Meeting Date: **8/4/2016**

Report Type: Consent

Report ID: 2016-00771

City of SACRAMENTO 16

City Council Report
915 I Street, 1st Floor
www.CityofSacramento.org

Title: Broadway Complete Streets Plan Project (S15141700)

Location: Districts 4 and 5

Recommendation: Pass a Resolution: 1) accepting the Broadway Complete Streets Plan as the City's guide for reconfiguration of the Broadway corridor between Interstate 5 and State Route 99 and adopting Option 2 as the preferred alternative; 2) directing staff to amend the appropriate local and regional plans to reflect the recommendations of the Broadway Complete Streets Plan; and 3) directing staff to seek funding for further analysis of the recommendation of the Broadway Complete Streets Plan.

Contact: Fedolia "Sparky" Harris, Principal Planner (916) 808-2996; Hector Barron, City Traffic Engineer, (916) 808-2669, Department of Public Works

Presenter: None

Department: Public Works Department

Division: Transportation Division

Dept ID: 15001911

Attachments:

1-Description/Analysis
2-Background
3-Resolution
4-Exhibit A - Summary Report
5-Exhibit B - Letter of Support
6-Exhibit C - Technical Appendix

City Attorney Review

Approved as to Form
Gerald Hicks
7/21/2016 2:58:45 PM

Approvals/Acknowledgements

Department Director or Designee: Jerry Way - 7/15/2016 7:15:15 AM

Description/Analysis

Issue: A common vision is needed for the ultimate design of the Broadway corridor between Interstate 5 (I-5) and State Route 99 (SR 99).

Policy Considerations: The following Sacramento 2035 General Plan policies support the recommendation:

M 1.1.1 Right-of-Ways - City shall preserve and manage rights-of-way consistent with: the circulation diagram, the City Street Design Standards, the goal to provide Complete Streets as described in Goal M 4.2, and the modal priorities for each street segment and intersection established in Policy M4.4.1: Roadway Network Development, Street Typology System.

M 1.2.1 Multimodal Choices - The City shall develop an integrated, multimodal transportation system that improves the attractiveness of walking, bicycling, and riding transit over time to increase travel choices and aid in achieving a more balanced transportation system and reducing air pollution and greenhouse gas emissions.

M 1.2.4 Multimodal Access - The City shall facilitate the provision of multimodal access to activity centers such as commercial centers and corridors, employment centers, transit stops/stations, airports, schools, parks, recreation areas, medical centers, and tourist attractions.

M 1.3.2 Eliminate Gaps - The City shall eliminate “gaps” in roadways, bikeways, and pedestrian networks. To this end:

a. The City shall construct new multi-modal crossings of the Sacramento and American Rivers.

b. The City shall plan and pursue funding to construct grade-separated crossings of freeways, rail lines, canals, creeks, and other barriers to improve connectivity.

c. The City shall construct new bikeways and pedestrian paths in existing neighborhoods to improve connectivity.

M 1.3.3 Improve Transit Access - The City shall support the Sacramento Regional Transit District (RT) in addressing identified gaps in public transit networks by working with RT to appropriately locate passenger facilities and stations, pedestrian walkways and bicycle access to transit stations and stops, and public rights of way as necessary for transit-only lanes, transit stops, and transit vehicle stations and layover.

M 2.1.4 Cohesive and Continuous Network - The City shall develop a pedestrian network of public sidewalks, street crossings, and other pedestrian paths that makes walking a convenient and safe way to travel citywide. The network should include a dense pattern of routes in pedestrian- oriented areas such as the Central City and include wayfinding where appropriate.

M 3.1.1 Transit for All - The City shall support a well-designed transit system that provides accessibility and mobility for all Sacramento residents, workers and visitors. The City shall enhance bicycle and pedestrian access to stations.

M 3.1.17 - Dedicated Bus Facilities - The City shall consider the provision of dedicated bus lanes and related infrastructure where transit is clearly prioritized in the Roadway Network and Street typologies section of this General Plan.

M 4.1.2 Balancing Community, Social, Environmental, and Economic Goals - The City shall evaluate and strive to address community, environmental, and citywide economic development goals when adding or modifying streets, roads, bridges, and other public rights-of-way.

M 4.1.3 Community Outreach - The City shall conduct public outreach to community organizations and members of the general public in corridor planning early in the project development process to identify feasible opportunities to provide community benefits and to lessen any potential impacts of modifications to local streets and roadways.

M 4.2.1 Accommodate All Users - The City shall ensure that all new roadway projects and any reconstruction projects designate sufficient travel space for all users including bicyclists, pedestrians, transit riders, and motorists except where pedestrians and bicyclists are prohibited by law from using a given facility.

M 4.2.2 Pedestrian and Bicycle-Friendly Streets - In areas with high levels of pedestrian activity (e.g., employment centers, residential areas, mixed-use areas, schools), the City shall ensure that all street projects support pedestrian and bicycle travel. Improvements may include narrow lanes, target speeds less than 35 miles per hour, sidewalk widths consistent with the Pedestrian Master Plan, street trees, high-visibility pedestrian crossings, and bikeways (e.g. Class II and Class III bike lanes, bicycle boulevards, separated bicycle lanes and/or parallel multi- use pathways).

M 4.2.5 Multi-Modal Corridors - Consistent with the Roadway Network and Street Typologies established in this General Plan, the City shall designate multi- modal corridors in the Central City, within and between urban centers, along major transit lines, and/or along commercial corridors appropriate for comprehensive multimodal

corridor planning and targeted investment in transit, bikeway, and pedestrian path improvements if discretionary funds become available.

M 4.2.6 Identify and Fill Gaps in Complete Streets - The City shall identify streets that can be made “complete” either through a reduction in the number or width of travel lanes or through two-way conversions, with consideration for emergency vehicle operations. The City shall consider including new bikeways, sidewalks, on-street parking, and exclusive transit lanes on these streets by re- arranging and/or re-allocating how the available space within the public right of way issued. All new street configurations shall provide for adequate emergency vehicle operation.

M 5.1.2 Appropriate Bikeway Facilities - The City shall provide bikeway facilities that are appropriate to the street classifications and type, number of lanes, traffic volume, and speed on all rights-of-way.

M 5.1.3 Continuous Bikeway Network - The City shall provide a continuous bikeway network consisting of bike-friendly facilities connecting residential neighborhoods with key destinations and activity centers (e.g., transit facilities, shopping areas, education institutions, employment centers).

M 5.1.5 Motorists, Bicyclists, and Pedestrian Conflicts - The City shall develop safe and convenient bikeways, streets, roadways, and intersections that reduce conflicts between bicyclists and motor vehicles on streets, between bicyclists and pedestrians on multi-use trails and sidewalks, and between all users at intersections.

Environmental Considerations:

California Environmental Quality Act (CEQA): The action requested is review of a concept plan for the Broadway corridor to be used as guidance for future engineering, design, and analysis that will require project level environmental analysis when those future efforts are conducted. One goal of the plan is the reduction of Broadway from 4 to 2 lanes between I-5 and SR 99. The Department of Public Works prepared a study model to assist in the planning for the project. It is expected that re-striping and other actions eventually taken as part of the project would not present significant environmental issues.

The City Council is asked to review a conceptual approach and provide general direction, an action which is covered by CEQA Guidelines section 15262. That section provides an exemption from CEQA review for a project that involves "...only feasibility or planning studies for future actions which the...agency...has not approved, adopted or funded."

Sustainability Considerations: The recommended action supports the Climate Action Plan goal to create a connected multi-modal transportation network that

increases the use of sustainable modes of transportation (e.g. walking, biking, transit) and reduces dependence on automobiles.

Other: None.

Committee/Commission Action: None.

Rationale for Recommendation: The section of Broadway between I-5 and SR 99 is a car-dominated landscape with suboptimal cycling and pedestrian amenities. The corridor lacks character and district identity due to inadequate spaces for outdoor/public gatherings and pedestrian amenities. The corridor is plagued with slow, sometimes unreliable transit services and difficult or unappealing connections between local and regional destinations. Finally, numerous planning efforts have been conducted over time with little physical change.

Implementation of the recommendation will create a better balance among all modes of travel, where pedestrians, cyclists, transit riders, and drivers all feel safe and accommodated. It will improve pedestrian and cyclist safety along and across the corridor, improve amenities throughout the corridor in a manner that creates a unified character for the corridor, and increase opportunities to enjoy businesses/leisure activities. It will maintain or improve transit performance, connections to and between transit services, and enhance transit amenities. It will also establish a realistic implementation plan including the identification of opportunities for near-term/immediate implementation.

Financial Considerations: The planning level cost estimate to implement the Broadway Complete Streets Plan is between $6.8 million and $7.6 million depending on the extent of treatments at key intersections. Approval of this recommendation does not obligate funding for the improvements. Upon approval of the recommendation, Federal, State, and local funding will be sought to implement the plan over time. No General Funds are involved with this recommendation.

Local Business Enterprise (LBE) Preference Program: This recommendation does not involve the procurement of goods or services.

Background

The Broadway study area is a central neighborhood located south of downtown Sacramento, hosting a diverse cultural mix of businesses, residents, parks, and historical landmarks. Broadway anchors multimodal transportation connections to neighborhood and regional destinations, accessible by foot, bike, bus, light rail, local streets, and several major highway connections. Currently, residents, workers, and business owners look to improve the safety, connectivity, and character of the Broadway corridor. Unfortunately, they often characterize Broadway with disconnected pedestrian facilities and amenities, discontinuous bicycle facilities, fast-moving, uninviting traffic conditions, undersized transit facilities or slower operations, poor or unrecognizable urban design. These conditions result in an environment that is perceived as unwelcoming to pedestrians, cyclists, and transit riders and produces imbalances that could be improved to enhance corridor access for all modes and businesses as well.

The Broadway Complete Street Plan builds upon several planning efforts in the Broadway Corridor and greater study area, including the Broadway Vision Plan by the Urban Land Institute - Sacramento District Council and the Greater Broadway Partnership in 2012. In 2014, the City secured a Community-Based Transportation Planning Grant from Caltrans, supplemented with local matching funds, to undertake this Broadway Complete Streets Plan, with a focus on technical review of the Broadway Vision Plan in order to advance implementation of a project that improves safety, access and character of Broadway.

Particular concerns that drove analysis included:

- long distances between crossings;
- uncomfortable pedestrian crossing conditions;
- fast-turning vehicles;
- sidewalk obstructions or narrow sidewalks;
- limited, discontinuous bike lanes;
- no buffer between bike lanes and vehicle lanes where present; and
- limited connections to existing bike network on other streets.

This Plan began with a technical review of the concepts from the Broadway Vision Plan, with the goal of bringing a better balance to Broadway as a multimodal street compared to its current automobile focus. Through a combination of technical analysis, urban design, and public participation, this Plan has outlined two potential concepts for improving safety, connectivity, and mobility for all Broadway travelers, and also

contributing to a more vibrant urban fabric for the corridor. The participation performed to develop and refine the plan concepts consisted of the following:

- Walking Audit – January 2015
- Internal Charette – April 2015
- Mobile workshops – April 2015
- Public Workshop #1 – September 2015
- Public Workshop #2 – January 2016

Both concepts developed build upon a common strategy to reduce the number of vehicular travel lanes from four to two with a center turn pocket. Option 1 includes a road diet with buffered bike lanes throughout the corridor, and emphasizes intersection design that includes bulb-outs, high visibility crosswalks, painted bike lanes (especially at conflict zones). Some features, such as restriping for the basic road diet lane configuration, could be pursued as part of a first step or phased approach to improvements. Pedestrian crossing improvements at key intersections maintain right turn slip lanes and existing cross street lane configurations at all locations. The road diet and buffered bikes lanes are consistent across the corridor, and additional design details are proposed for key intersections:

- Riverside Boulevard and Land Park Drive/ 16th Street – bulb-outs to reduce pedestrian crossing distances where possible and high visibility crosswalks; maintain eastbound right turn slip lane, with a raised crosswalk connecting the sidewalk and the refuge island;
- maintain one-way northbound traffic on 16th Street with no change to transit routing; and
- move westbound Route 51 bus stop at 19th Street to nearside at 20th Street, install raised crosswalk through entire 20th Street intersection to improve pedestrian crossing for bus-to-light rail connections across Broadway.

Option 2 includes a road diet with buffered bike lanes throughout the corridor, and emphasizes intersection design that includes bulb-outs, high visibility crosswalks, and painted bike lanes (especially at conflict zones). Some features, such as restriping for the basic road diet lane configuration, could be pursued as part of a first step or phased approach to improvements.

Option 2 removes the right turn slip lanes at key intersections, introduces two-way traffic on 16th Street, and includes significant transit hub improvements between 19th and 20th Streets, connecting bus and light rail at the Broadway LRT Station. The road diet and buffered bikes lanes are consistent across the corridor, and additional design details are proposed for key intersections:

- Riverside Boulevard and Land Park Drive/16th Street – bulb-outs to reduce pedestrian crossing distances at all corners and high visibility crosswalks; bring all approach lanes to the signal-controlled intersections, removing yield-controlled eastbound right turn slip lanes while maintaining dedicated right turn lanes;
- introduce two-way traffic on 16th Street between X Street and Broadway; and
- maintain existing location for westbound 19th Street bus stop, with a midblock crosswalk immediately west of the light rail tracks to facilitate direct pedestrian access across Broadway for westbound bus-to-light rail connections.

The improvements discussed in this plan might not be implemented all at once, whether due to timeline, funding, or resource constraints. A combination of time and persistence, grant writing, collaborative partnerships, layering and leveraging of multiple funding sources might be necessary to bring the complete streets solutions for Broadway from concept to construction.

This project was structured around a robust public outreach process at each stage of analysis, concept development and evaluation. The recommendations presented in this report are informed by input from the community, along with the technical stakeholders and the City team.

RESOLUTION NO.

Adopted by the Sacramento City Council

BROADWAY COMPLETE STREETS PLAN (S15141700)

BACKGROUND

A. The City Council of Sacramento directed staff to submit a grant application for a Community-Based Transportation Planning Grant for the Broadway Complete Street Plan and authorized the City Manager to accept the award of a grant funding following project selection;

B. The Broadway Complete Streets Plan was awarded grant funding in Fiscal Year 2013/14 and work began on the Plan in December of 2014;

C. The agreed upon scope of work was to identify a detailed conceptual plan for the historic Broadway corridor as a more inviting and usable place for all users;

D. Planning for the corridor was to be undertaken in a collaborative process involving all relevant City departments as well as SACOG, Regional Transit, Caltrans, and the community;

E. The Plan was intended to identify operational enhancements, aesthetic improvements, and other concepts, which will enable pedestrians, cyclists, transit riders, and motorists to comfortably share this important facility;

F. Extensive outreach was intended to be a hallmark for the Complete Streets Plan in order to engage a diverse mixture of stakeholders from non-profit social service organizations, sole proprietor shops, and affordable housing interests to Class A office providers, high- end restaurateurs, and national commercial chains;

G. A diverse group of stakeholders was engaged representing property owners, community groups, neighborhood associations, developers, business interests, public transportation agencies, as well as advocates for walking and biking;

H. The project team reviewed and analyzed existing and ongoing studies to provide a framework for an existing conditions review;

I. The project team then conducted a review of existing features/roadways and developed a design memo to guide the development of conceptual alternatives;

J. The project team then defined a purpose and need statement, developed a multidisciplinary framework with multimodal evaluation criteria, and generated corridor alternatives with guidance from key external and internal technical stakeholders;

K. The project team then solicited public feedback on the corridor alternatives through multiple strategies including a business walk, pedestrian surveys on the street, and outreach to local organizations. The project team also maintained a robust web site with up-to-date information;

L. Finally, cost estimates and funding strategies were developed for the options;

M. Based upon the need and purpose developed for the plan, staff believes that Option 2 best accomplishes the desired outcome of the project.

BASED ON THE FACTS SET FORTH IN THE BACKGROUND, THE CITY COUNCIL RESOLVES AS FOLLOWS:

Section 1. The Broadway Complete Streets Plan is accepted as the City's guide for reconfiguration of the Broadway corridor between I-5 and State Route 99 and adopting Option 2 as the preferred alternative;

Section 2. Staff is directed to amend the appropriate local and regional plans to reflect the recommendations of the Broadway Complete Streets Plan;

Section 3. Staff is directed to seek funding for further analysis of the recommendation of the Broadway Complete Streets Plan.

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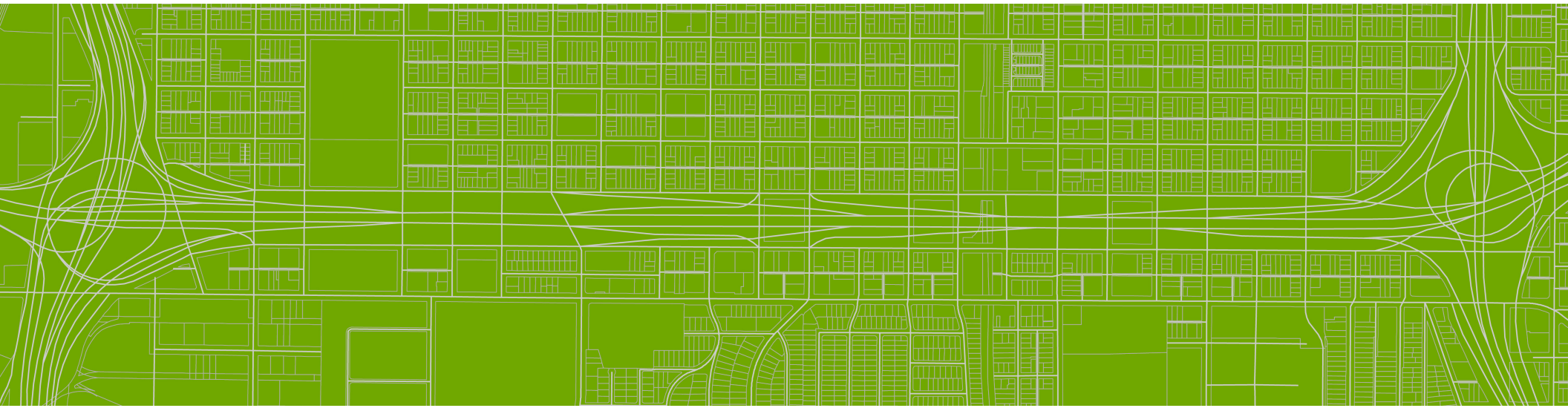
BROADWAY
Complete Streets Plan



BROADWAY COMPLETE STREETS FINAL RECOMMENDATIONS

APRIL 2016

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01 INTRODUCTION

Broadway Complete Street Plan

The Broadway Complete Street Plan builds upon several planning efforts in the Broadway Corridor and greater study area, including the Broadway Vision Plan by the Urban Land Institute, Sacramento District Council, and the Greater Broadway Partnership in 2012

SETTING - PROJECT CORRIDOR, DISTRICTS, CITY PRIORITIES

The Broadway Complete Street Plan builds upon several planning efforts in the Broadway Corridor and greater study area, including the Broadway Vision Plan by the Urban Land Institute, Sacramento District Council, and the Greater Broadway Partnership in 2012. The Broadway study area is a central neighborhood located just south of downtown Sacramento, hosting a diverse cultural mix of businesses, residents, parks, and historical landmarks. Broadway anchors multimodal transportation connections to these destinations, maiking it accessible by foot, bike, bus, light rail, local streets, and several major highway connections.

Currently, residents, workers, and business owners look to improve the safety, connectivity, and character of the Broadway corridor. Unfortunately, they often characterize Broadway with disconnected pedestrian facilities and amenities, discontinuous bicycle facilities, fast-moving, uninviting traffic conditions, undersized transit facilities or slower operations, poor or unrecognizable urban design. These conditions result in an environment that is unwelcoming to pedestrians, cyclists, and transit riders and produces imbalances that could be improved to enhance corridor access for motorists and businesses as well.

In 2014, the City secured a Community-Based Transportation Planning Grant from Caltrans, supplemented with local matching funds, to undertake this Broadway Complete Streets Plan, with a focus on technical review of the Broadway Vision Plan in order to advance implementation of a project that improves safety, access and character of Broadway. This Plan focuses development of a path for implementation of complete streets design for Broadway, in the context of the Broadway Vision Plan, but also noting the need for safe, connected multimodal travel in the Corridor. The following report outlines the approach, analysis, and findings about the design of the corridor, along with an approach to funding and phasing a Broadway Complete Streets project.

FIGURE 1 COMPLETE STREETS IMPLEMENTATION WOULD IMPROVE SAFETY, ACCESS, AND CONNECTIVITY FOR BROADWAY TRAVELERS

PURPOSE AND NEED

The Broadway Complete Streets Plan identifies recommendations for multimodal design improvements to make the two-mile corridor safer and more inviting for all modes of travel.

PROJECT GOALS

The following three goals have defined the project approach and specific recommendations:

- Balance accessibility for all modes of transportation in the Broadway Corridor
- Enhance safety and comfort for all modes, especially pedestrians and bicyclists
- Encourage economic revitalization and reinvestment along the Broadway Corridor

PROJECT IMPACTS

Broadway is currently designed to favor driving conditions, with excess lane capacity, wide intersections, ample room for fast moving vehicles, and yield-control turns and pedestrian crossings. A broad range of human-scale design changes will support a more interactive environment. A focus on accessibility, comfort and safety for all modes goes hand in hand with expanding mobility choices, supporting community development, enlivening the streets, and incentivize reinvestment throughout the corridor.

PLAN GOALS

The Plan described in this document has been structured to achieve the following three goals:

- Provide a technical review of the Broadway Vision Plan - continuous bike lanes, traffic calming, pedestrian safety, urban design and corridor character, a “road diet”, or lane reduction, and traffic operations
- Explore two alternative concepts – a basic road diet 4-to-3 conversion with bike lanes, and an enhanced “do more” option
- Address technical needs and questions – conduct a multidisciplinary evaluation, including traffic analysis, to ensure that concept designs address engineering and practical street design needs

PROJECT APPROACH

The Broadway Complete Streets Corridor plans were developed to:

- Design and vet a road diet and continuous bike lanes through the full length of the study corridor
- Apply corridor concepts at three key intersections where right of way dimensions, lane configurations, traffic operations, pedestrian crossing and transit connectivity call for location-specific recommendations: Riverside Boulevard, Land Park Drive/ 16th Street, and the Broadway Station light rail between 19th Street and 20th Street.

Concept details and evaluation are described in the following sections.

The Broadway Complete Street Plan builds upon several planning efforts in the Broadway Corridor and greater study area.


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02 FRAMEWORK AND EVALUATION

Criteria

This section describes the study team's approach to development and evaluation of design options for complete streets treatments in the Broadway Corridor. The following chapter, Chapter 3, describes the corridor alternatives and their performance with respect to these multimodal, and in fact multidisciplinary, evaluation criteria.

OVERVIEW

This section describes the study team's approach and evaluation of design options for complete streets treatments in the Broadway Corridor. The following chapter, Chapter 3, describes the corridor alternatives and their performance with respect to these multimodal, and in fact multidisciplinary, evaluation criteria.

The plan evaluation aims to ensure that the project would incorporate, understand, and address both the technical needs of the project as well as community, stakeholder, and agency concerns. The study team began with a review of multimodal level of service metrics, typically referred to as MMLOS, on similar relevant projects. After coordination with agency partners and community feedback, the team settled on a detailed quantitative and qualitative analysis framework. This allows for a measured, comprehensive discussion of the potential project tradeoffs. It also allows for a discussion of possible impacts and mitigation or management of those impacts in the next phase of project implementation.

The evaluation describes the quality of each design option, including the existing condition for reference, with respect to the following areas of potential impact:

- Pedestrian and bicycle safety and comfort
- Transit access and operational impacts
- Traffic operations and parking
- Urban landscape and design

Within each of these categories, there are further details that help to arrive at an overall understanding of the potential impact of each design option. For example, within Pedestrian Conditions, both the width of the pedestrian path of travel and the percentage of the total building to building right of way dedicated to pedestrians were analyzed.

- crosswalk type
- curb type
- amount of shading
- adjacent lane use
- crossing distance
- crossing opportunities

To evaluate the ways that bicycling conditions change across the design options, the team analyzed the following:

- opportunities for bike parkign
- connections to network
- comfort
- safety

Comfort and safety were analyzed together, with consideration of the following:

- width of the bicycle lane
- percentage of the route along Broadway in a dedicated bicycle lane
- percentage of the route along Broadway that is buffered from vehicular traffic
- speed of the lane adjacent to the bicycle facility

To understand the potential transit access and operations impacts across the design options, the team analyzed the following:

- stop amenities
- stop spacing
- connectivity
- reliability

To assess the potential traffic impacts and parking access across the design options, the team analyzed the following:

- travel time
- turn opportunities
- delay and queuing
- parking by segment

Within each of the metrics in traffic and parking, the impacts were examined in total and by segment rather than by block or by space. For example, we summarize the change in dedicated left-turn opportunities as 3 turns per 5 blocks in one option vs perhaps 2 turns per 5 blocks in the other. This methodology is more instructive for understanding impacts at a corridor level. It is also more indicative of a conceptual design study and analysis. More detail will be developed during the final design and analysis of the project as it approaches implementation.

To understand the potential enhancements to the urban design realm, the following metrics were examined:

- connection to adjacent use
- amount/ quality of activity spaces
- comfort and safety

The complete, multidisciplinary criteria are shown below.

The evaluation includes both qualitative and quantitative measures. The primary sources of data for evaluating performance include:

- Transportation demand modeling and traffic operations analysis
- Conceptual engineering designs
- Data on the performance of other complete streets projects in similar settings
- Stakeholder and community outreach

Key aspects of the project were assessed using a two-step approach to modeling transportation conditions, as summarized in Figure 2. The models used for this evaluation are:

- Sacramento Council of Governments Activity-Based Travel Demand Forecasting model, which models Sacramento area transportation demand and conditions (SACOG model)
- Synchro, which provides traffic analysis at specific key intersections

More detail on the traffic analysis process is provided in the technical appendix.

FIGURE 2 MULTIDISCIPLINARY EVALUATION FRAMEWORK

METRICS ANALYZED		
Pedestrian Conditions	• crosswalk type • curb type • amount of shading	• adjacent lane use • crossing distance • crossing opportunities
Bicycling Conditions	• opportunities for bike parking • connections to network	• comfort • safety
Transit Conditions	• stop amenities • stop spacing	• connectivity • reliability
Traffic Conditions	• travel time • turn opportunities	• delay and queuing • parking by segment
Urban Design	• connection to adjacent use • comfort & security	• amount/quality of activity spaces

When presented to agency partners, stakeholders, and the community for feedback, most felt that this matrix would best capture the overall goals and objectives of the Broadway Complete Streets project. There was some discussion as to whether one goal might be more important than others, eg pedestrian safety; however, since the goal is simply to bring a better balance to the street, in the end no one metric outshined another. As a result no weighting is assigned to individual metrics or modes, nor are any values assigned or summed. This allows a broad examination of the tradeoffs and synergies of each option.

More detail on the overall performance of the design options is included in chapter 3, following the description of each option.

The approach for the evaluation criteria was to ensure that the project would incorporate, understand, and address both the technical needs of the project as well as community, stakeholder, and agency concerns.


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Land Park
CORE

03 CORRIDOR ALTERNATIVES

Options

Previous examinations of Broadway envision a reduction from the 4-lane cross-section, often with parking, an occasional left-turn pocket, and discontinuous bike lanes in order to improve the safety, operation, and connectivity along Broadway. Corridor-wide, the concept of a 2-lane cross-section with alternating median/ dedicated left-turn lanes makes room for continuous bike lanes with parking in key areas.

The design concepts were was applied, refined, and analyzed throughout the corridor, which spans the Marina District, the Tower District, and the Upper District, from 3rd Street at the west end to 26th Street/ Fernando Way at the east end. Specific design recommendations were developed for the following three key intersections:

- Riverside Boulevard
- Land Park Drive/ 16th Street
- Broadway Station light rail between 19th Street and 20th Street

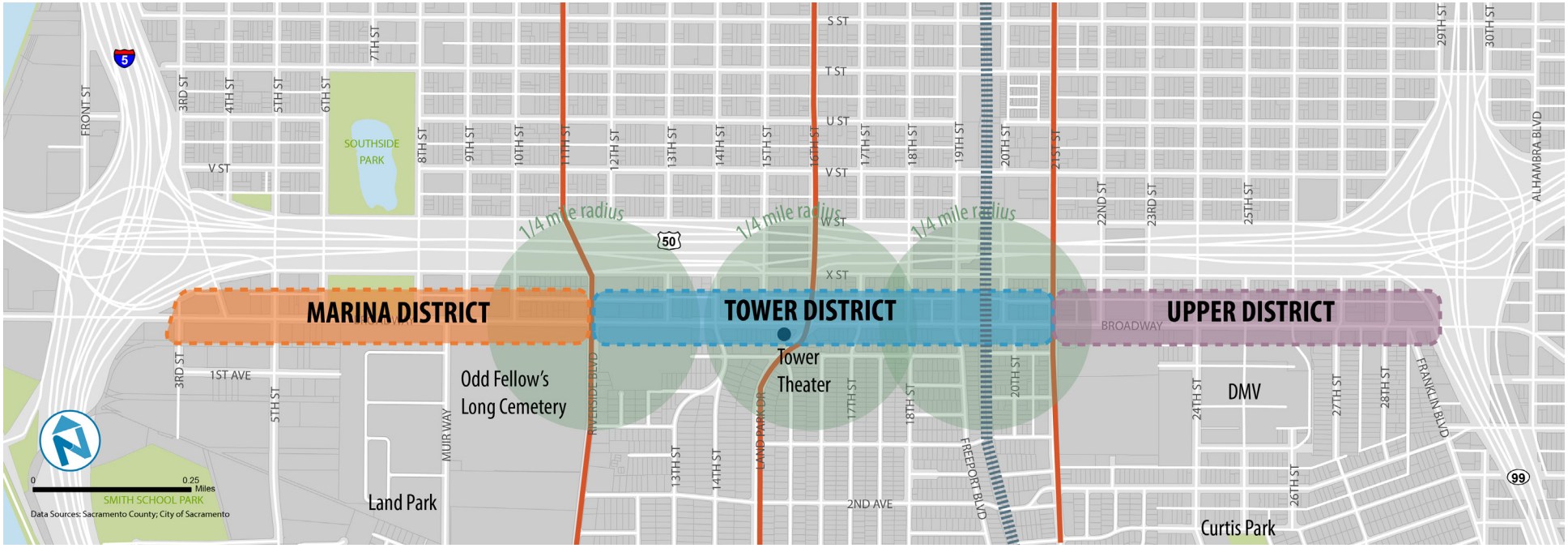
CRITICAL ISSUES

Key issues that stand out from project walk audits, outreach, and previous visioning processes include:

- Long distances between crossings
- Uncomfortable pedestrian crossing conditions
- Fast-turning vehicles
- Sidewalk obstructions or narrow sidewalks
- Limited, discontinuous bike lanes
- No buffer between bike lanes and vehicle lanes where present
- Limited connections to existing bike network on other streets
- Limited transit amenities
- Inconvenient connections between bus and light rail

Pedestrian crossings are especially long and challenging at the key intersections. Eastbound right turns are yield-controlled at Riverside Boulevard and Land Park Drive, and westbound bus passengers must take an indirect path of travel to connect to the Broadway light rail station.

FIGURE 3 CORRIDOR DISTRICTS



CORRIDOR-WIDE ROAD DIET

While the right of way dimensions and lane configurations vary across the Broadway corridor, the typical cross section includes a sidewalk and parking lane on each side, two travel lanes in each direction, and a painted median, illustrated in Figure 4.

DEFINITION/DESCRIPTION

A road diet reduces the total number of vehicle lanes from four, with two in each direction, to three, with one in each direction and a center left-turn pocket. Roads with average daily traffic (ADT) volumes of less than 25,000 can usually accommodate this lane reduction, with some modifications at key locations to ensure access to local businesses, maintain traffic flow, and maintain or enhance transit performance. Figure 3 illustrates the typical configuration for the road diet with buffered bike lanes.

The proposed road diet allows for a buffered bike lane through the entire corridor, and presents opportunities for pedestrian crossing improvements, new pedestrian crossings, and sidewalk enhancements.

Figure 5 illustrates the proposed corridor-wide improvement and locations of key intersections where specific recommendations vary.

FIGURE 4 TYPICAL CROSS SECTION - EXISTING

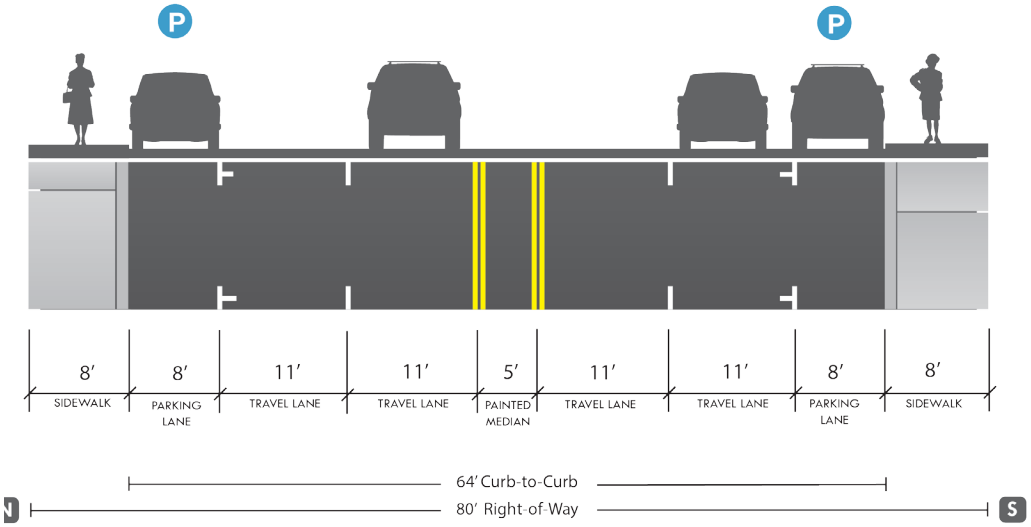
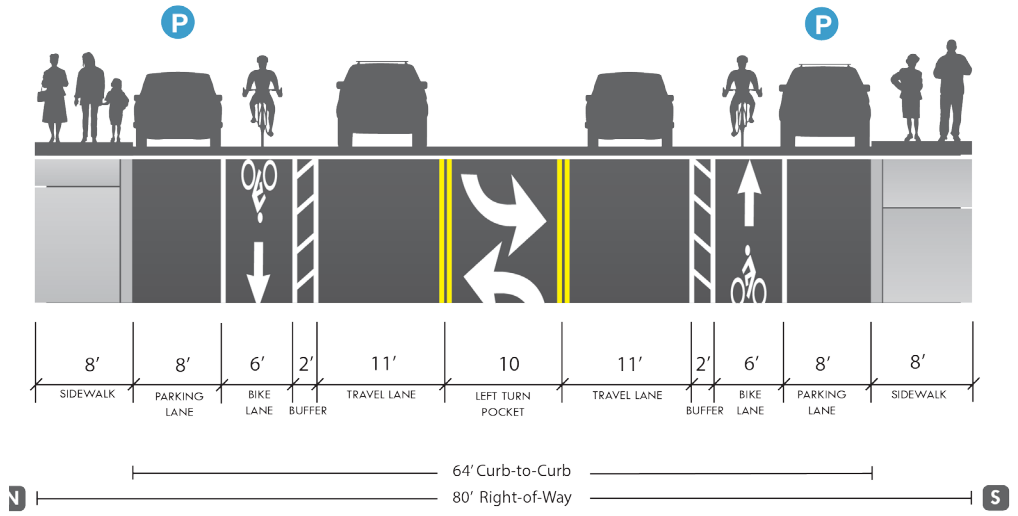


FIGURE 5 TYPICAL CROSS SECTION - PROPOSED



ADVANTAGES

The road diet reallocates right of way from high speed vehicles to a variety of active users, dedicating space to pedestrians, bicyclists and slower moving/ turning vehicles. With a narrower vehicle right of way, the corridor is designed for lower driving speeds, and provides cues to drivers that this corridor is shared with other users.

