalk, and better defining conflict points, usually at intersections. Also called bulb-outs.	Install at intersections with long crossing times, heavy pedestrian traffic, a history of pedestrian safety issues, or where neighborhood streets intersect with busier throughways. The texture and color of the pedestrian clear path should extend all the way to the curb ramps.	

Component	Function	Guidance	Illustration
Midblock crossing	Facilitates safe pedestrian crossing between major destinations and/or along long block faces.	Install in locations where there are high-traffic pedestrian destinations on both sides of the street and conflicts for the use of the curb space are minimal. Install with a pedestrian crossing warning system as a minimum safety measure. Alternative, 'special' crosswalk designs (as shown) will be considered on a case-by-case basis. May be combined with curb extensions to reduce cross distance.	 <p data-bbox="1423 667 1722 688">Source: ActiveSteve, 2013 (via Flickr)</p>
Signal timing and phasing	Determines when and for how long traffic in each lane (including crosswalks) is allowed to travel through an intersection.	Signal phasing should prioritize pedestrian crossing to the greatest possible extent, subject to appropriate traffic studies. Intersection delay not only discourages walking and biking, but it also encourages risky or illegal behavior.	
Signal activation	Pushing the signal activation button notifies the intersection controller system to include pedestrian signalization in the next signal cycle.	In general, pedestrian signals should be automatically included in the signal cycle. Pushbuttons should function as an accessibility feature, offering additional confirmation of a safe crossing, but should not be necessary to activate a pedestrian crossing signal. Further specifications on pedestrian pushbuttons and auditory signal systems can be found in the Accessibility chapter.	

Components of the Street: Sidewalk Realm

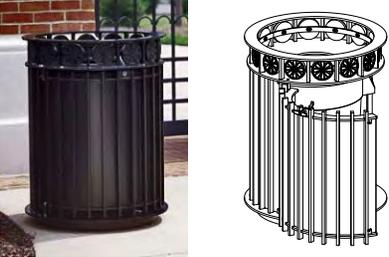
Sidewalks are the spine of the green frame. They connect the private and public realms, interact with all modes of travel, and provide the social environment of the streetscape.

On sidewalks, people can find benches, landscaping and street trees, a range of street lights and pedestrian lamps, bike racks, public art, drinking fountains, and other features of outdoor living. Sidewalk concrete and brickwork shall be repaired or replaced when heaving, tree roots, or other maintenance issues impede pedestrians' smooth, clear path.

Throughout the downtown, elements including benches, trash receptacles, drinking fountains, and lighting should be powdercoated in black color with a semi-gloss finish for a consistent look.

The table below details those elements that can enliven the sidewalk by making the space both useful and interesting.

Component	Function	Guidance	Illustration
Sidewalks			
Awnings	Roof or material projections over the sidewalk for weather protection and to enhance aesthetic quality of the street.	Existing and new street-fronting retail should provide awnings, where possible. Per the City's Municipal Code, awnings should project at least 7 feet over the sidewalk. The Corridors Plan recommends a height of at least 7 feet 4 inches. Wooden awnings over sidewalks and illuminated signs are prohibited.	
Benches and seating	Benches or chairs placed in the public realm.	Install benches to match style of benches near Todos Santos Plaza: DuMor bench 58, with center armrest, in powdercoated black color with semi-gloss finish. Place in areas that are well-lit and near activity, amenities, and other street furniture, and in both sun and shade. Existing benches should be retrofit with center armrests and be painted black as required for maintenance.	 <p>Source: DuMor Site Furnishings</p>

Component	Function	Guidance	Illustration
Bicycle parking - short term	Bicycle racks allowing both wheels to be secured to a structure cemented in place.	Install bike parking at key destinations and near restaurants, shops, and other frequently visited locations. Rack styles may match existing (inverted 'U') or other creative styles that provide two points of contact. Per the City's Municipal Code, bicycle parking should have a minimum allotted space of 2.5 feet by 6 feet.	
Bicycle repair kiosk	Publicly-accessible bicycle mounting stand and tools for cyclists to perform basic repairs	Install bicycle repair kiosks near bicycle parking facilities at key destinations, such as at Todos Santos Plaza. Kiosks should be located out of the main sidewalk clear path. Model shown: Dero Fixit.	 <p data-bbox="1522 883 1627 902">Source: Dero</p>
Drinking fountains	Provide drinking water for immediate needs and filling water bottles.	Install fountains with the additional features of water bottle fillers at Todos Santos Plaza and the BART Station. Consider placement at other important bicycle and pedestrian destinations. Fountains should be powdercoated black in semi-gloss finish, and offer a spout accessible to wheelchair users.	 <p data-bbox="1470 1159 1680 1179">Haws model 3511</p>
Trash bins	Trash bins similar in style to the seating and benches.	Install bins near intersections and in high pedestrian traffic areas. Locate far enough from seating to allow comfortable sitting. Include recyclables insert or locate recycle bins nearby. Bins should be powdercoated black in semi-gloss finish. DuMor Receptacle 102 matches the preferred benches (see above).	 <p data-bbox="1449 1484 1701 1503">Source: DuMor Site Furnishings</p>

Component	Function	Guidance	Illustration
Utility boxes	Utility boxes in the public right-of-way can be canvases for local art.	Adopt a program or seek a local nonprofit partner to install art on the existing downtown utility boxes.	 <p data-bbox="1417 586 1732 609">Source: Aaron Anderer, 2013 (via Flickr)</p>

Lighting	Improves visibility and safety for pedestrians, cyclists, and drivers and provides a more welcoming environment at night.	<p data-bbox="714 630 1955 755">Street and pedestrian light fixtures should direct light onto the street and sidewalk in an evenly distributed pattern and meet standard light level and uniformity requirements, per IESNA RP-8 (street lighting) and RP-33 (pedestrian lighting). Adjust dimensions below based on context to meet these standards. Tree canopy maintenance may be necessary to reduce interference with light distribution.</p> <table border="1" data-bbox="714 760 1955 1339"> <thead> <tr> <th data-bbox="714 760 1129 803">Sidewalk</th> <th data-bbox="1129 760 1528 803">Street</th> <th data-bbox="1528 760 1955 803">Pole</th> </tr> </thead> <tbody> <tr> <td data-bbox="714 803 1129 1104"> <p data-bbox="714 812 1129 901">Luminaire: Memphis Pedestrian Teardrop LED with shallow skirt</p>  </td> <td data-bbox="1129 803 1528 1104"> <p data-bbox="1129 812 1528 868">Luminaire: Memphis Teardrop LED shallow skirt</p>  </td> <td data-bbox="1528 803 1955 1339" rowspan="4"> <ul data-bbox="1543 812 1701 1258" style="list-style-type: none"> • Fluted, tapered pole • Powder-coat black, semi-gloss finish • North Yorkshire clamshell base • West Liberty crossarm  </td> </tr> <tr> <td data-bbox="714 1104 1129 1144">Height: 12-15 feet (approx.)</td> <td data-bbox="1129 1104 1528 1144">Height: 25 feet (approx.)</td> </tr> <tr> <td data-bbox="714 1144 1129 1185">Place approx. 40-60 feet apart</td> <td data-bbox="1129 1144 1528 1185">Place approx. 80-120 feet apart</td> </tr> <tr> <td data-bbox="714 1185 1129 1226">Orient over sidewalk path</td> <td data-bbox="1129 1185 1528 1226">As close to curb as possible</td> </tr> <tr> <td colspan="2" data-bbox="714 1226 1528 1339">Bulb: Light Emitting Diode (LED) 2,800-4,000 K color temperature</td> <td></td> </tr> </tbody> </table>	Sidewalk	Street	Pole	<p data-bbox="714 812 1129 901">Luminaire: Memphis Pedestrian Teardrop LED with shallow skirt</p> 	<p data-bbox="1129 812 1528 868">Luminaire: Memphis Teardrop LED shallow skirt</p> 	<ul data-bbox="1543 812 1701 1258" style="list-style-type: none"> • Fluted, tapered pole • Powder-coat black, semi-gloss finish • North Yorkshire clamshell base • West Liberty crossarm 	Height: 12-15 feet (approx.)	Height: 25 feet (approx.)	Place approx. 40-60 feet apart	Place approx. 80-120 feet apart	Orient over sidewalk path	As close to curb as possible	Bulb: Light Emitting Diode (LED) 2,800-4,000 K color temperature		
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Component	Function	Guidance	Illustration
'Twinkle' tree lights	Provide ambient light and enhance the nighttime environment.	Install new tree lighting fixtures and wiring to match existing style in Todos Santos Plaza. Add to corridors where not already existing, including Salvio West, Central Grant, and Oak Street zones.	
Sidewalk edge/ furnishings zone	Accommodate street furniture and separate the clear pedestrian walking path from vehicle traffic	Where hardscape is used in the edge zone, follow precedent and specify pavers to visually distinguish between the clear path and curb. Pavers should be set in a mortar base for longevity. Tree grates should also be specified (see page 30).	
Sidewalk maintenance	Preserve the structural integrity of the sidewalk to allow safe and clear passage for all pedestrians.	The City's Municipal Code establishes that maintenance of a sidewalk clear of obstructions, including all costs and expenses incurred, is the responsibility of the adjacent property owner. This include repairing surfaces, replacing sidewalks, removing weeds, and trimming trees and shrubs. The City shall work with property owners to raise awareness of this responsibility.	
Driveways and curb cuts	Ramps facilitate vehicular travel over a sidewalk to access a property.	When installing a driveway or other non-intersection curb cut, maintain a level sidewalk path. Driveways should be as narrow as possible to slow vehicles and minimize sidewalk interruption. Use an 11-foot one-way path or 22-foot two-way path unless the path is needed for truck loading or required to be a fire lane.	

Components of the Street: Wayfinding Signage

Used as a system, wayfinding signs can help pedestrians, cyclists, and motorists alike navigate Concord's busy urban environment.

As Concord places even more emphasis on multiple modes of travel, the existing Downtown wayfinder signs for automobiles and kiosks for pedestrians can be augmented to provide more guidance on getting around Downtown.

New wayfinding signs at key locations, specially designed street signs, and bicycle route signage can all help make the study corridors feel more connected and contribute to a sense of place.

Wayfinding			
<p>Automobile wayfinding</p>	<p>Driver-oriented signs that direct autos to key destinations in and around Downtown.</p>	<p>Design to match existing automobile wayfinding signs. Key driving destinations may include: Todos Santos Plaza, the BART station, hospitals, public parking, and other city facilities. Signs to be placed on street signals and light poles, expanding on the existing signage at select locations Downtown.</p>	
<p>Banner signs</p>	<p>Foster a district identity and provide community 'branding' through and add for various</p>	<p>Content should contribute to neighborhood identity (e.g. "Todos Santos Plaza") and/or provide information on citywide events and programs, such as the Music and Market event series. Banners can be hung from street lights/utility poles, with no more than two per pole.</p>	

<p>Bicycle wayfinding</p>	<p>Signage and/or pavement markings to guide cyclists along the city’s bicycle routes and to key destinations.</p>	<p>Install bicycle wayfinding consistent with the Citywide Bicycle, Pedestrian and Safe Routes to Transit Plan. Use signs in combination with pavement markings indicating the bicycle route.</p> <p>Signs provide directional arrows, distances, and times to destinations. Can be customized to include special path or city logos. Locate at major trip origins (such as the BART station), along bicycle routes, and where a bicycle route turns.</p>	 <p>Source: NACTO</p>
<p>Pedestrian kiosk wayfinding</p>	<p>Kiosks with locator maps, key destinations, and business.</p>	<p>Displayed content should include the sign location (cross streets or major location, like Todos Santos Plaza), a simple locator map on both sides, and nearby destinations with directional signs and walking time.</p>	
<p>Special district street name signs</p>	<p>Street name signs with notations for special districts.</p>	<p>Design street signs with a custom logo and/or text to alert users that they have entered a special district. Install signs in the ‘Inner Core’ area on Grant and Salvio Streets, and other streets as determined by the City’s Housing and Economic Development Council Committee. Existing signs can be retrofitting by adding a “top” to the sign stack.</p>	 <p>Source: AtlasPDX82, 2011 (via Wikimedia Commons), Kumar Appalah, 2009 (via Flickr)</p>

Components of the Street: Landscaping

Landscape features offer ecological, functional, and aesthetic benefits to the streetscape.

Trees and landscaping make urban environments more comfortable and inviting, adding visual interest and variety to the streetscape. Trees offer shade during hot summer months, and landscaping strips reduce stormwater runoff. Landscaping also buffers pedestrians from vehicular traffic.

For additional information on design options for healthy trees, see Downtown Corridors Plan Appendix A: Urban Forest Guidance.

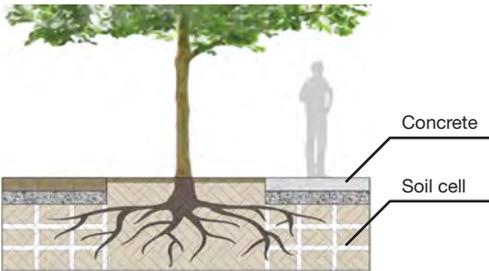
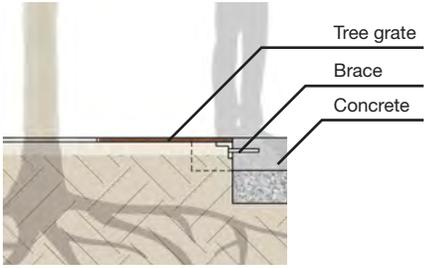
PLANTINGS

Planting area treatments should complement the existing aesthetic of surrounding areas while working to reduce the impact of ornamental landscape on natural resources. Plant species should be selected based on observation of successful landscaping in the project area, and supplemented with recommendations in the Contra Costa Stormwater C.3 Guidebook. All species proposed herein are tolerant of various urban stresses, including drought, vehicular and pedestrian traffic, and have similar, minimal irrigation and maintenance requirements. Final design and species selection should be approached on a case-by-case basis.

IRRIGATION

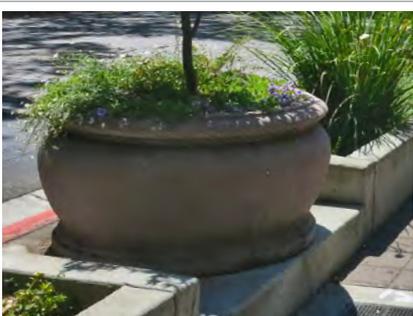
All irrigation for groundcover planting should consist of a low-flow drip system that emits water at each plant, eliminating the need for overhead spray or other techniques that require higher water usage. Tree irrigation should encourage deep rooting through use of RWS (root watering systems) and surface bubbler installations. Standalone planters without access to a permanent irrigation system can be hand-watered or utilize a modular irrigation system, which uses soil moisture sensors to release water as needed. These systems require no plumbing, but must be regularly filled with water based on plant needs. Final irrigation system design should reflect specific conditions on a case-by-case basis.

Component	Function	Guidance	Illustration
Street Trees			
Tree species	Trees offer social, economic, and environmental benefits enhancing the aesthetic beauty of neighborhoods, moderating climate, reducing energy costs and increasing property values.	Tree selection criteria include: aesthetics, functionality, cultural and ecological significance, and potential conflicts with structures and utilities. The following species are recommended:	
		<p>Chinese Flame Tree</p> <p>Crape Myrtle</p> <p>Tulip Tree</p> <p>London Planetree</p> <p>Littleleaf Linden</p>	

Component	Function	Guidance	Illustration
Trees - new trees	New trees to provide shade, comfort, and separate vehicle and pedestrian traffic.	Plant trees with root barriers and sufficient soil base to prevent sidewalk maintenance issues. In new construction, use plastic soil cells to allow tree roots to grow in the uncompacted soil between structural supports. Soil cells can support vehicular loads and provide stormwater management through absorption, evapotranspiration, and interception.	
Tree planted area	An unpaved area of soil surrounding a tree containing existing, new or amended soil. Planted areas reduce impervious surface and runoff.	May be planted or covered with mulch. Ideally used next to wide walking areas. Permeable paving cut-throughs allow pedestrian circulation without damaging plant material or compacting soil.	
Tree grates	Protect tree from soil compaction and allow uninterrupted pedestrian circulation.	Match style and size of existing tree grates. Install flush with existing sidewalk surface, and repair sidewalk heaving as necessary to provide a continuous, smooth walking surface. Shown: Neenah Foundry 'Metropolitan' two-part tree grate.	 <p data-bbox="1314 1149 1518 1174">Source: Neenah Foundry</p>
Tree grate retrofit	Add grates to existing trees. Potential to enlarge existing tree well areas to allow for soil mediation, enhanced root growth, and safer pedestrian travel.	Add a concrete collar to support tree grate flush with sidewalk. Saw cut existing concrete tree wells and pour a concrete collar to support the grate, taking care to avoid root damage (e.g. a newer planting without an established root system).	

Component	Function	Guidance	Illustration
Tree well mulch to mitigate trip hazard	Reduce trip hazards caused by compacted tree well soils that are not flush with the surrounding pavement. Interim solution before tree grate installation.	Organic mulch, such as shredded bark, can not only reduce tripping hazards, but also improve moisture retention. Decomposed granite, which has been used within the corridors, is not recommended as it can become compacted over time and can be displaced with foot traffic, causing a maintenance issue.	

Landscaping Strip/Planters

Landscape strip / permanent planter	Allow stormwater infiltration, separate pedestrian and vehicular traffic, improve aesthetics of urban environment, and reduction of heat island effect.	Use existing perennial species within the corridors for a cohesive aesthetic (see palette on page 32). Plant in large masses with few species for ease of maintenance and a stronger visual statement.	
Movable planter	Provide pedestrian buffer from vehicles, add visual interest to streetscape.	All planters require supplemental irrigation. Avoid placing in high traffic pedestrian accessible pathways. Opportunity to select annuals, special event planting, and definition of social spaces. Place perennials at the center of the planter as year-round 'anchors,' and place annuals around them.	

Landscaping Palette

STREET TREES



Chinese Flame Tree
Koelreuteria Bipinnata



Crape Myrtle
Lagerstroemia indica



Tulip Tree
Liriodendron tulipifera



London Planetree
Platanus x acerifolia



Littleleaf Linden
Tilia Cordata

SMALL/MEDIUM SHRUBS



Fortnight Lily
Dietes Sp.



Lily of the Nile
Agapanthus Sp.



Daylily
Hemerocallis Sp.



New Zealand Flax
Phormium Sp.



Star Jasmine
Trachelospermum
Jasminoides



Rosemary
Rosmarinus Sp.



Cotoneaster
Cotoneaster
'Lowfast'



Carpet Rose
Rosa Sp.

GROUNDCOVERS

LOW-IMPACT DEVELOPMENT/STORMWATER FEATURES



Dwarf Cape Rush
Chondropetalum 'El Campo'



Rush
Juncus Patens



Coral Aloe
Aloe Striata



Creeping Sage
Salvia Sonomensis



Berkeley Sedge
Carex Divulsa

Components of the Street: Low-Impact Development & Stormwater

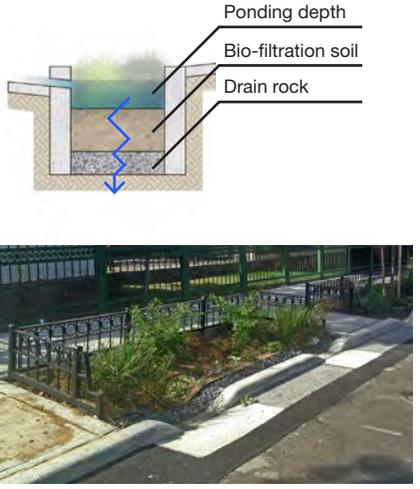
Low-impact landscape elements and stormwater features capture and treat excess runoff, as well as enhance the comfort and appeal of the pedestrian environment.

