BERKELEY CITY COUNCIL FACILITIES, INFRASTRUCTURE, TRANSPORTATION, ENVIRONMENT & SUSTAINABILITY COMMITTEE REGULAR MEETING

Thursday, May 4, 2023
1:00 PM

2180 Milvia Street, 6th Floor - Redwood Room

Committee Members:

Councilmembers Terry Taplin, Kate Harrison, and Rigel Robinson
Alternate: Councilmember Mark Humbert

This meeting will be conducted in a hybrid model with both in-person attendance and virtual participation. For in-person attendees, face coverings or masks that cover both the nose and the mouth are encouraged. If you are feeling sick, please do not attend the meeting in person.

Remote participation by the public is available through Zoom. To access the meeting remotely using the internet: Join from a PC, Mac, iPad, iPhone, or Android device: Use URL https://cityofberkeley-info.zoomgov.com/j/1609443290. If you do not wish for your name to appear on the screen, then use the drop down menu and click on "rename" to rename yourself to be anonymous. To request to speak, use the “raise hand” icon on the screen. To join by phone: Dial **1-669-254-5252 or 1-833-568-8864 (Toll Free)** and Enter Meeting ID: **160 944 3290**. If you wish to comment during the public comment portion of the agenda, press *9 and wait to be recognized by the Chair.

To submit a written communication for the Committee’s consideration and inclusion in the public record, email policycommittee@cityofberkeley.info.

Written communications submitted by mail or e-mail to the Facilities, Infrastructure, Transportation, Environment & Sustainability Committee by 5:00 p.m. the Friday before the Committee meeting will be distributed to the members of the Committee in advance of the meeting and retained as part of the official record.

AGENDA

Roll Call

Public Comment on Non-Agenda Matters

Minutes for Approval

Draft minutes for the Committee's consideration and approval.

1. Minutes - April 13, 2023

Committee Action Items

The public may comment on each item listed on the agenda for action as the item is taken up. The Chair will determine the number of persons interested in speaking on each item. Up to ten (10) speakers may speak for two minutes. If there are more than ten persons interested in speaking, the Chair may limit the public comment for all speakers to one minute per speaker. Speakers are permitted to yield their time to one other speaker, however no one speaker shall have more than four minutes.

Following review and discussion of the items listed below, the Committee may continue an item to a future committee meeting, or refer the item to the City Council.

2. Audit Status Report: Underfunded Mandate: Resources, Strategic Plan, and Communication Needed to Continue Progress towards the Year 2020 Zero Waste Goal
From: City Manager
Referred: November 3, 2022
Due: July 25, 2023
Contact: Liam Garland, Public Works, (510) 981-6300

3. Audit Status Report: Unified Vision of Zero Waste Activities Will Help Align Service Levels with Billing and Ensure Customer Equity
From: City Manager
Referred: November 3, 2022
Due: July 25, 2023
Contact: Liam Garland, Public Works, (510) 981-6300

4. Budget Referral: Additional Street Maintenance Funding to Improve Pavement Condition, Saving Tax Dollars and Our Streets
From: Councilmember Kesarwani (Author), Councilmember Humbert (Co-Sponsor), Councilmember Taplin (Co-Sponsor), Councilmember Wengraf (Co-Sponsor)
Referred: February 27, 2023
Due: July 18, 2023
Recommendation: Refer to the FY 2023-25 biennial budget process to further increase the street paving budget by $4.7 million General Fund in FY 2024-25 for a total street paving budget of approximately $20 million in FY 2024-25.
On July 26, 2022, the City Council unanimously passed a policy ensuring an adequate annual General Fund contribution for street maintenance that amounts to a total of $15.3 million annually plus inflation—the amount needed to maintain (although not improve) the pavement condition. This budget request for an additional $4.7 million builds on the streets fiscal policy by seeking to increase the street paving budget further in FY 2024-25 to begin to improve the pavement condition.
We note that the City Council already approved a $9 million increase to the street paving budget for FY 2023-24 for a total of $16.3 million in FY 2023-24.
A dollar of maintenance early in a street's life-cycle saves $8 later in the street's life-cycle due to avoided rehabilitation and/or reconstruction costs associated with failing streets, making this budget request an urgent matter of fiscal oversight. Further, the defeat of the Measure L general obligation bond on the November 8, 2022 ballot means that the City currently lacks significant resources to fully address deferred street maintenance, requiring the City Council to add additional resources from the General Fund in order to make steady progress towards improving the average pavement condition.
Financial Implications: See report
Contact: Rashi Kesarwani, Councilmember, District 1, (510) 981-7110

Unscheduled Items

These items are not scheduled for discussion or action at this meeting. The Committee may schedule these items to the Action Calendar of a future Committee meeting.

5. 51 Bus Rapid Transit
From: Councilmember Taplin (Author)
Referred: November 28, 2022
Due: June 5, 2023
Recommendation: 1) Refer to the City Manager the development of an implementation and community engagement plan to install Bus Rapid Transit, including dedicated bus lanes, transit signal priority, elevated platforms, and enhanced sections, on the AC Transit 51B route along University Avenue from Sixth Street to Shattuck Avenue and along Shattuck Avenue from University Avenue to Durant Avenue, with engagement centering pedestrian, cyclist, transit and mobility justice advocates, the disability rights community, local faith communities, merchants, neighboring residential communities inclusive of tenants, seniors, and students, and historically marginalized communities.
2) Refer $300,000 to the Fiscal Year 2024-2025 Budget Process to conduct a Complete Street Corridor Study antecedent to the installation of a cycle track along University Avenue from 6th Street to Oxford Street, consistent with the City of Berkeley's 2017 Bicycle Plan and integrating pedestrian amenities consistent with the City of Berkeley's 2020 Pedestrian Plan. As per the Bicycle Plan, the study will be evaluated in the context of the modal priorities established by the City of Berkeley General Plan's 2001 Transportation Element and the Alameda County Transportation Commission's (ACTC) 2016 Countywide Multimodal Arterial Plan.
3) Refer $300,000 to the Fiscal Year 2024-2025 Budget Process to conduct a Complete Street Corridor Study antecedent to the installation of a cycle track along Oxford Street from Virginia Street to Durant Avenue consistent with the Bicycle Plan and integrating pedestrian amenities consistent with the Pedestrian Plan. As per the Bicycle Plan, the study will be evaluated in the context of the modal priorities established by the Transportation Element and ACTC's Countywide Multimodal Arterial Plan. It will be coordinated with proposed improvements to transit performance on this Primary Transit Route, such as bus boarding islands, transit-only lanes, transit signal priority/queue jump lanes, far-side bus stop relocations, and other improvements as described in AC Transit's 2016 Major Corridor Study.
4) Refer $X to the Fiscal Year XX-XX Budget Process to install quick-build bus station improvements along the AC Transit 51B route.
5) Initiate consultation with AC Transit and UC Berkeley Bear Transit as soon as possible on the planning, scoping, and implementation of these items.
Financial Implications: See report
Contact: Terry Taplin, Councilmember, District 2, (510) 981-7120

Unscheduled Items

6. Adopt an Ordinance Adding a New Chapter 12.01 to the Berkeley Municipal Code Establishing Emergency Greenhouse Gas Limits, Process for Updated Climate Action Plan, Monitoring, Evaluation, Reporting and Regional Collaboration
From: Councilmember Harrison (Author), Councilmember Bartlett (Co-Sponsor) and Councilmember Hahn (Co-Sponsor)
Referred: November 15, 2021
Due: May 31, 2023
Recommendation: 1. Adopt an ordinance adding a new Chapter 12.01 to the Berkeley Municipal Code (BMC) establishing Emergency Greenhouse Gas Limits with an effective date of [ ], 2022.
2. Refer to the FY23-24 Budget Process $[ ] consistent with implementing the requirements of Sections 12.01.040, 12.01.050, 12.01.060.
Financial Implications: See report
Contact: Kate Harrison, Councilmember, District 4, (510) 981-7140

Items for Future Agendas

- **Requests by Committee Members to add items to future agendas**

Adjournment

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Written communications addressed to the Facilities, Infrastructure, Transportation, Environment & Sustainability Committee and submitted to the City Clerk Department will be distributed to the Committee prior to the meeting.

This meeting will be conducted in accordance with the Brown Act, Government Code Section 54953 and applicable Executive Orders as issued by the Governor that are currently in effect. Members of the City Council who are not members of the standing committee may attend a standing committee meeting even if it results in a quorum being present, provided that the non-members only act as observers and do not participate in the meeting. If only one member of the Council who is not a member of the committee is present for the meeting, the member may participate in the meeting because less than a quorum of the full Council is present. Any member of the public may attend this meeting. Questions regarding this matter may be addressed to Mark Numainville, City Clerk, (510) 981-6900.

COMMUNICATION ACCESS INFORMATION:
This meeting is being held in a wheelchair accessible location. To request a disability-related accommodation(s) to participate in the meeting, including auxiliary aids or services, please contact the Disability Services specialist at (510) 981-6418 (V) or (510) 981-6347 (TDD) at least three business days before the meeting date. Attendees at public meetings are reminded that other attendees may be sensitive to various scents, whether natural or manufactured, in products and materials. Please help the City respect these needs.

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I hereby certify that the agenda for this meeting of the Standing Committee of the Berkeley City Council was posted at the display case located near the walkway in front of the Maudelle Shirek Building, 2134 Martin Luther King Jr. Way, as well as on the City's website, on April 27, 2023.

Mark Numainville, City Clerk

Communications

Communications submitted to City Council Policy Committees are on file in the City Clerk Department at 2180 Milvia Street, 1st Floor, Berkeley, CA, and are available upon request by contacting the City Clerk Department at (510) 981-6908 or policycommittee@cityofberkeley.info.

BERKELEY CITY COUNCIL FACILITIES, INFRASTRUCTURE, TRANSPORTATION, ENVIRONMENT & SUSTAINABILITY COMMITTEE SPECIAL MEETING MINUTES

Thursday, April 13, 2023
9:00 AM

2180 Milvia Street, 6th Floor - Redwood Room

Committee Members:

Councilmembers Terry Taplin, Kate Harrison, and Rigel Robinson
Alternate: Councilmember Mark Humbert

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MINUTES

Roll Call: 9:08 a.m.

Present: Taplin, Harrison, and Robinson

Public Comment on Non-Agenda Matters: 1 Speaker

Minutes for Approval

Draft minutes for the Committee's consideration and approval.

1. Minutes - March 2, 2023
Action: M/S/C (Robinson/Taplin) to approve the March 2, 2023 minutes.
Vote: All Ayes.

Committee Action Items

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2. Audit Status Reports: Fleet Replacement Fund Short Millions & Rocky Road: Berkeley Streets At Risk and Significantly Underfunded
From: City Manager
Referred: November 3, 2022
Due: April 25, 2023
Contact: Liam Garland, Public Works, (510) 981-6300

Action: 5 speakers. M/S/C (Hahn/Robinson) to send the item to City Council with a positive recommendation that Council:
1. Refer to the City Manager to establish a policy that the Public Works Department will be responsible for reviewing, submitting, and approving all departmental requests to Council for adding new vehicles to the fleet to facilitate maximum cost recovery through the vehicle replacement fund, consistency with fleet rightsizing studies, oversight, and timely electrification of the fleet.
2. Refer to the Budget and Finance Committee to prioritize funding to the vehicle replacement fund to make up the shortfall over time in order to stabilize the fund.
Vote: All Ayes.

Committee Action Items

3. Budget Referral: Additional Street Maintenance Funding to Improve Pavement Condition, Saving Tax Dollars and Our Streets
From: Councilmember Kesarwani (Author), Councilmember Humbert (Co-Sponsor), Councilmember Taplin (Co-Sponsor), Councilmember Wengraf (Co-Sponsor)
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Financial Implications: See report
Contact: Rashi Kesarwani, Councilmember, District 1, (510) 981-7110

Action: 4 speakers. Discussion held. Item continued to the Facilities, Infrastructure, Transportation, Environment & Sustainability Committee's next meeting.

Unscheduled Items

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4. 51 Bus Rapid Transit
From: Councilmember Taplin (Author)
Referred: November 28, 2022
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Financial Implications: See report
Contact: Terry Taplin, Councilmember, District 2, (510) 981-7120

Unscheduled Items

5. **Audit Status Report: Underfunded Mandate: Resources, Strategic Plan, and Communication Needed to Continue Progress towards the Year 2020 Zero Waste Goal**
   From: City Manager
   Referred: November 3, 2022
   Due: April 25, 2023
   Contact: Liam Garland, Public Works, (510) 981-6300

6. **Audit Status Report: Unified Vision of Zero Waste Activities Will Help Align Service Levels with Billing and Ensure Customer Equity**
   From: City Manager
   Referred: November 3, 2022
   Due: July 25, 2023
   Recommendation:
   Financial Implications:
   Contact: Liam Garland, Public Works, (510) 981-6300

7. **Adopt an Ordinance Adding a New Chapter 12.01 to the Berkeley Municipal Code Establishing Emergency Greenhouse Gas Limits, Process for Updated Climate Action Plan, Monitoring, Evaluation, Reporting and Regional Collaboration**
   From: Councilmember Harrison (Author), Councilmember Bartlett (Co-Sponsor) and Councilmember Hahn (Co-Sponsor)
   Referred: November 15, 2021
   Due: May 31, 2023
   Recommendation: 1. Adopt an ordinance adding a new Chapter 12.01 to the Berkeley Municipal Code (BMC) establishing Emergency Greenhouse Gas Limits with an effective date of [ ], 2022.
   2. Refer to the FY23-24 Budget Process $[ ] consistent with implementing the requirements of Sections 12.01.040, 12.01.050, 12.01.060.
   Financial Implications: See report
   Contact: Kate Harrison, Councilmember, District 4, (510) 981-7140

Items for Future Agendas

None

Adjournment

Adjourned at 11:14 a.m.

I hereby certify that the foregoing is a true and correct record of the Facilities, Infrastructure, Transportation, Environment & Sustainability Committee meeting held on April 13, 2023.

_____
Neetu Salwan, Assistant City Clerk

Communications

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Office of the City Manager

INFORMATION CALENDAR
November 3, 2022

To: Honorable Mayor and Members of the City Council

From: Dee Williams-Ridley, City Manager

Submitted by: Liam Garland, Director, Department of Public Works

Subject: Audit Status Report: Underfunded Mandate: Resources, Strategic Plan, and Communication Needed to Continue Progress towards the Year 2020 Zero Waste Goal

INTRODUCTION

The Office of the City Auditor presented a July 1, 2014 Report to the City Council: Underfunded Mandate: Resources, Strategic Plan, and Communication Needed to Continue Progress towards the Year 2020 Zero Waste Goal[1] (Audit Report). The City Auditor conducted the Audit Report at the Public Works Director's request to assess Zero Waste Division's progress towards the Year 2020 Zero Waste Goal. This is the fifth and final status report on the efforts made to implement the Audit Report's recommendations, which are slated for no further follow-up action as recommended by the City Auditor for all audits more than five years old.

CURRENT SITUATION AND ITS EFFECTS

The Audit Report noted fifteen (15) recommendations for the Public Works Department (PWD) and its Zero Waste Division (ZWD) to review, implement and report to Council. The first set of seven (7) recommendations was related to zero waste goals and ZWD's operational components, and the second set of eight (8) recommendations focused on collaborating with the Department of Information Technology (IT) to utilize technology to interface with Zero Waste routes, staff, and the customers.

Since the January 15, 2020 update on this Audit Report, Public Works has made additional progress on the implementation of recommendations. At the time of this report, the Auditor's Office verified three (3) of the recommendations as implemented and dropped the remaining twelve (12) recommendations.

BACKGROUND

Public Works' Zero Waste Division is responsible for the collection of residential material, including refuse, recycling, and composting; collection and processing of commercial material, including refuse, recycling, and composting; off-site hauling and

[1] https://www.cityofberkeley.info/uploadedFiles/Auditor/Level_3_-_General/A%202_RPT_Zero%20Waste_Final.pdf

composting of green/food waste for all customers; off-site hauling, sorting, and marketing of construction and demolition debris for all customers; and manages contracts related to the above work.

On March 22, 2015, the Berkeley City Council adopted Zero Waste Resolution No. 62,849-N.S. setting a goal of zero waste sent to landfills by the year 2020. The Resolution does not define a specific zero waste percentage expectation for Berkeley, but the language used therein suggests diversion of 100% of waste from landfills.

In its October 17, 2017 presentation to the City Council, the Zero Waste Commission recommended attaining the City's Zero Waste goal requires redefining the Zero Waste Goal and issuing a Request for Proposal (RFP) for a Zero Waste Management Strategic Plan. The City Council approved this recommendation.

On April 28, 2022, the City released the RFP, seeking qualified firms for the development and completion of an Integrated Zero Waste Management Strategic Plan (Plan) to provide methodologies and guidance for the City's Zero Waste Division's operation, personnel, program, and financial requirements to meet the City's Climate Action Plan and Zero Waste goals. The Plan's development will include robust public participation and outreach, along with City Council and staff input on both the draft and final Plan. City Council approved an item at the October 8, 2022 meeting to enter into a contract with the selected consultant for the Plan's development.

ENVIRONMENTAL SUSTAINABILITY AND CLIMATE IMPACTS

The increased diversion of compostable and recyclable materials is an essential part of the City's Zero Waste Goal as described in the City's 2009 Climate Action Plan.

POSSIBLE FUTURE ACTION

Public Works' Zero Waste Division and the Zero Waste Commission will continue to take timely and focused action(s) to address outstanding and partially implemented recommendations.

FISCAL IMPACTS OF POSSIBLE FUTURE ACTION

The Integrated Zero Waste Management Strategic Plan has an approved budget of $500,000. The AMCS financial software platform and associated professional services are budgeted for $1.3 million for the first five years. There may be additional financial impacts to complete the remaining Audit findings.

CONTACT PERSON

Greg Apa, Solid Waste & Recycling Manager (510) 981-6359

Attachment:
1. Audit Findings and Recommendations Response Form

ATTACHMENT No. 1

Audit Title: Underfunded Mandate: Resources, Strategic Plan, and Communication Needed to Continue Progress Toward the Year 2020 Zero Waste Goal					
Findings and Recommendations		**Lead Dept.**	**Agree, Partially Agree, or Do Not Agree and Corrective Action Plan**	**Expected or Actual Implementation Date**	**Status of Outstanding Audit Recommendations and Implementation Progress Summary**
Finding 1: Insufficient data and resources (for planning, strategy, or execution) dedicated to Berkeley's zero waste by 2020 resolution					
1.1	Request the City Council to redefine and then reaffirm its commitment to zero waste (i.e., the percentage that the Council considers to be success), and to ensure sufficient resources to fund appropriate staffing and the necessary infrastructure to achieve stated goals by 2020.	Public Works	Agree This is consistent with the strategic approach the Public Works Department has taken to correct operational deficiencies and create an organization more capable of continuing the work to reach the City's zero waste goal. The Department is poised to undertake an open search for a new ZWD Manager whose input, perspective, and anticipated professional expertise will be essential in analyzing the resources necessary to achieve the goal and drafting suitable recommendations to Council.	June 2015 June 2019 June 2019 December 2019 November 2020 July 2023	5/09/2017 Status: not submitted **January 23, 2018 Update:** **Not Implemented** The Zero Waste Commission submitted to the City Council its recommendation for the City to develop an RFP to: 1) develop a Zero Waste Strategic Plan (Plan) to delineate terminology, 2) define and clarify what the City's Zero Waste Goal will be, and 3) develop plan for the Public Works - Zero Waste Division to implement to attain that goal. The City Council concurred with this recommendation which was an item on its October 17, 2017 Action Calendar for the Zero Waste Division to develop the RFP for the development of the Plan. **6/04,2018 Update:** **Not Implemented** The RFP is in development and should be released to solicit proposals to be submitted during the second quarter FY2019. **March 12, 2019** **Partially Implemented** ZWD has developed an RFP to: 1) develop a Zero Waste Strategic Plan (Plan) to delineate terminology, 2) define and clarify what the City's Zero Waste Goal will be, and 3) develop plan for the Public Works - Zero Waste Division to implement to attain that goal. The RFP is in administrative review. **March 24, 2020 Update** **Partially Implemented** At the September 17, 2019 City Council Work Session, Public and its consultant presented the proposed 5-year Rate Review that includes additional staffing for implementation and compliance with State and StopWaste.org mandatory recycling and food waste. The Council provided input on the Rate Review is in review and adjusted Rates with be presented to the City Council mid-2020. **November 13, 2022 Update** **Dropped** Revised 5-year Rate Schedules presented at the December 7, 2021 City Council Work Session. Council consented to moving forward with Proposition 218 process to approve Rates as proposed. In January

ATTACHMENT No. 1

Audit Title: Underfunded Mandate: Resources, Strategic Plan, and Communication Needed to Continue Progress Toward the Year 2020 Zero Waste Goal					
Findings and Recommendations		**Lead Dept.**	**Agree, Partially Agree, or Do Not Agree and Corrective Action Plan**	**Expected or Actual Implementation Date**	**Status of Outstanding Audit Recommendations and Implementation Progress Summary**
					2022, The City Agenda Committee placed the revised 5-year rate schedules on pause.
1.2	Draft and obtain Council approval of a written strategic plan to achieve zero waste by 2020, including annual or biennial interim waste diversion goals. Topics that the strategic plan should discuss include: • Objectives and long-term and interim goals • Actions to be taken • Responsible parties • Expected cost and impact of implementation • Performance measures • External factors affecting performance and progress	Public Works	Agree The Public Works Department has taken a strategic approach to solving the structural deficit and making progress toward our Zero Waste goal. The Department improved the efficiency of operations, followed the strategies in the Climate Action Plan, is currently completing a commercial franchise study, and in May 2014 completed a Prop 218-compliant rate increase. PW will continue to focus on maintaining efficient operations, high quality customer service, and improvements to waste diversion efforts. The Department will take the next step toward zero waste by reassessing the current situation, and developing a strategic plan intended to guide the Department through the increasingly difficult path to zero waste. Part of this process requires evaluating the existing Transfer Station infrastructure, along with what might be required to reach the Zero Waste goal as defined. The strategic plan will be flexible so that annual work plans can be designed to address changing conditions. Public Works will build upon relevant	June 2015 June 2019 June 2019 December 2019 May 2021	5/09/2017 Status: not submitted **January 23, 2018 Update:** **Not Implemented** The City's Solid Waste Management Plan (1998) and Source Reduction and Recycling Element (1992) are the City's most recent documents guiding the City's actions toward the goal of zero waste. Although the City's Solid Waste Management Plan Update (2005) wasn't formerly adopted by the City, it was designed to achieve the 2010 goal of reaching 75% diversion. The City is currently achieving 76% diversion based on FY2015 information. The Zero Waste Commission and the City Auditor each concluded independently that a comprehensive, written strategic plan that clearly defines roles and responsibilities and assigns sufficient resources is needed to guide the City towards the goal of achieving zero waste. The Zero Waste Commission recommended and the City Council concurred at its October 17, 2017 Action Calendar concurred with Zero Waste Commission's recommendation for Public Works' Zero Waste Division to develop an RFP to: develop a Zero Waste Strategic Plan to delineate terminology, define and clarify what the City's Zero Waste Goal will be, and develop plan to attain the defined Strategic Plan's Zero Waste Goal. **6/04,2018 Update:** **Not Implemented** These issues will be included in the development of RFP that will be advertised for proposals the second quarter FY2019. **March 12, 2019** **Partially Implemented** ZWD has developed an RFP to: 1) develop a Zero Waste Strategic Plan (Plan) to delineate terminology, 2) define and clarify what the City's Zero Waste Goal will be, and 3) develop plan for the Public Works - Zero Waste Division to implement to attain that goal. The RFP is in administrative review. **March 24, 2020 Update** **Partially Implemented** With installation and implementation of the Zero Waste Division's management software (vendor is AMCS and projected to be

ATTACHMENT No. 1

Audit Title: Underfunded Mandate: Resources, Strategic Plan, and Communication Needed to Continue Progress Toward the Year 2020 Zero Waste Goal					
Findings and Recommendations		**Lead Dept.**	**Agree, Partially Agree, or Do Not Agree and Corrective Action Plan**	**Expected or Actual Implementation Date**	**Status of Outstanding Audit Recommendations and Implementation Progress Summary**
			content in the 2005 Solid Waste Management Plan, the 2009 Climate Action Plan, and incorporate input from the Zero Waste Commission.	August 2024	completed late 2020), the City can assure Strategic Plan proposes that customers information is accurate and verifiable (FUND$ cannot). Then the RFP for a Zero Waste Strategic Plan will then be issued and this Plan will develop strategies to attain the City's zero waste goal. RFP for Integrated Zero Waste Management Strategic Plan released **November 13, 2022 Update** **Dropped** The AMCS software financial platform will not be fully implemented until July 2024. An RFP for an Integrated Zero Waste Management Strategic Plan (Plan) was released April 28, 2022. An October 8, 2022 City Council Consent Item was submitted for award of contract for development of the Plan to the selected consultant. The implementation of the AMCS platform and the Plan development will be conducted and coordinated in unison.
1.3	Prepare detailed annual work plans that contain: • Objectives • Annual/biennial (short-term) goals • Actions to be taken • Budget allocated for the actions • Timeline for completion • Lead staff responsible for task completion • Full-time equivalent employees assigned to the tasks • Performance measures	Public Works	Agree Public Works will continue to prepare its annual work plan under the direction of the City Manager, in coordination and consistent with other Department work plans. Goals, objectives, and actions for the Zero Waste program will be organized and managed by the Zero Waste Manager.	June 2019 December 2019	5/09/2017 Status: not submitted **January 23, 2018 Update:** **Not Implemented** The Zero Waste Commission submitted to the City Council its recommendation for the City to develop an RFP to: 1) develop a Zero Waste Strategic Plan (Plan) to delineate terminology, 2) define and clarify what the City's Zero Waste Goal will be, and 3) develop plan for the Public Works - Zero Waste Division to implement to attain that goal. The City Council concurred with this recommendation which was an item on its October 17, 2017 Action Calendar for the Zero Waste Division to develop the RFP for the development of the Plan. With a third-party firm in-place, the Plan development will proceed with all stakeholders' input solicited, reviewed and included. With approved by both the Zero Waste Commission and City Council, a fully vetted and approved Zero Waste Strategic Plan will provide Public Works a detailed road map to attain a Zero Waste goal. With these elements agree to then annual/biennial goals, budget allocations, timelines for completion, employees' assigned task and performance measures will be concisely identified and assigned to meet the Zero Waste goal. **March 12, 2019** **Partially implemented** ZWD is drafting an RFP for a Zero Waste Strategic plan to guide the

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Audit Title: Underfunded Mandate: Resources, Strategic Plan, and Communication Needed to Continue Progress Toward the Year 2020 Zero Waste Goal					
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					City's policy and decision making and paths of implementation to the goal of Zero Waste. IT and ZWD are in the process of selecting a vendor to implement an entirely new ZW software solution that includes routing, billing and work orders. ZW meets weekly with key PW staff to ensure division objectives and action items are prioritized and budgeted for. With the first reading and passing of the Single Use Foodware and Litter Reduction Ordinance on January 22, 2019, ZWD is working closely with PW Fiscal and Admin division to budget for adequate staffing for this new responsibility. ZWD anticipates completion of a Feasibility Study to replace the existing Transfer Station by mid-2019. ZWD primary objectives are in accordance with the Citywide Strategic Plan. Once the new ZW software system is in place and the Strategic Plan has been completed, a more accurate work plan could be created that would include performance measures.
				May 2022	**<u>March 24, 2020 Update</u>** **Partially Implemented** With installation and implementation of the Zero Waste Division's management software (vendor is AMCS and projected to be completed late 2020), the City can assure Strategic Plan proposes that customers information is accurate and verifiable (FUND$ cannot). With completion of this step, the City can issue an RFP for a new user-friendly routing system. With a new Routing system, reliable, verifiable and accurate performance metrics can be developed. The cost of these systems and additional staffing required have been included in projected budgets.
				August 2024	**<u>November 13, 2022 Update</u>** **Dropped** The AMCS software financial platform will not be fully implemented until July 2024. An RFP for an Integrated Zero Waste Management Strategic Plan (Plan) was released April 28, 2022. An October 8, 2022 City Council Consent Item was submitted for award of contract for development of the Plan to the selected consultant. The implementation of the AMCS platform and the Plan development will be conducted and coordinated in unison.
1.4	Regularly communicate zero waste goals and achievements to City staff and the Council, and offer training to staff on how they can help	Public Works	Agree Prepare an annual report to Council, highlighting progress toward strategic plan and work plan goals to achieve zero waste in Berkeley.	December 2019	5/09/2017 Status: not submitted **<u>January 23, 2018 Update:</u>** **Partially Implemented** With the newly re-staffed ZWC and new management at Zero Waste Division and once the Strategic Plan is completed and as part of the Strategic Plan, the Work Plan with goals, budget, timelines, FTEs and measurements will be developed. Then, Public Works will initiate

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Berkeley achieve zero waste. This includes sharing strategic and annual work plan goals and regular updates regarding progress and completion.			November 2021 November 2021 August 2024	annual reporting to Council. Nonetheless progress has been made, such as: the ZWD has undertaken a City Facilities Greening Project to ensure that all City-owned facilities have the appropriate containers with signage for trash, recyclables (bottles/cans and fiber), and organics; and that City staff receive training on the acceptable materials to place in each container type. The recent, May through September 2017, renovation of 1947 Center Street is being used as a pilot for this Project. In celebration of Earth Day 2017, the ZWD hosted a Zero Waste Earth Day Fair for City employees to get answers to all of their recycling-related questions, play games, enjoy zero waste snacks, and talk trash with ZWD staff. This event was attended by more than 100 City employees. **March 12, 2019** **Partially Implemented** City staff have been encouraged to participate in the visioning sessions for the Transfer Station Redesign January 16, 17, and 18, 2019. Also, ZWD has developed an RFP to: 1) develop a Zero Waste Strategic Plan (Plan) to delineate terminology, 2) define and clarify what the City's Zero Waste Goal will be, and 3) develop plan for the Public Works - Zero Waste Division to implement to attain that goal. The RFP is in administrative review. Once the strategic plan is completed, it will be shared with City staff. **March 24, 2020 Update** **Partially Implemented** At the Council's Work Sessions for Rate Review (September 17, 2019) and Solid Waste & Recycling Transfer Station Feasibility Study (November 5, 2019), PW informed Council of the need for additional RFPs, staffing, funding and facility requirements to meet the City's zero waste goal. **November 13, 2022 Update** **Dropped** Revised 5-year Rate Schedules was presented at the December 7, 2021 City Council Work Session. Council consented to moving forward with Proposition 218 process for property owner consent of the revised Rates as proposed. These Revised Schedules included additional costs for: 1) Ecology and CCC contracts ($85 mil over 10 years, sole sourced per Council direction); staffing for AB 341 & 1826 (commercial recycling), SB1383 (organic recycling) and Single Use

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Audit Title: Underfunded Mandate: Resources, Strategic Plan, and Communication Needed to Continue Progress Toward the Year 2020 Zero Waste Goal					
Findings and Recommendations		**Lead Dept.**	**Agree, Partially Agree, or Do Not Agree and Corrective Action Plan**	**Expected or Actual Implementation Date**	**Status of Outstanding Audit Recommendations and Implementation Progress Summary**
					Disposal Foodware and Litter Reduction Ordinance compliance; and CEQA compliance work for Transfer Station Replacement Concepts A and B. In January 2022, The City Agenda Committee placed the revised 5-year rate schedules on pause.
1.5	Determine if additional funds are needed for the education, outreach, compliance, and enforcement necessary to reach zero waste goals. If sufficient funds are not available, propose to Council a separate fee to cover those costs for the City's zero- waste program, such as a regulatory fee as allowed under Proposition 218.	Public Works	Agree The Public Works Strategic Plan process will evaluate and identify the necessary resources, and if funding is insufficient, a recommendation will be made to consider an Integrated Waste Management Fee or other appropriate mechanism to fund additional staffing and/or outreach needs.	December 2019	5/09/2017 Status: not submitted **January 23, 2018 Update:** **Partially Implemented** Since September 2016, Public Works has hired the Zero Waste Division's Solid Waste & Recycling Manager, Greg Apa, and Recycling Program Manager, Heidi Obermeit, who have 29 and 10 years, respectively, of solid waste industry experience. With their extensive background in the solid waste industry, they are in the process of reviewing, assessing and addressing Zero Waste's current efforts to educate and as needed the expansion of educational outreach to the community members and commercial businesses, both existing and new. Outreach educational materials are somewhat dated and these materials may be updated and customized as required with more current graphics and narratives. In addition, the ZWD has hired a Field Service Representative who assists ZWD's education and compliance efforts with all community members and businesses. In 2018, the current Council approved rate structure will require an updated rate study including the cost of increased educational outreach and training for handling of recyclable materials to ensure a sustainable rate structure to achieve the zero waste goals that the Council has set for Public Waste and Zero Waste Division. **March 12, 2019** **Partially Implemented** Public Works has determined through internal budget process that Zero Waste needs two additional full-time staff members to oversee the education, outreach, compliance, and enforcement necessary to reach zero-waste goals. The Zero Waste Division will be determining additional funding beyond staffing needed to increase education, outreach, compliance, and enforcement during the strategic planning process. The RFP for the strategic plan process is currently under administrative review. This process will also identify if the current levels of fees can cover the costs of the City's Zero Waste program or if Public Works will need to assess additional fees.

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				November 2021 July 2023	**<u>March 24, 2020</u>** **Partially Implemented** July 2019, City Council approved the hiring two additional full-time staff members to oversee the education, outreach, compliance, and enforcement necessary to reach zero waste goals. At a September 17, 2019 City Council Work Session on the current Rate Review Study, Council provided Public Works and its consultant direction to provide ongoing and additional services to be funded by the Zero Waste Fund. An update of the Rate Review Study will be scheduled with the City Council mid-2020. **<u>November 13, 2022 Update</u>** **Dropped** Revised 5-year Rate Schedules was presented at the December 7, 2021 City Council Work Session. Council consented to moving forward with Proposition 218 process for property owner consent of the revised Rates as proposed. These Revised Schedules included additional costs for: 1) Ecology and CCC contracts ($85 mil over 10 years, sole sourced per Council direction); staffing for AB 341 & 1826, SB1383 and Single Use Disposal Plastic and Litter Reduction Ordinance compliance; and CEQA compliance work for Transfer Station Replacement Concepts A and B. In January 2022, The City Agenda Committee placed the revised 5-year rate schedules on pause.
1.6	Update the City's Zero Waste website to include easily accessible information regarding: • How and where to recycle materials that are not accepted in curbside collection. • What can be brought to the transfer station and materials recovery facility.	Public Works	Agree	October 2016	5/09/2017 Status: not submitted **<u>January 23, 2018 Update:</u>** **Implemented** With the hiring of the Recycle Program Manager, ZWD is continuously streamlining and updating the City's and ZWD's website to include: guidelines to recycle plant debris and food waste; information on the mandatory recycling requirements for businesses and multi-family properties in Alameda County; and links to other recycling resources in the area. Further, the ZWD has made available guidelines to help designers of multifamily, commercial, and mixed-use buildings plan for recycling collection when designing new buildings or renovations. In conjunction with the City's Public Information Officer, the ZWD has distributed press releases to educate the general public about the appropriate material to place in their refuse, recycling and green compost carts, extra pick-up bags, proper cart placement.

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	• Zero waste goals and progress toward those goals. StopWaste.org is a good example and has resources that Berkeley can direct customers to use. Updates should be made as changes are made to the list of materials accepted through each waste stream.				
1.7	Engage in discussions with the California Department of Resources Recycling and Recovery to obtain permission to collect garbage biweekly instead of weekly while maintaining weekly collection of compostables. Perform additional education and outreach prior to implementing biweekly garbage service to educate the public on the change. Alternatively, seek permission to implement a pilot project for biweekly garbage service.	Public Works	Agree The ZWD will investigate the process of obtaining legal permission to pilot biweekly rubbish collection. We will identify the operational and outreach preparation necessary to evaluate the feasibility of this pilot.	N/A	5/09/2017 Status: not submitted **January 23, 2018 Update:** **Dropped** Although a Solid Waste & Recycling Manager and Recycling Program Manager is on staff, the Zero Waste Division, as an enterprise funded collection service division, is unstaffed and inexperienced to engage in the process change of State Law, which requires weekly collection of refuse. In addition, this would require significant lobbying of CalRecycle to approve a pilot program to collect refuse other than on a weekly basis. The Audit Report states that there is the potential of $496,000 annual cost savings by switching to biweekly garbage service. However, and as noted in the Audit Report, this is based on assumptions which: 1) State law requires the refuse shall not remain on any premises more than seven (7) days. Berkeley would need to revise the State law, request a waiver or seek permission for a pilot program. This waiver or revision of State law will potentially require substantial lobbying members of City Council, State House of Representative(s) and Senator(s), as well as, of all the many County and State permitting and health agencies that would be involved to amend State law.