Traffic calming:

- Road diet treatments shift the corridor design from accommodating vehicle throughput to providing space for all users, including pedestrians, bicyclists, transit passengers, and visitors to local businesses
- Narrower vehicle lanes and clear definitions of space for other users reduces corridor design speed and slows motorists
- Smaller turning radii at intersections reduces design speeds for turning vehicles and positions drivers closer to perpendicular as they approach crosswalks, bringing pedestrians into their field of vision

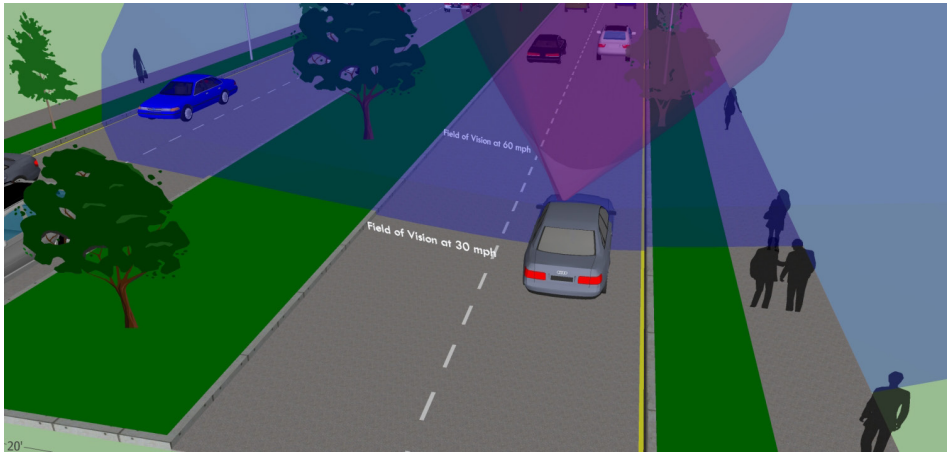
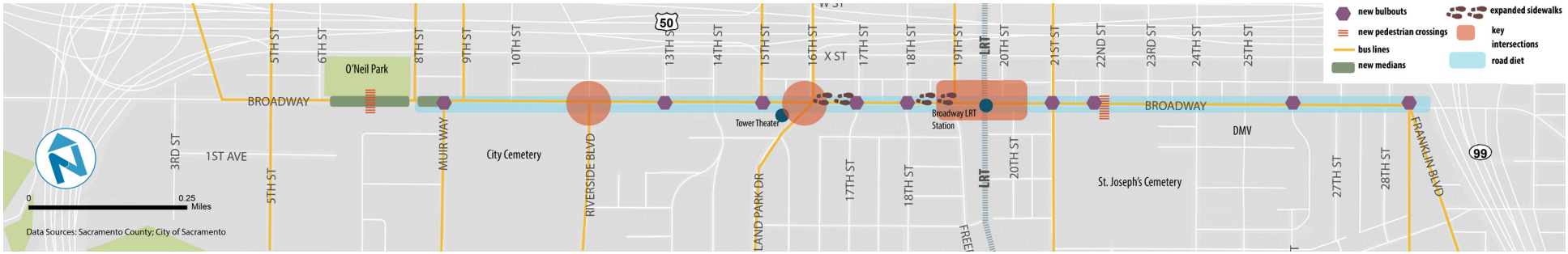


FIGURE 6 PROPOSED CORRIDOR IMPROVEMENTS



PEDESTRIAN SAFETY:

- About 25% of corridor residents commute by walking, biking or transit, more than double the citywide average
- Bulb-outs at intersections and mid-block crossings reduce the distance pedestrians need to cross and reduce the exposure to vehicle conflicts
- Crossing treatments will highlight the presence of pedestrians at intersections, increasing motorists awareness of where to expect pedestrians

BUFFERED BIKE LANES:

- Allocates road space to cyclists, creating a continuous route for the entire corridor
- Increases motorist awareness and visibility of bicyclists, while making bicyclists presence and movements more predictable
- Marking the bike lane through the intersection provides continuous signal to both motorists and bicyclists

OPPORTUNITIES FOR TRANSIT CONNECTIONS:

- Transit riders make about 6,500 trips along Broadway each day, with about 1,500 boardings at the Broadway Station light rail
- Broadway hosts one of Sacramento's highest ridership bus lines (Route 51), operating every 12 minutes almost 14 hours per day
- The road diet presents opportunities for traffic calming and improved pedestrian crossing treatments at Broadway Station (details for Option 1 and Option 2 are outlined below)

DEDICATED LEFT-TURNING POCKETS:

- Dedicated lanes for left turns improves predictability of vehicle movements at intersections and allows for through moving vehicles to travel across intersections without interruption
- Signals can be optimized to accommodate turning movements

CHALLENGES

There are some challenges to consider in evaluating road diet treatments. The maximum ADT on the Broadway corridor reach approximately 22,000 east of 17th Street, which can typically be accommodated with one lane in each direction. However, on streets with higher ADT, it can be more difficult to achieve road diet without advance design or technology.

- Vehicle capacity may be constrained where ADTs cannot be accommodated
- Queues may form at congested intersections or turn locations with high vehicle volumes
- Fewer lanes can hinder transit operations unless protective measures are employed

CONNECTING THE NETWORK AS WE GROW

- The Broadway Corridor is part of a connected grid. As potential new development projects in the Marina District advance, with the associated growth in trips, there may be opportunities for additional crossings along Broadway perhaps in tandem with future additions to the street grid.
- Sacramento's overall bicycle network is important to promote safe routes for bicycle trips through the street grid. The Broadway Complete Streets Plan strengthens a spine in the network that will facilitate future improved connections on key north-south routes. As projects in SacGrid 2.0 are implemented, new connections to and from Broadway will be created or further strengthened over time.

OPTION 1

DEFINITION

Option 1 includes a road diet with buffered bike lanes throughout the corridor, and emphasizes intersection design that includes bulb-outs, high visibility crosswalks, painted bike lanes (especially at conflict zones). Some features, such as restriping for the basic road diet lane configuration, could be pursued as part of a first step or phased approach to improvements. Pedestrian crossing improvements at key intersections maintain right turn slip lanes and existing cross street lane configurations at all locations. The road diet and buffered bikes lanes are consistent across the corridor, and additional design details are proposed for key intersections:

- Riverside Boulevard and Land Park Drive/ 16th Street – bulb-outs to reduce pedestrian crossing distances where possible and high visibility crosswalks; maintain eastbound right turn slip lane, with a raised crosswalk connecting the sidewalk and the refuge island
- Maintain one-way northbound traffic on 16th Street with no change to transit routing
- Move westbound Route 51 19th Street bus stop to nearside at 20th Street, install raised crosswalk through entire 20th Street intersection to improve pedestrian crossing for bus-to-light rail connections across Broadway

PROS AND CONS

Option 1 presents the following strengths:

- Full corridor road diet with buffered bike lanes
- Pedestrian crossing improvements throughout, with shorter crossing distances at key intersections and wherever bulb-outs are feasible at other crosswalk locations
- Vertical treatments at raised crosswalks across right turn slip lanes and at 20th Street
- Improved connection between eastbound bus and Broadway Station light rail, providing a more direct path of travel across Broadway

The following challenges should be considered:

- Right turn slip lanes at Riverside Boulevard and Land Park Drive maintain existing vehicle access at these locations, but also require long crossing distances for pedestrians connecting to and from the southwest corners of these intersections
- The bus-to-light rail connection at 20th Street is more direct than the current crossing at 19th Street, but requires pedestrians to use a yield control crossing and maintains a significant walking distance between the westbound bus stop and light rail boarding area

OPTION 2 (PREFERRED)

DEFINITION

As in Option 1, Option 2 includes a road diet with buffered bike lanes throughout the corridor, and emphasizes intersection design that includes bulb-outs, high visibility crosswalks, painted bike lanes (especially at conflict zones). Some features, such as restriping for the basic road diet lane configuration, could be pursued as part of a first step or phased approach to improvements.

Option 2 removes the right turn slip lanes at key intersections, introduces two-way traffic on 16th Street (consistent with the Downtown Plan), and includes significant transit hub improvements between 19th and 20th Streets, connecting bus and light rail at Broadway Station. The road diet and buffered bikes lanes are consistent across the corridor, and additional design details are proposed for key intersections:

- Riverside Boulevard and Land Park Drive/ 16th Street – bulb-outs to reduce pedestrian crossing distances at all corners and high visibility crosswalks; bring all approach lanes to the signal-controlled intersections, removing yield-controlled eastbound right turn slip lanes while maintaining dedicated right turn lanes
- Introduce two-way traffic on 16th Street (consistent with the Downtown Plan), and reroute southbound Route 6 bus from 15th street to 16th Street
- Maintain existing location for westbound 19th Street bus stop, with a midblock crosswalk immediately west of the light rail tracks to facilitate direct pedestrian access across Broadway for westbound bus-to-light rail connections
- Locate bike lanes adjacent to curb,introduce bus boarding islands, and exclusive bus only lanes between 19th Street and 20th Street to eliminate bike-bus conflict and expand loading and waiting area for bus passengers

PROS AND CONS

Option 2 presents the following strengths:

- Full corridor road diet with buffered bike lanes
- Pedestrian crossing improvements throughout, removing right turn slip lanes at key intersections to significantly reduce pedestrian crossing distance, and wherever bulb-outs are feasible at other crosswalk locations
- Squaring up intersections with bulbs at corners, to slow down vehicles at intersections without reducing roadway capacity
- Two-way traffic on 16th Street will offer greater vehicle access on 16th and consistent routing of northbound and southbound Route 6 bus service and reduce Broadway cut-through traffic
- Pedestrian crossing between 19th and 20th Streets for a direct connection between the eastbound Route 51 bus and Broadway Station light rail, providing the shortest possible path of travel across Broadway
- Bus boarding islands provide additional space for bus passengers and establish a transit hub at this important light rail and bus connection point
- Bus boarding islands and curbside bike lanes eliminate bike-bus conflict at this potentially busy transfer station with frequent bus service

The following challenges should be considered:

- Eliminating right turn slip lanes at Riverside Boulevard and Land Park Drive reduces pedestrian crossing distances, but also requires tighter turning radii for large vehicles making eastbound right turns
- The bus-to-light rail connection at the midblock crossing is the most direct connection between bus and light rail, but will require coordination at adjacent intersections and with the freight rail crossing. Given the location of this crossing, during the next phase of development further analysis should explore the pedestrian crossing control that best addresses transit connectivity while also managing vehicle queuing in a manner acceptable to Sacramento Regional Transit and California Public Utilities Commission. It will also be necessary to coordinate with improvements proposed for 19th Street as part of the Downtown study, Grid 2.0, which recently settled on an option that would convert 19th Street to one-way operations between Broadway and X Street.

KEY INTERSECTION DETAILS

The following sections provide illustrations for Option 1 and Option 2 (preferred) at Riverside Boulevard, Land Park Drive/ 16th Street and Broadway Station light rail.

RIVERSIDE BOULEVARD

FIGURE 7 RIVERSIDE BOULEVARD OPTION 1 PLAN VIEW

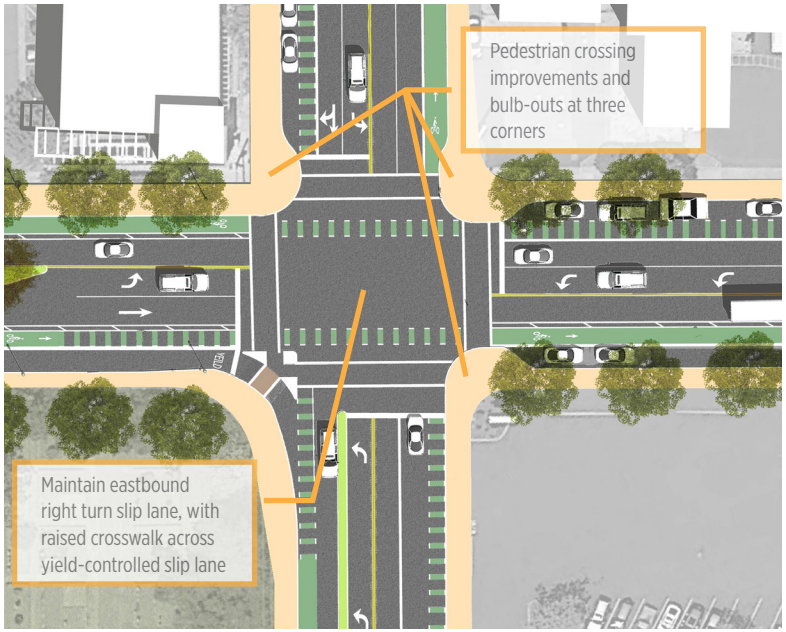


FIGURE 8 RIVERSIDE BOULEVARD OPTION 1 BIRD'S EYE RENDERING

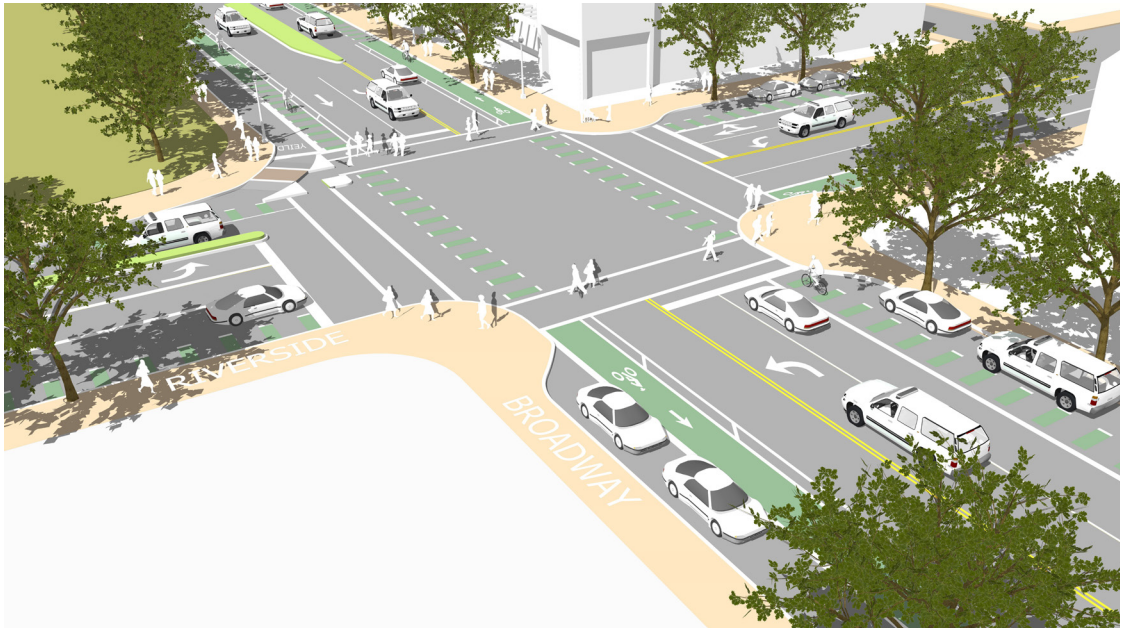


FIGURE 9 RIVERSIDE BOULEVARD OPTION 2 (PREFERRED) PLAN VIEW

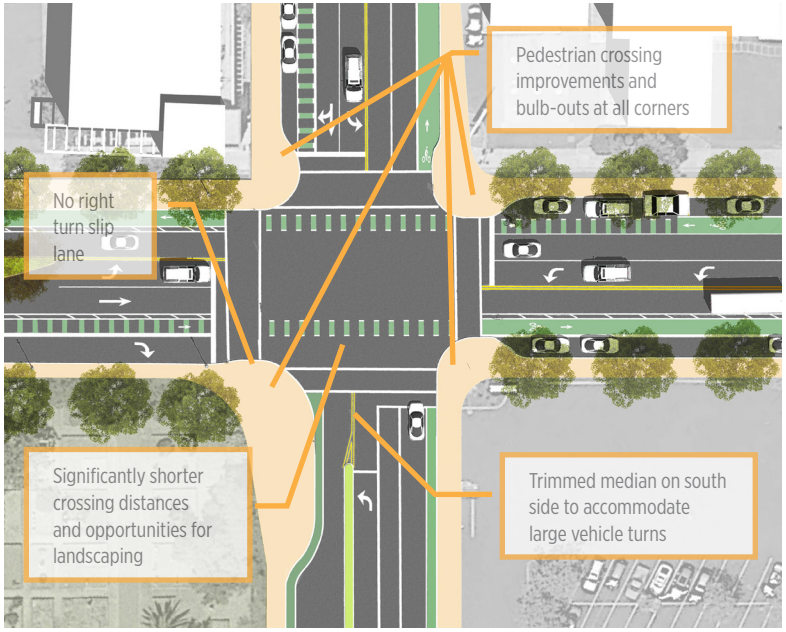
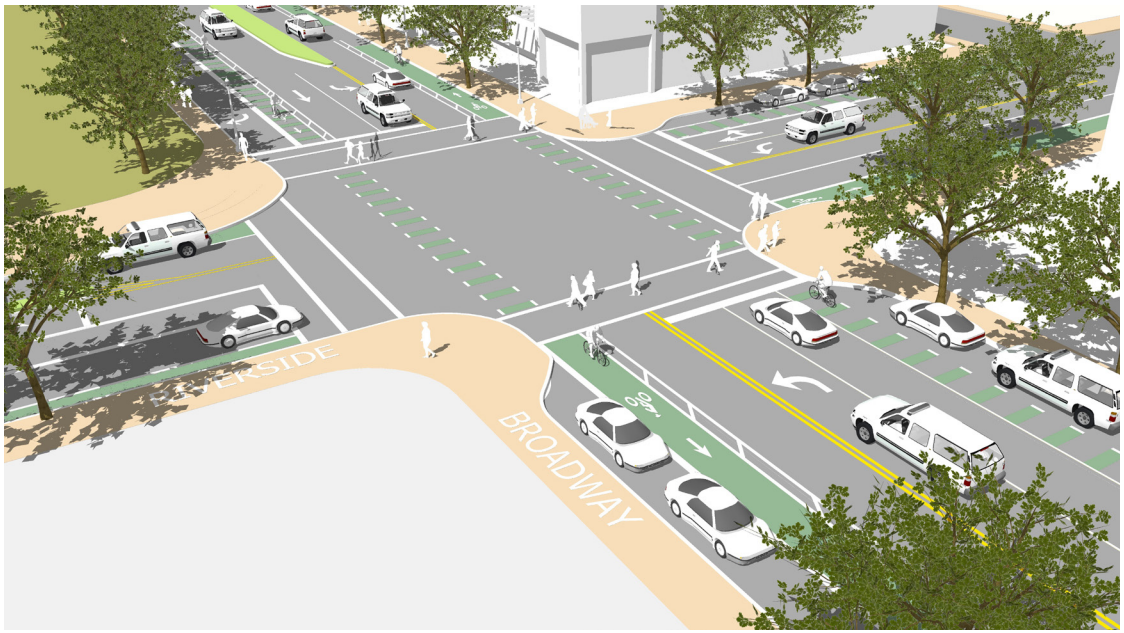


FIGURE 10 RIVERSIDE BOULEVARD OPTION 2 (PREFERRED) BIRD'S EYE RENDERING



BROADWAY STATION LIGHT RAIL - 19TH STREET TO 20TH STREET

FIGURE 11 LAND PARK DRIVE/ 16TH STREET OPTION 1 PLAN VIEW

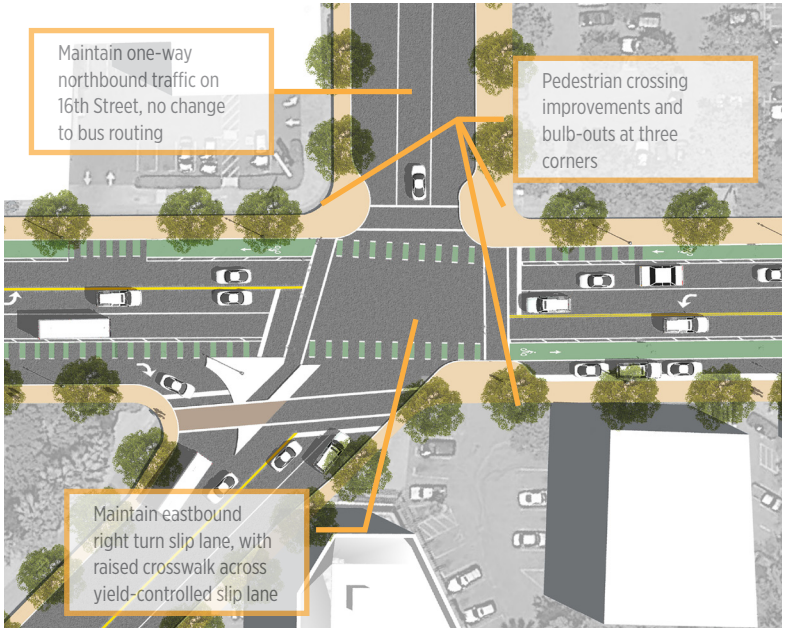


FIGURE 12 LAND PARK DRIVE/ 16TH STREET OPTION 1 BIRD'S EYE RENDERING

FIGURE 13 LAND PARK DRIVE/ 16TH STREET OPTION 2 (PREFERRED) PLAN VIEW

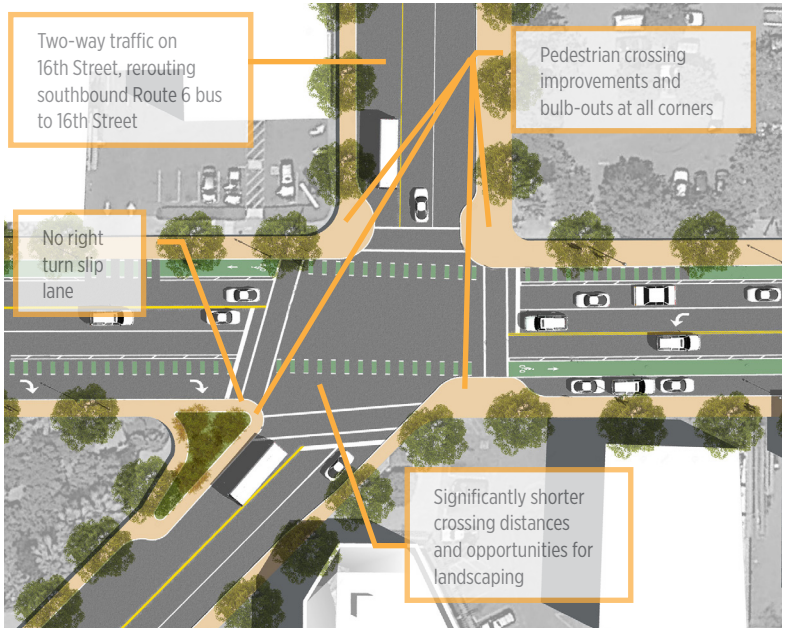


FIGURE 14 LAND PARK DRIVE/ 16TH STREET OPTION 2 (PREFERRED) BIRD'S EYE RENDERING

BROADWAY STATION LIGHT RAIL

FIGURE 15 BROADWAY STATION LIGHT RAIL OPTION 1 PLAN VIEW

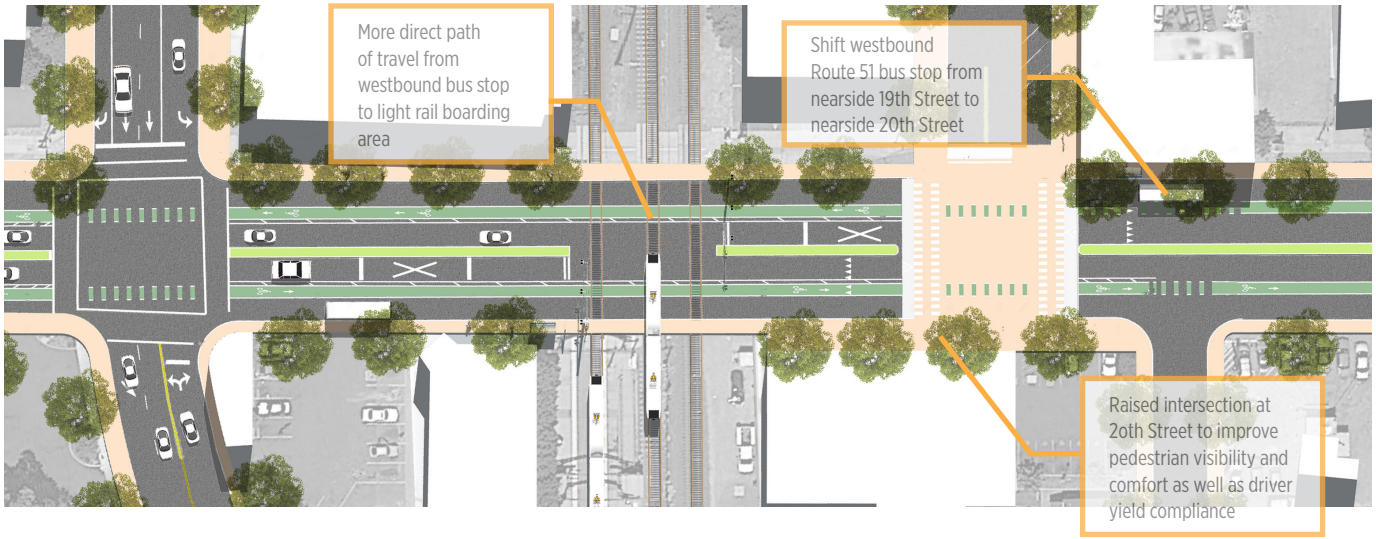


FIGURE 16 BROADWAY STATION LIGHT RAIL OPTION 1 BIRD'S EYE RENDERINGS

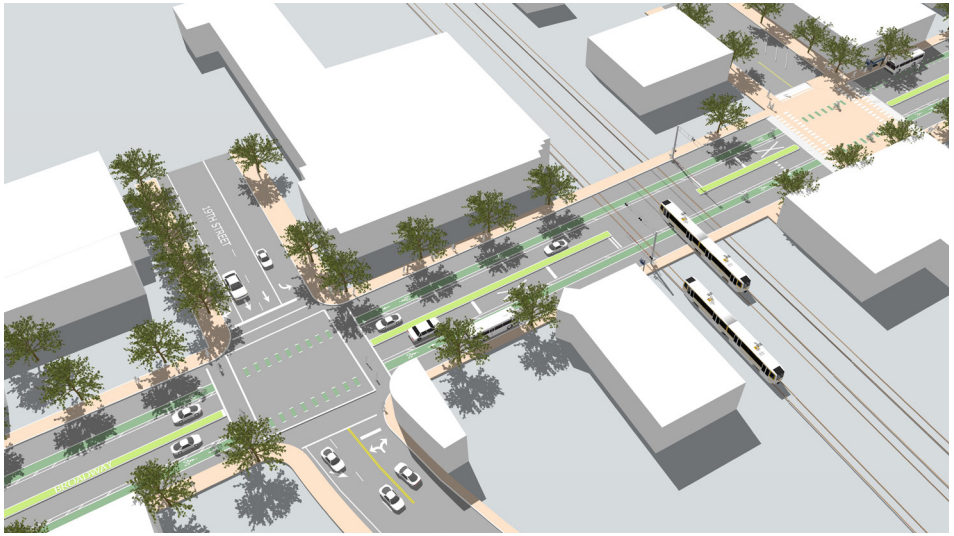


FIGURE 17 BROADWAY STATION LIGHT RAIL OPTION 2 (PREFERRED) PLAN VIEW

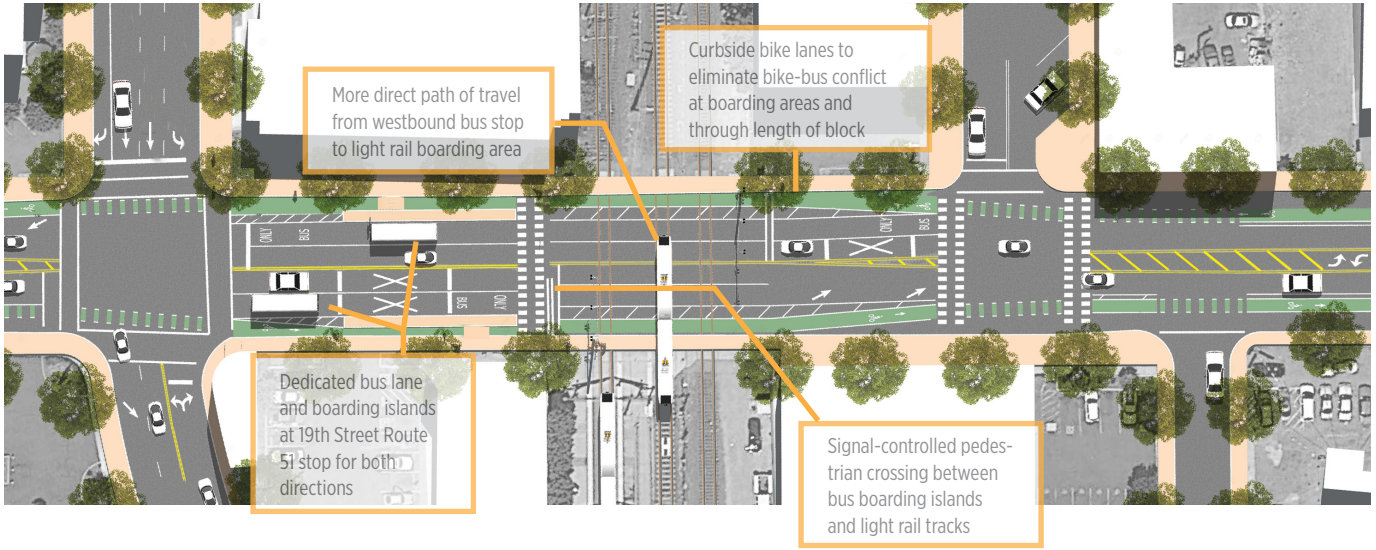


FIGURE 18 BROADWAY STATION LIGHT RAIL OPTION 2 (PREFERRED) BIRD'S EYE RENDERINGS

CASE STUDIES

The following case studies provide examples of application and impacts of road diets in several cities, and Caltrain's urban rail track crossing design. Additional details are included in the *[Case Studies technical appendix].*

CONCLUSIONS

These case studies demonstrate that:

- **Fewer customers drive to shop than businesses think,** as on York Blvd in LA
- **Thriving shopping areas will not be negatively impacted by a road diet**; in fact, facilitating opportunities for pedestrians and cyclists to visit businesses will introduce new customers
- Current traffic on the Broadway corridor is safely in the range for a successful road diet; Ocean Park Blvd in Santa Monica had high daily traffic volumes but found that **side street traffic remained stable**
- **Adjacent side streets may not be overrun by new traffic** when a road diet is implemented; in fact, traffic may decrease in the area, as occurred in Seattle

ROAD DIET EXAMPLES

Sacramento's Broadway corridor has an average daily traffic (ADT) of 21,980 vehicles at its busiest intersection, Broadway and 17th. As a general rule, two and three lane roads are capable of accommodating up to 25,000 vehicles per day. The Broadway corridor is similar to a number of recent road diet conversion cases, providing real-world examples of how the change in road design impacts traffic patterns and local economic activity.

York Boulevard, Los Angeles

LA DOT implemented a road diet on 1.3 miles of the York Boulevard corridor in the Highland Park neighborhood of northeast LA County in 2006. The design changes included a mixed use lane reduction from two lanes each way to one lane each way with a center turn lane. A few years later, bicycle lanes were added. The following impacts were recorded after implementation:

- 85-95% of business survey respondents did not feel that bike lanes had hurt their business
- Sales tax revenues at local businesses on the road diet section of York Blvd increased from $727,000 to $1.1M post-road diet implementation
- Since the road diet installation, 21 new businesses have opened on the corridor
- There is a disconnect between how businesses think their customers travel to shop and how customers reported traveling – 60-75% of businesses said customers drive, while only about 15-30% of customers reported driving
- After the road diet, this portion of York Blvd experienced a 23% reduction in pedestrian/automobile collisions and a 27% reduction in injuries.

Ocean Park Blvd, Santa Monica

The City of Santa Monica installed a road diet on 1.1 miles of Ocean Park Blvd in 2008 consisting of a four to three lane road diet and addition of bike lanes. The following safety impacts were recorded:

- 65% reduction in collisions in first nine months
- Traffic volumes decreased from approximately 23,000 ADT to 19,000-20,000 ADT after the road diet
- Vehicles appeared to move to the I-10 freeway and traffic counts on adjacent side streets remained stable to pre-road diet volumes

Stone Way N, Seattle

The City of Seattle completed a road diet on Stone Way N in 2007, reducing mixed use traffic lanes from four to three and adding bike lanes. The following impacts were recorded:

- Automobile speeds declined, with a decrease in excessive speeding
- Vehicle traffic decreased approximately 6 percent in the corridor, while bicycling increased 35%
- Vehicles have not diverted to nearby side streets; in fact, traffic decreased even more substantially on side streets than on Stone Way
- Total collisions declined 14% between the periods of 2005-07 and 2007-09; pedestrian collisions declined 80%

SIGNAL-CONTROLLED PEDESTRIAN CROSSING SYSTEMS AT CALTRAIN RAIL TRACKS

Signal preemption is used to make signals for vehicular crossings of rail tracks and intersections function together effectively, with the goal of having vehicles clear of the railroad crossing when a train approaches. This system can also be used to coordinate signal control for pedestrian crosswalks and nearby intersections. According to Caltrain, which uses signal preemption at several urban rail track crossings, an effective interconnection system improves safety and vehicular traffic at rail crossings, the planning and design of the roadway signal system and expedites the diagnostics processing of both the railroad and roadway signal systems.

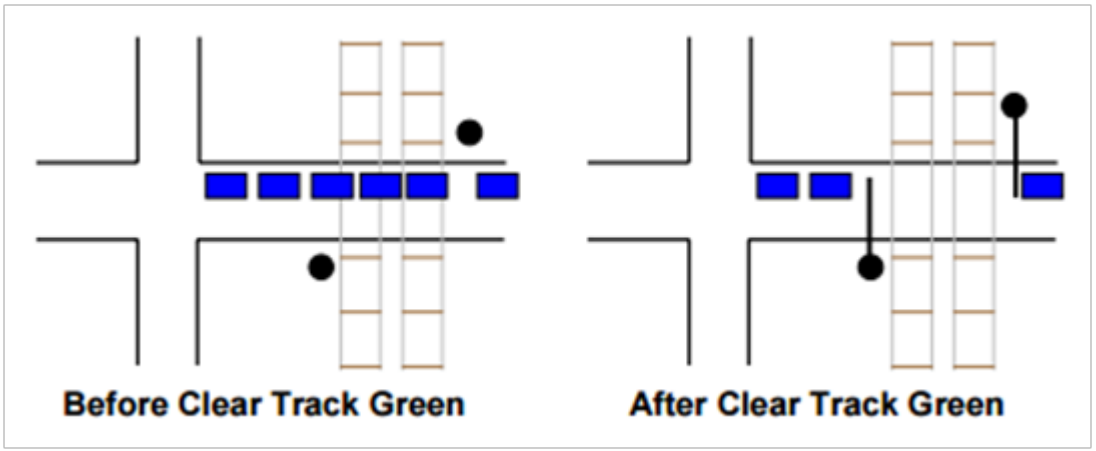
When to Apply Signal Preemption

The Institute of Transportation Engineers (ITE) recommends that signal preemption be applied at rail crossings when there is a potential for traffic to extend across a rail.

Signal Preemption Design

The distance between the rail tracks and the 19th Street and 20th Street intersections are approximately 110 feet and 160 feet, respectively. This falls short of the most recent 200 foot threshold of “long distance” approach set by the Manual on Uniform Traffic Control Devices (MUTCD) and therefore this crossing should follow the ITE best practices for “short distances”. At rail crossings with “short distances” and likelihood for frequent vehicle queuing over the rail tracks, a pre-signal should be installed even if gates are used at the crossing.

When a pre-signal is used, intervals should be progressively timed with signals downstream to ensure there is adequate time for vehicles to clear the rail crossing. The progressive timing should take vehicles that need to stop prior to crossing the tracks (e.g. school busses) into consideration. For added safety, vehicle detection could be used in the clear storage area on either side of the tracks to provide additional security for instances where vehicles could get trapped within the minimum track clearance zone by extending the clear track green interval.



Source: Guide for Traffic Signal Preemtion Near Railroad Grade Crossing, http://d2dtl5nnlpfr0r.cloudfront.net/tti.tamu.edu/documents/1439-9.pdf.

Pedestrian Safety

Caltrain Design Criteria recognizes that in urban areas pedestrians will cross rail tracks and roads whether or not there is a designated place to do so. Therefore, Caltrain Design Standards require that pedestrian safety features be used at all rail crossings in urban areas. At grade crossings, Caltrain requires active warning devices be used for pedestrian crossing areas. Further, automatic pedestrian gate arms and passive traffic control devices may be installed, and if necessary should be included at all four quadrants of where vehicular crossing occurs. If automatic pedestrian gate arms are used, these should not be attached to the vehicular gate mechanism as it increases the potential for failure.

CONCLUSIONS

Safety at railroad crossings in urban areas can be enhanced using signal preemption and interconnect circuits. These systems allow for advanced warnings when trains approach and coordinate traffic movement to prohibit moving vehicles from approaching the rail crossing when trains approach. These methods also facilitate the safe placement of vehicles at intersections near rail crossings by allowing sufficient time for vehicles to exit the clear zone of a rail crossing. Each of these methods should be coordinated with pedestrian safety features at rail crossings to create a safe environment for both pedestrians and vehicles.

EVALUATION

MULTIMODAL EVALUATION CRITERIA

The multimodal evaluation framework described in Chapter 2 are measured for existing conditions, Option 1 and Option 2 (Preferred), summarized by mode, below.