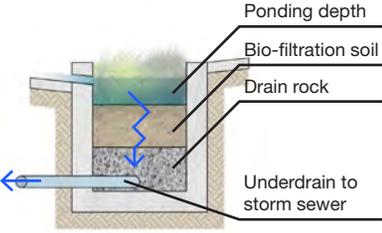
Green infrastructure design in Concord is governed by the Contra Costa Clean Water Program, and the Stormwater C.3 Guidebook. The Guidebook is written primarily to apply low-impact development principles to new construction; it prescribes optimizing a site, using pervious surfaces where feasible and rainwater harvesting before going to bio-treatment measures. Given the constraints of an existing

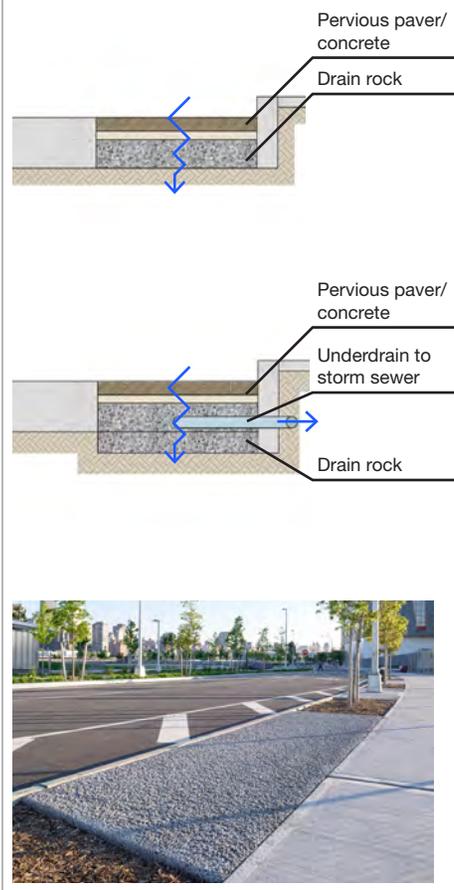
downtown, the most feasible green infrastructure will consist of either “Source Control” (such as pervious pavement) or “Treatment” measures (such as bio-filtration and bio-retention).

Bio-retention and bio-filtration function by diverting water from “grey” infrastructure, such as catch basins and storm sewers, and diverting it into planted areas. The water is allowed to pond (to a depth of 6”-12”), slowly seep through a minimum of 18” of specialized treatment soil, then collect in a layer of drain rock. In a bio-retention system, the treated water is allowed to infiltrate into the native soil, while in a bio-filtration system, the treated water is returned to the storm sewer. Bio-retention systems are preferred when the soil

is well-drained because they more closely mimic the natural environment, reduce the amount of water entering the storm sewer, and are less expensive to construct and maintain. Bio-filtration systems also improve the quality of stormwater, but do not reduce the quantity. As a result, these systems are preferred in poorly draining soils or close to building foundations. The Stormwater C.3 Guidebook specifies the exact dimensions, specifications, and recommended species planting list for these systems. The size of these systems is calculated using a flow and volume method per the Stormwater C.3 Guidebook, but usually is around 3% of the impervious area.

Component	Function	Guidance	Illustration
Low-Impact Development & Stormwater			
<p>Bio-retention planter (rain garden)</p>	<p>Filters stormwater naturally and allows it to soak into soil; reduces demand on storm sewer.</p>	<p>Area should be roughly 3% of the street area (on a typical block, this is roughly the size of 3 parking spaces). May integrate several along one block as opportunities allow. Place at Curb Extensions or in the Planting Strip. Choose bio-retention over bio-filtration when soil is well-drained per a geotechnical investigation. Sizing and design per the Contra Costa County Stormwater C.3 Guidebook.</p>	

Component	Function	Guidance	Illustration
<p>Bio-filtration planter (flow-through planter)</p>	<p>Filters stormwater naturally before discharging it into the storm sewer.</p>	<p>Area should be roughly 3% of the catchment area (on a typical block, this is roughly the size of 3 parking spaces). May integrate several along one block as opportunities allow. Place at Curb Extensions or in the Planting Strip. Use this option in poorly draining soils per a geotechnical investigation or when within 10 feet of a building. Size and design per the Contra Costa County Stormwater C.3 Guidebook.</p> <p>Where adjacent to parking, design with cut-throughs or set back from curb to allow passengers to safely exit their vehicle.</p>	 
<p>“Signature” bio-retention or bio-filtration</p>	<p>Can function as bio-retention, or as flow-through planter. Differs from those in being larger, treating a larger area, and serving as a larger green space with additional functions.</p>	<p>Use this option for treatment to create a focal point or pocket park. Size and design per the Contra Costa County Stormwater C.3 Guidebook.</p>	

Component	Function	Guidance	Illustration
<p>Permeable pavers/pavement</p>	<p>Allows water to infiltrate through paved area to native soil; reduces demand on storm sewer.</p>	<p>Use permeable pavers/materials where possible, such pavers as in sidewalk edge zone. Select materials to follow existing sidewalk design precedents.</p> <p>Material: Can be pervious concrete, or permeable pavers to better match existing bricks, which can also be colored. May be constructed with an underdrain where native soils are poorly drained. Underdrain may be raised above bottom of reservoir for some storage and to slow water infiltration water following storms.</p> <p>Placement: Place in parking lane (pavement) or on sidewalks (pavement or pavers) outside of the main walkway to allow for easier maintenance. Not recommended in travel lanes because the weight of vehicles, especially trucks, can damage permeable pavement and increase maintenance costs. Most effective where soil will allow infiltration.</p>	

4 Pop-up and Temporary Uses Guidelines

Pop-up and temporary uses can bring vibrancy to an area without a high level of investment or permanent change to the design of multi-use spaces. Concord's Farmers' Market in Todos Santos Plaza, for example, illustrates how these uses can benefit an area. Standards for design and implementation of pop-up and temporary uses will help ensure their ongoing success.

Design and Implementation

While most public realm investments can take years or even decades from planning to implementation, pop-up and temporary uses can activate the streets nearly overnight. Temporary uses are not only quicker to construct than new development or infrastructure, they also encourage experimentation and imaginative design. They help bring planning for the future from the abstract to the concrete by allowing people to interact with and respond to transformations of the public realm. Further, temporary uses benefit surrounding neighborhoods by spurring economic development and creating fun, relaxing shared spaces.

Creative design is a foundation of pop-up and temporary uses of the street. With temporary uses, communities can suspend the highly functional element of the street in favor of creating a space that is unique and aesthetically appealing. These uses are meant as urban surprises that draw a pedestrian in to linger, socialize, and enjoy the community. By nature, these spaces should be inviting.

Pop-up and temporary uses of the street include:

- Parklets or transformations of parking spaces into public spaces
- Food trucks and other mobile food vendors
- Retail or vending in the public realm or in a shared space on private property
- Bike corrals
- Street redesign
- Public art and performance space

While the various designs of a community use should be unique, some features are consistent. Signage should communicate that the area is available for public use. Like any public space, these spaces should be accessible in compliance with the Americans with Disabilities Act. Also like any use of the public space, temporary uses are required to obtain standard licenses detailed in the City of Concord Municipal Code (mostly covered in Chapters 12.50 and 18.200). Concord can encourage these uses by investigating ways to reduce the number and complexity of licenses, while still ensuring the uses are safe and in the public interest. For temporary uses in the downtown area specifically, the Municipal Code should be updated to allow and even encourage vendors and food vendor group sites to operate.

Description	Size and Type	Locations	Permitting	Maintenance	Photo
Parklets					
Semi-permanent transformations of parking spaces into public spaces	Total dimensions of one or two parking spaces	Parklets are generally located on low speed streets with high pedestrian volumes installed at least fifteen feet from an intersection. They can also be located in driveways with written consent from property owners.	<p>In Concord, the Community and Economic Development Department issues permits for use of the public right-of-way. A vendor operating within a city facility, such as a street, must receive a concessionaire license from the City.</p> <p>Additional permitting could include noticing and insurance requirements. Bay Area cities with parklet programs (San Francisco, Berkeley, and Oakland) have similar requirements for community support in the area surrounding the future parklet. Once community support is demonstrated, parklet applicants are generally required to provide a maintenance plan and to detail a schedule for removal upon permit expiration. Parklet managers are required to carry insurance.</p>	The parklet manager is required to maintain the parklet and the space around it. The parklet itself should be maintained by keeping plants in good health, removing any graffiti, and keeping the structure free of debris, grime, and other litter. Parklets should never impede curbside drainage and the area underneath the structure should be regularly swept and rinsed.	

Description	Size and Type	Locations	Permitting	Maintenance	Photo
Food trucks and other mobile food vendors*					
<p>From the City of Concord Municipal Code:</p> <p>Vendor cart. A small non-motorized vehicle equipped with a container(s) for food, wares, or other merchandise, and/or services offered for sale, barter, or exchange.</p> <p>Vendor motor vehicle. A motor vehicle from which food items, wares, or other merchandise and/or services are offered for sale, barter, or exchange.</p>	<p>Food trucks: total dimensions of one or two parking spaces; Food carts: necessary sidewalk space while allowing a 3-foot clear path and access to surrounding buildings and utilities</p>	<p>Food vendors are generally located on low speed streets with high pedestrian volumes and parked least fifteen feet from an intersection. Food trucks can also be located in driveways with written consent of the relevant property owners.</p>	<p>For individual uses, the City of Concord Municipal Code would need modification to:</p> <ul style="list-style-type: none"> • Allow vending within the Downtown Pedestrian District • Adjust restrictions on food vendor group site locations (especially regarding proximity of parks and ability to park in or block parking) • Apply temporary uses and structures regulations to vendors 	<p>The food truck or cart manager is required to maintain the truck or cart and the space around it. The vehicle itself should be maintained by properly disposing of waste and keeping the area free of grime, debris, and other litter.</p>	 <p>Source: Karlis Dambrans, 2014 (via Flickr)</p>
Retail or vending in the public realm or in a shared space on private property					
<p>See vendor cart and vendor motor vehicle descriptions above.</p>	<p>A temporary retail structure can be as large or small as the space in which it is located.</p>	<p>Temporary retail can be located on carts, under tents on tables, in parklets, in cargo containers, in vacant buildings, in buildings during off hours, and more.</p>	<p>The City of Concord Municipal Code will need modification to:</p> <ul style="list-style-type: none"> • Allow vending within the Downtown Pedestrian District • Apply temporary uses and structures regulations to vendors 	<p>Like other temporary uses, retail vendors should maintain a debris-free space. The property on which they locate should be in the same condition when they arrive as when they leave.</p>	

*Individual occurrences are distinct from group events, such as 'Off the Grid,' which are permitted and organized together.

Description	Size and Type	Locations	Permitting	Maintenance	Photo
Bike corrals					
<p>Short-term bicycle parking for numerous bicycles.</p>	<p>Bike corrals can be artistic, unique, and of a variety of sizes or types. With striking design as a priority, bike parking can transform from component to highlight of the street.</p>	<p>Bike corrals can replace vehicle parking or can sit on a sidewalk or walkway large enough to preserve a minimum 3-foot clear path for pedestrians.</p>	<p>Like all bike parking, bike corrals should be located within 50 feet from a building entrance and preferably within view of the entrance.</p>	<p>Bike corrals should be maintained by the City agency that maintains other utilities and features of the public realm.</p>	 <p>Source: VeloBusDriver, 2009 (via Flickr)</p>
Street redesign					
<p>Transformation of the street configuration using temporary materials, such as chalk, cones, potted plants, and seating.</p>	<p>Street redesigns can expand or contract to fit the relevant function and location.</p>	<p>Street redesigns are safest on low traffic but high pedestrian volume streets.</p>	<p>The type of street redesign determines the permitting. Generally, the permitting will follow permitting for other temporary uses of the public realm.</p>	<p>Street redesigns require the same general upkeep during use and upon removal as other temporary uses of the public realm.</p>	 <p>Source: Brian Kusler, 2009 (via Flickr)</p>

Description	Size and Type	Locations	Permitting	Maintenance	Photo
Public art installations and performance space					
<p>A public art installation is any feature meant to enhance the aesthetics of a space as its primary or sole purpose. Performances can include music, theater, dance, magic, or other entertainment.</p>	<p>As small or large scale as can be imagined</p>	<p>Art installations usually benefit from being in the center of a walk space, or at least enabling a 360 degree appreciation. But since art installations can be small or placed on existing components of the street, such as utilities, they can be located anywhere. Performance spaces are slightly less flexible. Music or theater spaces tend to need a projection and a backside space, meaning that they're best organized along wide sidewalks or in parks, as is the Music and Market Series and other festivals in downtown Concord.</p>	<p>The City of Concord Municipal Code would likely classify performances under a Major Temporary Use and would require an administrative permit. Permitting for public art installations would vary widely depending on the purpose, size, and location of the installation.</p>	<p>Art installations and performance spaces require the same general upkeep during use and upon removal as other temporary uses of the public realm.</p>	

*Individual occurrences are distinct from group events, such as 'Off the Grid,' which are permitted and organized together.



Concord Farmers' Market

5 Accessibility Guidelines

Sidewalks and street crossings are used by a broad cross-section of users and should be designed to accommodate these users' broad range of needs. In fact, all road users are at some point pedestrians crossing or walking along sidewalks.

Pedestrians encompass all ages and mobility needs, including people with visual or hearing impairments, people in wheelchairs or using other mobility devices, and people with strollers or carts. Pedestrians range in age from children to the elderly, and have varying walking speeds. Good design can be the first step in creating public spaces accessible to everyone. This chapter highlights issues of particular importance for public realm accessibility and elaborates on information provided in the Components of the Street section.

Overview

This section of the Design Guidelines aims to emphasize a commitment to accessible design in the design of the study corridors. The basic requirements for accessible design on streets and sidewalks are governed by the Americans with Disabilities Act (ADA). All design elements should conform to California Title 24 Chapter 11B: Accessibility to Public Buildings, Public Accommodations, Commercial Buildings, and Publicly Funded Housing. The US Access Board also provides guidelines and standards for the design and implementation of accessible routes.

Sidewalks and Crossings

STANDARD: PEDESTRIAN THROUGHWAY MINIMUM CLEAR PATH

4 feet (Legal requirement)
5 feet (Recommended)

The minimum clear path along the sidewalk should be of consistent texture and color, ideally with no cross-slope, and should not be interrupted by driveways. A 5-foot minimum is recommended to allow passing wheelchair users.

STANDARD: PEDESTRIAN CROSSWALK REFUGE ISLAND DIMENSIONS

4 feet long by 3 feet wide

If the island is raised, it should have ramps on either side.

STANDARD: MINIMUM VERTICAL CLEARANCE ABOVE SIDEWALK

80 inches (84 inches recommended)

STANDARD: MAXIMUM PROTRUSION INTO CLEAR VERTICAL AREA

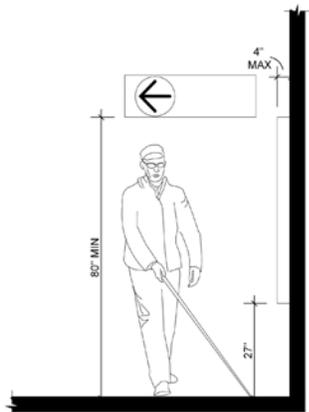
4 inches (except post-mounted objects)

DISCUSSION

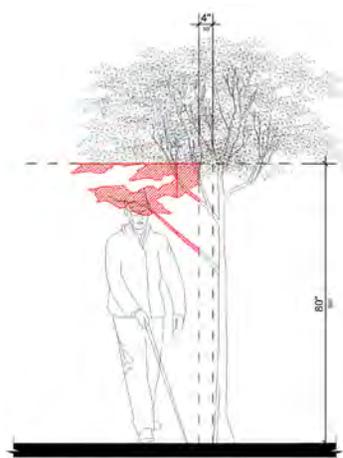
Sidewalks should be kept clean and clear of obstructions, including the sidewalk surface itself (such as heaving from tree roots) and on top of the surface (such as brush and other debris). Per the City of Concord Municipal Code, maintenance of the sidewalk is the responsibility of any property owner whose property is adjacent to or fronts the sidewalk. This responsibility encompasses maintenance of all sidewalk conditions.

Paving surfaces should designate the clear path using different colors and textures from the furnishings zone, where parking meters, signs, utilities, street furniture, and other obstructions may be located. The clear path should be a smoother texture than the adjacent areas.

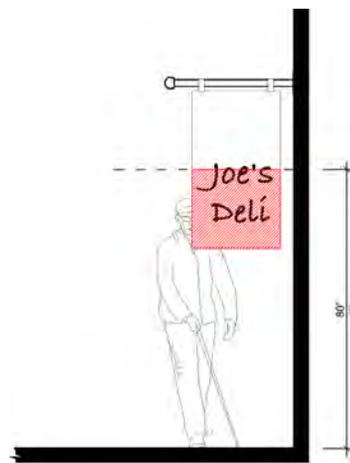
Additionally, the space above the sidewalk should be kept clear, for a minimum of 80 inches above the ground. Objects should not protrude more than four inches into this area above the sidewalk (except post-mounted objects). Examples of elements that should be kept clear of the walkway include: tree branches, leaning tree trunks, signage, awnings, lights, utilities, planter boxes, and street furniture.



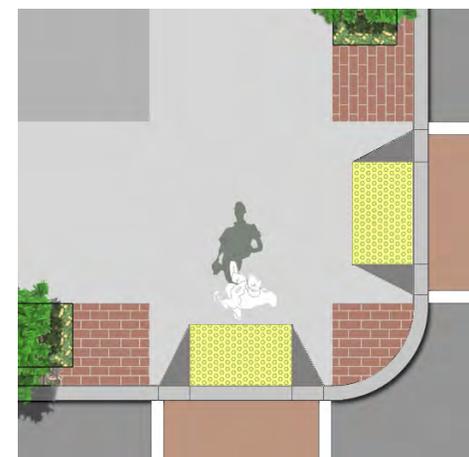
Basic vertical clearance dimensions



Example: Tree limbs violate vertical protrusion standards



Example: Sign violates vertical protrusion standards



Ideal curb ramp arrangement: separate ramps in the direction of travel

Where tree grates extend the clear path, they must be flush with sidewalk and tree limbs should be kept clear of the vertical clear area.

Curb Ramp Standards and Placement

STANDARD: MAXIMUM CURB RAMP SLOPE
8.3%

Ramps should be installed at any pedestrian crossing. In the direction of pedestrian travel, the ramp should be as gradual as possible, with a slope of 8.3% at most.

STANDARD: CURB RAMP MINIMUM WIDTH
4 feet, 2 inches wide

Minimum width does not include the portions of the ramp perpendicular to pedestrian travel where the sidewalk transitions into the ramp (flared sides).

STANDARD: MAXIMUM CURB RAMP CROSS SLOPE
2.0%

The cross slope is the slope perpendicular to pedestrian travel. In other words, the path should not be angled toward or away from the building edge.

PREFERRED: CURB RAMP TYPE
Perpendicular curb ramps in direction of travel

DISCUSSION

A sidewalk or curb ramp allows pedestrians with strollers or carts and people in wheelchairs or with other mobility devices to safely transition from the sidewalk to a crosswalk. Ramps should alert pedestrians of roadway crossings and guide them safely into the crosswalk. The ramp should have truncated domes, yellow in color, extending the full width and depth of the ramp, not including the flared sides. On corners with more than one connected crosswalk, a ramp should be installed for each crosswalk. The preferred ramp alignment is perpendicular to curb with the slope toward the crosswalk. Although legally permissible, diagonal ramps angled into the center of the intersection are not recommended.

To assist low vision and blind pedestrians, the finish texture of the clear walk area of the sidewalk paving should extend to the curb ramp, and dark gray integral color paving should be used surrounding curb ramps to create a high visible contrast with the truncated domes.

Pedestrian Signals and Pushbuttons

STANDARD: CROSSING PUSHBUTTON LOCATION AND ORIENTATION

Adjacent to curb ramp, oriented parallel to direction of travel



Crossing pushbutton parallel to direction of travel.