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					2) Require additional staff and funding to support a community educational outreach to ensure that refuse is not just reallocated by community members to the recycling and plant debris carts. 3) Public Works would need to enter into negotiations with the employee bargaining unit to an agreement whether positions can be eliminated through attrition or reassignment.
Finding 2: Limited use of available technologies affects operational efficiencies					
2.1	Work with the Department of Information Technology to configure the CRM system with a required field that auto populates valid route information based on address and service delivery type so that route specific data can be collected on a going-forward basis.	Public Works	Agree	December 2019 December 2019	5/09/2017 Status: not submitted **<u>January 23, 2018 Update:</u>** **Not implemented** Currently the City is implementing an Enterprise Resource Planning (ERP) project to replace the FUND$ system including the CRM application. ERP is a software with financial (accounting, billing, budget, contracts) and human resource (time entry, personnel, payroll, benefits) applications. As part of this project, ZWD has been working with IT and its consultant during the needs assessment phase to ensure that RouteSmart™ will interface with the selected software. **<u>June 4, 2018 Update:</u>** **Not implemented** IT with ZWD is soliciting many companies to demonstrate their invoicing, customer service, and routing systems. With the conclusion of the demonstrations, IT will develop an RFP that will soloist proposals for systems that will integrate with Erma. **<u>March 12, 2019</u>** **Not Implemented** IT released an RFP on behalf of Public Works for Zero Waste Management software on October 18, 2018. As the FUND$ system is in the process of being replaced, a new system was deemed necessary and IT issued an RFP for a Zero Waste Management System and Professional Services consisting of a Waste Billing System, a Waste Computerized Maintenance Management System and a Route Optimization System. One proposal was received. If the proposal is accepted, software installation and implementation is anticipated to begin immediately upon contract execution in May 2019, with software operational by December 2019. The new system will require route optimization and will have an onboard system for drivers containing route information based on address and service delivery type so that route-specific data can be

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				November 2022 July 2024	collected on a going-forward basis. The details of this system will be evaluated and developed as part of implementation. In addition to these new systems, Public Works and Parks are also implementing a new computerized maintenance management system. Once that vendor has been selected, then 311 will issue an RFP for a new Customer Relationship Management system that will integrate with the Zero Waste solutions. **March 24, 2020 Update** **Not Implemented** IT is finalizing the contract the new Zero Waste software management system and to be completed late 2020. After this in operation, RFPs will be issued for new Routing and CRM system. When these are operational, CRM will be able to integrate routing information. **November 13, 2022 Update** **Dropped** Contract awarded to AMCS to install new customer account & financial software platform to be up and running by mid-2024.
2.2	Work with the Department of Information Technology to create a link between RouteSmart and the CRM system (or the software implementation of Recommendation 2.5 below).	Public Works	Agree Zero Waste will work with IT to create the most efficient link between RouteSmart™ and the CRM system that can be created, given available resources. One solution, budget permitting, would be implementing the best of breed billing system that integrates with RouteSmart, rather than to trying to configure the CRM system to handle functions it was never designed to handle.	April 2015 December 2019	5/09/2017 Status: not submitted **January 23, 2018 Update:** **Not Implemented** IT has been able to create a table that extracts customer information from the FUND$ and RouteSmart™. However, and due to the limitations of FUND$, this link takes hours to download information into RouteSmart™ versus that the company states should take minutes. Therefore, until the installation of the ERP process is completed, RouteSmart™ cannot be used to its full route optimization capabilities. **March 12, 2019** **Not Implemented** Working with RouteSmart™ for further integration was deemed not worthwhile as that system does not integrate with ArcGIS which is the City's primary system for spatial data. IT released an RFP on behalf of Public Works for Zero Waste Management software on October 18, 2018. The RFP was for a Zero Waste Management System and Professional Services consisting of a Waste Billing System, a Waste Computerized Maintenance Management System and a Route Optimization System. One proposal was received. If the proposal is

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Findings and Recommendations		**Lead Dept.**	**Agree, Partially Agree, or Do Not Agree and Corrective Action Plan**	**Expected or Actual Implementation Date**	**Status of Outstanding Audit Recommendations and Implementation Progress Summary**
				November 2022 August 2024	accepted, software installation and implementation is anticipated to begin immediately upon contract execution in May 2019, with software operational by December 2019. In addition to these new systems, Public Works and Parks are also implementing a new computerized maintenance management system. Once that vendor has been selected, then 311 will issue an RFP for a new Customer Relationship Management system that will integrate with the Zero Waste solutions. **March 24, 2020 Update:** **Not Implemented** After evaluating various applications and discussed by IT. IT-CS and PW, a link between RouteSmart and CRM cannot be installed. Therefore, the first step of soliciting a new Zero Waste software management system. Then, an RFP for new routing software will be issued. In IT-CS will be soliciting a new CRM system. **November 13, 2022 Update** **Dropped** Contract awarded to AMCS to install new customer account & financial software platform to be up and running by mid-2024.
2.3	Appoint individuals at the management, supervisory, and line staff levels to meet and identify Zero Waste Division operational and analytical reporting needs based on the performance goals at each level of the organization. Work with IT staff to determine responsibility and establish timelines for developing the reports.	Public Works	Agree.	September 2016	5/09/2017 Status: not submitted **January 23, 2018 Update:** **Implemented** ZWD along with IT, 311 Call Center, and Revenue Collection have established a monthly meeting to address operational and reporting needs; and create action plans to address those identified needs. These monthly reports included reviewing and analyzing as a Group: 1) monthly 311 calls on various the community members zero waste issues, 2) develop resolutions on community members' zero waste issues (reviewed weekly by 311 and ZWD personnel), and 3) review and resolve community members' LAGAN cases created by 311 calls.
2.4	Designate a business-line expert within the	Public Works	Agree	December 2018	5/09/2017 Status: not submitted **January 23, 2018 Update:**

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	Zero Waste Division and require that expert to develop internal capacity to configure optimal collection routes and produce standardized reports for route specific reporting using existing software (or the software implementation of Recommendation 2.5 below). The reports developed should allow measurement of the performance metrics developed in Recommendation 1.2 and 1.3 above.			December 2019 May 2021	**Not Implemented** In late 2016 and with RouteSmart™ staff input, ZWD reviewed its current staff capability to implement complete routing needs. And it was determined, the ZWD staff is not currently capable of this effort. ZWD has only recently achieved sufficient fund balance to have the funding ability to budget and requisition this job classification with its annual budget. With the completion of the optimization of commercial routing, ZWD in collaboration with IT will propose to fund this position in FY2019. **March 12, 2019 Update:** **Not Implemented** Additional staffing positions have been proposed as part of the budget process with both the Senior Solid Waste Supervisor and an Associate Management Analyst being tasked with route optimization once new software has been identified and implemented. As mentioned elsewhere in this table, an RFP process for this software is currently underway. **March 24, 2020** **Dropped** Existing software (FUND$ and RouteSmart™) are not capable or adaptable to allow configuration of optimal routing. IT received one proposal for an RFP for a Zero Waste Management System that includes a Waste Billing System, a Waste Computerized Maintenance Management System on October 18, 2018. Once the contract is finalized and the system installed, an RFP for Routing System may be released. With a user-friendly routing system, performance metrics; such as, cart set out and participation rates cubic yards/tons collected; can be complied and reports developed.
2.5	Assess the benefits of using mobile technologies that would allow drivers to enter information directly into the CRM system while on their routes, take pictures of why pickups were skipped, and implement electronic	Public Works	Agree The Zero Waste Division will work with Information Technology and Human Resources Departments to assess the pros, cons, and feasibilities of mobile technologies (hardware and software).		5/09/2017 Status: not submitted **January 23, 2018 Update:** **Not Implemented** ZWD with IT input has been working with the RouteSmart™ to determine if ZWD can utilize its mobile technology to improve route management and provide real-time service data to the customer service representatives in the 311 Call Centers. Fixed unit GPS units are available in the marketplace to track truck movements, such as, missed pickups. However, and with any mobile technology, these systems are constantly involving and improving. Therefore, any investment in a mobile system will not be implemented until the

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	route books and other mobile field reporting. Include in the assessment changes to job responsibilities that might require a meet and confer with union representatives. Purchase the software and hardware if cost beneficial.			December 2019 January 2021 August 2024	City's ERP project vendor selected, contract awarded and then ZWD/IT needs assessment completed. **March 12, 2019** **Partially Implemented** IT released an RFP on behalf of Public Works for Zero Waste Management software on October 18, 2018. The RFP was for a Zero Waste Management System and Professional Services consisting of a Waste Billing System, a Waste Computerized Maintenance Management System and a Route Optimization System. These systems will utilize onboard mobile hardware. In addition, this system will integrate with the new GPS solution which will integrate with the Zero Waste solution allowing for real time decision making and route information. Exact capabilities of both systems will be validated and coordinated as part of the contracting process once the vendors are selected. **March 24, 2020 Update** **Partly Implemented** IT released an RFP for a Zero Waste Management System and Professional Services consisting of a Waste Billing System, a Waste Computerized Maintenance Management System will allow a follow-up RFP for Route Optimization System on October 18, 2018. One proposal was received. IT and Legal are in the process of finalizing a contract with the vendor with software installation to follow. Once this system is installed and operating, an RFP for onboard truck/route/customer reporting system may be released. **November 13, 2022 Update** **Dropped** Contract awarded to AMCS to install new customer account & financial software platform to be up and running by mid-2024.
2.6	Work jointly with the Department of Information Technology and the Department of Finance to develop and automate script flows in the CRM system to ensure that all cases undergo the appropriate	Public Works	Agree	October 2016	5/09/2017 Status: not submitted **January 23, 2018 Update:** **Implemented** ZWD, IT, 311 Call Center, and Finance have developed script flows with use of the CRM tracking systems to ensure all cases receive appropriate review prior to closing. These cases are compiled and reviewed weekly and monthly by ZWD, IT, 311 Call Center, and Finance staff.

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Findings and Recommendations		**Lead Dept.**	**Agree, Partially Agree, or Do Not Agree and Corrective Action Plan**	**Expected or Actual Implementation Date**	**Status of Outstanding Audit Recommendations and Implementation Progress Summary**
	reviews before a case can be closed. The final step in the script flow should be a final review by someone who has authority to verify that all required steps have occurred before the case is closed.				
2.7	Use the reports developed from implementing recommendation 2.4 To monitor customer complaints and determine what impact the annual bid process has on customer service. If the information demonstrates the annual bid process significantly affects customer service, meet and confer with union representatives to discuss the elimination the annual route bidding process to help reduce customer complaints and improve service delivery. Implement change if	Public Works	Agree Zero Waste will use the CRM system to monitor customer complaints and help assess the effect of the yearly bid process.	January 2019 June/August 2019 January 2021	5/09/2017 Status: not submitted **<u>January 23, 2018 Update:</u>** **Not Implemented** ZWD services 62 commercial route days and these ZWD's routes include: 42 refuse route days, 11 fiber (cardboard, paper) route days, 5 mixed recyclable route days and 6 plant debris/food waste routes days. After the new commercial accounts are optimized with existing commercial accounts/routes, ZWD will be in the position to numerically determine if the annual bid system is affecting customer service. With this information completed, this would enable ZWD to meet and confer with the Union. **<u>June 4, 2018 Update:</u>** **Not Implemented** With the integration of an additional 440 commercial accounts (had been serviced by either Waste Management, Inc. or Republic Services, Inc.) completed March/April 2018, with existing commercial accounts/routes, ZWD is in the position to numerically determine if the annual bid system is affecting customer service in April 2019. When this information is completed, ZWD will have information to meet and confer with the Union. **<u>March 12, 2019</u>** **Not Implemented** The annual bid process is set to begin February 2019 and its impacts will be evaluated June 2019. **<u>March 24, 2020 Update:</u>** **Dropped** Meet and confer with SEIU 1021 is ongoing and the Route Bid system as currently handled is in place. With the completion of the meet and confer, it will be reassessed at that time.

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Findings and Recommendations		**Lead Dept.**	**Agree, Partially Agree, or Do Not Agree and Corrective Action Plan**	**Expected or Actual Implementation Date**	**Status of Outstanding Audit Recommendations and Implementation Progress Summary**
	agreement is reached.				
2.8	Create a method for community members to track the status of their cases online, which will reduce the call volume to the 311 Call Center.	Information Technology	Agree This functionality will be available after the upgrade of our CRM system is complete, currently scheduled to be no later than the end of FY 2015.	June 2016 June 2020 January 2022	5/09/2017 Status: not submitted **January 23, 2018 Update:** **Not Implemented** Currently 311 team members create cases and assigned them to the appropriate service queue for ZWD investigation and response. This system allows the City to internally track issues but the ability of community member to track independently or via the City website has not been linked. Currently the City is implementing an Enterprise Resource Planning (ERP) project to replace the FUND$ system and to update the City website. With the installation of the selected ERP, then the CRM system can be integrated with the ERP system. This integration would allow community members' to track their issues, such as, missed pickups, cost of service, etc. only. **March 12, 2019** **Not Implemented** IT released an RFP on behalf of Public Works for Zero Waste Management software on October 18, 2018 for a complete Zero Waste Solution. Software installation and implementation is anticipated to begin immediately upon contract execution in May 2019, with software operational by December 2019. Subsequently, IT will be issuing an RFP for a new 311 system to replace LAGAN that will integrate with the Zero Waste solution. One of the objectives of these new systems is to provide customers the ability to track their requests. **March 24, 2020 Update** **Partially Implemented** IT released an RFP for a Zero Waste Management System and Professional Services consisting of a Waste Billing System, a Waste Computerized Maintenance Management System will allow a follow-up RFP for Route Optimization System on October 18, 2018. One proposal was received. IT and Legal are in the process of finalizing a contract with the vendor with software installation to follow. Once this system is installed and operating, an RFP for onboard truck/route/customer reporting system may be released. With an onboard system linked to Customer Relationship Management (CRM)

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				August 2024	reporting system, customers could track status of their cases, such as, missed pickups, late routes, etc **November 13, 2022 Update** **Dropped** Contract awarded to AMCS to install new customer account & financial software platform to be up and running by mid-2024.

03

Office of the City Manager

INFORMATION CALENDAR
November 3, 2022

To: Honorable Mayor and Members of the City Council

From: Dee Williams-Ridley, City Manager

Submitted by: Liam Garland, Director, Public Works

Subject: Audit Status Report: Unified Vision of Zero Waste Activities Will Help Align Service Levels with Billing and Ensure Customer Equity

INTRODUCTION

The Office of the City Auditor presented to the City Council a September 20, 2016 Report: Unified Vision of Zero Waste Activities Will Help Align Service Levels with Billing and Ensure Customer Equity. The City Auditor conducted the audit to assess whether the City of Berkeley is correctly billing customers based on their actual refuse collection levels; whether all Berkeley residents are signed up to receive refuse, recycling, and plant debris collection service as required by the Berkeley Municipal Code; and whether there are opportunities for improving both refuse and service delivery operations. This is the final status report on the efforts made to implement the Audit Report's recommendations, which are slated for no further follow-up action as recommended by the City Auditor for all audits more than five years old.

CURRENT SITUATION AND ITS EFFECTS

The Audit Report included twelve (12) recommendations for the Office of the City Manager and Departments of Finance, Information Technology, and Public Works to review, implement, and report to Council regarding the status of recommendations. This is the fifth and final status report on the recommendations. Public Works has continued to make progress since the last status update. The Auditor's Office verified six recommendations as implemented and has dropped the remaining six recommendations. Please see Attachment 1 for a detailed table of audit report recommendations, corrective actions, and implementation progress.

BACKGROUND

Public Works' Zero Waste Division is responsible for the collection of residential material, including refuse, recycling, and composting; collection and processing of commercial material, including refuse, recycling, and composting; off-site hauling and composting of green/food waste for all customers; off-site hauling, sorting, and marketing of construction and demolition debris for all customers; and manages contracts related to the above work.

ENVIRONMENTAL SUSTAINABILITY AND CLIMATE IMPACTS

With the implementation of the Audit's recommendations, the Zero Waste Division will continue to help reduce the volume of waste landfilled and:

- Increase residential composting, recycling, and source reduction.
- Increase commercial composting, recycling, and source reduction.
- Increase recycling of construction and demolition (C&D) debris.
- Expand efforts to eliminate waste at its source.
- Increase waste diversion in public buildings.

All of these above-noted items promote the City's zero waste goal and are included in the approved Climate Action Plan Goals for Waste Reduction and Recycling.

POSSIBLE FUTURE ACTION

Public Works will continue to take timely and focused action(s) to address outstanding and partially implemented recommendations. The Zero Waste Division is working with the Information Technology and Finance Departments to select the software solution(s) needed to facilitate the implementation of the audit recommendations.

FISCAL IMPACTS OF POSSIBLE FUTURE ACTION

Public Works will update Council periodically on the progress, resources available, and any additional funding needed to address those recommendations that remain outstanding and partially implemented.

CONTACT PERSON

Greg Apa, Solid Waste and Recycling Manager, (510) 981-6359

Attachment:

1. Audit Findings and Recommendations Response Form

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Audit Title: Unified Vision of Zero Waste Activities Will Help Align Service Levels with Billing and Ensure Customer Equity					
Findings and Recommendations		**Lead Dept.**	**Agree, Partially Agree, or Do Not Agree and Corrective Action Plan**	**Expected or Actual Implementation Date**	**Status of Outstanding Audit Recommendations and Implementation Progress Summary**
Finding: Integrated thinking about zero waste operations will help ensure accurate billings and customer equity					
1.1	Agree to a common and unified vision for zero waste operations. Discuss the long-term zero waste goals, objectives, and key initiatives and share that information with those responsible for day-to-day operations. Use meetings and informal communications to regularly encourage staff to embrace a unified view of zero waste operations.	City Manager's Office and Team Response: Public Works, Finance, and Information Technology	Agree	October 2016	**January 23, 2018 Update** **Implemented** Since late 2015, Zero Waste, 311, and IT (called collectively the Customer Solutions Group or Group) have met on a monthly basis to discuss operational issues that affect the three divisions. Given that this Group was already in place and per the Auditor's recommendation, the Group opted to include Finance as a participant instead of creating of a separate team and meeting. The meetings' monthly agenda identifies that the Group's primary focus is the development and continuous implementation of a common approach by all members to ensure a unified vision for zero waste operations for all community members. In addition, the meetings' agenda details those customers' issues as they occur, so that, the Group's members resolve them. These resolutions are applied by the Group to continue its efforts to strive towards the City's zero waste goals and the initiatives needed to attain these goals.
1.2	Form a zero waste team comprised of managers and line staff involved with zero waste operations (i.e., waste collection, billings, customer calls, systems support). Include a diverse pool of people who can share ideas, resources, and knowledge. Have the team members' work collectively to evaluate their respective functions; the interrelationships among their departmental activities; and the practices, policies, and procedures they use to perform their zero waste account management and operations functions. Ensure that the team understands that their	Team Response: Public Works, Finance, and Information Technology	Agree	October 2016	**September 20, 2016 Update** **Implemented** Zero Waste, 311, and IT meet on a monthly basis to discuss operational issues that affect the three divisions. This meeting schedule has been in existence for over one year. Since there was already a setup in place, we decided to include Finance as a participant versus create a separate team. We expanded the group and meeting scope to accommodate the Auditor's recommendations. At every meeting, it will be the first agenda item to make sure all participants are made aware of the team's concept. We will consider this completely implemented by October 2016, as at that time we will have met twice within the capacity required by this audit recommendation. This will be a regular meeting for the foreseeable future. The team members do understand that the Zero Waste operation is an enterprise with different parts and that the success of the operation depends on each of these distinctive units working together.

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	goal is to develop and support a holistic approach to zero waste operations not only to ensure billing accuracy, but also to help accomplish zero waste by 2020 and ensure continued efficient and effective operations beyond that achievement.				
1.3	Require the zero waste team formed in response to recommendation 1.2 to develop written procedures that clearly support cross- departmental strategies and help staff perform their work, as well as understand how their work contributes to success. Include information that helps promote the unified view of zero waste operations, while also explaining the individual tasks that take place within the departments and how those connect. Examples include, but are not limited to, describing the process for routing customer cases from 311 calls, and detailing in layman's terms the monthly updates that take place to align the CX and RouteSmart systems. Also see recommendation 1.2.	Team Response: Public Works, Finance, and Information Technology	Agree	Originally Expected December 2017 July 2019	**<u>September 20, 2016 Update</u>** Staff from the Zero Waste Division, 311 Customer Service Center, Information Technology, and Finance Revenue Collection are reviewing and updating standard operating procedures for refuse and recycling services; reconfiguring and updating webpages; and creating technical assistance tools for zero waste customers. In July 2016, the group participated in an IT Strategic Plan Workshop to review the start of service process using the Rapid Workflow Process Model. The group will use this model to review other critical workflow processes. **<u>January 23, 2018 Update</u>** **Partially Implemented** The Customer Solutions Group is constantly reviewing and updating standard operating procedures for refuse and recycling services; reconfiguring and updating webpages; and creating technical assistance tools for its zero waste customers. An example of this effort is Zero Waste and 311 identified issues related to responding to the community members complaints related to collection services. Zero Waste and 311 developed 311's scripted response and Solid Waste Supervisor response flow chart to ensure these issues were addressed within a 48 hour time frame. In July 2016, the Group participated in an IT Strategic Plan Workshop to review the start of service process using the Rapid Workflow Process Model. And as of this date, the ERP implementation schedule hasn't reached its scheduled timeline to integrate CX and RouteSmart systems. Nonetheless, the Group will use this Model to review other critical workflow processes to ensure that updates are developed in layman's terms in its monthly updates. **<u>September 25, 2018 Update</u>** **Partially Implemented**

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				December 2019 January 2021 July 2024	IT administration, IT-311 and Zero Waste have commenced efforts, such as, an As-Is (existing software) review to improve customer interface with the City and a To-Be (future software) for the development of an RFP to solicit new software for new customer interface, refuse billing and routing systems. These reviews were facilitated by the City's software consultant, Third Wave. The RFP is tentatively scheduled for a late 2018 release. Rather than the purchase of another software system to integrate the existing inefficient (i.e., requires another software program to be bolted on to existing software), and inadequate software, a new routing and customer billing system would replace the CX and RouteSmart™ systems, integrate with ERMA and would be customer driven resolution and coordinated billing system. **March 12, 2019 Update** **Partially Implemented** IT released an RFP on behalf of Public Works for Zero Waste Management software on October 18, 2018. The RFP was for a Zero Waste Management System and Professional Services consisting of a Waste Billing System, a Waste Computerized Maintenance Management System and a Route Optimization System. One proposal was received. If the proposal is accepted, software installation and implementation is anticipated to begin immediately upon contract execution in May 2019, with software operational by December 2019 **March 24, 2020 Update** **Partially Implemented** IT released an RFP for a Zero Waste Management System and Professional Services consisting of a Waste Billing System, a Waste Computerized Maintenance Management System will allow a follow-up RFP for Route Optimization System on October 18, 2018. One proposal was received. IT and Legal are in the process of finalizing a contract with the vendor with software installation to follow. **November 13, 2022 Update** **Dropped** Contract awarded to AMCS, July 2020, to install new customer account & financial software platform to be up and running by mid-2024.
1.4	Require the zero waste team formed in response to	Team Response:	Agree	October 2016	**September 20, 2016 Update** **Implemented.**

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	recommendation 1.2 to have regular meetings, e.g., quarterly, to share information about their operations and the known or expected changes and events that may impact cross-functional efforts. These meetings may need to be more frequent at first and less frequent over time. The team should use their meeting time to: ▪ Identify continued barriers to change. ▪ Decide on solutions that will help overcome barriers. ▪ Share information about the challenges preventing staff from meeting operational objectives. ▪ Make cross-departmental decisions to improve processes and customer service. Also see recommendation 1.2.	Public Works, Finance, and Information Technology			As mentioned in response to recommendation 1.2, we expanded our existing monthly meeting to include Finance. The purpose of those meetings has always been to share information about operational and staff challenges. We expanded the meeting to include specific suggestions for this recommendation. This initiative will be a continuous process that will be put in place for years to come as it becomes part of managing the operations of Zero Waste.
1.5	In collaboration with Information Technology and as part of Enterprise Resource Planning, budget for, select, and install an account management system designed for zero waste activities. Use information from the zero waste team evaluation (recommendation 1.2) and zero waste strategy analyses	Team Response: Public Works and Finance	Agree		**<u>January 23, 2018 Update</u>** **Not Implemented** The current Customer Relationship Management (CRM) system will not integrate with RouteSmart™ due to both FUND$ and CRM system limitations. The City is currently engaged in the Enterprise Resource Planning process to replace the FUND$ and then integrate the CRM system, which according to the current schedule by June 2019. The long term solution will be to procure a new customer management, operations and billing software that will fully integrate the RouteSmart™ with the new ERP. Zero Waste Division and the Customer Solutions Group is actively engaging with IT to ensure that the new ERP system recognizes that Zero Waste Division is an enterprise funded operation. That is, it would be desirable to utilize RouteSmart system's

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(recommendation 1.8) to identify the critical business needs that should be included in the purchase of new zero waste account management system, or that should be considered when determining whether sufficient middleware options exist to fully integrate existing systems with the new account management software. Also see recommendations 1.2 and 1.8.			July 2019 December 2019 January 2021 July 2024	capabilities to generate customer driven service requests (work orders), whereas the current ERP system is a City staff internally generated system input. IT has recognized that to provide seamless CRM service that a Request for Proposals (RFP) for an application that delivers the most efficient financial and operational software system that specifically handles the Zero Waste collection services will be written in FY2018 as part of Phase 2 of the ERP project. **September 25, 2018 Update** **Partially Implemented** IT administration, IT-311 and Zero Waste have commenced efforts, such as, an As-Is (existing software) review to improve customer interface with the City and a To-Be (future software) for the development of an RFP to solicit new software for new customer interface, refuse billing and routing systems. These reviews were facilitated by the City's software consultant, Third Wave. The RFP is tentatively scheduled for a late 2018 release. Rather than the purchase of another software system to integrate the existing inefficient (i.e., requires another software program to be bolted on to existing software), and inadequate software, a new routing and customer billing system would replace the CX and RouteSmart™ systems, integrate with ERMA and would be customer driven resolution and coordinated billing system. **March 12, 2019 Update** **Partially Implemented** IT released an RFP on behalf of Public Works for Zero Waste Management software on October 18, 2018. The RFP was for a Zero Waste Management System and Professional Services consisting of a Waste Billing System, a Waste Computerized Maintenance Management System and a Route Optimization System. One proposal was received. If the proposal is accepted, software installation and implementation is anticipated to begin immediately upon contract execution in May 2019, with software operational by December 2019. **March 24, 2020 Update** **Partially Implemented** IT released an RFP for a Zero Waste Management System and Professional Services consisting of a Waste Billing System, a Waste Computerized Maintenance Management System will allow a follow-up RFP for Route Optimization System on October 18, 2018. One proposal was received. IT and Legal are in the process of finalizing a contract with the vendor with software installation to follow. **November 13, 2022 Update.**

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					Dropped Contract awarded to AMCS to install new customer account & financial software platform to be up and running by mid-2024.
1.6	Incorporate systems thinking into the hiring process for both competitive and promotional recruitments: ▪ Describe the interdependent nature of zero waste operations in job announcements. ▪ Highlight the cross-functional responsibilities and relationships in job descriptions. Discuss cross-functional experiences during job interviews to gain an understanding of an applicant's mindset about shared accountability.	Team Response: Public Works and Finance	Agree Difficult to implement I and II because some classifications are not specific to Zero Waste operations but are general classification that are Citywide Item III – During job interviews for Zero Waste functions, questions are tailored to potential hires about the working conditions specifically as the relate to Zero Waste.	October 2016 October 2016	**<u>September 20, 2016 Update</u>** Public Works is currently recruiting for zero waste and using the interview techniques described. Finance and IT, however, are not in the process of, or able to identify when they will be, recruiting for a position for which this recommendation applies. Therefore, we cannot identify a future implementation date. However, both IT and Finance applied these concepts in recent hires. Additionally, all the departments intend to use the concepts described in the recommendation as much as allowable and consider this recommendation implemented. During the interview process, candidates are provided an overview of Zero Waste Division operations including relationships with other departments, the strategic priorities used to guide our everyday thinking and application of resources, and owning the commitment to excel in the areas of courtesy, knowledge, promptness, and teamwork. To the extent possible and allowable by the City's recruitment practices, we will include in our recruitment materials information that conveys to applicants for general classifications that their work will include cross-functional responsibilities and shared accountability. **<u>January 23, 2018 Update</u>** **Implemented** The Departments of Public Works and Human Resources have reviewed the process of development of job announcements, such as, the recent hiring of Zero Waste Division Operations Manager to directly address the issues noted in this Recommendation. With this job description for the Operations Manager and future Zero Waste management, administrative and operation staff positions will include a description of the interdepartmental nature of zero waste operations, and highlight cross-functional responsibilities.
1.7	Require that someone other than the person who manually calculated the zero waste rates and entered the updated rates into the CX module	Finance	Agree	May 2015	**<u>September 20, 2016 Update</u>** Completed. For FY 2016 updates, which was input in 2015, Finance implemented a Quality Assurance process in which an error report was produced by IT. The Supervisor reviewed the report and made corrective changes. The report was re-

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	perform an independent review of the calculations and data entry for accuracy. Have the reviewer report back on any errors. Ensure that management is also notified of the errors, verifies that the corrections were made, and signs off on the review.			July 2024	produced two other times to make sure all the error was fixed and the Manager of the unit signed off on the final report before finalizing system changes. **January 23, 2018 Update:** **Implemented** The initial base rates were approved by Resolution No. 66,600-N.S. effective July 1, 2014 for FY2015. The Department of Public Works administration calculates the next Fiscal Year's rates based on the previous Fiscal Year's rates. The rates are calculated utilizing the current CPI, the published April annual rate, or 3%, whichever is greater. These new FY rates and calculations are verified and signed off by Zero Waste Division Manager. The completed approved Rate Tables are then forwarded to the Finance Department Revenue Collections Manager for final verification and FUND$ system input for billing. **November 13, 2022 Update** **Implemented** Contract awarded to AMCS, July 2020, to install new customer account & financial software platform to be up and running by mid-2024. New Rates were proposed at a 12/07/2022 Council Work Session that was to include the cost of AMCS. The Proposition 218 rate approval process was put on hold by City Agenda Committee in January 2022.
1.8	Request that Information Technology use the CX module data extracts, such as the one used for this audit, to provide Public Works staff with the data they need to analyze zero waste strategies. Use the data extracts to further identify the critical business needs for new zero waste account management software. Also see recommendation 1.5.	Public Works	Agree	Originally Expected: December 2016	**September 20, 2016 Update** We will ask IT to provide our fiscal services and zero waste strategy staff with CX data using existing data extracts, and use that for data analytics using software such as Excel. We will use these extracts to help identify the reporting needs of a new zero waste account management system. If needed, IT staff can provide reports or training to Public Works staff so they are able to run the reports themselves or extract the information in the format needed, if feasible. **January 23, 2018 Update** **Not Implemented** The CX module data utilized for this Audit was specifically designed to support the data request and this is what is called a bolt-on module, which means, it retrieves specific data requested from the CRM. Any module development requires IT to code, test and implement these bolt-on modules for a specific request. To analyze all appropriate data to identify a critical Zero Waste Division business need(s) would require the utilization of data residing in RouteSmart™. The Current CRM system will not integrate or auto-populate with RouteSmart™ due to CRM system limitations. Per

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			December 2019	the current IT ERP implementation schedule, the City is scheduled to upgrade and/or replace the CRM system in June 2019. The long term solution will be to procure a new customer management, operations and billing software that will integrate and fully utilize the RouteSmart™ data. An RFP for an application that delivers the most efficient financial and operational software system specific to the Zero Waste Division operational and the solid waste industry requirements is scheduled to be developed in FY2018 as part of Phase 2 of the ERP project. **<u>September 25, 2018 Update</u>** **Partially Implemented** IT provided extensive CX data in support of the Commercial Route expansion. During the expansion which involved adding over 400 accounts, critical limitations of the CZX software were identified. Additionally, IT facilitated the key departments to complete an As-Is analysis of existing software to identify areas of improvement. The departments have completed s To-Be analysis of future software which was the basis for a Request For Proposals (RFP) to solicit new software for new customer interface, refuse billing and routing systems. Both the CX (customer account management and billing software) and RouteSmart™ (collection routing software) systems are planned for replacement within the next year. These reviews were facilitated by the City's software consultant, Third Wave. The RFP is tentatively scheduled for late 2018 release. IT administration, IT-311 and Zero Waste are collaborating to ensure a unified approach. This new routing and customers billing software will the CX and RouteSmart™ Systems and integrate with Erma, the City's new financial software system. The new software will be customer driven and provide enhanced, coordinated billing system.
			December 2019 January 2021	**<u>March 12, 2019 Update</u>** **Partially Implemented** IT released an RFP on behalf of Public Works for Zero Waste Management software on October 18, 2018. The RFP was for a Zero Waste Management System and Professional Services consisting of a Waste Billing System, a Waste Computerized Maintenance Management System and a Route Optimization System. One proposal was received. If the proposal is accepted, software installation and implementation is anticipated to begin immediately upon contract execution in May 2019, with software operational by December 2019. **<u>March 24, 2020 Update</u>** **Partially Implemented**

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				July 2024	IT released an RFP for a Zero Waste Management System and Professional Services consisting of a Waste Billing System, a Waste Computerized Maintenance Management System will allow a follow-up RFP for Route Optimization System on October 18, 2018. One proposal was received. IT and Legal are in the process of finalizing a contract with the vendor with software installation to follow. **November 13, 2022 Update.** **Dropped** Contract awarded to AMCS to install new customer account & financial software platform to be up and running by mid-2024.
1.9	Perform, or contract for, a fully comprehensive route audit to align service delivery with billing rates. Use the route audit to: ▪ Make CX module and/or RouteSmart system updates to ensure customers are billed correctly for their City-provided services. ▪ Ensure that all residential accounts are receiving required services. ▪ Ensure that the commercial accounts that the City is responsible for receive and pay for the zero waste services required by City policy. Verify that roll-off bin customers serviced by the Zero Waste Division are accurately billed.	Public Works	Agree	Originally expected: July 2018 December 2019	**September 20, 2016 Update** As part of the route audit, actual service levels will be compared against data in the CX module and appropriate updates made to ensure that all residential and commercial accounts are receiving required services and billed correctly for those services. Route books will also be updated to reflect the results of the route audit. **January 23, 2018 Update** **Not Implemented** IT has created a table for monthly routing development that extracts customer information from the FUND$ and provides the data to be then downloaded into RouteSmart™. Due to the FUND$ system limitations, this link takes hours to download information into RouteSmart™. The company, RouteSmart™, has stated that this integration process should take minutes. The City will be replacing the ERP system in June 2019 and then the CRM system would be upgraded or replaced. The long term solution is to integrate the new customer management, operations and billing software with RouteSmart™. With RouteSmart™ full utilization and the integration of a work order system, the invoicing system could be customer based, i.e. customers' billing and services are directly linked with the new EFP implementation, to allow the City to more easily reconcile services provided with customers' invoices. **September 25, 2018 Update** **Partially Implemented** IT facilitated the key departments to complete an As-Is analysis of existing software to identify areas of improvement. The departments have completed s To-Be analysis of future software which was the basis for a Request For Proposals (RFP) to solicit new software for new customer interface, refuse billing and routing systems. Both the CX (customer account management and billing software) and RouteSmart™ (collection routing software) systems are planned for replacement within the next year. These reviews were facilitated by the City's software consultant, Third Wave. The RFP is

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				December 2019 January 2020 July 2024	tentatively scheduled for late 2018 release. IT administration, IT-311 and Zero Waste are collaborating to ensure a unified approach. This new routing and customers billing software will the CX and RouteSmart™ Systems and integrate with Erma, the City's new financial software system. The new software will be customer driven and provide enhanced, coordinated billing system. **March 12, 2019 Update** **Partially Implemented** IT released an RFP on behalf of Public Works for Zero Waste Management software on October 18, 2018. The RFP was for a Zero Waste Management System and Professional Services consisting of a Waste Billing System, a Waste Computerized Maintenance Management System and a Route Optimization System. One proposal was received. If the proposal is accepted, software installation and implementation is anticipated to begin immediately upon contract execution in May 2019, with software operational by December 2019. **March 24, 2020 Update** **Partially Implemented** IT released an RFP for a Zero Waste Management System and Professional Services consisting of a Waste Billing System, a Waste Computerized Maintenance Management System will allow a follow-up RFP for Route Optimization System on October 18, 2018. One proposal was received. IT and Legal are in the process of finalizing a contract with the vendor with software installation to follow. **August 24, 2022 Update.** **Dropped** Contract awarded to AMCS to install new customer account & financial software platform to be up and running by mid-2024.
1.10	Enforce the requirement for zero waste drivers to compare actual service levels against route books and addenda during their collection routes, and report any variances to the Zero Waste Division supervisor for correction. Ensure that the drivers' efforts are supported by taking action to correct the	Public Works	Agree.	December 2016	**September 20, 2016 Update** We agree that the actual service levels should be compared against route books but believe that enforcing the policy to have drivers do onsite comparisons is no longer an efficient use of our drivers' time. We are exploring other options, such as using student interns to do the comparisons. **January 23, 2018 Update** **Implemented** The Zero Waste drivers are reminded monthly to verify actual service levels with the route books for their collection routes by the Zero Waste Management Team. The Zero Waste dispatcher(s) are in constant communication with the drivers to ensure service levels are correct. If service levels are not corrected, Zero Waste Supervisor(s)

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	discrepancies.				undertake appropriate corrective actions to ensure verification.
1.11	When drafting new franchise hauler agreements: ▪ Clearly define the fee calculation requirements. ▪ Clearly define the type of financial data and reports that the haulers must submit to support their fee calculations. Create and enforce the use of standardized forms for the franchise haulers to use when remitting their fees to facilitate Public Works staff's review.	Public Works	Agree	Originally Expected: December 2017 July 2019	**<u>September 20, 2016 Update</u>** The City has contracted with a consultant to assess development and implementation costs related to the City's planned in-house commercial hauling system, and evaluate the financial and operational impacts of that system on the City and on existing commercial customers. The study will look at future franchise agreements for waste collection services and will include these factors. **<u>January 23, 2018 Update</u>** **Not Implemented** The City Council approved a recommendation to replace the current non-exclusive franchise collection system for commercial refuse and recyclables with in-house commercial refuse and recycling collection services except for roll-off service. In FY19, Public Works' will be issuing an RFP to solicit a consultant to review all Transfer Station and residential and commercial community members' rates. Once contracted, the consultant will assess development and implementation costs related to redesigning the franchise commercial hauling system to provide for roll-off and compactor services. Then, the consultant will evaluate the financial and operational impacts of that system on the City and on existing commercial customers. **<u>January 23, 2018 Update</u>** **Not Implemented** No changes since last report, but progress continues on this item. **<u>September 25, 2018 Update</u>** **Not Implemented** No changes since last report, but progress continues on this item. **<u>March 12, 2019 Update</u>** **Dropped** With Zero Waste Division successful completion in March 2018 of the integration of commercial accounts (440 +) formerly collected under the existing Non-Exclusive Commercial Hauler Franchise Agreement system, revision of the existing system is not required. Zero Waste does not anticipate issuing new Franchise Agreements but will work with the three existing Franchisees during the next Franchise Agreement renewal process in 2020 to enhance reporting requirements. Public Works will also evaluate the published fees as set by resolution as listed in 9.60.260 of the Municipal Code.