PEDESTRIAN

METRIC	MEASUREMENT	EXISTING	OPTION 1	OPTION 2 (PREFERRED)
Marked Crosswalks	# of marked N/S crosswalks across Broadway, end-to-end of corridor	36	40	40
Curb type	% of rolled curb at proposed sidewalk enhancement locations	67%	0%	0%
Amount of shading	Available shade/cover	Moderate	Opportunity for additional trees, street furniture	Opportunity for additional trees, street furniture
Pedestrian space	Average sidewalk space as % of total right of way at proposed sidewalk enhancement locations	24%	32%	29%
	Average width of path of travel at proposed sidewalk enhancement locations (ft)	9	15	12.7
Adjacent lane use	Travel lane| bike/parking | landscaping	Traffic | Parking	Traffic | Parking/ Bike	Traffic | Parking/ Bike
Crossing distance N/S	Average curb-to-curb crossing distance at key intersections across Broadway (ft)	77	69	63
Crossing distance E/W	Average curb-to-curb crossing distance at key intersections across intersecting streets (ft)	72	64	58
Crossing opportunities	Average block distance between crosswalks where new crossings are proposed (ft)	593	383	285

BICYCLE

METRIC	MEASUREMENT	EXISTING	OPTION 1	OPTION 2 (PREFERRED)
Opportunities for bike parking	# end-to-end of corridor	Very minimal due to sidewalk constraints	Available on proposed sidewalk enhancement blocks	Available on proposed sidewalk enhancement blocks
Connections to network	# of cross streets with bike routes	5	13	13
Comfort & safety	Width of lane (ft)	None or 5	6	6
	% of route with dedicated bike lane	21%	100%	100%
	% of route buffered	None	85%	90%
	Speed of adjacent lane	25-30 mph	25 mph	25 mph

TRANSIT

METRIC	MEASUREMENT	EXISTING	OPTION 1	OPTION 2 (PREFERRED)
Stop amenities	none | basic | enhanced	None/minimum	Basic	Enhanced
Stop spacing	Density of transit service on corridor	Adequate	No change	No change
Connectivity	# of new, direct connections | transfers	N/A	Improved at Broadway Station (LRT)	Direct connection at Broadway Station (LRT)
	Walking distance (ft) from WB bus stop to Broadway Station (LRT)	470	370	200
Reliability	# of blocks with route in dedicated lane	0	0	2

IMPROVING TRANSIT AS PART OF A COMPLETE STREET

- Over time, opportunities for sidewalk expansion can be explored on blocks as appropriate. The Broadway Complete Streets Plan designs allow for conversion of the parking lane to an expanded sidewalk to create space for better bus amenities, landscaping, sidewalk dining, and other urban design elements.
- The bus boarding island treatment at 19th Street/Riverside Boulevard can be reproduced at other stop locations where warranted and appropriate right of way exists. This design would likely require removing the two-way left turn lane or other turn pockets, and will require signal modifications if bus queue jumps are desired.
- Buses will continue to make their stops curbside in bus stop zones as they do currently (with the exception of the new 19th St transit boarding islands). With the bus stopped curbside, vehicles will still be able to pass in the travel lane. It will be necessary to evaluate traffic congestion, bus travel times and frequencies, as well as ridership to ensure ongoing performance and protection for transit and other modes as the project progresses.
- Although this Plan includes suggested locations for key features, specific design features for elements such as bulbouts and traffic islands will be further examined during the final engineering design phase. This may result in refinements to the number and spacing along the corridor, as well as the size in order to maximize accessibility along the corridor as well as safety at each location while still accommodating emergency vehicle access and buses where needed.

URBAN DESIGN

METRIC	MEASUREMENT	EXISTING	OPTION 1	OPTION 2 (PREFERRED)
Connection to adjacent use	type/character of setback	Poor	Improved	Improved
Comfort & safety	pedestrian-oriented lighting	None	Improved	Improved
Amount of activity spaces	opportunities for programmed space	Limited	Improved with landscaping	Improved with landscaping

- For the most part, the concepts recommended in Option 1 and Option 2 do not call for specific urban design treatments; rather, there are opportunities to implement improvements for connections to adjacent uses, comfort, safety, and activity spaces throughout the corridor
- A detailed discussion about urban design recommendations and opportunities is presented in Chapter 4

TRAFFIC/ AUTO

METRIC	MEASUREMENT	EXISTING	OPTION 1	OPTION 2 (PREFERRED)
AM Peak Travel Time (WB)	Minutes, of travel time across corridor, from west of 5th St. to east of Franklin Blvd.	8.4	8.4	8.4
AM Peak Travel Time (EB)		7.4	8.4	8.4
PM Peak Travel Time (WB)		9.7	9.7	9.7
PM Peak Travel Time (EB)		8.4	9.7	9.7
AM Peak Delay	Average seconds of delay at key intersections	29.2	25.6	25.6
PM Peak Delay		24.4	33.4	33.4
Turn opportunities	Change in dedicated left turn opportunities	Frequent	No change	No change
On-Street Parking	Change in on-street parking supply	Ample	No change	No change

METHODOLOGY

To monitor the performance of auto traffic within the study area, an analysis was conducted which focused on the traffic operations of 32 intersections both on Broadway and adjacent to the study area. Special consideration was taken to monitor how the reduction in travel lanes on Broadway may cause some traffic to divert to parallel streets, especially W Street, X Street and 2nd Avenue during peak commute hours.

The City of Sacramento is currently conducting a Downtown Transportation Study that is defining a comprehensive multi-modal transportation network for the street grid that serves Downtown and Midtown. A Preferred Network has been defined that includes the proposed Broadway Complete Streets Plan and conversions of a number of one-way streets in the study area. The changes in the Preferred Network include:

1. 16th Street between Broadway and X Street converted from three northbound lanes to two northbound lanes and one southbound lane
2. A new one-way southbound street connecting X Street to Broadway at the southbound on-ramp to SR 99

Another key project that will influence travel patterns in the study area is the proposed new Sacramento River Crossing that is included in the 2016 Metropolitan Transportation Plan / Sustainable Community Strategy (MTP/SCS). Consistent with the assumptions used by SACOG for the MTP/SCS, this 2036 analysis includes a new bridge that extends from the western end of Broadway to South River Road in West Sacramento. It was assumed that the new River Crossing would be connected to W Street and X Street and that Broadway would not connect directly to new River Crossing.

Traffic counts were conducted in 2015 at the study intersections and were used to analyze traffic operation under existing conditions. SACOG's regional travel demand model (SACSIM) was used to predict the changes in travel demand and traffic patterns under the other scenarios. The 2036 traffic forecasts are based on the SACOG's 2036 development estimates for the 2016 Metropolitan Transportation Plan / Sustainable Community Strategy (MTP/SCS).

For signalized and unsignalized intersections, operational analyses were conducted using a methodology outlined in the Transportation Research Board's Highway Capacity Manual (HCM). This procedure calculates an average control delay per vehicle for each movement at an intersection, and assigns a level of service (LOS) letter grade designation. More information on the traffic model and HCM methodology can be found in the Technical Appendix.

ANALYSIS SUMMARY

Figures x and x summarize the peak PM hour levels of service for the existing conditions and existing with the implementation of Broadway Option 2. More details regarding the predicted travel demand model for 2026 can be found in the Technical Appendix. A summary of the traffic analysis shows that:

- All of the study intersections currently operate at LOS D or better conditions during the AM and PM peak hours on a typical weekday for both the existing and existing plus plan conditions
- Some intersections are projected to improve in operation due to one to two-way operation changes, shifts in travel patterns, and signal timing changes
- The road diet on Broadway, coupled with a proposed new one-way southbound street connecting X Street to Broadway at the southbound on-ramp to SR 99, would divert some Broadway traffic to W Street and X Street, especially under 2036 conditions. The changes in levels of service at most study intersections due to Broadway Complete Streets Plan are projected to be modest.
- The only location where the proposed Broadway Complete Streets Plan would cause LOS F conditions is the intersection of Broadway with 19th Street/Freeport Boulevard during the PM peak hour under 2036 conditions. It should be noted that the 2036 development forecasts prepared by SACOG assumed a significant increase in college enrollment at Sacramento City College on Freeport Boulevard, which results in a significant traffic increase on 19th Street and Freeport Boulevard.

QUEUING ANALYSIS

To assist the preliminary design for the Broadway Complete Streets Plan, the model was used to estimate queuing along Broadway with the Plan with a focus on queues in left-turn lanes on Broadway at its signalized intersections.

The proposed design for the Broadway Complete Streets Plan calls for a continuous two-way left turn lane on most of Broadway, which allows access to driveways as well as unsignalized cross-streets. The analysis indicates that during peak hours the traffic queues for the through travel lanes along Broadway at many of its signalized intersection will extend for most of a block. Some motorists could choose to use a portion of the continuous two-way left turn lane to access the left-turn lane at the down-stream traffic signal or wait in the through-lane traffic queue until they are close to the signal. The length of each left turn

pocket can be adjusted for demand at particular intersections and consideration for the need for a two-way left turn lane.

The Synchro analysis software indicates that the queues at left-turn lanes along Broadway at its signalized intersections will be "metered" by the queues in the through lanes along Broadway. Thus the estimated queue lengths in the left-turn lanes at signalized intersections are modest.

TRAVEL TIME ANALYSIS

The model was also used to estimate the change in travel times along Broadway from west of 5th Street to east of Franklin Boulevard. The model accounts for delays at signalized intersections, queuing delays, as well as general travel time moving along the corridor. It should be noted that travel time estimates used in this model are not as accurate as those provided by a simulation model. The analysis indicates that implementation of the Broadway Complete Streets Plan would result in a modest increase in eastbound travel times and no change in westbound travel time under existing conditions.

PUBLIC ENGAGEMENT

This project was structured around a robust public outreach process at each stage of analysis, concept development and evaluation. The recommendations presented in this report are informed by input from the community, along with the technical stakeholders and the City team.

OUTREACH ACTIVITIES

- Walking audit & neighborhood flyering
- 3 rounds of outreach
  - Spring 2015: mobile workshops at lunch and evening hours throughout the corridor
  - Fall 2015: public workshop with over 65 in attendance & meetings
  - Winter 2016: public workshop with over 60 in attendance & meetings
- Online and printed surveys distributed in summer and fall of 2015 with over 200 community member responses

WHAT WE HEARD

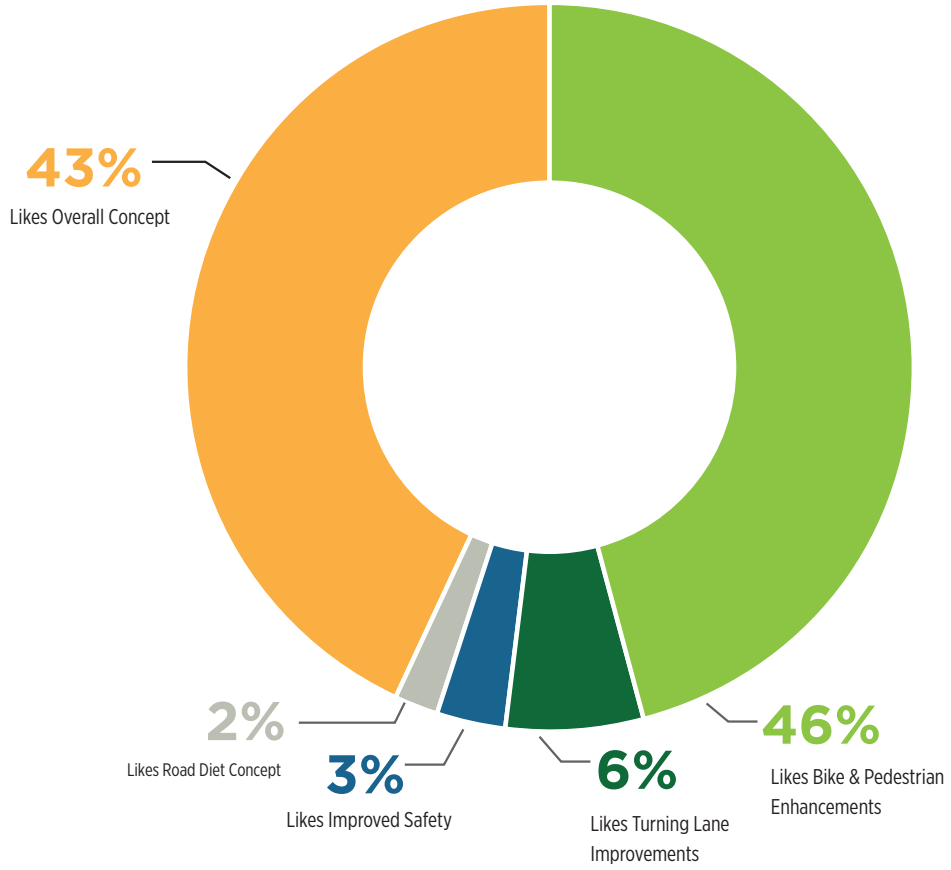
Priorities for improvements:

- Pedestrian and bicycle safety and comfort
- Lane reduction, traffic calming
- Streetscape improvements

Responses to concepts

- Full-length road diet enjoys great support due to safety and accessibility improvements Support for pedestrian and bicycle enhancements
- Support for overall road diet concept
- Focus on benefits:
- Shorter pedestrian crossings
- Dedicated bike lanes with buffer
- Slower, calmer traffic
- Concerns identified:
- Safety at pedestrian crossings and bike-vehicle mixing zones
- Potential conflict between bikes and right turning vehicles
- Traffic delay and diversions (minimal or manageable)
- Possible reductions in parking access (manageable)
- Access to/impacts on businesses along the corridor

FIGURE 19 SURVEY RESULTS - SUMMARY OF COMMENTS ON THE ROAD DIET CONCEPT



04 URBAN DESIGN

Placemaking Strategies for the Broadway Corridor

Urban design goals detailed on the following pages aim to create a distinguished identity befitting a grand avenue. Placemaking concepts for the street emphasize its character and celebrate historic resources such as the Tower Theater and the City Cemetery. Streetscape elements illustrated in this chapter suggest styles and materials that relate to the greater vision for Broadway as a safe and comfortable multi-modal street. Urban design typologies and photo simulations demonstrate how streetscape elements could be incorporated into the corridor design implementation.

URBAN DESIGN PRINCIPLES

01 SENSE OF PLACE AND IDENTITY

The Broadway Corridor is a unique, historic street in Sacramento, just on the edge of the downtown districts. Its history should be celebrated and manifested in its urban design character. The quality and character of the placemaking strategies should reflect the historic, electric identity of the corridor. From industrial land uses, to a historic theater landmark, to new retail and restaurants, Broadway is home to a variety of uses, neighborhoods, and historic resources that create a unique identity.

» **Enhanced Character Elements**: Character elements on Broadway including architecturally significant structures and signage should be preserved and enhanced as they contribute to a strong identity for the corridor. New planting and furnishing should emphasize these features, reinforce view corridors, and allow opportunities to admire these features.

» **Gateway Elements**: Introducing gateway elements at significant points on the corridor will create impactful interventions that give the street a stronger identity. Gateway elements can include pedestrian and vehicular signage, colored and/or patterned crosswalk pavement, sculptural elements, unique planting and furnishing.

» **Celebration of History**: The historic aspects of Broadway should be celebrated as visual elements along the corridor. Interventions might include interpretive signage, murals on walls along the corridor, etc. This would be particularly impactful near Tower Theater as it is a place with rich history and a current source of positive identity.

» **Distinct Character Zones**: The distinct character zones that broadly comprise the corridor include the Marina District, the Tower District and the Upper District. In the Marina District, industrial heritage should be recognized, including current light industrial uses and historic cemetery. The Tower District, as mentioned previously, should celebrate the historic Tower Theater. The Upper District, dominated by public and institutional uses could use clear signage for pedestrians and vehicles to enhance visibility.

» **Unique Streetscape Elements and Programming**: Sense of place along the corridor can be accomplished through unique streetscape design interventions. Streetscape elements can include: sculptures, activated building frontages, furniture and planting. Enhanced streetscape elements placed strategically in distinct character zones can highlight several of the goals mentioned above.

URBAN DESIGN PRINCIPLES

02 SAFETY

Designing with safety in mind is integral for the success of the Broadway Corridor. With a safe corridor comes a level of comfort for all users. Streetscape elements selection should keep in mind principals of safety including visibility, sidewalk capacity and interface with transit.

- **Visibility**: Visibility is one of the key principals of safety. Pedestrians and bicyclists should be legible to motorists on the Broadway Corridor through several interventions including lighting. Street lights provide an opportunity for visibility, illuminating and a consistent element along the length of Broadway. Street lights illuminate the sidewalk area for pedestrians.
- **Street Width Capacity**: While street width capacity is detailed in other chapters of this document, it is an importance emphasis of the urban design. When designing sidewalk widths that include street furniture and planting, it is important to consider street width minimums related to sidewalk capacity for pedestrian travel.
- **Crosswalks**: Creating a visible crosswalk could assist in creating a safe environment for all modes of transit. Additionally, creating legible and visually unique crosswalks establish a vocabulary for identity.
- **LRT Interface**: Urban design and safety are particularly important at the LRT station at Broadway. Features including transit shelters, planting, and crosswalks could assist in creating a safer transit experience.

URBAN DESIGN PRINCIPLES

03 URBAN ECOLOGY

Broadway is near several parks and historic open spaces and the street itself should reflect the intent of larger ecological goals for the community. The urban ecology of the Broadway Corridor could contribute to the greater Sacramento open space network.

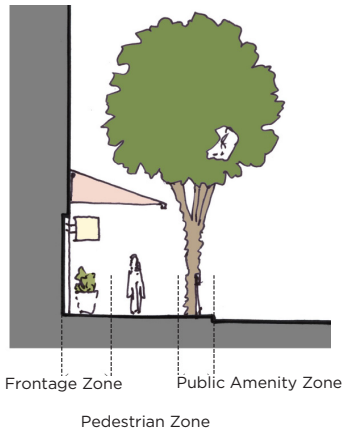
- **A Healthy Urban Forest**: Street trees along Broadway should be selected and cared for as part of an urban forest. Factors such as fruit and leaf clean-up, surfical roots, and shade should contribute to tree selection. It is important to draw from a list of trees that have successfully thrived in the region. Benefits of an urban forest include shade, combatting the urban heat island effect, and carbon sequestration. Trees also help with stormwater management because of their ability to absorb water.
- **Stormwater Management**: Extended sidewalks and bulbouts allow opportunities to incorporate stormwater management into the streetscape design. Creating resilient landscapes along the corridor foster a richer ecology and emphasize this streetscape as part of an ecological infrastructure.

04 COMFORT AND QUALITY OF SPACE

The comfort and quality of urban design interventions along Broadway are vital to its realization as a complete street. Several streetscape elements contribute to a comfortable environment for pedestrians and bicyclists and encourage people from surrounding neighborhoods to walk and bike to Broadway.

- **Shade**: Currently, Broadway's tree canopy is minimal in several areas, making it inhospitable for pedestrians in extreme climate conditions. Providing more shade by introducing more trees or shade structures along the corridor could help create a more hospitable sidewalk zone for pedestrians.
- **Sidewalk Zones**: Activation of sidewalk zones in the form of outdoor cafes, pop up retail and gallery spaces and parklets suggest a variety of activities along the corridor that create visual and programmatic interest.
- **Seating**: Outdoor seating provides areas of respite for pedestrians. Strategic placement of seating at intersections and bus shelters will provide opportunities for seating in high traffic zones.
- **Bicycle Parking**: As bicycle lanes have been planned for the length of Broadway, bicycle parking is an important element that contributes to the comfort of its users. Several types of bicycle parking should exist along the corridor in order to provide safe and secure parking.
- **Bus and LRT Shelters**: Bus lines exist along the corridor and at several cross streets in the area, as well as the LRT station near Broadway between 19th and 20th Street. Urban design interventions should take this into account, planning for bus and LRT shelters that reflect the larger design intent and create a comfortable area for pedestrians.

FIGURE 20 SIDEWALK ZONES SHOW VARIOUS IMPROVEMENTS THAT CONTRIBUTE TO PEDESTRIAN COMFORT.

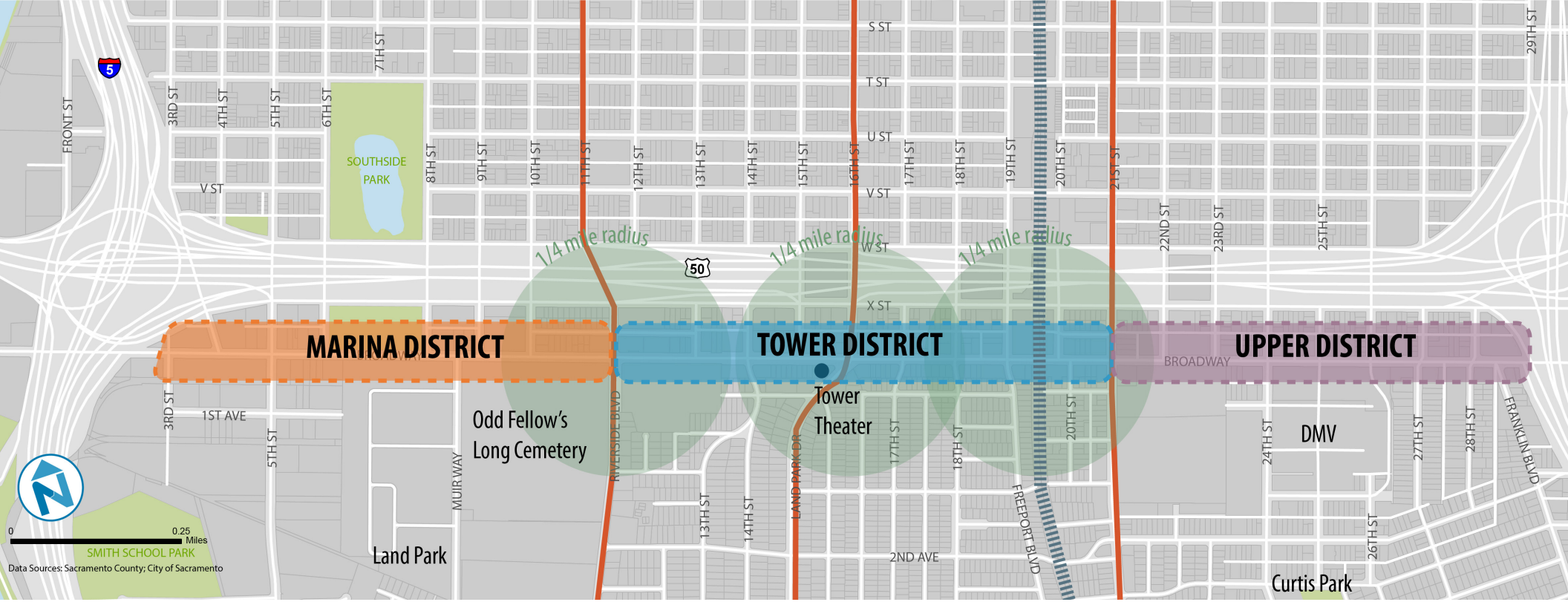


URBAN DESIGN PRINCIPLES

05 BUSINESS REVITALIZATION AND ACTIVATION

Business revitalization along Broadway could present exciting opportunities for urban design interventions. Public realm investments including sidewalk upgrades, furnishings, street trees and upgrades to pedestrian safety such as lighting, catalyze private improvements. Private investments in building street frontages and along blank walls contribute to a more active and vibrant sidewalk zone. All of these investments create activity nodes that anchor parts of the corridor, generating vitality and serving as an attraction for neighbors and visitors. Business associations and improvement districts could foster initiatives that allow merchants and other neighborhood institutions to catalyze urban design initiatives in the area.

- **Building Fenestration and Frontages**: Building frontages that are open and inviting to pedestrians could activate sidewalks and provide visibility for businesses in order for them to advertise their services and amenities. Blank building walls create opportunities for graphic art and vegetation. Historic building fenestrations should be restored or adapted to celebrate their architectural significance.
- **Outdoor Seating and Displays**: Sidewalk zones, especially those that are greater than two feet, offer flexible cafe seating, enclosed outdoor zones for bars and restaurants and space for galleries and retail establishments.
- **Parklets**: Parklets allow for public spaces that are sponsored by businesses and organizations. They are especially useful in areas that have narrow sidewalks, and could contribute to a more vibrant atmosphere of shops and restaurants where space is constrained.



URBAN DESIGN DISTRICTS + CORRIDOR CHARACTER

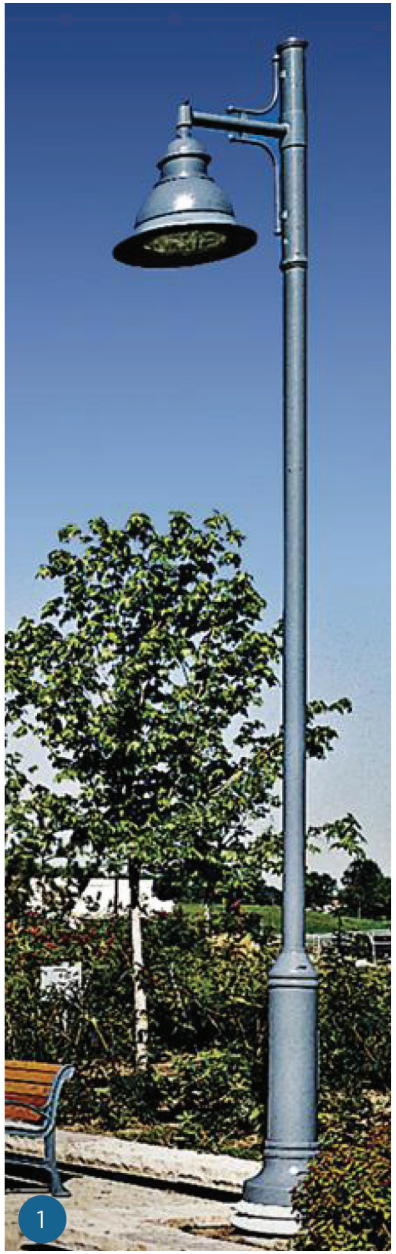
The Broadway Corridor is made up of three distinct districts: the Marina District, the Tower District and the Upper District. While each of these districts has a unique character, the urban design of Broadway should also create a strong, legible corridor that attracts citywide and even regional visitors while serving neighborhood residents and businesses. A standard furnishing foundation including benches, trash cans, street trees and lighting should exist consistently along the entire corridor. Additionally, the scale of the street should be taken into consideration. Designing at a larger scale will reinforce Broadway's historic past as a grand boulevard. A level of grandeur could be emphasized by preserving existing vistas and view corridors and introducing a consistent allée of large trees when possible.

In addition to a corridor wide vocabulary of standard streetscape elements, enhanced streetscape elements allow each individual district to display distinct character through changes in paving, crosswalk colors, furnishing and storefront activation. Gateway elements, public art and interpretive signage could also create a sense of place that demonstrates the history and unique land uses that each district has to offer.

CATALOGUE OF STANDARD STREETSCAPE ELEMENTS

Streetscape elements displayed on this spread are considered standard elements that provide basic necessities for the corridor including safety, comfort and functionality. Images shown represent a range of potential styles and materials that can be further explored for Broadway. Lighting displayed on these pages range from pedestrian lights to dual purpose street lights with simple designs and durable materials. Benches are chosen for comfort and durability, pared with other related furnishing, including trash cans. Bicycle parking is displayed in different varieties including single racks as well as larger systems. Bus shelters provide basic shelter and seating. For the entire Broadway Corridor, standard streetscape elements should be chosen in order to create a consistent and unifying vocabulary. These standard elements should be paired with some of the enhanced streetscape elements detailed on the next spread.

1. Pedestrian Scaled Streetlight
2. Bus Shelter with Shade
3. Zelkova Street Tree
4. Ginkgo Biloba Street Tree
5. Dual Purpose Streetlight
6. Standard Streetscape Benchand Trash Receptacle
7. Metal Tree Grate
8. Standard Bicycle Parking
9. Individual Bicycle Rack
10. Chinese Pistache Street Tree
11. Crinodendrum Patagua Tree

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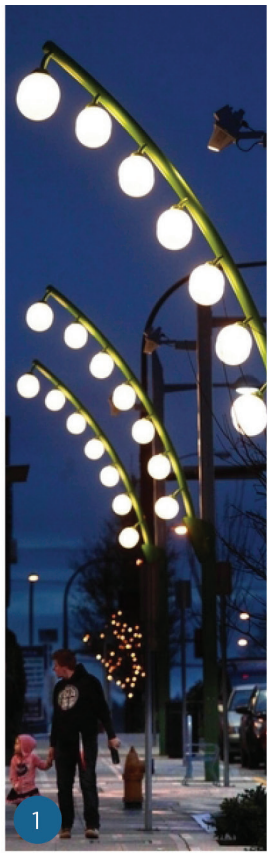
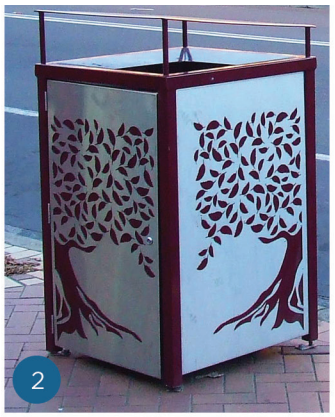
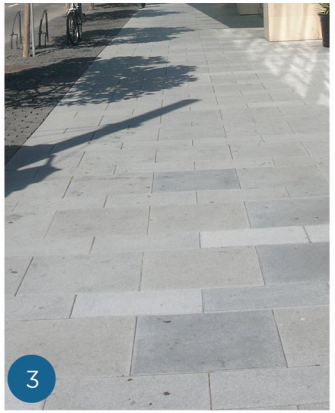
CATALOGUE OF ENHANCED STREETSCAPE ELEMENTS

Enhanced streetscape elements are displayed on the following spread to demonstrate how different districts along the corridor can be highlighted through urban design interventions. In addition to enhanced traditional streetscape elements that are shown on the spread, these precedent images introduce additional elements that can emphasize a distinct zone including interpretive signage and gateway elements. For instance, the Tower Theater's unique Art-Deco style can be manifested on crosswalks, benches, and through public art and interpretive signage.

1. DecorativePedestrianStreetlight
2. Decorative Trash Receptacle
3. Unit Pavers
4. Decorative Tree Grate
5. Bus Shelter/Sculpture
6. Decorative Crosswalk
7. Sculptural Bicycle Rack
8. Metal Sculpture
9. Gateway Marker
10. District Signage
11. Rain Garden
12. Decorative Crosswalk
13. Gateway Marker





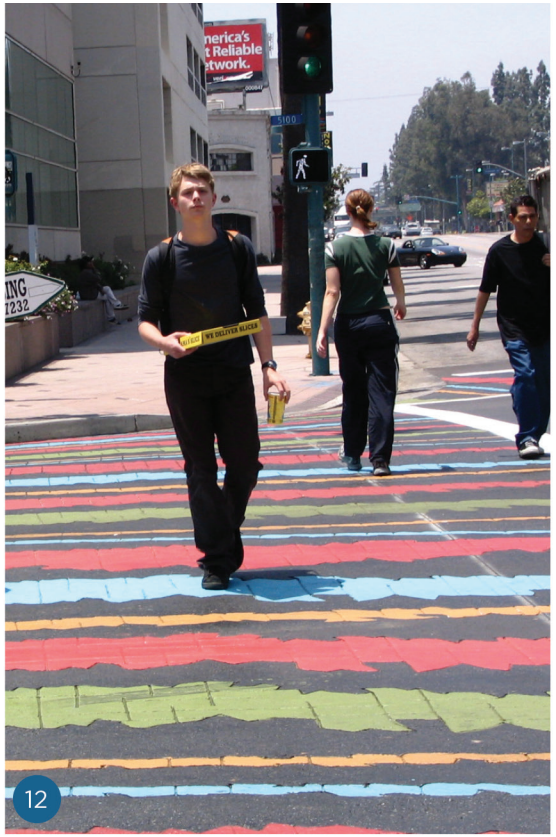



8


CASTRO VALLEY
9


Hollywood mediadistrict
10


11


12


OLD DOWNTOWN
WINDSOR
13

CATALOGUE OF BUILDING FRONTAGE AND ACTIVATION EXAMPLES

Revitalizing building frontages and activating sidewalks relates to several of the urban design goals. Businesses including restaurants and cafes can configure their frontages to create a semi-private or public interface that allows pedestrians to have visual interest. Photos on this spread show a wide variety of interventions from colored awnings and tables and chairs, to architecturally significant changes that create permanent seating in the street.

1

2


3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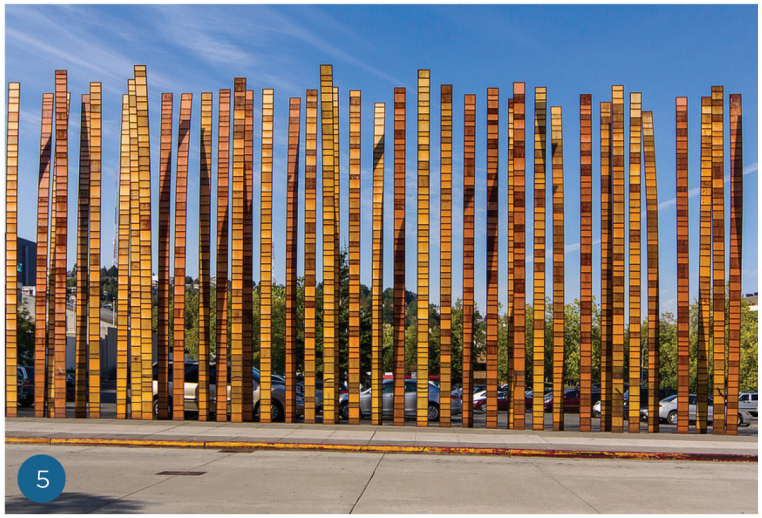

5

1. Graphic Art on Building Exterior
2. Outdoor Seating and Awning
3. Outdoor Flex Seating and Bar
4. Shaded Seating
5. Decorative Parking Lot Screen
6. Indoor/Outdoor Restaurant Design
7. Graphic Art and Seating
8. Decorative Green Wall
9. Outdoor Sidewalk Furnishing

6

8


A
MASTERS
PROGRAM
FOR
ADULTHOOD
ESTD 2014

7


RÉVEILLE
COFFEE CO.

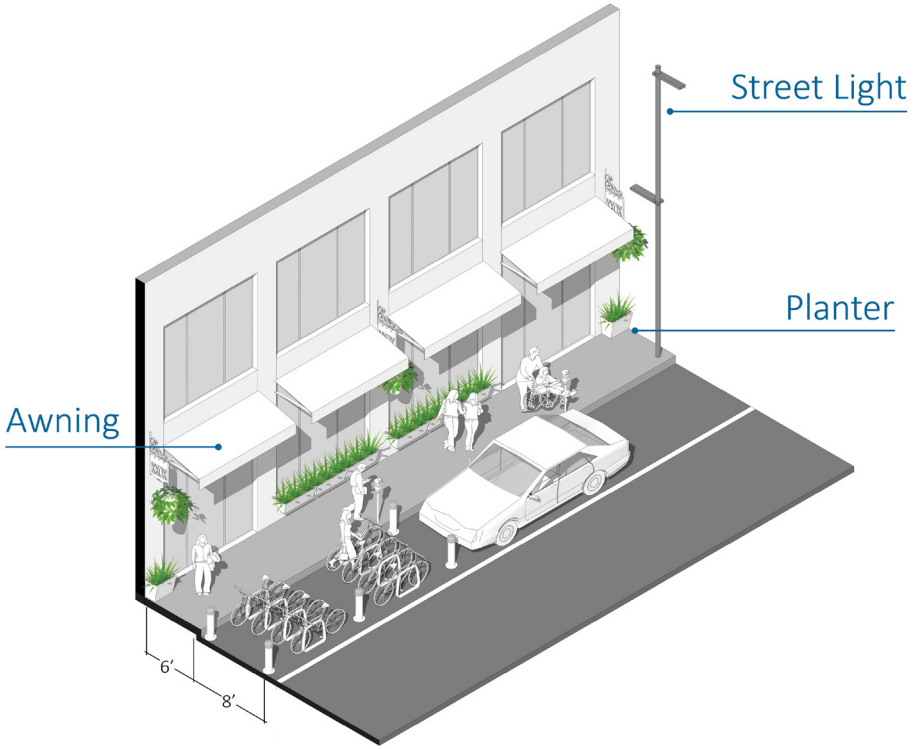
9

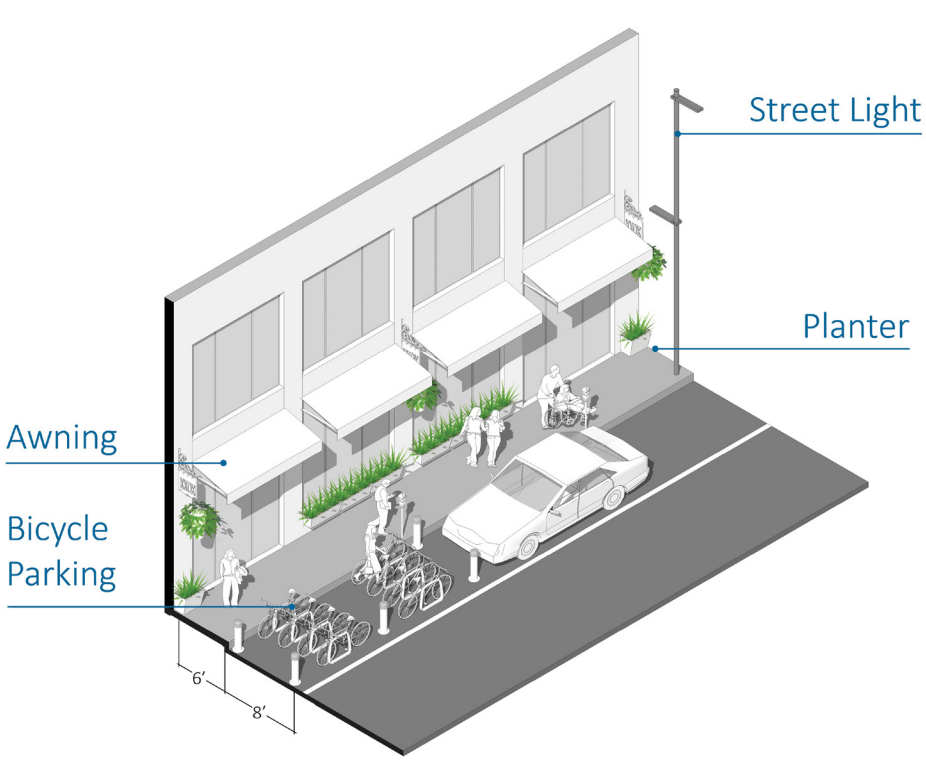
The sidewalk widths on Broadway vary block by block through the corridor and more described more fully in the existing conditionsl technical appendix. The following pages detail typologies for a 6' sidewalk, which mostly exist between 6th Street and Riverside Boulevard, 15' sidewalks which exist near the LRT station and 8-10' sidewalks which exists in most other areas of the corridor. Each sidewalk width presents different design opportunities and constraints.