STANDARD: CROSSING PUSHBUTTON HEIGHT (MAXIMUM)

3 feet 6 inches

DISCUSSION

Ideally, every signalized intersection will have an automatic pedestrian walk signal. However, crossings that do not should have a pushbutton to activate a pedestrian crossing signal. All intersections with pedestrian crossings should have a uniform auditory communications system that alerts pedestrians to the signal cycle. Auditory signals enhance safety and accessibility for all pedestrians, especially those with visual impairments.

Pedestrian crossing pushbuttons should be located as close to each curb ramp as possible without interfering with the clear path and should also be no more than three and a half feet tall.

The control face of the button should be parallel to the direction of the crosswalk to make clearer which crosswalk signal the button activates. The alignment of the front face of the pushbutton should establish an alignment within the width of the crosswalk.

The pushbutton should activate the auditory signal, which should be amplified from the pushbutton unit itself, and should articulate the different cycles of walk or wait. The 'wait' cycle signal is to help the blind and visually impaired to locate the crosswalk and pushbutton. The pushbutton, when pushed and held, should identify the street that can be crossed and the parallel street (for instance: "Crossing Concord Boulevard along Grant Street"). The pushbutton should vibrate and illuminate when it is time to cross, and the audible signal should be distinct from the wait cycle signal.

Street Furniture Considerations

STANDARD: BENCH AND SEATING SETBACK FROM CLEAR PATH

18 inches

Street furniture should not obstruct pedestrian travel. The clear path should remain clear surrounding street furniture. Place benches and other seating elements 18 inches offset from the minimum clear path so that legs, feet, and bags do not extend into the clear path.

STANDARD: TABLE DIMENSIONS

Tabletop height: 28 to 34 inches
Knee clearance: 27 inches under table

Tables should be of appropriate height for wheelchair users and have sufficient knee room.

STANDARD: DRINKING FOUNTAIN MAXIMUM HEIGHT

36 inches

Drinking fountains should be low enough for wheelchair users to reach.

DISCUSSION

Where possible, alert pedestrians to the presence of street furniture via a change in ground material, and select street furniture colors that contrast with the sidewalk surface. Public realm seating should accommodate wheelchair parking. Transit shelters should include wheelchair space next to the bench.

Accessible Parking Standards

STANDARD: ACCESSIBLE PARKING SPACE GENERAL LOCATION

Adjacent to intersection curb ramp, back of space nearest curb ramp

Parallel parking: when used on one-way street, preferred location is on right side of street

STANDARD: MAXIMUM SLOPE

8.3%

STANDARD: MAXIMUM CROSS SLOPE

2.0%

DISCUSSION

Accessible parking spaces should be located considering ease of access to curb ramps and minimizing the user's interaction with traffic in the roadway. Locate spaces next to curb ramps, with the back of the space nearest the ramp so that a person using a back lift can avoid traveling around the vehicle, and into the street.

Accessible parking cannot be located within tow zones (including but not limited to street cleaning and parking zones converted to drive lanes at commute hours).

Accessible parallel parking must provide a clear aisle to ensure that people using side lifts can exit safely, out of bicycle and vehicle lanes.

Accessible parking areas can only be located on streets with slopes of less than 8.3%, and cross slopes less than 2%.

Refer to California Title 24, Chapter 11b, Section 502 Parking Spaces for specific requirements for accessible diagonal and perpendicular parking spaces and accessible loading zones, including signage, street markings, and painted curbs.

6 Implementation

The design concept established by the Design Guidelines will be implemented incrementally, in combination with other projects and as the City identifies funding sources. This section describes the implementation process, setting priorities for projects with parameters that allow for flexibility.

Prioritizing projects helps distinguish between projects that should be pursued now and those that can be implemented as funding becomes available. In addition to setting priorities, a successful Corridors Plan implementation will:

- Identify funding sources early;
- Budget for appropriate technical work;
- Integrate projects into the Capital Improvements Plan;
- Set a guide for internal governmental collaboration so that all departments are at the table from the start; and
- Coordinate with General Plan and Downtown Specific Plan implementation, so when development begins, funds can be most usefully applied.

With these guidelines, downtown improvements will fit the overall community vision. Projects implemented opportunistically as funding arises will contribute to the overall design vision.

Project Timeline

Although all projects identified in the conceptual design of the Downtown Corridors are coordinated, projects vary in importance and in the process needed to complete them. Projects updating existing features that are generally adequate should have lower priority. In general, the City will prioritize projects that:

1. Close network gaps

- Example: Finalize the Citywide Bicycle and Pedestrian Safe Routes to Transit plan to create a continuous bike network

2. Require further technical study

- Example: Plan a downtown shuttle bus service

3. Address elements not up to code or best practices

- Example: Rebuild curb ramps to be accessible to pedestrians of all abilities

4. Involve community consensus

- Example: Permit temporary uses, which are often community-led, in public spaces

Short-term projects

There are two types of short-term projects. “Near-term” projects are relatively easy to implement and can have a high impact. “Get started” projects are the first stages of high priority projects with a multi-year implementation timeline, thus benefitting from an early start.

SHORT-TERM PROJECTS INCLUDE:

- Finalize the Citywide Bicycle and Pedestrian Safe Routes to Transit plan that includes a complete bicycle network and facilities.
- Finalize and implement bicycle facilities striping.
- Begin installing or upgrading pedestrian-scale lighting.
- Update City Municipal Code to allow vendors and food vendor group sites in the downtown area, including the Downtown Pedestrian District surrounding Todos Santos Plaza.
- Conduct an area-wide traffic study to better understand multimodal volumes in downtown.
- Collaborate with the ADA Coordinator to replace and upgrade ramps, signals, and other mobility features consistent with the ADA Transition Plan.
- Begin detailed design for long-term bicycle improvements, including selected curb bulb-out removal and/or curb reconstruction.
- Install benches and trash bins for bus stops where missing.
- Complete a feasibility study for a downtown shuttle.
- Review existing City records for geotechnical reports for the downtown area to prepare for LID and green infrastructure.
- Conduct a geotechnical and utilities survey of ground conditions to show suitability for LID and green infrastructure.

Mid- and Long-term projects

There are three types of mid- and long-term projects. Some projects continue those started earlier on. For example, installation of a uniform auditory communications system at downtown intersections could be phased according to a replacement plan formulated in the short-term. Second, projects can be upgraded from interim to permanent solutions, such as replacing street tree mulching with permanent tree grates. Finally, lower priority projects that require less advance planning, such as a utility box art program, can be implemented in the mid- or long-term timeframe.

MID-TERM PROJECTS INCLUDE:

- Upgrade bicycle facilities and add physical buffers where not possible initially.
- Begin installation of updated ramps, signals, and other mobility features per the ADA Transition Plan.
- Reconstruct corner radii at key pedestrian intersections to narrow crossing distances and to provide separate curb ramps in the direction of pedestrian travel.
- Repair/replace crosswalks and begin adding decorative and high-visibility crosswalks.
- Add or replace planters and other informal landscaping.
- Create utility box art program.
- Add retrofit tree grates to existing tree wells.
- Create comprehensive wayfinding program.

LONG-TERM PROJECTS INCLUDE:

- Finish installing accessible ramps and signals, as necessary.
- Repair and reconstruct sidewalks as necessary to remove heaving and create a consistent clear pathway.
- Install low-impact landscaping and features that help mitigate stormwater runoff.
- Plant formal landscaping, including street trees where lacking.
- Upgrade bus stops to bus shelters where appropriate.
- Finish installing decorative and high-visibility crosswalks.
- Upgrade street furniture.
- Implement wayfinding program.

Implementation Process

Before any City department begins a project in the public realm downtown, it should be reviewed for consistency with the Downtown Corridors Plan. Ideally, all City departments should also coordinate with the Planning Division when designing a new downtown project to ensure that improvements contribute to the overall vision for the area and that complementary or coinciding projects are identified.

Funding Sources

All projects should be added to the Capital Improvement Plan so when project designs are completed they can be funded and implemented. While outside grants and developer impact fees will fund the majority of projects, some projects could be funded within the CIP under storm drainage zones, traffic mitigation, or the general fund. The table on page 48 lists potential funding sources.

Additionally, the City also has an opportunity to fund improvements to Oak Street between Mt. Diablo Street and Galindo Street as part of an expected development agreement for the Oak Street West parcel that is expected to be transferred to the City from the Successor Agency to the Concord Redevelopment Authority.

Funding Sources

Funding Program	Program Description	URL
California Gas Tax	The state charges 39.5 cents per gallon of gasoline that is used by local jurisdictions for transportation-related projects and maintenance.	http://www.sco.ca.gov/Files-AUD/gas_tax_guidelines.pdf
California Infrastructure State Revolving Fund Loan Program	Street redesigns can expand or contract to fit the relevant function and location.	http://www.ibank.ca.gov/infrastructure_loans.htm
Caltrans Sustainable Transportation Planning Grant Program	This grant program is available to government entities at all levels to plan and implement transport projects that enhance safety, sustainability, or efficiency. The funding cycle begins during the summer with a late fall or early winter deadline.	http://www.dot.ca.gov/hq/tpp/grants.html
Clean Water State Revolving Fund	The EPA partners with states to administer funds for water quality projects, including local infrastructure and other projects that lead to better local or regional water quality.	http://www.epa.gov/cwsrf
Impact fees from downtown development	As new development is proposed, fees that fund multimodal projects consistent with the guidelines can help mitigate traffic and environmental impacts. For instance, the City should take advantage of development on the vacant parcel at Oak Street and Galindo Street to help fund streetscape improvement projects.	http://www.cityofconcord.org/page.asp?pid=5123
One Bay Area Grant (OBAG) Program Round 2	The call for projects for the second round of OBAG grants begins in Spring 2016 and continues through January 2017.	http://www.mtc.ca.gov/our-work/fund-invest/federal-funding/obag-2
PeopleForBikes Community Grant Program	With a minimum 50% match, a range of bicycle and active transportation projects can receive funding for construction.	http://www.peopleforbikes.org/pages/community-grants
Transportation Development Act (TDA 3)	Article 3 provides funds to counties via metropolitan planning organizations to grant funds for bicycle and pedestrian facilities.	http://mtc.ca.gov/our-work/fund-invest/investment-strategies-commitments/transit-21st-century/funding-sales-tax-and-0
Bicycle Voucher Program (Transportation Fund for Clean Air)	The Bay Area Air Quality Management District administers an annual voucher program for bike parking for installations from a pre-approved vendor list. Each applicant may receive a maximum of \$15,000 per year.	http://www.baaqmd.gov/grant-funding/public-agencies/brvp
Urban Greening Grant Program	Using cap and trade funds, this program funds plans and projects that “reduce energy consumption, conserve water, improve air and water quality, and provide other community benefits.”	https://www.sgc.ca.gov/s_uggprogram.php

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Downtown Corridors Plan Conceptual Streetscape Design



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Acknowledgements

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Downtown Corridors Plan

Conceptual Streetscape Design

1. Introduction	1
2. Conceptual Design Overview.	3
3. Salvio West	6
4. Todos Santos Plaza.	10
5. Central Grant	14
6. Oak Street/BART Access	18





Grant Street

1 Introduction

The Downtown Corridors Plan presents a conceptual vision for Downtown Concord's future streetscape that incorporates key bicycle connections, improved pedestrian conditions, and greater consistency. The design uses familiar materials while establishing a more consistent design, better legibility and accessibility, and improved safety. The Plan's aim is to improve key pedestrian and bicycle connections between Todos Santos Plaza, employment centers, residential neighborhoods, and regional transit.

The Downtown Corridors Plan builds on the community vision established in the 2014 Downtown Specific Plan and aims to enhance the pedestrian environment in Downtown Concord. The plan focuses on three study corridors that form the eastern half of the 'green frame' conceptualized in the Specific Plan: Oak Street, Grant Street from Oak Street to Salvio Street, and Salvio Street from Grant Street to Broadway.

Concord has long planned for a more urban, mixed-use environment around the BART station and Todos Santos Plaza. The mixed-use zoning designations that pre-dated the Specific Plan were not sufficient to transform the area or make it apparent to passengers arriving at the Downtown Concord BART station that they were in a walkable downtown and that Todos Santos Plaza was nearby. With zoning in place to encourage private development, the City aims to transform the public right-of-way to support the kind of residential, retail, and employment-generating development envisioned for the area.

This document illustrates a conceptual streetscape plan for each of the four study 'zones.' Together, the plans depict a walkable, bikeable future for the study corridors. Some elements of the design can be implemented in the near term, while others have a longer implementation timeline. Significant changes to the streetscape will require collaborative effort with adjacent property owners and stakeholders. For both near and long-term elements, the conceptual streetscape plans establish a guide for future improvements to the public right-of-way. Specific details, such as street furniture and bicycle parking locations, will be evaluated with specific implementation projects.

The City will pursue funding to implement the improvements identified in the conceptual plan as opportunities arise.

See Also

DOWNTOWN CORRIDORS PLAN DESIGN GUIDELINES

Refer to the Design Guidelines for more detail on concepts and 'toolkit' components illustrated in the conceptual plans

DOWNTOWN CORRIDORS PLAN APPENDIX A: URBAN FOREST GUIDANCE

The Plan's Urban Forest Guidance appendix introduces design options to consider when addressing common issues observed within the study area, such as tree root uplift.

OTHER RELEVANT PLANS AND PROJECTS

The plan is coordinated with other relevant efforts, including:

- Citywide Bicycle and Pedestrian Safe Routes to Transit plan
- Downtown Bicycle Lanes project, the Central Concord Pedestrian and Streetscape Project
- Other capital improvements projects in the downtown



Todos Santos Plaza area

2 Conceptual Design Overview

In the future, the Grant, Oak, and Salvio Street corridors will have enhanced pedestrian and new bicycle facilities to continue serving as key routes to and from Downtown Concord, Todos Santos Plaza, and transit.

The conceptual streetscape design aims to:

- Increase pedestrian safety by improving curb corners, crosswalks, and pedestrian lighting
- Add buffered bicycle facilities to Oak and Grant Streets, and Salvio Street west of Concord Avenue/Galindo Street
- Enhance landscaping and stormwater treatment by adding green infrastructure

The design applies to the public realm, from sidewalk to sidewalk.

This section describes the common design elements and features used in the design of all three corridors.

2.1 Common Elements

Bicycle facilities

The conceptual design aims to maximize bicycle facilities while considering right-of-way constraints and balancing circulation needs.

The conceptual design specifies:

- Buffered bicycle lanes to separate cyclists from vehicle traffic, where possible
- Bicycle network connectivity, both between important downtown destinations and with nearby neighborhoods
- Green pavement paint to highlight potential bicycle-vehicle conflict zones
- Bicycle boxes and two-stage turn boxes, facilitating left turns and position cyclists in proper position to cross intersections
- Additional bicycle parking, including both loop racks and bicycle corrals, which can be added to as demand grows

Crossing and crosswalk improvements

Where possible, the conceptual design aligns crosswalks with the sidewalk clear walking path and curb ramps, making pedestrian paths more predictable. In some cases this requires adjusting the position of the crosswalk.

Two types of crosswalk upgrades are specified:

- High-visibility ‘ladder’ crosswalks on higher speed streets with high traffic volumes
- Decorative ‘herringbone’ pattern crosswalks on slower streets with lower volumes

The purpose of crosswalk upgrades is to ensure better visibility of crossings for drivers and to improve safety for pedestrians.

In addition to improved crosswalk markings, as noted in Section 5 of the Downtown Corridors Design Guidelines, pedestrian walk phases at signals should be automatically activated on each cycle, eliminating the need to press a request button.

Curb corner and curb cut improvements

Improved pedestrian facilities at intersections are a key feature of the conceptual design. The design uses several techniques to improve ease of navigation and safety for pedestrians:

- **Separate curb ramps:** Provide a curb ramp for each crosswalk, aligned in the direction of pedestrian travel
- **Truncated domes:** Install ‘truncated domes’ at all curb ramps, with high color contrast to surrounding materials, to improve safety for pedestrians with impaired sight
- **Consistent materials for clear path:** Provide a continuous concrete surface for the pedestrian clear walking path, from the curb ramp to the existing concrete sidewalk. This provides a visual and textural contrast that will clearly delineate the travel path for all pedestrians

Sidewalk maintenance

Basic sidewalk maintenance is a major issue in the downtown area. Damaged brickwork and heaving due to tree roots are particular problems as they impede safe travel for pedestrians of all abilities. Per the City's Municipal Code, sidewalk maintenance and repair is the responsibility of adjacent property owners.

Following the Design Guidelines, sidewalks should be repaired to provide:

- Concrete clear path for pedestrian movement
- Pavers in the furnishings/edge zone as appropriate to match surrounding context, set in a mortar base for improved durability
- Tree grates, installed over tree wells to reduce trip hazards in areas with a hardscape furnishings zone

Removal of cross-slopes

The conceptual streetscape design envisions the eventual removal of cross-slopes from a variety of locations along the corridors. This means replacing driveways that introduce a slope to the sidewalk, providing better accessibility to users with impaired sight and/or mobility. It also means replacing curb ramps cross-slopes greater than 2.0% to comply with Americans with Disabilities Act (ADA) regulations.

Landscaping and pavers

Landscape features can offer ecological, functional, and aesthetic benefits to the streetscape. The conceptual design envisions several types of improvements:

- Replacement of decomposed granite areas with landscaping or pavers
- Larger tree wells, with planted areas surrounding street trees
- New trees, with root barriers, planted to fill gaps along sidewalk
- Additional formal landscaping in select areas
- Additional landscaping to provide a buffer between vehicle traffic and sidewalk activity

Green infrastructure and rain gardens

The conceptual design specifies possible locations for low-impact landscape elements, which use resilient, low-water plantings and can filter and treat stormwater runoff before it enters the sewer system. This 'green infrastructure' (also known as 'rain gardens') has been located at existing stormwater catch basins. Implementation of low-impact landscaping will require detailed design in order to determine feasibility.

Pedestrian lighting

The design identifies potential locations for additional street and pedestrian lighting to fill gaps and improve nighttime safety. The design also specifies expansion of the existing tree-mounted 'twinkle' lights at Todos Santos Plaza to the remainder of the study corridors.

Light standards and designs are specified in the Design Guidelines. Before installation, lighting conditions and tree canopy should be evaluated in detail to ensure conditions meet specifications.

Over the long term, light fixtures at the end of their lifespan should be replaced with new standard fixtures specified in the Design Guidelines.

Street furniture

As the conceptual streetscape design moves toward implementation, street furniture such as benches, trash and recycling receptacles, bicycle racks, and planters should follow Design Guidelines specifications.

2.2 Downtown Corridors Plan Zones

The design is presented by 'zone' as defined in the Downtown Corridors Design Guidelines, and shown in the adjacent map.