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1.12	Continue to investigate whether the franchise hauler erroneously removed recyclables from its fee calculations and, if so, back bill as allowable, per state law and city code.	Public Works	Partially Agree	Originally Expected; December 2016 October 2018	**September 20, 2016 Update** City Council Approved a Public Works Action Calendar Item to replace the current non-exclusive franchise collection system. Public Works' long-term plan is for the department to take over all commercial zero waste services except for roll-off containers and compactors. Given the planned changes, it is not practical or cost-effective to undertake the task of investigating the past fee calculations. However, moving forward, for any franchise hauler agreements we may have, we will require that staff have written procedures in place that describe the correct calculations for determining what that haulers owe the City, and that staff review invoices for accuracy in comparison to those calculation requirements. **January 23, 2018 Update** **Alternative Implemented** At its May 26, 2015[1], the City Council approved a Department of Public Works Action Calendar Item to replace the current non-exclusive franchise collection system. The Council's approved Public Works' long-term plan for in-house collection of these non-exclusive commercial waste collection services except for roll-off and compactor services. This in-house commercial waste collection by Zero Waste Division is scheduled to start March 1, 2018 as detailed at the October 10, 2017 Council Work session[2]. Given the approved action with the non-exclusive franchisees termination, it would be neither practical nor cost-effective to undertake the task of investigating the past fee calculations. ZWD staff agrees for any future franchise hauler agreements for roll-off and compactor services that staff will have written procedures in place that describe the correct calculations to determine what that owe the City, and that staff will review invoices for accuracy in comparison to those calculation requirements. **September 25, 2018 Update** **Dropped** Beginning in March 2018, the Zero Waste Division began collecting commercial waste, recyclables and compost in-house, except for roll-off and compactor services. Written procedures that describe the correct calculations are in progress concurrence with the implementation of Erma, the City new financial software system, to start October 1, 2018.

[1] https://www.cityofberkeley.info/Clerk/City_Council/2015/05_May/Documents/2015-05-26_Item_34_Zero_Waste.aspx

[2] https://www.cityofberkeley.info/Clerk/City_Council/2016/09_Sep/Documents/2016-09-13_WS_Item_01_Zero_Waste_Worksession.aspx

ATTACHMENT No. 1

Audit Title: Unified Vision of Zero Waste Activities Will Help Align Service Levels with Billing and Ensure Customer Equity					
Findings and Recommendations		**Lead Dept.**	**Agree, Partially Agree, or Do Not Agree and Corrective Action Plan**	**Expected or Actual Implementation Date**	**Status of Outstanding Audit Recommendations and Implementation Progress Summary**
				June 2020	**March 12, 2019 Update** **Partially Alternately Implemented** Given the roll-out issues associated with the November 1st implementation of the City's new enterprise resource planning system, "Erma", staff time has been rerouted to resolve. This project is on hold.

Street Paving

ADDITIONAL STREET MAINTENANCE FUNDING TO IMPROVE PAVEMENT CONDITION, SAVING TAX DOLLARS AND OUR STREETS

FACILITIES, INFRASTRUCTURE, TRANSPORTATION, ENVIRONMENT & SUSTAINABILITY POLICY COMMITTEE

COUNCILMEMBER RASHI KESARWANI | APRIL 13, 2023

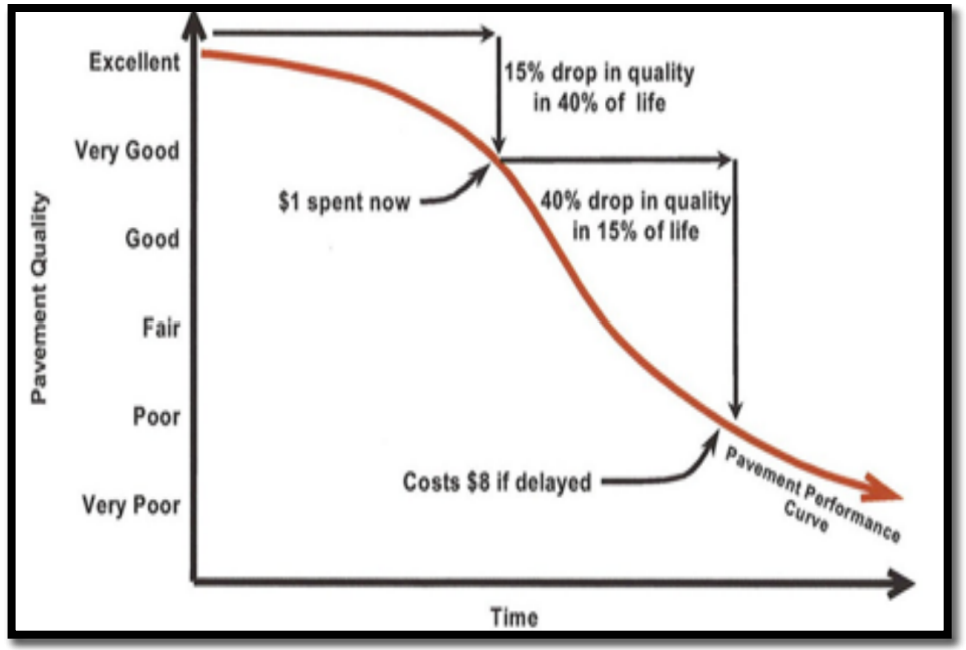
Recommendation

A dollar of maintenance early in a street's life-cycle saves $8 later due to avoided rehabilitation and/or reconstruction costs associated with failing streets

Refer to the FY 2023-25 biennial budget $4.7 million General Fund in FY 2024-25 for street paving—bringing the total street paving annual budget to **$20 million**—to *begin to improve the pavement condition*

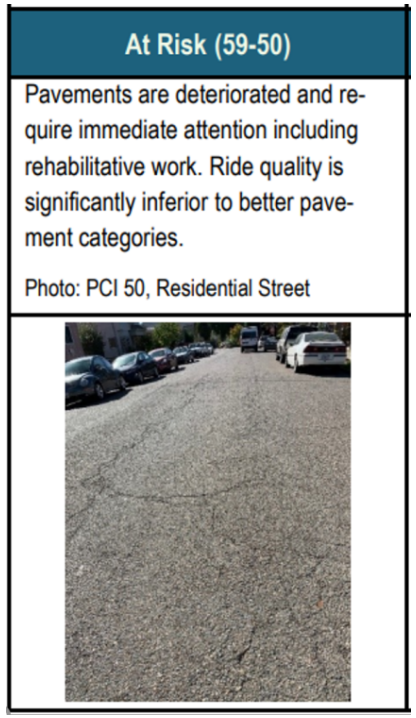
Why?

- New State Green Infrastructure mandate will increase paving costs per acre
- More funding enables more low-cost bike/pedestrian infrastructure to be added at time of paving
- Delay leads to exponentially higher costs later



“At Risk” Streets Harm All Users

Berkeley’s streets were rated at an average of **55 out of 100** (**Pavement Condition Index**) in 2023, meaning they are “at risk”



- Drivers pay **$1,049 annually** (according to TRIP, a national transportation research group) in **vehicle repair costs**, **accelerated vehicle deterioration and depreciation, increased maintenance costs**, and **additional fuel consumption; this hurts lower-income drivers more**
- **Safety concerns for bicyclists and pedestrians** who suffer injuries due to potholes and uneven pavement

Source: Berkeley City Auditor, *Rocky Road: Berkeley Streets at Risk and Significantly Underfunded*, Nov. 19, 2020

Historically, Berkeley Has Underfunded Street Paving

One-Time

Ongoing

General Fund

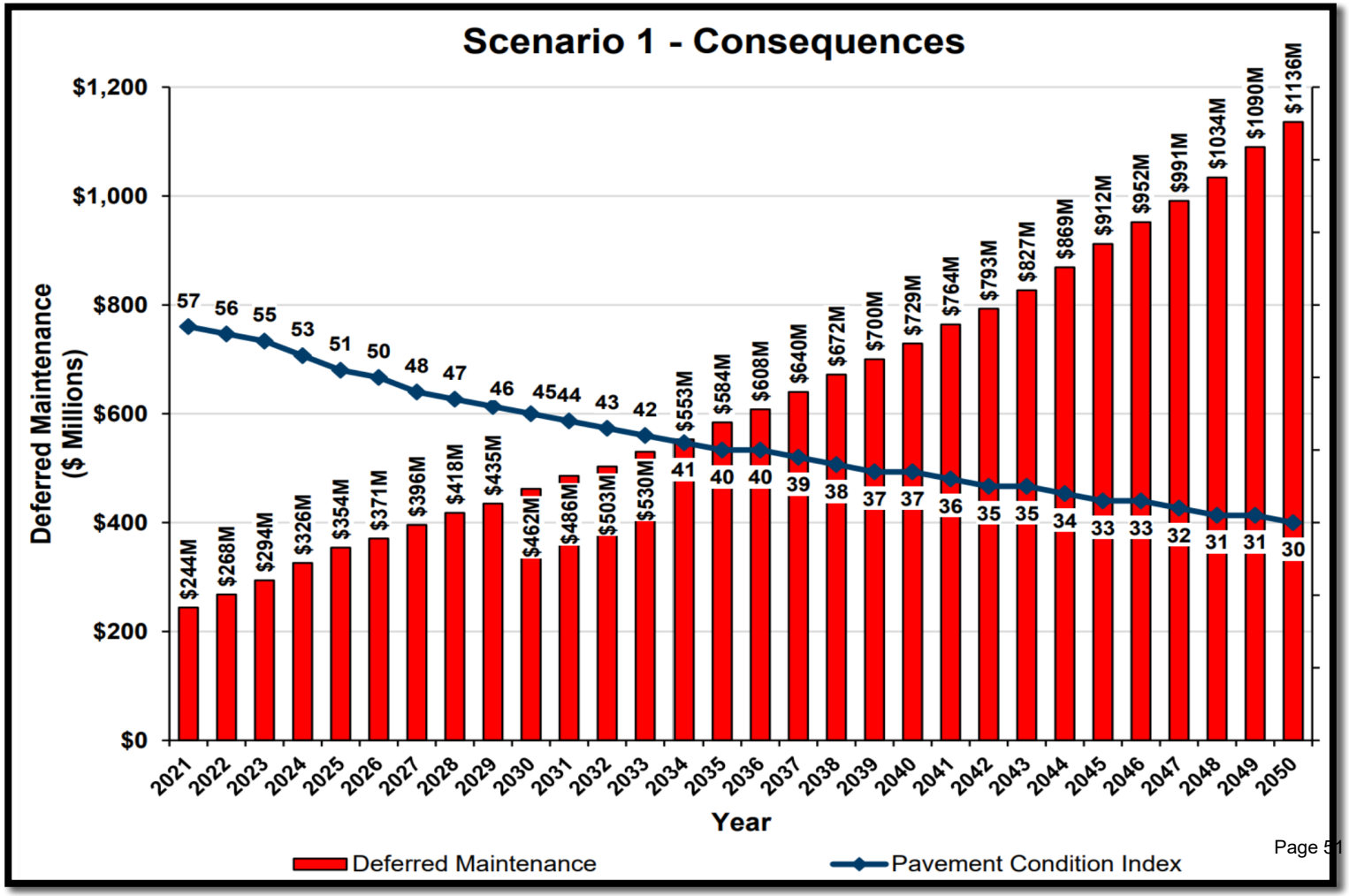
Funding Source (Dollars in Millions)	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	Total
Non-Recurring Funding	**$2.5**	**$6.0**	**$6.1**	**$6.0**	**$4.4**		**$2.8**	**$27.8**
Measure M	$2.5	$6.0	$6.0	$6.0	$4.4			$24.9
Measure T1							$2.6	$2.6
Measure T1 - AAO #1							$0.3	$0.3
Successor Agency - WBIP			$0.1					$0.1
Recurring Funding	**$3.5**	**$4.0**	**$5.2**	**$5.2**	**$4.3**	**$4.9**	**$7.0**	**$34.1**
State Transportation Tax Fund	$0.8	$0.8	$0.8	$0.8	$0.5	$0.5	$0.5	$4.7
State Transportation Tax Fund - SB1							$1.5	$1.5
Measure B	$0.7	$0.7	$0.7	$0.7	$0.7	$0.7	$0.7	$5.0
Measure BB			$1.6	$1.6	$1.1	$1.6	$2.2	$8.1
Measure F	$0.1	$0.6	$0.2	$0.2		$0.2	$0.2	$1.3
Capital Improvement Fund[1]	$1.9	$1.9	$1.9	$1.9	$1.9	$1.9	$1.9	$13.5
Total	**$6.0**	**$10.0**	**$11.3**	**$11.2**	**$8.7**	**$4.9**	**$9.8**	$61.9

[1]Capital Improvement Fund is from the City's General Fund.

Source: Berkeley City Auditor

Deferred Street Maintenance

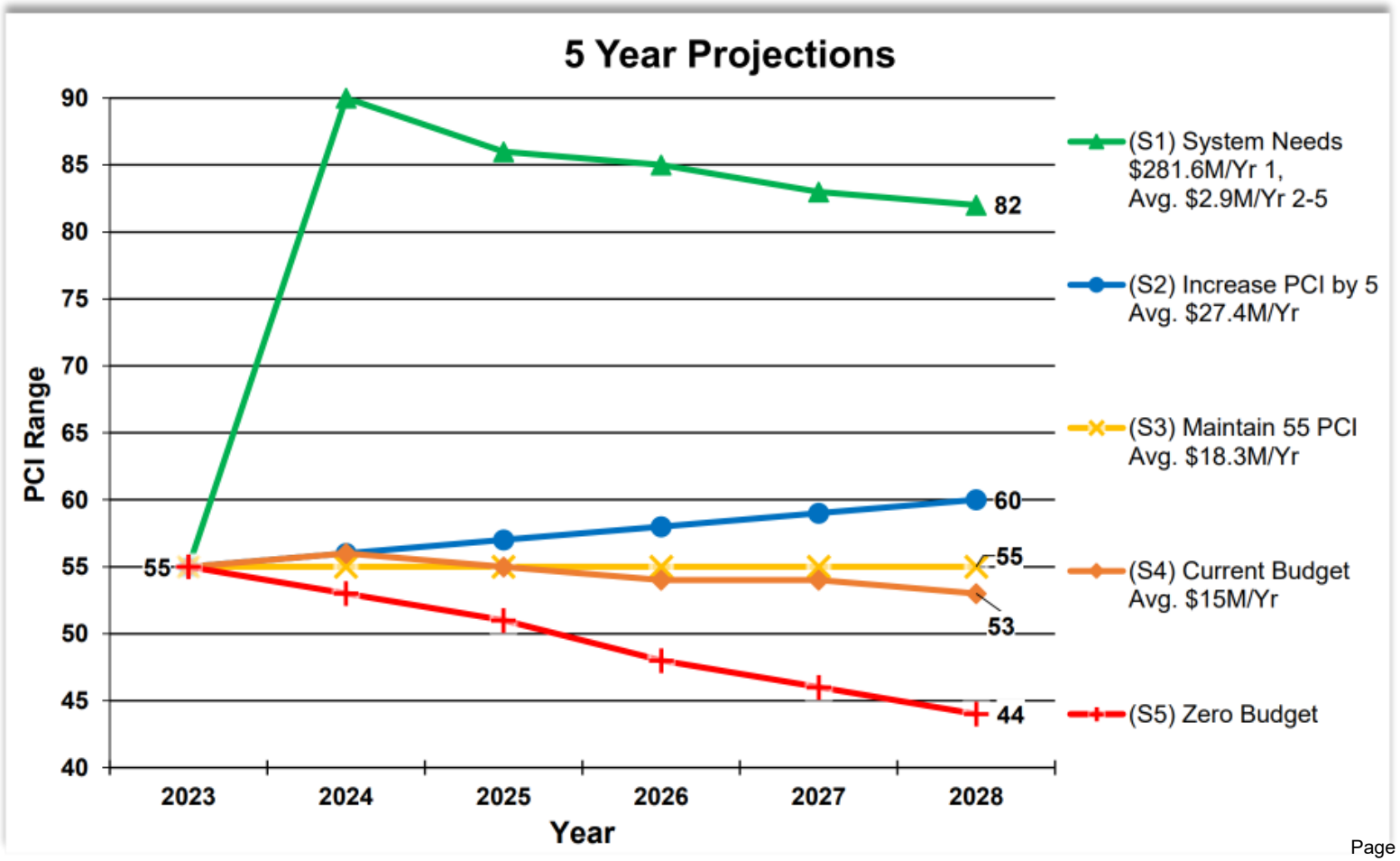
With historic street paving budget, deferred maintenance grows to more than $1 billion by 2050



Source: Pavement Engineering Inc., City of Berkeley 2020/21 Pavement Management System Update, p. 10, Jan. 2021

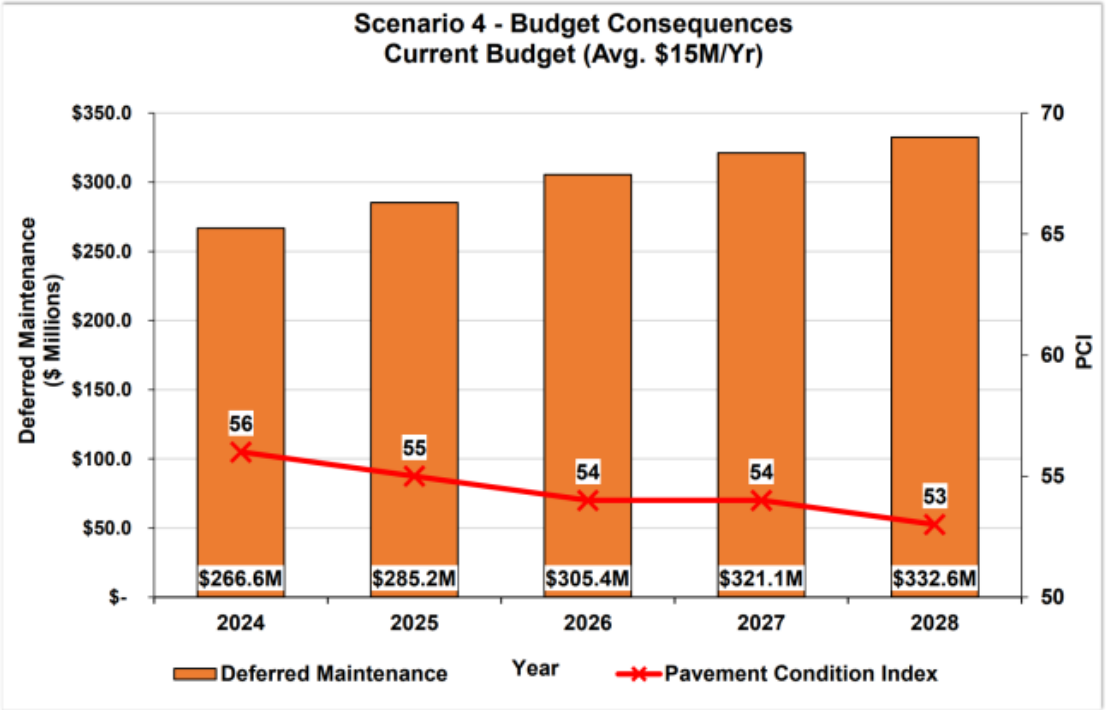
Importance of Increasing Maintenance Funds

Our current budget of $15 million per year is already insufficient to maintain the pavement condition (see orange line, S4)

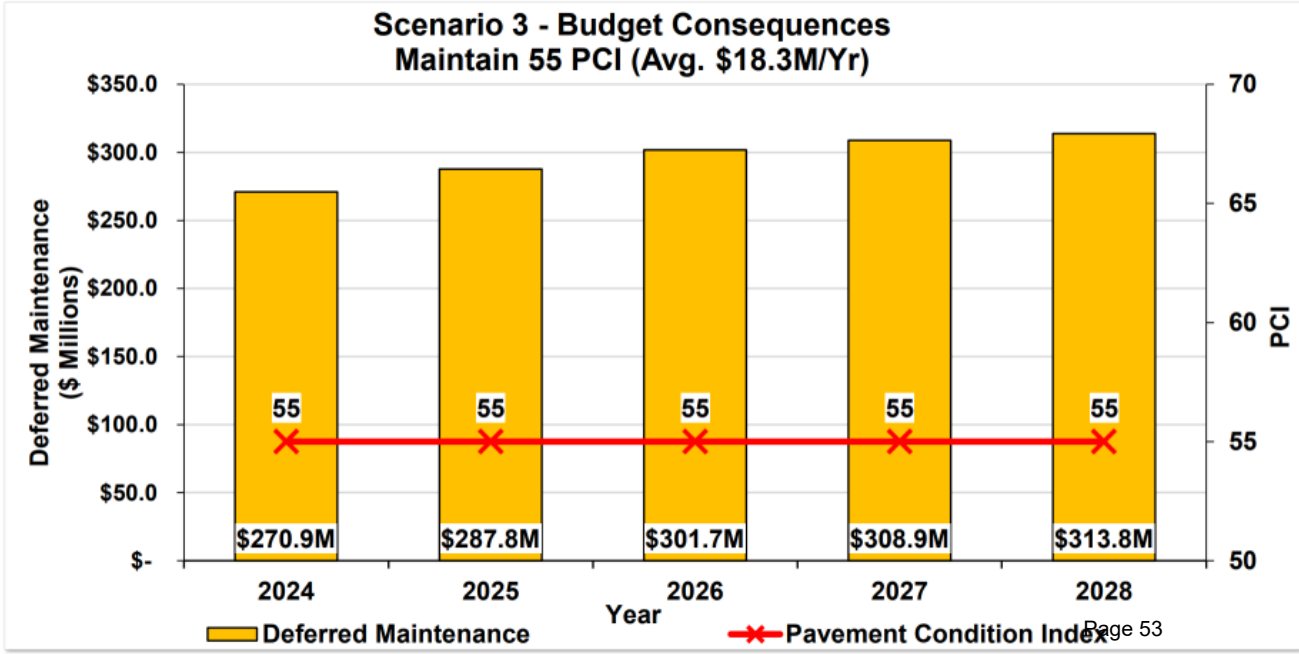


Source: Pavement Engineering Inc., City of Berkeley 2022 Pavement Management Program Update, p. 6, March 2023

Maintaining Pavement Condition Now Costs $18.3 Million Annually



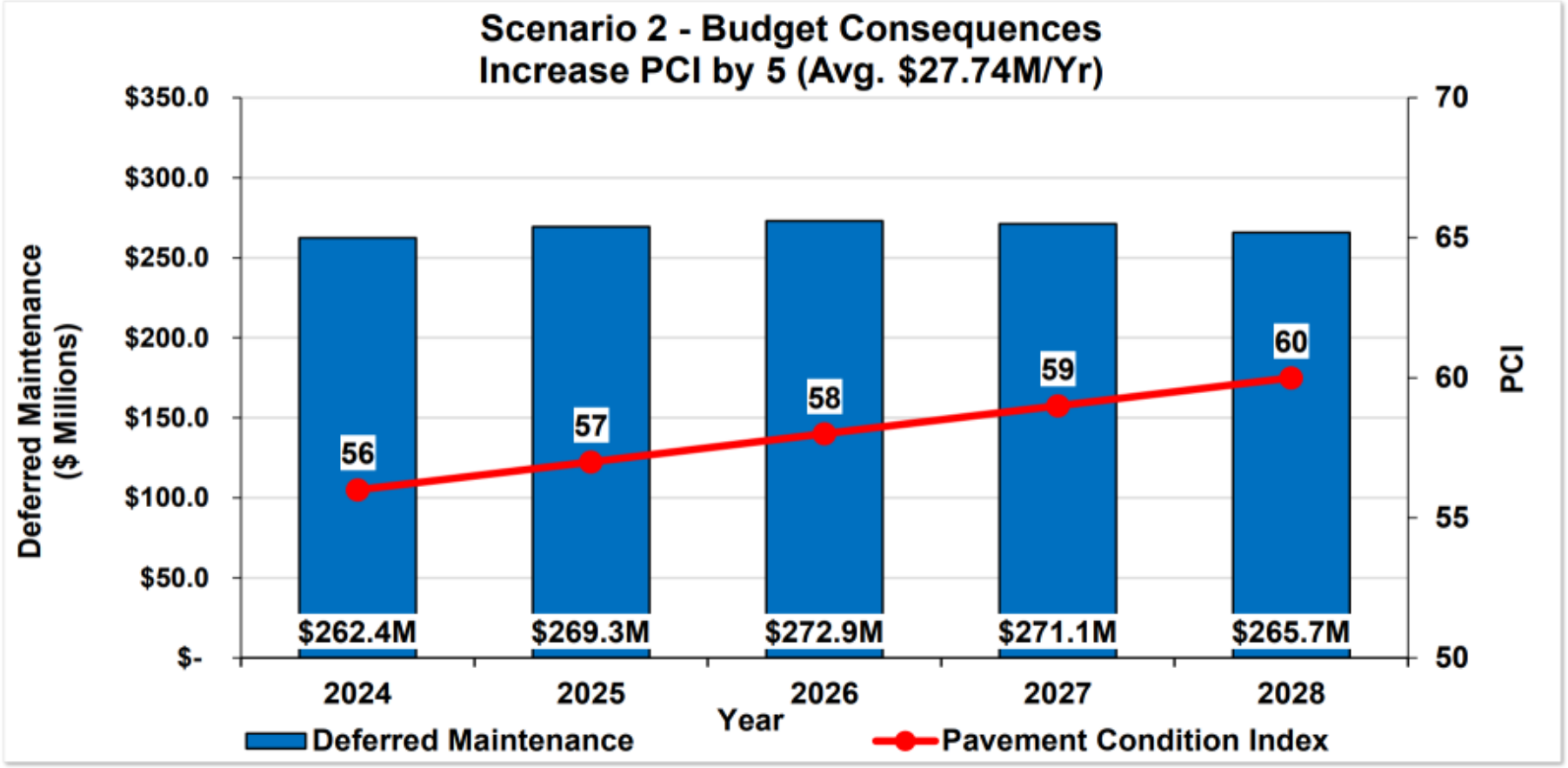
The Council's Streets Fiscal Policy passed in July 2022 is already insufficient to maintain the current pavement condition



The Council needs to increase the street paving budget to $18.3 million just to maintain the current "at risk" pavement condition

Source: Pavement Engineering Inc., City of Berkeley 2022 Pavement Management Program Update, p. 8-9, March 2023

What It Takes to Increase the Pavement Condition by 5 Points in 5 Years



Source: Pavement Engineering Inc., City of Berkeley 2022 Pavement Management Program Update, p. 9, March 2023

Thank You

Councilmember Rashi Kesarwani
rkesarwani@cityofberkeley.info or 510-981-7110

Rashi Kesarwani
Councilmember, District 1

CONSENT CALENDAR
MARCH 14, 2023

TO: Honorable Mayor and Members of the City Council

FROM: Councilmember Rashi Kesarwani (Author) and Councilmembers Mark Humbert, Terry Taplin, and Susan Wengraf (Co-Sponsors)

SUBJECT: Budget Referral: Additional Street Maintenance Funding to Improve Pavement Condition, Saving Tax Dollars and Our Streets

RECOMMENDATION

Refer to the FY 2023-25 biennial budget process to further increase the street paving budget by $4.7 million General Fund in FY 2024-25 for a total street paving budget of approximately $20 million in FY 2024-25.

On July 26, 2022, the City Council unanimously passed a policy ensuring an adequate annual General Fund contribution for street maintenance that amounts to a total of $15.3 million annually plus inflation—the amount needed to maintain (although not improve) the pavement condition.[1] This budget request for an additional $4.7 million builds on the streets fiscal policy by seeking to increase the street paving budget further in FY 2024-25 *to begin to improve the pavement condition*.

We note that the City Council already approved a $9 million increase to the street paving budget for FY 2023-24 for a total of $16.3 million in FY 2023-24.

A dollar of maintenance early in a street's life-cycle saves $8 later in the street's life-cycle due to avoided rehabilitation and/or reconstruction costs associated with failing streets, making this budget request an urgent matter of fiscal oversight.[2] Further, the

[1] Arreguín, Jesse, Kesarwani, Rashi, Taplin, Terry, and Wengraf, Susan, Establishing Policy for Adequate Annual General Fund Contribution for Street Maintenance to Prevent Deterioration of Pavement Condition, Special City Council Meeting July 26, 2022, Item #3 and Pavement Engineering Inc., City of Berkeley 2020/21 Pavement Management System Update, p. 8, Jan. 2021

[2] L. Galehouse, J. S. Moulthrop, and R. G. Hicks, "Principles of pavement preservation: definitions, benefits, issues, and barriers," TR News, pp. 4–15, 2003 as cited in City Manager, *Discuss Vision 2050, Infrastructure Priorities, Stakeholder and Community Engagement, and City's Bonding Capacity;*

defeat of the Measure L general obligation bond on the November 8, 2022 ballot means that the City currently lacks significant resources to fully address deferred street maintenance, requiring the City Council to add additional resources from the General Fund in order to make steady progress towards improving the average pavement condition.

CURRENT SITUATION AND ITS EFFECTS

Without A General Obligation Bond, City's Streets Will Decline In the Long Run Even with Higher Maintenance Budget of $15.3 Million Annually. The defeat of Measure L, which would have provided $231 million to address deferred street maintenance, means that the City does not have a major funding source for addressing this liability. In Exhibit 1, a 30-year projection for various funding scenarios shows that the City's streets will continue to deteriorate in the absence of a large general obligation bond—even with a higher maintenance budget of $15.3 million annually plus inflation. For the biennial FY 2022-24 budget, a total of $14 million in new street paving funds was added—$5 million added (for a total of $12.3 million) in FY 2022-23 and $9 million added (for a total of $16.3 million) in FY 2023-24. Further, the City Council passed a streets fiscal policy in July 2022 committing $15.3 million plus inflation to street paving annually.[3] However, even if these higher funding levels are maintained, our pavement condition will continue to deteriorate due to the inability to address the significant backlog of deferred maintenance, mirroring the orange scenario (S2) in Exhibit 1 shown below.

and Seek Direction on November 2022 Revenue Measure(s) Presentation slide 4, City Council Worksession Item 1, Jan. 20, 2022

[3] Arreguín, Jesse, Kesarwani, Rashi, Taplin, Terry, and Wengraf, Susan, Establishing Policy for Adequate Annual General Fund Contribution for Street Maintenance to Prevent Deterioration of Pavement Condition, Special City Council Meeting July 26, 2022, Item #3

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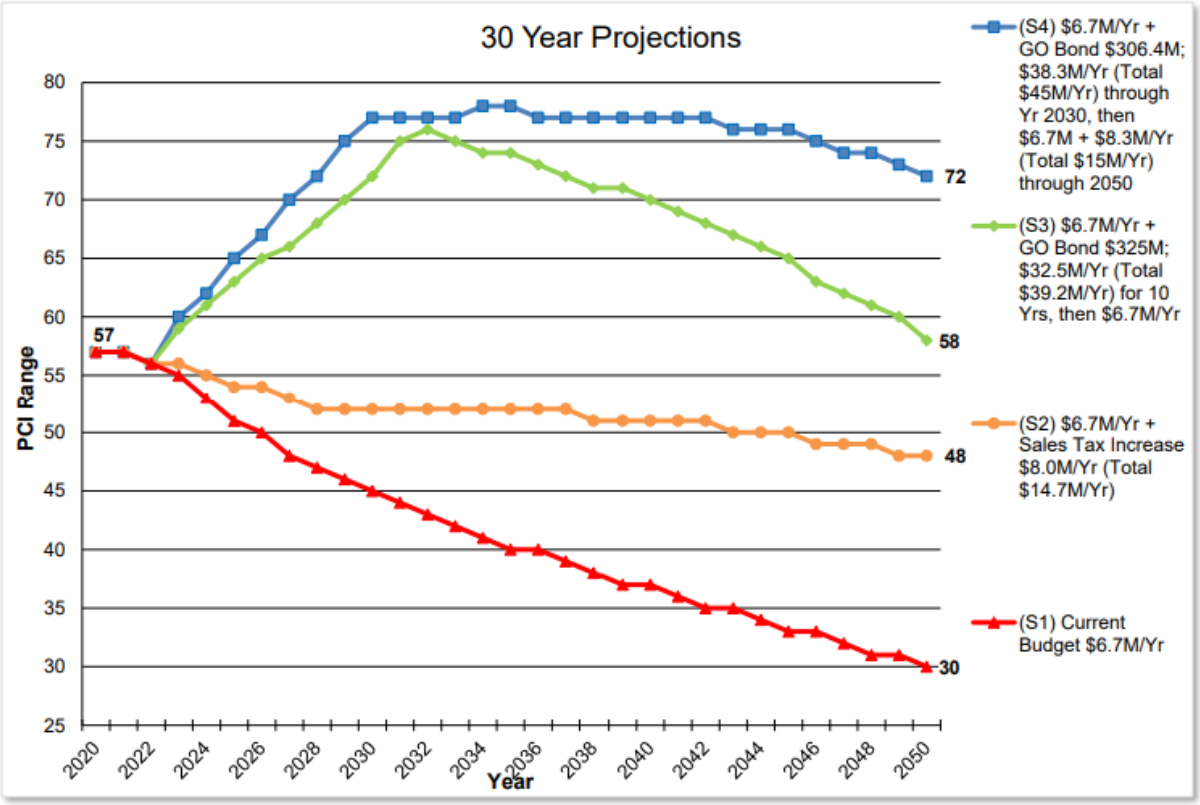
Exhibit 1: Without A General Obligation Bond, City's Streets Will Decline In the Long Run Even with Higher Maintenance Budget of $15.3 Million Annually (S2 Orange Scenario)



Source: Pavement Engineering Inc., City of Berkeley 2020/21 Pavement Management System Update, https://berkeleyca.gov/sites/default/files/2022-02/Pavement-Management-Update-2020.pdf, p. 19, Jan. 2021

Berkeley's Streets Are Rated Among the Worst in the Bay Area, Costing Motorists an Extra $1,049 Annually for Vehicle Repair and Increasing Risk of Injury for Bicyclists and Pedestrians. Compared to other jurisdictions in the Bay Area, Berkeley has the 15th worst Pavement Condition Index (PCI) rating out of 101 cities in the nine-county jurisdiction covered by the Metropolitan Transportation Commission, the federally designated transportation planning organization for the Bay Area.[4] The general condition of streets is measured by PCI, a numerical rating from 0 to 100, as shown in Exhibit 2. Berkeley's streets were rated in 2021 at an average of 56 out of 100, meaning they are "at risk"—defined as deteriorated pavement that requires immediate attention, including rehabilitative work. At this rating, ride quality is significantly inferior compared to better pavement ratings, impacting all roadway users including pedestrians, bicyclists, public transit riders, and motorists. At-risk pavement conditions make it more likely for bicyclists and pedestrians to suffer injuries. For drivers, at-risk conditions cost $1,049 annually, according to TRIP, a national transportation research group, due to vehicle repair

[4] Berkeley City Auditor, *Rocky Road: Berkeley Streets at Risk and Significantly Underfunded*, p. 2, Nov. 19, 2020

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costs, accelerated vehicle deterioration and depreciation, increased maintenance costs, and additional fuel consumption.[5] This pavement condition disproportionately harms lower-income residents for whom extra vehicle costs consume a greater share of income. During the heavy winter storms, in which Berkeley received 20 inches of rain in December 2022 and January 2023, many streets that developed the most potholes had poor quality pavement to start.[6] In Attachment 1, we include a list of all City streets and their respective PCI rating in 2020, provided by the Public Works Department.

[5] Berkeley City Auditor, *Rocky Road: Berkeley Streets at Risk and Significantly Underfunded*, p. 3, Nov. 19, 2020

[6] Markovich, Ally, *January was Berkeley's worst month for potholes on record*, https://www.berkeleyside.org/2023/02/19/january-was-berkeleys-worst-month-for-potholes-on-record, Feb. 19, 2023.

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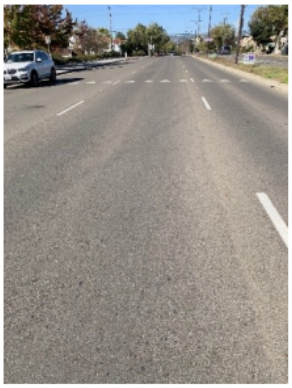
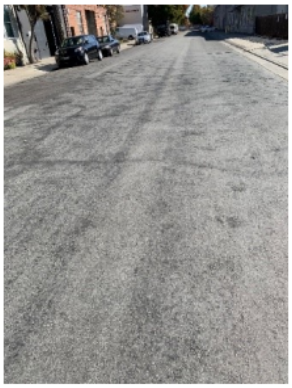
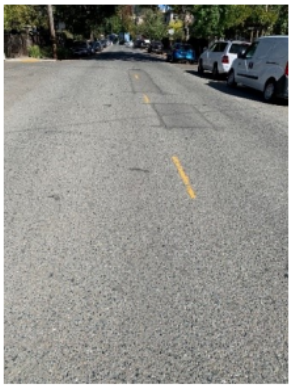
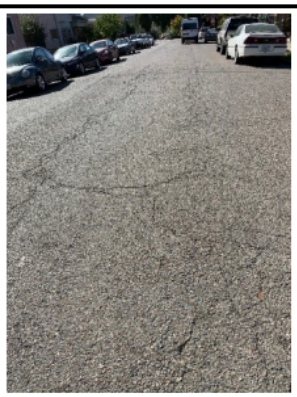
Exhibit 2: Pavement Condition Index (PCI) is a Numerical Rating for the General Condition of Streets

Very Good-Excellent (100-80)	Good (79-70)	Fair (69-60)
Pavements are newly constructed or resurfaced and have few if any signs of distress. Photo: PCI 98, Arterial	Pavements require mostly preventive maintenance and have only low levels of distress, such as minor cracks or spalling, which occurs when the top layer of asphalt begins to peel or flake off as a result of water permeation. Photo: PCI 74, Collector	Pavements at the low end of this range have significant levels of distress and may require a combination of rehabilitation and preventive maintenance to keep them from deteriorating rapidly. Photo: PCI 63, Collector
		
At Risk (59-50)	**Poor (49-25)**	**Failed (24-0)**
Pavements are deteriorated and require immediate attention including rehabilitative work. Ride quality is significantly inferior to better pavement categories. Photo: PCI 50, Residential Street	Pavements have extensive amounts of distress and require major rehabilitation or reconstruction. Pavements in this category affect the speed and flow of traffic significantly. Photo: PCI 39, Residential Street	Pavements need reconstruction and are extremely rough and difficult to drive. Photo: PCI 20, Residential/Bike Boulevard
		

Source: Berkeley City Auditor, *Rocky Road: Berkeley Streets at Risk and Significantly Underfunded*, p. 5, Nov. 19, 2020

Historically, Berkeley Has Inadequately Funded Street Paving. In recent fiscal years, the total annual amount that the City of Berkeley has budgeted for street maintenance has fluctuated from $4.9 million in FY 2018-19 to as much as $11.3

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million in FY 2015-16, as shown in Exhibit 3.[7] The City has added one-time bond funding to enhance the annual street paving budget through Measures M and T1 in recent fiscal years. However, the General Fund contribution to street maintenance remained flat at just $1.9 million from FY 2013-14 through FY 2019-20, shown as Capital Improvement Fund in Exhibit 3.