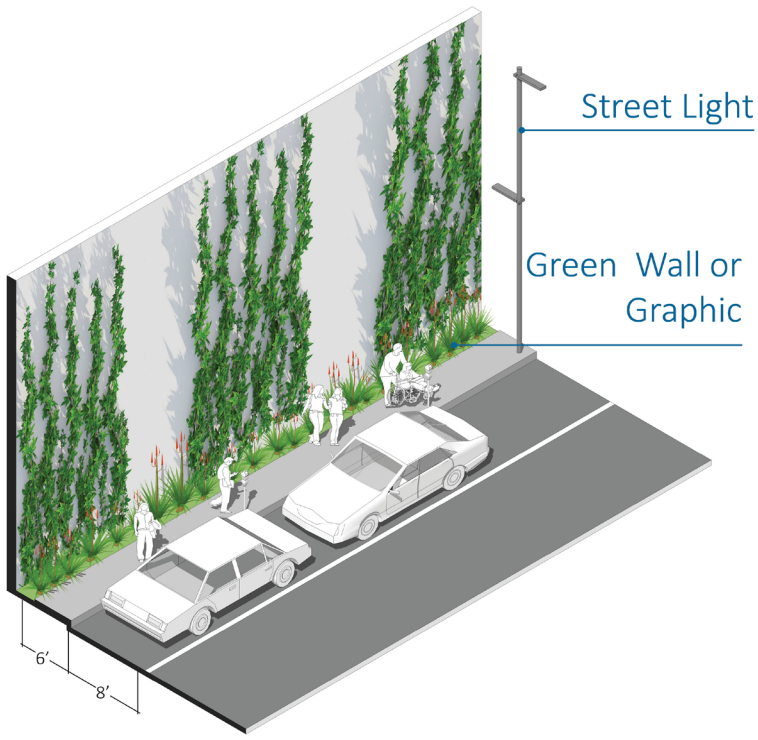
URBAN DESIGN TYPOLOGIES [6' SIDEWALK]

While a 6' sidewalk may seem limiting for urban design interventions, not all elements require a wide sidewalk. Most 6' sidewalks are between 6th street and Riverside Boulevard on Broadway. Basic elements that could be placed on this sidewalk include street lights and narrow planters. Businesses with street frontage could provide awning for shade. Where a blank wall exists, visual interest including a green wall or a graphic symbol could enhance the sidewalk experience. Where a narrow sidewalk exists, bicycle parking, parklets and other appropriate amenities can exist on the street adjacent to the sidewalk and still provide benefits for users.

A 6' sidewalk with planters and overhang.



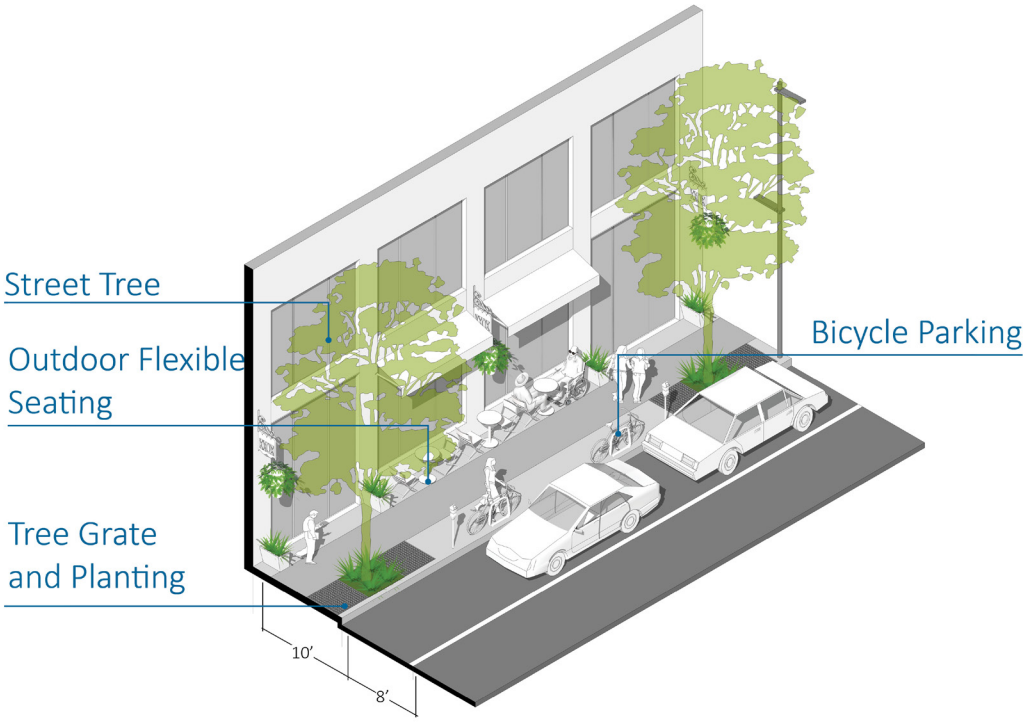

Street Light
Planter
Awning
Bicycle
Parking
6′
8′

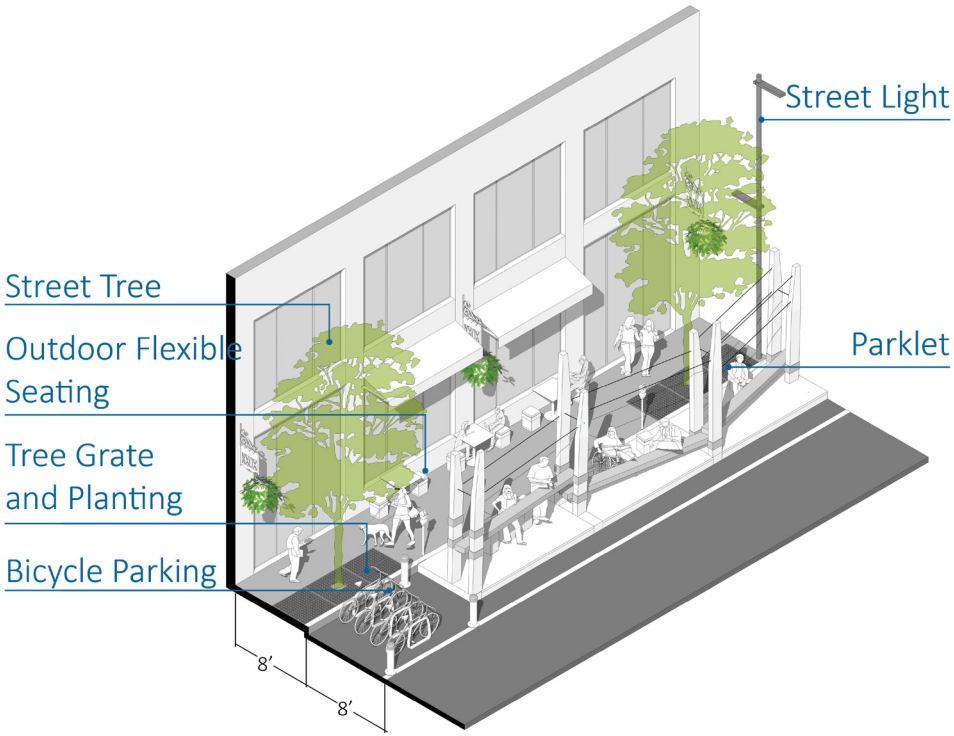

Street Light
Green Wall or
Graphic
6′
8′

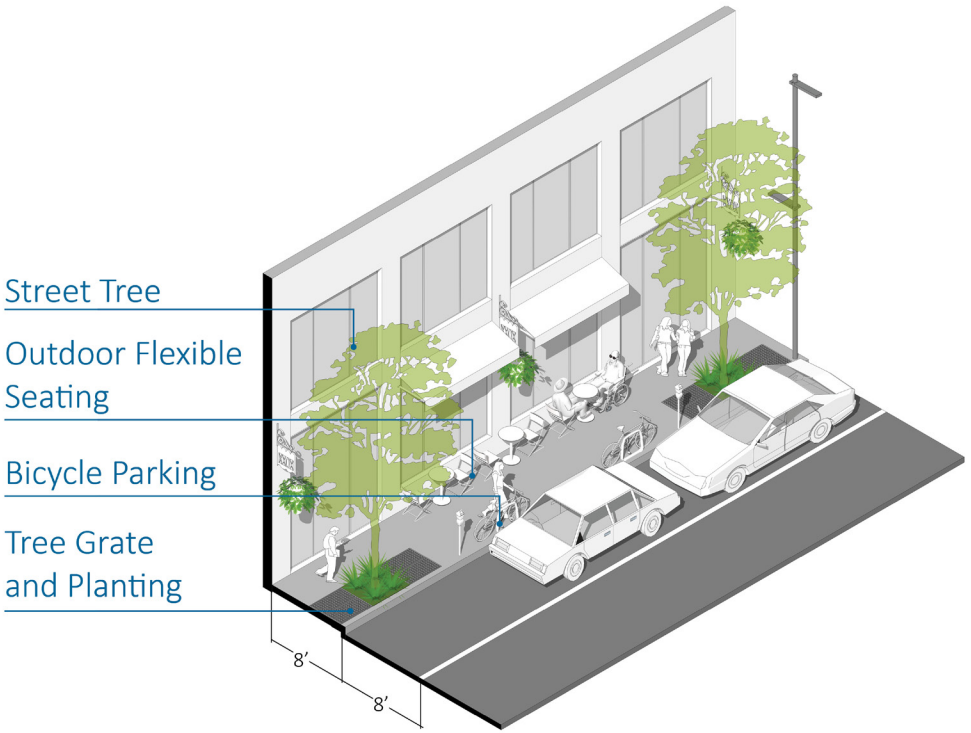
URBAN DESIGN TYPOLOGIES [8-10' SIDEWALK]

While an 8-10' sidewalks is not a significant increase in width, it allows for some significant changes to the sidewalk section. The average sidewalk width is between 8-10' along Broadway. The minimum allowable width for a street tree should be no smaller than 4' of the sidewalk width. In this section, single bicycle racks can be placed on the sidewalk between street trees. Businesses could place informal seating that does not exceed 3' of sidewalk width. Fenestration including awnings are encouraged in this street section. Bicycle parking and parklets outside of the sidewalk zone are encouraged in this section as they can allow for greater sidewalk capacity.

Parklets are a good option for extending sidewalk public space.



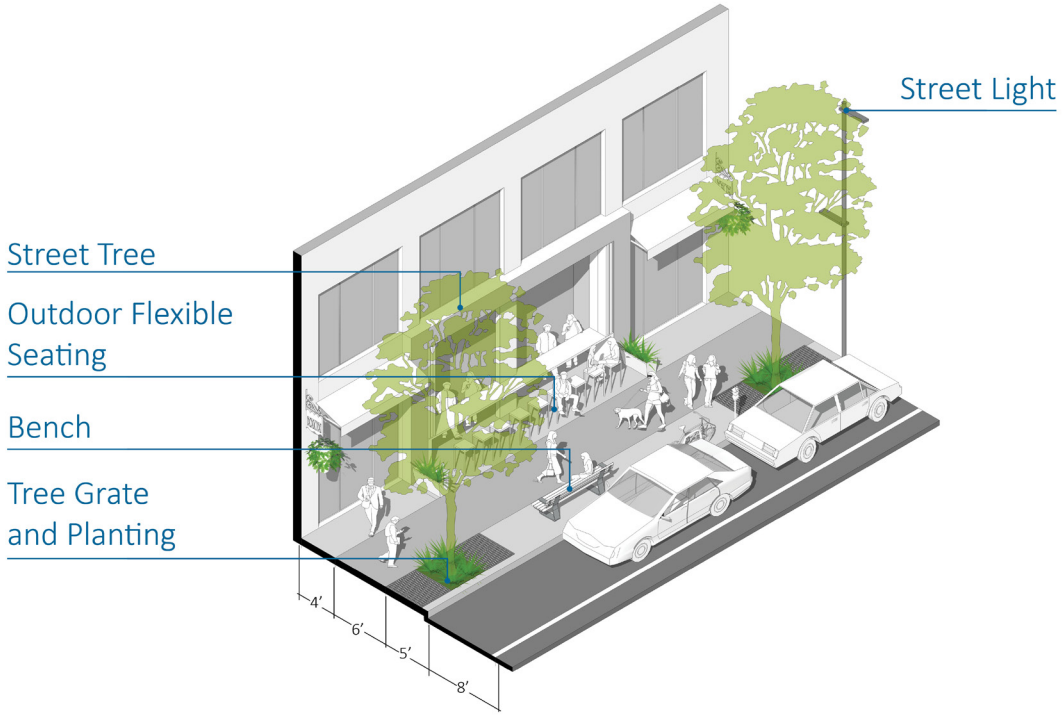

Street Light
Street Tree
Outdoor Flexible Seating
Parklet
Tree Grate and Planting
Bicycle Parking
8′
8′

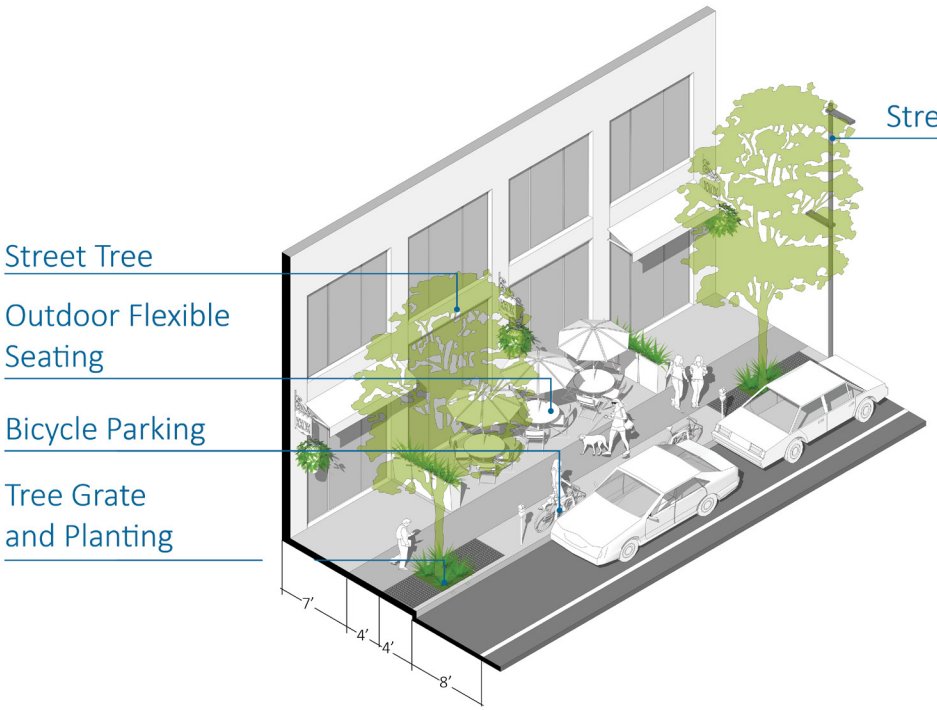

Street Tree
Outdoor Flexible Seating
Bicycle Parking
Tree Grate and Planting
8′
8′

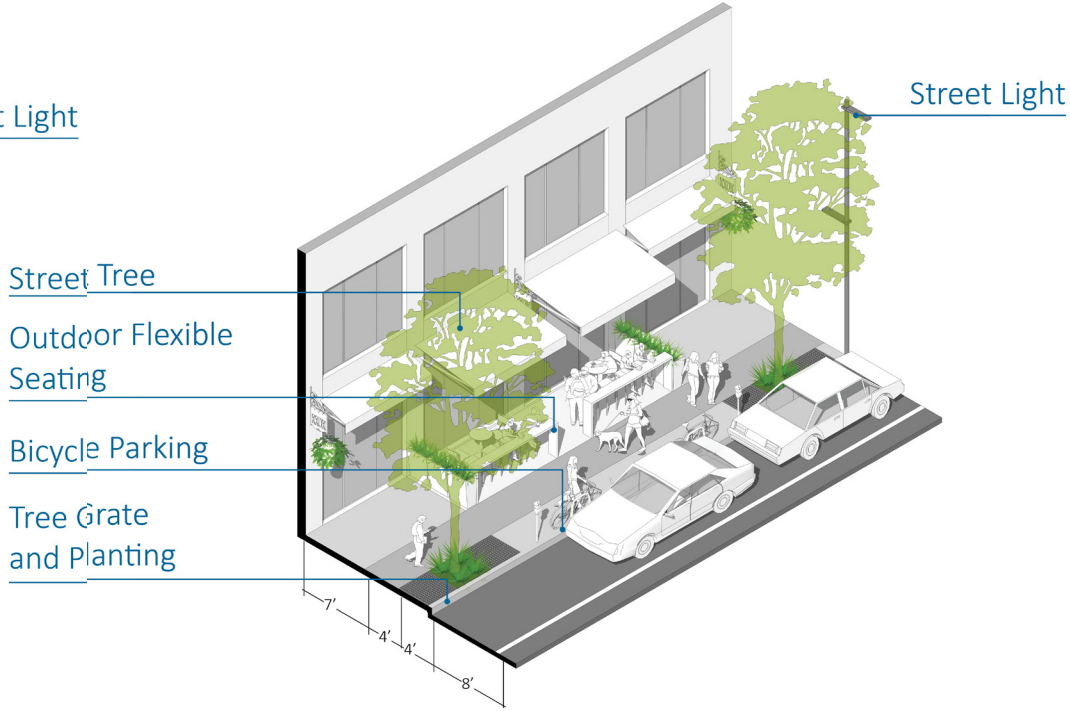
URBAN DESIGN TYPOLOGIES [15'+ SIDEWALK]

A sidewalk that is 15 feet or more exists around the LRT Station from 18th to 21st Street. Not only does this section allow for a wider pedestrian zone, it also allows for larger shade trees. Additionally, furniture such as benches and trash cans can be introduced to the sidewalk zone. A wider street also allows businesses to inhabit a greater outdoor flexible space that could be used for seating or a sidewalk gallery.

A wide sidewalk allows for various amenities including seating and street trees.




Street Light
Street Tree
Outdoor Flexible Seating
Bicycle Parking
Tree Grate and Planting
7′
4′
4′
8′


Street Light
Street Tree
Outdoor Flexible Seating
Bicycle Parking
Tree Grate and Planting
7′
4′
4′
8′

URBAN DESIGN POTENTIALS

TOWER GATEWAY

Currently, public space around the Tower Theater does little to hint at its storied past. In the photosimulation above, the art deco architecture of the theater manifests in pavement patterns around the bulbout intersections. New furnishing and other elements branded with the Tower District give the intersection an identity. Additionally, a sculpture and small plaza in the bulbout adjacent to the Tower Theater create a gateway marker for the district. Crosswalk interventions create identity and also provide legibility for pedestrians.

DESIGN DETAILS

- Design details address specific features for landscaping, sidewalk styles, and colored crosswalk treatments, and are subject to approval by City engineers. Currently, the Manual of Uniform Traffic Control Devices (MUTCD) Official Ruling 3(09)-24(I) regulates the use of decorative crosswalk paint, but discussions in the traffic engineering community have been ongoing regarding the use of experimental crosswalk treatments. Each jurisdiction is able to make their own decisions regarding the use and treatment of high-visibility crosswalk treatments on a case by case basis.

URBAN DESIGN POTENTIALS

BROADWAY AND 18TH

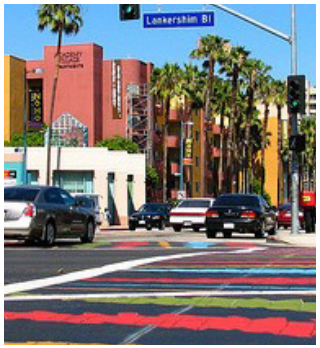
The interventions shown on Broadway and 18th Street imagine an intersection that combines a rich ecology with business revitalization and pedestrian amenities. The corner business spills over into the street, supported by amenities including benches and large shade trees. The planted bulbout provides visual and textural interest while shortening the crosswalk for pedestrians. This is another example of how urban design treatments can complement the transportation elements of a complete streets design for Broadway.

URBAN DESIGN CASE STUDIES

NOHO ARTS DISTRICT STREETSCAPE

North Hollywood, CA

The NOHO Arts District Streetscape is composed of a series of streets including Lankershim Boulevard, a main street that is connected to an LA Metro stop. The land uses in the area are a mix of institutional, residential, restaurants, and theaters. The goals of this streetscape included realizing potential of interstitial spaces, strong connections to transit and creating an identity for the district. Various trees, street lights, furnishing, and signage have formed a unified corridor. A large sign that spans a main corridor in the NOHO arts district created a gateway that reflects the character for the district. Custom banner signs and crosswalks mark the corridors in the NOHO arts district as well. Recently, the NOHO plaza was built in an underutilized alley and includes flexible furniture and vibrant painted paving, resulting in a pocket park that provides a respite for transit riders and areas for informal meeting.



URBAN DESIGN CASE STUDIES

NORTH PARK STREETSCAPE

San Diego, CA

North Park is a neighborhood located northeast of downtown San Diego. Like the Broadway Corridor, the North Park District has several bus lines that traverse through it. Additionally, there are a number of historical landmarks including the North Park Theater. The existing fine grain street pattern fosters connectivity and promotes walkability. Streetscape improvements for the area include decorative tree grates, seating and shelters, and gateway signage. Architectural interventions include restored historic buildings and activated frontage areas with outdoor cafe and retail displays.

URBAN DESIGN CASE STUDIES

CASTRO VALLEY BOULEVARD

Castro Valley, CA

The redesign of Castro Valley Boulevard, a former state highway and large, traffic-dominated thoroughfare, created a new pedestrian-friendly retail main street and town center for this established Alameda County, California community. The design combined pedestrian enhancements such as bulb-outs, pedestrian-scaled lights, gateway elements, furnishing and bicycle parking with highly crafted elements that convey the community's unique identity. Travel and parking lane widths are sized to facilitate safe flow of cars, to calm traffic, and to be in balance with other modes of travel. Bicycle lanes enhance access to local businesses. Sustainable measures were employed as well, such as capturing and filtering storm water to prevent erosion of nearby creeks and pollutants from entering the bay.

PHASING AND IMPLEMENTATION

Elements of this plan are intended to enhance mobility and livability position this project for grant funding. In some cases, funding may be correlated with elements of implementation, i.e. striping, sidewalk enhancements and street trees. However, funding may be available to complete the entire length or select segments. This plan identifies two general phases: near term and long term implementation. These phases are based on available sources of funding and amount of budget resources to complete the project.

- **Near Term Opportunities**: Several aspects of the Broadway Streetscape design can be implemented immediately and over the next several years.
  - **Pilot Road Striping**: In several areas of the corridor, new striping can be introduced as a pilot project in order to incorporate bicycle lanes, legible crosswalks, etc. It also presents a near term opportunity if street repaving is necessary.
  - **Green Walls and Graphic Art**: Interventions at existing buildings including murals, graphic art and green walls can be implemented in the near term by building owners and merchants.
  - **Parklets and On-Street Bicycle Parking**: A parklet program can be implemented immediately as they can be designed and installed in existing parking spaces. Additionally, on-street bicycle parking can be installed in existing parking spaces.
- **Future Implementation**: Streetscape construction may need to take place over several phases due to the cost of infrastructure and complete streets implementation. Construction of the streetscape could happen in segments in order to create less disruption for the community, merchants and residents. Creating phases based on districts outlined in previous sections provides logical areas for implementation. Streetscape construction should occur in order of community priority and opportunity: the Tower District, the Marina District and the Upper District.
  - **Tower District**: As the Tower District is the most defined district, the construction in this area is a logical early phase to revitalize the corridor and build off existing resources and success. In addition to the interventions mentioned in the Upper and Marina Districts, the Tower District also includes potential gateway elements and signage, potentially decorative paving, site walls and distinct furnishing and mobility enhancements around the LRT station.
  - **Marina District**: The Marina District has the greatest level of potential development and change as well as some of the narrowest sidewalks. This phase will include sidewalk widening and bulbouts, new pedestrian crossings, key intersection interventions at Riverside Boulevard and standard streetscape elements and furnishing along its length.
  - **Upper District**: The employment centers in the Upper District have the highest traffic volume and need for walkability. The Upper District interventions also include sidewalk extensions and bulbouts, new pedestrian crossings and standard streetscape elements and furnishings.

PHASING EXAMPLE

The first phase in the Broadway and 18th Street area could be furnishing, striping and related private investment with facade improvements. This phase can be completed at a lower cost if associated with normal street repaving.

The second phase in the Broadway and 18th Street area could include bulbouts, sidewalk enhancements, vegetation and street trees. It is important to coordinate between paving construction and tree planting, as irrigation lines and soil trenches for healthy roots can be established for optimal success.

The final phase includes additional streetscape furnishing. Higher levels of private investment in buildings come with this degree of public improvements.

05 PRELIMINARY COST ESTIMATES

APPROACH AND ASSUMPTIONS

Preliminary estimates have been developed for the construction cost associated with the 10% concept designs for corridor improvements described in the Corridor Alternatives section of this report. These estimates are for construction costs only, and do not include elements such as right of way acquisition, utility relocation, and various soft costs, project approvals, and City staff time.

To facilitate efficient implementation, estimates are provided for the following scenarios:

- First phase road diet as a precursor to either Option 1 or Option 2
- Road diet with Option 1 intersection improvements
- Road diet with Option 2 intersection improvements

FIRST PHASE ROAD DIET

A First Phase Road Diet could be implemented with a focus on restriping and other low-impact interventions for a low construction cost and near-term phasing.

- Reconfigure vehicle and bicycle lanes on Broadway and improve pedestrian crossings with striping only
- Striping removal cost is included in the price of restriping
- Slurry seal is recommended to smooth the roadway surface after striping removal
- Traffic signals remain in place with minor signal timing updates and modification

Total construction cost for First Phase: approximately $1.1 million

ROAD DIET - OPTION 1

Road Diet – Option 1 implementation includes all of the striping and slurry seal improvements listed above, with additional construction costs for key intersection improvements.

- Maintain slip lane configuration at Riverside Boulevard and Land Park Drive, with raised crosswalks across slip lanes
- Expanded sidewalks on the north side of Broadway between 18th and 20th Streets
- Pedestrian treatments at the Broadway light rail station, including a raised intersection at 20th St
- Traffic signals remain in place with minor signal timing updates and modification

Total construction cost for Road Diet – Option 1: approximately $5.7 million

ROAD DIET - OPTION 2

Road Diet – Option 2 implementation includes all of the striping and slurry seal improvements listed above, with additional construction costs for key intersection improvements.

- Remove slip lane at Riverside Boulevard and Land Park Drive and expand sidewalk space at the corners, bringing the intersections closer to square
- Bus boarding islands at the 19th Street RT stops adjacent to the Broadway light rail station
- Relocate traffic signals where slip lane modification requires different placement

Total construction cost for Road Diet – Option 1: approximately $6.5 million

The higher cost for Option 2 can be attributed to the following:

- Relocated signals due to removing islands at Riverside Boulevard and Land Park Drive
- Construction of larger, additional curb extensions at key intersections

Additional details about assumptions and line item costs are included in Appendix X.

FIGURE 21 COST ESTIMATES FOR OPTION 1

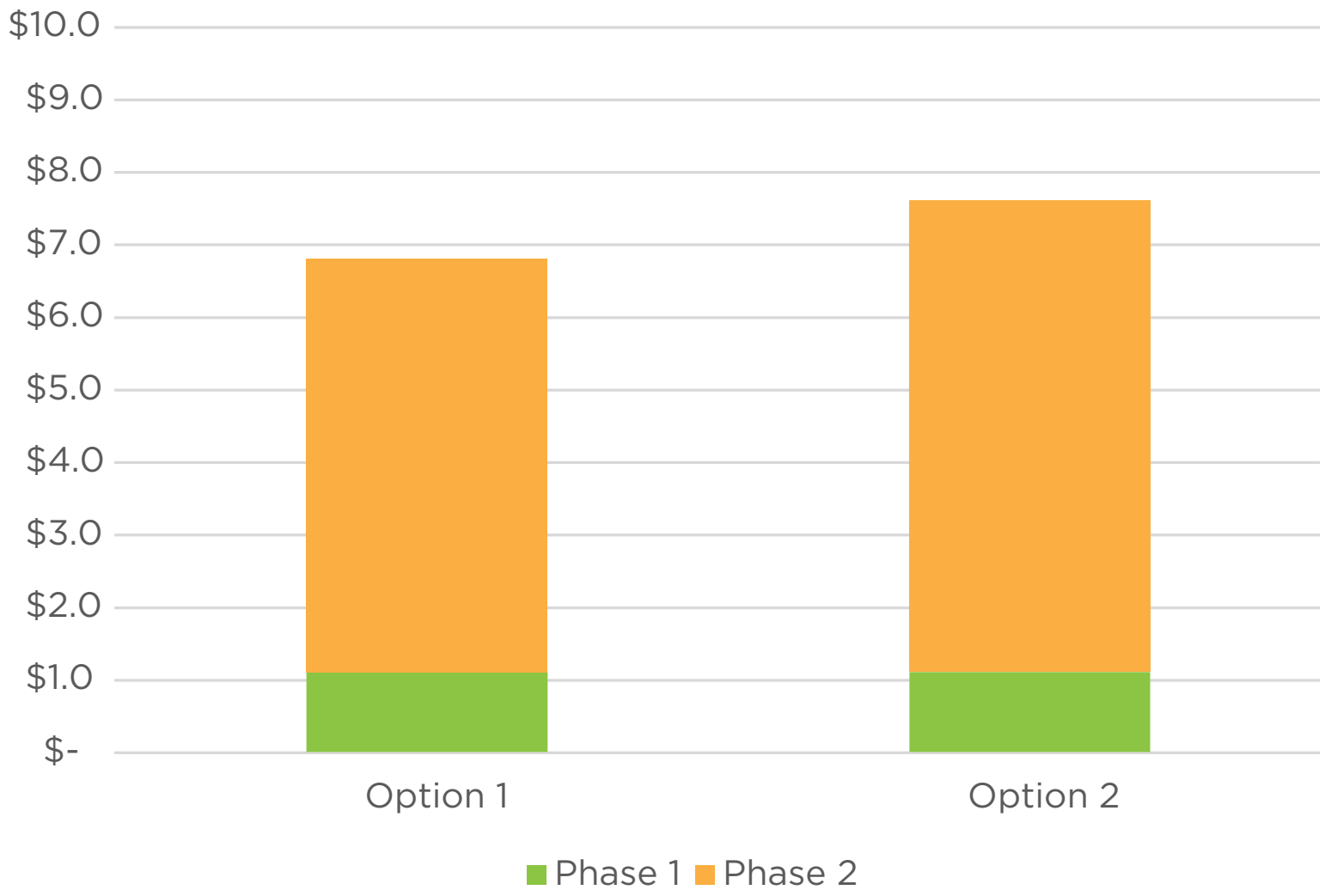


FIGURE 22 COST ESTIMATES FOR URBAN DESIGN ELEMENTS

ITEM	UNIT	COST PER UNIT
Rain Garden	EA	$15,000
Enhanced Sidewalk Paving (Typical Intersection)	EA	$50,000
Street Lights	Average Block	$70,000
Furnishings (Bike Rack, Trash/Recycle, Bench)	Average Block	$2,700
Gateway Elements	EA	$25,000
Parklet	EA	$20,000
Transit Shelter (Custom)	EA	$35,000
Transit Shelter (Standard)	EA	$15,000
Enhanced Crosswalk Treatment (4 Per Intersection)	EA	$6,600
At Grade Planting (Typ Block)	EA	$6,750
Street Tree- Standard 24" Box (Grate, Planting Soil, Irrigation)	EA	$5,000
Street Tree-Accent Palm (Grate, Planting Soil, Irrigation)	EA	$15,000

06 FUNDING + IMPLEMENTATION

Improvements

The improvements discussed in this plan might not be implemented all at once, whether due to timeline, funding, or resource constraints. A combination of time and persistence, grant writing, collaborative partnerships, layering and leveraging of multiple funding sources might be necessary to bring the complete streets solutions for Broadway from concept to construction.

The most promising programs available to help fund the proposed improvements for the Broadway Corridor are identified below. They provide potential opportunities for roadway, sidewalk and streetscape improvements, traffic controls, and other infrastructure to support multi-modal access, safety and mobility, corridor enhancement and economic development.

STATE AND REGIONAL FUNDING SOURCES

The Sacramento Area Council of Governments (SACOG) is an association of local governments in the six-county Sacramento area that provides transportation planning and funding for the region. SACOG conducts programming rounds to allocate funds to projects based on available apportionments from federal and state sources, including regional Congestion Mitigation and Air Quality (CMAQ), Regional Surface Transportation Program (RSTP), State Transportation Improvement Program (STIP), and Active Transportation Program (ATP) funds. These funds are distributed to member agencies through Regional ATP, Air Quality, Regional Bicycle & Pedestrian Funding Program (BPFP), Community Design, Transportation Demand Management (TDM) and Regional/Local Funding Programs.

ACTIVE TRANSPORTATION PROGRAM (STATEWIDE)

Pursuant to California Senate Bill 99 (Chapter 359, Statutes of 2013) and Assembly Bill 101 (Chapter 354, Statutes of 2013), the Active Transportation Program (ATP) was created to fund bicycle and pedestrian infrastructure and non-infrastructure projects. The ATP combines many federal and state funding streams previously used for bicycle, pedestrian, safety, and other related purposes into one funding stream with broad eligibilities.

Eligible applicants include cities, counties, MPOs, transit agencies, natural-resource or public-lands agencies, tribal governments, private nonprofit tax-exempt organizations, and public schools or school districts.

Eligible projects for ATP funding include:

- Infrastructure – capital improvements, including planning, design and construction.
- Non-infrastructure – education, encouragement, enforcement and planning activities that further the program's goals.
- Combined Infrastructure and non-infrastructure activities.
- Plans, which must be stand alone.

Eligible examples include the development of bikeways and walkways, installation of traffic-control devices and lighting that improves safety for non-motorists, bike-share programs, bike-carrying facilities on public transit, bike parking and storage facilities, landscaping that improves bicycle-and pedestrian safety and convenience, trails that serve a transportation purpose, projects that improve the safety of non-motorized students, and education programs to increase walking and biking.

REGIONAL ACTIVE TRANSPORTATION PROGRAM (ATP) AND REGIONAL BICYCLE AND PEDESTRIAN FUNDING PROGRAM (BPFP)

In 2015, SACOG consolidated the regional MPO component of the ATP with the Regional Bicycle and Pedestrian Program to enable applicants to efficiently and effectively apply to both programs (if applicable).

The Regional ATP targets projects that increase walking/biking, improve safety, and benefit disadvantaged communities. The Regional BPFP concentrates on project performance to implement the Region's Metropolitan Transportation Plan/ Sustainable Communities Strategy (MTP/SCS). Together, the programs strive to improve the region's active transportation system, air quality, and overall quality of life.

Funds can be used for construction, as well as preliminary engineering, which includes environmental work and design, as well as for right-of-way phases. Non-infrastructure projects include bicycle and pedestrian planning, education, information, Safe Routes to School Programs, and marketing efforts.

SACOG COMMUNITY DESIGN GRANTS

The Community Design Funding Program provides financial assistance to local government agencies seeking to implement physical development that is consistent with SACOG's Blueprint Principles. Approximately every two years, SACOG accepts applications for projects from cities, counties, transit districts and air districts from Sacramento, Sutter, Yolo and Yuba Counties.

The Blueprint Principles are:

- Transportation Choices
- Housing Diversity
- Compact Development
- Use of Existing Assets
- Mixed Land Uses
- Quality Design
- Natural Resource Conservation

SACOG REGIONAL LOCAL FUNDING PROGRAM

The Regional/Local Program is SACOG's largest competitive program. The emphasis of the program is to fund projects that will help implement the MTP/SCS by providing regional benefits.