SALVIO WEST

Salvio Street from Broadway Street to Galindo Street

TODOS SANTOS PLAZA

Salvio Street from Galindo Street to Grant Street
Grant Street from Salvio Street to Willow Pass Road

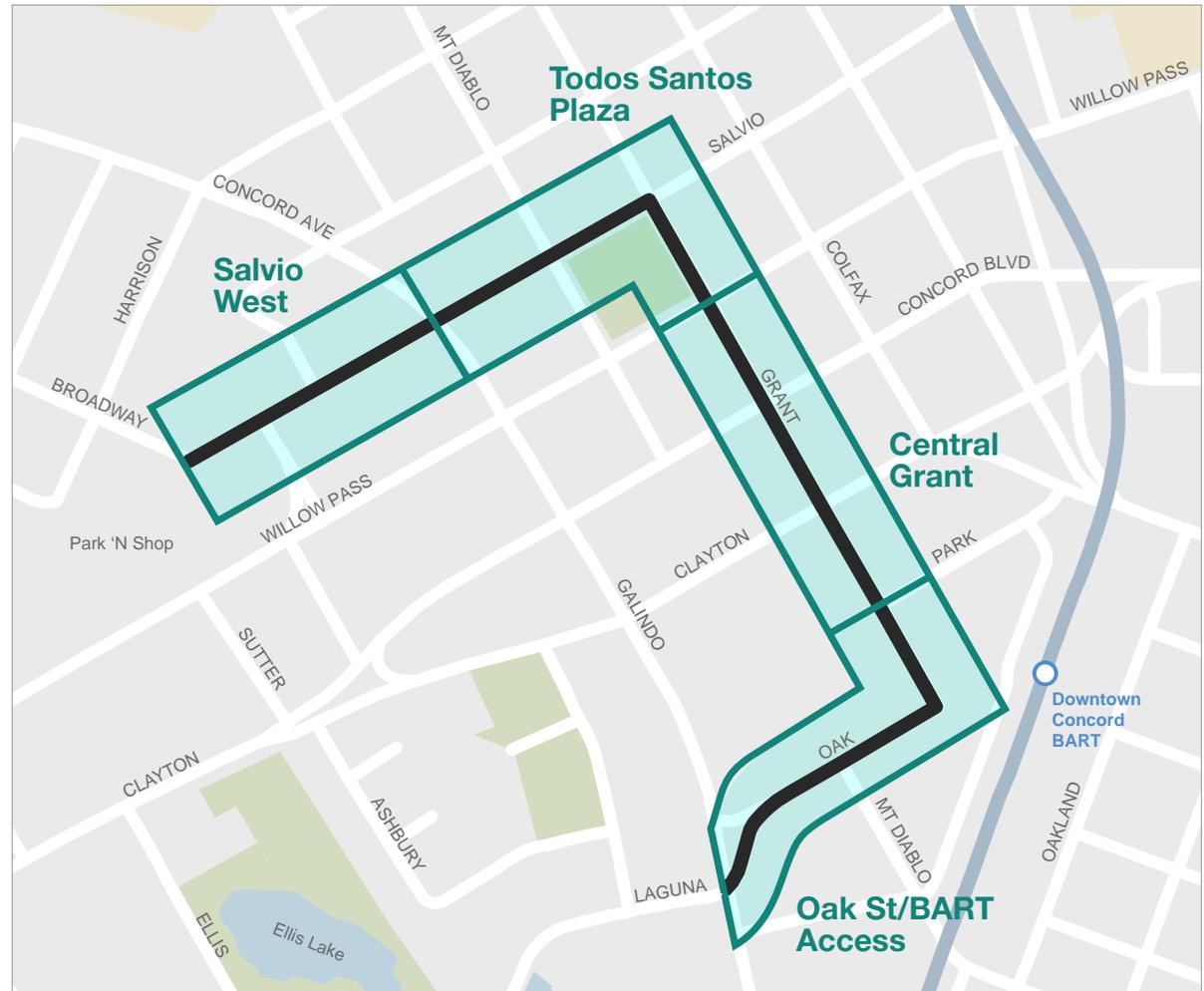
CENTRAL GRANT

Grant Street from Willow Pass Road to Park Street

OAK STREET/BART ACCESS

Grant Street from Park Street to Oak Street
Oak Street from Grant Street to Galindo Street

Sections 3-6 of this document describe and illustrate the elements of each conceptual streetscape plan.



Downtown Corridors Plan Zones

3 Salvio West



Salvio West will serve as a pleasant connection for residents and visitors entering Todos Santos Plaza from Park 'N Shop and other locations to the west. The character will be similar to that of the plaza area to make a clear visual connection to that popular destination.

Features

STREET AND BICYCLE ELEMENTS

- Add buffered bicycle lanes along the entire length of the zone
- Consider re-purposing the parking lane on the north side of Salvio Street west of Adobe Street; options for use of this space include:
 - Paint lane a different color, program with planters, parklets, and/or art installations
 - Widen northern sidewalk to match the curb bulb out at Adobe Street (~21 feet)
- Remove parking along the south side of Salvio Street from Mira Vista Terrace to Concord Avenue/Galindo Street
- Add a bicycle box on the eastbound through lane at the Concord Avenue/Galindo Street, positioning cyclists to enter the shared lane on the east side of the intersection
- Add intersection crossing markings for bicycles at Mira Vista Terrace, marking cyclists' path across the intersection
- Add green dash striping to the bicycle-vehicle conflict zone on the west side of the Mira Vista Terrace intersection

SIDEWALKS AND CURB CORNERS

- Widen the northern sidewalk west of Adobe Street 16 or 21 feet, creating a more comfortable pedestrian environment
- Consolidate curb cuts along the north side near Mira Vista Terrace
- Add a curb bulb-out at the southwest corner of Salvio Street and Mira Vista Terrace, reducing the crossing distance across Mira Vista Terrace.

- Separate the curb ramps at Mira Vista Terrace
- Add truncated domes to all curb ramps where they are not present
- Remove driveway cross-slopes and pave driveways in concrete, creating a visual distinction from pavers at sidewalk edge
- Improve signage at bus stops between Adobe Street and Concord Avenue/Galindo Street
- Add a waist-height trellis fence along the parking lot at Broadway, creating a buffer and defining the pedestrian realm

CROSSWALKS

- Add high-visibility crosswalks at Concord Avenue/Galindo Street
- Add decorative crosswalks at Mira Vista Terrace and Adobe Street
- Add a high-visibility mid-block crosswalk with rapid flashing beacons at Adobe Street, facilitating pedestrian crossing between the movie theater and retail shops

LANDSCAPING AND GREEN INFRASTRUCTURE

- Add rain gardens along the corridor, with a significant feature at the northeast corner of Salvio Street and Broadway
- Enhance existing gateway landscaping at Adobe Street for a more prominent entrance to this area of historical significance

LIGHTING

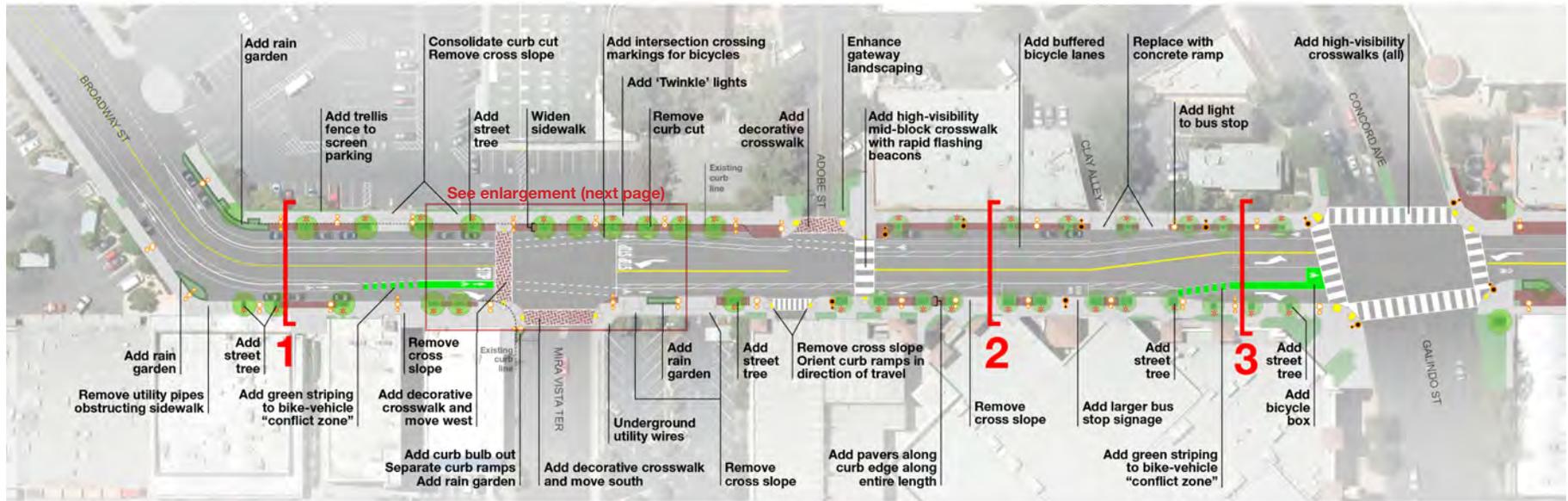
- Add pedestrian lighting to the west of Adobe Street and other locations as necessary
- Improve lighting at bus stops between Adobe Street and Concord Avenue/Galindo Street
- Add tree-mounted 'twinkle' lights on both sides of Salvio Street

Salvio West: Salvio Street Concept



Salvio Street at Mira Vista Terrace

Salvio West: Conceptual Plan



1. Salvio Street at Broadway



2. Salvio Street at Adobe Street



3. Salvio Street at Galindo Street

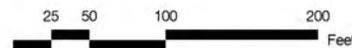


Legend

- | | | | |
|--------------------|-----------------------|---------------------------------|-------------------------|
| Pavers | Rain garden | <i>Existing Lighting</i> | <i>New Lighting</i> |
| Concrete sidewalk | Tree well | ● Street | ● Street |
| Truncated domes | Bollard - illuminated | ● Street & pedestrian | ● Street & pedestrian |
| Street | Bollard | ○ Pedestrian | ○ Pedestrian |
| Landscape/planting | | ● Pedestrian (retrofit) | ● Pedestrian (retrofit) |
| | | * 'Twinkle' Tree-Mounted Lights | |



October 7, 2016



A larger version of this annotated conceptual plan is available in Appendix B.

Salvio West: Plan Enlargement



Salvio Street at Mira Vista Terrace

4 Todos Santos Plaza



Todos Santos Plaza will continue to be the primary destination in Downtown Concord. Its character connects the surrounding streets and buildings to create a welcome space that can be expanded upon in the future.

Features

STREET AND BICYCLE ELEMENTS

Salvio Street

- Add bicycle shared lane markings ('sharrows') as bicycle lanes are not recommended next to front-in angle parking and the street is not wide enough to accommodate bicycle lanes along Todos Santos Plaza
- Add bicycle parking and a bicycle repair kiosk at the southwest corner of Salvio Street and Mt. Diablo Street
- Add bicycle parking at Salvio Pacheco Square
- Add a bicycle locker on the northeast corner of Salvio Street and Grant Street

Grant Street

- Add a contra-flow bicycle lane as a pilot project, closing a bicycle facility gap between Salvio Street and Willow Pass Road
- Add a northbound buffered bicycle lane on the right side of Grant Street
- Add an in-street bicycle corral near intersection with Salvio Street
- Replace the two accessible parking spaces lost in the removal of angle parking nearby

SIDEWALKS AND CURB CORNERS

- Remove angle parking on Salvio Street along Salvio Pacheco Square and widen the sidewalk
- Enlarge the existing bus stop platform and add a bus shelter to the northeast corner of Todos Santos Plaza

- Add truncated domes to all curb ramps where they are not present

CROSSWALKS

- Add high-visibility crosswalks at:
 - Salvio Street and Concord Avenue/ Galindo Street
 - Grant Street and Willow Pass Road
- Add decorative crosswalks at the Salvio Street intersections of Mt. Diablo and Grant Streets
- Add high-visibility crosswalk markings to the mid-block crossing at Todos Santos Plaza and Salvio Pacheco Square

LANDSCAPING AND GREEN INFRASTRUCTURE

- Add rain gardens, using a parking-compatible design as appropriate
- Install pavers in decomposed granite areas to increase sidewalk coverage while allowing water infiltration

LIGHTING

- Install new pedestrian lighting at selected locations where lights are missing and/or street trees will block light spread
- Add tree-mounted 'twinkle' lights on the east side of Grant Street

Contra-flow bicycle facility

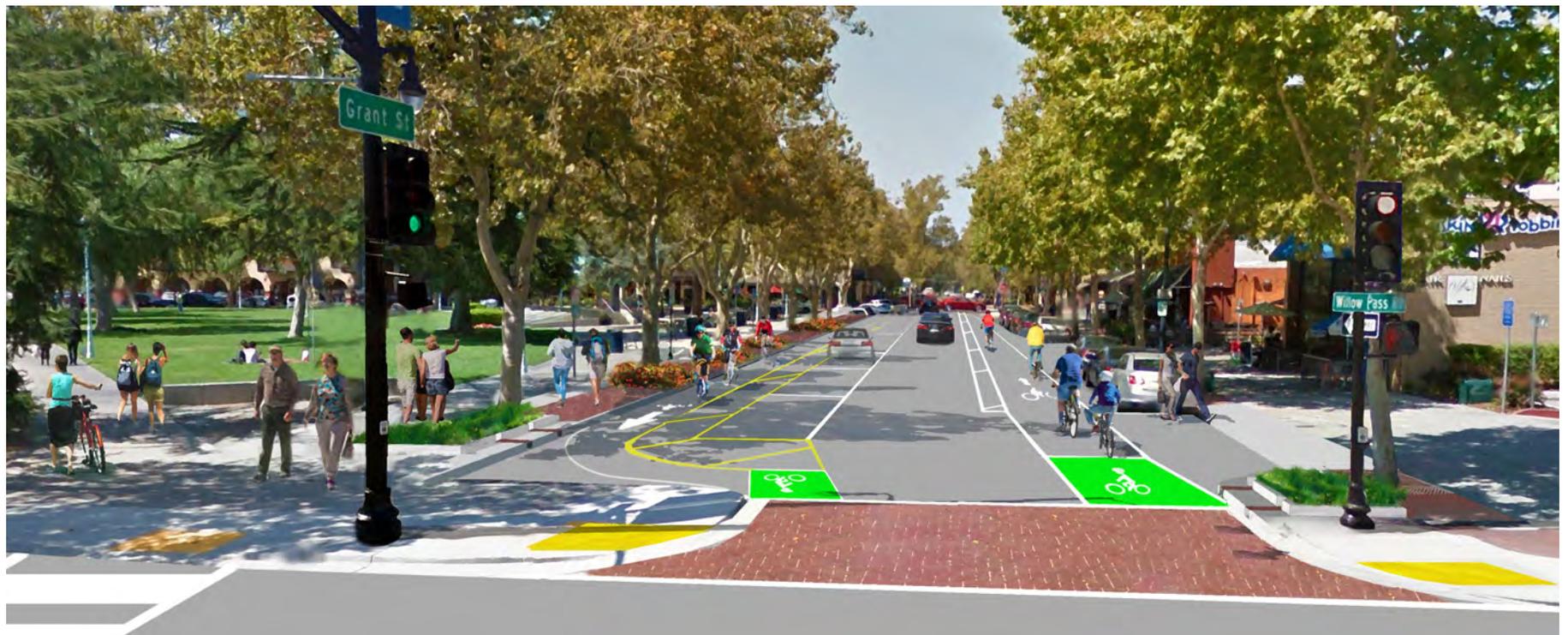
The conceptual streetscape design proposes a southbound bicycle connection on Grant Street between Salvio Street and Willow Pass Road. A 'contra-flow' bicycle facility is used on one-way streets to allow cyclists to make direct connections between bicycle facilities, and this facility will

form a key connection in the Downtown bicycle network. Since this is a new type of facility in Concord, it can be implemented as a pilot project to study its effectiveness.

GRANT STREET CONTRA-FLOW BICYCLE FACILITY

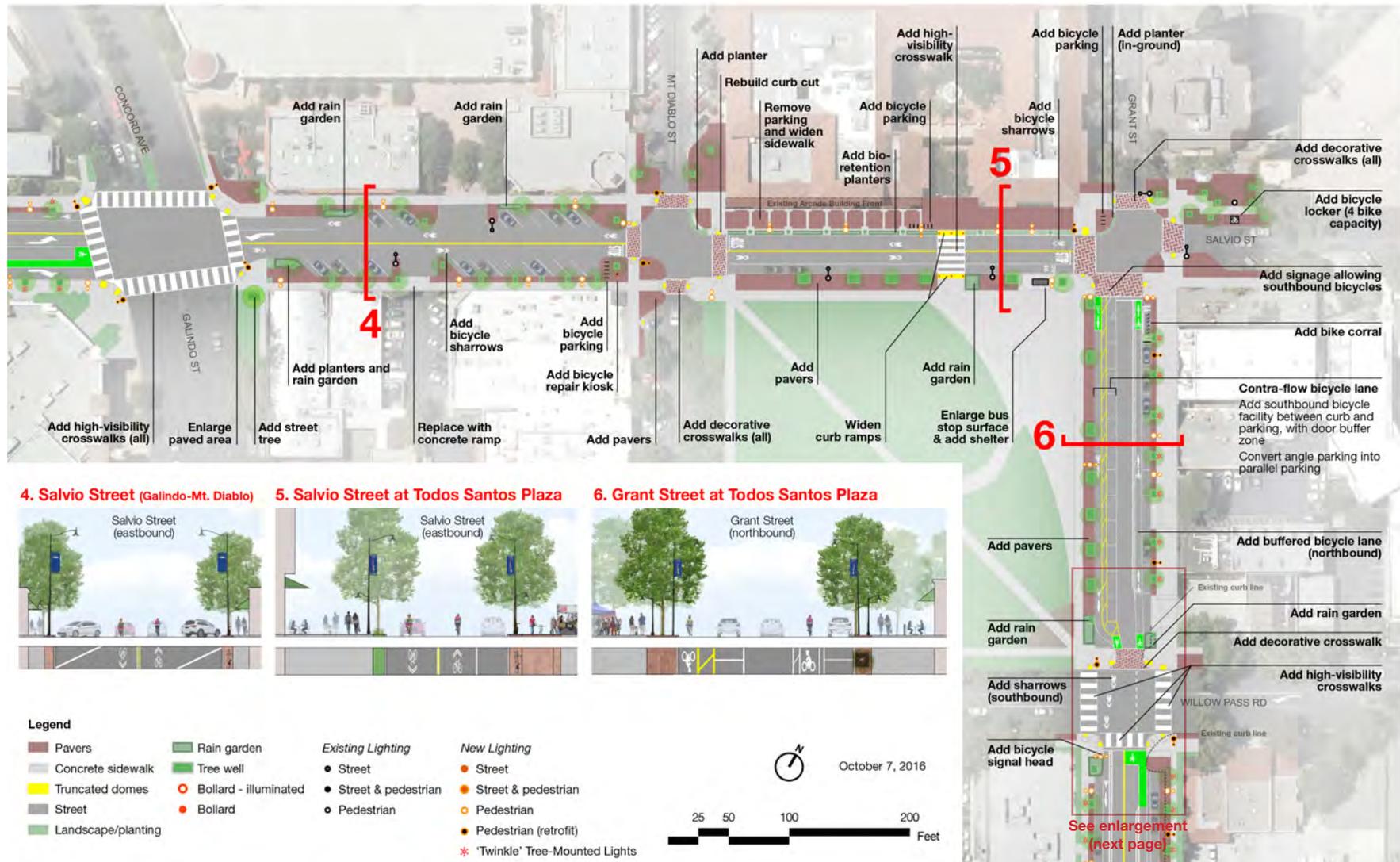
- Add southbound contra-flow bike lane adjacent to the western curb along Todos Santos Plaza
- Add signage at Grant and Salvio Streets to indicate that only cyclists are permitted in the southbound direction
- Convert front-in angle parking to parallel parking and locate between southbound bicycle traffic and northbound vehicles
- Add buffer between parking and the contra-flow lane, preventing vehicles from obstructing the bicycle facility
- Add southbound bicycle signal head at the intersection with Willow Pass Road to allow cyclists safe passage
- Close contra-flow lane or relocate parking for vendors during events such as the Farmers' Market to prevent conflicts between bicycles and vendors; add temporary signage to alert cyclists of the closure