Exhibit 3: General Fund Contribution to Street Maintenance Remained Flat at $1.9 Million From FY 2013-14 through FY 2019-20 (Dollars in Millions)

Funding Source	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	Total
Non-Recurring Funding	**$2.5**	**$6.0**	**$6.1**	**$6.0**	**$4.4**		**$2.8**	**$27.8**
Measure M	$2.5	$6.0	$6.0	$6.0	$4.4			$24.9
Measure T1							$2.6	$2.6
Measure T1 - AAO #1							$0.3	$0.3
Successor Agency - WBIP			$0.1					$0.1
Recurring Funding	**$3.5**	**$4.0**	**$5.2**	**$5.2**	**$4.3**	**$4.9**	**$7.0**	**$34.1**
State Transportation Tax Fund	$0.8	$0.8	$0.8	$0.8	$0.5	$0.5	$0.5	$4.7
State Transportation Tax Fund - SB1							$1.5	$1.5
Measure B	$0.7	$0.7	$0.7	$0.7	$0.7	$0.7	$0.7	$5.0
Measure BB			$1.6	$1.6	$1.1	$1.6	$2.2	$8.1
Measure F	$0.1	$0.6	$0.2	$0.2		$0.2	$0.2	$1.3
Capital Improvement Fund[1]	$1.9	$1.9	$1.9	$1.9	$1.9	$1.9	$1.9	$13.5
Total	**$6.0**	**$10.0**	**$11.3**	**$11.2**	**$8.7**	**$4.9**	**$9.8**	**$61.9**

[1]Capital Improvement Fund is from the City's General Fund.
Source: Berkeley City Auditor

The City Council has made progress in adding resources to the City's street paving budget, particularly with the July 2022 streets fiscal policy that commits $15.3 million plus inflation annually. Significantly, even if this level of funding is maintained through 2025, the PCI will not increase, as shown in Exhibit 4 (see S3 Yellow Line).

[7] Berkeley City Auditor, *Rocky Road: Berkeley Streets at Risk and Significantly Underfunded*, p. 6, Nov. 19, 2020.

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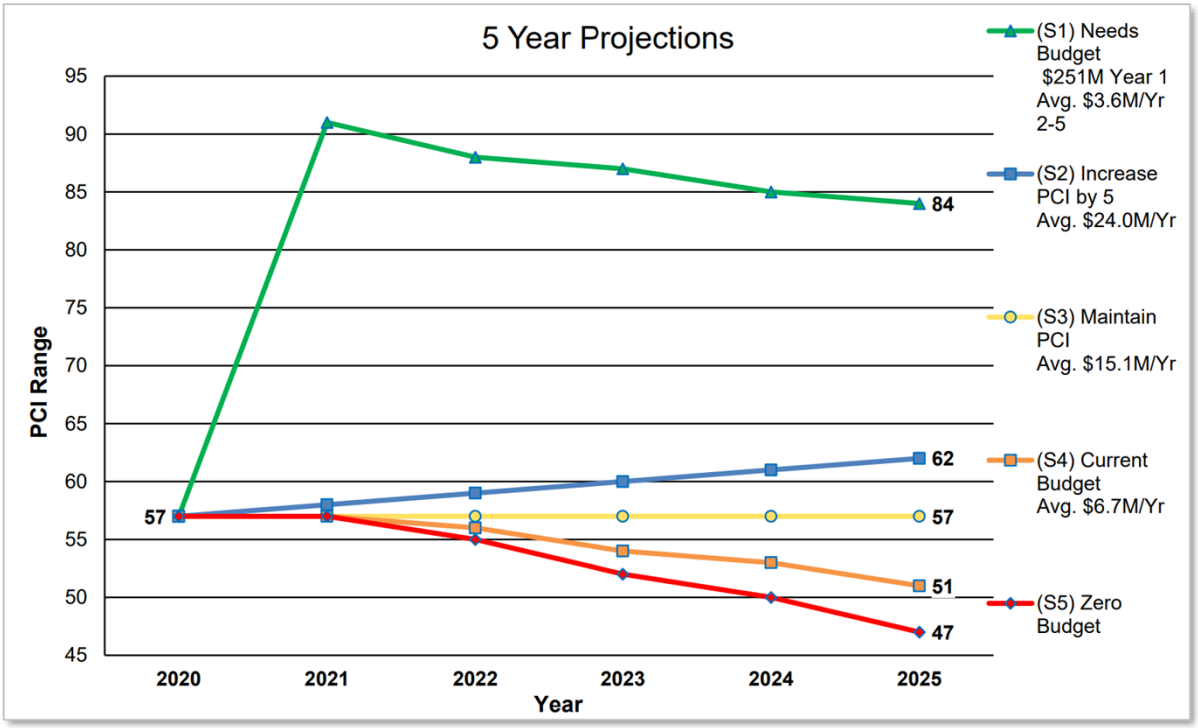
Exhibit 4: Even If Streets Are Funded at $15.3 Million Annually, the Pavement Condition Will Not Improve By 2025 (S3 Yellow Line)



Source: Pavement Engineering Inc., City of Berkeley 2020/21 Pavement Management System Update, https://berkeleyca.gov/sites/default/files/2022-02/Pavement-Management-Update-2020.pdf, p. 9, Jan. 2021

Deferring Street Maintenance Makes Street Paving and Repair Eight Times More Expensive Later. The City's inability to adequately maintain a street early in its life-cycle leads to escalating costs that are eight times higher later in a street's life-cycle, as shown in Exhibit 5.[8] In the case of arterial streets that are receiving significantly less attention under the current street paving plan, a predictable outcome is that they will deteriorate precipitously due to lack of investment and costs to repair them will rise exponentially, *absent additional resources for street maintenance*.[9]

[8] L. Galehouse, J. S. Moulthrop, and R. G. Hicks, "Principles of pavement preservation: definitions, benefits, issues, and barriers," TR News, pp. 4–15, 2003 as cited in City Manager, *Discuss Vision 2050, Infrastructure Priorities, Stakeholder and Community Engagement, and City's Bonding Capacity; and Seek Direction on November 2022 Revenue Measure(s)* Presentation slide 4, City Council Worksession Item 1, Jan. 20, 2022

[9] Garland, Liam, Street Maintenance and Rehabilitation Policy and Five-Year Paving Plan pgs. 9-11, City Council Meeting Jan. 25, 2022, Item Aa

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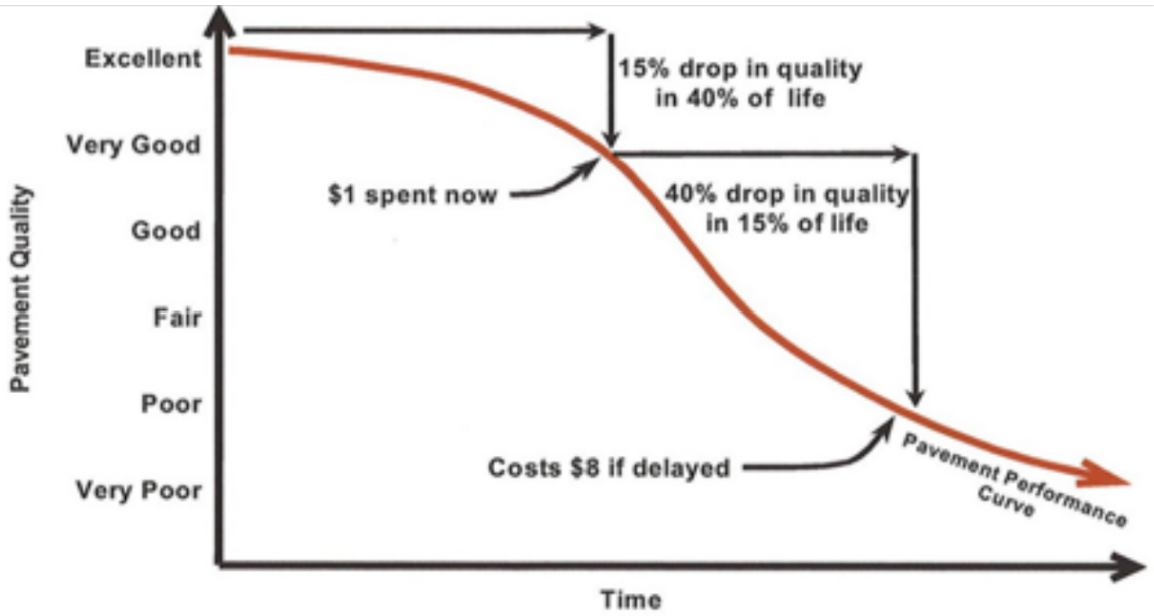
Exhibit 5: Conducting Street Paving and Repair Later in a Street's Life Cycle is Eight Times More Expensive



Source: L. Galehouse, J. S. Moulthrop, and R. G. Hicks, "Principles of pavement preservation: definitions, benefits, issues, and barriers," TR News, pp. 4–15, 2003 as cited in City Manager, *Discuss Vision 2050, Infrastructure Priorities, Stakeholder and Community Engagement, and City's Bonding Capacity; and Seek Direction on November 2022 Revenue Measure(s)* Presentation slide 4, City Council Worksession Item 1, Jan. 20, 2022

Inadequate Street Paving Budget Has Led to an Estimated $286 Million in Deferred Maintenance and Growing. Because the City's street paving budget has historically been underfunded for the last 15 years, a significant backlog of deferred street maintenance has accumulated that is now estimated at about $286 million.[10] This amount is larger than the City's entire revised General Fund budget for FY 2021-22 of $269 million.[11] Deferred street maintenance has grown exponentially over the last decade. In a 2011 audit *Failing Streets: Time to Change Direction to Achieve Sustainability*, the City Auditor found that Berkeley needed an estimated total of $54 million to address the backlog of street maintenance and improve the average PCI from 58 to 75.[12] Over the past 12 years, that amount has grown by more than five times to a $286 million unfunded liability in 2023 and will continue to grow precipitously in the future, even with a $15 million contribution annually:

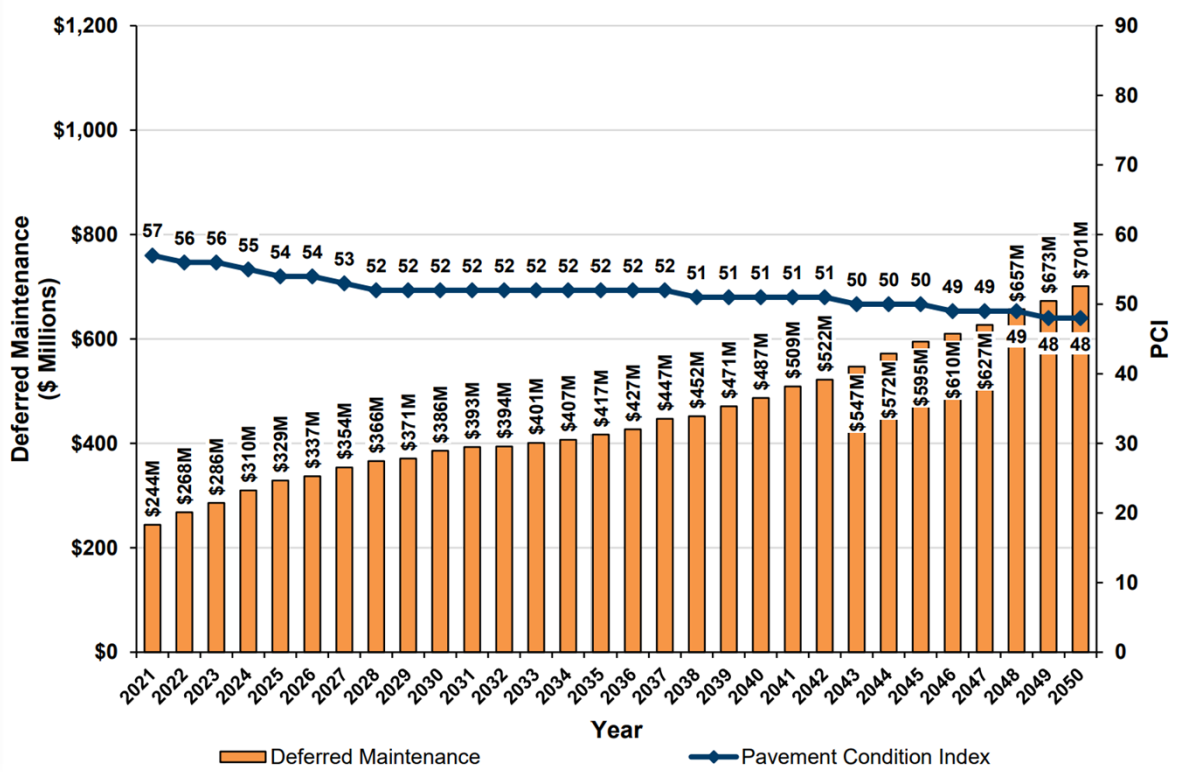
[10] Pavement Engineering Inc., City of Berkeley 2020/21 Pavement Management System Update, https://berkeleyca.gov/sites/default/files/2022-02/Pavement-Management-Update-2020.pdf, p. 14, Jan. 2021. We note that the estimate of $286 million in deferred street maintenance only accounts for paving, not other "Complete Streets" infrastructure.

[11] City Manager, *Amendment: FY 2022 Annual Appropriations Ordinance*, City Council Meeting Dec. 14, 2021, Item 45, Revised Material (Supp 3), https://berkeleyca.gov/sites/default/files/documents/2021-12-14%20Item%2045%20Amendment%20%20FY%202022%20Annual%20Appropriations%20Ordinance%20-%20Rev%20CMO.pdf

[12] Hogan, Anne-Marie, *Failing Streets: Time to Change Direction to Achieve Sustainability*, Nov. 15, 2011

- In five years in 2028, deferred street maintenance is estimated to total $366 million.
- In 10 years in 2033, deferred street maintenance is estimated to total $401 million.
- By 2050, deferred street maintenance is estimated to total $701 million, as shown in Exhibit 6.

Exhibit 6: If $15 Million Funding Level Continues, Deferred Street Maintenance Still Grows to More than $700 Million by 2050



Source: Pavement Engineering Inc., City of Berkeley 2020/21 Pavement Management System Update, https://berkeleyca.gov/sites/default/files/2022-02/Pavement-Management-Update-2020.pdf, p. 14, Jan. 2021

BACKGROUND

Lessons Learned from 2012 Measure M for Streets. Measure M raised $30 million in general obligation bond funds for street maintenance, falling short of the $54 million of identified deferred maintenance.[13] A Complete Streets approach was also applied, which—at the time—funded sidewalk repair, green infrastructure, as well as bike and pedestrian improvements. This approach meant that about 75 to 85 percent of the $30 million went toward street paving, with the remaining funds paying for Complete Streets improvements. Because the funding was inadequate to fully clear the backlog of deferred street paving, and additional annual maintenance funding

[13] City Auditor Report, Rocky Road: Berkeley Streets at Risk and Significantly Underfunded, p. 13, Nov. 19, 2020

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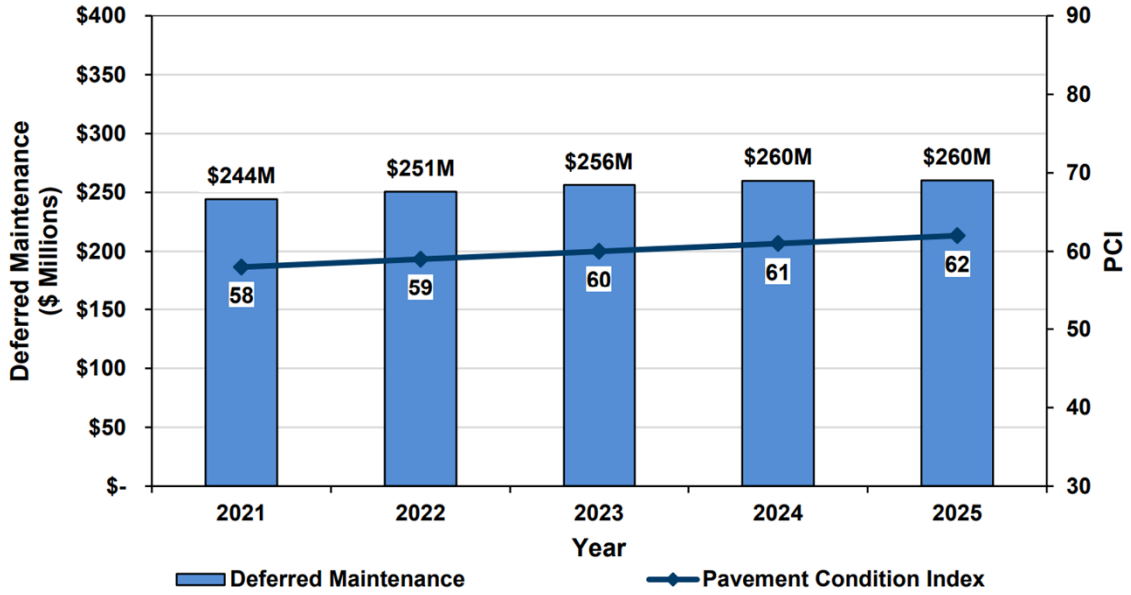
was not added to the budget, Measure M only succeeded in temporarily stalling the decline in the City's pavement condition. Today, sidewalk improvements are budgeted separately from street paving, and the City has a clear understanding of the cost of funding Bicycle and Pedestrian Plan upgrades; however, the cost of green infrastructure improvements are harder to predict. The City should be aware of the additional costs associated with green infrastructure as well as the Bicycle Plan and Pedestrian Plan when planning and budgeting for deferred street maintenance.

FISCAL IMPACT

City Would Need to Budget $24 Million Annually to Improve Pavement Condition. The City needs to continue to address the shortfall of street maintenance funds. To increase the PCI by 5 points from 57 to 62, it is projected by Pavement Engineering Inc. that an average funding level of $24 million annually would be needed, as shown in Exhibit 7.[14] At this funding level, the backlog of deferred street maintenance still grows—from $244 million in 2021 to $260 million in 2025—albeit at a slower rate of 7 percent (when compared to budgeting $15.1 million annually for street paving). This budget referral recognizes that there are numerous competing priorities for General Fund resources, including the Measure T1 infrastructure funding shortfall, allocation to the Section 115 Trust for unfunded pension liabilities, among other priorities. We request an augmentation of $4.7 million General Fund to reach a total street paving budget of approximately $20 million in FY 2024-25 so that the City moves beyond the minimum amount to simply maintain the existing PCI of roughly 57.

[14] Pavement Engineering Inc., City of Berkeley 2020/21 Pavement Management System Update, https://berkeleyca.gov/sites/default/files/2022-02/Pavement-Management-Update-2020.pdf, p. 11, Jan. 2021

Exhibit 7: $24 Million Annually Leads to a 5-Point Increase in Pavement Condition Index and Slower Rate of Deferred Maintenance Growth



Source: Pavement Engineering Inc., City of Berkeley 2020/21 Pavement Management System Update, https://berkeleyca.gov/sites/default/files/2022-02/Pavement-Management-Update-2020.pdf, p. 11, Jan. 2021

$15.1 Million Annually Maintains Current Pavement Condition, But Deferred Maintenance Grows By 23 Percent. To maintain a PCI of 57, it is projected by Pavement Engineering Inc. that an average funding level of $15.1 million annually is needed, as shown in Exhibit 8. At this funding level, the backlog of deferred street maintenance grows from $250 million in 2021 to $307 million in 2025, an increase of 23 percent.

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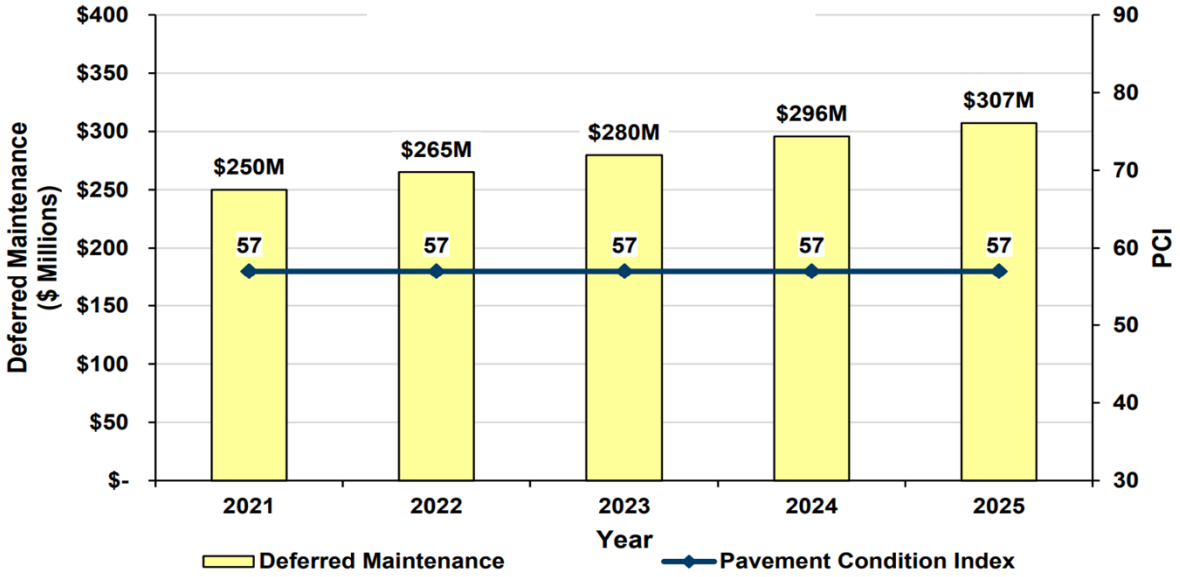
Exhibit 8: $15.1 Million Annually Maintains Pavement Condition, But Leads to Faster Deferred Maintenance Growth



Source: Pavement Engineering Inc., City of Berkeley 2020/21 Pavement Management System Update, https://berkeleyca.gov/sites/default/files/2022-02/Pavement-Management-Update-2020.pdf, p. 11, Jan. 2021

Street Paving and Maintenance is a Core Service that Aligns with our Strategic Plan. Providing state-of-the-art, well-maintained infrastructure, amenities, and facilities is one of the priorities articulated in our Strategic Plan, adopted in January 2018. This plan sets forth the long-term goals that Berkeley City government will achieve on behalf of its residents and acts as a conceptual guide to help ensure these goals are met.[15]

ENVIRONMENTAL IMPACTS

Good street conditions will improve safety for pedestrians, cyclists, users of micro-mobility devices, and public transit users. Using alternatives to driving cars will decrease our greenhouse gas emissions, which aligns with another of the City's Strategic Plan priorities to be a global leader in addressing climate change, protecting the environment, and advancing environmental justice.

CONTACT

Councilmember Rashi Kesarwani, District 1 (510) 981-7110

[15] See City of Berkeley 2018-2019 Strategic Plan presented to Berkeley City Council on January 16, 2018.

Attachment:
Attachment 1 - City of Berkeley Roads (by PCI as of 2020) from Pavement Engineering Inc., City of Berkeley 2020/21 Pavement Management System Update, pgs. 39-78, Jan. 2021

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Road Name	Section ID	Beg Location	End Location	Lanes	Length	Width	Funct. Class	PCI
10TH ST	047	DELAWARE ST	UNIVERSITY AVE	2	950	36	R	15
10TH ST	045	VIRGINIA ST	DELAWARE ST	2	675	36	R	16
10TH ST	060	DWIGHT WAY	HEINZ AVE	2	2520	36	R	19
10TH ST	044	CEDAR ST	VIRGINIA ST	2	675	36	R	51
10TH ST	042	CAMELIA ST	CEDAR ST	2	1320	36	R	68
10TH ST	050	UNIVERSITY AVE	DWIGHT WAY	2	3005	36	R	94
10TH ST	030	NORTH CITY LIMIT	HARRISON ST	2	450	36	R	95
10TH ST	033	HARRISON ST	CAMELIA ST	2	1270	36	R	95
2ND ST	043	PAGE ST	CEDAR ST	2	820	40	R	8
2ND ST	044	CEDAR ST	VIRGINIA ST	2	740	40	R	9
2ND ST	047	DELAWARE ST	HEARST AVE	2	475	42	R	12
2ND ST	040	CAMELIA ST	PAGE ST	2	450	40	R	28
2ND ST	048	HEARST AVE	UNIVERSITY AVE	2	490	40	R	33
2ND ST	050	UNIVERSITY AVE	ADDISON ST	2	450	35	R	34
2ND ST	035	GILMAN ST	CAMELIA ST	2	655	40	R	41
2ND ST	045	VIRGINIA ST	HEARST AVE	2	1115	42	R	46
2ND ST	030	NORTH CITY LIMIT	GILMAN ST	2	1305	63	R	50
4TH ST	054	ADDISON ST	CHANNING WAY	2	1810	36	C	33
4TH ST	056	CHANNING WAY	DWIGHT WAY	2	615	36	C	66
4TH ST	050	UNIVERSITY AVE	ADDISON ST	2	450	35	R	70
4TH ST	044	CEDAR ST	VIRGINIA ST	2	665	36	R	73
4TH ST	040	CAMELIA ST	CEDAR ST	2	1330	36	R	79
4TH ST	030	HARRISON ST	CAMELIA ST	2	1375	36	R	82
4TH ST	048	DELAWARE ST	UNIVERSITY AVE	2	950	28	R	89
4TH ST	046	VIRGINIA ST	DELAWARE ST	2	665	36	R	90
4TH ST	060	DWIGHT WAY	PARKER ST	2	600	21	NCR	96
5TH ST	040	CAMELIA ST	CEDAR ST	2	1320	48	R	27
5TH ST	050	UNIVERSITY AVE	DWIGHT WAY	2	2990	34	R	29
5TH ST	065	END NORTH OF ANTHONY ST	POTTER ST	2	390	36	R	35
5TH ST	044	CEDAR ST	VIRGINIA ST	2	675	44	R	71
5TH ST	045	VIRGINIA ST	UNIVERSITY AVE	2	1650	44	R	76
5TH ST	030	NORTH CITY LIMIT	HARRISON ST	2	400	41	R	82
5TH ST	033	HARRISON ST	CAMELIA ST	2	1305	48	R	86
62ND ST	060	MARTIN LUTHER KING JR WAY	CITY LIMIT (DOVER ST)	2	525	36	R	30
62ND ST	050	WEST CITY LIMIT (CALIFORNIA)	ADELINE ST	2	985	36	R	36
63RD ST	060	MARTIN LUTHER KING JR WAY	CITY LIMIT (DOVER ST)	2	400	36	R	28
63RD ST	050	WEST CITY LIMIT (CALIFORNIA)	ADELINE ST	2	1220	36	R	40
65TH ST	060	ADELINE ST	680' E/O ADELINE ST	2	680	36	R	32
65TH ST	045	WEST CITY LIMIT (IDAHO)	IDAHO ST	2	191	33	R	47
66TH ST	045	WEST CITY LIMIT (MABEL)	SACRAMENTO ST	2	1418	36	R	54
67TH ST	045	WEST CITY LIMIT (MABEL)	SACRAMENTO ST	2	1465	30	R	85
6TH ST	044	CEDAR ST	VIRGINIA ST	4	675	59	C	54
6TH ST	045	VIRGINIA ST	UNIVERSITY AVE	4	1625	59	C	63
6TH ST	040	CAMELIA ST	CEDAR ST	2	1320	48	C	75
6TH ST	035	GILMAN ST	CAMELIA ST	2	640	48	C	84
6TH ST	030	NORTH CITY LIMIT	GILMAN ST	2	1140	42	R	85

Road Name	Section ID	Beg Location	End Location	Lanes	Length	Width	Funct. Class	PCI
6TH ST	050	UNIVERSITY AVE	ALLSTON WAY	2	1000	48	C	93
6TH ST	055	ALLSTON WAY	DWIGHT WAY	2	1955	48	C	97
7TH ST	050	UNIVERSITY AVE	BANCROFT WAY	2	1670	36	R	31
7TH ST	055	BANCROFT WAY	DWIGHT WAY	2	1330	36	R	32
7TH ST	045	VIRGINIA ST	UNIVERSITY AVE	2	1625	36	R	36
7TH ST	030	HARRISON ST	CAMELIA ST	2	1350	34	R	37
7TH ST	070	ASHBY AVE	FOLGER AVE	2	364	34	C	38
7TH ST	040	CAMELIA ST	VIRGINIA ST	2	1995	36	R	41
7TH ST	060	DWIGHT WAY	GRAYSON ST	2	1844	41	C	74
7TH ST	065	GRAYSON ST	HEINZ AVE	2	690	41	C	80
7TH ST	067	HEINZ AVE	ASHBY AVE	2	1010	46	C	84
8TH ST	042	PAGE ST	JONES ST	2	460	35	R	16
8TH ST	045	VIRGINIA ST	UNIVERSITY AVE	2	1625	37	R	18
8TH ST	044	JONES ST	VIRGINIA ST	2	1095	35	R	19
8TH ST	055	COLUMBUS SCHOOL	DWIGHT WAY	2	1705	36	R	20
8TH ST	063	CARLETON ST	PARDEE ST	2	304	34	R	25
8TH ST	050	UNIVERSITY AVE	ALLSTON WAY	2	1010	36	R	29
8TH ST	034	GILMAN ST	CAMELIA ST	2	625	35	R	35
8TH ST	040	CAMELIA ST	PAGE ST	2	440	34	R	42
8TH ST	065	PARDEE ST	HEINZ AVE	2	962	36	R	75
8TH ST	061	DWIGHT WAY	PARKER ST	2	660	36	R	78
8TH ST	062	PARKER ST	CARLETON ST	2	545	33	R	80
8TH ST	030	NORTH CITY LIMIT	GILMAN ST	2	1185	36	R	84
9TH ST	063	PARDEE ST	HEINZ AVE	2	1000	48	R	24
9TH ST	048	HEARST AVE	UNIVERSITY AVE	2	480	48	R	65
9TH ST	046	DELAWARE ST	HEARST AVE	2	480	48	R	68
9TH ST	043	CEDAR ST	DELAWARE ST	2	1330	48	R	70
9TH ST	069	ASHBY ST	MURRAY ST	2	150	36	R	79
9TH ST	052	UNIVERSITY AVE	BANCROFT WAY	2	1635	48	R	80
9TH ST	056	CHANNING WAY	DWIGHT WAY	2	665	48	R	85
9TH ST	040	CAMELIA ST	CEDAR ST	2	1330	47	R	86
9TH ST	060	DWIGHT WAY	PARDEE ST	2	1444	43	R	86
9TH ST	066	HEINZ AVE	JOG JUST NORTH OF ANTHONY	2	410	36	R	87
9TH ST	054	BANCROFT WAY	CHANNING WAY	2	705	48	R	87
9TH ST	030	NORTH CITY LIMIT	CAMELIA ST	2	1720	46	R	89
9TH ST	068	JOG JUST NORTH OF ANTHONY	ASHBY ST	2	340	38	R	95
ACACIA AVE	070	CRAGMONT AVE	EUCLID AVE	2	500	22	R	16
ACROFT CT	040	ACTON ST	DEAD END (ACTON ST)	2	270	20	R	63
ACTON CIRCLE	050	DEAD END (ACTON CRESCENT)	ACTON CRESCENT	2	120	21	R	29
ACTON CRESCENT	040	ACTON ST	EAST DEAD END (ACTON ST)	2	470	21	R	30
ACTON ST	063	PARKER ST	WARD ST	2	895	36	R	15
ACTON ST	061	BLAKE ST	PARKER ST	2	325	36	R	17
ACTON ST	065	WARD ST	RUSSELL ST	2	1154	36	R	19
ACTON ST	055	BANCROFT WAY	DWIGHT WAY	2	1330	36	R	20
ACTON ST	035	HOPKINS ST	ROSE ST	2	640	28	R	22
ACTON ST	038	ROSE ST	CEDAR ST	2	635	34	R	23

Road Name	Section ID	Beg Location	End Location	Lanes	Length	Width	Funct. Class	PCI
ACTON ST	052	ADDISON ST	UNIVERSITY AVE	2	340	30	R	42
ACTON ST	060	DWIGHT WAY	BLAKE ST	2	320	36	R	42
ACTON ST	050	ADDISON ST	BANCROFT WAY	2	1350	26	R	43
ACTON ST	040	CEDAR ST	UNIVERSITY AVE	2	2260	34	R	44
ACTON ST	030	NORTH CITY LIMIT	HOPKINS ST	2	1085	36	R	65
ACTON ST	069	RUSSELL ST	ASHBY AVE	2	491	36	R	79
ACTON ST	070	ASHBY ST	66TH ST	2	1234	36	R	86
ADA ST	045	ORDWAY ST	SACRAMENTO ST	2	1350	30	R	25
ADA ST	055	CALIFORNIA ST	MC GEE ST	2	360	36	R	71
ADA ST	050	SACRAMENTO ST	CALIFORNIA ST	2	500	36	R	79
ADDISON ST	030	6TH ST	SAN PABLO AVE	2	1642	36	R	16
ADDISON ST	025	4TH ST	6TH ST	2	680	36	R	19
ADDISON ST	040	SAN PABLO AVE	CURTIS ST	2	730	36	R	23
ADDISON ST	062	MILVIA ST	SHATTUCK AVE	2	700	31	R	35
ADDISON ST	050	SACRAMENTO ST	MARTIN LUTHER KING JR WAY	2	2620	36	R	40
ADDISON ST	060	MARTIN LUTHER KING JR WAY	MILVIA ST	2	670	37	R	52
ADDISON ST	044	BROWNING ST	SACRAMENTO ST	2	1900	36	R	55
ADDISON ST	010	AQUATIC PARK	RRX	2	466	36	R	75
ADDISON ST	015	RRX	4TH ST	2	322	36	R	83
ADDISON ST	066	SHATTUCK AVE	OXFORD ST	2	490	37	R	90
ADDISON ST	064	SHATTUCK AVE	SHATTUCK AVE	2	180	39	R	100
ADELINE (NB)	076	ALCATRAZ AVE	MLK/ ADELINE ST	2	890	37	A	75
ADELINE ST	070	ASHBY AVE	MLK/ ADELINE ST	4	1420	85	A	73
ADELINE ST	078	ALCATRAZ AVE	SOUTH CITY LIMIT (KING ST)	5	1045	70	A	75
ADELINE ST	060	DERBY ST	STUART ST	4	750	85	A	100
ADELINE ST	064	STUART ST	ASHBY AVE	4	1480	84	A	100
ADELINE ST (SB)	074	ADELINE ST/ MARTIN LUTHER KING J	ALCATRAZ AVE	2	945	36	A	69
AJAX PL	080	AJAX LANE	SUMMIT RD	2	305	20	R	13
ALAMO AVE	010	SPRUCE ST	HALKIN LANE	2	840	20	R	20
ALBINA AVE	030	NORTH CITY LIMIT	HOPKINS ST	2	730	32	R	82
ALCATRAZ AVE	080	CITY LIMIT (COLLEGE AVE)	CLAREMONT AVE	2	670	36	C	56
ALCATRAZ AVE	050	SACRAMENTO ST	ADELINE ST	2	1840	38	C	65
ALCATRAZ AVE	045	WEST CITY LIMIT (IDAHO)	SACRAMENTO ST	2	1225	38	C	90
ALCATRAZ AVE	060	ADELINE ST	CITY LIMIT (DOVER ST)	2	910	48	C	95
ALLSTON WAY	020	DEAD END	6TH ST	2	930	36	R	20
ALLSTON WAY	030	6TH ST	9TH ST	2	985	36	R	21
ALLSTON WAY	035	9TH ST	SAN PABLO AVE	2	657	36	R	24
ALLSTON WAY	040	SAN PABLO AVE	STRAWBERRY CK PARK	2	1430	36	R	33
ALLSTON WAY	063	MILVIA ST	SHATTUCK AVE	2	715	36	R	45
ALLSTON WAY	045	STRAWBERRY CK PARK	ACTON ST	2	530	36	R	69
ALLSTON WAY	047	ACTON ST	SACRAMENTO ST	2	640	36	R	69
ALLSTON WAY	050	SACRAMENTO ST	MARTIN LUTHER KING JR WAY	2	2660	36	R	90
ALLSTON WAY	065	SHATTUCK AVE	OXFORD ST	2	590	32	R	100
ALLSTON WAY	060	MARTIN LUTHER KING JR WAY	MILVIA ST	2	660	42	R	100
ALTA RD	070	SPRUCE ST	CRAGMONT AVE	2	390	22	R	20
ALVARADO RD	094	BRIDGE RD	NORTH CITY LIMIT AB WILLOW W	2	1890	24	R	44