FIGURE 23 SUMMARY OF STATE AND REGIONAL FUNDING PROGRAMS

FUNDING PROGRAM	STATE ACTIVE TRANSPORTATION PROGRAM	REGIONAL ACTIVE TRANSPORTATION PROGRAM	BICYCLE & PEDESTRIAN FUNDING PROGRAM	COMMUNITY DESIGN FUNDING PROGRAM	REGIONAL/LOCAL FUNDING PROGRAM	STATE AFFORDABLE HOUSING AND SUSTAINABLE COMMUNITIES PROGRAM
Administrator	Caltrans	Sacramento Area Council of Governments (SACOG)		SACOG	SACOG	Dept. of Housing and Community Development (HCD)
Purpose	Encourage increased use of active modes of transportation through walking/ biking infrastructure improvements and programs.	The Regional ATP targets projects that increase walking/ biking, improve safety, and benefit disadvantaged communities. The Regional BPFP concentrates on project performance to implement the MTP/SCS. Together, the programs strive to improve the region's active transportation system, air quality, and overall quality of life.		Physical implementation of SACOG Blueprint principles (compact development, mixed of land uses, transportation options, etc.)	Implement the MTP/SCS by providing Regional benefits.	Projects that reduce GHG emissions and VMT through land use, housing, transportation, and agricultural land preservation practices that support infill development
Funding Levels	$250,000 min. No max.	Infrastructure: $250,000 min. Programs: $50,000 min. No max.	Capital projects: $250,000 min. for Pre-construction-only projects: $150,000 min. Non-capital projects: $50,000 min. No max.	Categories: 1) Conventional: $300,000 to $4 million; Pre-construction $150,000-$500,000. 2) Complete Streets focus: $1.5 million-$4 million. 3) Non Competitive: max $100,000.	Capital projects do not have min or max project size.	$500,000 min. $20 million max.

STATE AFFORDABLE HOUSING AND SUSTAINABLE COMMUNITIES PROGRAM

The California Strategic Growth Council's Affordable Housing and Sustainable Communities Program (AHSC) awards funds, through a competitive application process, for land-use, housing, transportation and land-preservation projects to support infill and compact development that reduces greenhouse gas emissions. Funded by State cap-and-trade emissions reduction auction proceeds, this program provides a major new source of funding for infill, mixed-use, transit-oriented development and multimodal-transportation infrastructure capital projects and programs.

The program specifies three types of eligible project areas:

- Transit-Oriented Development projects within one-half mile of high-quality (high frequency) transit
- Integrated Connectivity Projects in areas with at least one transit station or stop that has sustainable transportation infrastructure to induce mode shift, and at least one additional capital or program use
- Rural Innovation Project Areas, which are the same as Integrated Connectivity Projects, but lack high-quality transit service, and are located in rural areas

The following table summarizes the funding programs that are administered by SACOG and programs administered by the State that are possible candidates for funding elements of the Broadway Complete Streets Plan. Additional details are included in the [funding technical appendix].

LOCAL FUNDING STRATEGIES

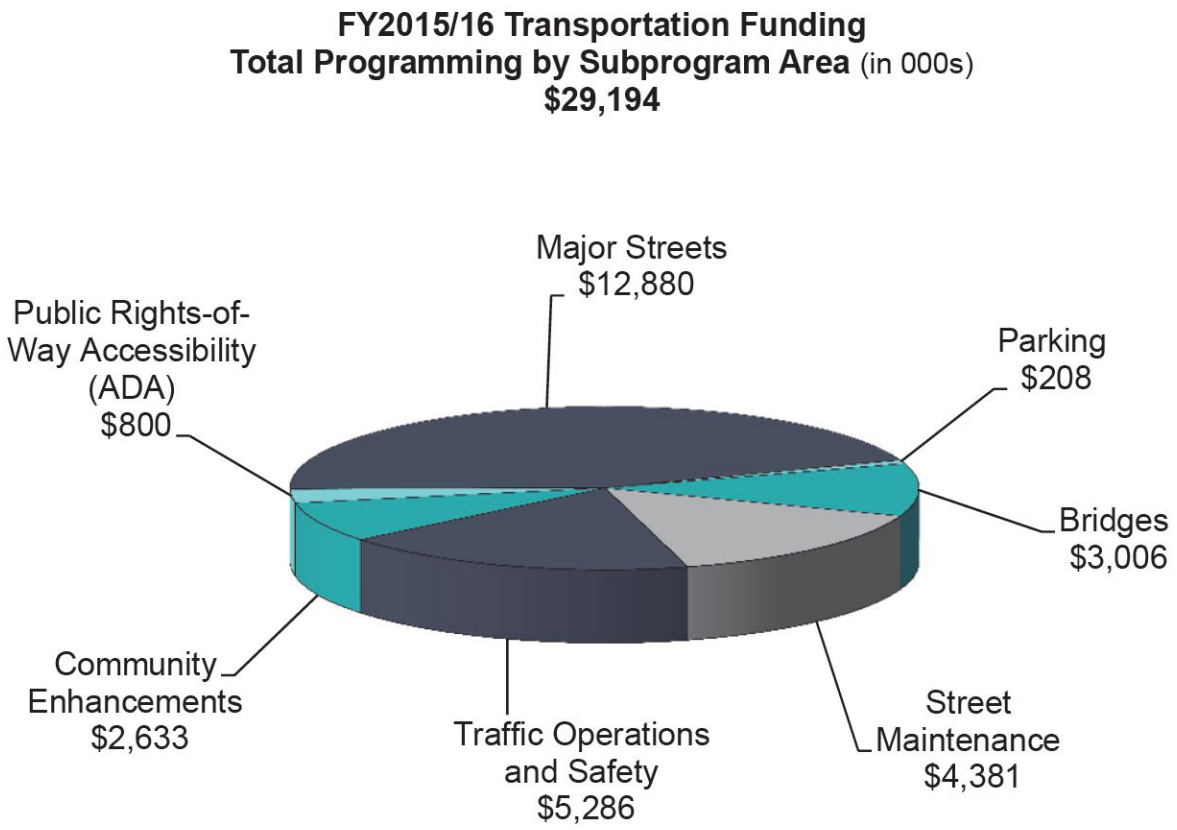
In addition to the grant and funding programs identified above, the City may want to explore opportunities for funding Broadway improvements through the City's Capital Improvement Program or a financing district, whether directly or as a means to providing local match for some of the sources above. This can be seen as a way to advance select project elements and/or to leverage and extend the benefit of local dollars.

CITY CAPITAL IMPROVEMENT PROGRAM

The 2015-2020 Transportation Program contained within the City's overall 5-year Capital Improvement Program (CIP) is designed to optimize the use of available local funds by leveraging state and federal funds to achieve the City's transportation priorities. Pedestrian and bicycle projects are in the Transportation Program to reflect the importance of those modes of travel as part of the overall transportation network.

The Transportation Program allocates funding to seven major subprogram areas shown in Figure 8. Funds are secured from multiple sources, such as the Federal Highway Safety Improvement Program, State Transportation Development Act, State Gas Excise Tax, County Measure A Transportation Sales Tax, City Major Street Construction Tax, and the City Landscaping and Lighting and Assessment District.

FIGURE 24 CITY OF SACRAMENTO TRANSPORTATION PROGRAM FUNDING



Projects and programs within the Major Streets, Traffic Operations and Safety, Street Maintenance and Community Enhancements subprogram areas could be scrutinized for potential near-term sources to help fund Broadway improvements. In addition, a new project proposal could be developed to help implement future improvements for consideration in the City CIP review process.

ENHANCED INFRASTRUCTURE FINANCING DISTRICT

The formation of an Enhanced Infrastructure Financing District (EIFD) could present a long-term strategy for funding improvements on the Broadway corridor and elsewhere in the city. Authorized by state legislation in 2014, an EIFD may be created by a city or county to collect tax increment revenues to finance improvements. Entities participating in an EIFD can include cities, counties and special districts, but not schools.

Infrastructure projects that can be financed through an EIFD include new construction and rehabilitation. Facilities don't need to be located within the EIFD boundaries, but they must have a tangible connection to the EIFD's work as detailed in its infrastructure financing plan.

An EIFD cannot be used to fund routine maintenance or operation costs. An infrastructure financing plan must be adopted before a city or county forms an EIFD. An EIFD is governed by a public financing authority, consisting of members from the city or county legislative body, participating taxing entities, and the public.

Additional details about EIFD requirements and structure are included in the *[funding technical appendix]*.

MOBILIZING PUBLIC/PRIVATE PARTNERSHIPS

The Greater Broadway Partnership (GBP) provides corridor cleanup, safety, physical enhancement and economic enhancement services and activities on behalf of the property owners and businesses within the GBP Property-based Improvement District.

The GBP, City, business and property owners and other organizations and associations could pursue additional collaborations and strategies to stimulate public and private investment in the Broadway corridor. Two examples discussed below include Tactical Urbanism and Crowdfunding.

TACTICAL URBANSIM

Working together, the City, GBP, business and property owners, residents and other organizations and associations could install temporary transformations to visualize, test, experience and promote changes, and attract new public and private investment. Sometimes referred to as "tactical urbanism,""placemaking", or simply "pilot projects," there is a growing number of examples across the nation. Sample projects include:

- Converting street edges into enhanced bikeways.
- Turning on-street parking spaces into extended sidewalks with outdoor seating and other features, known as parklets or streetdecks.
- Adding chairs, landscaping, art and other street furniture on existing sidewalks.
- Converting vacant lots into community gardens and play lots.
- Converting off-street parking areas into small plazas or food-vendor courtyards.
- Improving blank walls and empty spaces with public art and colorful murals.

Changes are often installed with local donated or recycled materials, supplies and volunteer labor. Ideas are tested with chalk, temporary paint, movable planters and homemade chairs and benches. The process builds connections, creates civic engagement, and empowers community members. The physical projects create opportunities for people to meet their neighbors.

Temporary projects can have a significant impact and help both the community and local officials envision a new future for a place – and attract funding for permanent improvements. City officials can use temporary permits and provide technical guidance to ensure adequate safety and operations. These pilots help foster innovation by residents, while enabling officials to evaluate the success of practices before making higher-cost, capital investments or regulatory changes.

CIVIC CROWDFUNDING

Crowdfunding is a means to collect monetary contributions from a large number of people or sources through an online platform to fund a project or venture. Civic crowdfunding is very flexible in the projects that can be funded. Examples might include bike racks, community gardens, playgrounds, renovation projects, neighborhood markets, cultural facilities, parks and recreation facilities, social services and conservation-easement purchases.

Examples of civic-specific crowdfunding platforms include Ioby and Citizinvestor. A platform like Neighbor.ly facilitates individual investment in municipal bonds. Larger crowdfunding sites, such as Gofundme, Kickstarter and Indiegogo, also have "community" or "civic" categories for projects.

The lead for a crowdfunding effort could be an individual, a community-based organization, any nonprofit or a government entity. They would use an online platform to initiate a crowdfunding campaign.

Successful examples and sources for more information about Tactical Urbanism and Civic Crowdfunding are included in the *[funding technical appendix].*

PHASING AND IMPLEMENTATION

Elements of this plan defined to enhance mobility and livability position this project for grant funding. In some cases, funding may be correlated with elements of implementation, i.e. striping, sidewalk enhancements and street trees. However, funding may be available to complete the entire length or select segments.

Based on performance and community feedback, Option 2 enjoys broad-based support, with some skepticism from those concerned about traffic and parking impacts. Though these impacts appear minimal and can be managed or mitigated, a phased approach can help demonstrate the benefits without large-scale construction.

Phased implementation can also reduce the wait for benefits, but it should be noted that partial implementation typically means only partial benefits. This plan identifies ways to advance improvements to Broadway in two general phases: near term and long term implementation, in the event that complete implementation is not financially or politically feasible.

Near Term Opportunities: Several aspects of the Broadway Streetscape design can be implemented immediately and over the next several years.

Pilot Road Striping: In several areas of the corridor, new striping can be introduced as a pilot project in order to incorporate bicycle lanes, legible crosswalks, etc. It also presents a near term opportunity if street repaving is necessary.

Green Walls and Graphic Art: Interventions at existing buildings including murals, graphic art and green walls can be implemented in the near term by building owners and merchants.

Parklets and On-Street Bicycle Parking: A parklet program can be implemented immediately as they can be designed and installed in existing parking spaces. Additionally, on-street bicycle parking can be installed in existing parking spaces.

Complete or Long Term Implementation: Streetscape construction might need to take place over several phases due to the cost of infrastructure and complete streets implementation. Construction of the streetscape could unfold in segments in order to create less disruption for the community, merchants and residents. Creating phases based on districts outlined in previous sections provides logical areas for implementation. Streetscape construction should occur in order of community priority and opportunity: the Tower District, the Marina District and the Upper District.

Tower District: As the Tower District is the most defined district, the construction in this area is a logical early phase to revitalize the corridor and build off existing resources and success. In addition to the interventions mentioned in the Upper and Marina Districts, the Tower District also includes potential gateway elements and signage, potentially decorative paving, site walls and distinct furnishing and mobility enhancements around the LRT station.

Marina District: The Marina District has the greatest level of potential development and change as well as some of the narrowest sidewalks. This phase could include sidewalk widening and bulbouts, new pedestrian crossings, key intersection interventions at Riverside Boulevard and standard streetscape elements and furnishing along its length.

Upper District: The employment centers in the Upper District have the highest traffic volume and need for walkability. The Upper District interventions would also include sidewalk extensions and bulbouts, new pedestrian crossings and standard streetscape elements and furnishings.

PHASING EXAMPLE

The first phase in the Broadway and 18th Street area could be furnishing, striping and related private investment with facade improvements. This phase can be completed at a lower cost if associated with normal street repaving.

The second phase in the Broadway and 18th Street area could include bulbouts, sidewalk enhancements, vegetation and street trees. It is important to coordinate between paving construction and tree planting, as irrigation lines and soil trenches for healthy roots can be established for optimal success.

The final phase includes additional streetscape furnishing. Higher levels of private investment in buildings come with this degree of public improvements.

FIGURE 25 18TH AND BWY INTERSECTION, ONE LAYER OF IMPROVEMENTS

FIGURE 26 18TH AND BWY INTERSECTION, TWO LAYER OF IMPROVEMENTS

FIGURE 27 18TH AND BWY INTERSECTION, THIRD LAYER OF IMPROVEMENTS

07 CONCLUSIONS + NEXT STEPS

Summary of Recommendations

The Broadway Complete Street Plan builds upon several planning efforts in the Broadway Corridor and greater study area, including the Broadway Vision Plan by the Urban Land Institute, Sacramento District Council, and the Greater Broadway Partnership in 2012.

The Broadway study area is a central neighborhood located south of downtown Sacramento, hosting a diverse cultural mix of businesses, residents, parks, and historical landmarks. This Plan began with a technical review of those concepts, with the goal of bringing a better balance to Broadway as a multimodal street rather than solely an auto thoroughfare.

Broadway anchors multimodal transportation connections to neighborhood and regional destinations, accessible by foot, bike, bus, light rail, local streets, and several major highway connections. Through a combination of technical analysis, urban design, and public participation, this Plan has outlined two potential concepts for improving safety, connectivity, and mobility for all Broadway travelers, and also contributing to a more vibrant urban fabric for the corridor.

MAKING THE STREET COMPLETE

The improvements discussed in this plan might not be implemented all at once, whether due to timeline, funding, or resource constraints. A combination of time and persistence, grant writing, collaborative partnerships, layering and leveraging of multiple funding sources might be necessary to bring the complete streets solutions for Broadway from concept to construction.

The City of Sacramento has already begun to pursue funding sources for the long-term options, including environmental review, detailed design, and construction. Phase 1 is intended to deliver low-cost, high impact safety improvements to the corridor that may be able proceed in advance of corridor-wide improvements. However, the project is laid out in components that can be delivered as one complete project, or strategically as complementary projects within the corridor or the city at large come on line. As the project advances to the next step in development, the City and its partners will work to explore these synergies to best deliver value and progress for the residents, workers, and businesses utilizing Broadway and its diverse amenities.

GREATER BROADWAY DISTRICT

July 22, 2016

Jerry Way
Department of Public Works
City of Sacramento
915 I Street
Sacramento, CA 95814

RE: Broadway Complete Streets Project

Dear Mr. Way,

On behalf of the Greater Broadway District (GBD), I wanted to share our Board's support for the City of Sacramento's Broadway Complete Street project.

The GBD is a Property and Business Improvement District (PBID) that provides programs aimed at increasing commercial activity and revitalizing the Broadway corridor. These services include enhanced landscape and streetscape maintenance, advocacy, economic development, promotion and special events. The GBD represents over 350 parcel owners and over 200 businesses along the 6-mile stretch of the District.

We believe that the Broadway Complete Street project will serve a diverse cultural mix of businesses, residents and civic amenities such as parks and historical landmarks. The Broadway corridor anchors multi-modal transportation connections such as pedestrian, bike, light rail, transit and major highway connections. This project aims to improve the safety, connectivity and character of the corridor by addressing the disconnected pedestrian and bike facilities in conjunction with the traffic conditions by exploring solutions and serving all modes of travel through a complete street approach.

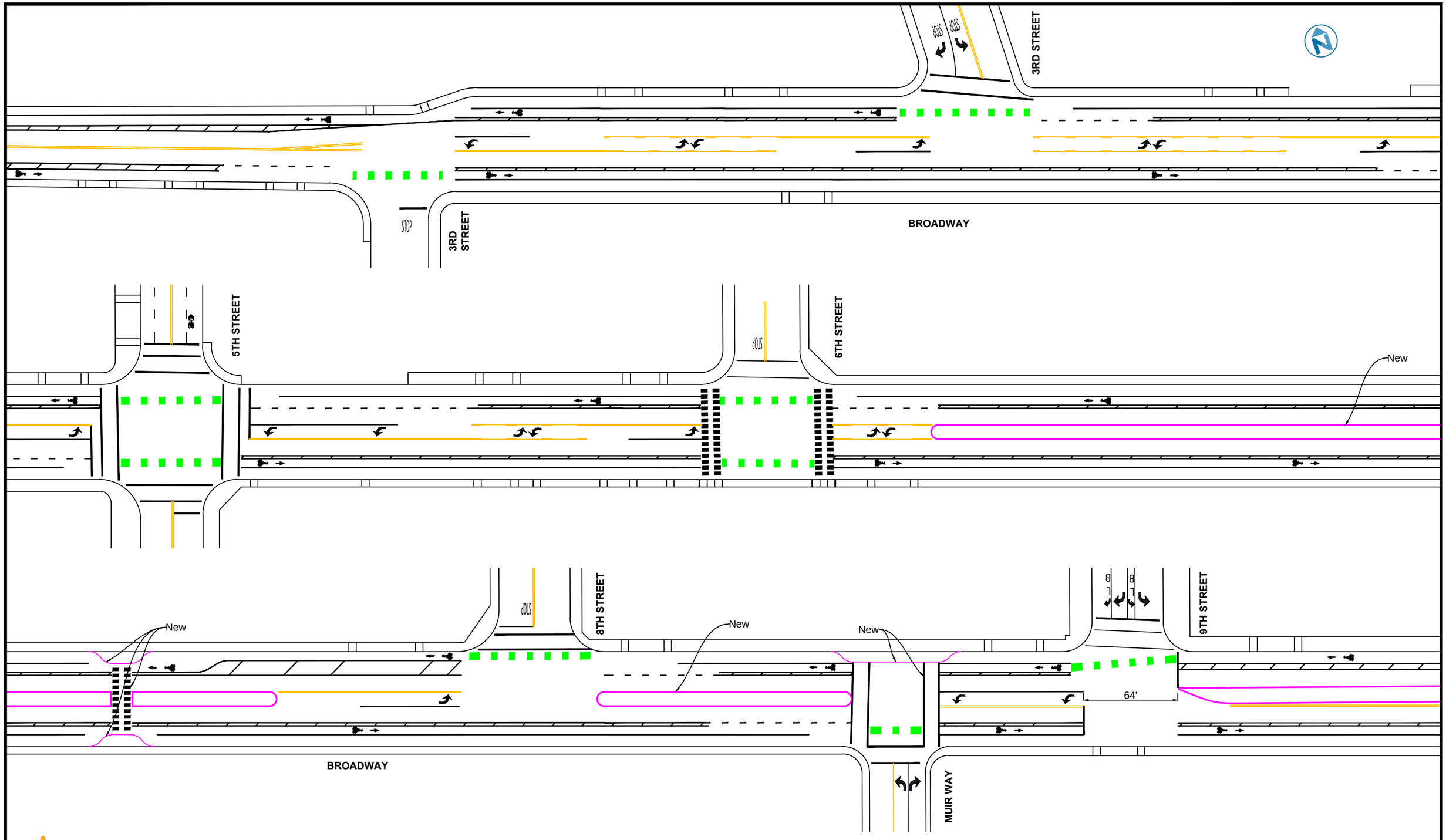
We appreciate the opportunity to voice our support for this plan and for improvements to the Broadway corridor.

Thank you,

Michelle Smira-Brattmiller
Executive Director

Cc: Greater Broadway District Board of Directors

Broadway Complete Streets Plan
Technical Appendix



BROADWAY
Complete Streets Plan

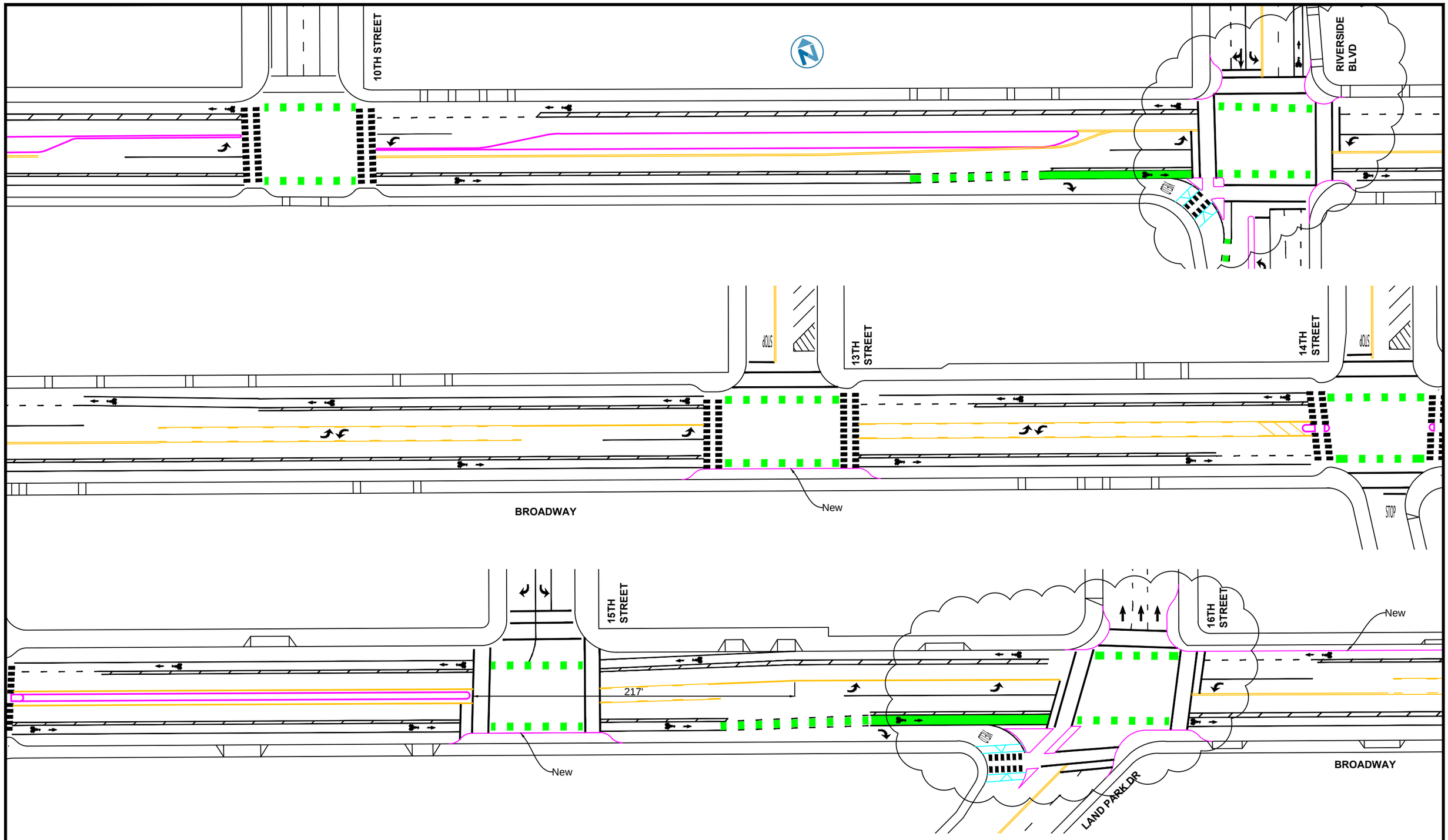
NELSON NYGAARD

Broadway Complete Streets Plan

Option 1 Concept Drawing

Scale = 1 : 60
Sheet 1 of 4

SOURCES: City of Sacramento, Mark Thomas & Company



BROADWAY Complete Streets Plan

NELSON NYGAARD

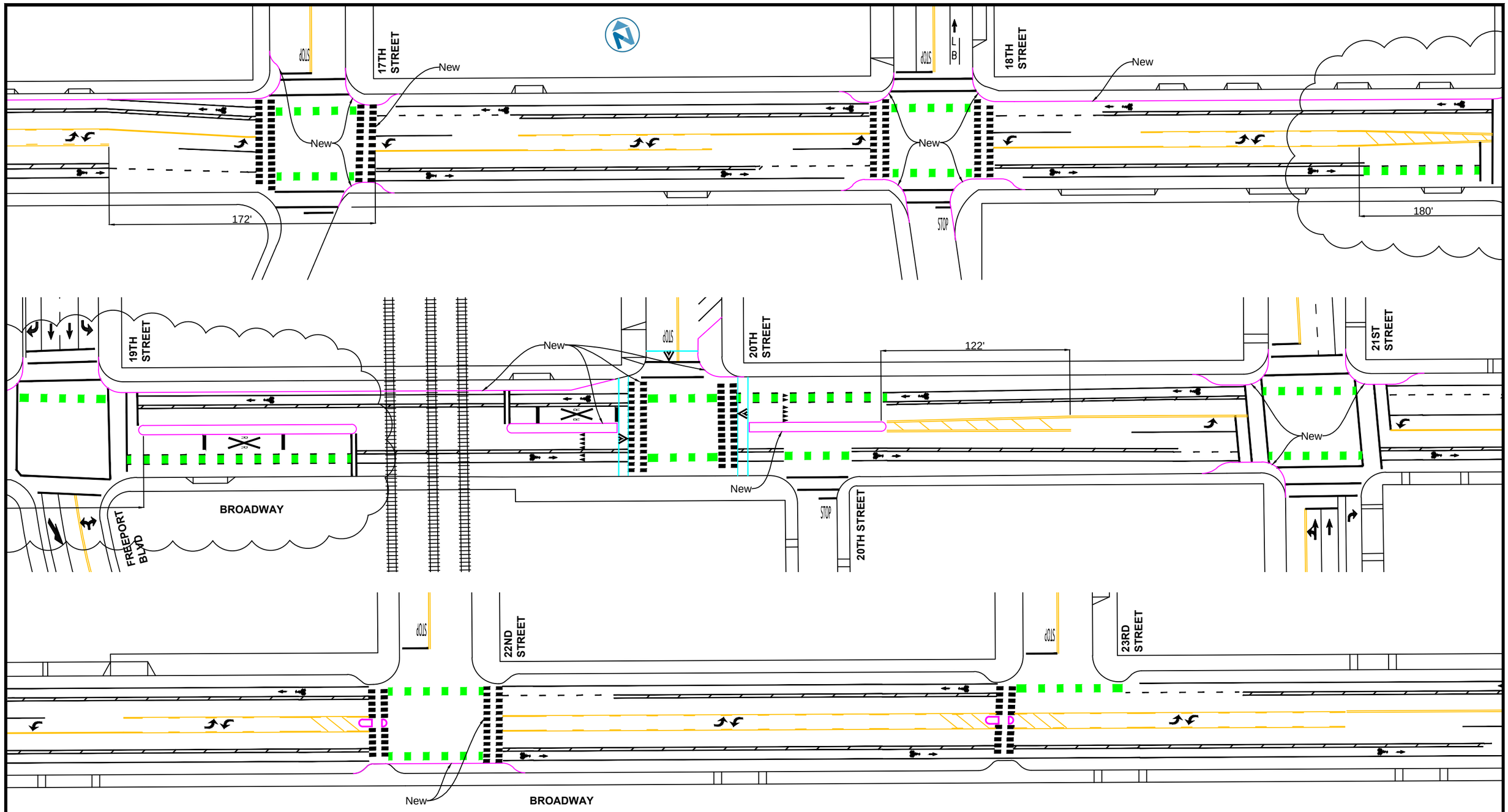
Broadway Complete Streets Plan

Option 1 Concept Drawing

Scale = 1 : 60

Sheet 2 of 4

SOURCES: City of Sacramento, Mark Thomas & Company



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Sheet 3 of 4

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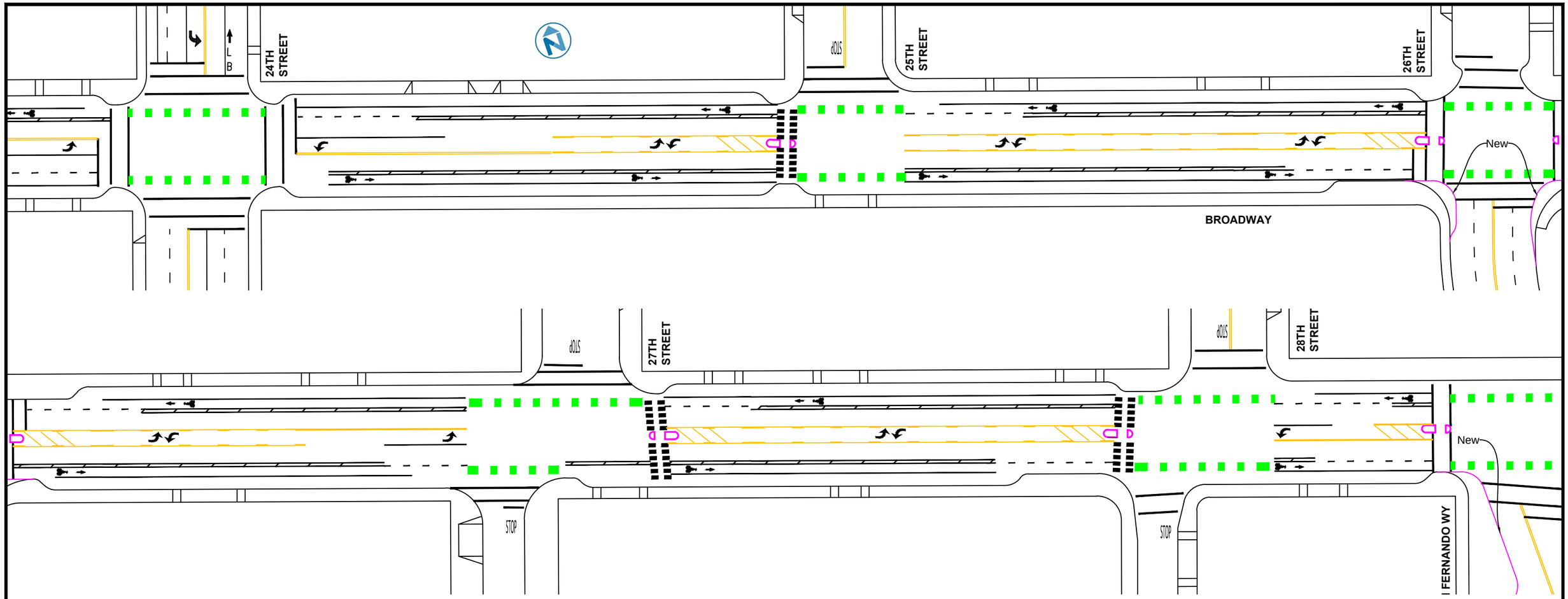

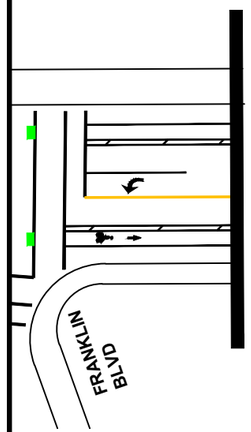

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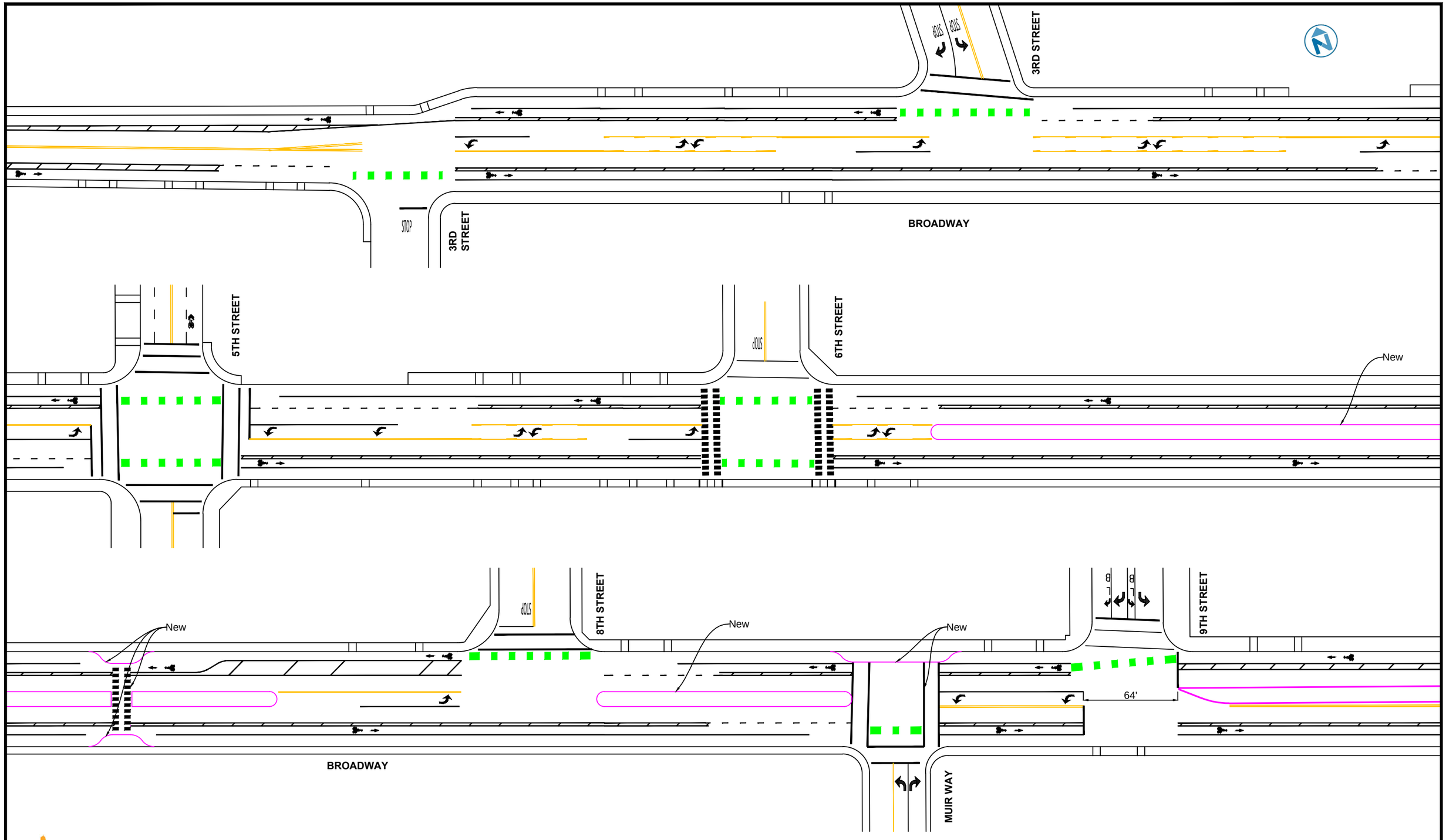