Todos Santos Plaza: Grant Street Concept



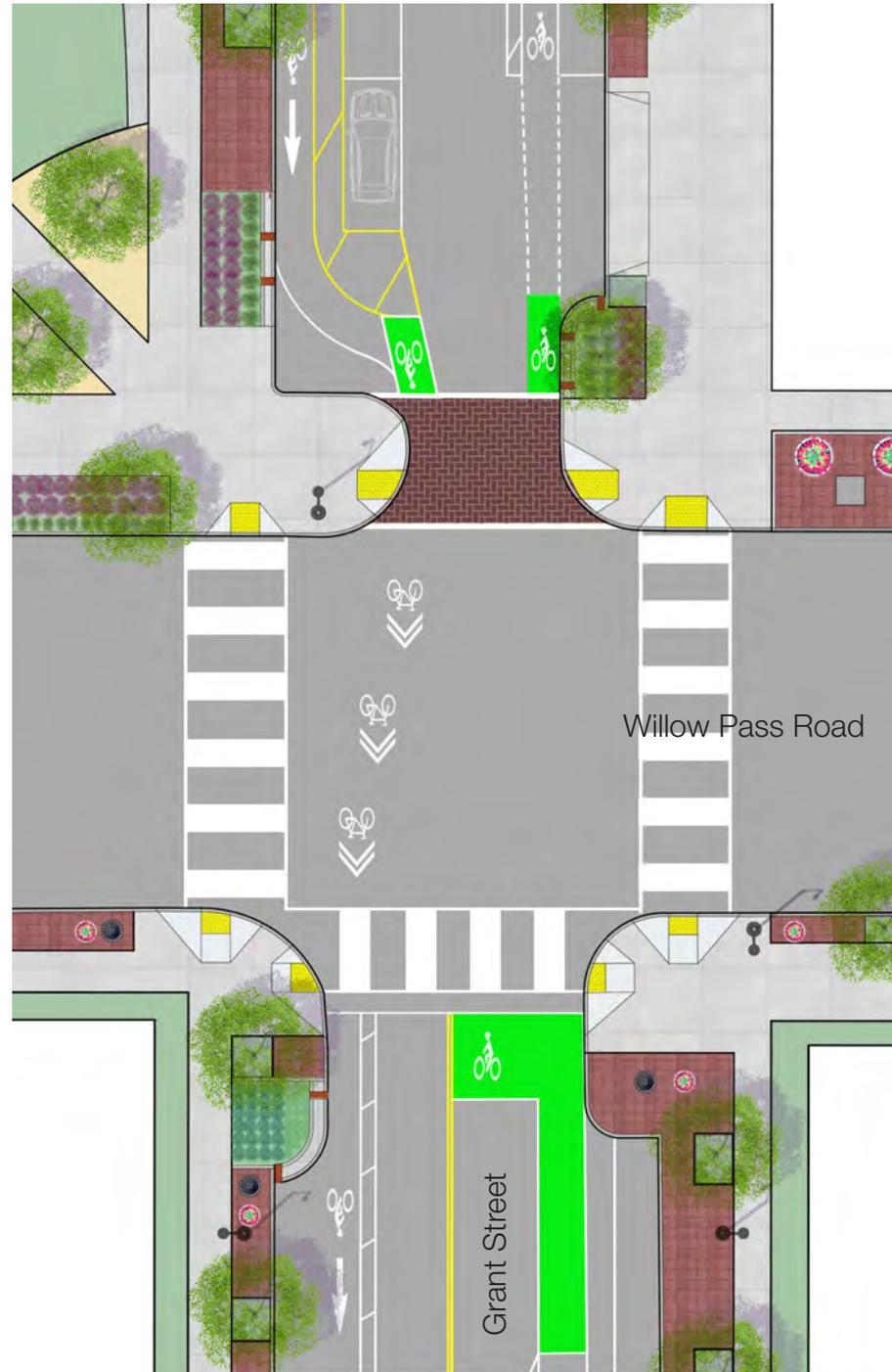
Contra-flow bicycle facility at Grant Street and Willow Pass Road

Todos Santos Plaza: Conceptual Plan



A larger version of this annotated conceptual plan is available in Appendix B.

Todos Santos Plaza: Plan Enlargement



Grant Street at
Willow Pass Road

5 Central Grant



Improvements to the Central Grant zone will make the transition from the BART station to Todos Santos Plaza more pleasant and ensure pedestrians and cyclists know they are on their way to a vibrant downtown destination.

Features

STREET AND BICYCLE ELEMENTS

- Add buffered bicycle lanes along the entire length of the zone
- Add bicycle boxes for northbound cyclists at:
 - Willow Pass Road, facilitating entry to the shared lane north of the intersection
 - Clayton Road, facilitating left turns from Clayton Road to Grant Street
- Add two stage turn boxes at:
 - Northeast corner of Concord Boulevard, facilitating left turns from Grant Street to Concord Boulevard
 - Southwest corner of Clayton Road, facilitating left turns from Grant Street to Clayton Road
- Add intersection crossing markings to mark cyclists' path across intersections
- Add a planted median south of Clayton Road

SIDEWALKS AND CURB CORNERS

- Widen the eastern sidewalk between Willow Pass Road and Concord Boulevard
- Reduce curb radii at:
 - Southeast corner at Willow Pass Road
 - Northwest and southwest corners at Clayton Road
- Add a curb bulb-out at the southwest corner at Concord Boulevard, reducing crossing distance and match the curb line of the southeast corner
- Add truncated domes to all curb ramps where they are not present

- Replace single, center curb ramps with separate ramps aligned with crosswalks
- Remove driveway cross-slopes and pave driveways in concrete, creating a visual distinction from pavers at sidewalk edge
- Enlarge the existing bus stop platform and add a bus shelter to the northbound stop at Concord Boulevard

CROSSWALKS

- Add high-visibility crosswalks at Willow Pass Road, Concord Boulevard, and Clayton Road
- Add decorative crosswalks to the northern crosswalk at Willow Pass Road and to the Park Street intersection

LANDSCAPING AND GREEN INFRASTRUCTURE

- Add rain gardens along corridor, using a parking-compatible design as appropriate
- Install pavers adjacent to the sidewalk, increasing the usable sidewalk area in busy pedestrian areas, such as in front of businesses
- Replace decomposed granite with mulch, large pavers, and/or plantings in areas with less sidewalk activity

LIGHTING

- Install new pedestrian lighting at selected locations where lights are missing and/or street trees will block light spread
- Consider removing the second row of pedestrian lights on the western side of Grant Street as pedestrian lights are upgraded and standardized
- Add tree-mounted 'twinkle' lights on both sides of Grant Street

Central Grant: Conceptual Plan

7. Grant Street (Willow Pass Rd to Concord Blvd)



8. Grant Street (Concord Blvd to Clayton Rd)

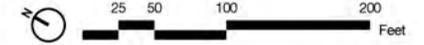


9. Grant Street (Clayton Rd to Park St)

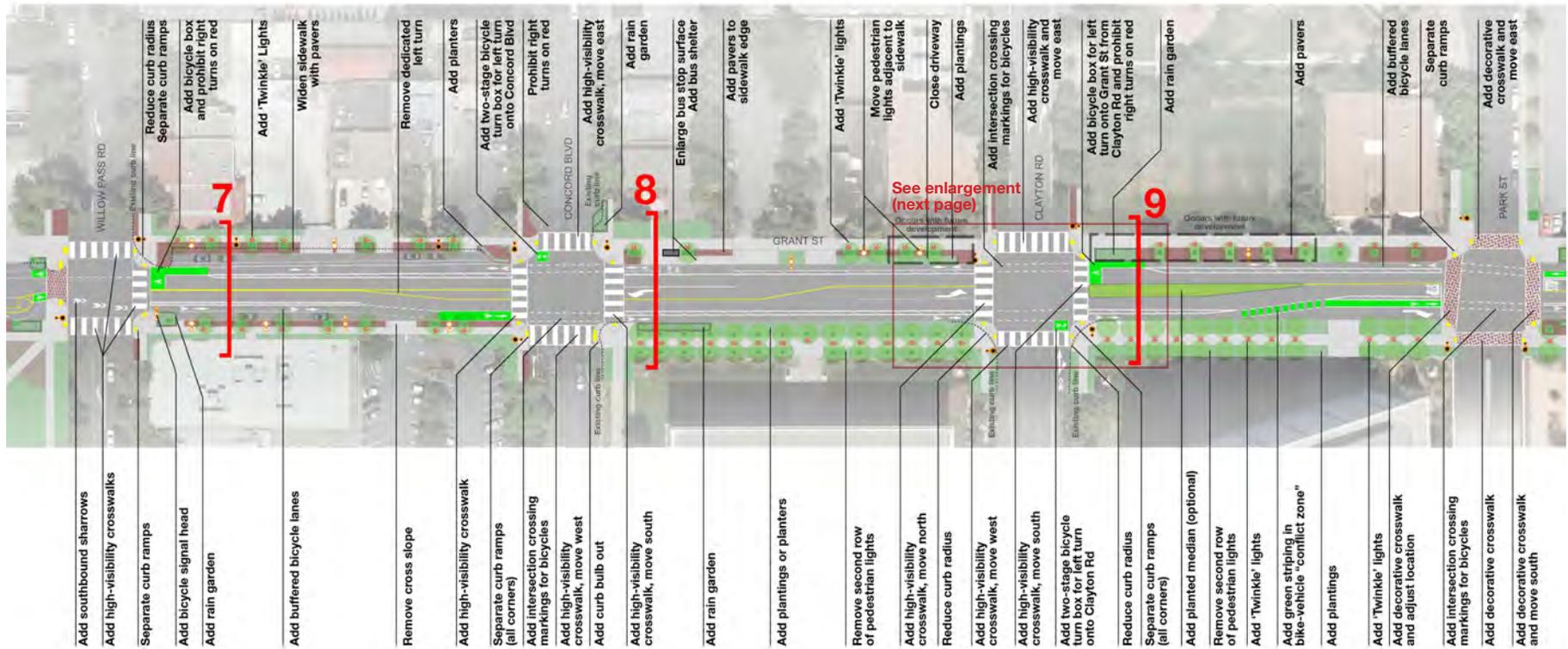


Legend

- Pavers
 - Concrete sidewalk
 - Truncated domes
 - Street
 - Street
 - Landscape/planting
 - Rain garden
 - Tree well
 - Bollard - illuminated
 - Bollard
- Existing Lighting*
 - Street
 - Street & pedestrian
 - Pedestrian
 - New Lighting*
 - Street
 - Street & pedestrian
 - Pedestrian
 - Pedestrian (retrofit)
 - * 'Twinkle' Tree-Mounted Lights



October 7, 2016



A larger version of this annotated conceptual plan is available in Appendix B.

Central Grant: Plan Enlargement



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6 Oak Street/BART Access



Oak Street and Grant Street will welcome transit riders, as well as pedestrians and cyclists from nearby neighborhoods, to the downtown area with generous bicycle facilities, improved crossings, and a upgraded sidewalks and furnishings zones.

Features

STREET AND BICYCLE ELEMENTS

- Add buffered bicycle lanes along the entire length of the zone
- Add intersection crossing markings for bicycles at Oak and Mt. Diablo Streets, indicating cyclists' path across the intersection
- Add green dash striping to the bicycle-vehicle conflict zone in the westbound direction on Oak Street at the dedicated right-turn lane onto Galindo Street

SIDEWALKS AND CURB CORNERS

- Replace the existing sidewalk along the south side of Oak Street with a new curb and pedestrian realm
- Replace curb ramps at the east side crosswalk of Oak Street at Galindo Street, aligned with the crosswalk direction of travel
- Install protective bollards at the northeast corner of the Oak Street and Galindo Street intersection
- Add truncated domes to all curb ramps where they are not present
- Enlarge the existing bus stop platform and add a bus shelter to the eastbound stop located on Oak Street east of Galindo Street

CROSSWALKS

- Add a raised intersection table, flush with the sidewalk, with protective illuminated bollards to slow traffic and facilitate access to the BART station at the corner of Oak and Grant Streets
- Add signage warning drivers of pedestrian and bicycle crossing to the BART station at the corner of Oak and Grant Streets
- Add high-visibility crosswalks at Galindo Street and the entrances to BART parking lots
- Add decorative crosswalks to the Park Street and Mt. Diablo Street intersections

LANDSCAPING AND GREEN INFRASTRUCTURE

- Add rain gardens along corridor, using a parking-compatible design as appropriate
- Replace decomposed granite adjacent to the curb on Grant Street with pavers to increase the usable sidewalk area
- Add street trees with planting areas and pavers along the curb edge on the southern side of Oak Street

LIGHTING

- Add pedestrian lighting along the south side of Oak Street to the west of the BART station, and other locations as necessary
- Consider removing the second row of pedestrian lights on the western side of Grant Street as pedestrian lights are upgraded and standardized
- Add tree-mounted 'twinkle' lights to Grant Street and the south side of Oak Street

Oak Street/BART Access: Salvio Street Concept



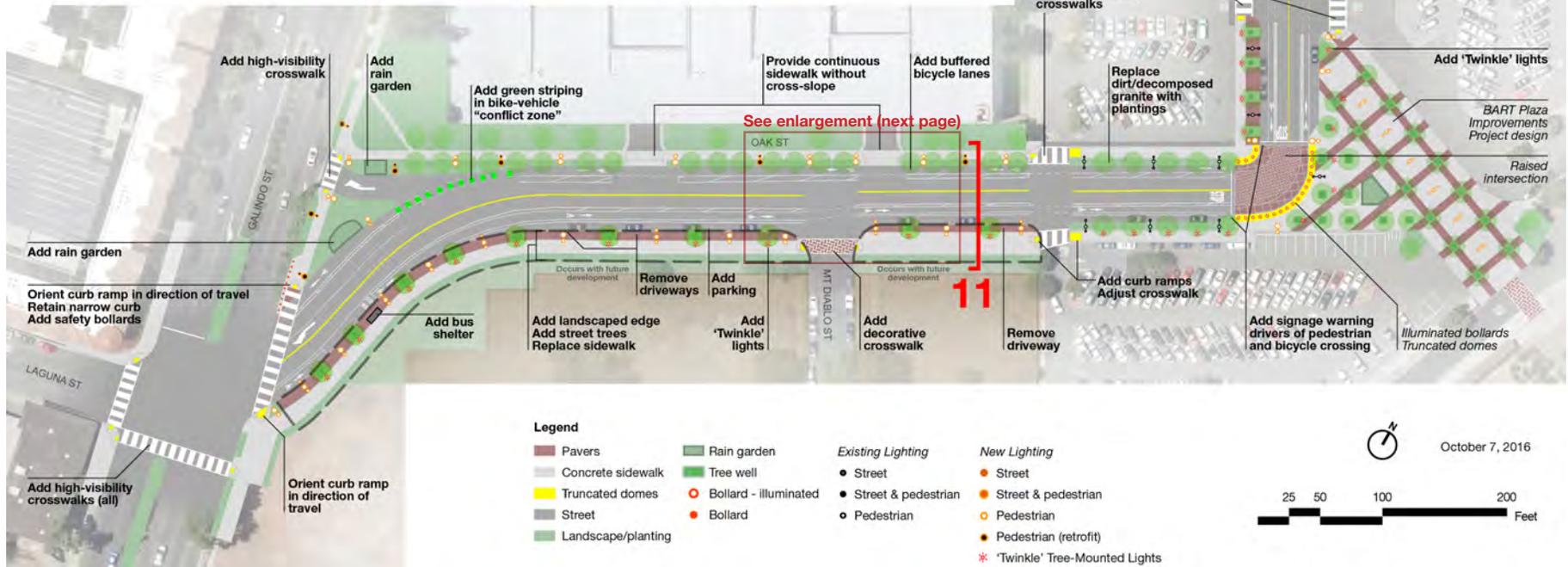
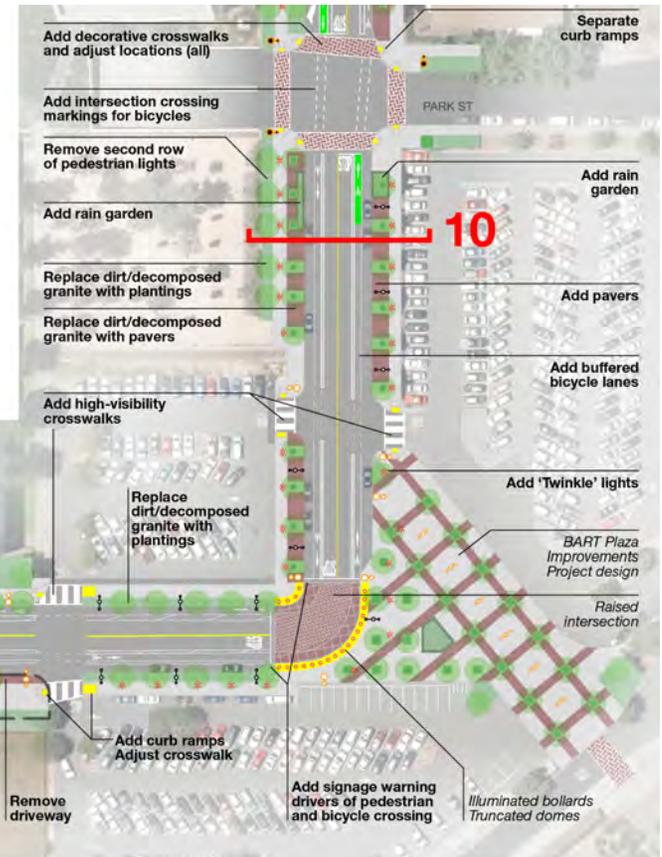
Oak Street at Mt. Diablo Street

Oak Street/BART Access: Conceptual Plan

11. Oak Street (Galindo St to Grant St)



10. Grant Street (Park St to Oak St)

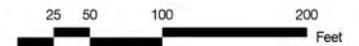


Legend

Pavers	Rain garden	Existing Lighting	New Lighting
Concrete sidewalk	Tree well	● Street	● Street
Truncated domes	Bollard - illuminated	● Street & pedestrian	● Street & pedestrian
Street	Bollard	○ Pedestrian	○ Pedestrian
Landscape/planting			● Pedestrian (retrofit)
			* 'Twinkle' Tree-Mounted Lights

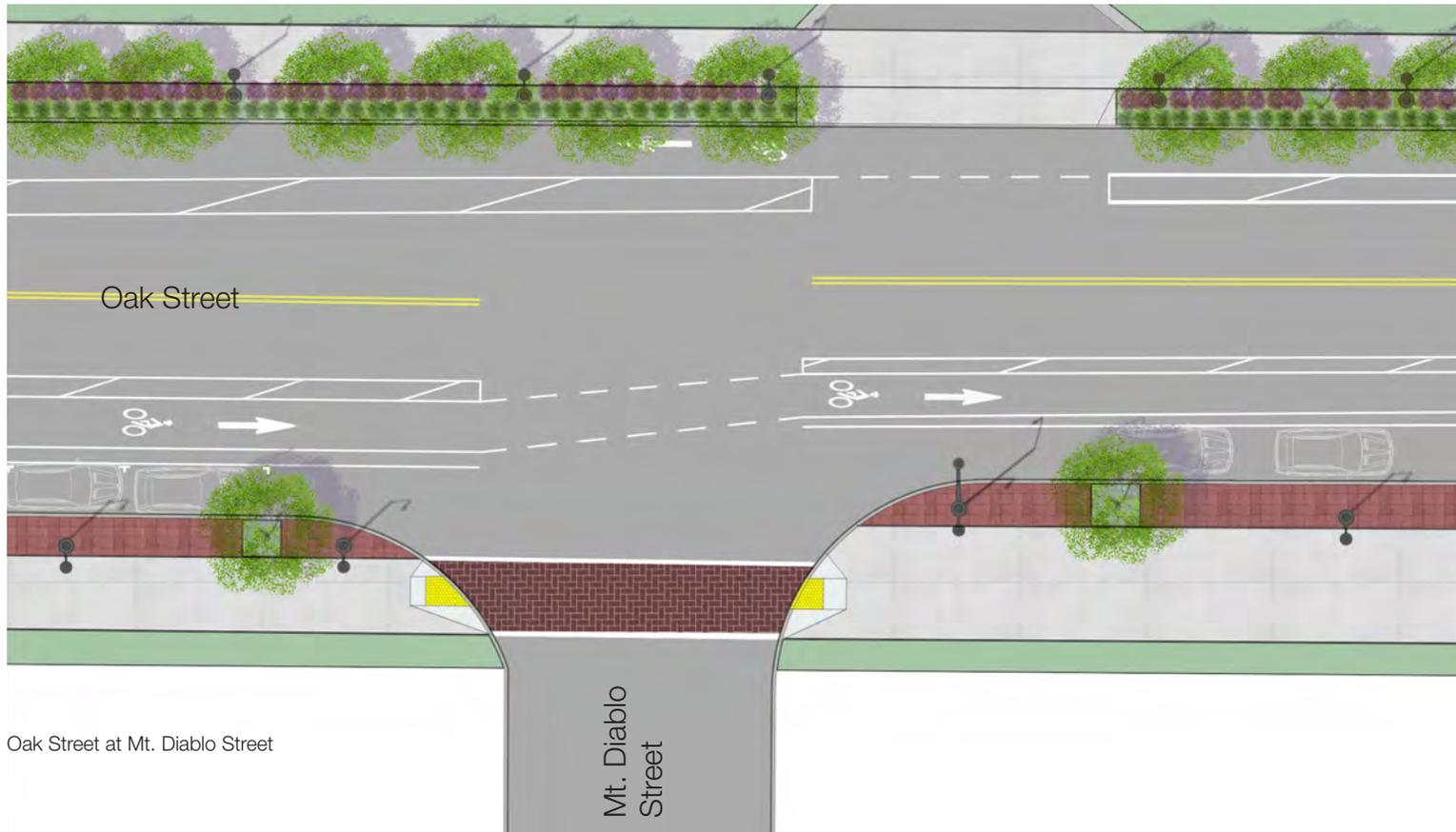


October 7, 2016



A larger version of this annotated conceptual plan is available in Appendix B.