Road Name	Section ID	Beg Location	End Location	Lanes	Length	Width	Funct. Class	PCI
ALVARADO RD	092	NORTH CITY LIMIT	BRIDGE RD	2	450	24	R	93
ALVARADO RD	090	TUNNEL RD	NORTH CITY LIMIT	2	770	24	R	95
AMADOR AVE	060	SUTTER ST	SHATTUCK AVE	2	920	32	R	57
ANTHONY ST	030	5TH ST	7TH ST	2	650	36	R	19
ANTHONY ST	040	7TH ST	9TH ST	2	564	36	R	37
ARCADE AVE	030	GRIZZLY PEAK BLVD	FAIRLAWN DR	2	310	23	R	100
ARCH ST	030	GLEN AVE	CEDAR ST	2	1995	36	R	11
ARCH ST	020	SPRUCE ST	EUNICE ST	2	1175	35	R	16
ARCH ST	040	CEDAR ST	HEARST AVE	2	1735	31	R	79
ARDEN RD	050	MOSSWOOD RD	PANORAMIC WAY	2	610	15	R	97
ARLINGTON AVE	010	NORTH CITY LIMIT (BOYNTON)	THOUSAND OAKS BLVD	2	2695	44	C	69
ARLINGTON AVE	015	THOUSAND OAKS BLVD	THE CIRCLE	2	2940	49	C	69
ASHBY PL	080	ASHBY AVE & ELMWOOD AVE	ASHBY AVE & PIEDMONT AVE	2	600	34	R	90
ATHERTON ST	050	CHANNING WAY	HASTE ST	2	325	35	R	20
ATLAS PL	080	HILL RD	SUMMIT RD	2	200	20	R	10
AVALON AVE	083	OAK KNOLL TERR	CLAREMONT BLVD	2	525	36	R	28
AVALON AVE	082	AVALON WALK	OAK KNOLL TERR	2	630	20	R	30
AVALON AVE	084	CLAREMONT BLVD	CLAREMONT AVE	2	300	25	R	37
AVENIDA DR	080	QUEENS RD	GRIZZLY PEAK BLVD	2	1315	24	R	38
AVENIDA DR	034	CAMPUS DR	QUEENS RD	2	445	24	R	81
AVIS RD	060	SAN ANTONIO AVE	SAN LUIS RD	2	440	20	R	80
BAKER ST	075	66TH ST	SOUTH CITY LIMIT (ALCATRAZ)	2	1019	36	R	62
BANCROFT WAY	080	PIEDMONT AVE	COLLEGE AVE	2	670	36	C	26
BANCROFT WAY	082	PIEDMONT AVE	WARRING ST	2	350	36	R	28
BANCROFT WAY	050	SACRAMENTO ST	MARTIN LUTHER KING JR WAY	2	2640	36	R	33
BANCROFT WAY	065	FULTON ST	SHATTUCK AVE	2	500	40	C	41
BANCROFT WAY	060	MILVIA WAY	SHATTUCK AVE	2	710	40	C	46
BANCROFT WAY	076	BOWDITCH ST	TELEGRAPH AVE	2	670	40	C	48
BANCROFT WAY	030	6TH ST	7TH ST	2	660	36	R	52
BANCROFT WAY	078	COLLEGE AVE	BOWDITCH ST	2	670	40	C	54
BANCROFT WAY	035	7TH ST	SAN PABLO AVE	2	1000	36	R	55
BANCROFT WAY	040	SAN PABLO AVE	WEST ST	2	1524	36	R	56
BANCROFT WAY	022	AQUATIC PARK	3RD ST (RR TRACKS)	2	300	36	R	75
BANCROFT WAY	045	WEST ST	SACRAMENTO ST	2	1121	36	R	75
BANCROFT WAY	024	3RD ST (RR TRACKS)	6TH ST	2	1000	36	R	78
BANCROFT WAY	072	TELEGRAPH AVE	DANA ST	2	1200	48	C	90
BANCROFT WAY	074	DANA ST	FULTON ST	2	1305	48	C	90
BANCROFT WAY	086	PROSPECT ST	PANORAMIC WAY	2	135	30	R	97
BATAAN AVE	030	7TH ST	8TH ST	2	330	22	R	16
BATEMAN ST	070	WEBSTER ST	108 N/O PRINCE ST.	2	475	18	R	85
BATEMAN ST	080	108 N/O PRINCE ST.	WOOLSEY	2	323	20	R	88
BAY ST	010	ASHYBY AVE OVERPASS	POTTER ST	2	560	26	A	95
BAY VIEW PL	070	SCENIC AVE	EUCLID AVE	2	800	30	R	74
BELROSE AVE	060	DERBY ST	CLAREMONT BLVD/ GARBER ST	2	650	40	C	97
BELVEDERE AVE	035	ROSE ST	CEDAR ST	2	350	30	R	47
BELVEDERE AVE	040	CEDAR ST	VIRGINIA ST	2	660	30	R	68

Road Name	Section ID	Beg Location	End Location	Lanes	Length	Width	Funct. Class	PCI
BENVENUE AVE	060	DWIGHT WAY	RUSSELL ST	2	2660	36	R	34
BENVENUE AVE	065	RUSSELL ST	ASHBY AVE	2	530	36	R	42
BENVENUE AVE	070	ASHBY AVE	CITY LIMIT (WOOLSEY ST)	2	1165	36	R	47
BERKELEY WAY	046	WEST ST PATHWAY	SACRAMENTO ST	2	1320	30	R	23
BERKELEY WAY	050	SACRAMENTO ST	GRANT ST	2	1920	32	R	41
BERKELEY WAY	045	CHESTNUT ST	WEST ST PATHWAY	2	435	24	R	48
BERKELEY WAY	058	GRANT ST	MARTIN LUTHER KING JR WAY	2	670	36	R	48
BERKELEY WAY	060	MARTIN LUTHER KING JR WAY	MILVIA WAY	2	700	34	R	65
BERKELEY WAY	063	MILVIA WAY	SHATTUCK AVE	2	645	40	R	70
BERKELEY WAY	065	SHATTUCK AVE	OXFORD ST	2	740	47	R	76
BERRYMAN ST	063	MILVIA ST	HENRY ST	2	303	36	R	57
BERRYMAN ST	064	HENRY ST	SHATTUCK AVE	2	367	36	R	76
BERRYMAN ST	055	WEST END	MARTIN LUTHER KING JR WAY	2	495	36	R	80
BERRYMAN ST	060	MARTIN LUTHER KING JR WAY	MILVIA ST	2	640	36	R	82
BEVERLY PL	050	WEST CITY LIMIT COP W/O MONTER	HOPKINS ST	2	1830	36	R	68
BLAKE ST	063	MILVIA ST	SHATTUCK AVE	2	688	48	R	19
BLAKE ST	060	MARTIN LUTHER KING JR WAY	MILVIA ST	2	665	48	R	19
BLAKE ST	040	SAN PABLO AVE	SACRAMENTO ST	2	2442	36	R	19
BLAKE ST	070	FULTON ST	TELEGRAPH AVE	2	1910	36	R	20
BLAKE ST	055	MC GEE ST	MARTIN LUTHER KING JR WAY	2	1280	36	R	20
BLAKE ST	065	SHATTUCK AVE	FULTON ST	2	575	36	R	34
BLAKE ST	050	SACRAMENTO ST	MC GEE ST	2	1270	36	R	76
BOISE ST	075	66TH ST	HARMON ST	2	505	36	R	65
BONAR ST	051	UNIVERSITY AVE	ADDISON ST	2	314	36	R	97
BONAR ST	053	ADDISON ST	ALLSTON WAY	2	670	36	R	97
BONAR ST	055	ALLSTON WAY	DWIGHT WAY	2	1982	36	R	97
BONITA AVE	040	CEDAR ST	VIRGINIA ST	2	670	36	R	19
BONITA AVE	034	ROSE ST	VINE ST	2	660	36	R	26
BONITA AVE	036	VINE ST	CEDAR ST	2	655	36	R	78
BONITA AVE	032	BERRYMAN ST	ROSE ST	2	665	36	R	79
BONITA AVE	030	YOLO AVE	BERRYMAN ST	2	745	30	R	82
BONITA AVE	045	UNIVERSITY AVE	NORTH END	2	210	36	R	87
BONITA AVE	055	DELAWARE ST	SOUTH END	2	180	36	R	92
BONITA AVE	050	BERKLEY WAY	NORTH OF HEARST	2	475	36	R	93
BONNIE LANE	010	HILLDALE AVE	MARIN AVE	2	750	21	R	61
BOWDITCH ST	050	BANCROFT WAY	DURANT AVE	2	330	36	R	20
BOWDITCH ST	052	DURANT AVE	HASTE ST	2	660	36	R	23
BOWDITCH ST	056	HASTE ST	DWIGHT WAY	2	330	36	R	40
BOYNTON AVE	015	COLORADO AVE	FLORIDA AVE	2	280	26	R	59
BOYNTON AVE (NB)	010	ARLINGTON AVE	COLORADO AVE	2	1540	16	R	42
BOYNTON AVE (SB)	011	COLORADO AVE	ARLINGTON AVE	2	1540	16	R	44
BRET HARTE RD	070	KEITH AVE	CREGMONT AVE	2	300	21	R	65
BRET HARTE RD	075	CRAGMONT AVE	KEELER RD	2	750	22	R	79
BRIDGE RD	070	ALVARADO RD	TUNNEL RD	2	450	24	R	95
BROOKSIDE AVE	080	CLAREMONT AVE	DEAD END (CLAREMONT AVE)	2	425	26	R	95
BROOKSIDE CT	070	DEAD END NR BROOKSIDE DR	BROOKSIDE DR	2	110	24	R	95

Road Name	Section ID	Beg Location	End Location	Lanes	Length	Width	Funct. Class	PCI
BROOKSIDE DR	070	CLAREMONT AVE	CLAREMONT AVE	2	535	24	R	95
BROWNING ST	050	ADDISON ST	DWIGHT WAY	2	2650	36	R	33
BUENA AVE	055	MCGEE AVE	CYPRESS ST	2	400	25	R	27
BUENA AVE	050	WEST DEAD END (HOLLY ST)	MCGEE AVE	2	904	37	R	95
BUENA VISTA WAY	078	260' NORTH OF PRIVATE PROP	PRIVATE PROPERTY	2	260	14	R	8
BUENA VISTA WAY	074	DELMAR AVE	260' NORTH OF PRIVATE PROP	2	470	22	R	10
BUENA VISTA WAY	070	EUCLID AVE	DEL MAR AVE	2	3775	30	R	21
BURNETT ST	040	SAN PABLO AVE	MABEL ST	2	874	36	R	22
BURNETT ST	042	MABEL ST	ACTON ST	2	704	36	R	76
BYRON ST	055	CHANNING WAY	DWIGHT WAY	2	660	30	R	17
BYRON ST	050	ADDISON ST	BANCROFT WAY	2	1320	36	R	85
CALIFORNIA ST	066	OREGON ST	ASHBY AVE	2	950	42	R	35
CALIFORNIA ST	045	HEARST AVE	UNIVERSITY AVE	2	600	42	R	37
CALIFORNIA ST	040	CEDAR ST	OHLONE PARK	2	1455	42	R	58
CALIFORNIA ST	030	ADA ST	CEDAR ST	2	1405	45	R	71
CALIFORNIA ST	050	UNIVERSITY AVE	DWIGHT WAY	2	3015	48	R	71
CALIFORNIA ST	072	ASHBY AVE	ALCATRAZ AVE	2	2000	42	R	77
CALIFORNIA ST	076	ALCATRAZ AVE	SOUTH CITY LIMIT	2	840	42	R	77
CALIFORNIA ST	020	HOPKINS ST	ADA ST	2	345	40	R	83
CALIFORNIA ST	060	DWIGHT WAY	OREGON ST	2	2270	42	R	83
CAMELIA ST	024	3RD ST (RR TRACKS)	4TH ST	2	330	36	R	18
CAMELIA ST	020	2ND ST	3RD ST (RR TRACKS)	2	345	35	R	19
CAMELIA ST	034	8TH ST	SAN PABLO AVE	2	1030	36	R	19
CAMELIA ST	030	6TH ST	8TH ST	2	620	36	R	27
CAMELIA ST	026	4TH ST	6TH ST	2	637	36	R	48
CAMELIA ST	040	SAN PABLO AVE	SANTA FE AVE	2	1050	36	R	89
CAMPUS DR	030	SHASTA RD	QUAIL AVE	2	370	22	R	42
CAMPUS DR	032	QUAIL AVE	GLENDALE AVE	2	450	24	R	46
CAMPUS DR	033	GLENDALE AVE	DELMAR AVE	2	1090	24	R	79
CAMPUS DR	035	DELMAR AVE	AVENIDA DRIVE	2	525	22	R	85
CAMPUS DR	036	AVENIDA DR	PARNASSUS RD	2	540	22	R	93
CAMPUS DR	037	PARNASSUS RD	DEAD END, U C PLOT 82	2	760	19	R	93
CANYON RD	080	PANORAMIC WAY	RIM ROAD (UC CAMPUS)	2	275	30	R	97
CANYON RD	085	RIM ROAD (UC CAMPUS)	DEAD END	2	583	15	R	97
CAPISTRANO AVE	050	PERALTA AVE	THE ALAMEDA	2	2645	26	R	38
CAPISTRANO AVE	060	THE ALAMEDA	CONTRA COSTA AVE	2	340	19	R	74
CARLETON ST	070	FULTON ST	TELEGRAPH AVE	2	1720	36	R	16
CARLETON ST	060	MARTIN LUTHER KING JR WAY	MILVIA ST	2	665	42	R	24
CARLETON ST	042	MATHEWS ST	SACRAMENTO ST	2	1912	36	R	28
CARLETON ST	078	TELEGRAPH AVE	DEAD END ABOVE TELEGRAPH A	2	160	27	R	29
CARLETON ST	050	7TH ST	SAN PABLO	2	1330	36	R	33
CARLETON ST	050	SACRAMENTO ST	MARTIN LUTHER KING JR WAY	2	2540	36	R	35
CARLETON ST	063	MILVIA ST	SHATTUCK AVE	2	675	42	R	57
CARLETON ST	065	SHATTUCK AVE	FULTON ST	2	622	36	R	60
CARLETON ST	040	5TH ST	7TH ST	2	615	36	R	77
CARLETON ST	030	3RD ST	5TH ST	2	630	36	NCR	80

Road Name	Section ID	Beg Location	End Location	Lanes	Length	Width	Funct. Class	PCI
CARLETON ST	040	SAN PABLO AVE	MATHEWS ST	2	500	36	R	82
CARLOTTA AVE	020	POSEN AVE	HOPKINS ST	2	865	36	R	71
CARLOTTA AVE	030	HOPKINS ST	ROSE ST	2	880	30	R	73
CARRISON ST	040	SAN PABLO AVE	ACTON ST	2	1528	36	R	73
CATALINA AVE	050	COLUSA AVE	THE ALAMEDA	2	980	27	R	97
CATHERINE DR	030	KEONCREST DR (N)	KEONCREST DR (S)	2	410	25	R	20
CEDAR ST	078	END W/O LA VEREDA	LA VEREDA	2	105	12	R	19
CEDAR ST	020	EAST FRONTAGE RD (STATE P/L)	4TH ST	2	925	36	A	23
CEDAR ST	050	SACRAMENTO ST	MARTIN LUTHER KING JR WAY	2	2600	40	C	24
CEDAR ST	025	4TH ST	6TH ST	2	670	43	A	42
CEDAR ST	070	SPRUCE ST	EUCLID AVE	2	1380	35	C	70
CEDAR ST	075	EUCLID AVE	LA LOMA AVE	2	920	34	C	74
CEDAR ST	065	OXFORD ST	SPRUCE ST	2	335	36	C	86
CEDAR ST	063	MILVIA ST	SHATTUCK AVE	2	660	36	C	90
CEDAR ST	060	MARTIN LUTHER KING JR WAY	MILVIA ST	2	665	36	C	91
CEDAR ST	045	CHESTNUT ST	ACTON ST	2	1140	37	C	93
CEDAR ST	064	SHATTUCK AVE	OXFORD ST	2	635	38	C	93
CEDAR ST	040	SAN PABLO AVE	CHESTNUT ST	2	1485	37	C	95
CEDAR ST	049	ACTON ST	SACRAMENTO ST	2	665	34	C	95
CEDAR ST	030	6TH ST	SAN PABLO AVE	2	1650	37	C	100
CEDARWOOD LANE	030	HARRISON ST	PARK WAY	2	330	36	R	0
CENTER ST	064	SHATTUCK AVE	OXFORD ST	2	620	47	R	64
CENTER ST	062	MILVIA ST	SHATTUCK AVE	2	730	47	R	100
CENTER ST	060	MARTIN LUTHER KING JR WAY	MILVIA ST	2	670	53	R	100
CHABOLYN TERRACE	080	SOUTH CITY LIMIT	SOUTH CITY LIMIT	2	420	26	R	90
CHANNING WAY	060	MARTIN LUTHER KING JR WAY	MILVIA ST	2	670	36	R	17
CHANNING WAY	057	ROOSEVELT AVE	MARTIN LUTHER KING JR WAY	2	1000	36	R	18
CHANNING WAY	084	PIEDMONT AVE	PROSPECT ST	2	630	36	R	30
CHANNING WAY	063	MILVIA ST	SHATTUCK AVE	2	710	36	R	30
CHANNING WAY	050	SACRAMENTO ST	ROOSEVELT AVE	2	1620	36	R	34
CHANNING WAY	040	SAN PABLO AVE	SACRAMENTO ST	2	2775	36	R	50
CHANNING WAY	038	10TH ST	SAN PABLO AVE	2	330	36	R	56
CHANNING WAY	030	6TH ST	10TH ST	2	1397	36	R	69
CHANNING WAY	078	BOWDITCH ST	COLLEGE AVE	2	670	37	R	76
CHANNING WAY	080	COLLEGE AVE	PIEDMONT AVE	2	630	36	R	78
CHANNING WAY	075	DANA ST	BOWDITCH ST	2	1340	40	R	78
CHANNING WAY	020	3RD ST	6TH ST	2	935	36	R	87
CHANNING WAY	070	FULTON ST	DANA ST	2	1340	36	R	93
CHANNING WAY	066	SHATTUCK AVE	FULTON ST	2	560	36	R	93
CHAUCER ST	040	SAN PABLO AVE	CURTIS ST	2	550	30	R	21
CHERRY ST	065	STUART ST	RUSSELL ST	2	500	36	R	85
CHESTNUT ST	035	ROSE ST	CEDAR ST	2	350	34	R	20
CHESTNUT ST	044	VIRGINIA ST	UNIVERSITY AVE	2	1620	36	R	24
CHESTNUT ST	042	CEDAR ST	VIRGINIA ST	2	650	36	R	39
CHILTON WAY	060	BLAKE ST	PARKER ST	2	335	30	R	27
CLAREMONT AVE	065	RUSSELL ST	ASHBY AVE	2	425	36	C	24

Road Name	Section ID	Beg Location	End Location	Lanes	Length	Width	Funct. Class	PCI
CLAREMONT AVE	060	EAST CITY LIMIT NR GARBER RD	RUSSELL AVE	2	600	38	C	27
CLAREMONT AVE	070	ASHBY AVE	SOUTH CITY LIMIT (ALCATRAZ)	4	2985	56	C	54
CLAREMONT BLVD	060	DERBY ST	CUL-DE-SAC	2	560	40	R	32
CLAREMONT BLVD	065	BELROSE AVE	CLAREMONT AVE	2	875	37	C	94
CLAREMONT CRESCEN	070	CLAREMONT AVE	ASHBY AVE	2	410	24	R	90
CODORNICES RD	030	DEAD END (EUCLID AVE)	EUCLID AVE	2	600	15	R	72
COLBY ST	070	ASHBY AVE	WEBSTER ST.	2	299	36	R	52
COLBY ST	080	WEBSTER ST.	END	2	385	32	R	80
COLLEGE AVE	060	DWIGHT WAY	DERBY ST (S)	2	1430	36	A	40
COLLEGE AVE	070	ASHBY AVE	SOUTH CITY LIMIT (ALCATRAZ)	2	2155	36	A	42
COLLEGE AVE	065	DERBY ST (S)	ASHBY AVE	2	1785	36	A	45
COLLEGE AVE	050	BANCROFT WAY	DWIGHT WAY	2	1340	36	C	89
COLORADO AVE	065	VERMONT AVE	MICHIGAN AVE	2	260	24	R	55
COLORADO AVE	060	BOYNTON AVE	VERMONT AVE	2	250	24	R	58
COLUMBIA CIRCLE	080	COLUMBIA PATH	FAIRLAWN DR	2	230	21	R	91
COLUSA AVE	025	MONTEREY AVE	POSEN AVE	2	1233	36	C	23
COLUSA AVE	026	POSEN AVE	HOPKINS ST	2	520	36	C	25
COLUSA AVE	010	NORTH CITY LIMIT (VISALIA)	SOLANO AVE	2	3565	36	C	37
COLUSA AVE	022	MARIN AVE	MONTEREY AVE	2	870	46	C	56
COLUSA AVE	020	SOLANO AVE	MARIN AVE	2	670	46	C	73
COMSTOCK CT	035	JAYNES ST	CEDAR ST	2	300	24	R	80
CONTRA COSTA AVE	010	YOSEMITE RD	SOLANO AVE	2	2375	20	R	89
CONTRA COSTA AVE	018	SOLANO AVE	LOS ANGELES AVE	2	185	25	R	95
CORNELL AVE	030	NORTH CITY LIMIT	GILMAN ST	2	765	30	R	46
CORNELL AVE	036	PAGE ST	HOPKINS ST	2	695	30	R	72
CORNELL AVE	035	GILMAN ST	PAGE ST	2	1000	30	R	74
CORNELL AVE	039	HOPKINS ST	CEDAR ST	2	345	29	R	98
CORNELL AVE	040	CEDAR ST	VIRGINIA ST	2	660	30	R	98
CORONA CT	070	ARCH ST	DEAD END (ARCH ST)	2	320	24	R	50
COWPER ST	040	SAN PABLO AVE	BYRON ST	2	370	30	R	91
CRAGMONT AVE	010	GRIZZLY PEAK BLVD	MARIN AVE	2	4100	22	C	38
CRAGMONT AVE	027	BRET HARTE RD	SHASTA RD	2	1625	21	R	85
CRAGMONT AVE	021	MARIN AVE	SANTA BARBARA RD	2	1110	23	R	87
CRAGMONT AVE	023	SANTA BARBARA RD	EUCLID AVE	2	830	22	R	87
CRAGMONT AVE	025	EUCLID AVE	BRET HARTE RD	2	1420	20	R	88
CRESTON RD	020	SUNSET LANE	GRIZZLY PEAK BLVD (S)	2	2699	22	R	57
CRESTON RD	010	GRIZZLY PEAK BLVD (N)	SUNSET LANE	2	1910	22	R	61
CRYSTAL WAY	020	EUCLID AVE (WEST)	EUCLID AVE (EAST)	1	80	24	R	37
CURTIS ST	038	HOPKINS ST	CEDAR ST	2	370	30	R	11
CURTIS ST	050	UNIVERSITY AVE	DWIGHT WAY	2	2990	36	R	14
CURTIS ST	040	CEDAR ST	VIRGINIA ST	2	660	30	R	16
CURTIS ST	030	NORTH CITY LIMIT	HOPKINS ST	2	2400	29	R	28
CURTIS ST	045	VIRGINIA ST	UNIVERSITY AVE	2	1615	36	R	66
CYPRESS ST	031	ROSE ST	BUENA AVE	2	325	26	R	81
DANA ST	050	BANCROFT WAY	DWIGHT WAY	2	1320	36	R	47
DANA ST	060	DWIGHT WAY	BLAKE ST	2	330	36	R	56

Road Name	Section ID	Beg Location	End Location	Lanes	Length	Width	Funct. Class	PCI
DANA ST	065	BLAKE ST	WARD ST	2	1320	36	R	61
DANA ST	070	WEBSTER ST	CITY LIMIT (WOOLSEY ST)	2	765	32	R	70
DEAKIN ST	075	PRINCE ST	CITY LIMIT (WOOLSEY ST)	2	385	36	R	79
DEAKIN ST	070	ASHBY AVE	PRINCE ST	2	820	36	R	89
DEAKIN ST	068	RUSSELL ST	ASHBY AVE	2	525	36	R	100
DEL MAR AVE	085	GLENDALE AVE	CAMPUS DR	2	480	24	R	12
DEL MAR AVE	083	BUENA VISTA WAY	GLENDALE AVE	2	795	21	R	22
DEL NORTE CT	020	DEL NORTE ST	DEAD END (DEL NORTE ST)	2	110	12	R	74
DEL NORTE ST	020	THE CIRCLE	SUTTER ST	2	690	28	C	91
DELAWARE ST	040	SAN PABLO AVE	ACTON ST	2	2435	48	C	28
DELAWARE ST	060	MARTIN LUTHER KING JR WAY	MILVIA ST	2	665	34	R	38
DELAWARE ST	063	MILVIA ST	WALNUT ST	2	975	34	R	40
DELAWARE ST	048	ACTON ST	SACRAMENTO ST	2	665	48	C	57
DELAWARE ST	030	6TH ST	9TH ST	2	955	48	C	76
DELAWARE ST	035	9TH ST	SAN PABLO AVE	2	670	48	C	76
DELAWARE ST	052	DEAD END WEST OF CALIFORNIA	CALIFORNIA ST	2	375	36	R	93
DELAWARE ST	055	CALIFORNIA ST	MARTIN LUTHER KING JR WAY	2	2000	36	R	97
DERBY ST	070	FULTON ST	TELEGRAPH AVE	2	1630	36	R	15
DERBY ST	063	MILVIA ST	SHATTUCK AVE	2	633	42	R	16
DERBY ST	075	TELEGRAPH AVE	HILLEGASS AVE (S)	2	860	38	R	19
DERBY ST	050	SACRAMENTO ST	MARTIN LUTHER KING JR WAY	2	2510	36	R	20
DERBY ST	065	SHATTUCK AVE	FULTON ST	2	675	36	R	22
DERBY ST	078	HILLEGASS AVE (S)	COLLEGE AVE	2	760	36	R	23
DERBY ST	082	PIEDMONT AVE	WARRING ST	2	322	37	R	27
DERBY ST	080	COLLEGE AVE	PIEDMONT AVE	2	653	37	R	31
DERBY ST	045	MABEL ST	SACRAMENTO ST	2	1311	36	R	32
DERBY ST	060	MARTIN LUTHER KING JR WAY	MILVIA ST	2	665	42	R	86
DERBY ST	085	WARRING ST	BELROSE AVE & TANGLEWOOD R	2	1205	36	A	95
DERBY ST	042	SAN PABLO AVE	MATHEWS ST	2	455	36	R	97
DERBY ST	044	MATHEWS ST	MABEL ST	2	608	36	R	97
DOHR ST	065	WARD ST	RUSSELL ST	2	1170	36	R	19
DOHR ST	068	RUSSELL ST	ASHBY AVE	2	489	22	R	21
DOHR ST	070	ASHBY AVE	PRINCE ST	2	764	26	R	100
DOMINGO AVE	068	CITY LIMIT NR RUSSELL ST	TUNNEL RD	2	220	40	R	39
DOMINGO AVE	070	TUNNEL RD	THE PLAZA DR	2	1130	40	R	73
DOVER ST	075	ALCATRAZ AVE	CITY LIMIT (63RD ST)	2	130	32	R	21
DOWLING PL	070	TELEGRAPH AVE	DANA ST	2	385	36	R	84
DURANT AVE	060	MILVIA ST	SHATTUCK AVE	2	710	47	C	15
DURANT AVE	064	SHATTUCK AVE	FULTON ST	2	530	48	C	29
DURANT AVE	070	FULTON ST	BOWDITCH ST	2	2650	48	C	52
DURANT AVE	078	BOWDITCH ST	COLLEGE AVE	2	670	48	C	64
DURANT AVE	080	COLLEGE AVE	PIEDMONT AVE	2	640	33	C	67
DWIGHT CRESCENT	055	6TH ST	7TH ST	2	420	45	C	98
DWIGHT WAY	020	4TH ST	6TH ST	2	650	36	C	12
DWIGHT WAY	083	PIEDMONT AVE	HILLSIDE AVE	2	765	36	R	14
DWIGHT WAY	085	HILLSIDE AVE	DEAD END ABOVE HILLSIDE AVE	2	590	36	R	18

Road Name	Section ID	Beg Location	End Location	Lanes	Length	Width	Funct. Class	PCI
DWIGHT WAY	050	SACRAMENTO ST	MARTIN LUTHER KING JR WAY	2	2615	39	A	23
DWIGHT WAY	030	6TH ST	7TH ST	2	310	36	C	30
DWIGHT WAY	032	7TH ST	SAN PABLO AVE	2	1350	36	A	43
DWIGHT WAY	064	MILVIA WAY	SHATTUCK AVE	2	710	38	A	57
DWIGHT WAY	060	MARTIN LUTHER KING JR WAY	MILVIA ST	2	665	36	A	59
DWIGHT WAY	073	DANA ST	TELEGRAPH AVE	2	670	40	A	79
DWIGHT WAY	070	FULTON ST	DANA ST	2	1325	40	A	85
DWIGHT WAY	075	TELEGRAPH AVE	BOWDITCH ST	2	660	36	A	86
DWIGHT WAY	066	SHATTUCK AVE	FULTON ST	2	600	40	A	91
DWIGHT WAY	080	COLLEGE AVE	PIEDMONT AVE	2	775	36	A	93
DWIGHT WAY	078	BOWDITCH ST	COLLEGE AVE	2	660	36	A	93
DWIGHT WAY	040	SAN PABLO AVE	SACRAMENTO ST	2	2430	36	A	95
DWIGHT WAY	090	PANORAMIC WAY	EAST CITY LIMIT	2	100	28	R	97
EAST BOLIVAR DR	050	ADDISON ST	DEAD END NR CHANNING	2	1800	24	R	29
EAST FRONTAGE RD	040	GILMAN ST	HEARST AVE	2	3696	34	C	30
EAST FRONTAGE RD	030	NORTH CITY LIMIT	GILMAN ST	2	1350	32	C	43
EAST PARNASSUS CT	080	PARNASSUS RD	DEAD END (PARNASSUS RD)	2	210	22	R	93
EDITH ST	040	CEDAR ST	VIRGINIA ST	2	638	30	R	55
EDITH ST	030	ROSE ST	CEDAR ST	2	1295	32	R	71
EDWARDS ST	055	BANCROFT WAY	DWIGHT WAY	2	1330	36	R	56
EL CAMINO REAL	070	DOMINGO AVE	THE UPLANDS	2	1840	24	R	86
EL CAMINO REAL	075	THE UPLANDS	DEAD END ABOVE THE UPLANDS	2	485	24	R	87
EL DORADO AVE	060	THE ALAMEDA	SUTTER ST	2	1290	33	R	25
EL PORTAL CT	030	DEAD END (LA LOMA AVE)	LA LOMA AVE	2	250	18	R	10
ELLIS ST	068	RUSSELL ST	ASHBY AVE	2	650	37	R	47
ELLIS ST	070	ASHBY AVE	ALCATRAZ AVE	2	2005	37	R	78
ELLSWORTH ST	050	BANCROFT WAY	DWIGHT WAY	2	1320	36	R	22
ELLSWORTH ST	062	CARLETON ST	WARD ST	2	620	42	R	87
ELLSWORTH ST	060	DWIGHT WAY	CARLETON ST	2	1000	36	R	90
ELLSWORTH ST	065	WARD ST	ASHBY AVE	2	1520	42	R	92
ELMWOOD AVE	080	ASHBY AVE & ASHBY PL	PIEDMONT AVE	2	570	34	R	20
ELMWOOD CT	070	ASHBY AVE	DEAD END (ASHBY AVE)	2	270	32	R	76
EMERSON ST	065	SHATTUCK AVE	WHEELER ST	2	575	36	R	24
EMERSON ST	060	ADELINE ST	SHATTUCK AVE	2	805	36	R	55
ENCINA PL	070	THE PLAZA DR	THE UPLANDS	2	350	40	R	93
ENSENADA AVE	020	SOLANO AVE	MARIN AVE	2	545	36	R	27
ENSENADA AVE	010	PERALTA AVE	SOLANO AVE	2	2255	27	R	62
EOLA ST	040	VIRGINIA ST	FRANCISCO ST	2	325	22	R	28
ESSEX ST	064	SHATTUCK AVE	WHEELER ST	2	585	36	R	26
ESSEX ST	062	TREMONT ST	SHATTUCK AVE	2	580	36	R	61
ESSEX ST	060	ADELINE ST	TREMONT ST	2	340	36	R	68
ETNA ST	062	DWIGHT WAY	PARKER ST	2	665	36	R	29
ETNA ST	064	PARKER ST	DERBY ST	2	665	36	R	31
ETON AVE	070	WOOLSEY ST	CLAREMONT AVE	2	750	36	R	86
ETON CT	070	CLAREMONT AVE	DEAD END (CLAREMONT AVE)	2	150	25	R	25
EUCALYPTUS RD	070	HILLCREST RD	SOUTH CITY LIMIT	2	440	25	R	56

Road Name	Section ID	Beg Location	End Location	Lanes	Length	Width	Funct. Class	PCI
EUCLID AVE	032	BAYVIEW PL	CEDAR ST	2	1890	34	C	28
EUCLID AVE	040	CEDAR ST	HEARST AVE	2	1625	35	C	41
EUCLID AVE	015	MARIN AVE	REGAL RD	2	600	32	R	73
EUCLID AVE	020	REGAL RD	CRAGMONT AVE	2	1475	40	C	74
EUCLID AVE	010	GRIZZLY PEAK BLVD	MARIN AVE	2	3054	32	C	77
EUCLID AVE	024	CRAGMONT AVE	BEG OF DIVIDED ROAD	2	650	41	R	77
EUCLID AVE	028	END OF DIVIDED ROAD	EUNICE ST	2	900	42	R	83
EUCLID AVE	030	EUNICE ST	BAYVIEW PL	2	870	36	C	100
EUCLID AVE (NB)	026	BEG OF DIVIDED ROAD	END OF DIVIDED ROAD	2	850	18	R	82
EUCLID AVE (SB)	027	BEG OF DIVIDED ROAD	END OF DIVIDED ROAD	2	845	31	R	81
EUNICE ST	070	SPRUCE ST	EUCLID AVE	2	1235	35	R	26
EUNICE ST	064	HENRY ST	SPRUCE ST	2	1370	34	R	39
EUNICE ST	060	MILVIA ST	CUL-DE-SAC	2	225	36	R	93
EVELYN AVE	030	NORTH CITY LIMIT	SANTA FE AVE	2	980	30	R	90
FAIRLAWN DR	038	AVENIDA DR	OLYMPUS DR	2	615	23	R	46
FAIRLAWN DR	030	QUEENS RD	AVENIDA DR	2	2575	21	R	93
FAIRVIEW ST	050	SACRAMENTO ST	ADELINE ST	2	2145	36	R	23
FAIRVIEW ST	060	ADELINE ST	CITY LIMIT (DOVER ST)	2	530	36	R	27
FAIRVIEW ST	047	BAKER ST	SACRAMENTO ST	2	630	36	R	73
FLORANCE ST	068	RUSSELL ST	ASHBY AVE	2	530	36	R	30
FLORIDA AVE	060	SANTA BARBARA RD	DEAD END (FLORIDA WALK)	2	400	26	R	82
FOLGER AVE	024	HOLLIS ST	7TH ST	2	365	42	C	86
FOLGER AVE	025	7TH ST	SAN PABLO AVE	2	1325	42	C	87
FOLGER AVE	020	WEST END	HOLLIS ST	2	365	42	R	97
FOREST AVE	080	COLLEGE AVE	CLAREMONT BLVD	2	1875	36	R	39
FORREST LANE	073	GRIZZY PARK	CRESTON RD	2	337	22	R	18
FORREST LANE	072	KEELER AVE	GRIZZLY PEAK BLVD	2	615	22	R	22
FORREST LANE	070	HILLDALE AVE	KEELER AVE	2	520	19	R	38
FRANCISCO ST	040	SAN PABLO AVE	CHESTNUT ST	2	1370	30	R	19
FRANCISCO ST	050	SACRAMENTO ST	MARTIN LUTHER KING JR WAY	2	2610	36	R	21
FRANCISCO ST	045	CHESTNUT ST	DEAD END	2	1130	30	R	25
FRANCISCO ST	060	MARTIN LUTHER KING JR WAY	MILVIA ST	2	670	36	R	27
FRANCISCO ST	063	MILVIA ST	SHATTUCK AVE	2	670	36	R	28
FRANKLIN ST	042	CEDAR ST	FRANCISCO ST	2	1025	38	R	80
FRANKLIN ST	044	FRANCISCO ST	HEARST AVE	2	745	38	R	87
FRESNO AVE	022	MARIN AVE	SONOMA AVE	2	1310	36	R	33
FRESNO AVE	020	SOLANO AVE	MARIN AVE	2	900	36	R	45
FULTON ST	060	DWIGHT WAY	BLAKE ST	2	312	36	R	54
FULTON ST	063	PARKER ST	STUART ST	2	1318	36	R	54
FULTON ST	061	BLAKE ST	PARKER ST	2	348	36	R	63
FULTON ST	070	ASHBY ST	PRINCE ST	2	810	36	R	75
FULTON ST	048	KITTREDGE ST	BANCROFT WAY	4	315	67	A	83
FULTON ST	065	STUART ST	ASHBY AVE	2	1166	36	R	85
FULTON ST	050	BANCROFT WAY	DURANT AVE	2	330	54	A	90
FULTON ST	052	DURANT AVE	DWIGHT WAY	2	990	36	A	90
GARBER ST	085	WEST END	OAK KNOLL TERRACE	2	550	22	R	32