BROADWAY
Complete Streets Plan

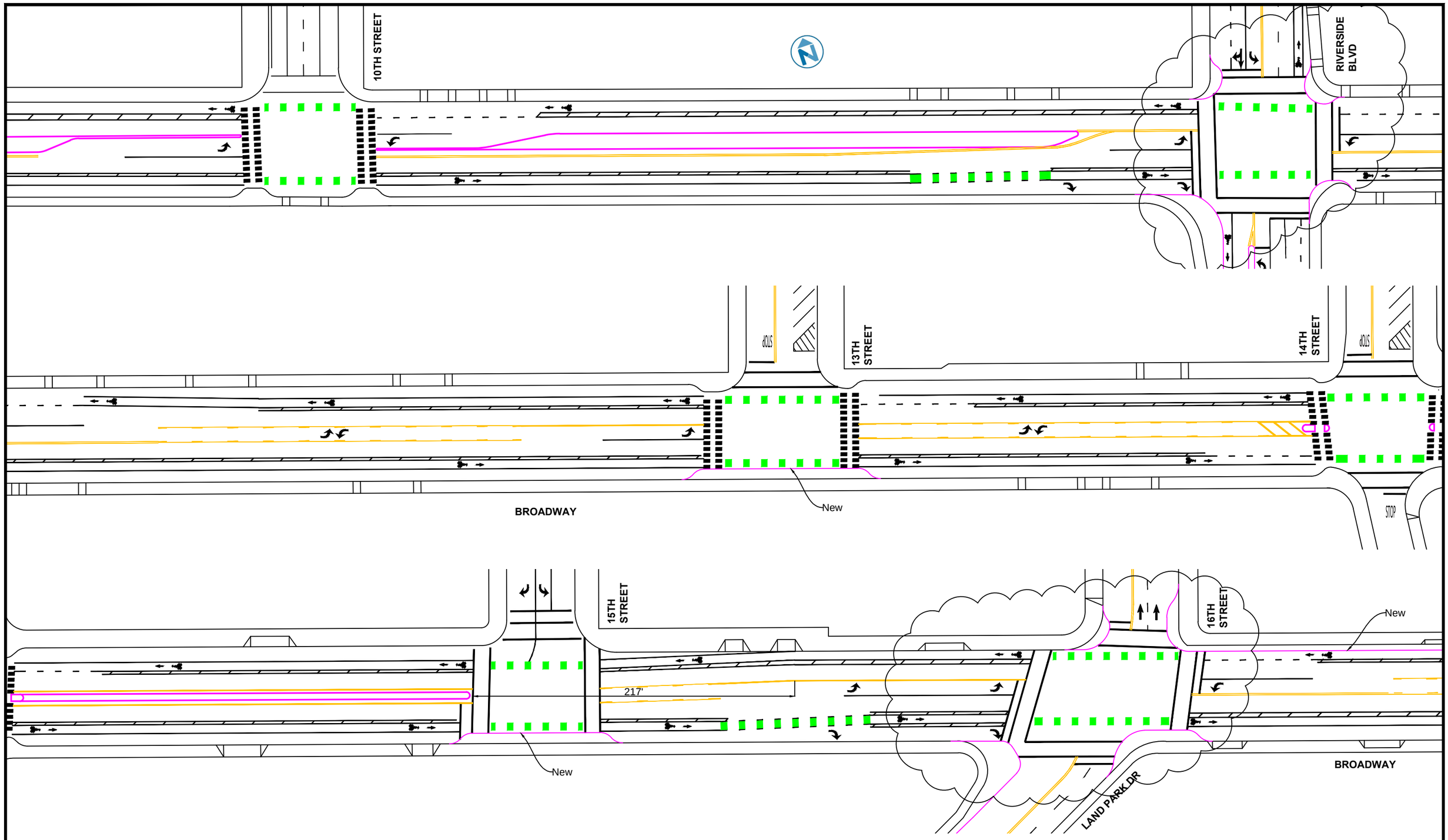
NELSON NYGAARD

Broadway Complete Streets Plan

Option 2 Concept Drawing (Preferred)

Scale = 1 : 60
Sheet 1 of 4

SOURCES: City of Sacramento, Mark Thomas & Company



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Complete Streets Plan

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Sheet 2 of 4

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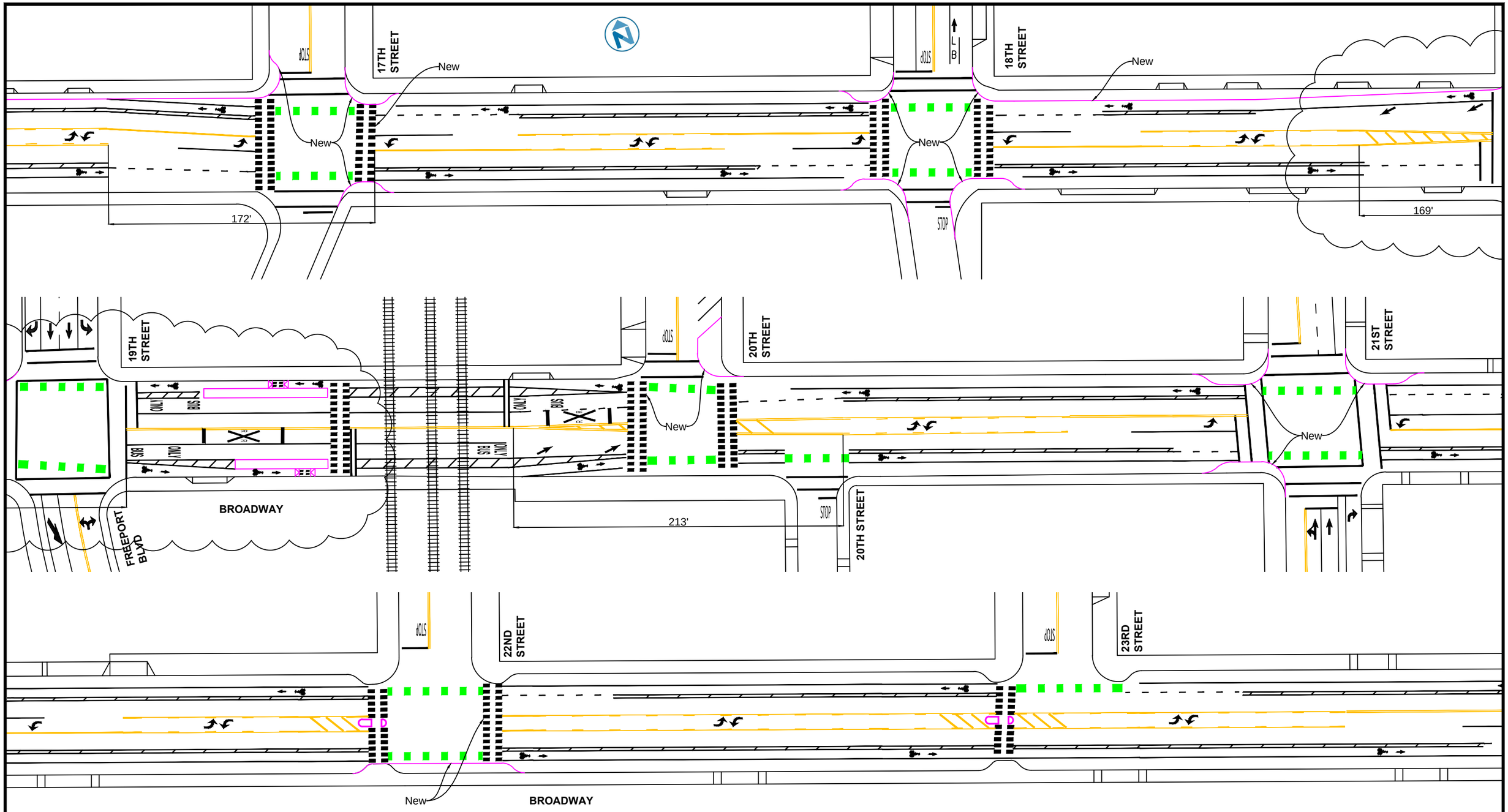

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Complete Streets Plan

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Broadway Complete Streets Plan

Option 2 Concept Drawing (Preferred)

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Sheet 3 of 4

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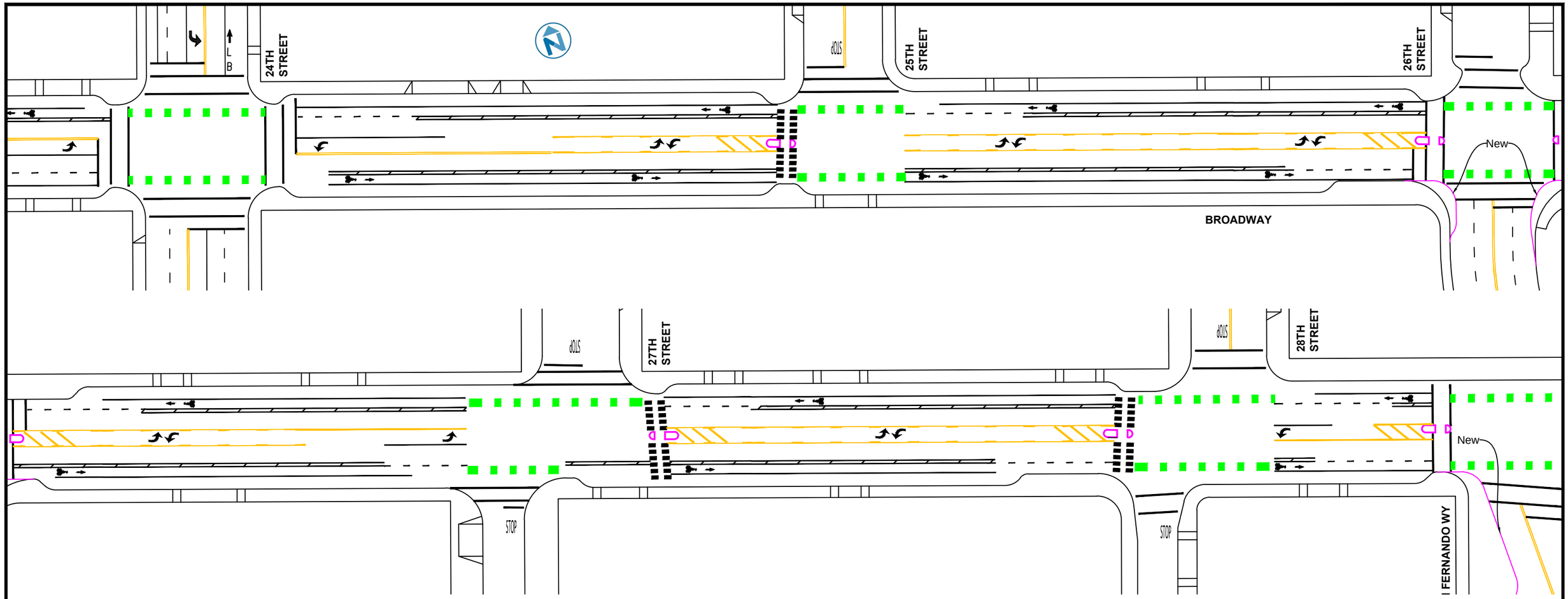

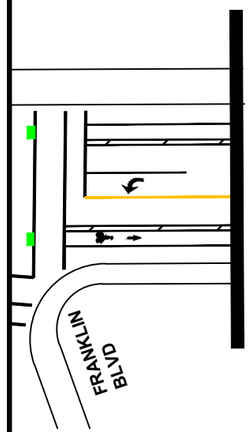

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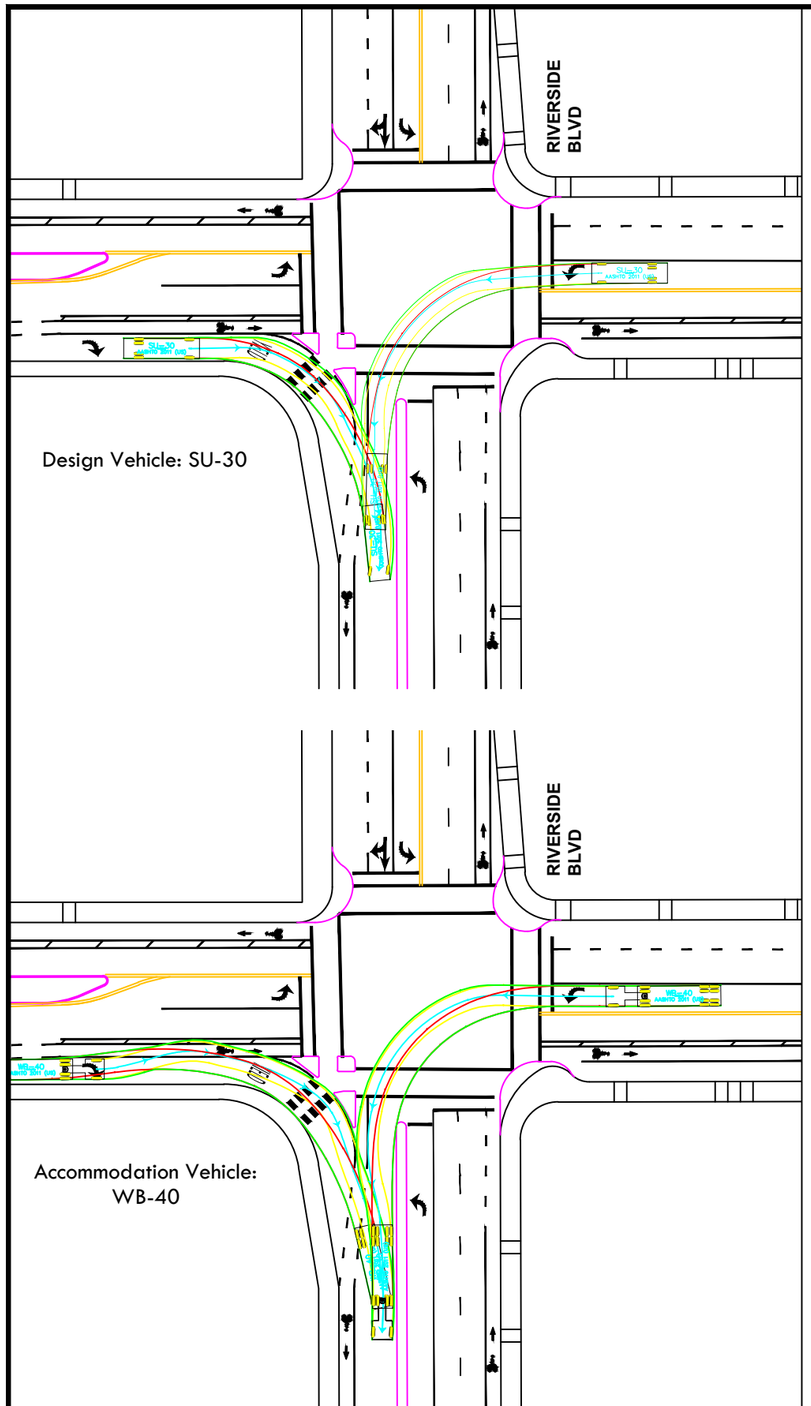
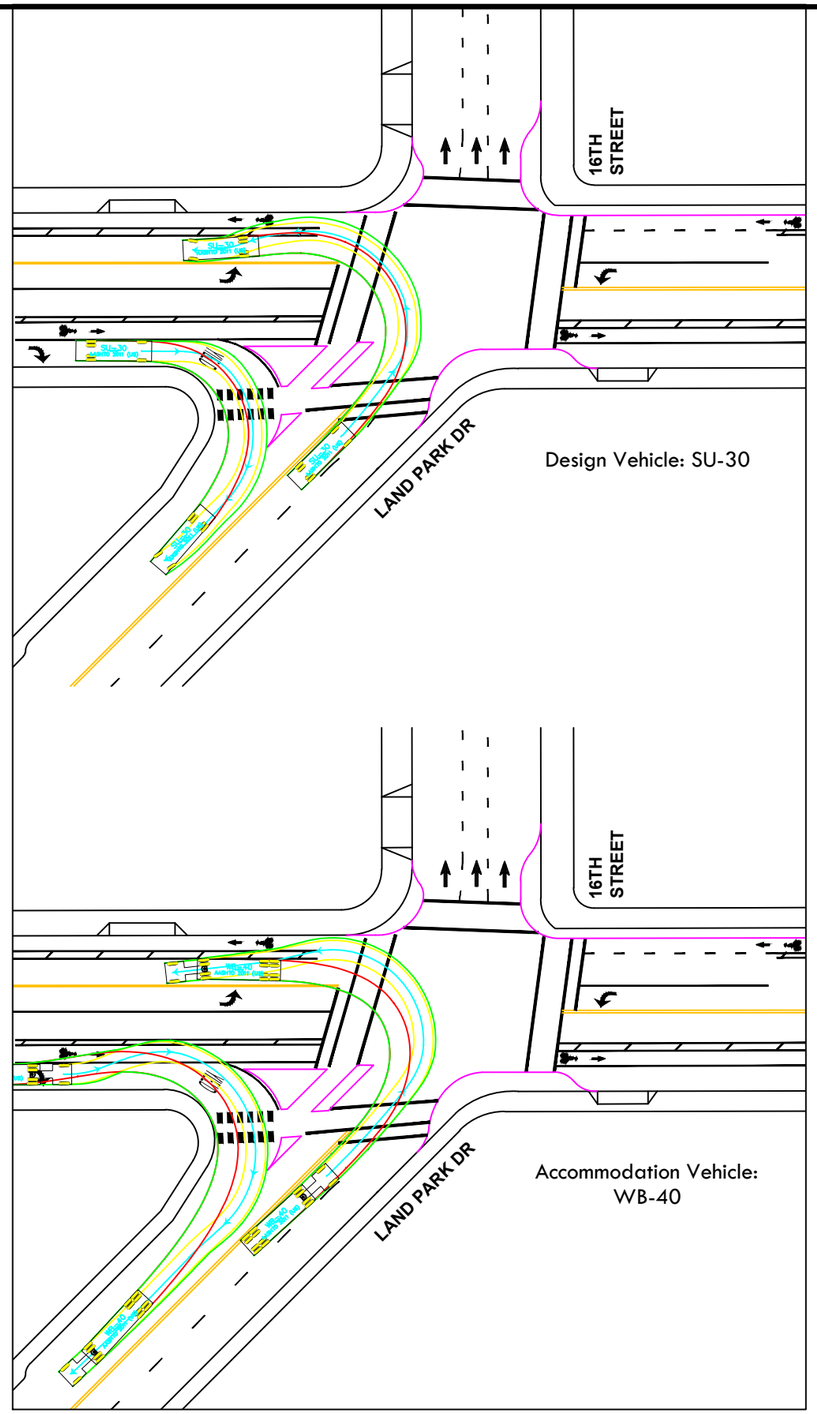
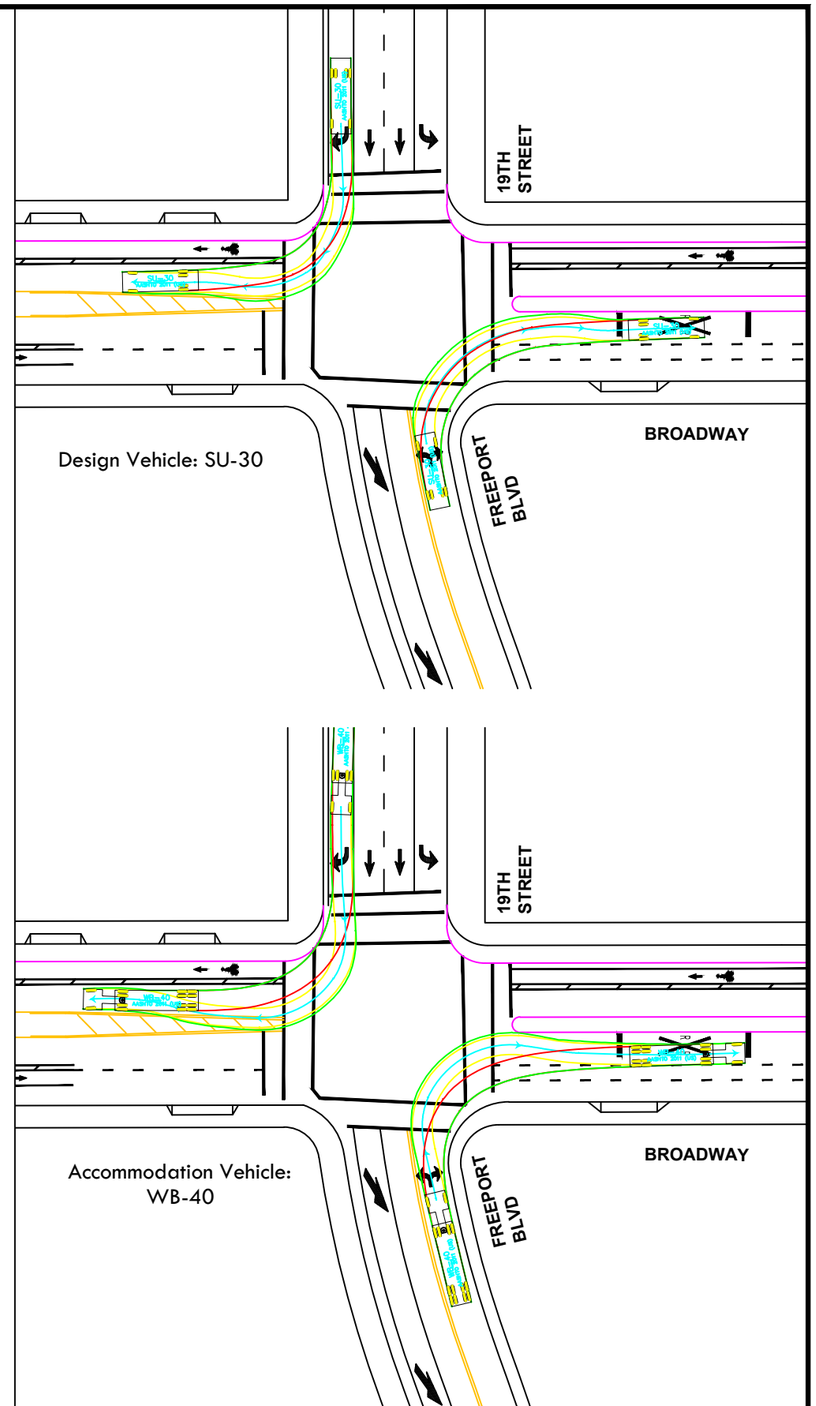






BROADWAY
Complete Streets Plan

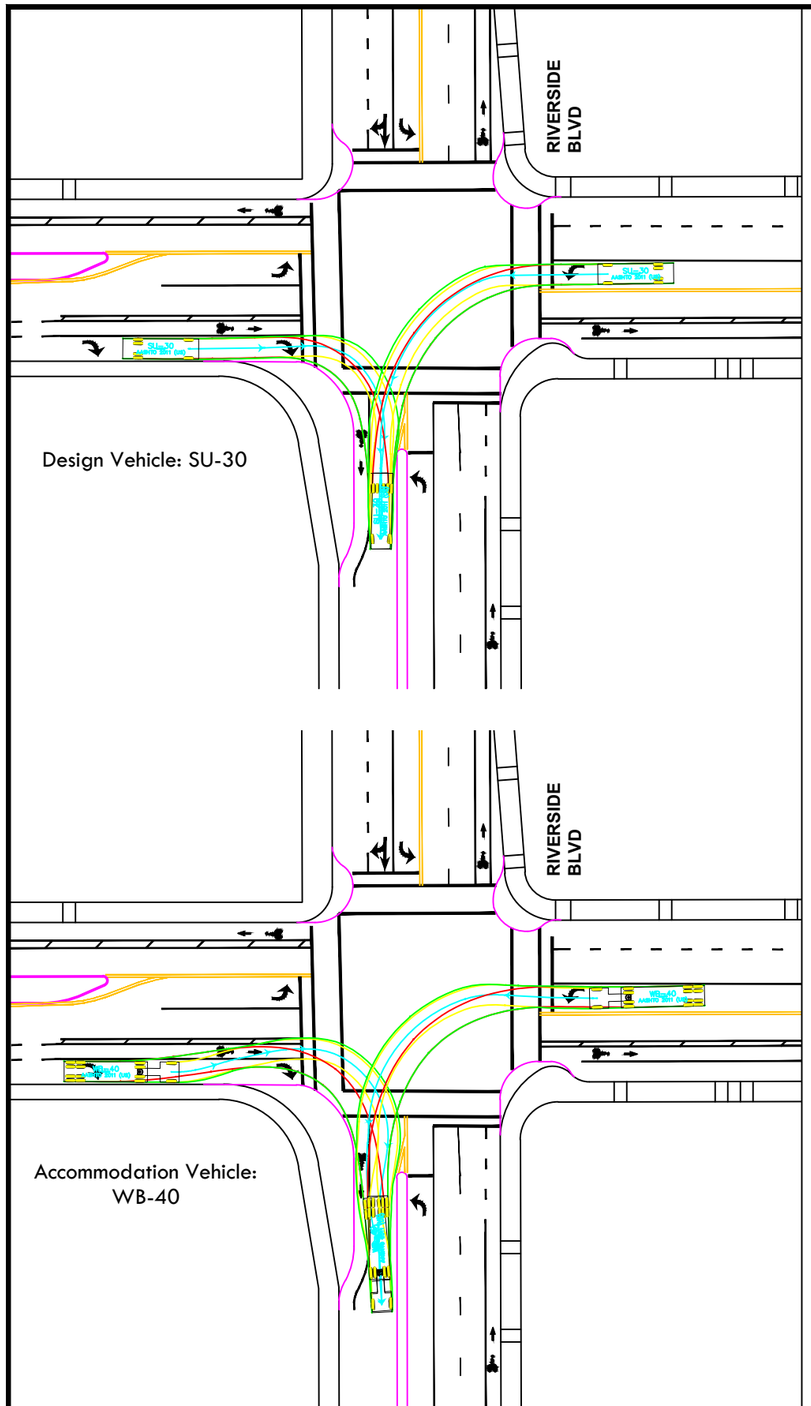
NELSON
NYGAARD

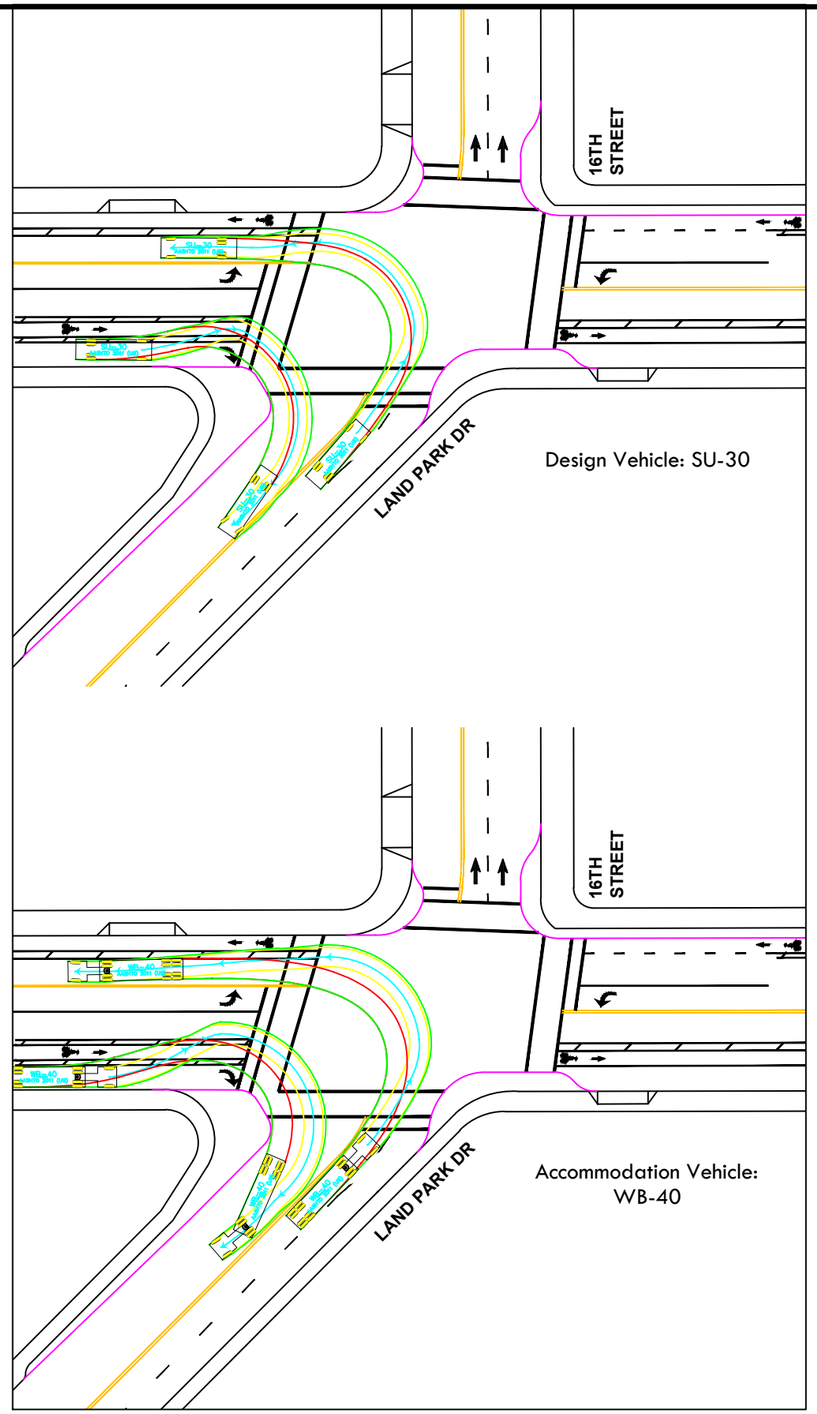
Broadway Complete Streets Plan

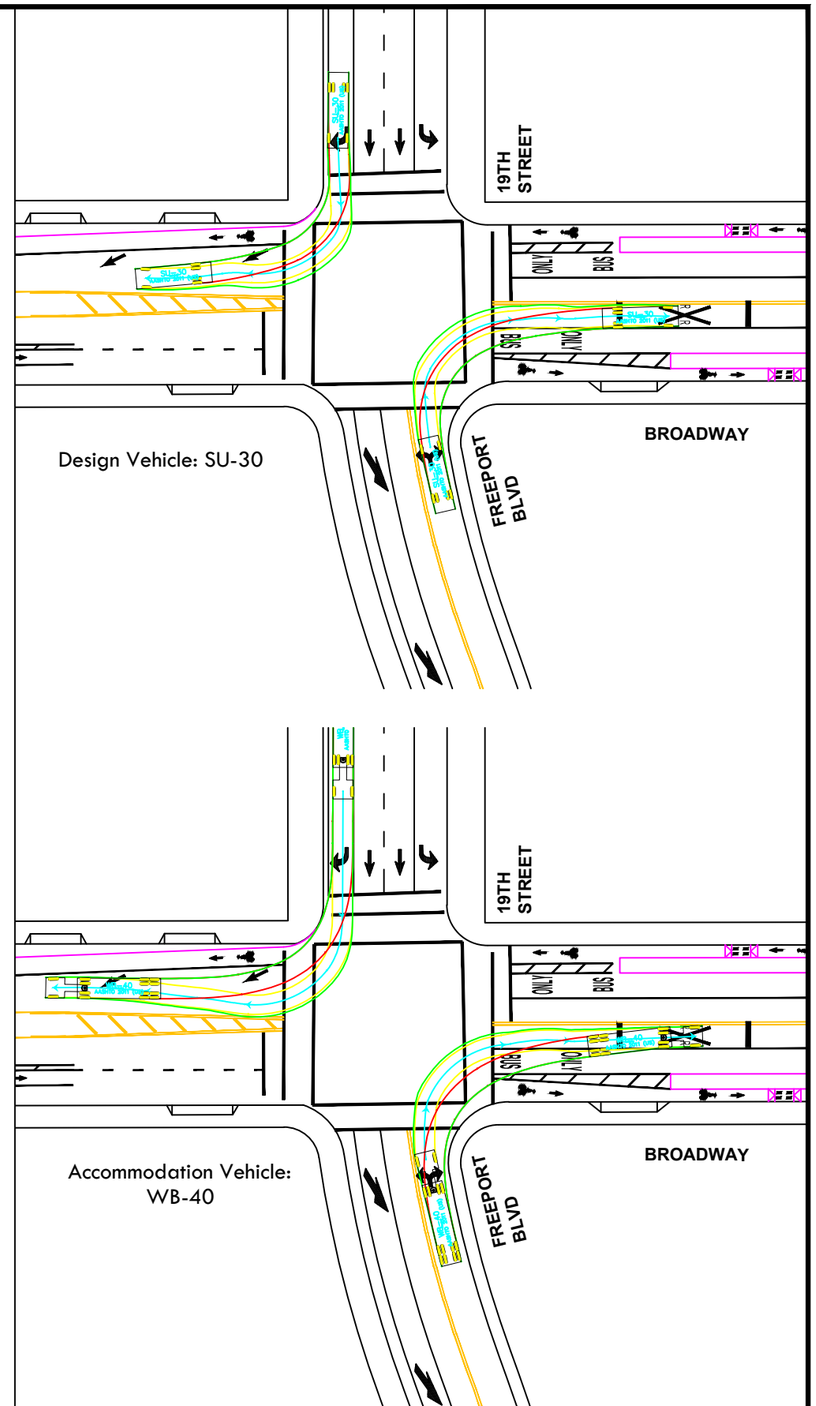
Option 1 Concept Turn Samples

Scale = 1 : 60

SOURCES: City of Sacramento, Mark Thomas & Company







BROADWAY
Complete Streets Plan

NELSON NYGAARD

Broadway Complete Streets Plan

Preferred Alternative Concept Turn Samples

Scale = 1 : 60

SOURCES: City of Sacramento, Mark Thomas & Company

NELSON
NYGAARD

MEMORANDUM

To:

From: Millie Tolleson, Nelson\Nygaard

Date: November 9, 2015

Subject: Road Diet Case Studies: York Blvd, Los Angeles; Ocean Park Blvd, Santa Monica; Stone Way N, Seattle

Project Background

Sacramento's Broadway corridor has an average daily traffic (ADT) of 21,980 vehicles at its busiest intersection, Broadway and 17th. As a general rule, two and three lane roads are capable of accommodating up to 25,000 vehicles per day. Broadway's adjacent land uses include large and small businesses, parks, a cemetery and housing.

Residents and business owners near the Broadway corridor in Sacramento have expressed concerns related to potential negative economic and traffic impacts as a result of the proposed road diet. This memorandum offers studies of similar corridors which implemented road diets and the impacts in the following two areas:

- Economic impact to local businesses
- Traffic impacts on the major street and on adjacent side streets

Case Study: York Boulevard, Los Angeles (ECONOMIC)[1]

LA DOT implemented a road diet on 1.3 miles of the York Boulevard corridor in the Highland Park neighborhood of northeast LA County in 2006. The design changes included a mixed use lane reduction from two lanes each way to one lane each way with a center turn lane. A few years later, bicycle lanes were added.

The study evaluated qualitative resources including merchant and customer surveys, as well as quantitative data on property sale prices, sales tax revenue, business turnover and new businesses opening. The study found the road diet "had little effect on surrounding businesses, property values, and customer shopping patterns."

- 85-95% of business survey respondents did not feel that bike lanes had hurt their business
- Sales tax revenues at local businesses on the road diet section of York Blvd increased from $727,000 to $1.1M post-road diet implementation
- Since the road diet installation, 21 new businesses have opened on the corridor

[1] McCormick, C. (2014) *York Blvd: The Economics of a Road Diet*

- Property values increased slightly post-road diet on the corridor: $229/square foot pre-road diet to $270/square foot post-road diet
- There is a disconnect between how businesses think their customers travel to shop and how customers reported traveling – 60-75% of businesses said customers drive, while only about 15-30% of customers reported driving
- Customers exhibited no significant preference for shopping on wide or narrow streets in survey responses; convenience and availability of needed products or services are larger determinants of where customers choose to shop
- After the road diet, this portion of York Blvd experienced a 23% reduction in pedestrian/automobile collisions and a 27% reduction in injuries.[2]

Case Study: Ocean Park Blvd, Santa Monica (TRAFFIC/SAFETY)[3]

The City of Santa Monica installed a road diet on 1.1 miles of Ocean Park Blvd in 2008 consisting of a four to three lane road diet and addition of bike lanes. Ocean Park Blvd is a neighborhood commercial district and carried about 23,000 vehicles per day prior to the road diet. There are multiple schools in the area and safety issues had been identified.

Safety and traffic results:

- 65% reduction in collisions in first nine months
- Traffic volumes decreased to about 19,000-20,000 vehicles per day after the road diet
- Vehicles appeared to move to the I-10 freeway and traffic counts on adjacent side streets remained stable to pre-road diet volumes (all info from US DOT FHA Road Diet Case Studies)

Case Study: Stone Way N, Seattle (TRAFFIC)

The City of Seattle completed a road diet on Stone Way N in 2007, reducing mixed use traffic lanes from four to three and adding bike lanes. At the time of implementation, Stone Way N carried 13,000 vehicles per day and had residential, retail and commercial adjacent land uses. The project was undertaken to improve pedestrian safety at crosswalks and enact the bicycle lanes called for in the Bicycle Master Plan.