Oak Street/BART Access: Plan Enlargement





Downtown Corridors Plan
Conceptual Streetscape Design

October 2016



Downtown Corridors Plan

Appendix A: Urban Forest Guidance

Urban Forest Guidance: Methods and Approaches for Healthy Trees

The urban forest is one of the defining elements of Downtown Concord's identity. When proposing changes to the design of the streetscape, a number of challenges arise with respect to the interface between the built environment and the existing ecosystem. This appendix is meant as a brief introduction to the design options to consider when addressing common issues observed within the Downtown Corridors study area.

The techniques discussed in this appendix include treatments to promote healthy tree growth that are compatible with a pedestrian-oriented streetscape and that will ensure the urban forest thrives for years to come. The techniques discussed can be added to existing conditions, used in new construction, and in some cases used in both scenarios, depending on the particular context.

The intent of this appendix is to act as a catalyst for discussion in future projects implemented within the Downtown Corridors study area and to emphasize the importance of the urban forest. It is not meant as a specification or to prescribe solutions for specific problems, nor is it a substitute for in-depth analysis and study to determine the feasibility and appropriateness of a particular solution.



Index

Tree Health and Soil Volume A4

Pavement Conflicts A5

Methods and Treatments

	Applicable For:		
	Retrofit	New Construction	
Soil Area Enlargement	X	X A6
Sidewalk Realignment	X	 A7
Tree Grate Retrofit	X	X A8
Structural Soils	X	X A9
Soil Cells		X A10

Temporary Treatments for Existing Tree Wells A11

Tree Quality and Planting Guidelines A12

Growing Media A13

Construction Details A14

 Paver Installation Guide A15

 Cut-Through Alternatives A16

Tree Health and Soil Volume

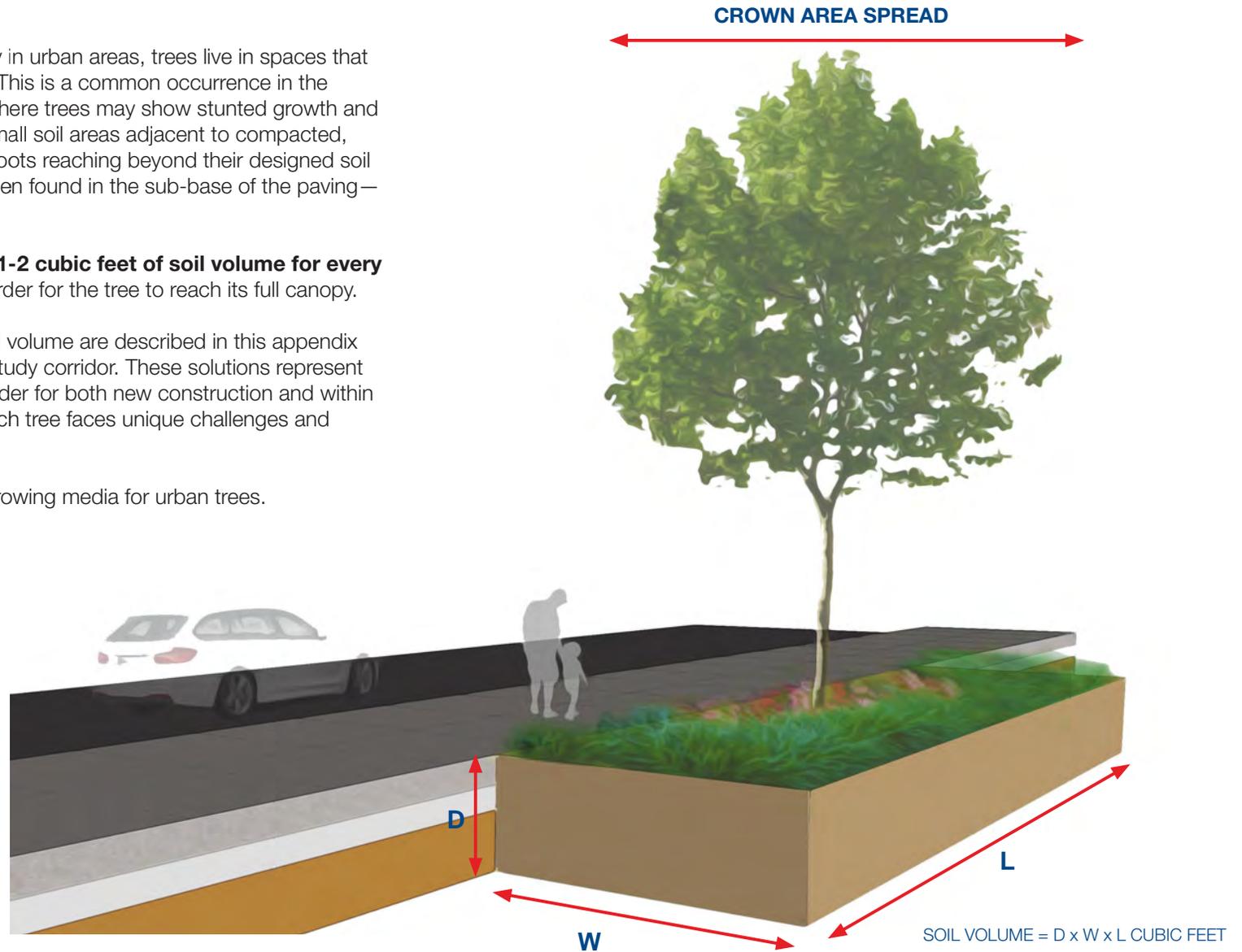
DESCRIPTION

In the built environment, particularly in urban areas, trees live in spaces that do not offer adequate soil volume. This is a common occurrence in the Downtown Corridors study area, where trees may show stunted growth and conflicts with adjacent surfaces. Small soil areas adjacent to compacted, impervious pavement lead to tree roots reaching beyond their designed soil area in search of air and water—often found in the sub-base of the paving—resulting in sidewalk heaving.

As a general rule, **a tree requires 1-2 cubic feet of soil volume for every square foot of crown space** in order for the tree to reach its full canopy.

Several solutions to inadequate soil volume are described in this appendix based on observations within the study corridor. These solutions represent potentially feasible options to consider for both new construction and within existing streetscape conditions. Each tree faces unique challenges and should be evaluated accordingly.

See page A13 for information on growing media for urban trees.



SOIL VOLUME DIAGRAM: A TREE REQUIRES 1-2 CUBIC FEET OF SOIL FOR EVERY SQUARE FOOT OF CROWN SPACE

Pavement Conflicts with Existing Trees

Mature trees provide significant benefits to an urban environment and should be considered the priority when repairing sidewalk damage and other circulation and accessibility issues. Trees with limited available soil area and surrounded by impervious surfaces will send roots beyond the designed growing area in search of air and water. Often they will grow below paved surfaces, causing sidewalk heaving and surface damage. The following pages present conceptual design options for increasing the available soil volume and mitigating surface damage to paving areas near mature trees.

MODERATE / LOW PEDESTRIAN TRAFFIC

In lower traffic volume areas growing areas can be enlarged through pavement removal and realignment:

- Open soil area expansion A6
- Paving removal / sidewalk realignment A7

HIGH PEDESTRIAN TRAFFIC

In higher traffic volume areas pedestrian circulation should be accommodated through paved surfaces and controlled in material and layout to minimize soil compaction:

- Paving removal / sidewalk realignment A7
- Tree grate retrofit / open area connection A8



SOIL AREA ENLARGEMENT



EXISTING CONDITIONS

Existing sidewalk tree wells with exposed soil at the base and minimal growing area will encourage roots to grow over and under sidewalks, sometimes causing stunted tree growth and sidewalk damage.

MITIGATION

- Enlarge open soil area by removing existing impervious paving, an appropriate solution in areas with lower pedestrian traffic
- If irrigation is available, install groundcover planting at open soil area (see Landscaping Palette on page 32 of the Downtown Corridors Design Guidelines for species)

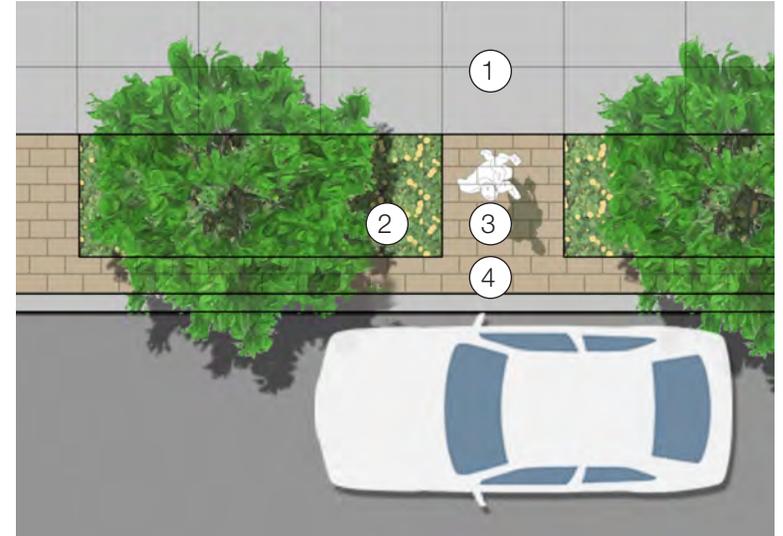


TREATMENT AREA

Limit of mitigation follows existing score lines and expansion joints of concrete for removal of existing paving. Care should be taken not to cut existing roots. The soil volume diagram on page A4 can be used as a guide to help determine limit of paving removal.

BENEFITS

- Encourages lateral root growth, minimizing damage of paved surfaces
- Enhances tree growth allowing it to reach mature size
- Reduces stormwater runoff



PLAN: OPEN AREA ENLARGEMENT

1. Sidewalk
2. Open soil area - enlarge open soil area to achieve adequate cubic feet of soil. See page A4 for soil volume guidelines. Area can be planted with ornamental planting if irrigation is available.
3. Pervious paving at cut-throughs - see Cut-Through Alternatives, page A16.
4. Curb walk - if space is available, specify 12-inch minimum width curb walks to help reduce soil compaction / vegetation damage by directing pedestrian traffic away from planting area.

SIDEWALK REALIGNMENT

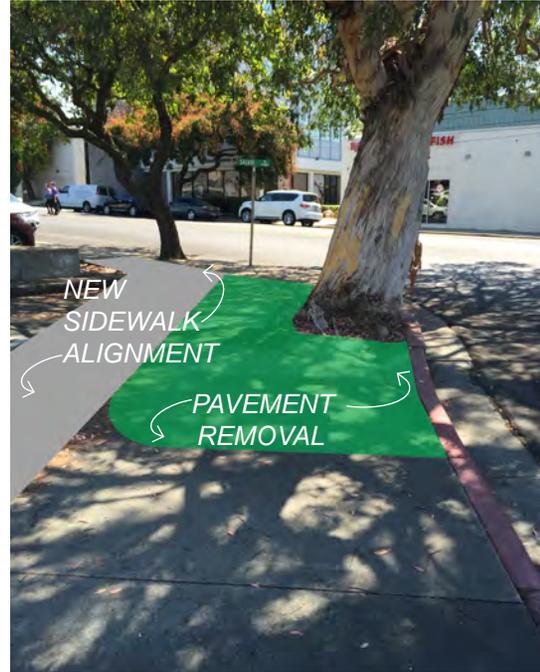


EXISTING CONDITIONS

Existing sidewalk has been heaved by surface roots of mature tree. Condition can occur due to inadequate soil volume availability, inappropriate tree species, poor location, or soil compaction.

MITIGATION

- Enlarge open soil area by removing existing impervious paving
- Install groundcover planting or organic mulch topdressing
- Relocate new sidewalk paving to circumnavigate surface roots of tree
- Removal and replacement of tree with appropriate species

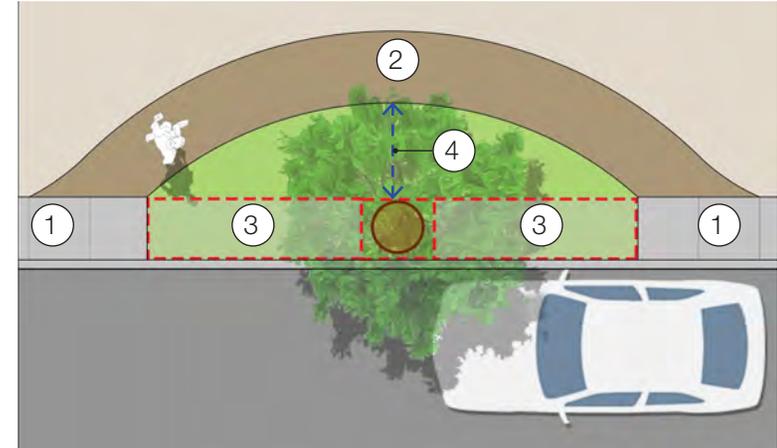


TREATMENT AREA

Limit of mitigation follows existing score lines and expansion joints of concrete for removal of existing paving to enlarge the open soil area. If space allows, the new paving should be installed beyond the root plate, typically three times the tree trunk diameter to avoid existing structural roots.

BENEFITS

- Encourages lateral root growth, minimizing damage of paved surfaces
- Enhances tree growth allowing it to reach mature size and prolonged health
- Maintains pedestrian circulation efficiency and accessibility



PLAN: SIDEWALK REALIGNMENT

1. Sidewalk
2. New sidewalk alignment
3. Existing pavement removal adjacent to tree well
4. Open soil area dimension - approximately 3x trunk diameter (root plate)

TREE GRATE RETROFIT WITH PERMEABLE PAVING CONNECTION

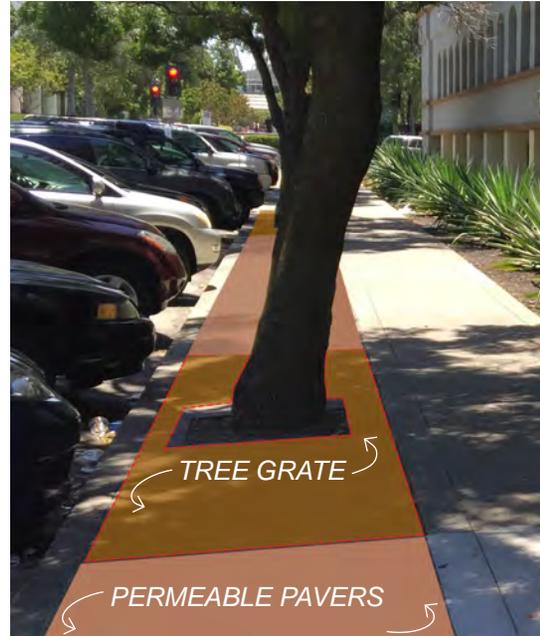


EXISTING CONDITIONS

Existing sidewalks adjacent to street parking and commercial space with higher pedestrian use require accessible surfaces for walking. Existing tree wells are too small for the tree species and will likely cause future pavement damage from root growth and diminish the long term health of the tree.

MITIGATION

- Enlarge open soil area by removing existing impervious paving
- Provide a tree grate retrofit to maintain accessible surface compatible in high use areas
- Replace impervious with pervious paving to connect adjacent tree wells

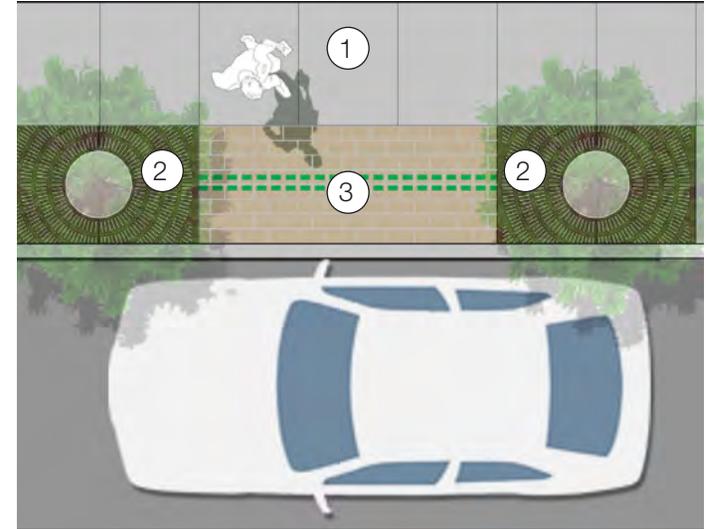


TREATMENT AREA

Limit of mitigation follows existing score lines and expansion joints of concrete for removal of existing paving to accept a tree grate retrofit. Sometimes an additional flush concrete curb will be required to support a tree grate. Permeable paving adjacent to each tree well creates a passage for roots to travel under, connecting to other open soil areas rather than under impervious paving.