Road Name	Section ID	Beg Location	End Location	Lanes	Length	Width	Funct. Class	PCI
GARBER ST	080	COLLEGE AVE	EAST END	2	1010	36	R	33
GARBER ST	088	BELROSE AVE	EAST CITY LIMIT (TANGLEWOOD)	2	450	24	R	36
GILMAN ST	035	8TH ST	SAN PABLO AVE	2	995	48	A	38
GILMAN ST	045	SANTA FE AVE	HOPKINS ST	2	1595	36	A	43
GILMAN ST	040	SAN PABLO AVE	SANTA FE AVE	2	1445	38	A	48
GILMAN ST	015	ENTRANCE OF FWY	2ND ST	2	700	62	R	59
GILMAN ST	024	3RD ST (RR TRACKS)	6TH ST	2	1000	48	A	59
GILMAN ST	020	2ND ST	3RD ST (RR TRACKS)	2	485	48	A	70
GILMAN ST	030	6TH ST	8TH ST	2	655	48	A	74
GLEN AVE	033	CORNER BETWEEN SUMMER/ARCH	SPRUCE ST	2	380	23	R	12
GLEN AVE	030	EUNICE ST	CORNER BETWEEN SUMMER/ARC	2	620	22	R	14
GLEN AVE	020	OAK ST	EUNICE ST	2	510	28	R	90
GLENDALE AVE	034	LA LOMA AVE	DEL MAR AVE	2	675	22	R	31
GLENDALE AVE	030	CAMPUS DR	LA LOMA AVE	2	640	32	C	88
GRANT ST	042	VIRGINIA ST	FRANCISCO ST	2	318	36	R	25
GRANT ST	060	DWIGHT WAY	OREGON ST	2	2266	36	R	33
GRANT ST	053	ADDISON ST	ALLSTON WAY	2	665	42	R	43
GRANT ST	061	N. END	RUSSELL ST	2	196	36	R	43
GRANT ST	057	BANCROFT WAY	CHANNING WAY	2	670	42	R	45
GRANT ST	041	LINCOLN ST	VIRGINIA ST	2	320	36	R	48
GRANT ST	030	NORTH END	ROSE ST	2	310	36	R	54
GRANT ST	040	CEDAR ST	LINCOLN ST	2	318	36	R	56
GRANT ST	032	ROSE ST	CEDAR ST	2	1325	36	R	65
GRANT ST	048	HEARST AVE	UNIVERSITY AVE	2	600	36	R	78
GRANT ST	059	CHANNING WAY	DWIGHT	2	665	42	R	83
GRANT ST	055	ALLSTON WAY	BANCROFT WAY	2	670	42	R	90
GRANT ST	051	UNIVERSITY AVE	ADDISON ST	2	335	42	R	93
GRANT ST	044	FRANCISCO ST	OHLONE PARK	2	525	36	R	97
GRAYSON ST	020	3RD ST (WEST END)	SAN PABLO AVE	2	2568	36	R	70
GREENWOOD TERRACE	030	ROSE ST	BUENA VISTA WAY	2	850	17	R	21
GRIZZLY PEAK BLVD	015	EUCLID AVE	KEELER AVE	2	1250	30	C	19
GRIZZLY PEAK BLVD	017	KEELER AVE	MARIN AVE	2	1400	33	C	19
GRIZZLY PEAK BLVD	010	NORTH CITY LIMIT (SPRUCE ST)	EUCLID AVE	2	1050	35	C	24
GRIZZLY PEAK BLVD	035	HILL RD	EAST CITY LIMIT	2	2515	32	C	51
GRIZZLY PEAK BLVD	029	SHASTA RD (S)	ARCADE AVE	2	1065	32	C	76
GRIZZLY PEAK BLVD	020	MARIN AVE	SHASTA RD (S)	2	4065	34	C	88
GRIZZLY PEAK BLVD	032	ARCADE AVE	(EXTENTION OF EUNICE) HILL RD	2	785	32	C	94
HALCYON CT	070	WEBSTER ST	PRINCE ST	2	460	57	R	89
HALKIN LANE	070	SPRUCE ST	CRAGMONT AVE	2	515	22	R	52
HARDING CIRCLE	030	OLYMPUS AVE	END	2	65	38	R	48
HARMON ST	045	IDAHO ST	SACRAMENTO ST	2	1025	36	R	15
HARMON ST	050	SACRAMENTO ST	ADELINE ST	2	1985	36	R	67
HAROLD WAY	050	ALLSTON WAY	KITTREDGE ST	2	325	36	R	53
HARPER ST	070	ASHBY AVE	WOOLSEY ST	2	935	36	R	64
HARPER ST	068	RUSSELL ST	ASHBY AVE	2	665	36	R	70
HARPER ST	072	WOOLSEY ST	FAIRVIEW ST	2	306	36	R	78

Road Name	Section ID	Beg Location	End Location	Lanes	Length	Width	Funct. Class	PCI
HARRISON ST	020	EASTSHORE HWY	2ND ST	2	270	49	R	48
HARRISON ST	022	3RD ST	6TH ST	2	935	34	R	73
HARRISON ST	030	6TH ST	8TH ST	2	645	35	R	78
HARRISON ST	040	SAN PABLO AVE	STANNAGE AVE	2	495	36	R	83
HARRISON ST	034	8TH ST	SAN PABLO AVE	2	990	35	R	84
HARVARD CIRCLE	030	FAIRLAWN DR & SENIOR AVE	FAIRLAWN DR	2	100	30	R	38
HASKELL ST	040	SAN PABLO AVE	ACTON ST	2	1505	36	R	77
HASTE ST	060	FULTON ST	SHATTUCK AVE	2	580	36	A	29
HASTE ST	070	BOWDITCH ST	FULTON ST	2	2680	40	A	35
HASTE ST	078	COLLEGE AVE	BODWITCH ST	2	670	39	A	41
HASTE ST	080	PIEDMONT AVE	COLLEGE AVE	2	650	36	A	43
HASTE ST	065	MILVIA ST	MARTIN LUTHER KING JR WAY	2	670	36	A	76
HASTE ST	063	SHATTUCK AVE	MILVIA ST	2	705	36	A	83
HAWTHORNE TERRACE	030	LE ROY AVE	EUCLID AVE	2	365	24	R	62
HAWTHORNE TERRACE	035	EUCLID AVE	CEDAR ST	2	1465	24	R	87
HAZEL RD	090	CLAREMONT AVE	DOMINGO AVE	2	830	30	R	85
HEARST AVE	030	6TH ST	SAN PABLO AVE	2	1650	36	C	25
HEARST AVE	045	ACTON ST	SACRAMENTO ST	2	676	36	R	26
HEARST AVE	040	SAN PABLO AVE	ACTON ST	2	2350	36	R	29
HEARST AVE	020	EAST FRONTAGE RD (STATE P/L)	6TH ST	2	1515	48	C	33
HEARST AVE	060	MARTIN LUTHER KING JR WAY	MILVIA ST	2	670	34	A	47
HEARST AVE	052	SACRAMENTO ST	CALIFORNIA ST	2	600	36	C	67
HEARST AVE	055	MC GEE AVE	MARTIN LUTHER KING JR WAY	2	1355	36	C	68
HEARST AVE	054	CALIFORNIA ST	MC GEE AVE	2	660	36	C	71
HEARST AVE	078	HIGHLAND PL	DEAD END (COP @ CL)	2	140	23	R	82
HEARST AVE	077	LA LOMA AVE	HIGHLAND PL	2	340	35	A	83
HEARST AVE	064	HENRY ST	SHATTUCK AVE	2	330	55	A	93
HEARST AVE	065	SHATTUCK AVE	WALNUT ST	2	325	57	A	93
HEARST AVE	067	WALNUT ST	OXFORD ST	2	355	57	A	93
HEARST AVE	068	OXFORD ST	SPRUCE ST	2	250	58	A	93
HEARST AVE	070	SPRUCE ST	ARCH ST	2	425	56	A	93
HEARST AVE	075	EUCLID AVE	LA LOMA AVE	2	975	39	A	93
HEARST AVE	062	MILVIA ST	HENRY ST	2	335	46	A	100
HEARST AVE (EB)	072	ARCH ST	EUCLID AVE	2	1160	20	A	95
HEARST AVE (WB)	073	EUCLID AVE	ARCH ST	2	1160	23	A	95
HEINZ AVE	040	7TH ST	SAN PABLO AVE	2	1368	36	R	22
HEINZ AVE	030	3RD ST (WEST END)	7TH ST	2	1197	36	R	83
HENRY ST	030	EUNICE ST	ROSE ST	2	1375	62	A	36
HENRY ST	045	HEARST AVE	BERKELEY WAY	2	335	34	R	73
HENRY ST	034	ROSE ST	VINE ST	2	660	36	R	97
HENRY ST	035	VINE ST	CEDAR ST	2	655	36	R	97
HIGH COURT	020	DEAD END	OAK ST	2	645	24	R	26
HIGHLAND PL	040	NORTH END	RIDGE RD	2	215	15	R	5
HIGHLAND PL	042	RIDGE RD	HEARST AVE	2	345	36	R	97
HILGARD AVE	070	ARCH ST	SCENIC AVE	2	440	36	R	61
HILGARD AVE	072	SCENIC AVE	EUCLID AVE	2	595	36	R	81

Road Name	Section ID	Beg Location	End Location	Lanes	Length	Width	Funct. Class	PCI
HILGARD AVE	074	EUCLID AVE	LA LOMA AVE	2	1050	35	R	88
HILGARD AVE	078	LA LOMA AVE	LA VEREDA	2	490	17	R	93
HILGARD AVE	080	LA VEREDA	DEAD END	2	220	24	R	97
HILL CT	070	EUCLID AVE	DEAD END (EUCLID AVE)	2	310	15	R	100
HILL RD	025	SHASTA RD	DEAD END	2	575	18	R	9
HILL RD	030	DEAD END NR AJAX LANE	GRIZZLY PEAK BLVD (SOUTH)	2	945	20	R	22
HILLCREST CT	070	THE FOOTWAY	HILLCREST RD	2	190	20	R	47
HILLCREST RD	088	ROANOK RD	DEAD END ABOVE ROANOK RD	2	390	24	R	30
HILLCREST RD	080	CLAREMONT AVE	ROANOK RD	2	3150	25	R	45
HILLDALE AVE	020	MARIN AVE	REGAL RD	2	1265	20	R	17
HILLDALE AVE	010	GRIZZLY PEAK BLVD	MARIN AVE	2	1870	21	R	20
HILLEGASS AVE	060	DWIGHT WAY	ASHBY AVE	2	3200	36	R	67
HILLEGASS AVE	070	ASHBY AVE	CITY LIMIT (WOOLSEY ST)	2	855	36	R	75
HILLSIDE AVE	050	PROSPECT ST	DWIGHT WAY	2	760	30	R	90
HILLSIDE CT	050	DEAD END (HILLSIDE AVE)	HILLSIDE AVE	2	290	16	R	95
HILLVIEW RD	020	WOODSIDE RD	PARK HILLS RD	2	1265	22	R	88
HOLLIS ST	070	FOLGER AVE	SOUTH CITY LIMIT	2	175	43	C	74
HOLLY ST	030	ROSE ST	CEDAR ST	2	910	36	R	7
HOPKINS CT	020	ALBINA AVE	HOPKINS ST	2	570	25	R	87
HOPKINS ST	047	GILMAN ST	SACRAMENTO ST	2	530	36	R	29
HOPKINS ST	060	THE ALAMEDA	SUTTER ST	2	1375	60	C	30
HOPKINS ST	050	HOPKINS CT	MONTEREY AVE	2	250	36	C	41
HOPKINS ST	055	CARLOTTA AVE	JOSEPHINE ST	2	1525	45	C	41
HOPKINS ST	049	SACRAMENTO ST	HOPKINS CT	2	200	36	A	45
HOPKINS ST	053	MC GEE AVE	CARLOTTA AVE	2	320	45	C	45
HOPKINS ST	052	MONTEREY AVE	MC GEE AVE	2	250	40	C	46
HOPKINS ST	059	JOSEPHINE ST	THE ALAMEDA	2	335	60	C	49
HOPKINS ST	046	PERALTA AVE	GILMAN ST	2	1442	36	R	51
HOPKINS ST	042	STANNAGE AVE	NORTHSIDE AVE	2	915	40	R	69
HOPKINS ST	045	NORTHSIDE AVE	PERALTA AVE	2	545	35	R	72
HOPKINS ST	040	SAN PABLO AVE	STANNAGE AVE	2	500	40	R	74
HOWE ST	070	ELLSWORTH ST	TELEGRAPH AVE	2	545	36	R	23
IDAHO ST	072	66TH ST	ALCATRAZ AVE	2	823	36	R	18
IDAHO ST	076	ALCATRAZ AVE	SOUTH CITY LIMIT	2	135	36	R	85
INDIAN ROCK AVE	064	SAN LUIS RD	SANTA BARBARA RD	2	565	30	R	20
INDIAN ROCK AVE	062	ARLINGTON AVE	SAN LUIS RD	2	1600	30	R	51
JAYNES ST	050	CALIFORNIA ST	EDITH ST	2	990	36	R	91
JEFFERSON AVE	050	UNIVERSITY AVE	ADDISON ST	2	335	24	R	35
JEFFERSON AVE	052	ALLSTON WAY	DWIGHT WAY	2	2000	39	R	35
JONES ST	040	SAN PABLO AVE	STANNAGE AVE	2	505	36	R	66
JONES ST	030	6TH ST	SAN PABLO AVE	2	1650	36	R	68
JONES ST	020	EASTSHORE HWY	2ND ST	2	280	37	R	97
JONES ST	025	4TH ST	6TH ST	2	685	36	R	97
JOSEPHINE ST	040	CEDAR ST	VIRGINIA ST	2	660	36	R	30
JOSEPHINE ST	036	ROSE ST	CEDAR ST	2	1320	36	R	67
JOSEPHINE ST	032	HOPKINS ST	ROSE ST	2	1290	36	R	82

Road Name	Section ID	Beg Location	End Location	Lanes	Length	Width	Funct. Class	PCI
JOSEPHINE ST	020	THE ALAMEDA	HOPKINS ST	2	575	36	R	97
JUANITA WAY	035	ROSE ST	CEDAR ST	2	595	25	R	29
JULIA ST	050	SACRAMENTO ST	KING ST	2	1415	36	R	80
KAINS AVE	040	CEDAR ST	VIRGINIA ST	2	660	30	R	72
KAINS AVE	030	NORTH CITY LIMIT	HOPKINS ST	2	2730	30	R	86
KALA BAGAI WAY	052	ADDISON ST	CENTER ST	2	330	48	A	100
KALA BAGAI WAY	050	UNIVERSITY AVE	ADDISON ST	3	356	50	A	100
KEELER AVE	020	MARIN AVE	MILLER AVE	2	1025	19	R	14
KEELER AVE	023	MILLER AVE	POPPY LANE	2	600	18	R	18
KEELER AVE	025	STERLING AVE	BRET HARTE RD	2	400	20	R	46
KEELER AVE	027	BRET HARTE RD	SHASTA RD	2	1760	25	R	55
KEELER AVE	010	GRIZZLY PEAK BLVD	MARIN AVE	2	1350	20	R	89
KEITH AVE	020	SPRUCE ST	EUCLID AVE	2	1472	22	C	75
KEITH AVE	025	EUCLID AVE	SHASTA RD	2	2570	25	C	80
KELSEY ST	060	STUART ST	RUSSELL ST	2	500	36	R	80
KENTUCKY AVE	010	VASSAR AVE	MARYLAND AVE	2	475	26	R	55
KENTUCKY AVE (NB)	015	MARYLAND AVE	MICHIGAN AVE	2	840	15	R	48
KENTUCKY AVE (SB)	020	MICHIGAN AVE	MARYLAND AVE	2	840	15	R	50
KEONCREST DR	040	ROSE ST	ACTON ST	2	950	25	R	24
KING ST	075	FAIRVIEW ST	SOUTH CITY LIMIT (62ND ST)	2	1500	37	R	75
KING ST	068	RUSSELL ST	ASHBY AVE	2	635	37	R	77
KING ST	070	ASHBY AVE	FAIRVIEW ST	2	1325	37	R	78
KITTREDGE ST	066	SHATTUCK AVE	FUTON ST	2	440	32	R	17
KITTREDGE ST	063	MILVIA ST	SHATTUCK AVE	2	705	36	R	27
LA LOMA AVE	036	END PCC	BUENA VISTA WAY	2	630	28	C	30
LA LOMA AVE	038	BUENA VISTA WAY	CEDAR ST	2	765	32	C	34
LA LOMA AVE	045	VIRGINIA ST	LA CONTE	2	273	25	C	40
LA LOMA AVE	050	LA CONTE	HEARST AVE	2	729	36	C	52
LA LOMA AVE	030	GLENDALE AVE	EL PORTAL CT	2	250	36	C	71
LA LOMA AVE	032	EL PORTAL CT	QUARRY RD	2	155	35	C	77
LA LOMA AVE	034	START PCC	END PCC	2	575	27	C	79
LA LOMA AVE	040	CEDAR ST	VIRGINIA ST	2	660	34	C	84
LA VEREDA RD	030	LA LOMA AVE	CEDAR ST	2	550	18	R	80
LA VEREDA RD	040	CEDAR ST	DEAD END ABOVE VIRGINIA ST	2	820	18	R	93
LASSEN ST	020	MARIN AVE	EL DORADO AVE	2	370	32	R	44
LATHAM LANE	080	MILLER AVE	GRIZZLY PEAK	2	485	21	R	45
LATHAM LANE	083	CRESTON RD	OVERLOOK RD	2	275	23	R	70
LAUREL LN	010	CAPISTRANO AVE	SAN PEDRO AVE	2	500	20	R	32
LAUREL ST	020	OAK ST	EUNICE ST	2	510	32	R	37
LE CONTE AVE	074	SCENIC AVE	EAST END	2	2147	36	R	80
LE CONTE AVE	072	ARCH ST & HEARST AVE	SCENIC AVE	2	746	32	R	90
LE ROY AVE	044	CUL-DE-SAC	RIDGE RD	2	805	35	R	26
LE ROY AVE	032	ROSE ST	HAWTHORNE TERRACE	2	390	30	R	51
LE ROY AVE	040	CEDAR ST	HILGARD AVE	2	375	34	R	84
LE ROY AVE	034	HAWTHORNE TERRACE	CEDAR ST	2	1235	30	R	92
LE ROY AVE	048	RIDGE RD	HEARST AVE	2	350	37	R	93

Road Name	Section ID	Beg Location	End Location	Lanes	Length	Width	Funct. Class	PCI
LEWISTON AVE	070	WOOLSEY ST	ALCATRAZ AVE	2	880	36	R	87
LINCOLN ST	045	ACTON ST	SACRAMENTO ST	2	750	24	R	46
LINCOLN ST	040	CHESTNUT ST	DEAD END	2	440	36	R	47
LINCOLN ST	050	SACRAMENTO ST	GRANT ST	2	1935	36	R	87
LINCOLN ST	060	MILVIA ST	SHATTUCK AVE	2	665	32	R	93
LINDEN AVE	070	ASHBY AVE	WEBSTER ST	2	660	27	R	31
LORINA ST	068	RUSSELL ST	ASHBY AVE	2	550	30	R	55
LOS ANGELES AVE	060	THE ALAMEDA	CONTRA COSTA AVE	2	420	48	R	39
LOS ANGELES AVE	065	THE CIRCLE	SPRUCE ST	2	1755	30	C	74
LOS ANGELES AVE	065	CONTRA COSTA AVE	THE CIRCLE	2	845	24	R	76
MABEL ST	062	PARKER ST	DERBY ST	2	650	36	R	21
MABEL ST	060	DWIGHT WAY	PARKER ST	2	645	36	R	31
MABEL ST	065	WARD ST	RUSSELL ST	2	1197	36	R	31
MABEL ST	064	DERBY ST	WARD ST	2	295	36	R	33
MABEL ST	067	RUSSELL ST	ASHBY AVE	2	523	36	R	33
MABEL ST	070	ASHBY ST	66TH ST	2	1248	36	R	74
MADERA ST	050	TULARE AVE	COLUSA AVE	2	827	32	R	75
MAGNOLIA ST	070	ASHBY AVE	WEBSTER ST	2	660	24	R	40
MARIN AVE	078	GRIZZLY PEAK BLVD	CRESTON RD	2	330	28	R	19
MARIN AVE	079	CRESTON RD	DEAD END (PACIFIC LUTHERAN)	2	450	30	R	42
MARIN AVE	074	EUCLID AVE	GRIZZLY PEAK BLVD	2	1078	23	C	45
MARIN AVE	065	THE CIRCLE	SPRUCE ST	2	1646	23	C	58
MARIN AVE	070	SPRUCE ST	EUCLID AVE	2	1050	23	C	65
MARIN AVE	050	WEST CITY LIMIT (TULARE AVE)	THE ALAMEDA	2	1655	60	A	86
MARIN AVE	060	THE ALAMEDA	THE CIRCLE	2	1150	60	A	87
MARINA BLVD	010	SPINNAKER WAY	UNIVERSITY AVE	2	2250	27	C	39
MARIPOSA AVE	020	LOS ANGELES AVE	AMADOR AVE	2	1070	36	R	84
MARTIN LUTHER KING	075	63RD ST	MARTIN LUTHER KING JR WAY	2	520	24	R	35
MARTIN LUTHER KING	050	UNIVERSITY AVE	ALLSTON WAY	4	1000	60	A	41
MARTIN LUTHER KING	030	YOLO AVE	CEDAR ST	2	2610	40	A	54
MARTIN LUTHER KING	060	DWIGHT WAY	ASHBY AVE	4	3383	56	A	54
MARTIN LUTHER KING	055	ALLSTON WAY	DWIGHT WAY	4	1980	56	A	56
MARTIN LUTHER KING	040	CEDAR ST	UNIVERSITY AVE	2	2955	56	A	64
MARTIN LUTHER KING	070	ASHBY AVE	WOOLSEY ST & ADELINE ST	2	985	65	A	67
MARTIN LUTHER KING	078	ADELINE ST	SOUTH CITY LIMIT	3	335	72	A	71
MARYLAND AVE	060	VERMONT AVE	KENTUCKY AVE	2	635	26	R	50
MASONIC AVE	030	NORTH CITY LIMIT	SANTA FE AVE	2	480	30	R	88
MATHEWS ST	060	DWIGHT WAY	PARKER ST	2	645	36	R	17
MATHEWS ST	063	PARKER ST	WARD ST	2	954	36	R	20
MATHEWS ST	066	WARD ST	RUSSELL ST	2	1208	36	R	29
MC GEE AVE	035	ROSE ST	CEDAR ST	2	1105	36	R	14
MC GEE AVE	050	UNIVERSITY AVE	DWIGHT WAY	2	3005	42	R	32
MC GEE AVE	040	CEDAR ST	VIRGINIA ST	2	645	36	R	42
MC GEE AVE	043	VIRGINIA ST	OHLONE PARK	2	848	36	R	43
MC GEE AVE	065	DERBY ST	RUSSELL ST	2	1343	36	R	49
MC GEE AVE	030	HOPKINS ST	ROSE ST	2	807	36	R	60

Road Name	Section ID	Beg Location	End Location	Lanes	Length	Width	Funct. Class	PCI
MC GEE AVE	060	DWIGHT WAY	DERBY ST	2	1350	36	R	60
MC GEE AVE	047	HEARST AVE	UNIVERSITY AVE	2	600	36	R	63
MC KINLEY AVE	050	ADDISON ST	DWIGHT WAY	2	2670	42	R	41
MENDOCINO AVE	015	ARLINGTON AVE	LOS ANGELES AVE	2	1650	24	R	23
MENDOCINO PL	017	MENDOCINO AVE	LOS ANGELES AVE	2	110	26	R	25
MENLO PL	050	THOUSAND OAKS BLVD	SANTA ROSA AVE	2	490	24	R	93
MENLO PL	055	SANTA ROSA AVE	THE ALAMEDA	2	450	24	R	93
MERCED ST	020	MADERA ST	SONOMA AVE	2	965	32	R	24
MICHIGAN AVE	010	MARYLAND AVE	SPRUCE ST	2	1480	24	R	100
MIDDLEFIELD RD	022	THE CROSSWAYS	THE SHORTCUT	2	360	21	R	60
MIDDLEFIELD RD	025	THE SHORTCUT	PARK HILLS RD	2	545	21	R	82
MIDDLEFIELD RD	020	DEAD END	THE CROSSWAYS	2	415	18	R	86
MILLER AVE	070	POPPY LN	SHASTA RD	2	3510	21	R	45
MILVIA ST	034	ROSE ST	CEDAR ST	2	1325	36	R	24
MILVIA ST	040	CEDAR ST	HEARST AVE	2	1665	36	C	31
MILVIA ST	025	YOLO AVE	EUNICE ST	2	217	32	R	53
MILVIA ST	047	HEARST AVE	UNIVERSITY AVE	2	615	40	C	69
MILVIA ST	058	CHANNING WAY	BLAKE ST	2	990	36	C	85
MILVIA ST	050	UNIVERSITY AVE	CENTER ST	2	660	40	C	86
MILVIA ST	052	CENTER ST	CHANNING WAY	2	1655	51	C	88
MILVIA ST	030	EUNICE ST	BERRYMAN ST	2	670	26	R	90
MILVIA ST	032	BERRYMAN ST	ROSE ST	2	665	36	R	90
MILVIA ST	020	HOPKINS ST	YOLO AVE	2	435	32	R	91
MILVIA ST	060	BLAKE ST	RUSSELL ST	2	2340	36	R	100
MIRAMAR AVE	010	SAN LORENZO AVE	CAPISTRANO AVE	2	380	26	R	40
MIRAMONTE CT	030	ADA ST	SOUTH DEAD END (ADA ST)	2	180	21	R	71
MODOC ST	020	SOLANO AVE	MARIN AVE	2	560	36	R	97
MONTEREY AVE	020	MARIN AVE	THE ALAMEDA	2	500	61	C	93
MONTEREY AVE	022	THE ALAMEDA	HOPKINS ST	2	3035	48	C	100
MONTROSE RD	060	SAN LUIS RD	SANTA BARBARA RD	2	375	23	R	45
MONTROSE RD	065	SANTA BARBARA RD	SPRUCE ST	2	640	24	R	51
MOSSWOOD RD	070	PANORAMIC WAY	DEAD END ABOVE ARDEN RD	2	800	15	R	97
MUIR WAY	080	GRIZZLY PEAK BLVD	PARK HILLS RD	2	385	25	R	63
MURRAY ST	030	7TH ST	SAN PABLO AVE	2	1322	29	R	97
MYSTIC ST	080	ROCKWELL ST	DEAD END NR ETON CT	2	110	26	R	78
NAPA AVE	060	HOPKINS ST	BLOCKADE @ THE ALAMEDA	2	970	32	R	42
NEILSON ST	030	NORTH CITY LIMIT	BARTD	2	890	26	R	14
NEILSON ST	035	BARTD	HOPKINS ST	2	1200	26	R	24
NEILSON ST	010	VISALIA AVE	SOLANO AVE	2	2635	26	R	71
NEWBURY ST	068	RUSSELL ST	ASHBY AVE	2	550	30	R	55
NOGALES ST	070	THE PLAZA DR	PARKSIDE DR	2	285	40	R	77
NORTH ST	035	NORTH DEAD END (JAYNES ST)	JAYNES ST	2	155	24	R	94
NORTH VALLEY ST	050	NORTH DEAD END (ALLSTON)	ALLSTON WAY	2	375	23	R	73
NORTHAMPTON AVE	060	SANTA BARBARA RD	SPRUCE ST	2	1150	23	R	27
NORTHBRAE TUNNEL	065	CONTRA COSTA AVE	DEL NORTE ST	2	1410	24	C	95
NORTHGATE AVE	080	DEAD END (NORTHGATE PATH)	SHASTA RD	2	880	21	R	93

Road Name	Section ID	Beg Location	End Location	Lanes	Length	Width	Funct. Class	PCI
NORTHSIDE AVE	035	BARTD	HOPKINS ST	2	880	30	R	27
NORTHSIDE AVE	030	GILMAN ST	BARTD	2	430	30	R	29
OAK KNOLL TERRACE	060	GARBER ST	AVALON AVE	2	475	36	R	21
OAK RIDGE RD	070	TUNNEL RD	DEAD END (OAK RIDGE STEPS)	2	1200	17	R	81
OAK ST	075	WEST END	HIGH CT	2	141	24	R	8
OAK ST	070	ARCH ST	GLEN ANE	2	313	24	R	11
OAKVALE AVE	090	CLAREMONT AVE	DOMINGO AVE	2	1190	30	R	87
OLYMPUS AVE	035	FAIRLAWN DR	DEAD END (U C PLOT 82)	2	760	21	R	20
OLYMPUS AVE	030	AVENIDA DR	FAIRLAWN DR	2	825	25	R	31
ORDWAY ST	030	NORTH CITY LIMIT	HOPKINS ST	2	1390	36	R	24
ORDWAY ST	035	HOPKINS ST	ROSE ST	2	490	26	R	67
OREGON ST	052	CALIFORNIA ST	GRANT ST	2	1319	36	R	13
OREGON ST	040	SAN PABLO AVE	MABEL ST	2	790	36	R	18
OREGON ST	045	PARK ST	SACRAMENTO ST	2	977	36	R	24
OREGON ST	055	GRANT ST	MARTIN LUTHER KING JR WAY	2	450	36	R	36
OREGON ST	060	MARTIN LUTHER KING JR WAY	MILVIA ST	2	675	42	R	39
OREGON ST	066	SHATTUCK AVE	FULTON ST	2	850	36	R	40
OREGON ST	063	MILVIA ST	ADELINE ST	2	560	42	R	60
OREGON ST	064	ADELINE ST	SHATTUCK AVE	2	262	42	R	76
OREGON ST	070	FULTON ST	REGENT ST	2	2050	36	R	79
OREGON ST	050	SACRAMENTO ST	CALIFORNIA ST	2	620	36	R	86
OTIS ST	065	RUSSELL ST	ASHBY AVE	2	700	36	R	40
OVERLOOK RD	020	END NORTH OF THE CROSSWAYS	PARK HILLS RD	2	1715	22	R	60
OXFORD ST	010	INDIAN ROCK AVE	MARIN AVE	2	975	23	R	46
OXFORD ST	041	CEDAR ST	161' N/O HEARST AVE	2	1326	43	A	48
OXFORD ST	030	EUNICE ST	ROSE ST	2	1350	36	R	50
OXFORD ST	035	ROSE ST	CEDAR ST	2	1318	33	A	63
OXFORD ST	048	BERKELEY WAY	UNIVERSITY AVE	4	315	69	A	72
OXFORD ST	020	MARIN AVE	LOS ANGELES AVE	2	1400	23	R	76
OXFORD ST	025	LOS ANGELES AVE	EUNICE ST	2	1170	30	R	79
OXFORD ST	052	UNIVERSITY AVE	ADDISON ST	4	350	64	A	80
OXFORD ST	054	ADDISON ST	KITTREDGE ST	4	1015	62	A	82
OXFORD ST	045	HEARST AVE	BERKELEY WAY	4	290	68	A	83
OXFORD ST	042	161' N/O HEARST AVE	HEARST AVE	2	161	43	A	100
PAGE ST	040	SAN PABLO AVE	CORNELL AVE	2	765	36	R	43
PAGE ST	035	10TH ST	SAN PABLO AVE	2	335	36	R	54
PAGE ST	030	6TH ST	10TH ST	2	1335	30	R	69
PAGE ST	028	4TH ST	6TH ST	2	637	30	R	71
PAGE ST	020	EAST FRONTAGE RD	2ND ST	2	270	36	R	95
PAGE ST	022	2ND ST	RAILROAD TRACKS	2	345	16	R	95
PAGE ST	026	3RD ST	4TH ST	2	330	30	R	97
PALM CT	080	KELSEY ST	DEAD END (KELSEY ST)	2	150	25	R	87
PANORAMIC WAY	082	CANYON RD	1ST TURN	2	670	17	R	97
PANORAMIC WAY	084	1ST TURN	ARDEN RD	2	1215	15	R	97
PANORAMIC WAY	086	ARDEN RD	BEG OF PCC (DWIGHT WAY)	2	342	15	R	97
PANORAMIC WAY	090	END OF PCC	EAST CITY LIMIT	2	836	15	R	97

Road Name	Section ID	Beg Location	End Location	Lanes	Length	Width	Funct. Class	PCI
PANORAMIC WAY	088	BEG OF PCC (DWIGHT WAY)	END OF PCC (#222)	2	517	15	R	98
PARDEE ST	030	7TH ST	SAN PABLO AVE	2	1330	30	R	20
PARK GATE	020	PARK HILLS RD	SHASTA RD	2	920	40	R	86
PARK HILLS RD	023	MIDDLEFIELD RD	PARK GATE	2	1305	22	R	67
PARK HILLS RD	025	PARK GATE	SHASTA RD	2	920	22	R	70
PARK HILLS RD	020	WILDCAT CANYON RD	MIDDLEFIELD RD	2	850	22	R	87
PARK ST	065	WARD ST	BURNETTE ST	2	1363	36	R	20
PARK WAY	020	3RD ST	4TH ST	2	250	36	R	0
PARKER ST	078	HILLEGASS AVE	COLLEGE AVE	2	760	36	R	8
PARKER ST	045	MABEL ST	SACRAMENTO ST	2	1320	36	R	20
PARKER ST	040	SAN PABLO AVE	MATHEWS ST	2	560	36	R	21
PARKER ST	042	MATHEWS ST	MABEL ST	2	560	36	R	21
PARKER ST	074	ELLSWORTH ST	DANA ST	2	670	36	R	28
PARKER ST	075	DANA ST	HILLEGASS AVE	2	1175	36	R	56
PARKER ST	035	7TH ST	SAN PABLO AVE	2	1350	36	R	71
PARKER ST	030	4TH ST	25' W/O 7TH ST	2	975	36	NCR	77
PARKER ST	050	SACRAMENTO ST	MARTIN LUTHER KING JR WAY	2	2560	36	R	78
PARKER ST	032	25' W/O 7TH ST	7TH ST	4	25	50	R	78
PARKER ST	063	MILVIA ST	SHATTUCK ST	2	718	42	R	81
PARKER ST	060B	374' E/O MARTIN LUTHER KING JR W	MILVIA WAY	2	291	42	R	85
PARKER ST	066	SHATTUCK AVE	FULTON ST	2	650	36	R	88
PARKER ST	072	FULTON ST	ELLSWORTH ST	2	660	36	R	90
PARKER ST	060A	MARTIN LUTHER KING	374' E/O MARTIN LUTHER KING JR	2	374	42	R	90
PARKER ST	085	PIEDMONT AVE	WARRING ST	2	325	36	R	93
PARKER ST	080	COLLEGE AVE	PIEDMONT AVE	2	665	36	R	94
PARKSIDE DR	080	ENCINA PL	THE PLAZA DR	2	1700	28	R	85
PARNASSUS RD	030	DEL MAR AVE	CAMPUS DR	2	1145	24	R	93
PERALTA AVE	030	NORTH CITY LIMIT	HOPKINS ST	2	1750	42	R	23
PERALTA AVE	010	COLUSA AVE	SOLANO AVE	2	2250	26	R	77
PIEDMONT AVE	070	ASHBY AVE	WEBSTER ST	2	660	34	R	32
PIEDMONT AVE	063	DERBY ST	STUART ST	2	825	36	R	47
PIEDMONT AVE	065	STUART ST	RUSSELL ST	2	455	36	R	60
PIEDMONT AVE	040	AT END OF GAYLEY RD	BANCROFT WAY	2	723	46	C	69
PIEDMONT AVE	066	RUSSELL ST	ASHBY AVE	2	325	36	R	76
PIEDMONT AVE	060	BANCROFT WAY	DWIGHT WAY	2	1392	46	C	82
PIEDMONT AVE	060	DWIGHT WAY	PARKER ST	2	622	36	R	93
PIEDMONT AVE	062	PARKER ST	DERBY ST	2	708	36	R	93
PIEDMONT CRESCENT	060	DWIGHT WAY	WARRING ST	2	285	56	C	93
PINE AVE	070	ASHBY AVE	WEBSTER ST	2	660	26	R	29
PINE AVE	068	RUSSELL ST	ASHBY AVE	2	325	32	R	45
POE ST	040	BONAR ST	DEAD END (BONAR ST)	2	175	30	R	97
POPLAR ST	080	EUCLID AVE	HILLDALE AVE	2	575	20	R	23
POPLAR ST	070	CRAGMONT AVE	EUCLID AVE	2	545	20	R	26
POPPY LANE	070	HILLDALE AVE	KEELER AVE	2	980	22	R	43
PORTLAND AVE	050	WEST CITY LIMIT (NEILSON)	COLUSA AVE	2	1250	36	R	60
POSEN AVE	050	WEST CITY LIMIT (MONTEREY)	COLUSA AVE	2	683	49	R	28