After implementation of the road diet:

- Automobile speeds declined. Prior to the roadway redesign, 4 percent of vehicles were traveling in excess of 40mph (in a 30mph zone); after, 1% were traveling at 40mph.
- Vehicle traffic decreased approximately 6 percent in the corridor, while bicycling increased 35%
- Vehicles have not diverted to nearby side streets; in fact, traffic decreased even more substantially on side streets than on Stone Way. To the west, Midvale decreased 18% and to the east, Interlake decreased 34%

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[2] LA DOT Bike Blog (2013) *York Boulevard Road Diet Traffic Safety Analysis*, https://ladotbikeblog.wordpress.com/2013/08/06/york-blvd-road-diet-traffic-safety-analysis/

[3] US Department of Transportation – Federal Highway Administration (2015) *Road Diet Case Studies*, http://safety.fhwa.dot.gov/road_diets/case_studies/roaddiet_cs.pdf

- Total collisions declined 14% between the periods of 2005-07 and 2007-09; pedestrian collisions declined 80%

Conclusions

These case studies demonstrate that:

- **Fewer customers drive to shop than businesses think**, as on York Blvd in LA
- **Thriving shopping areas will not be negatively impacted by a road diet**; in fact, facilitating opportunities for pedestrians and cyclists to visit businesses will introduce new customers
- Current traffic on the Broadway corridor is safely in the range for a successful road diet; Ocean Park Blvd in Santa Monica had high daily traffic volumes but found that **side street traffic remained stable**
- **Adjacent side streets may not be overrun by new traffic** when a road diet is implemented; in fact, traffic may decrease in the area, as occurred in Seattle

NELSON
NYGAARD

MEMORANDUM

To: Sparky Harris, Jesse Gothan

From: Zabe Bent, Nelson\Nygaard Team

Date: November 20, 2015

Subject: Case Studies, signalization

Signal preemption is used to make signals for vehicular crossings of rail tracks and intersections function together effectively, with the goal of having vehicles clear of the railroad crossing when a train approaches.

According to Caltrain design criteria, an effective interconnection system improves safety and vehicular traffic at rail crossings, the planning and design of the roadway signal system and expedites the diagnostics processing of both the railroad and roadway signal systems.[1]

When to Apply Signal Preemption

The Institute of Transportation Engineers (ITE) recommends that signal preemption be applied at rail crossings when there is a potential for traffic to extend across a rail crossing or a signalized state highway intersection.[2] Though Broadway is not a state highway, these risks apply to the rail crossing at the intersection of Broadway and 19th Street. To improve safety at this location, it is recommended that an active warning device be used to ensure effective preemption of the traffic warning system. With 20th Street being stop controlled, it is further recommended that a traffic signal be installed to prohibit vehicle movements toward the rail crossing. This will further ensure that the area will be clear of vehicles when a train is approaching, if no other traffic controls can ensure this level of effectiveness.

Signal Preemption Design

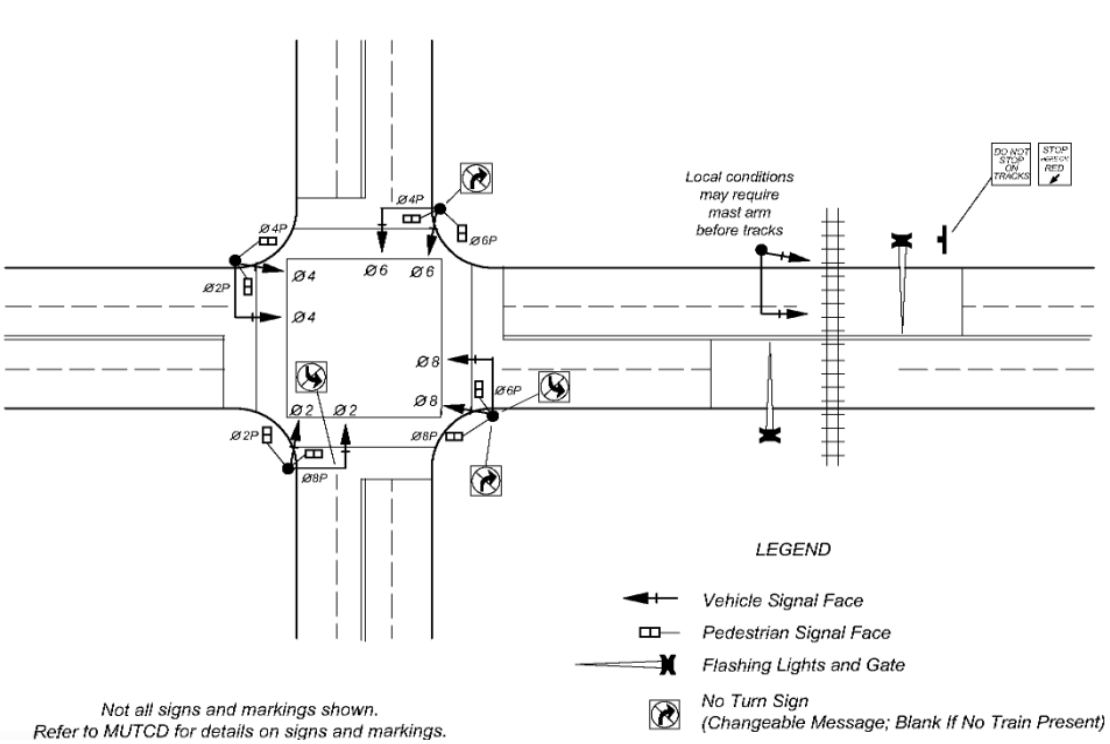
The distance between the rail tracks and the 19th Street and 20th Street intersections are approximately 110 feet and 160 feet, respectively. This falls short of the most recent 200 foot threshold of "long distance" approach set by the Manual on Uniform Traffic Control Devices (MUTCD) and therefore this crossing should follow the ITE best practices for "short distances". At rail crossings with "short distances" and likelihood for frequent vehicle queuing over the rail tracks, a pre-signal should be installed even if gates are used at the crossing.ITE further recommends that evaluations be made to accommodate large trucks that may turn toward the tracks. If these vehicles cannot safety execute the turn and remain both behind the rail crossing

[1] Caltrain Design Criteria, 2007 http://www.caltrain.com/assets/_engineering/engineering-standards-2/criteria/CHAPTER7.pdf.

[2] Preemtion of Traffic Signals near Railroad Crossings: An ITE Recommended Practice, http://library.ite.org/pub/e1dca8bc-2354-d714-51cd-bd0091e7d820.

wait line and out of the intersection, additional black-out, internally illuminated, or variable message signs should be used to further restrict turning traffic.

Figure 1 Typical Two-Phase Signal with Pre-Signal



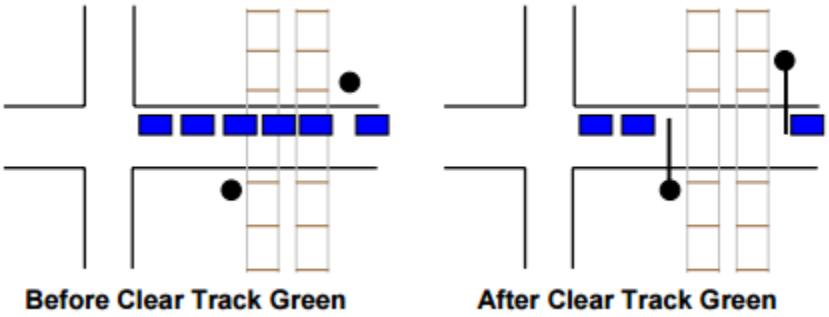
Source: Preemtion of Traffic Signals Near Railroad Crossings, An ITE Recommended Practice, http://library.ite.org/pub/e1dca8bc-2354-d714-51cd-bd0091e7d820

When a pre-signal is used, intervals should be progressively timed with signals downstream to ensure there is adequate time for vehicles to clear the rail crossing. The progressive timing should take vehicles that need to stop prior to crossing the tracks (e.g. school busses) into consideration. For added safety, vehicle detection could be used in the clear storage area on either side of the

tracks to provide additional security for instances where vehicles could get trapped within the minimum track clearance zone by extending the clear track green interval.[3]

To further prohibit vehicular movement when a train approaches, an interconnect circuit or railroad preemption circuit can be used to link the railroad equipment with the traffic signal controller. These circuits are designed to be closed in the absence of a train, though when an approaching train is detected the circuit will open. It is important to note that these circuits are designed to be "failsafe" and engineers should consider the effects of an extended railroad preempt. Implementing interconnect circuits requires that green track clear times be determined to allow adequate time for vehicles to clear out of the track zone and remain in the vehicle storage zone.[4]

Figure 2 Vehicles to be Cleared during Clear Track Green Times



Source: Guide for Traffic Signal Preemtion Near Railroad Grade Crossing, http://d2dtl5nnlpfr0r.cloudfront.net/tti.tamu.edu/documents/1439-9.pdf.

Pedestrian Safety

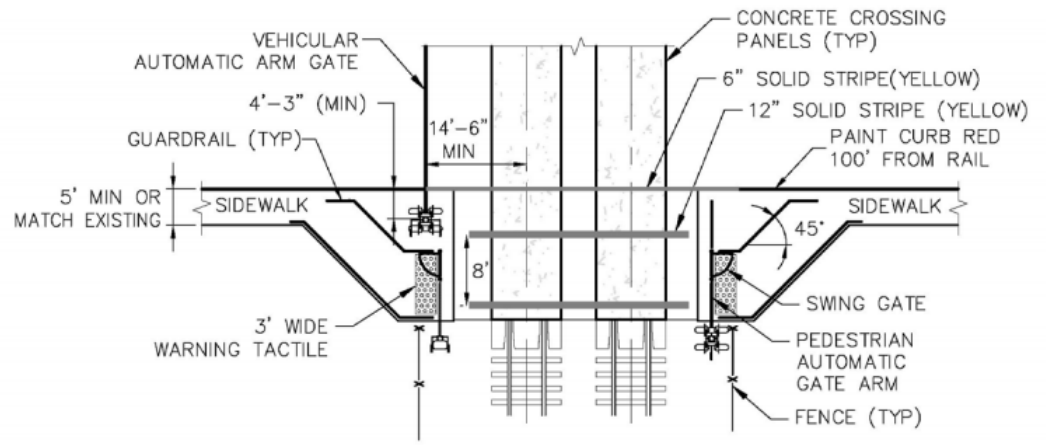
Caltrain Design Criteria recognizes that in urban areas pedestrians will cross rail tracks and roads whether or not there is a designated place to do so. Therefore, Caltrain Design Standards require that pedestrian safety features be used at all rail crossings in urban areas. At grade crossings, Caltrain requires active warning devices be used for pedestrian crossing areas. Further, automatic pedestrian gate arms and passive traffic control devices may be installed, and if necessary should be included at all four quadrants of where vehicular crossing occurs. If automatic pedestrian gate arms are used, these should not be attached to the vehicular gate mechanism as it increases the potential for failure.[5]

[3] Preemtion of Traffic Signals near Railroad Crossings: An ITE Recommended Practice, http://library.ite.org/pub/e1dca8bc-2354-d714-51cd-bd0091e7d820.

[4] Guide for Traffic Signal Preemtion near Railroad Grade Crossing, 2000, http://d2dtl5nnlpfr0r.cloudfront.net/tti.tamu.edu/documents/1439-9.pdf.

[5] Caltrain Design Criteria, 2007 http://www.caltrain.com/assets/_engineering/engineering-standards-2/criteria/CHAPTER7.pdf.

Figure 3 Typical Pedestrian Sidewalk at Vehicular Crossing



Source: Caltrain Design Criteria, Chapter 7-Grade Crossings, http://www.caltrain.com/assets/_engineering/engineering-standards-2/criteria/CHAPTER7.pdf.

Conclusion

Safety at railroad crossings in urban areas can be enhanced using signal preemption and interconnect circuits. These systems allow for advanced warnings when trains approach and coordinate traffic movement to prohibit moving vehicles from approaching the rail crossing when trains approach. These methods also facilitate the safe placement of vehicles at intersections near rail crossings by allowing sufficient time for vehicles to exit the clear zone of a rail crossing. Each of these methods can be further coordinated with pedestrian safety features at rail crossings to create a safe environment for both pedestrians and vehicles.

MEMORANDUM

DATE: February 12, 2016

TO: Zabe Bent, Nelson\Nygaard

FROM: John Long and Sean Carney, DKS Associates

SUBJECT: **Traffic Analysis of Broadway Complete Streets Plan**

This memorandum documents the traffic operations analysis that was conducted by DKS Associates on the proposed Broadway Complete Streets Plan.

Background

The Broadway Complete Streets Plan involves a range of design elements that are intended:

- Balance accessibility for all modes of transportation in the Broadway Corridor
- Enhance safety and comfort for all modes, especially pedestrians and bicyclists
- Encourage economic revitalization and reinvestment along the Broadway Corridor

The Plan involves a "road diet" that will reduce travel lanes along Broadway from four (two in each direction) to three (one in each direction plus a center lane for left turns). The road diet, which is the current design used on the western portion of Broadway (west of 9th Street), will allow continuous on-street (Class 2) bike lanes along the full Project Corridor (west of SR 99). The Plan also includes some design features at key intersections along Broadway to improve pedestrian safety while accommodating turning movements with high traffic volumes.

The traffic capacity and operations along Broadway will be controlled by the capacity of its signalized intersections. During peak commute hours, the reduction in travel lanes on Broadway may cause some traffic to divert to parallel streets, especially W Street, X Street and 2nd Avenue. Thus the analysis of the Plan focuses on the traffic operations of 32 intersections along Broadway, W Street, X Street and 2nd Street between 5th Street and SR 99 during the AM and PM peak hours for traffic volumes on average weekdays.

The City of Sacramento is currently conducting a Downtown Transportation Study that is defining a comprehensive multi-modal transportation network for the street "Grid" that serves Downtown and Midtown. A Draft Preferred Network, called "Grid 2.0" has been defined that includes the proposed Broadway Complete Streets Plan and "conversions" of a number of one-way streets in the Grid. These street conversions would reduce the number travel lanes on some one-way streets to accommodate bike lanes or exclusive transit lanes. Grid 2.0 includes changes to the following north-south streets that intersect Broadway:

1) 16th Street between Broadway and X Street would be converted from three northbound lanes to two northbound lanes and one southbound lane. Providing a southbound travel lane would reduce the number of eastbound to southbound right-turn vehicles at the Broadway/Land Park Drive/16th Street intersection and thereby reduce conflicts with pedestrians at this intersection

2) A new one-way southbound street would connect X Street to Broadway at the southbound on-ramp to SR 99. This new street is intended to divert some eastbound traffic from Broadway to X Street.

Since these two improvements are intended to reduce traffic volumes on portions of Broadway, their implementation was assumed in the analysis scenarios that include the Broadway Complete Streets Plan.

Another key project that will influence travel patterns in the study area is the proposed new Sacramento River Crossing that is included in the 2016 Metropolitan Transportation Plan / Sustainable Community Strategy (MTP/SCS). Consistent with the assumptions used by SACOG for the MTP/SCS, this 2036 analysis includes a new bridge that extends from the western end of Broadway to South River Road in West Sacramento. It was assumed that the new River Crossing would be connected to W Street and X Street and that Broadway would be terminated west of 5th Street and would not connect directly to new River Crossing.

Analysis Methodology

Traffic operations were evaluated for the following scenarios:

- **Existing:** 2015 traffic conditions
- **Existing Plus Plan:** 2015 traffic conditions with the Broadway Complete Streets Plan plus the two Grid 2.0 improvements to the north-south streets that intersect Broadway (see above)
- **2036 without Plan:** Projected 2036 conditions without the Broadway Complete Streets Plan. Under this scenario, the remainder of the Draft Preferred Network for Grid 2.0 was assumed except the two Grid 2.0 improvements to the north-south streets that intersect Broadway (see above)
- **2036 with Plan:** Projected 2036 traffic conditions with the Broadway Complete Streets Plan plus the two Grid 2.0 improvements to the north-south streets that intersect Broadway (see above)

Figure 1 shows the location of the 32 study intersections.

Traffic counts were conducted during peak periods (7 to 9 AM and 4 to 6 PM) on an average weekday in 2015 at the study intersections and were used to analyze traffic operation under existing conditions. SACOG's regional travel demand model (SACSIM) was used to predict the changes in travel demand and traffic patterns under the other scenarios. The 2036 traffic forecasts are based on the SACOG's 2036 development estimates for the 2016 Metropolitan Transportation Plan / Sustainable Community Strategy (MTP/SCS).

For signalized and unsignalized intersections, operational analyses were conducted using a methodology outlined in the Transportation Research Board's Highway Capacity Manual, 2000 (HCM 2000) and Highway Capacity Manual, 2010 (HCM 2010). The HCM 2010 methodology was used in all locations except where signalized intersection characteristics deemed the methodology inappropriate. These locations include intersections with unconventional signal phasing, and locations adjacent to light rail tracks where additional delay occurs due to light rail operations. In the selected locations, the HCM 2000 methodology was employed.

The methodology utilized is known as an "operational analysis". This procedure calculates an average control delay per vehicle for each movement at an intersection, and assigns a level of service designation based upon the average delay per vehicle. **Table 1** presents the level of service criteria for signalized and unsignalized intersections based on the HCM methodology.

Figure 1
Study Intersections

Table 1: Level of Service Criteria (Intersections)		
Level of Service (LOS)	Total Delay Per Vehicle (seconds)	
	Signalized Intersections	Unsignalized Intersections
A	≤ 10	≤ 10
B	> 10 and ≤ 20	> 10 and ≤ 15
C	> 20 and ≤ 35	> 15 and ≤ 25
D	> 35 and ≤ 55	> 25 and ≤ 35
E	> 55 and ≤ 80	> 35 and ≤ 50
F	> 80	> 50
Source: HCM 2010 Highway Capacity Manual, Transportation Research Board, Washington, D.C., 2010.		

Figure 2 shows the existing peak hour traffic volumes and lane geometry for the intersections along Broadway while **Figures 3, 4 and 5** show the estimated peak hour traffic volumes and lane geometry for the other analysis scenarios.

The Synchro software was used to analyze levels of service at the study area intersections. The output sheets from that analysis (one per intersection per peak hour) are provided in a separate attachment to this memorandum and show traffic volumes, geometry assumed signal phasing/timing and the calculations used to estimate delay and levels of service.

By 2036, the new Sacramento River Crossing is assumed to be constructed with connections to W and X Streets. The location and design of those connections and how freeway ramp connections to I-5 and US 50 may or may not be modified is unknown. Also Grid 2.0 proposes to convert 5th Street to two-way operations north of X Street. At this time, it is unknown how the intersections W Street and X Street with 5th Street will be redesigned to accommodate future traffic flows. Therefore, levels of service were not provided for these intersections under 2036 conditions. However, traffic forecast indicate that the Broadway Complete Streets Plan will not significantly change traffic volumes at these intersections.

Levels of Service Analysis

Table 2 summarizes the peak hour levels of service for the four analysis scenarios. This table indicates the following:

- All of the study intersections currently operate at LOS D or better conditions during the AM and PM peak hours on a typical weekday.
- The road diet on Broadway, coupled with a proposed new one-way southbound street connecting X Street to Broadway at the southbound on-ramp to SR 99, would divert some Broadway traffic to W Street and X Street, especially under 2036 conditions. The changes in levels of service at most study intersections due to Broadway Complete Streets Plan are projected to be modest.
- The only location where the proposed Broadway Complete Streets Plan would cause LOS F conditions is the intersection of Broadway with 19th Street/Freeport Boulevard during the PM peak hour under 2036 conditions. It should be noted that the 2036 development forecasts prepared by SACOG assumed a significant increase in college enrollment at Sacramento City College on Freeport Boulevard, which results in a significant traffic increase on 19th Street and Freeport Boulevard.

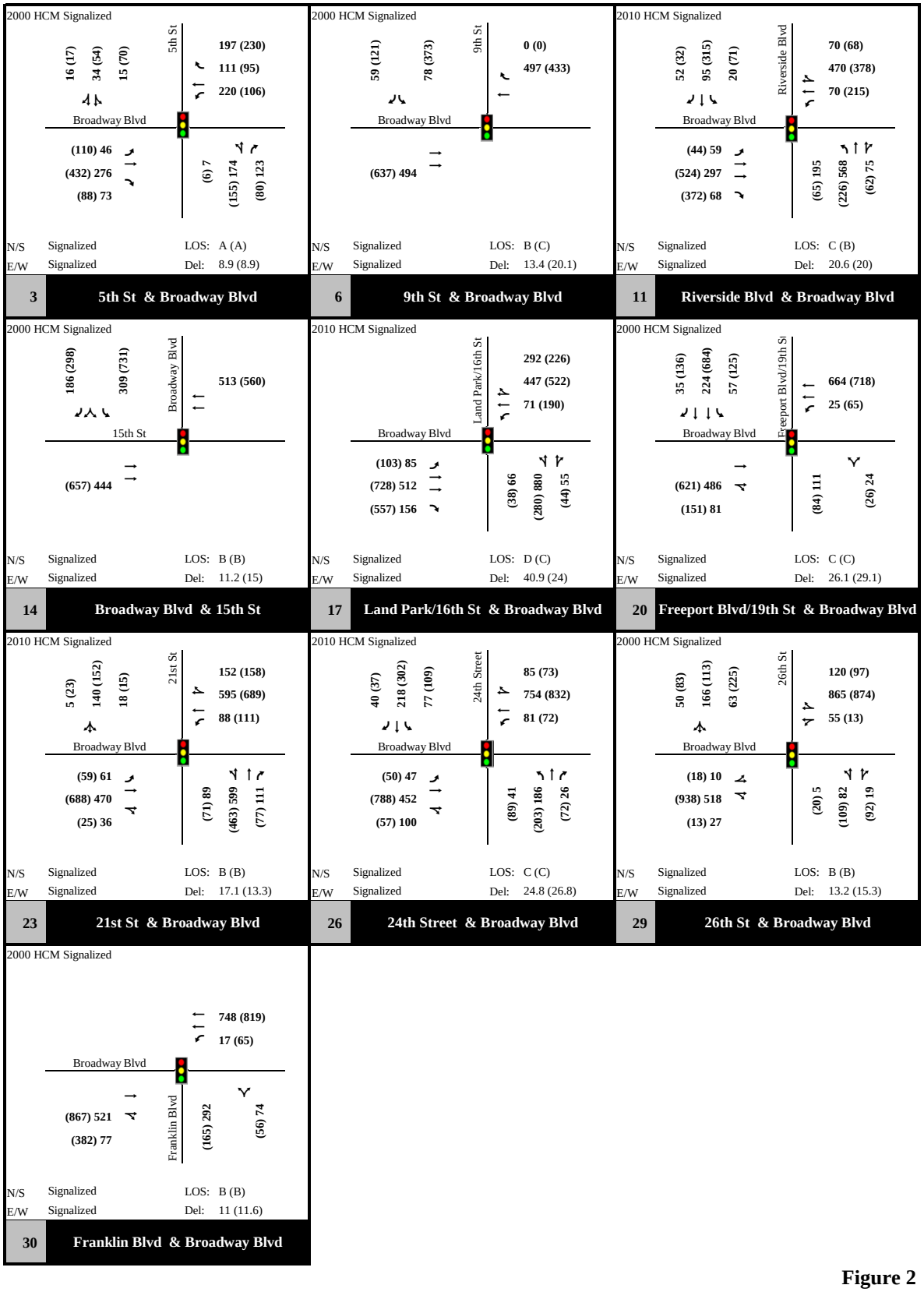


Figure 2
Existing Intersection Volumes, Geometrics, and LOS

AM (PM)

DKS

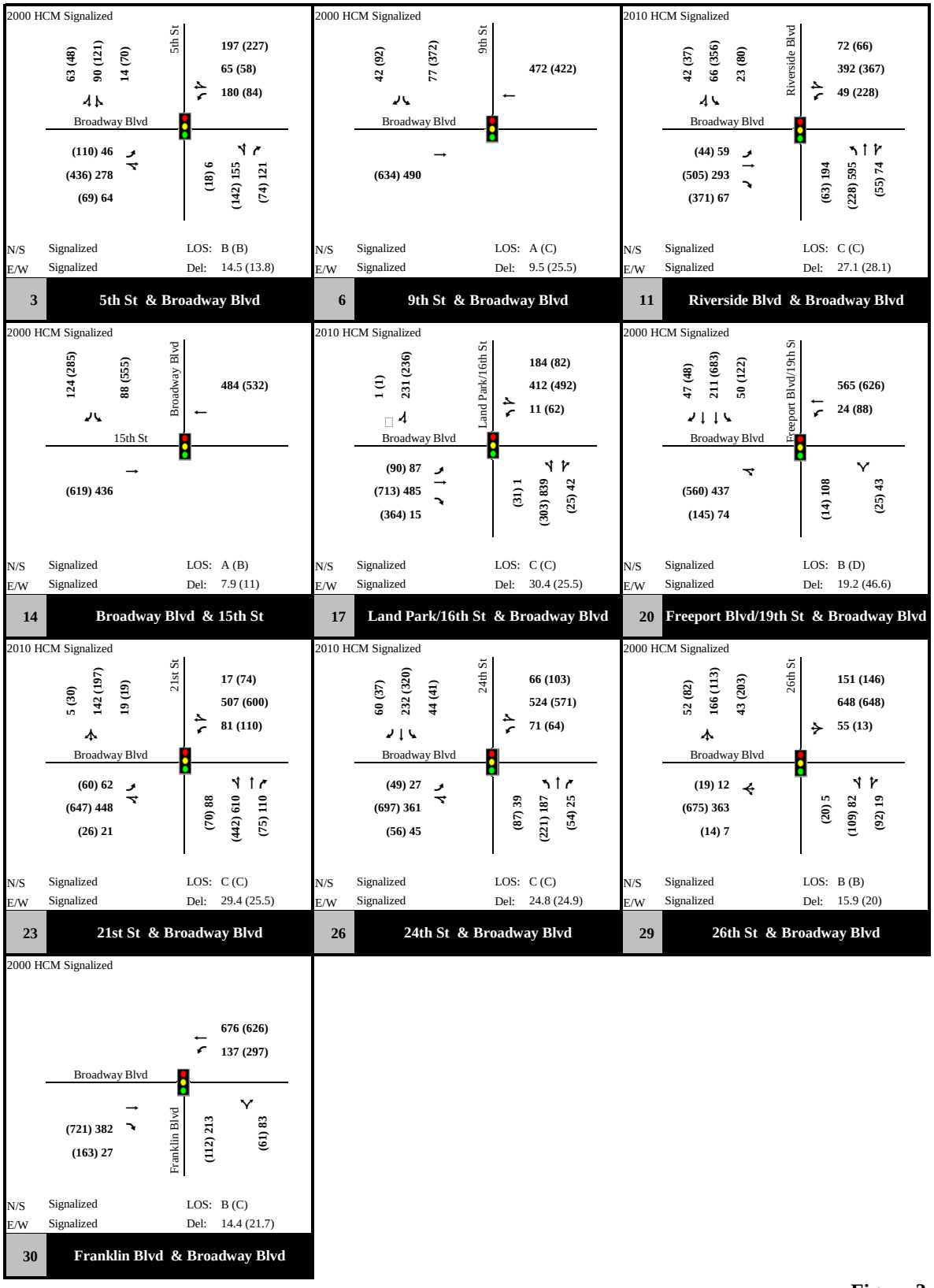


Figure 3
Existing with Plan Intersection Volumes, Geometrics, and LOS

AM (PM)

DKS

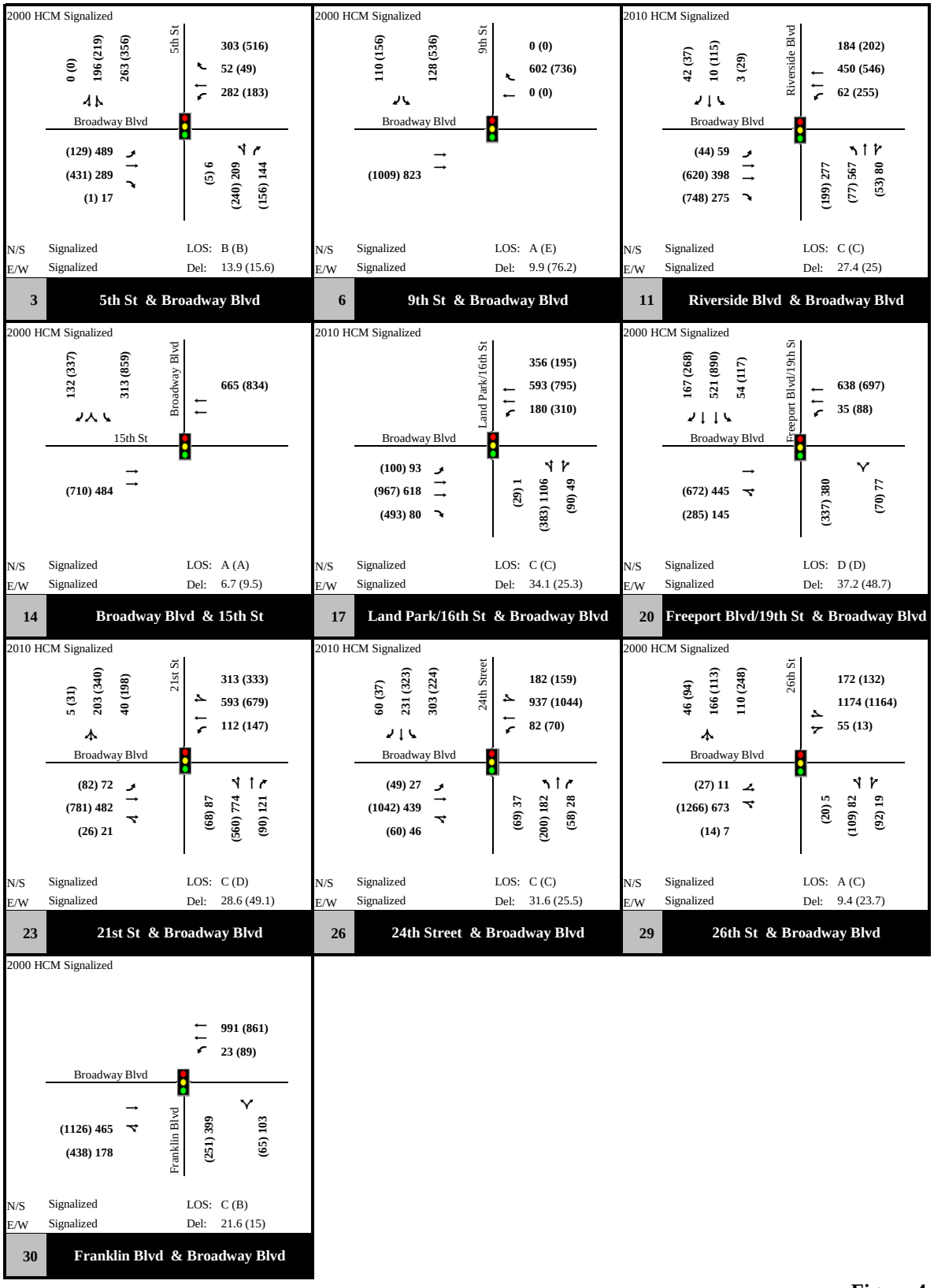


Figure 4
2036 without Plan Intersection Volumes, Geometrics, and LOS

AM (PM)

DKS

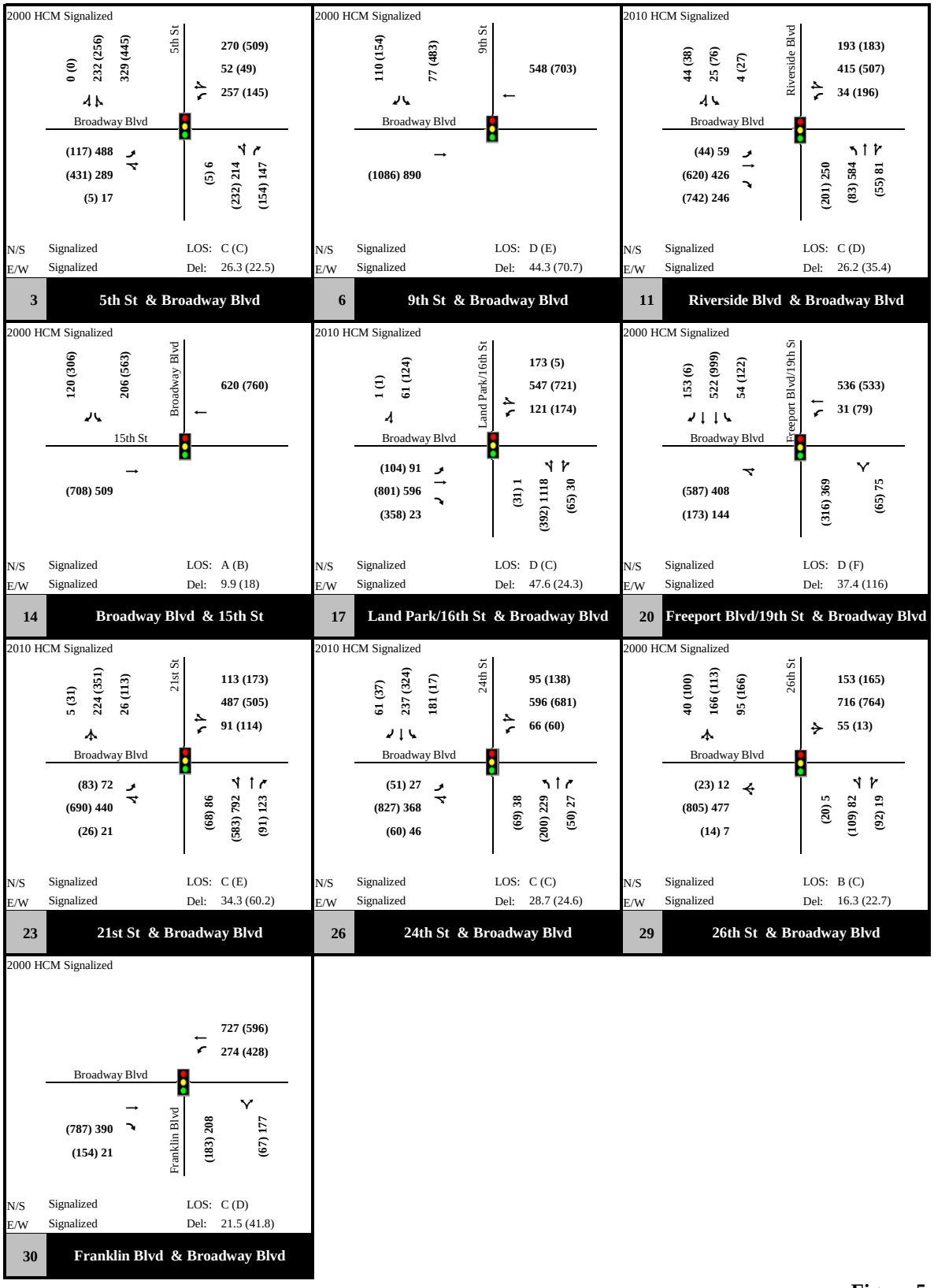


Figure 5
2036 with Plan Intersection Volumes, Geometrics, and LOS

AM (PM)

DKS

Table 2: Summary of Peak Hour Intersection Levels of Service																
Intersection	Existing				Existing Plus Plan				2036 without Plan				2036 with Plan			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
1 5th St & W St	B	11.5	D	40.6	B	11.5	D	40.6	Unknown intersection geometrics							
2 5th St & X St	B	17.2	C	29.8	B	17.2	C	29.8								
3 5th St & Broadway	A	8.9	A	8.9	B	14.5	B	13.8	B	13.9	B	15.6	C	26.3	C	22.5
4 9th St & W St	B	19.2	B	14.2	A	6.2	B	15.3	B	10.5	B	18.2	B	10.6	B	16.6
5 9th St & X St	C	23.9	A	6.6	B	10.1	A	7.8	C	26.5	A	9.7	A	5.4	B	11.9
6 Broadway & 9th St	B	13.4	C	20.1	A	9.5	C	25.5	A	9.9	E	76.2	D	44.3	E	70.7
7 10th St & W Street	C	25.8	C	25.4	A	7.6	A	6.1	A	7.5	A	6.3	A	9.0	A	6.9
8 10th St & X Street	A	7.9	A	8.2	B	13.4	A	7.4	B	10.6	A	8.7	B	13.0	A	7.3
9 Riverside Blvd/11th St & W St	B	14.5	B	10.8	B	13.5	B	16.9	A	8.3	B	10.0	A	9.4	B	15.9
10 Riverside Blvd & X St	B	12.8	C	20.7	A	7.1	B	16.9	B	15.8	C	23.9	B	11.4	D	36.3
11 Riverside Blvd & Broadway	C	20.6	B	20.0	C	27.1	C	28.1	C	27.4	C	25.0	C	26.2	D	35.4
12 15th St & W St	B	12.7	B	11.7	A	9.8	B	13.3	B	13.1	C	20.8	A	10.0	B	16.3
13 15th St & X St	C	20.2	D	39.6	C	25.9	D	41.1	C	29.3	D	51.3	D	40.0	D	40.7
14 Broadway & 15th St	B	11.2	B	15.0	A	7.9	B	11.0	A	6.7	A	9.5	A	9.9	B	18.0
15 16th St & W St	D	53.6	D	36.7	A	7.6	B	11.4	C	24.5	B	13.0	C	20.2	B	14.7
16 16th St & X St	B	13.8	C	26.0	B	13.2	B	14.1	B	15.8	B	17.9	C	20.0	C	24.2
17 Land Park/16th St & Broadway	D	40.9	C	24.0	C	30.4	C	25.5	C	34.1	C	25.3	D	47.6	C	24.3
18 19th St & W St	A	8.1	B	10.5	A	7.0	B	10.4	A	9.5	C	21.3	B	10.7	B	19.0
19 19th St & X St	B	13.3	B	11.5	B	13.6	B	13.2	B	14.8	C	23.6	B	11.7	B	17.6
20 Freeport Blvd/19th St & Broadway	C	26.1	C	29.1	B	19.2	D	46.6	D	37.2	D	48.7	D	37.4	F	116.0

Table 2: Summary of Peak Hour Intersection Levels of Service

Intersection	Existing				Existing Plus Plan				2036 without Plan				2036 with Plan			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
21 21st St & W St	A	9.0	A	8.9	B	10.5	B	12.0	B	17.0	A	9.1	A	8.3	B	15.1
22 21st St & X Street	B	14.7	B	16.6	A	4.6	A	8.8	B	12.0	B	17.7	A	7.9	B	12.3
23 21st St & Broadway Blvd	B	17.1	B	13.3	C	29.4	C	25.5	C	28.6	D	49.1	C	34.3	E	60.2
24 24th St & W Street	A	6.1	A	7.0	A	4.1	A	7.5	A	7.4	B	13.7	A	5.7	B	10.2
25 24th St & X Street	A	5.7	A	5.6	B	10.3	A	8.3	A	6.9	A	8.7	A	7.9	A	7.4
26 24th Street & Broadway Blvd	C	24.8	C	26.8	C	24.8	C	24.9	C	31.6	C	25.5	C	28.7	C	24.6
27 26th St & W Street	B	13.6	B	12.7	B	18.2	B	16.5	B	17.2	B	13.4	C	20.4	B	18.8
28 26th St & X Street	B	10.6	A	9.2	B	15.6	B	16.3	B	13.0	A	9.5	B	12.2	B	10.8
29 26th St & Broadway Blvd	B	13.2	B	15.3	B	15.9	B	20.0	A	9.4	C	23.7	B	16.3	C	22.7
30 Franklin Blvd & Broadway Blvd	B	11.0	B	11.6	B	14.4	C	21.7	C	21.6	B	15.0	C	21.5	D	41.8
31 Freeport Blvd & 2nd Ave	B	14.1	B	19.5	C	20.4	C	27.5	B	12.2	E	67.5	C	27.8	E	59.0
32 21st St & 2nd Ave	B	12.0	B	10.0	B	18.3	B	14.0	C	26.6	A	9.7	D	37.9	B	13.9

Source: DKS Associates, 2016

Queuing Analysis

To assist the preliminary design for the Broadway Complete Streets Plan, the Synchro model was used to estimate queuing along Broadway with the Plan with a focus on queues in left-turn lanes on Broadway at its signalized intersections.