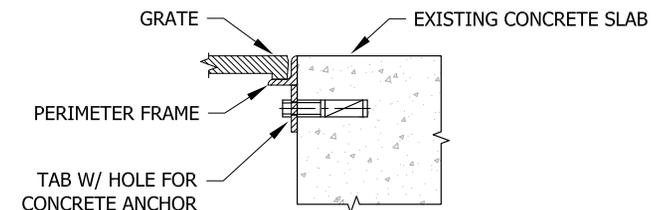
BENEFITS

- Encourages lateral root growth, minimizing damage of paved surfaces
- Enhances tree growth allowing it to reach mature size and prolonged health
- Maintains pedestrian circulation efficiency and accessibility



PLAN: TREE GRATE RETROFIT WITH PERMEABLE CUT-THROUGH

1. Sidewalk
2. Tree grate retrofit
3. Pervious paving at cut-throughs - see page A16. Permeable material between grates connects covered soil area at tree planting, providing additional space for lateral root growth

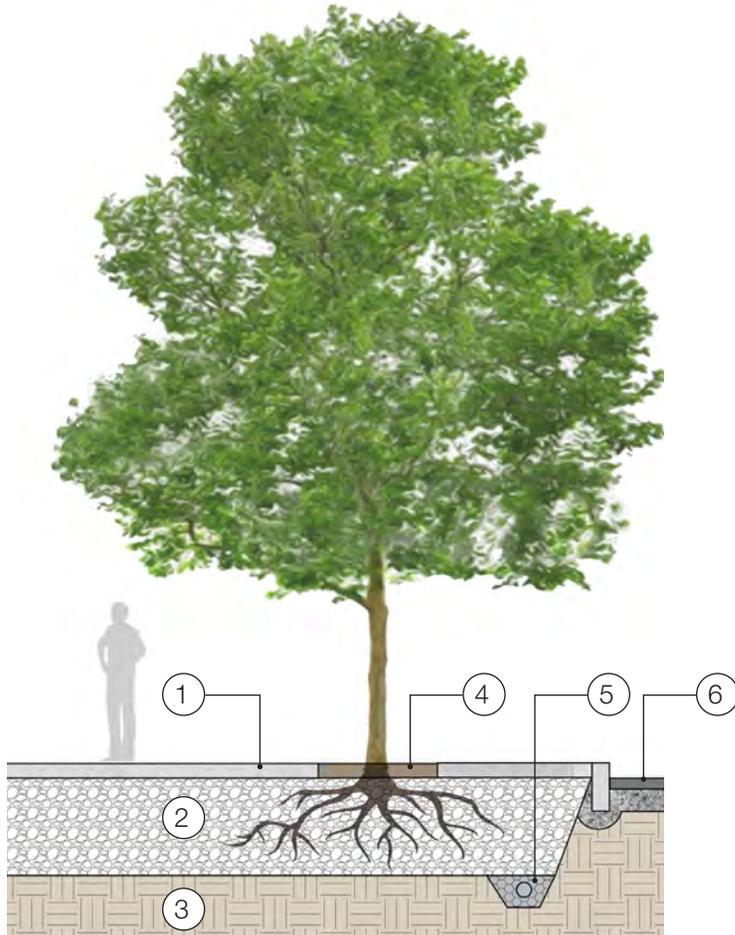


SCHMATIC DETAIL: TREE GRATE RETROFIT AT EXISTING PAVING

STRUCTURAL SOILS

DESCRIPTION

In urban environments where there is minimal available soil for root growth, structural soil can be implemented under paved surfaces for tree roots to access. Structural soil is a system consisting of engineered and organic soil, designed to meet load bearing requirements as well as tree requirements for root growth. Structural soils can be implemented in both new construction projects and as mitigation for sidewalk damage (see plan, this page). See page A13 for more information on growing media.



SCHEMATIC SECTION: STRUCTURAL SOIL

- | | | |
|--------------------|----------------------|---|
| 1. Sidewalk | 3. Subgrade | 5. Drainage to stormwater system |
| 2. Structural soil | 4. Tree well opening | 6. Typical street paving with curb and gutter |



PLAN: STRUCTURAL SOIL RETROFIT

- | | |
|------------------|---|
| 1. Sidewalk | 3. Breakout Zone - existing heave pavement removed, structural soil base installed, pavement replaced |
| 2. Existing Tree | 4. Connection to adjacent landscape area |

TYPICAL TREATMENT AREAS

- Sidewalks
- Plazas
- Parking areas
- Cut-throughs

BENEFITS

- Promotes large tree growth in highly paved areas
- Minimizes pavement damage
- Installation similar to standard pavement base course material

SOIL CELLS



SOIL CELL INSTALLATION AT STREET RENOVATION PROJECT



COMPLETED SOIL CELL PLAZA INSTALLATION

EXISTING CONDITIONS

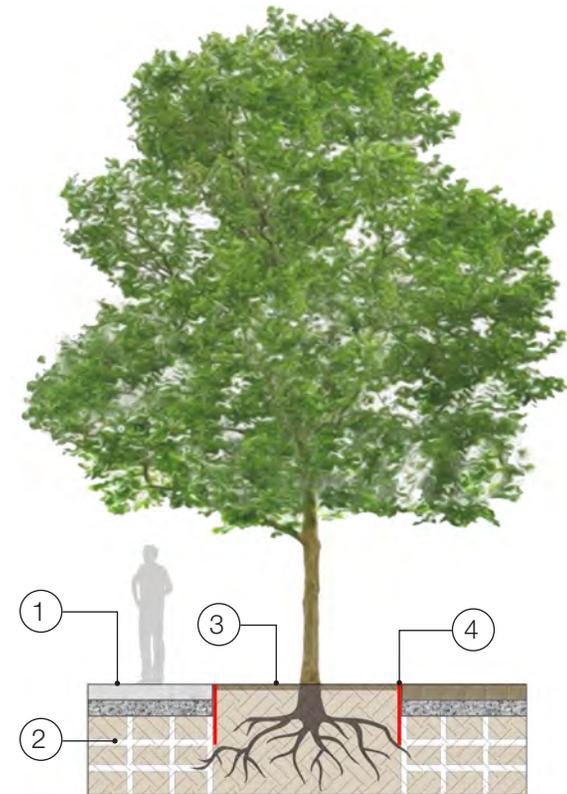
A soil cell is a modular system that can support a paved finish surface and house soil that is accessible to tree roots. This promotes larger tree growth in more urban areas where stormwater treatment and tree canopy are negatively affected by impervious surfaces.

TYPICAL TREATMENT AREAS

Soil cells are used in parking areas, sidewalks, plazas, and other areas where a paved surface is required and open soil area is minimal. Due to the scale of the installation, soil cells are typically utilized in new construction or large-scale revitalization projects.

BENEFITS

- Promotes large tree growth in urban areas
- Enables on site stormwater treatment
- Root barriers can direct roots down into the soil cell



1. Sidewalk
2. Soil cell with specific soil mix infill
3. Tree grate
4. Root barrier at paving to direct roots to cell (18"-24" minimum depth)

SCHEMATIC SECTION: SOIL CELL

Temporary Treatment for Existing Tree Wells

DESCRIPTION

Tree wells observed in the study area sometimes exhibit exposed soil conditions that rest below adjacent paving surfaces, causing a tripping hazard, physical damage susceptibility to the tree and to the irrigation system, moisture loss, and soil compaction. The following treatments are considered temporary due to their unpredictable nature, with installation results that are likely to change over time based on environmental impact.



TEMPORARY TREATMENT ALTERNATIVES



DECOMPOSED GRANITE

BENEFITS

- Solid surface
- Easy installation
- Already exists within corridor
- Less tendency to travel

DRAWBACKS

- Compacts over time, reduces oxygen circulation
- Messy when wet
- Tracks to other surfaces when walked on
- Can hold moisture against existing roots and trunks

ORGANIC MULCH

BENEFITS

- Moisture retention
- Reduces soil compaction
- Easy installation / cost effective
- Adds nutrients to soil as it decomposes

See page A13 for more guidance on mulches

DRAWBACKS

- Easily displaced
- Decomposes over time, causing settling
- Needs consistent maintenance / refreshing

Tree Quality and Planting Guidelines

Below are general guidelines for new and replacement tree planting within existing streetscape conditions. It contains information on material quality and structure, soils, and conceptual details of installation. Each new construction project will require individual written specifications and drawings, which will take precedent over this appendix.

QUALITY AND STRUCTURE

- All trees shall be healthy and free of all pests and diseases.
- Trees shall be in a vigorous condition, with average shoot growth for the previous season, a minimum of 12 inches.
- Trees shall have a structure typical of the species or variety, and be properly pruned.
- Trees shall have sufficient trunk taper and strength to be able to remain upright without staking support.
- Roots shall be healthy and extend to the bottoms and sides of the container. Rooting shall be extensive enough to hold the root ball together during planting, but not so dense as to discourage root establishment into surrounding soils. Roots shall not show any signs of restriction due to kinked, circular, or distorted growth.
- Primary structural roots shall be near the soil surface.
- Trees shall be delivered and maintained with the root balls moist and no indication of water.

ROOT PRUNING

As a general rule, tree root pruning should not occur within a distance of three to five times the trunk diameter from the trunk. Roots larger than 3 inches in diameter are often considered structural; cutting these roots could compromise tree stability. Mature trees are more susceptible to structural failure after root pruning, so this should not be considered a mitigation option unless it is in conjunction with a long-term treatment. Key factors to consider when determining if root pruning is appropriate are age, root size, trunk proximity, species, overall health, and current structure.

FERTILIZERS

- Place plant tablets (21 gram planting tablets 20% Nitrogen, 10% Phosphoric Acid and 5% Potash [20-10-5]) 3 inches below surface of rootball and 1/2-inch from roots at the following rates: 2 tablets for a 15-gallon tree, 6 tablets for 24-inch box tree, 8 tablets for 36-inch box tree, and 10 tablets for a 48-inch box tree.
- Specific recommendations based upon a soil analysis and report would take precedence over the tablet application.

PLANTING

- If poor soil drainage is suspected, use a percolation test to verify drainage. Sub-surface drainage may be required, or selection of a species tolerant of poor drainage conditions.
- Planting pit shall be twice the diameter of the container size at a minimum.
- Generally, the backfill soil shall be the existing native soil.
- The backfill soil shall be thoroughly fragmented to a friable condition (e.g. 'crumbly' texture to allow drainage and air space) and free of hard clods greater than 2 inches in diameter. No organic material shall be incorporated into the backfill soil. Backfill soil shall be free of subsoil, clay, lumps, stones, and other objects over 2 inches in diameter, and without weeds, roots, and other objectionable material.
- Amendments incorporated in the planting backfill should only be considered in areas with known poor quality. Amendments should be selected for the specific soil problem. Soil amendment requirements shall be determined through an agricultural suitability test performed by an accredited soils testing laboratory.
- Use light tamping and watering to settle the backfill soil and remove air pockets. Do not over compact and do not place soil on top of the root ball.
- Create a 3-inch high earthen basin around the tree to facilitate hand watering. The basin will need to be filled multiple times to ensure enough water to wet the entire root ball.

Growing Media

Soil quality is an important factor when considering tree growth in urban areas and should be designed in conjunction with soil volume solutions. Soil structure found in urban areas varies greatly due to paved surfaces and compacted soils. Air, water movement, and holding capacity patterns typical in natural soils can be altered or stopped completely due to compaction. The soil available to trees in the built environment is limited and often found under hardscape, leading to conflicts with paving as well as diminished tree health if the growing medium is not designed for the condition. Special mixes are available for paved environments that can establish healthy trees and minimize surface damage.

Soils should be analyzed in mitigation and new construction projects involving tree and plant growth. The selection of plant material, topsoil, fertilizer, soil amendments, conditioners, and irrigation systems should address the needs indicated in the soils analysis. The City's Public Works Parks Maintenance Division should be included in soil analysis review and inspections.

IMPORTED TOPSOIL

Imported topsoil shall improve water holding capacity, structural properties, nutrient levels and root depth. If topsoil must be imported to the landscape site, it shall predominantly be a friable loam in nature, obtained from well-drained, arable land. It shall be free of roots, rocks, debris, and other heavy materials with a recommended pH between 7.0 and 6.0.

SOIL AMENDMENTS FOR GENERAL APPLICATION

Should amendments to native soil be required, amendments shall be a decomposed or readily decomposed nitrogen stabilized organic material such as Forest Humus Duraloam, or a nitrolized redwood sawdust. It shall be a fresh aerated material containing particles not greater than 1/4-inch in size. No more than 25% of particles can fail to pass a 500 micron sieve. Amendment which has been allowed to 'sour' at the bottom of stockpiles cannot be used. It shall contain the following allowable analysis:

- Soluble salts (in PPM saturated extraction): 3.0 maximum
- Iron, acid-soluble dilution (based on dry weight): 0.08 minimum
- Ash (based on dry weight): 0-6.0 minimum
- Nitrogen (based on dry weight): 0.4-0.6 minimum

FERTILIZERS

All fertilizers must contain the manufacturer's warranted analysis on each container which will clearly state the compositions of N (Nitrogen), P (Phosphorus) and K (Potassium), as well as any secondary or micro nutrients. Each type of fertilizer applied as a general soil improvement must be able to respond in season to the particular soil composition, pH, solubility and species demand of an area to ensure optimum usage. The fertilizer, like the soil amendment, should be the one that best addresses the shortages revealed in a soil analysis as compared to the needs of any plants introduced area by area. Changes or additions made to fertilizers must also anticipate other improvements made in the soil.

MULCHES AND TOP DRESSING

All mulches and top dressing shall be small grade 'walk on' type bark with an aggregate particle size of approximately 1/4-inch. It shall be well aerated and free of debris (both organic and man-made). Mulch that has been allowed to 'sour' at the bottom of stockpiles cannot be used.

STRUCTURAL SOILS

A structural soil is an engineered mix of aggregates and soil that can support load bearing requirements of typical paved surfaces and support tree growth through gaps in the compacted aggregate sufficient for root penetration. The specific mix of crushed stone, clay loam and organic matter are installed to a depth of 24 to 36 inches, depending on the design. Mixing can be done on site and incorporate a small percentage of a chemical binder to prevent aggregate and soil separation. The material is then installed in 6-inch lifts. The use of structural soil requires a deep section removal and additional drainage, which increases the cost of a project and is generally used for new construction, but it can be used as a mitigation technique.

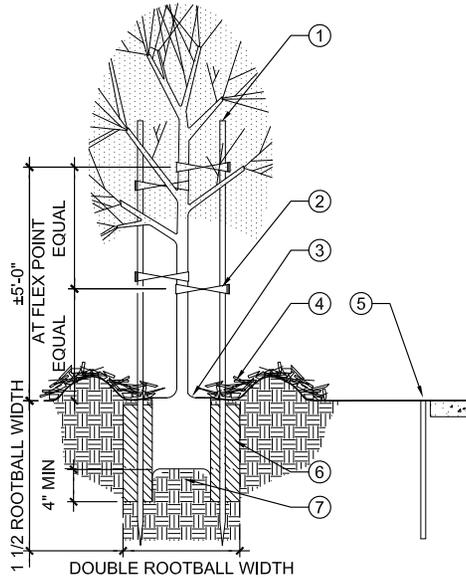
BIORETENTION SOILS

Bioretention soils, or bio-mixes, are used in areas that are designed to treat stormwater and typically fall under low-impact development guidelines. Retention areas have a holding capacity larger than standard planting areas and can sustain a particular volume of water. Bioretention soil mixes have specific holding capacities and drainage rates, and contain organic matter to support plant growth. The Contra Costa Clean Water Program has developed specific mixes for use in the county based on project design requirements.

Construction Details

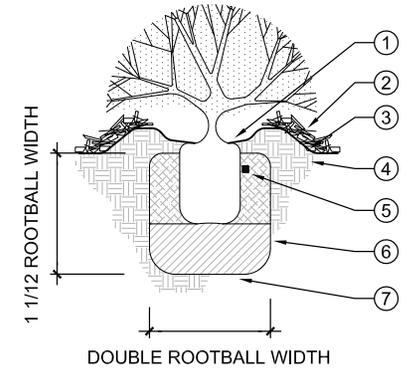
The detail drawings below are conceptual representations of industry best practices for tree and shrub installation and irrigation. Specifications for individual design projects will take precedent over these drawings.

- ① LODGEPOLE PINE STAKES
2 PER TREE
SET UPWIND, TRIM TOP OF
STAKE AS REQUIRED
- ② 24" MIN. LONG FLAT BLACK
RUBBER TREE TIE - TWIST IN
FIGURE 8 PATTERN, NAIL AT
BACK OF STAKE W/ 1" GALV.
ROOFING NAIL
- ③ SET ROOTCROWN 2" HIGHER
THAN FINISH GRADE
- ④ MULCH
- ⑤ ROOT BARRIER, 24" MIN.
- ⑥ AMENDED BACKFILL
- ⑦ UNDISTURBED NATIVE SOIL
UNDER ROOTBALL. EXCAVATE
ADJACENT SOIL AN ADDITIONAL
4" MIN. AND REPLACE W/
AMENDED BACKFILL



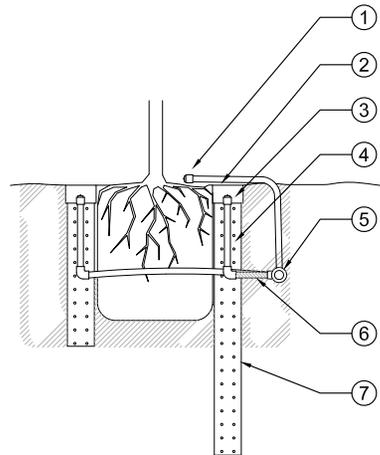
SCHEMATIC DETAIL: TREE PLANTING

- ① SET ROOT CROWN HIGHER THAN
FINISH GRADE - 1" MIN / 2" MAX
- ② MULCH
- ③ 6" HIGH BERM AT EDGE OF CONTAINER
- ④ AMENDED SOIL
- ⑤ FERTILIZER TABLET
- ⑥ BACKFILL MIX
- ⑦ EXCAVATE, LOOSEN BOTTOM OF HOLE,
REPLACE EXISTING SOILD AND FOOT
TAMP. NO BACKFILL UNDER ROOTBALL



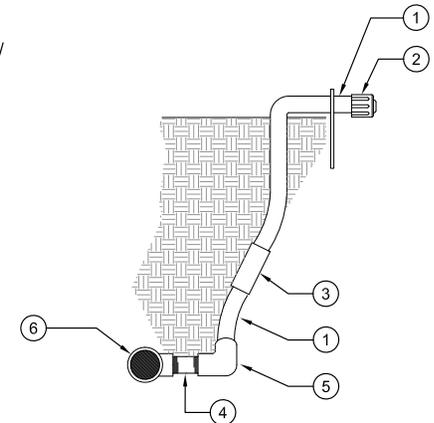
SCHEMATIC DETAIL: SHRUB PLANTING

- ① BUBBLER ON FLEX TUBE
- ② PERFORATED PIPE CAP
- ③ BUBBLER
- ④ SCHEDULE 80 RISER
- ⑤ LATERAL LINE
- ⑥ FLEXIBLE PVC
- ⑦ 3'L X 3"W PERFORATED PIPE. FILL W/ PEA
GRAVEL



SCHEMATIC DETAIL: TREE DEEP ROOT WATERING SYSTEM WITH SURFACE BUBBLER

- ① FLEX PVC PIPE/RISER - SECURE W/
STAPLE
- ② BUBBLER HEAD
INSTALL W/IN PLANT BASIN
ADJACENT TO ROOTBALL
- ③ CHECK VALVE
- ④ 2" LONG SCH 80 PVC NIPPLE
- ⑤ SCH 80 PVC ELBOW - LINE SIZE
- ⑥ LATERAL LINE



SCHEMATIC DETAIL: SHRUB BUBBLER

PAVER INSTALLATION GUIDE

DESCRIPTION

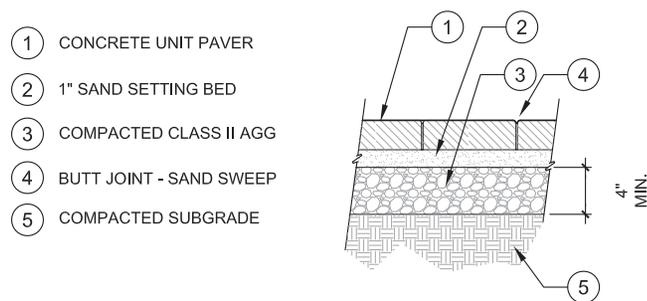
Pavers within the corridor have presented some long term maintenance and accessibility issues due to displacement or heaving. Multiple areas have failed due to the proximity of nearby mature trees with minimal growing space. How the paver is installed is based on a number of issues, including existing drainage patterns, mature trees, accessibility and use types. Each individual area requires analysis to determine which treatment is appropriate when installing a paver material is desired. Below are two common options that have proven to be successful in urban environments given proper installation techniques and siting have been implemented.