Road Name	Section ID	Beg Location	End Location	Lanes	Length	Width	Funct. Class	PCI
POTTER ST	030	BAY ST	I-80 FREEWAY RAMP	2	700	23	A	90
POTTER ST	020	3RD ST (WESTEND)	9TH ST	2	1700	34	R	93
PRINCE ST	070	TELEGRAPH AVE	DANA ST	2	406	36	R	40
PRINCE ST	050	SACRAMENTO ST	MARTIN LUTHER KING JR WAY	2	2220	36	R	45
PRINCE ST	075	DANA ST	BATEMAN ST	2	771	24	R	46
PRINCE ST	045	ACTON ST	STANTON ST	2	523	24	R	90
PRINCE ST	080	CLAREMONT AVE	COLLEGE AVE	2	1510	36	R	93
PRINCE ST	065	TREMONT ST	SHATTUCK AVE	2	601	36	R	95
PRINCE ST	067	SHATTUCK AVE	TELEGRAPH AVE	2	1784	36	R	97
PROSPECT ST	056	HILLSIDE AVE	DWIGHT WAY	2	530	36	R	92
PROSPECT ST	052	BANCROFT WAY	HILLSIDE AVE	2	710	36	R	97
QUAIL AVE	085	CAMPUS DR	QUEENS RD	2	325	23	R	54
QUAIL AVE	080	NORTHGATE AVE	CAMPUS DR	2	340	21	R	82
QUARRY RD	030	DEAD END (LA LOMA AVE)	LA LOMA AVE	2	340	12	R	39
QUEENS RD	030	SHASTA RD	QUAIL AVE	2	640	22	R	38
QUEENS RD	031	QUAIL AVE	FAIRLAWN DR	2	880	21	R	38
QUEENS RD	033	FAIRLAWN DR	AVENIDA DR	2	975	21	R	51
REGAL RD	070	SPRUCE ST	MARIN AVE	2	1050	24	R	21
REGAL RD	075	MARIN AVE	EUCLID AVE	2	550	24	R	32
REGAL RD	076	EUCLID AVE	CRAGMONT AVE	2	1325	22	R	34
REGENT ST	065	WILLARD PARK SCHOOL (WARD ST)	ASHBY AVE	2	1440	36	R	32
REGENT ST	060	DWIGHT WAY	DERBY ST	2	1345	36	R	36
REGENT ST	070	ASHBY AVE	DEAD END	2	720	36	R	66
REGENT ST	075	DEAD END	CITY LIMIT (WOOLSEY ST)	2	370	36	R	69
RIDGE RD	070	SCENIC AVE	EUCLID AVE	2	670	36	R	93
RIDGE RD	072	EUCLID AVE	LA LOMA AVE	2	975	36	R	93
RIDGE RD	077	LA LOMA AVE	HIGHLAND PL	2	340	36	R	93
ROANOKE RD	070	HILLCREST RD & THE UPLANDS	SOUTH CITY LIMIT	2	300	24	R	41
ROBLE CT	090	DEAD END (ROBLE RD)	ROBLE RD	2	430	24	R	8
ROBLE RD	070	TUNNEL RD	SOUTH CITY LIMIT (ROBLE CT)	2	920	24	R	95
ROCK LANE	010	POPLAR ST	CRAGMONT AVE	2	800	22	R	20
ROOSEVELT AVE	050	ADDISON ST	CHANNING WAY	2	1995	42	R	29
ROOSEVELT AVE	058	CHANNING WAY	DWIGHT WAY	2	660	42	R	70
ROSE ST	050	SACRAMENTO ST	MARTIN LUTHER KING JR WAY	2	2559	36	C	21
ROSE ST	065	SHATTUCK AVE	SPRUCE ST	2	945	36	C	87
ROSE ST	040	HOPKINS ST	CHESTNUT ST	2	703	36	R	90
ROSE ST	070	SPRUCE ST	ARCH ST	2	315	36	R	90
ROSE ST	063	MILVIA ST	SHATTUCK AVE	2	675	40	C	90
ROSE ST	072	ARCH ST	SCENIC AVE	2	455	24	R	91
ROSE ST	044	CHESTNUT ST	ORDWAY	2	655	36	R	93
ROSE ST	045	ORDWAY ST	SACRAMENTO ST	2	1250	36	R	93
ROSE ST	060	MARTIN LUTHER KING JR WAY	MILVIA ST	2	665	40	C	93
ROSE ST	075	LE ROY AVE	EAST END	2	750	18	R	100
ROSEMONT AVE	070	CRESTON RD	VISTAMONT AVE	2	540	24	R	38
ROSLYN CT	080	THE SOUTH CROSSWAYS	CHABOLYN TERRACE	2	150	20	R	90
RUGBY AVE	010	NORTH CITY LIMIT (VERMONT)	VERMONT AVE	2	210	28	R	97

Road Name	Section ID	Beg Location	End Location	Lanes	Length	Width	Funct. Class	PCI
RUSSELL ST	040	SAN PABLO AVE	PARK ST	2	1230	36	R	29
RUSSELL ST	045	PARK ST	SACRAMENTO ST	2	1021	36	R	31
RUSSELL ST	063	SHATTUCK AVE	FULTON ST	2	855	36	R	32
RUSSELL ST	070	FULTON ST	TELEGRAPH AVE	2	1265	36	R	32
RUSSELL ST	088	CLAREMONT BLVD	EAST CITY LIMIT (DOMINGO AVE)	2	135	36	R	35
RUSSELL ST	062	ADELINE ST	SHATTUCK AVE	2	465	36	R	44
RUSSELL ST	080	COLLEGE AVE	PIEDMONT AVE	2	585	36	R	59
RUSSELL ST	060	MARTIN LUTHER KING JR WAY	MILVIA ST	2	715	36	R	71
RUSSELL ST	075	TELEGRAPH AVE	HILLEGASS AVE	2	1125	35	R	72
RUSSELL ST	085	PIEDMONT AVE	CLAREMONT BLVD	2	1590	36	R	73
RUSSELL ST	076	HILLEGASS AVE	BENVENUE AVE	2	360	35	R	76
RUSSELL ST	077	BENVENUE AVE	COLLEGE AVE	2	360	35	R	93
RUSSELL ST	050	SACRAMENTO ST	MARTIN LUTHER KING JR WAY	2	2375	36	R	93
RUSSELL ST	061	MILVIA ST	ADELINE ST	2	115	38	R	98
SACRAMENTO ST	035	CEDAR ST	VIRGINIA ST	2	660	68	A	50
SACRAMENTO ST	030	HOPKINS ST	ROSE ST	2	789	36	A	60
SACRAMENTO ST	034	ROSE ST	CEDAR ST	4	845	66	A	69
SACRAMENTO ST	050	UNIVERSITY AVE	DWIGHT WAY	4	3001	56	A	76
SACRAMENTO ST	070	ASHBY AVE	SOUTH CITY LIMIT (ALCATRAZ)	4	2164	64	A	89
SACRAMENTO ST	064	OREGON ST	ASHBY AVE	4	1021	63	A	90
SACRAMENTO ST	040	VIRGINIA ST	UNIVERSITY AVE	2	1587	80	A	93
SACRAMENTO ST (NB)	062	OREGON ST	DWIGHT WAY	2	2310	33	A	87
SACRAMENTO ST (SB)	060	DWIGHT WAY	OREGON ST	2	2310	32	A	78
SAN ANTONIO AVE	062	ARLINGTON AVE	300 FT +/- EAST OF AVIS RD	2	525	17	R	34
SAN ANTONIO AVE	060	SAN RAMON AVE & THE ALAMEDA	ARLINGTON AVE	2	865	24	R	70
SAN BENITO RD	020	MARIN AVE	SPRUCE ST	2	810	24	R	61
SAN DIEGO RD	010	SOUTHAMPTON AVE	INDIAN ROCK AVE	2	1850	19	R	56
SAN FERNANDO AVE	010	ARLINGTON AVE	YOSEMITE RD	2	1055	24	R	87
SAN JUAN AVE	060	SANTA CLARA AVE	SAN FERNANDO AVE	2	900	24	R	91
SAN LORENZO AVE	052	PERALTA AVE	THE ALAMEDA	2	2145	26	R	56
SAN LORENZO AVE	050	WEST CITY LIMIT (NEILSON)	PERALTA AVE	2	370	26	R	70
SAN LUIS RD	010	ARLINGTON AVE	INDIAN ROCK AVE	2	3430	22	R	64
SAN MATEO RD	010	DEAD END (CUL-DE-SAC)	INDIAN ROCK AVE	2	780	24	R	18
SAN MIGUEL AVE	010	THOUSAND OAKS BLVD	SANTA ROSA AVE	2	470	22	R	88
SAN PEDRO AVE	050	COLUSA AVE	THE ALAMEDA	2	1050	26	R	81
SAN RAMON AVE	060	SAN ANTONIO AVE & THE ALAMEDA	SAN FERNANDO AVE	2	1060	24	R	34
SANTA BARBARA RD	025	SPRUCE ST	CRAGMONT AVE	2	605	24	R	20
SANTA BARBARA RD	010	ARLINGTON AVE	FLORIDA AVE	2	1040	26	R	40
SANTA BARBARA RD	020	MARIN AVE	SPRUCE ST	2	510	24	R	61
SANTA BARBARA RD	012	FLORIDA AVE	MARIN AVE	2	3250	26	R	62
SANTA CLARA AVE	010	SAN RAMON AVE	THOUSAND OAKS BLVD	2	870	24	R	91
SANTA FE AVE	030	NORTH CITY LIMIT	GILMAN ST	2	587	30	R	97
SANTA FE AVE	035	GILMAN ST	CORNELL AVE & PAGE ST	2	1450	31	R	100
SANTA ROSA AVE	020	THOUSAND OAKS BLVD	SAN LORENZO AVE	2	1280	24	R	86
SANTA ROSA AVE	015	MENLO PLACE	THOUSAND OAKS BLVD	2	455	22	R	87
SCENIC AVE	040	CEDAR ST	HEARST AVE	2	1600	36	R	16

Road Name	Section ID	Beg Location	End Location	Lanes	Length	Width	Funct. Class	PCI
SCENIC AVE	030	BAYVIEW PL/ ROSE ST	VINE ST	2	1030	24	R	66
SCENIC AVE	035	VINE ST	CEDAR ST	2	645	36	R	82
SEAWALL DR	010	NORTH END	UNIVERSITY AVE	2	1350	28	R	22
SEAWALL DR	020	UNIVERSITY AVE	SOUTH END	2	1100	31	R	23
SENIOR AVE	080	FAIRLAWN DR	GRIZZLY PEAK BLVD	2	700	24	R	31
SHASTA RD	072	TAMALPAIS RD	KEITH AVE	2	565	20	R	51
SHASTA RD	070	TAMALPAIS RD AND ROSE ST	TAMALPAIS RD	2	1540	22	R	51
SHASTA RD	073	KEITH AVE	CRAGMONT AVE	2	1000	24	C	56
SHASTA RD	076	QUEENS RD	GRIZZLY PEAK BLVD	2	1130	25	C	75
SHASTA RD	074	CRAGMONT AVE	KEELER AVE	2	680	25	C	87
SHASTA RD	075	KEELER AVE	QUEENS RD	2	1315	24	C	90
SHASTA RD	077	GRIZZLY PEAK BLVD	PARK GATE	2	250	29	C	100
SHASTA RD	079	PARK GATE	EAST CITY LIMIT (GOLF COURSE)	2	565	20	C	100
SHATTUCK AVE	038	VINE ST	CEDAR ST	4	660	60	A	23
SHATTUCK AVE	040	CEDAR ST	HEARST AVE	4	1670	60	A	23
SHATTUCK AVE	036	ROSE ST	VINE ST	4	660	60	A	33
SHATTUCK AVE	010	INDIAN ROCK AVE	MARIN AVE	2	615	24	R	35
SHATTUCK AVE	048	HEARST AVE	UNIVERSITY AVE	4	620	60	A	35
SHATTUCK AVE	030	EUNICE ST	ROSE ST	2	1335	40	R	48
SHATTUCK AVE	050	ALLSTON WAY	DWIGHT WAY	4	1980	48	A	49
SHATTUCK AVE	070	ASHBY AVE	CITY LIMIT (WOOLSEY ST)	2	1210	46	C	54
SHATTUCK AVE	060	DWIGHT WAY	WARD ST	4	1340	48	A	57
SHATTUCK AVE	066	WARD ST	ASHBY AVE	2	1510	46	C	64
SHATTUCK AVE	025	LOS ANGELES AVE	EUNICE ST	2	1590	30	R	77
SHATTUCK AVE	020	MARIN AVE	LOS ANGELES AVE	2	950	24	R	80
SHATTUCK AVE	055	CENTER ST	ALLSTON WAY	4	340	69	A	100
SHATTUCK AVE (SB)	057	UNIVERSITY AVE	CENTER ST	3	660	52	A	100
SHATTUCK PL	030	HENRY ST & ROSE ST	SHATTUCK AVE	4	525	61	A	24
SHORT ST	045	DELAWARE ST	HEARST ST	2	345	36	R	23
SHORT ST	040	LINCOLN AVE	VIRGINIA ST	2	360	30	R	87
SIERRA ST	020	MADERA ST	SONOMA AVE	2	940	30	R	58
SOJOURNER TRUTH CT	065	WARD ST	CUL DE SAC	2	440	30	R	67
SOLANO AVE	060	THE ALAMEDA	CONTRA COSTA AVE	2	510	43	C	71
SOLANO AVE	055	COLUSA AVE	THE ALAMEDA	2	756	60	C	82
SOLANO AVE	050	TULARE AVE	COLUSA AVE	2	762	57	C	83
SOMERSET PL	060	SOUTHAMPTON AVE	DEAD END (JOHN HINKEL PARK)	2	425	22	R	84
SONOMA AVE	050	WEST CITY LIMIT (TULARE AVE)	JOSEPHINE ST	2	1975	36	R	80
SOUTH HOSPITAL DRIV	075	COLBY ST	REGENT ST	2	300	30	R	66
SOUTHAMPTON AVE	068	SAN LUIS RD	SANTA BARBARA RD	2	400	24	R	76
SOUTHAMPTON AVE	060	ARLINGTON AVE	SAN LUIS RD	2	2050	24	R	84
SPAULDING AVE	050	ADDISON ST	DWIGHT WAY	2	2675	48	R	36
SPINNAKER WAY	010	BREAKWATER DR	MARINA BLVD	2	1500	40	R	18
SPRING WAY	030	DEAD END	SCENIC AVE	2	220	18	R	85
SPRUCE ST	025	ARCH ST	EUNICE ST	2	980	37	C	37
SPRUCE ST	030	EUNICE ST	ROSE ST	2	1365	36	C	66
SPRUCE ST	045	VIRGINIA ST	HEARST AVE	2	1040	36	R	69

Road Name	Section ID	Beg Location	End Location	Lanes	Length	Width	Funct. Class	PCI
SPRUCE ST	036	VINE ST	CEDAR ST	2	660	36	R	69
SPRUCE ST	033	ROSE ST	VINE ST	2	665	36	R	71
SPRUCE ST	010	GRIZZLY PEAK AVE	ALTA RD	2	800	36	C	75
SPRUCE ST	015	ALTA RD	MARIN AVE	2	4375	36	C	79
SPRUCE ST	020	MARIN AVE	ARCH ST	2	1738	36	C	85
SPRUCE ST	040	CEDAR ST	VIRGINIA ST	2	670	36	R	93
STANNAGE AVE	038	HOPKINS ST	CEDAR ST	2	210	30	R	63
STANNAGE AVE	034	GILMAN ST	HOPKINS ST	2	1685	30	R	82
STANNAGE AVE	040	CEDAR ST	VIRGINIA ST	2	660	30	R	83
STANNAGE AVE	030	NORTH CITY LIMIT	GILMAN ST	2	700	30	R	85
STANTON ST	067	RUSSELL ST	ASHBY AVE	2	560	26	R	71
STANTON ST	070	ASHBY AVE	PRINCE ST	2	706	26	R	73
STANTON ST	065	OREGON ST	RUSSELL ST	2	428	30	R	74
STATION PL	010	CATALINA AVE	SOUTH DEAD END (CATALINA AV	2	210	36	R	97
STERLING AVE	020	KEELER AVE	SHASTA RD	2	2310	20	R	35
STEVENSON AVE	020	GRIZZLY PEAK BLVD	MILLER AVE	2	520	24	R	49
STODDARD WAY	020	DEAD END	GRIZZLY PEAK BLVD	2	260	20	R	24
STUART ST	050	SACRAMENTO ST	MARTIN LUTHER KING JR WAY	2	2405	36	R	20
STUART ST	060	MARTIN LUTHER KING JR WAY	MILVIA ST	2	660	42	R	28
STUART ST	078	HILLEGASS AVE	COLLEGE AVE	2	715	36	R	30
STUART ST	070	FULTON ST	HILLEGASS AVE	2	2450	36	R	37
STUART ST	065	ADELINE ST	FULTON ST	2	995	36	R	43
STUART ST	080	COLLEGE AVE	KELSEY ST & PALM CT	2	900	36	R	56
STUART ST	063	MILVIA ST	ADELINE ST	2	385	42	R	56
SUMMER ST	070	SPRUCE ST	GLEN AVE	2	660	25	R	18
SUMMIT LANE	030	SUMMIT RD NR GRIZZLY PEAK	DEAD END	2	180	6	R	21
SUMMIT RD	038	GRIZZLY PEAK BLVD	END SOUTH OF GRIZZLY PEAK BL	2	740	26	R	13
SUMMIT RD	032	ATLAS PL	GRIZZLY PEAK BLVD	2	2530	23	R	18
SUMMIT RD	030	AJAX LANE	ATLAS PL	2	240	20	R	20
SUNSET LANE	075	GRIZZLY PEAK BLVD	WOODMONT RD	2	344	22	R	20
SUNSET LANE	070	WOODMONT RD	WILDCAT CANYON RD	2	370	17	R	27
SUTTER ST	020	DEL NORTE ST	EUNICE ST	4	1340	50	A	28
TACOMA AVE	055	COLUSA AVE	THE ALAMEDA	2	1010	26	R	42
TACOMA AVE	050	SOLANO AVE	COLUSA AVE	2	1360	26	R	73
TALBOT AVE	030	NORTH CITY LIMIT	SANTA FE AVE	2	1350	30	R	85
TAMALPAIS RD	030	SHASTA RD	ROSE ST	2	2075	22	R	43
TANGLEWOOD RD	060	BELROSE AVE	EAST CITY LIMIT (CLAREMONT)	2	900	26	R	39
TELEGRAPH AVE	065	WARD ST	ASHBY AVE	4	1580	74	A	25
TELEGRAPH AVE	060	DWIGHT WAY	WARD ST	4	1725	68	A	26
TELEGRAPH AVE	050	DWIGHT WAY	BANCROFT WAY	2	1320	31	C	38
TELEGRAPH AVE	070	ASHBY AVE	CITY LIMIT (WOOLSEY ST)	4	1255	68	A	39
TEVLIN ST	035	WATKINS ST	END SOUTH OF GILMAN ST	2	425	25	R	3
TEVLIN ST	030	NORTH END	WATKINS ST	2	300	21	R	6
THE ALAMEDA	028	HOPKINS ST	YOLO AVE	2	210	66	A	71
THE ALAMEDA	015	CAPISTRANO AVE	TACOMA AVE	2	245	36	R	75
THE ALAMEDA	012	THOUSAND OAKS BLVD	CAPISTRANO AVE	2	1510	28	R	76

Road Name	Section ID	Beg Location	End Location	Lanes	Length	Width	Funct. Class	PCI
THE ALAMEDA	010	SAN ANTONIO AVE	THOUSAND OAKS BLVD	2	1385	24	R	78
THE ALAMEDA	016	TACOMA AVE	SOLANO AVE	2	1250	36	R	95
THE ALAMEDA	018	SOLANO AVE	MARIN AVE	2	935	60	A	95
THE ALAMEDA	020	MARIN AVE	HOPKINS ST	4	1370	61	A	95
THE CIRCLE	060	INTERSECTION MARIN AVE, ETC.	INTERSECTION ARLINGTON AVE	2	246	50	A	75
THE CRESCENT	020	PARK HILLS RD (NORTH)	PARK HILLS RD (SOUTH)	2	1020	23	R	88
THE CROSSWAYS	080	OVERLOOK RD	MIDDLEFIELD RD	2	230	21	R	58
THE PLAZA DR	080	ENCINA PL	PARKSIDE DR	2	1380	40	R	85
THE SHORT CUT	080	MIDDLEFIELD RD	PARK HILLS RD	2	200	22	R	85
THE SPIRAL	080	DEAD END	WILDCAT CANYON RD	2	305	25	R	93
THE UPLANDS	099	TUNNEL RD	DEAD END	2	340	14	R	20
THE UPLANDS	090	CLAREMONT AVE	ENCINA PL	2	320	56	R	39
THE UPLANDS	093	HILLCREST RD	EL CAMINO REAL	2	495	28	R	39
THE UPLANDS	097	EL CAMINO REAL	TUNNEL RD	2	1048	25	R	40
THE UPLANDS	091	ENCINA PL	HILLCREST RD	2	1685	28	R	61
THOUSAND OAKS BLVD	050	WEST CITY LIMIT (NEILSON)	COLUSA AVE	2	450	36	R	48
THOUSAND OAKS BLVD	055	VINCENTE AVE	THE ALAMEDA	2	850	24	C	73
THOUSAND OAKS BLVD	053	COLUSA AVE	VINCENTE AVE	2	380	24	C	76
THOUSAND OAKS BLVD	060	THE ALAMEDA	ARLINGTON AVE	2	1605	26	C	79
TOMLEE DR	045	JUANITA WAY	ACTON ST	2	330	25	R	19
TREMONT ST	070	EMERSON ST	CITY LIMIT (WOOLSEY ST)	2	925	34	R	29
TULARE AVE	020	SOLANO AVE	SONOMA AVE	2	1715	36	R	95
TWAIN AVE	070	KEELER AVE	STERLING AVE	2	740	20	R	26
TYLER ST	050	SACRAMENTO ST	KING ST	2	1333	36	R	29
UNIVERSITY AVE	015	MARINA BLVD	WEST FRONTAGE RD	2	1600	66	C	8
UNIVERSITY AVE	010	SEAWALL DR	MARINA BLVD	2	1950	40	C	31
UNIVERSITY AVE	060	MARTIN LUTHER KING JR WAY	MILVIA ST	4	715	63	A	36
UNIVERSITY AVE	063	MILVIA ST	SHATTUCK AVE	4	630	63	A	37
UNIVERSITY AVE	025	3RD ST	5TH ST	4	400	115	A	52
UNIVERSITY AVE	028	5TH ST	6TH ST	4	185	84	A	52
UNIVERSITY AVE	040	SAN PABLO AVE	SACRAMENTO ST	4	2940	69	A	54
UNIVERSITY AVE	064	SHATTUCK AVE	SHATTUCK AVE	4	260	70	A	55
UNIVERSITY AVE	065	SHATTUCK AVE	OXFORD ST	4	450	65	A	59
UNIVERSITY AVE	030	6TH ST	SAN PABLO AVE	4	1638	72	A	66
UNIVERSITY AVE	052	SACRAMENTO ST	MCGEE AVE	4	1325	73	A	72
UNIVERSITY AVE	055	MCGEE AVE	MARTIN LUTHER KING JR WAY	4	1329	63	A	72
UNIVERSITY AVE OVER	018	I-80 ON/OFF RAMPS	6TH ST	4	2100	52	A	46
VALLEJO ST	060	THE ALAMEDA	SAN RAMON AVE	2	460	24	R	30
VALLEY ST	055	NORTH DEAD END (BANCROFT)	DWIGHT WAY	2	1245	36	R	45
VASSAR AVE (NB)	010	NORTH CITY LIMIT (KENTUCKY)	KENTUCKY AVE	2	375	19	R	78
VASSAR AVE (NB)	012	KENTUCKY AVE	SPRUCE ST	2	1160	16	R	79
VASSAR AVE (SB)	011	KENTUCKY AVE	NORTH CITY LIMIT (KENTUCKY)	2	375	17	R	78
VASSAR AVE (SB)	013	SPRUCE ST	KENTUCKY AVE	2	1160	14	R	79
VERMONT AVE	015	MARYLAND AVE	COLORADO AVE	2	750	25	R	27
VERMONT AVE	010	NORTH WEST DEAD END (RUGBY)	MARYLAND AVE	2	770	23	R	97
VICENTE RD	075	EAST CITY LIMIT NR GRAND VIEW	TUNNEL RD	2	1310	24	R	30

Road Name	Section ID	Beg Location	End Location	Lanes	Length	Width	Funct. Class	PCI
VICENTE RD	070	ALVARADO RD	EAST CITY LIMIT NR GRAND VIEW	2	550	24	R	45
VINCENTE AVE	013	THOUSAND OAKS BLVD	COLUSA AVE	2	1165	24	R	70
VINCENTE AVE	010	NORTH END (VINCENTE WALK)	THOUSAND OAKS BLVD	2	1400	24	R	75
VINCENTE AVE	016	COLUSA AVE	PERALTA AVE	2	1000	24	R	77
VINE ST	063	MILVIA ST	SHATTUCK AVE	2	670	36	R	25
VINE ST	055	GRANT ST	MARTIN LUTHER KING JR WAY	2	665	36	R	29
VINE ST	060	MARTIN LUTHER KING JR WAY	MILVIA ST	2	665	36	R	32
VINE ST	052	EDITH ST	GRANT ST	2	335	36	R	33
VINE ST	065	SHATTUCK AVE	WALNUT ST	2	335	36	R	49
VINE ST	067	WALNUT ST	SPRUCE ST	2	665	36	R	63
VINE ST	070	SPRUCE ST	SCENIC AVE	2	635	36	R	68
VINE ST	050	MC GEE AVE	EDITH ST	2	575	26	R	91
VINE ST	080	SCENIC AVE	HAWTHORNE TERRACE	2	315	30	R	95
VIRGINIA GARDENS	040	NORTH DEAD END (CEDAR)	VIRGINIA ST	2	470	20	R	90
VIRGINIA ST	030	6TH ST	SAN PABLO AVE	2	1650	36	R	36
VIRGINIA ST	030	2ND ST	6TH ST	2	1325	36	R	39
VIRGINIA ST	076	EUCLID AVE	LA LOMA AVE	2	1000	34	R	47
VIRGINIA ST	050	SACRAMENTO ST	MC GEE AVE	2	1270	36	C	54
VIRGINIA ST	055	MC GEE AVE	GRANT ST	2	665	36	C	66
VIRGINIA ST	064	SHATTUCK AVE	SPRUCE ST	2	1000	36	R	67
VIRGINIA ST	070	SPRUCE ST	ARCH ST	2	450	36	R	68
VIRGINIA ST	072	ARCH ST	EUCLID AVE	2	1060	36	R	68
VIRGINIA ST	060	MARTIN LUTHER KING JR WAY	MILVIA ST	2	680	36	R	71
VIRGINIA ST	047	ACTON ST	SACRAMENTO ST	2	710	51	R	76
VIRGINIA ST	057	GRANT ST	MARTIN LUTHER KING JR WAY	2	670	36	C	83
VIRGINIA ST	062	MILVIA ST	SHATTUCK AVE	2	615	36	R	83
VIRGINIA ST	040	SAN PABLO AVE	ACTON ST	2	2500	36	R	85
VIRGINIA ST	078	LA LOMA AVE	DEAD END (AT LA VEREDA)	2	220	17	R	95
VIRGINIA ST	020	EAST FRONTAGE RD (STATE P/L)	2ND ST	2	350	37	R	98
VISALIA AVE	053	WEST CITY LIMIT COP W/O NEILSON	COLUSA AVE	2	325	24	R	27
VISALIA AVE	055	COLUSA AVE	VINCENTE AVE	2	890	24	R	48
VISTAMONT AVE	110	NORTH END	WOODMONT AVE	2	415	22	R	14
VISTAMONT AVE	010	WOODMONT AVE	WOODMONT AVE NR SUNSET LA	2	1340	22	R	42
WALKER ST	060	DERBY ST	WARD ST	2	330	18	R	40
WALLACE ST	065	WARD ST	RUSSELL ST	2	1220	35	R	18
WALNUT ST	049	BERKELEY WAY	UNIVERSITY AVE	2	315	36	R	20
WALNUT ST	020	SHATTUCK AVE	EUNICE ST	2	900	33	R	27
WALNUT ST	030	EUNICE ST	CEDAR ST	2	2645	36	R	44
WALNUT ST	040	CEDAR ST	HEARST AVE	2	1680	36	R	54
WARD ST	075	ELLSWORTH ST	TELEGRAPH AVE	2	880	36	R	14
WARD ST	046	ACTON ST	SACRAMENTO ST	2	727	36	R	18
WARD ST	070	FULTON ST	ELLSWORTH ST	2	660	36	R	21
WARD ST	050	SACRAMENTO ST	MARTIN LUTHER KING JR WAY	2	2437	36	R	25
WARD ST	060	MARTIN LUTHER KING JR WAY	MILVIA ST	2	660	42	R	27
WARD ST	066	SHATTUCK AVE	FULTON ST	2	780	36	R	30
WARD ST	063	MILVIA ST	ADELINE ST	2	500	45	R	62

Road Name	Section ID	Beg Location	End Location	Lanes	Length	Width	Funct. Class	PCI
WARD ST	040	SAN PABLO AVE	ACTON ST	2	1658	36	R	100
WARRING ST	050	BANCROFT WAY	DWIGHT WAY	2	1270	36	R	27
WARRING ST	060	DWIGHT WAY	DERBY ST	2	1545	43	C	95
WATKINS ST	040	NEILSON ST	TEVLIN ST	2	250	26	R	21
WEBSTER ST	078	HILLEGASS AVE	COLLEGE AVE	2	600	36	R	59
WEBSTER ST	074	TELEGRAPH AVE	COLBY ST	2	645	36	R	63
WEBSTER ST	076	REGENT ST	DEAD END	2	202	20	R	85
WEBSTER ST	077	DEAD END	HILLEGASS AVE	2	268	36	R	85
WEBSTER ST	080	COLLEGE AVE	CLAREMONT AVE	2	1760	36	R	92
WEBSTER ST	072	DEAKIN ST	TELEGRAPH AVE	2	670	36	R	93
WEST BOLIVAR DR	050	GATE	END NR ANTHONY ST	2	6515	22	R	83
WEST BOLIVAR DR	040	PARKER ST	GATE	2	50	22	R	89
WEST FRONTAGE RD	040	GILMAN ST	UNIVERSITY AVE	2	4400	30	C	55
WEST FRONTAGE RD	050	UNIVERSITY AVE	OPP DWIGHT WAY	2	3170	26	C	59
WEST FRONTAGE RD	060	OPP DWIGHT WAY	SOUTH CITY LIMIT	2	4250	26	C	59
WEST PARNASSUS CT	080	PARNASSUS PATH	PARNASSUS RD	2	230	22	R	93
WEST ST	053	ADDISON ST	DEAD END	2	265	21	R	93
WEST ST	055	BANCROFT WAY	DWIGHT WAY	2	1325	32	R	100
WHEELER ST	068	RUSSELL ST	ASHBY AVE	2	530	36	R	30
WHEELER ST	070	ASHBY AVE	WOOLSEY ST	2	1105	36	R	72
WHITAKER AVE	020	MILLER AVE	STERLING AVE	2	550	18	R	35
WHITNEY ST	070	WOOLSEY ST	SOUTH CITY LIMIT	2	130	36	R	75
WILDCAT CANYON RD	025	THE SPIRAL	EAST CITY LIMIT(NR SHASTA RD)	2	3590	28	C	77
WILDCAT CANYON RD	020	SUNSET LN	THE SPIRAL	2	2400	27	C	79
WILDCAT CANYON RD	010	GRIZZLY PEAK BLVD	SUNSET LANE	2	3730	29	C	81
WILSON CIRCLE	080	OLYMPUS DR	CUL-DE-SAC	2	180	23	R	40
WOODMONT AVE	012	WILDCAT CANYON & GRIZZLY PEAK	ROSEMONT AVE	2	1175	20	R	24
WOODMONT AVE	020	SUNSET LANE	DEAD END	2	175	12	R	43
WOODMONT AVE	014	ROSEMONT AVE	SUNSET LANE	2	1700	20	R	55
WOODMONT CT	070	WOODMONT AVE (NORTH)	WOODMONT AVE (SOUTH)	2	285	23	R	42
WOODSIDE RD	020	THE CRESCENT	PARK HILLS RD	2	1450	24	R	41
WOOLSEY ST	078	HILLEGASS AVE	COLLEGE AVE	2	600	37	R	18
WOOLSEY ST	080	COLLEGE ST	CLAREMONT AVE	2	1250	36	R	20
WOOLSEY ST	050	SACRAMENTO ST	KING ST	2	1275	36	R	50
WOOLSEY ST	065	TREMONT ST	SHATTUCK AVE	2	579	42	R	59
WOOLSEY ST	066	SHATTUCK AVE	WHEELER ST	2	680	42	R	63
WOOLSEY ST	067	WHEELER ST	TELEGRAPH AVE	2	1036	36	R	63
WOOLSEY ST	055	KING ST	MARTIN LUTHER KING JR WAY	2	905	36	R	79
WOOLSEY ST	072	TELEGRAPH AVE	HILLEGASS AVE	2	1555	36	R	90
WOOLSEY ST	060	ADELINE ST	TREMONT ST	2	600	42	R	90
YOLO AVE	060	THE ALAMEDA	MILVIA ST	2	570	36	R	93
YOLO AVE	065	MILVIA AVE	SUTTER ST	2	375	36	R	93
YOSEMITE RD	064	SAN FERNANDO AVE	CONTRA COSTA AVE	2	400	26	R	37
YOSEMITE RD	066	CONTRA COSTA AVE	ARLINGTON AVE	2	1090	24	R	48
YOSEMITE RD	062	THE ALAMEDA	SAN FERNANDO AVE	2	870	26	R	91

51 Bus Rapid Transit

Berkeley City Councilmember
Terry Taplin
District 2

Facilities, Infrastructure, Transportation, Environment, and Sustainability Policy Committee

March 2, 2023

RECOMMENDATION

- Refer to the City Manager the development of an implementation and community engagement plan to install Bus Rapid Transit, including dedicated bus lanes, transit signal priority, elevated platforms, and enhanced sections, on the AC Transit 51B route along University Avenue from Sixth Street to Shattuck Avenue and along Shattuck Avenue from University Avenue to Durant Avenue, with engagement centering pedestrian, cyclist, transit and mobility justice advocates, the disability rights community, local faith communities, merchants, neighboring residential communities inclusive of tenants, seniors, and students, and historically marginalized communities.

RECOMMENDATION

- Refer $300,000 to the Fiscal Year 2024-2025 Budget Process to conduct a Complete Street Corridor Study antecedent to the installation of a cycle track along University Avenue from 6th Street to Oxford Street, consistent with the City of Berkeley's 2017 Bicycle Plan and integrating pedestrian amenities consistent with the City of Berkeley's 2020 Pedestrian Plan. As per the Bicycle Plan, the study will be evaluated in the context of the modal priorities established by the City of Berkeley General Plan's 2001 Transportation Element and the Alameda County Transportation Commission's (ACTC) 2016 Countywide Multimodal Arterial Plan.

RECOMMENDATION

- Refer $300,000 to the Fiscal Year 2024-2025 Budget Process to conduct a Complete Street Corridor Study antecedent to the installation of a cycle track along Oxford Street from Virginia Street to Durant Avenue consistent with the Bicycle Plan and integrating pedestrian amenities consistent with the Pedestrian Plan. As per the Bicycle Plan, the study will be evaluated in the context of the modal priorities established by the Transportation Element and ACTC's Countywide Multimodal Arterial Plan. It will be coordinated with proposed improvements to transit performance on this Primary Transit Route, such as bus boarding islands, transit-only lanes, transit signal priority/queue jump lanes, far-side bus stop relocations, and other improvements as described in AC Transit's 2016 Major Corridor Study.

RECOMMENDATION

- Refer $X to the Fiscal Year XX-XX Budget Process to install quick-build bus station improvements along the AC Transit 51B route.

- Initiate consultation with AC Transit and UC Berkeley Bear Transit as soon as possible on the planning, scoping, and implementation of these items.

WHAT IS BUS RAPID TRANSIT (BRT)?

- AC Transit describes BRT as "a high-quality, high-capacity bus transit system designed to emulate light rail operation"
- AC Transit's 2016 Major Corridors Study
- AC Transit's 2018 Multimodal Corridor Guidelines

PERCENT TRAVEL SPEED AND RIDERSHIP

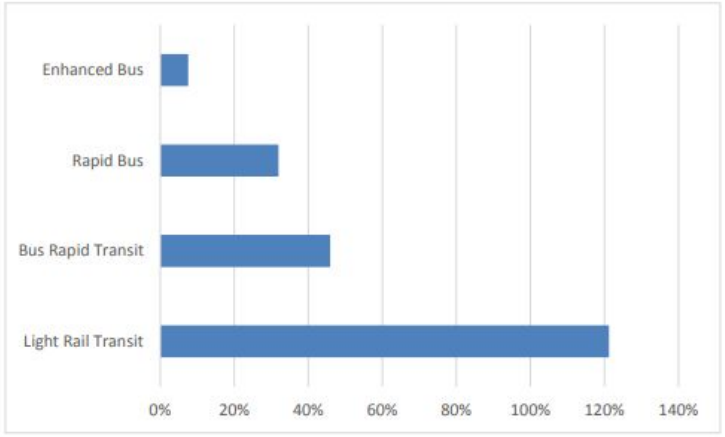


Figure A: Percent Travel Speed Increase by Mode (2040 with Project vs. 2040 Baseline)

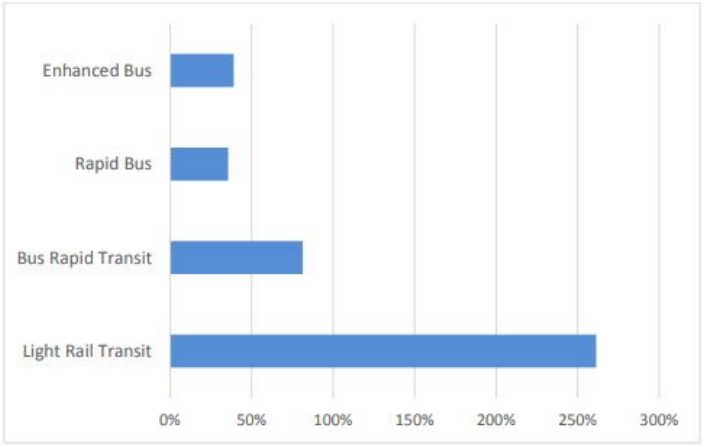


Figure B: Ridership Increase by Mode (2040 with Project vs. 2040 Baseline)

COST PER PASSENGER TRIP AND OPERATING COSTS

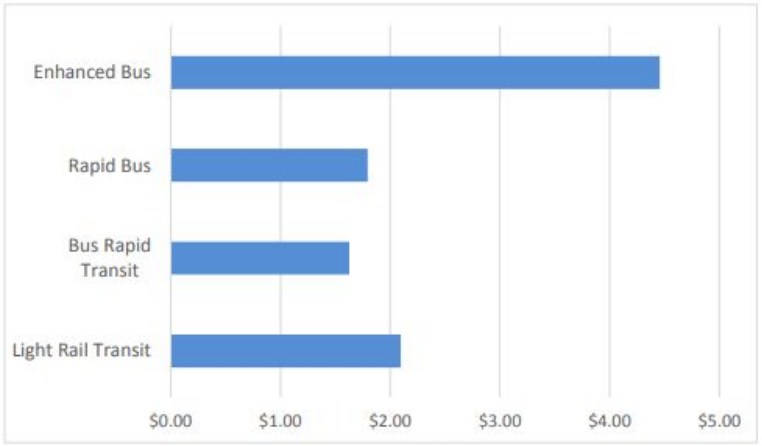


Figure D: Cost per Unlinked Passenger Trip by Mode

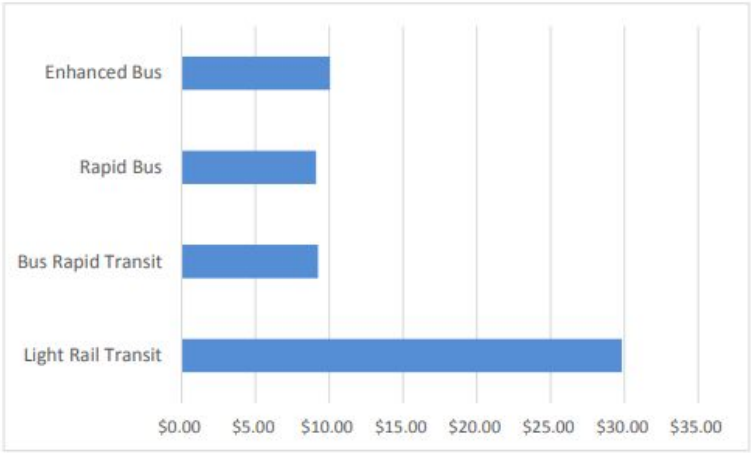


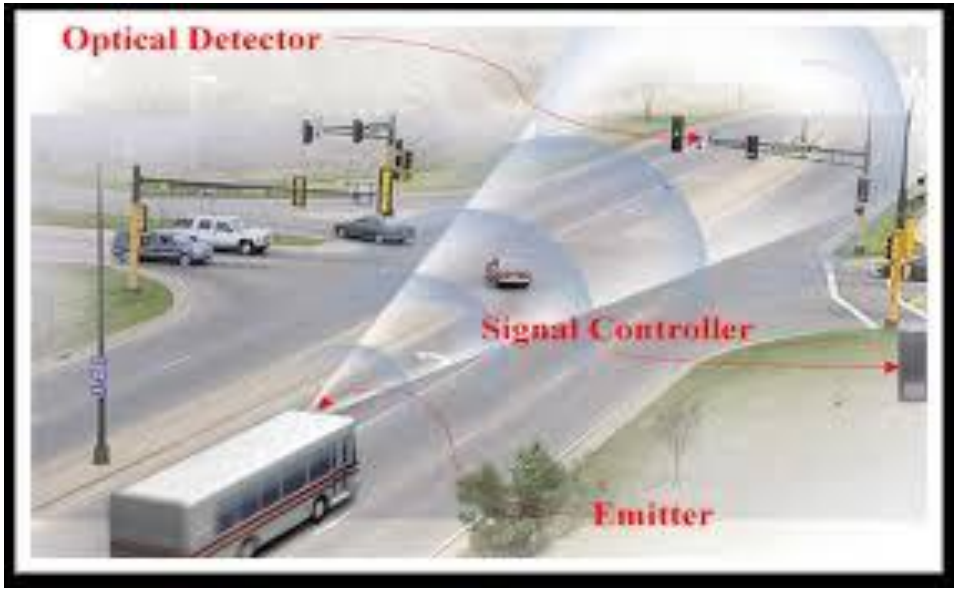
Figure E: Operating Cost per Mile by Mode

HIGH-AMENITY STATIONS AND OFF-BOARD FARES

Oakland

Oakland

PEDESTRIAN INFRASTRUCTURE AND TRANSIT SIGNALS



BUS-ONLY LANES

San Francisco

San Leandro

WHY BUS RAPID TRANSIT (BRT)?