The proposed design for the Broadway Complete Streets Plan calls for a continuous two-way left turn lane on most of Broadway, which allows access to driveways as well as unsignalized cross-streets. The analysis indicates that during peak hours the traffic queues for the through travel lanes along Broadway at many of its signalized intersection will extend for most of a block. Some motorists on Broadway that want to turn left at a signalized intersection could choose to use a portion of the continuous two-way left turn lane to access the left-turn lane at the down-stream traffic signal. However, some motorists will wait in the through-lane traffic queue until they are close to the signal.

The Sychro analysis software indicates that the queues at left-turn lanes along Broadway at its signalized intersections will be "metered" by the queues in the through lanes along Broadway. Thus the estimated queue lengths in the left-turn lanes at signalized intersections are modest.

Table 3 summarizes the queues estimated in this analysis.

Table 3
Estimated Queue Lengths (feet) for Left-turn Lanes along Broadway with Broadway Complete Street Plan

Intersection	AM Peak Hour				PM Peak Hour			
	Existing Plus Plan		2036 Plus Plan		Existing Plus Plan		2036 Plus Plan	
	EB	WB	EB	WB	EB	WB	EB	WB
5th St & Broadway Blvd	28	105	NA	**0**	56	48	148	**135**
Riverside Blvd & Broadway Blvd	73	**69**	74	**31**	60	226	60	**131**
16th St & Broadway Blvd	107	**0**	103	**89**	**68**	**45**	75	**117**
19th St & Broadway Blvd		**25**		**20**		**102**		**47**
21st St & Broadway Blvd	**48**	**85**	**40**	**81**	**38**	**99**	40	**101**
24th St & Broadway Blvd	**23**	**48**	**21**	**40**	**41**	**39**	29	**34**
Franklin Blvd & Broadway Blvd		**60**		**60**		**60**		**60**

Bold indicates estimates where the Sychro model projects that left-turn vehicle demand would be "metered" by queuing in through lanes along sections of Broadway

Source: DKS Associates, 2016

Travel Time Analysis

The Sychro model was also used to estimate the change in travel times along Broadway from west of 5th Street to east of Franklin Boulevard, which are summarized in **Table 4**. The model accounts for delays at signalized intersections plus the time related to queuing. However, the travel time estimates are not as accurate as those provided by a simulation model.

The analysis indicates that implementation of the Broadway Complete Streets Plan would result in a modest increase in eastbound travel times under existing conditions but significant increases in travel times under 2036 conditions.

Table 4
Estimated Change in Peak Hour Travel Times
West of 5th Street to East of Franklin Boulevard

	AM Peak Hour			PM Peak Hour		
	Travel Time (Minutes)		Percent Change	Travel Time (Min)		Percent Change
	Without Plan	With Plan		Without Plan	With Plan	
Existing						
Eastbound	7.4	8.4	13%	8.4	9.7	15%
Westbound	8.4	8.4	0%	9.7	9.7	0%
2036						
Eastbound	7.9	11.5	45%	9.0	18.0	100%
Westbound	8.4	14.0	67%	11.5	11.5	0%

Source: DKS Associates, 2016

MARK THOMAS & COMPANY, INC.
Providing Engineering, Surveying and Planning Services

Memorandum

To: Sparky Harris, City of Sacramento File: SA-15109

Cc:

From: Jake Weir, Mark Thomas & Company

Date: February 24, 2016

RE: **Broadway Cost Estimate Memo**

Cost Estimate Approach and Assumptions

Mark Thomas & Company (MTCo) has been working in concert with Nelson/Nygaard to provide planning level cost estimates based on Option 1 & Option 2 (Preferred) Concept Drawings for the Broadway Complete Streets Plan. MTCo also estimated a first phase to install a road diet on Broadway that could be a precursor to Option 1 or Option 2 at significantly lower cost.

The cost estimates are for construction only and do not include the following elements:

- Right of Way Acquisition
- Utility Relocation
- Project conform work on private properties (if required)
- Soft costs including Project Approval & Environmental Document preparation, PS&E Design Costs, City of Sacramento staff time.

Road Diet - First Phase

Constructing a first phase road diet in the near term via restriping could be completed at significantly lower cost compared to completing Option 1 or Option 2. These improvements would reconfigure Broadway with striping only. Slurry seal is recommended to clean up the roadway surface after striping removal. The following items from Option 1/Option 2 estimates would be required to complete a First Phase road diet:

7300 Folsom Boulevard, Suite 203 Sacramento, CA 95826
www.markthomas.com ***Tel:*** (916) 381-9100 ***Fax:*** (916) 381-9180

Quantity Summary: First Phase					
Item No.	Item	Unit	Cost per unit	Quantity	Total
10.	Restriping- Road Diet with Buffered Bicycle Lane	8th St to Franklin Blvd	$125,000	1	$125,000
11.	Restriping- New Crosswalk	EA	$1,000	57	$57,000
12.	Green Thermoplastic at intersections	Per Intersection	$3,000	28	$84,000
13.	Green Thermoplastic at driveways	Per Average Driveway	$1,500	8	$12,000
16.	Slurry Seal	Ton	$275	670	$184,250
17.	Signal Modification	EA	$25,000	7	$175,000
18.	Traffic Control[1]	LS	$30,000	1	$30,000
19.	Prepare WPCP	LS	$10,000	1	$10,000
				Sub-total	$677,250
20.	Minor Items	LS	10% of Items 1-19	1	$68,000
				Sub-total	$745,250
21.	Mobilization	LS	10% of Items 1-20	1	$75,000
				Sub-total	$820,250
22.	Contingencies	LS	30% of Items 1-21	1	$247,000
				Total	**$1,067,250**

1. Assume 25 Working Days of Traffic Control

Assumptions for First Phase work include:

- Traffic Signals will remain in place; minor signal modification/updating is included
- Striping removal cost is included in the price of restriping

Road Diet - Option 1

Proposed features specific to Option 1 include:

- Maintaining slip lane configuration at Land Park Drive and Riverside Blvd while adding raised crosswalks
- Expanded sidewalks on the north side of Broadway between 18th and 20th Streets
- Raised intersection and crosswalk at Broadway/20th Street

Road Diet - Option 2

Proposed features specific to Option 2 include:

- Squaring up right turn movements at Land Park Drive and Riverside Blvd (removing slip lane configuration) by constructing expanded bulbs
- Constructing Bus boarding islands

Quantity Summary: Option 1					
Item No.	Item	Unit	Cost per unit	Quantity	Total
1.	Bulbout (standard) incl. Drainage work	EA	$15,000	12	$180,000
2.	Bulbout (large) incl. Drainage work	EA	$50,000	5	$250,000
3.	Raised Crosswalk at Slip Lane	EA	$12,500	2	$25,000
4.	Widened Sidewalk (4') incl. raised curb and drainage work	Average block (one side)	$75,000	8	$600,000
5.	Widened Sidewalk (7') incl. raised curb and drainage work	Average block (one side)	$110,000	2	$220,000
6.	Convert rolled curb to raised curb (no widening)	Average block (one side)	$22,500	40	$900,000
7.	Median Island (5' concrete)	LF	$130	780	$101,400
8.	Median Island (10' landscaped)	LF	$350	1,490	$521,500
9.	New Midblock Crossing with Bulbouts	EA	$12,000	2	$24,000
10.	Restriping- Road Diet with Buffered Bicycle Lane	8th St to Franklin Blvd	$125,000	1	$125,000
11.	Restriping- New Crosswalk	EA	$1,000	57	$57,000
12.	Green Thermoplastic at intersections	Per Intersection	$3,000	28	$84,000
13.	Green Thermoplastic at driveways	Per Average Driveway	$1,500	8	$12,000
14.	Bus Boarding Island with raised crossing	EA (average size)	$22,500	0	$0
15.	Raised Intersection at 20th St	EA	$22,500	1	$22,500
16.	Slurry Seal	Ton	$275	670	$184,250
17.	Signal Modification	EA	$10,000	7	$70,000
18.	Traffic Control	LS	$250,000	1	$250,000
19.	Prepare WPCP	LS	$10,000	1	$10,000
				Sub-total	$3,636,650
20.	Minor Items	LS	10% of Items 1-19	1	$364,000
				Sub-total	$4,000,650
21.	Mobilization	LS	10% of Items 1-20	1	$401,000
				Sub-total	$4,401,650
22.	Contingencies	LS	30% of Items 1-21	1	$1,321,000
				Total	**$5,722,650**

Quantity Summary: Option 2					
Item No.	Item	Unit	Cost per unit	Quantity	Total
1.	Bulbout (standard) incl. Drainage work	EA	$15,000	15	$225,000
2.	Bulbout (large) incl. Drainage work	EA	$50,000	9	$450,000
3.	Raised Crosswalk at Slip Lane	EA	$0	0	$0
4.	Widened Sidewalk (4') incl. raised curb and drainage work	Average block (one side)	$75,000	9	$675,000
5.	Widened Sidewalk (7') incl. raised curb and drainage work	Average block (one side)	$110,000	1	$110,000
6.	Convert rolled curb to raised curb (no widening)	Average block (one side)	$22,500	40	$900,000
7.	Median Island (5' concrete)	LF	$130	780	$101,400
8.	Median Island (10' landscaped)	LF	$350	1,490	$521,500
9.	New Midblock Crossing with Bulbouts	EA	$12,000	2	$24,000
10.	Restriping- Road Diet with Buffered Bicycle Lane	8th St to Franklin Blvd	$125,000	1	$125,000
11.	Restriping- New Crosswalk	EA	$1,000	57	$57,000
12.	Green Thermoplastic at intersections	Per Intersection	$3,000	28	$84,000
13.	Green Thermoplastic at driveways	Per Average Driveway	$1,500	8	$12,000
14.	Bus Boarding Island with raised crossing	EA (average size)	$22,500	2	$45,000
15.	Raised Intersection at 20th St	EA	$22,500	0	$0
16.	Slurry Seal	Ton	$275	670	$184,250
17.	Signal Modification	EA	$50,000	7	$350,000
18.	Traffic Control	LS	$250,000	1	$250,000
19.	Prepare WPCP	LS	$10,000	1	$10,000
				Sub-total	$4,124,150
20.	Minor Items	LS	10% of Items 1-19	1	$413,000
				Sub-total	$4,537,150
21.	Mobilization	LS	10% of Items 1-20	1	$454,000
				Sub-total	$4,991,150
22.	Contingencies	LS	30% of Items 1-21	1	$1,498,000
				Total	**$6,489,150**

Cost Summary

The higher cost for Option 2 can be attributed to the following:

- More expensive signal modification is anticipated for Option 2 due to removing islands at Land Park Drive and Riverside Boulevard necessitating moving signal locations for two legs of the intersection at each location.
- Constructing larger and additional bulbs within Option 2
- Constructing an additional block of extended sidewalk in Option 1

Estimate Assumptions

- Existing drainage trunk lines and manholes will be relocated where the alignment is beneath proposed median. Typically, Sacramento Department of Utilities requires drainage to be located outside of sidewalk/median improvements for maintenance or utility work in the future.
- Existing drainage inlets and laterals within the footprint of proposed bulbs are assumed to be replaced.
- Pavement rehabilitation is not required.
- Cross slope correction is not required. However, an edge grind and 0.2' overlay extending to the bike lane buffer is included in the construction of vertical curb.
- A slurry seal is necessary to provide a clean finish for the project due to anticipated lane shifting from traffic handling during construction.
- Onsite work including recirculation of private properties is excluded.
- Paved medians are constructed with glue on or dowelled-in curbs and roadway excavation is not associated with paved median work.
- All concrete work next to the roadway includes saw cutting 2' into the existing pavement and replacing with 1' full depth hot mix asphalt.

Broadway Complete Streets Plan: Potential Funding Sources

January 26, 2016

Prepared by Josh Meyer, Local Government Commission

The improvements discussed in this plan will not be implemented all at once. A combination of time and persistence, grant writing, collaborative partnerships, layering and leveraging of multiple funding sources will be necessary to bring the complete streets solutions for Broadway from concept to construction.

The most promising programs available to help fund proposed improvements are identified below. They provide potential opportunities for roadway, sidewalk and streetscape improvements, traffic controls, and other infrastructure to support multi-modal access, safety and mobility, corridor enhancement and economic development.

State and Regional Programs

The Sacramento Area Council of Governments (SACOG) is an association of local governments in the six-county Sacramento area that provides transportation planning and funding for the region. SACOG conducts programming rounds to allocate funds to projects based on available apportionments from federal and state sources, including regional Congestion Mitigation and Air Quality (CMAQ), Regional Surface Transportation Program (RSTP), State Transportation Improvement Program (STIP), and Active Transportation Program (ATP) funds. These funds are distributed to member agencies through Regional ATP, Air Quality, Regional Bicycle & Pedestrian Funding Program (BPFP), Community Design, Transportation Demand Management (TDM) and Regional/Local Funding Programs.

The table on the next page summarizes these funding programs that are administered by SACOG. It also includes programs administered by the State that are possible candidates for funding elements of the Broadway Complete Streets Plan.

Summary of State and Regional Funding Programs

	State Active Transportation Program	Regional Active Transportation Program	Bicycle & Pedestrian Funding Program	Community Design Funding Program	Regional/Local Funding Program	State Affordable Housing and Sustainable Communities Program
Administrator	Caltrans	Sacramento Area Council of Governments (SACOG)		SACOG	SACOG	Dept. of Housing and Community Development (HCD)
Purpose	Encourage increased use of active modes of transportation through walking/biking infrastructure improvements and programs.	The Regional ATP targets projects that increase walking/biking, improve safety, and benefit disadvantaged communities. The Regional BPFP concentrates on project performance to implement the MTP/SCS. Together, the programs strive to improve the region's active transportation system, air quality, and overall quality of life.		Physical implementation of SACOG Blueprint principles (compact development, mixed of land uses, transportation options, etc.)	Implement the MTP/SCS by providing Regional benefits.	Projects that reduce GHG emissions and VMT through land use, housing, transportation, and agricultural land preservation practices that support infill development
Funding Levels	$250,000 min. No max.	Infrastructure: $250,000 min. Programs: $50,000 min. No max.	Capital projects: $250,000 min. for Pre-construction-only projects: $150,000 min. Non-capital projects: $50,000 min. No max.	Categories: 1) Conventional: $300,000 to $4 million; Pre-construction $150,000-$500,000. 2) Complete Streets focus: $1.5 million-$4 million. 3) Non Competitive: max $100,000.	Capital projects do not have min or max project size.	$500,000 min. $20 million max.

Active Transportation Program (Statewide)

Pursuant to California Senate Bill 99 (Chapter 359, Statutes of 2013) and Assembly Bill 101 (Chapter 354, Statutes of 2013), the Active Transportation Program (ATP) was created to fund bicycle and pedestrian infrastructure and non-infrastructure projects. The ATP combines many federal and state funding streams previously used for bicycle, pedestrian, safety, and other related purposes into one funding stream with broad eligibilities.

Program funding is awarded in two stages, beginning with a statewide competition led by Caltrans, and followed by a regional competition led by the Metropolitan Planning Organizations (MPOs) across the state. SACOG is the MPO for the Sacramento region. Recommendations for awards are then submitted to the California Transportation Commission for final approval.

A minimum of 25% of the funds must benefit disadvantaged communities.

Eligible applicants include cities, counties, MPOs, transit agencies, natural-resource or public-lands agencies, tribal governments, private nonprofit tax-exempt organizations, and public schools or school districts.

The ATP consists of three components: the statewide component (50% of the funds), the small urban and rural component (10% of the funds), and the large MPO component (40% of the funds). Projects located within the boundaries of one of the nine large MPOs that were not selected in the statewide component are considered for funding through the MPO component.

Eligible projects for ATP funding include:

- Infrastructure – capital improvements, including planning, design and construction.
- Non-infrastructure – education, encouragement, enforcement and planning activities that further the program's goals.
- Combined Infrastructure and non-infrastructure activities.
- Plans, which must be stand alone.

Eligible examples include the development of bikeways and walkways, installation of traffic-control devices and lighting that improves safety for non-motorists, bike-share programs, bike-carrying facilities on public transit, bike parking and storage facilities, landscaping that improves bicycle-and pedestrian safety and convenience, trails that serve a transportation purpose, projects that improve the safety of non-motorized students, and education programs to increase walking and biking.

The minimum request for ATP funds is $250,000. This minimum does not apply to non-infrastructure projects (i.e., funding for plans and programs instead of construction) and Safe Routes to Schools projects. There is no maximum request and no match required, though leveraging of additional funds is encouraged and can increase the competitiveness of applications.

Both the State and regional (SACOG) ATP Cycle 2 call for projects were announced last spring with due dates in June 2105. Awards in the statewide category ranged from $110,000 to prepare an Active Transportation Plan to more than $10 million for construction of large-scale pedestrian and bicycle projects. On March 16th, 2016 the California Transportation Commission (CTC)

will approve the Cycle 3 CTC ATP Guidelines. The Cycle 3 Call for Projects is tentatively scheduled for late March 2016 through mid-June 2016 and includes 2019/20 and 202/21 state funding years totaling about $230M.

For more information:

- About ATP: dot.ca.gov/hq/LocalPrograms/atp
- 2015 Program Guidelines: catc.ca.gov/programs/ATP/2015/Final%20Adopted%202015%20ATP%20Guidelines.pdf

Regional Active Transportation Program (ATP) and Regional Bicycle and Pedestrian Funding Program (BPFP)

In 2015, SACOG consolidated the regional MPO component of the ATP with the Regional Bicycle and Pedestrian Program to enable applicants to efficiently and effectively apply to both programs (if applicable).

The Regional ATP targets projects that increase walking/biking, improve safety, and benefit disadvantaged communities. The Regional BPFP concentrates on project performance to implement the Region's Metropolitan Transportation Plan/Sustainable Communities Strategy. Together, the programs strive to improve the region's active transportation system, air quality, and overall quality of life.

Funds can be used for construction, as well as preliminary engineering, which includes environmental work and design, as well as for right-of-way phases. Non-infrastructure projects include bicycle and pedestrian planning, education, information, Safe Routes to School Programs, and marketing efforts.

Non-capital programs and projects are eligible for funding, but are of lower priority than capital projects and master plans. In addition to funding needed for master plans, approximately 10 percent of the Regional BPFP funds in a funding cycle may be awarded to non-capital programs.

Funding requests require 11.47% match. The minimum project size for capital projects including the construction phase applying to the Regional ATP and Regional BPFP is $282,390 ($250,000 funding award + $32,390 local match). Pre-construction-only projects applying directly to Regional BPFP have a project minimum of $169,434 ($150,000 funding award + $19,434 local match). The $282,390 threshold applies to all capital projects applying to the Regional ATP. Public agencies applying for funding for smaller projects may want to consider combining projects to meet the $282,390 threshold, or consider a larger, multi-year program or project. The exceptions to this rule are funding for non-infrastructure projects, such as plans or Safe Routes to School Program, which have a project minimum of $56,478 ($50,000 funding request + $6,478 local match) identified through the Regional ATP. The Regional BPFP does not have a project minimum for non-infrastructure proposals.

The last call for projects were announced last spring with due dates in June 2105. The call for the next round of proposals will likely be in late winter/early spring 2017.

For more information: http://www.sacog.org/regionalfunding/fundingprograms_bikeped-overview.cfm

SACOG Community Design Grants

The Community Design Funding Program provides financial assistance to local government agencies seeking to implement physical development that is consistent with SACOG's Blueprint Principles. Approximately every two years, SACOG accepts applications for projects from cities, counties, transit districts and air districts from Sacramento, Sutter, Yolo and Yuba Counties.

The Blueprint Principles are:

- Transportation Choices
- Housing Diversity
- Compact Development
- Use of Existing Assets
- Mixed Land Uses
- Quality Design
- Natural Resource Conservation

Funding is awarded in three grant categories:

- Conventional Projects – Pre-construction and Construction. Applicants can apply for funding between $150,000 and $500,000 for engineering design, right-of-way, or environmental review, and between $300,000 and $4 million for construction of street improvements that implement the goals of Blueprint principles.
- Complete Streets Projects. This category provides funding for transformation of transportation corridors to more pedestrian and transit friendly streetscapes with an associated transition in land uses. Projects must be primarily or exclusively construction and funding requests between $1.5 million and $4 million.
- Non-Competitive Projects. This category provides opportunities for member cities and counties that choose not to compete for larger amounts of funding. It limits applicants to request one $100,000 maximum grant. It was developed to encourage cities and counties that have not applied for program funds in the past, and those that cannot compete in the other two categories.

SACOG has awarded the 2016 round of projects, with the next funding cycle, Round 8, expected to occur in 2017.

For more information: http://www.sacog.org/regionalfunding/communitydesign.cfm

SACOG Regional Local Funding Program

The Regional/Local Program is SACOG's largest competitive program. The emphasis of the program is to fund projects that will help implement the MTP/SCS by providing regional benefits. The program seeks to promote effective and efficient use of limited state and federal funding resources to both develop and maintain the regional transportation network. This is accomplished through the funding of capital and lump sum projects included in the 2012 Metropolitan Transportation Plan/Sustainable Communities Strategy, asset management planning and projects, and the development of shelf-ready projects.

Capital projects do not have a minimum or maximum funding request, but must provide a minimum of 11.47% match in non-federal funds.

For more information: http://www.sacog.org/regionalfunding/regionallocal.cfm

State Affordable Housing and Sustainable Communities Program

The California Strategic Growth Council's Affordable Housing and Sustainable Communities Program (AHSC) awards funds, through a competitive application process, for land-use, housing, transportation and land-preservation projects to support infill and compact development that reduces greenhouse gas emissions. Funded by State cap-and-trade emissions reduction auction proceeds, this program provides a major new source of funding for infill, mixed-use, transit-oriented development and multimodal-transportation infrastructure capital projects and programs.

Established by the California's landmark 2006 Global Warming Solutions Act (AB 32), the cap-and-trade program is the only state-run program of its kind in the nation. Senate Bill 862 apportioned 20% of Greenhouse Gas Reduction Fund annual proceeds to the AHSC program beginning in 2015-16, providing a steady revenue source for the AHSC Program to support local smart-growth projects and initiatives.

The program specifies three types of eligible project areas:

- Transit-Oriented Development: These projects are located within one-half mile of high-quality (high frequency) transit that include affordable-housing development or related infrastructure, plus sustainable transportation infrastructure, or additional capital or program uses, such as transit-stop and station-area improvements or bicycle-and-pedestrian improvements to improve connections to transit.
- Integrated Connectivity Project: These project areas include at least one transit station or stop that has sustainable transportation infrastructure to induce mode shift, such as bicycle and pedestrian connections from employment centers to transit, and at least one additional capital or program use, such as affordable-housing development or a transit-ridership improvement program.
- Rural Innovation Project Areas: These are the same as Integrated Connectivity Projects, but lack high-quality transit service, and are located in rural areas as defined in the program guidelines.

The 2015-2016 Guidelines support the following types of capital projects that reduce passenger vehicle miles travelled and support transportation mode shifts:

- Affordable housing development in close proximity to transit
- Capital infrastructure projects, including:
    - Active transportation capital projects, including pedestrian, bicycle infrastructure, crosswalks, and other capital projects which increase connectivity to and from key destinations (housing, jobs, school, retail, services, etc) or to transit.
    - Infrastructure (water, sewer, roads, etc.) that directly serves affordable housing development in proximity to transit.
    - Infrastructure associated with affordable housing, active transportation, or transit capital projects that meet or exceed current requirements for energy efficiency,

green building, water efficient uses, low impact development, or renewable energy.
    - Infrastructure associated with affordable housing, active transportation, or transit capital projects that include urban greening components (e.g. tree canopy along walkable and bikeable corridors, parks and open space adjacent to housing, etc).
    - Capital costs associated with increasing the capacity of a transit system. This includes increased fleet (e.g. vanpool, car share, shuttles), expansion of service (e.g. extension of service to underserved areas).
    - Capital costs supporting improvement or addition of infrastructure to expand public transit access and increase connectivity between the transit stop or station and active transportation infrastructure.
- Programs supporting shifts in transportation mode, including:
    - Active transportation outreach (e.g. safety)
    - Transit ridership programs (e.g. transit passes, outreach programs)
    - Criteria air pollutant programs

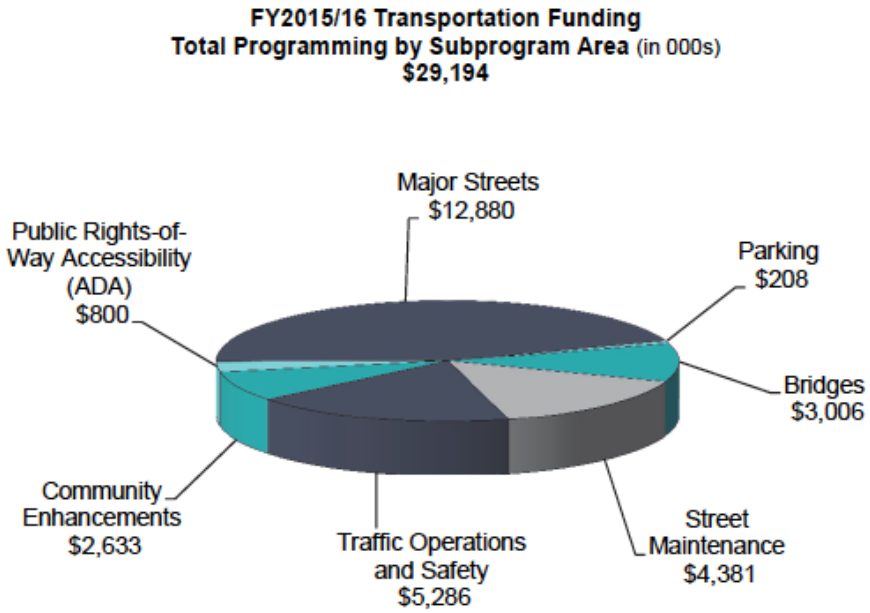
In 2014-15,the Strategic Growth Council awarded $121.9 million to 28 projects in 21 cities and 19 counties. The call for the next round of 2015-16 AHCS applications is expected in January 2016, with total available funding increased to $400 million. The minimum and maximum amounts for projects are $500,000 and $20 million. At least 50% of funding must be dedicated to affordable housing and benefit disadvantaged communities.

City Capital Improvement Program

In addition to the grant and funding programs identified above, the City may want to explore opportunities for funding Broadway improvements through the City's Capital Improvement Program.

The 2015-2020 Transportation Program contained within the City's overall 5-year Capital Improvement Program (CIP) is designed to optimize the use of available local funds by leveraging state and federal funds to achieve the City's transportation priorities. Pedestrian and bicycle projects are in the Transportation Program to reflect the importance of those modes of travel as part of the overall transportation network.

The Transportation Program allocates funding to seven major subprogram areas shown below. Funds are secured from multiple sources, such as the Federal Highway Safety Improvement Program, State Transportation Development Act, State Gas Excise Tax, County Measure A Transportation Sales Tax, City Major Street Construction Tax, and the City Landscaping and Lighting and Assessment District.



Projects and programs within the Major Streets, Traffic Operations and Safety, Street Maintenance and Community Enhancements subprogram areas could be scrutinized for potential near-term sources to help fund Broadway improvements. In addition, a new project proposal could be developed to help implement future improvements for consideration in the City CIP review process.

Enhanced Infrastructure Financing District

A long-term strategy for funding improvements on the Broadway corridor and elsewhere in the city could be through formation of an Enhanced Infrastructure Financing District (EIFD).

Authorized by state legislation in 2014, an EIFD may be created by a city or county to collect tax increment revenues to finance improvements. Entities participating in an EIFD can include cities, counties and special districts, but not schools.

Participating entities are critical to an EIFD's success, as they must agree to allocate their tax increment to the EIFD. One or more EIFDs may be created within a city or county, and an EIFD may include properties that are not contiguous. No vote is required to form an EIFD. However, issuance of bonds requires approval by a 55% majority of voters or landowners (if fewer than 12 persons are registered to vote, then the vote is by landowners).

Infrastructure projects that can be financed through an EIFD include new construction and rehabilitation. Facilities don't need to be located within the EIFD boundaries, but they must have a tangible connection to the EIFD's work as detailed in its infrastructure financing plan.

An EIFD cannot be used to fund routine maintenance or operation costs. An infrastructure financing plan must be adopted before a city or county forms an EIFD. An EIFD is governed by a public financing authority, consisting of members from the city or county legislative body, participating taxing entities, and the public.

For more information:

- California Economic Summit, “A How-To Guide for Using New EIFDs.”cafwd.app.box.com/s/p8re0h7s6vkhm1st2uwq
- League of California Cities, Analysis of SB 628 (EIFD), cacities.org/CMSPages/GetFile.aspx?nodeguid=d8e42eca-7647-4f12-98d4-e93383abc48c&lang=en-US

Public-Private Partnerships

The Greater Broadway Partnership (GBP) provides corridor cleanup, safety, physical enhancement and economic enhancement services and activities on behalf of the property owners and businesses within the GBP Property-based Improvement District.

The GBP, City, business and property owners and other organizations and associations could pursue additional collaborations and strategies to stimulate public and private investment in the Broadway corridor. Two examples discussed below include Tactical Urbanism and Crowdfunding.

Tactical Urbansim
Working together, the City, GBP, business and property owners, residents and other organizations and associations could install temporary transformations to visualize, test, experience and promote changes, and attract new public and private investment. Sometimes referred to as “tactical urbanism,”“placemaking” or simply “pilot projects,” there is a growing number of examples across the nation. Sample projects include:

- Converting street edges into enhanced bikeways.
- Turning on-street parking spaces into extended sidewalks with outdoor seating and other features, known as parklets or streetdecks.
- Adding chairs, landscaping, art and other street furniture on existing sidewalks.
- Converting vacant lots into community gardens and play lots.
- Converting off-street parking areas into small plazas or food-vendor courtyards.
- Improving blank walls and empty spaces with public art and colorful murals.

Changes are often installed with local donated or recycled materials, supplies and volunteer labor. Ideas are tested with chalk, temporary paint, movable planters and homemade chairs and benches. The process builds connections, creates civic engagement, and empowers community members. The physical projects create opportunities for people to meet their neighbors. Temporary projects can have a significant impact and help both the community and local officials envision a new future for a place – and attract funding for permanent improvements. City officials can use temporary permits and provide technical guidance to ensure adequate safety and operations. These pilots help foster innovation by residents, while enabling officials to evaluate the success of practices before making higher-cost, capital investments or regulatory changes.

For example, on Broad Avenue in Memphis, TN, Livable Memphis, the Broad Avenue Arts District, and Binghampton Development Corporation worked with volunteers and area business

owners to open up storefronts and move in pop-up shops and restaurants on the corridor. They transformed the street to illustrate how bicycle and pedestrian infrastructure could enliven the commercial district. Changes included:

- Curb extensions for shorter and safer crossings;
- Protected bikes lanes to narrow the street and slow traffic while buffering cyclists and pedestrians from traffic with parked cars;
- High visibility crosswalks and added pedestrian-crossing street signs;
- Added streetlights, benches, bike racks and trees in planters.

Livable Memphis reports, "For a few thousand dollars in paint and rollers and a lot of donated time, energy and supplies from people who shared the vision, Broad Avenue was transformed. 15,000 people visited Broad Avenue that weekend and had a great time exploring the new Broad." The temporary street conversion was retained and is awaiting a more complete and permanent version with construction of an extended bikeway.

For more information about Broad Avenue:

- http://www.livablememphis.org/new-face-for-an-old-broad
- https://www.ioby.org/blog/case-study-the-hampline

For more information about tactical urbanism:

- Mike Lydon and Anthony Garcia, "Tactical Urbanism: Short-term Action for Long-term Change,"March 2015, tacticalurbanismguide.com
- The Street Plans Collaborative's "Tactical Urbanism 2" provides an overview of tactical urbanism and examples of types of projects and places where they're being used: issuu.com/streetplanscollaborative/ docs/tactical_urbanism_vol_2_final
- Project for Pubic Spaces,pps.org/reference/lighterquicker-cheaper
- For tips and a blueprint for how to create a street-redesign pop-up, see the plans for Oakland's Telegraph Avenue project: docs.google.com/ document/d/1mQE5RHAqsDScrlmSzhzKkKJkQNbtZl9_Ft1fgK85Ds8/edit

Civic Crowdfunding

Crowdfunding is a means to collect monetary contributions from a large number of people or sources through an online platform to fund a project or venture. Civic crowdfunding is very flexible in the projects that can be funded. Examples might include bike racks, community gardens, playgrounds, renovation projects, neighborhood markets, cultural facilities, parks and recreation facilities, social services and conservation-easement purchases.

Examples of civic-specific crowdfunding platforms include Ioby and Citizinvestor. A platform like Neighbor.ly facilitates individual investment in municipal bonds. Larger crowdfunding sites, such as Gofundme,Kickstarter and Indiegogo,also have "community"or "civic"categories for projects.

Gofundme has allowed more than $1 billion to be raised from 16 million donors since it launched in 2010. Ioby has recorded donations totaling more than $2 million – with

approximately 600 civic projects successfully funded.

The average fundraising goal for an active project is about $7,000, with an average donor living within two miles of their project. Ioby also has an 87% funding success rate, which is much higher than non-civic crowdfunding projects.

The lead for a crowdfunding effort could be an individual, a community-based organization, any nonprofit or a government entity. They would use an online platform to initiate a crowdfunding campaign.

While usually geared toward raising relatively small sums, Crowdfunding platforms have been generally geared toward raising relatively small sums for gap funding, small scale or incremental projects, and to help seed larger projects. But larger examples exist. In 2014,the San Diego Opera generated more than $2 million in crowdfunding contributions to save its company and launch its 2015-16 season. Nearly half of the donors had never given to the San Diego Opera before.

Some municipalities are experimenting with crowdfunding as a source for larger public infrastructure projects. Denver recently crowdfunded $12 million worth of mini-bonds. The bond offering, the last phase of a $550 million voter-approved bond program to upgrade roads and civic buildings, was available only to Colorado residents. The bonds were priced in affordable denominations of $500, versus the typical $5,000 minimum for municipal bonds. Orders were limited to $20,000 per person. Had the bonds been offered conventionally through Wall Street, the average purchase would most likely have been in the $500,000 to $1 million range, according to the City's Deputy Mayor. Offered on-line through the City's web site, the mini-bonds sold out in 16 minutes. Officials made refunds to hundreds of people who placed orders after the bonds sold out.

For more information:

- "Crowdfunding Fans Are Crazy About Denver's Mini-Bonds," https://nextcity.org/daily/entry/denver-mini-bonds-500-crowdfunding-cities
- "Putting the Public Back in Public Finance," New York Times, July 10, 2015, http://nyti.ms/1dR9AzY
- Citizinvestor,citizinvestor.com
- Gofundme,gofundme.com
- Kickstarter,kickstarter.com
- Ioby,ioby.org
- Neighbor.ly,neighborly.com