EXISTING SAND SET PAVERS



EXISTING PAVERS WITH MORTARED JOINT



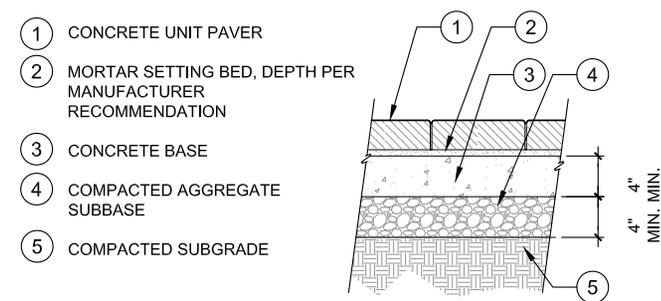
SCHEMATIC DETAIL: SAND SET PERMEABLE PAVERS

BENEFITS

- Permeability
- Allows water and air into tree planting areas
- Reduces stormwater runoff
- Installation feasible in existing conditions

DRAWBACKS

- Prone to settling and displacement / heaving over time
- Higher maintenance requirements



SCHEMATIC DETAIL: PAVER MORTARED TO CONCRETE BASE

BENEFITS

- Longer life span
- Reduces maintenance
- Maintains more consistent surface grade

DRAWBACKS

- Impervious
- More expensive
- Thicker section requiring more significant construction
- Not appropriate near planting areas where tree roots can cause heaving

CUT-THROUGH ALTERNATIVES

DESCRIPTION

Cut-throughs are narrow paving strips that connect pedestrian walkways to the street. The primary function is to direct circulation to minimize 'desire lines' or pathways created from a need to navigate a space unintended for foot traffic, typically a planting area. In planting areas adjacent to sidewalk and parking areas that contain mature trees, reducing the risk of physical root damage and soil compaction is essential in order for the tree to reach its full life span.

BENEFITS

- Redirects foot traffic away from sensitive areas while maintaining circulation patterns
- Prevents irrigation and vegetation damage
- Reduces soil compaction that could lead to long term health impacts of mature trees



DECOMPOSED GRANITE

- New construction or existing conditions
- Lower traffic area solution
- Permeable, maintains existing drainage patterns
- Cost effective
- Exists within study area
- Binder or glue mix available to increase durability / minimize erosion



SAND SET PAVERS

- New construction or existing conditions
- Lower traffic area solution
- Permeable, maintains existing drainage patterns
- Cost effective
- Exists within study area



PERMEABLE CONCRETE

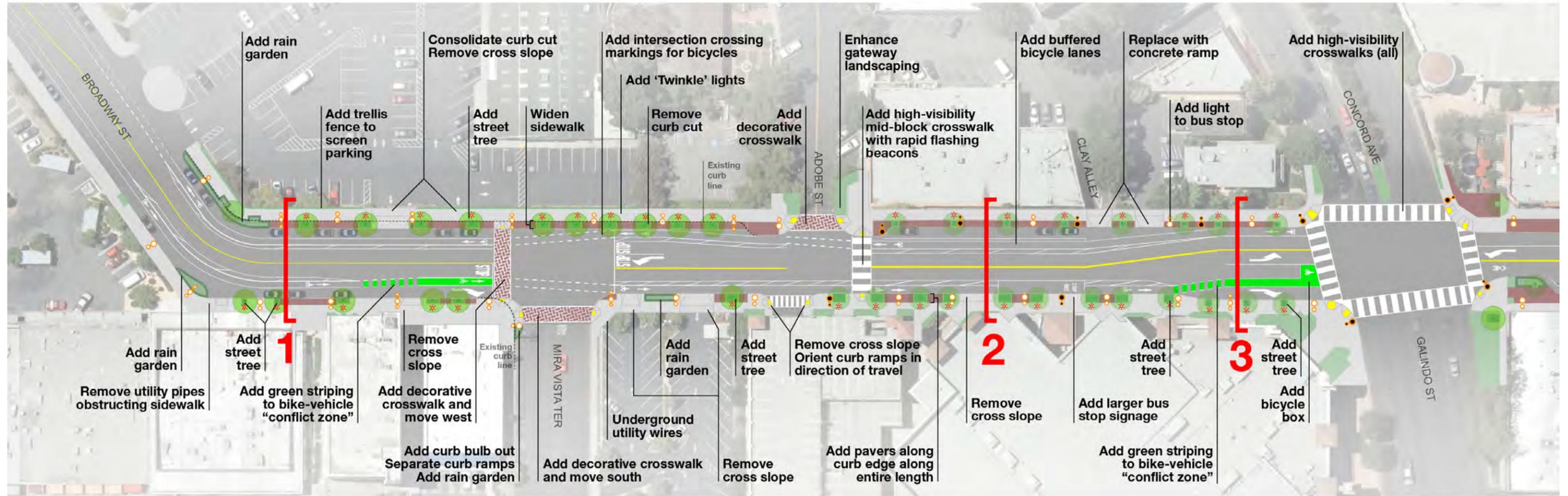
- New construction or existing conditions
- Low to high traffic solution
- Permeable, maintains existing drainage patterns
- Newer technology, higher up front costs



Downtown Corridors Plan

Appendix B: Conceptual Plan Diagrams

Salvio West Conceptual Plan



1. Salvio Street at Broadway



2. Salvio Street at Adobe Street



3. Salvio Street at Galindo Street

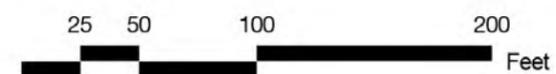


Legend

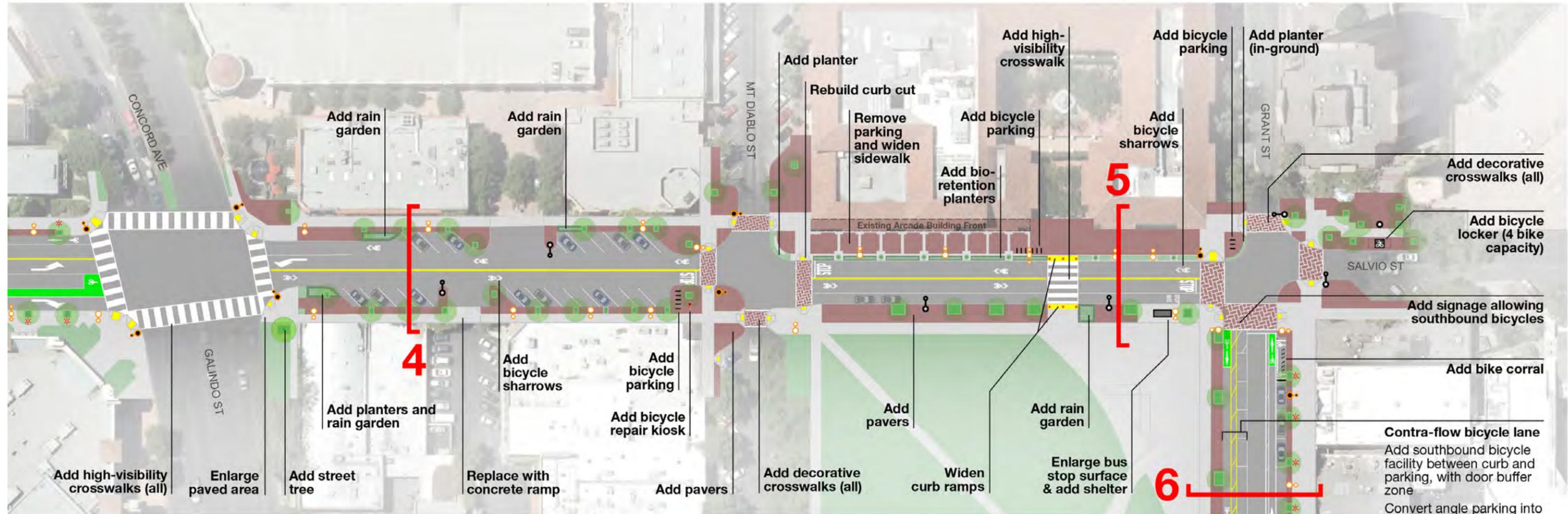
- | | | | |
|--------------------|-----------------------|--------------------------|-------------------------------|
| Pavers | Rain garden | <i>Existing Lighting</i> | <i>New Lighting</i> |
| Concrete sidewalk | Tree well | Street | Street |
| Truncated domes | Bollard - illuminated | Street & pedestrian | Street & pedestrian |
| Street | Bollard | Pedestrian | Pedestrian |
| Landscape/planting | | | Pedestrian (retrofit) |
| | | | 'Twinkle' Tree-Mounted Lights |



October 7, 2016



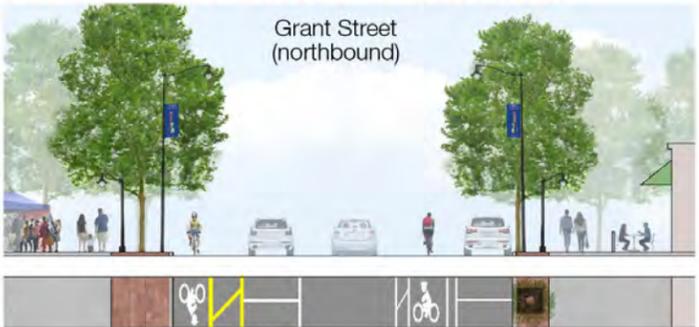
Todos Santos Plaza Conceptual Plan



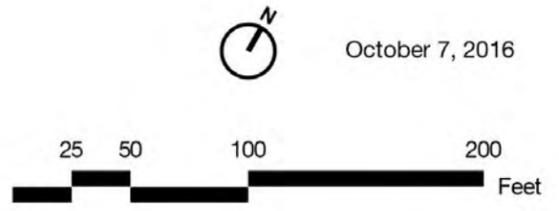
4. Salvio Street (Galindo-Mt. Diablo)

5. Salvio Street at Todos Santos Plaza

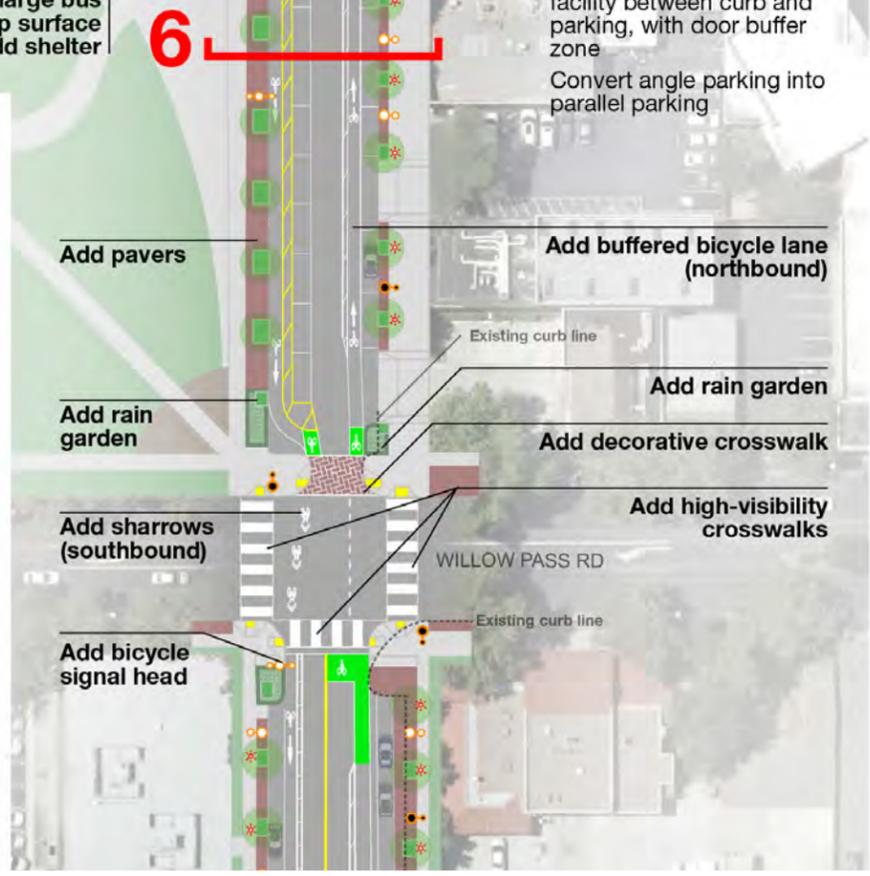
6. Grant Street at Todos Santos Plaza



- Legend**
- Pavers
 - Rain garden
 - Tree well
 - Concrete sidewalk
 - Bollard - illuminated
 - Bollard
 - Truncated domes
 - Street
 - Landscape/planting
 - Existing Lighting*
 - Street
 - Street & pedestrian
 - Pedestrian
 - New Lighting*
 - Street
 - Street & pedestrian
 - Pedestrian
 - Pedestrian (retrofit)
 - 'Twinkle' Tree-Mounted Lights



October 7, 2016

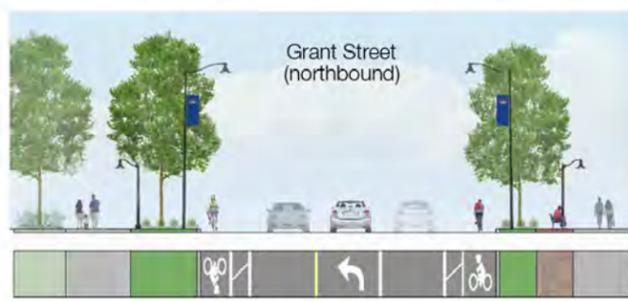


Central Grant Conceptual Plan

7. Grant Street (Willow Pass Rd to Concord Blvd)



8. Grant Street (Concord Blvd to Clayton Rd)

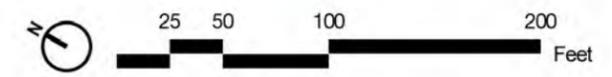


9. Grant Street (Clayton Rd to Park St)

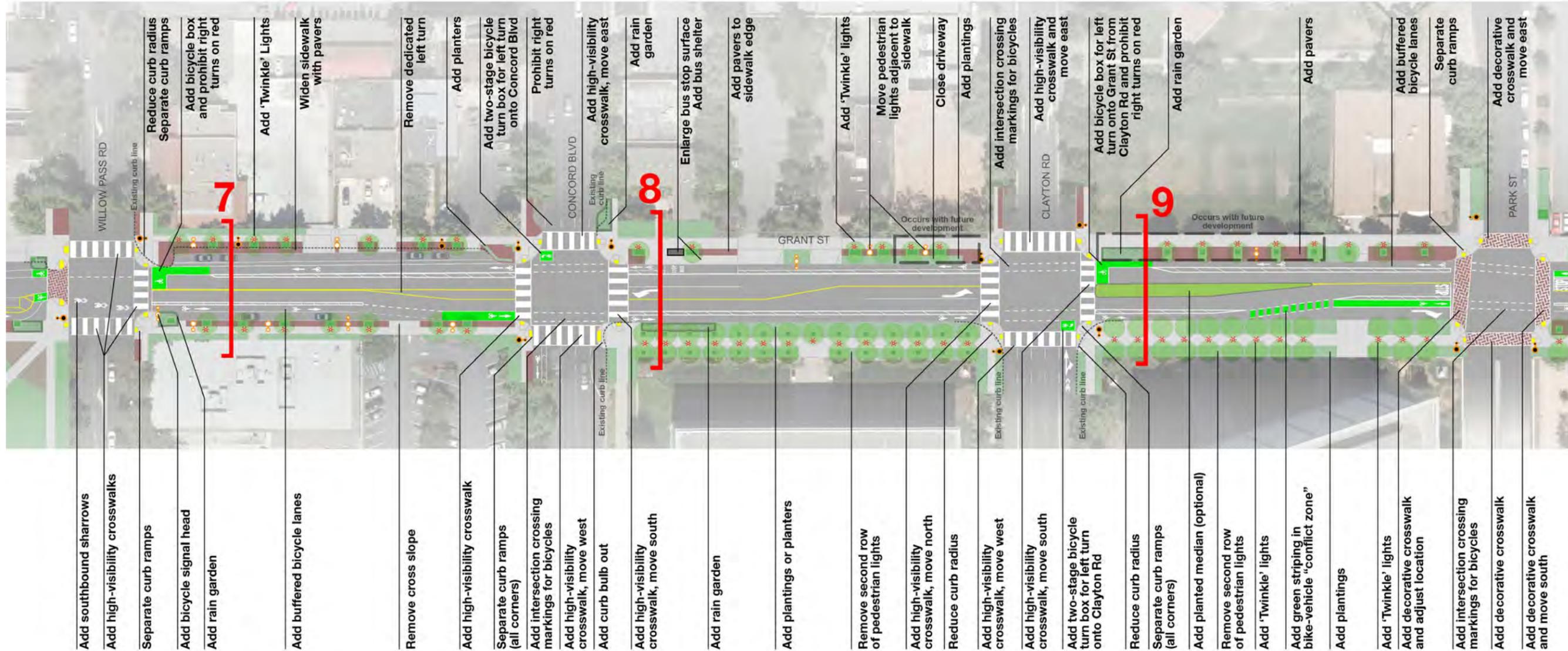


Legend

- Pavers
 - Concrete sidewalk
 - Truncated domes
 - Street
 - Landscape/planting
 - Rain garden
 - Tree well
 - Bollard - illuminated
 - Bollard
- Existing Lighting*
 - Street
 - Street & pedestrian
 - Pedestrian
 - New Lighting*
 - Street
 - Street & pedestrian
 - Pedestrian
 - Pedestrian (retrofit)
 - 'Twinkle' Tree-Mounted Lights



October 7, 2016

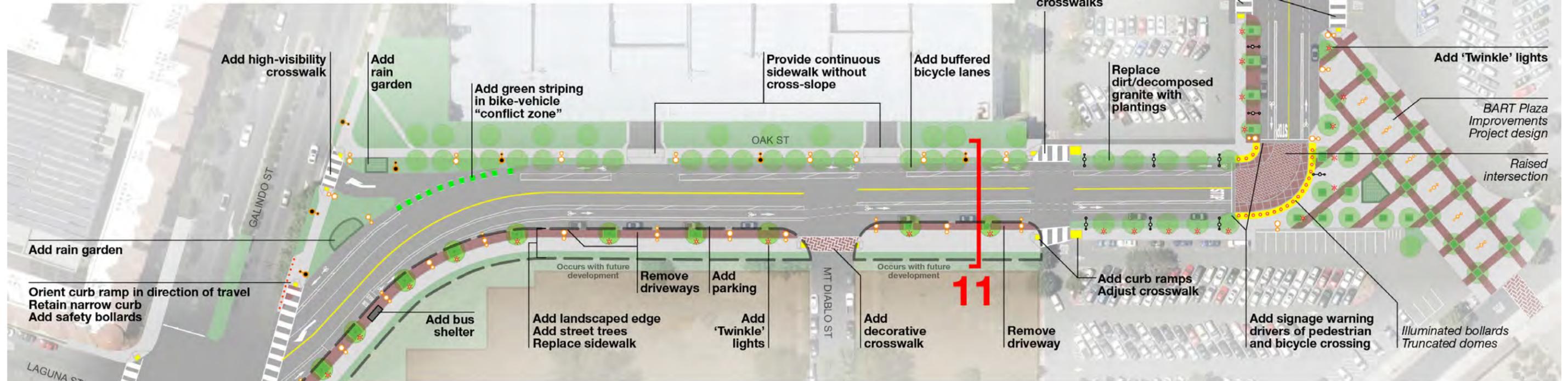


Oak Street/BART Access Conceptual Plan

11. Oak Street (Galindo St to Grant St)



10. Grant Street (Park St to Oak St)



Legend

- | | | | |
|--------------------|-----------------------|--------------------------|-------------------------------|
| Pavers | Rain garden | Existing Lighting | New Lighting |
| Concrete sidewalk | Tree well | Street | Street |
| Truncated domes | Bollard - illuminated | Street & pedestrian | Street & pedestrian |
| Street | Bollard | Pedestrian | Pedestrian |
| Landscape/planting | | | Pedestrian (retrofit) |
| | | | 'Twinkle' Tree-Mounted Lights |



October 7, 2016