- City of Berkeley's Climate Action Plan
- City of Berkeley's Strategic Transportation Plan
- City of Berkeley's Strategic Plan
- City of Berkeley's Vision Zero Action Plan
- Population Trends
- AC Transit Ridership
- Pedestrian Collisions
- ADA Compliance
- Local Business and Economy

CLIMATE ACTION PLAN (2009)

- Transportation Emissions Are Largest Source of Greenhouse Gases
- Envisions Public Transit, Walking, Cycling, and Other Sustainable Mobility Nodes as Primary Means of Transportation
- Goal: Increase Safety, Reliability, and Frequency of Public Transit
- Goal: Manage Parking Effectively to Minimize Driving Demand
- Goal: Encourage and Support Alternatives to Driving
- In 2018, City Declared Climate Emergency

STRATEGIC TRANSPORTATION PLAN (2016)

- Envisions Streets, Sidewalks, and Pathways as Multimodal
- Goal: Encouraging People to Walk, Bicycle, and Ride Transit
- Goal: Improve Transit Efficiency
- Goal: Design Street Networks That Ensure Comfortable, Safe Environments for Users of All Abilities
- Prioritizing Transit Services Along Transit Routes

STRATEGIC PLAN (2018)

- Goal: Provide State-of-the-Art, Well-Maintained Infrastructure, Amenities, and Facilities
- Goal: Create a Resilient, Safe, Connected, and Prepared City
- Goal: Foster a Dynamic, Sustainable, and Locally-Based Economy

VISION ZERO ACTION PLAN (2019)

- Strategy to Eliminate All Traffic Fatalities and Severe Injuries While Increasing Safe, Healthy, and Equitable Mobility for All
- Goal: Create Safer Transportation Options for People Who Walk, Bike, and Take Transit
  - Makes These Modes More Attractive
  - Reduces Number of Car Trips
  - Resulting in Fewer Severe and Fatal Collisions

POPULATION TRENDS

- City of Berkeley's 2023 Housing Element Update
- Since 2000, Population Has Increased 9% Each Decade
- 2020 Department of Finance Estimate: 122,580
- 2030 Association of Bay Area Government Estimate: 136,000
- 2040 Association of Bay Area Government Estimate: 141,000

AC TRANSIT RIDERSHIP

- 2019 Annual Report: Ridership Over 53 Million, 2.5% Increase from 2018
  - Key Factors: Proactive Efforts, Service Frequency, Robust Local Economy
  - Nationwide Major Transit Providers Reported 2.8% Decline
- 2020 COVID-19 Pandemic
  - Fewer People Commuting, Running Errands, or Doing Activities
  - Schools and Colleges Closed, Employees Working from Home
- Fiscal Year 2021-2022: Ridership Almost 29 Million, 36% Increase
  - Service at 85% of Pre-Pandemic Levels

PEDESTRIAN COLLISIONS

- City of Berkeley's 2020 Pedestrian Plan
  - Shattuck and University Avenues Rank 1st and 5th (2008 - 2017)
  - 1st and 3rd (Tied) for Fatal or Severe

ADA COMPLIANCE

- BRT Improvements Advance City's Goals
  - Increasing Mobility Access for Transit Riders and Cyclists with Disabilities
  - ADA Accessibility Standards Issued by US Department of Transportation
  - Guidance for Bus Boarding and Alighting Areas, Shelters, Signs, and More

LOCAL BUSINESSES AND ECONOMY

- National Institute for Transportation and Communities
  - 2015 National Study of BRT Development Outcomes
  - Areas Within a ½ Mile of BRT Corridors Increased Share of Office Space By ⅓
  - New Multifamily Apartment Construction Doubled Since 2008
- PolicyLink “Business Impact Mitigations for Transit Projects” (2013)
  - Best Practices: Financial and Technical Assistance, Proactive Outreach

INITIAL CITY AND COMMUNITY INPUT

- City of Berkeley's Office of Economic Development
- District 2 Transportation and Infrastructure Commissioner
- AC Transit
- Bike East Bay
- Telegraph for People
- Walk Bike Berkeley

BUILDING COMMUNITY ENGAGEMENT

- Berkeley Chamber of Commerce
- Center for Independent Living
- Downtown Arts District
- Downtown Berkeley Association
- Netivot Shalom
- Poet's Corner Merchants
- Telegraph for People
- University Avenue Association
- Walk Bike Berkeley
- Way Christian Center
- ...And More!

ONGOING CITY/AGENCY DISCUSSIONS

- AC Transit
- Alameda County Transportation Commission
- Berkeley Unified School District
- Fire Department
- Office of Economic Development
- Public Works Department
- Transportation Division
- Transportation and Infrastructure Commission
- UC Berkeley Bear Transit

QUESTIONS AND CONTACT INFORMATION

- Councilmember Terry Taplin
  - TTaplin@cityofberkeley.info
  - (510) 981-7120

- Rubén Hernández Story *(Chief of Staff)*
  - RHernandezStory@cityofberkeley.info
  - (510) 981-7120

BERKELEY CITY COUNCILMEMBER
TERRY TAPLIN
DISTRICT 2

CONSENT CALENDAR
March 2~~December 13~~, 2023~~2~~

To: ~~—~~Honorable Mayor and Members of the City Council

From: ~~———~~Councilmember Terry Taplin (Author)

Subject: 51~~University-Downtown Avenue~~ Bus Rapid Transit

~~RECOMMENDATION~~

~~(1) Refer to the City Manager and the Department of Public Works the installation initiation of a University Avenue Multimodal Corridor Project that centers the creation of a transit-only lane Bus Rapid Transit (BRT) corridor spanningalong University Avenue, Shattuck Avenue, and Telegraph Avenue with dedicated lanes and elevated platforms.~~

~~(2) Refer $300,000 to the budget process to be alloted to the Department of Public Worksengage a consultant for study, community engagement, and project design.for the study, community feedback process, and design of the project.~~

~~Refer $30,000 to the budget process for the construction of elevated bus stop platforms for the purposes of bringing BRTelevated platforms to University Avenue on a pilot basis while the wider project is in development.~~

~~initiate consultation with AC Transit and UC Berkeley Bear Transit as soon as possible on the planning, scoping and implementation of these items.~~

RECOMMENDATION

1) Refer to the City Manager the development of an implementation and community engagement plan to install Bus Rapid Transit, including dedicated bus lanes, transit signal priority, elevated platforms, and enhanced sections, on the AC Transit 51B route along University Avenue from Sixth Street to Shattuck Avenue and along Shattuck Avenue from University Avenue to Durant Avenue, with engagement centering pedestrian, cyclist, transit and mobility justice advocates, the disability rights community, local faith communities, merchants, neighboring residential communities inclusive of tenants, seniors, and students, and historically marginalized communities.~~Refer to the City Manager the development of an implementation and community engagement plan to install Bus Rapid Transit including dedicated bus lanes, transit signal priority, elevated platforms, and enhanced sections, along the AC Transit 51B route along University Ave from Sixth St to Shattuck Ave and along Shattuck Avenue from UniversitySixth to Durant, with engagement centering pedestrian, cyclist, transit and mobility justice advocates, the disability rights community, local faith communities, merchants,~~

~~neighboring residential communities inclusive of tenants, seniors, and students, and historically marginalized communities.~~

2) Refer $300,000 to the Fiscal Year 2024-2025 Budget Process to conduct a Complete Street Corridor Study antecedent to the installation of a cycle track along University Avenue from 6th Street to Oxford Street, consistent with the City of Berkeley's 2017 Bicycle Plan and integrating pedestrian amenities consistent with the City of Berkeley's 2020 Pedestrian Plan. As per the Bicycle Plan, the study will be evaluated in the context of the modal priorities established by the City of Berkeley General Plan's 2001 Transportation Element and the Alameda County Transportation Commission's (ACTC) 2016 Countywide Multimodal Arterial Plan.~~Refer $300k to the FY 24-25 Budget Process to conduct a Complete Street Corridor Study antecedent to the installation of a two-cycle track along the University from 6th to Oxford consistent with the adopted 2017 Bicycle9 Bike Plan and integrating pedestrian amenities consistent with the Pedestrian Plan. As per the 2017 Bicycle Plan, the study will be evaluated in the context of the modal priorities established by the Berkeley General Plan Transportation Element and the Alameda County Transportation Commission Countywide Multimodal Arterial Plan.~~

3) Refer $300,000 to the Fiscal Year 2024-2025 Budget Process to conduct a Complete Street Corridor Study antecedent to the installation of a cycle track along Oxford Street from Virginia Street to Durant Avenue consistent with the Bicycle Plan and integrating pedestrian amenities consistent with the Pedestrian Plan. As per the Bicycle Plan, the study will be evaluated in the context of the modal priorities established by the Transportation Element and ACTC's Countywide Multimodal Arterial Plan. It will be coordinated with proposed improvements to transit performance on this Primary Transit Route, such as bus boarding islands, transit-only lanes, transit signal priority/queue jump lanes, far-side bus stop relocations, and other improvements as described in AC Transit's 2016 Major Corridor Study.~~Refer $300k Refer $X to the FY 24-25 Budget Process to conduct a Complete Street Corridor Study antecedent to the installation of a two-cycle track along Shattuck from Virginia to Woolsey consistent with the adopted 2017 Bicycle9 Bike Plan. and integrating pedestrian amenities consistent with the Pedestrian Plan. As per the 2017 Bicycle Plan, the study will be evaluated in the context of the modal priorities established by the Berkeley General Plan Transportation Element and the Alameda County Transportation Commission Countywide Multimodal Arterial Plan. It will be coordinated with proposed improvements to transit performance on this Primary Transit Route, such as bus boarding islands, transit-only lanes, transit signal priority/queue jump lanes, far-side bus stop relocations, and other improvements as described in the AC Transit Major Corridor Study.~~

4) Refer $X to the Fiscal Year XX-XX Budget Process to install quick-build bus station improvements along the AC Transit 51B route.~~Refer to the FYx $X to install quick-build bus station improvements along the 51b route.~~

5) Initiate consultation with AC Transit and UC Berkeley Bear Transit as soon as possible on the planning, scoping, and implementation of these items.~~Initiate consultation with AC Transit and UC Berkeley Bear Transit as soon as possible on the planning, scoping, and implementation of these items.~~

~~FISCAL IMPACTS~~
~~Staff costs. An estimated $300,000 for the staff costs of engaging a consultant for the Multimodal Corridor Project. An estimated $30,000 for two elevated platforms, or "bus bulbs", at an estimated cost of $15,000 per platform.~~[1]

BACKGROUND~~CURRENT SITUATION AND ITS EFFECTS~~

Existing Transit Lanes~~**Existing Transit Lanes in Berkeley**~~
Currently, Berkeley has a transit lane on Bancroft Way between Telegraph and Downtown that is used by westbound buses, and a transit lane is planned for Durant Ave for eastbound buses. Bus lines using these lanes continue on to Shattuck, University, and Telegraph.

Shattuck, University, and Telegraph Avenues
Berkeley's University Avenue runs West to East from the Berkeley Marina and I-80 Freeway to its termination at UC Berkeley's Crescent Lawn. University Avenue is dubbed the "Gateway to Berkeley" due to the location of the city's lone Amtrak Station at the intersection of Fourth Street, the avenue's proximity to both the North Berkeley and Downtown Berkeley BART stations, the regularly congested I-80 exit onto the avenue, and the service of AC Transit's 51B, 52, 79, 88, 802, and FS lines. University Avenue is a wide street with two travel lanes in each direction, parking lanes, turn pockets, and a center median.

Berkeley's Shattuck Avenue runs North to South from Indian Rock Park in the Berkeley Hills to 45th Street in Oakland near the intersection of Telegraph Avenue. Shattuck Avenue serves as the main street of Berkeley, running through its Downtown, which is home to the Downtown Berkeley BART Station, AC Transit and Bear Transit stations, and various restaurants and office spaces.

Telegraph Avenue, from Woolsey Street on the Oakland border up through Dwight Way near UC Berkeley, is in the midst of its own Multimodal Corridor Project[2] that may result in BRT infrastructure in the coming years. Should this project be completed or significantly underway at the time of the development of BRT plans for Shattuck and University Avenues, close attention should be paid to its initial impacts, successes, and failures so that future applications of BRT infrastructure build on these lessons.

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[1] ~~https://berkeleyca.gov/sites/default/files/documents/2020%20Pedestrian%20Plan%20Appendix%20E%20%28adopted%29.pdf~~

[2] https://berkeleyca.gov/your-government/our-work/capital-projects/telegraph-avenue-multimodal-corridor-project#:~:text=The%20Telegraph%20Avenue%20Multimodal%20Corridor,bike%20lanes%2C%20and%20transit%20improvements.

University Avenue

Berkeley's University Avenue runs West to East from the Berkeley Marina and I-80 Freeway to its termination at the Crescent Lawn of the UC Berkeley campus. University Ave is dubbed the "Gateway to Berkeley" due to the location of the city's lone Amtrak Station at University & Fourth Street, the avenue's proximity to both the North Berkeley and Downtown Berkeley BART stations, the regularly congested I-80 exit onto the avenue, and the service of AC Transit's 51B, 52, 79, 88, 802, and FS lines on at least part of the corridor.. University Avenue is a wide street with two travel lanes in each direction, parking lanes, turn pockets, and a center median.

The central location of University Avenue and the variety of communities it connects makes this corridor an incredibly important focus for the City's housing and transportation planning for the coming decades. University Avenue has had a number of housing developments completed recently, with additional developments under construction, With University Avenue likely seeing a growth in new housing development under the forthcoming Housing Element, it is important for Berkeley's transportation infrastructure to keep up with the changing needs of its old and new residents. On top of the expected growth in Berkeley's population and thus its transportation needs, climate change and the urgency of pedestrian and cyclist safety require that the transportation system of the City's future be one that prioritizes public transit and bicycle travel over the use personal automobiles. With this in mind, the 2017 Bicycle Plan recommends a Complete Streets Corridor Study for University Avenue.[3]

Shattuck & Telegraph Avenues

Any successful transportation project that seeks to increase the speed and reliability of AC Transit service in Berkeley will need to serve a longer route have to apply to more than the a single relavivelyrelatively short corridor segmentjust one major within Berkeley. There are several transit corridors within Berkeley, and connecting to other cities, that AC Transit has identified as needing upgraded types of service. We It would be important for the City would like to work with the City AC Transit to identify the routings which would roadway. be the most productive.

Telegraph Avenue, running from the Oakland border in South-East Berkeley up through downtown to UC Berkeley, is in the midst of its own multimodal corridor project at this time that may result in rapid transit infrastructure on the avenue in the coming years.[4] Should the Telegraph Avenue Multimodal Project be completed or significantly underway at the time of the development of BRT plans for University Avenue and Shattuck Avenue, close attention should be paid to initiatial impacts, successes, and failures of the Telegraph project so that application of rapid transit infrastructure on University and Shattuck is done that builds on the lessons of Telegraph.

[3] https://berkeleyca.gov/sites/default/files/2022-01/Berkeley-Bicycle-Plan-2017_AppendixH_Complete%20Streets%20Corridors.pdf

[4] https://berkeleyca.gov/your-government/our-work/capital-projects/telegraph-avenue-multimodal-corridor-project#:~:text=The%20Telegraph%20Avenue%20Multimodal%20Corridor,bike%20lanes%2C%20and%20transit%20improvements.

~~Furthermore, these three avenues are each unique and each present their own problems when considering the addition of BRT. The application of BRT on the downtown stretch of Shattuck Avenue, which could improve the service of AC Transit's 18 and various other lines which briefly serve Shattuck at the start/end of their routes, will require careful consideration of the already congested conditions of the street. The construction of elevated platforms on University Avenue as a pilot for BRT while completion of Telegraph Avenue's project is underway and Shattuck Avenue rapid transit is being considered will allow for some near-term service improvements while giving staff the time necessary to study how to bring multimodal improvements to the rest of the corridors as fastidiously as possible.~~

Bus Rapid Transit

While diverse in their application around the world, Bus Rapid Transit is typically a transportation corridor that prioritizes fast and efficient bus service that may include dedicated bus lanes, traffic signal priority, elevated platforms, and off-board fare collection.[5] There is no one-size-fits-all approach to BRT and a University Avenue BRT is sure to look different than it might on Telegraph Avenue or International Boulevard in Oakland. However, ~~, but~~ pursuit of a quicker and more efficient bus corridor along University should result in dedicated bus lanes and elevated platforms at existing AC Transit stops. Most transit planners consider center running bus lanes--such as provided on International Boulevard~~.~~ ~~a~~And Van Ness Avenue~~.~~ ~~i~~In San Francisco--as more effective than curbside bus lanes. However, this would have to be determined in the course of planning the project. Relative to other rapid transit improvements such as light rail, BRT's advantages include lower upfront capital requirements, a higher degree of flexibility in their application, and a much~~er~~ quicker ~~be~~ implementation timeline.[6]

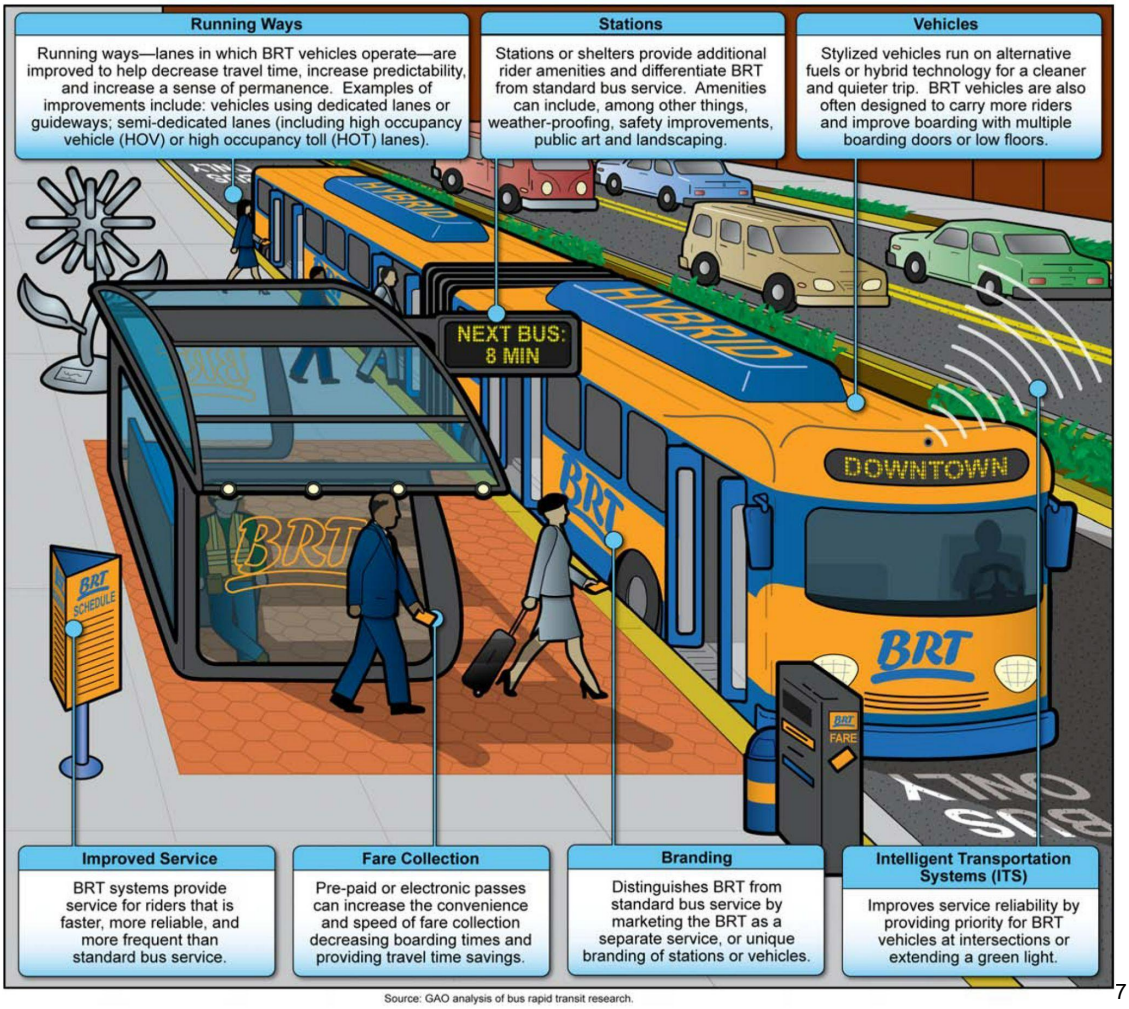
[5] https://www.transit.dot.gov/research-innovation/bus-rapid-transit

[6] https://digitalcommons.usf.edu/cgi/viewcontent.cgi?article=1023&context=jpt

Van Ness Avenue, San Francisco

~~Do we want to include a photo? Van Ness Ave is probably the best example - it is designed to work with multiple existing bus lines using regular buses~~

Figure 1: Characteristics of Bus Rapid Transit



Source: GAO analysis of bus rapid transit research.[7]

Population Trends

According to the City of Berkeley's 2023 Housing Element Update,[8] the city's population has grown steadily since 2000, increasing approximately 9% each decade. The Department of Finance estimates that the city's population was 122,580 in 2020. The Association of Bay Area Governments' Plan Bay Area 2040 projections anticipate Berkeley's population to reach about 136,000 by 2030 and 141,000 by 2040.

Pedestrian Collisions

The City of Berkeley's 2020 Pedestrian Plan[9] determined that Shattuck and University Avenues represent two of the top five streets with pedestrian collisions between 2008 and 2017, ranked first and fifth, respectively, as well as two of the top four streets with fatal or severe pedestrian collisions in the same time period, ranked first and third (tied) respectively.

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[7] https://www.gao.gov/blog/2016/04/13/rapid-buses-for-rapid-transit

[8] https://berkeleyca.gov/sites/default/files/documents/Combined_HousingElementFinal_redline.pdf

[9] https://berkeleyca.gov/sites/default/files/2022-01/2020-Pedestrian-Plan.pdf

AC Transit

In AC Transit's 2019 Annual Report[10], they reported a systemwide ridership of over 53 million customers, reflecting a 2.5% increase (1.28 million riders) over the previous year. This occurred at a time when major transit providers nationwide reported a ridership decline of 2.8%. Key factors attributed to this growth included proactive efforts to maintain high service levels, adding service frequency, and a robust local economy. That same year, AC Transit released their first Strategic Plan[11] in about 20 years. In April of 2022, an Addendum[12] was added to address the effects of the ongoing COVID-19 pandemic.

The pandemic has had an enormous impact on transit operations and economic activity. In 2020, fewer people needed to ride the bus, whether to commute to work or get around the city for personal errands and activities. Schools and colleges closed their campuses and several office workers began working from home. Although there has been a recovery in ridership[13] beginning in 2021, pre-pandemic levels have not been reached. Fiscal Year 2021-2022 saw an annual ridership of almost 29 million customers, which was a 36% increase (7.6 million riders) over the previous fiscal year. Service is at around 85% of pre-pandemic levels, which is the equivalent of deleting one out of every seven trips.

RATIONALE

City of Berkeley Plans

The City of Berkeley's Climate Action Plan,[14] adopted in 2009, envisions public transit, walking, cycling, and other sustainable mobility modes as the primary means of transportation for residents and visitors. To do so, it lists various goals, such as increasing the safety, reliability, and frequency of public transit and managing parking effectively to minimize driving demand and encourage and support alternatives to driving. It also addresses the fact that transportation emissions are the largest source of greenhouse gas emissions, a trend that has continued as of the 2019 Greenhouse Gas Inventory.

The Berkeley Strategic Transportation Plan[15], adopted in 2016, envisions the city's streets, sidewalks, and pathways as multimodal, serving people walking, bicycling, riding transit, driving, and moving goods. To do so, it lists various goals, such as encouraging people to walk, bicycle, and ride transit, improving transit efficiency, designing street networks that ensure comfortable, safe environments for users of all abilities, and prioritizing transit services along transit routes.

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[10] https://www.actransit.org/sites/default/files/2021-03/0017-20%20Annual%20Report%202019_small_FNL.pdf
[11] https://www.actransit.org/sites/default/files/2021-03/AC%20Transit%20Strategic%20Plan.pdf
[12] https://www.actransit.org/sites/default/files/2022-12/0230-22%20Strat%20Plan%20Adden_FNL.pdf
[13] https://www.actransit.org/ridership
[14] https://berkeleyca.gov/sites/default/files/2022-01/Berkeley-Climate-Action-Plan.pdf
[15] https://berkeleyca.gov/your-government/our-work/adopted-plans/berkeley-strategic-transportation-best-plan

The City of Berkeley's Strategic Plan[16], adopted in 2018, includes long-term goals such as providing state-of-the-art, well-maintained infrastructure, amenities, and facilities, creating a resilient, safe, connected, and prepared city, and fostering a dynamic, sustainable, and locally-based economy. That same year, the city declared a climate emergency and committed to mobilize to end greenhouse gas emissions swiftly.

The Berkeley Vision Zero Action Plan[17], adopted in 2019, is a strategy to eliminate all traffic fatalities and severe injuries while increasing safe, healthy, and equitable mobility for all. To do so, it lists various goals, such as creating safer transportation options for people who walk, bike, and take transit, which would make these modes more attractive and reduce the number of car trips in Berkeley, which can mean fewer severe and fatal collisions.

AC Transit's Recovery
Supporting AC Transit's recovery enhances the mobility and safety of Berkeley residents while simultaneously improving the walkability and bikeability of the city as well as breathing life into the local economy.

Any successful transportation project that seeks to increase the speed and reliability of AC Transit service in Berkeley will need to serve a longer route than the single relatively short corridor segment within Berkeley. There are several transit corridors within Berkeley connecting to other cities that AC Transit has identified as needing upgraded types of service. It would be important for the city to work with AC Transit to identify the routings which would be the most productive.

Shattuck, University, and Telegraph Avenues
The central location of University Avenue and the variety of communities it connects makes this corridor an incredibly important focus for the city's housing and transportation planning for the coming decades. University Avenue has had a number of housing developments completed recently, with additional developments under construction. With University Avenue likely seeing a growth in new housing development under the forthcoming Housing Element, it is important for Berkeley's transportation infrastructure to keep up with the changing needs of its old and new residents. On top of the expected growth in Berkeley's population and thus its transportation needs, climate change and the urgency of pedestrian and cyclist safety require that the transportation system of the City's future be one that prioritizes public transit and bicycle travel over the use personal automobiles. With this in mind, the 2017 Bicycle Plan recommends a Complete Streets Corridor Study for University Avenue.[18]

Furthermore, these three avenues are each unique and each present their own problems when considering the addition of BRT. The application of BRT on the downtown stretch of Shattuck Avenue, which could improve the service of AC Transit's

[16] https://berkeleyca.gov/sites/default/files/2022-01/Berkeley-Strategic-Plan.pdf
[17] https://berkeleyca.gov/sites/default/files/2022-02/Berkeley-Vision-Zero-Action-Plan.pdf
[18] https://berkeleyca.gov/sites/default/files/2022-01/Berkeley-Bicycle-Plan-2017_AppendixH_Complete%20Streets%20Corridors.pdf

18 and various other lines which briefly serve Shattuck Avenue at the start and end of their routes, will require careful consideration of the already congested conditions of the street. The construction of elevated platforms on University Avenue as a pilot for BRT while completion of Telegraph Avenue's project is underway and Shattuck Avenue rapid transit is being considered will allow for some near-term service improvements while giving staff the time necessary to study how to bring multimodal improvements to the rest of the corridors as fastidiously as possible.

Breakdown of Recommended Improvements
Dedicated bus lanes improve travel speeds and reliability by reducing delays caused by other traffic. Transit signal priority uses technology to reduce dwell time at traffic signals for transit vehicles, such as extending the duration of green lights or shortening that of red lights. Raised platforms make it easier and more accessible for passengers to board or alight from buses by decreasing the distance between the platform and the vehicle, therefore increasing route efficiency.

ADA Compliance
The recommended improvements also help advance the city's goal of increasing mobility access for transit riders and cyclists with disabilities. ADA Accessibility Standards for transportation facilities are issued by the US Department of Transportation and include guidance for bus boarding and alighting areas, shelters, signs, and more.[19]

Impact to Local Businesses and Economy
In addition to advancing various climate and public safety goals of the city, investing in bus and bicycle infrastructure benefits local businesses and the economy. The League of American Bicyclists's report entitled "Bicycling Benefits Business"[20] illustrates that the bicycle industry and its related transportation, tourism, and health benefits spur job creation, economic activity, and cost savings. The Outdoor Industry Association reported that outdoor recreation consumers spend $887 billion annually and create 7.6 million jobs.[21]

The National Institute for Transportation and Communities published a peer-reviewed study examining BRT lines and found that the areas within a half-mile of BRT corridors increased their share of new office space by one third from 2000-2007, and new multifamily apartment construction doubled in those half-mile areas since 2008.[22] PolicyLink released a report entitled "Business Impact Mitigations for Transit Projects"[23] that address BRT projects, concluding that best practices include providing the right

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[19] https://federalist-e3fba26d-2806-4f02-bf0e-89c97cfba93c.app.cloud.gov/preview/atbcb/usab-uswds/ada-alternative/ada/#ada-810
[20] https://bikeleague.org/sites/default/files/Bicycling%20Benefits%20Business.pdf
[21] https://outdoorindustry.org/resource/2017-outdoor-recreation-economy-report/
[22] https://t4america.org/wp-content/uploads/2016/01/NATIONAL-STUDY-OF-BRT-DEVELOPMENT-OUTCOMES-11-30-15.pdf
[23] https://www.policylink.org/sites/default/files/FINAL%20PolicyLink%20Business%20Impact%20Mitigation%20Strategies_0.pdf

type of financial and technical assistance and proactive outreach to businesses built on constant communication, flexibility, and trust.

ENVIRONMENTAL IMPACTS

The City estimates that transportation-related emissions accounts for approximately 60% of our community's total annual greenhouse gas emissions.[24] By encouraging alternatives to car transportation by making public transportation options quicker and more appealing, policy stands to lower the emissions from our community's dominant source of carbon emissions.

The goal of any new public transportation initiative must be to increase the local mode eshare of residents choosing public transportation over personal automobiles for commuting and other trips.. BRT offers many advantages for this pursuit. The U.S. Government Accountability Office reviewed implemented BRT projects in 2012 and found that "13 of the 15 project sponsors…reported increases in ridership after 1 year of service and reduced average travel times of 10 to 35 percent over previous bus services."[25] Paired with the multimodal project along Telegraph Avenue, Berkeley has the potential for a large increase in transit ridership and thus a decline in greenhouse gas emissions if the City follows through on BRT in the coming years.

FISCAL IMPACTS

Staff costs. An estimated $300,000 for the staff costs of engaging a consultant for the Multimodal Corridor Project. An estimated $30,000 for two elevated platforms, or "bus bulbs", at an estimated cost of $15,000 per platform.[26]

CONTACT

Councilmember Terry Taplin~~, Councilmember~~, District 2, (510) 981-7120, TTaplin@cityofberkeley.info

ATTACHMENTS

1. AC Transit Multimodal Corridor Guidelines

[24] https://www.cityofberkeley.info/Clerk/City_Council/2018/12_Dec/Documents/2018-12-06_WS_Item_01_Climate_Action_Plan_Update_pdf.aspx

[25] https://www.gao.gov/products/gao-12-811

[26] https://berkeleyca.gov/sites/default/files/documents/2020%20Pedestrian%20Plan%20Appendix%20E%20%28adopted%29.pdf

BERKELEY CITY COUNCILMEMBER
TERRY TAPLIN
DISTRICT 2

CONSENT CALENDAR
March 2, 2023

To: Honorable Mayor and Members of the City Council

From: Councilmember Terry Taplin (Author)

Subject: 51 Bus Rapid Transit

RECOMMENDATION

1) Refer to the City Manager the development of an implementation and community engagement plan to install Bus Rapid Transit, including dedicated bus lanes, transit signal priority, elevated platforms, and enhanced sections, on the AC Transit 51B route along University Avenue from Sixth Street to Shattuck Avenue and along Shattuck Avenue from University Avenue to Durant Avenue, with engagement centering pedestrian, cyclist, transit and mobility justice advocates, the disability rights community, local faith communities, merchants, neighboring residential communities inclusive of tenants, seniors, and students, and historically marginalized communities.

2) Refer $300,000 to the Fiscal Year 2024-2025 Budget Process to conduct a Complete Street Corridor Study antecedent to the installation of a cycle track along University Avenue from 6th Street to Oxford Street, consistent with the City of Berkeley's 2017 Bicycle Plan and integrating pedestrian amenities consistent with the City of Berkeley's 2020 Pedestrian Plan. As per the Bicycle Plan, the study will be evaluated in the context of the modal priorities established by the City of Berkeley General Plan's 2001 Transportation Element and the Alameda County Transportation Commission's (ACTC) 2016 Countywide Multimodal Arterial Plan.

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2016 Major Corridor Study.

4) Refer $X to the Fiscal Year XX-XX Budget Process to install quick-build bus station improvements along the AC Transit 51B route.

5) Initiate consultation with AC Transit and UC Berkeley Bear Transit as soon as possible on the planning, scoping, and implementation of these items.

BACKGROUND

Existing Transit Lanes
Currently, Berkeley has a transit lane on Bancroft Way between Telegraph and Downtown that is used by westbound buses, and a transit lane is planned for Durant Ave for eastbound buses. Bus lines using these lanes continue on to Shattuck, University, and Telegraph.

Shattuck, University, and Telegraph Avenues
Berkeley's University Avenue runs West to East from the Berkeley Marina and I-80 Freeway to its termination at UC Berkeley's Crescent Lawn. University Avenue is dubbed the "Gateway to Berkeley" due to the location of the city's lone Amtrak Station at the intersection of Fourth Street, the avenue's proximity to both the North Berkeley and Downtown Berkeley BART stations, the regularly congested I-80 exit onto the avenue, and the service of AC Transit's 51B, 52, 79, 88, 802, and FS lines. University Avenue is a wide street with two travel lanes in each direction, parking lanes, turn pockets, and a center median.

Berkeley's Shattuck Avenue runs North to South from Indian Rock Park in the Berkeley Hills to 45th Street in Oakland near the intersection of Telegraph Avenue. Shattuck Avenue serves as the main street of Berkeley, running through its Downtown, which is home to the Downtown Berkeley BART Station, AC Transit and Bear Transit stations, and various restaurants and office spaces.

Telegraph Avenue, from Woolsey Street on the Oakland border up through Dwight Way near UC Berkeley, is in the midst of its own Multimodal Corridor Project[1] that may result in BRT infrastructure in the coming years. Should this project be completed or significantly underway at the time of the development of BRT plans for Shattuck and University Avenues, close attention should be paid to its initial impacts, successes, and failures so that future applications of BRT infrastructure build on these lessons.

Bus Rapid Transit
While diverse in their application around the world, Bus Rapid Transit is typically a transportation corridor that prioritizes fast and efficient bus service that may include dedicated bus lanes, traffic signal priority, elevated platforms, and off-board fare

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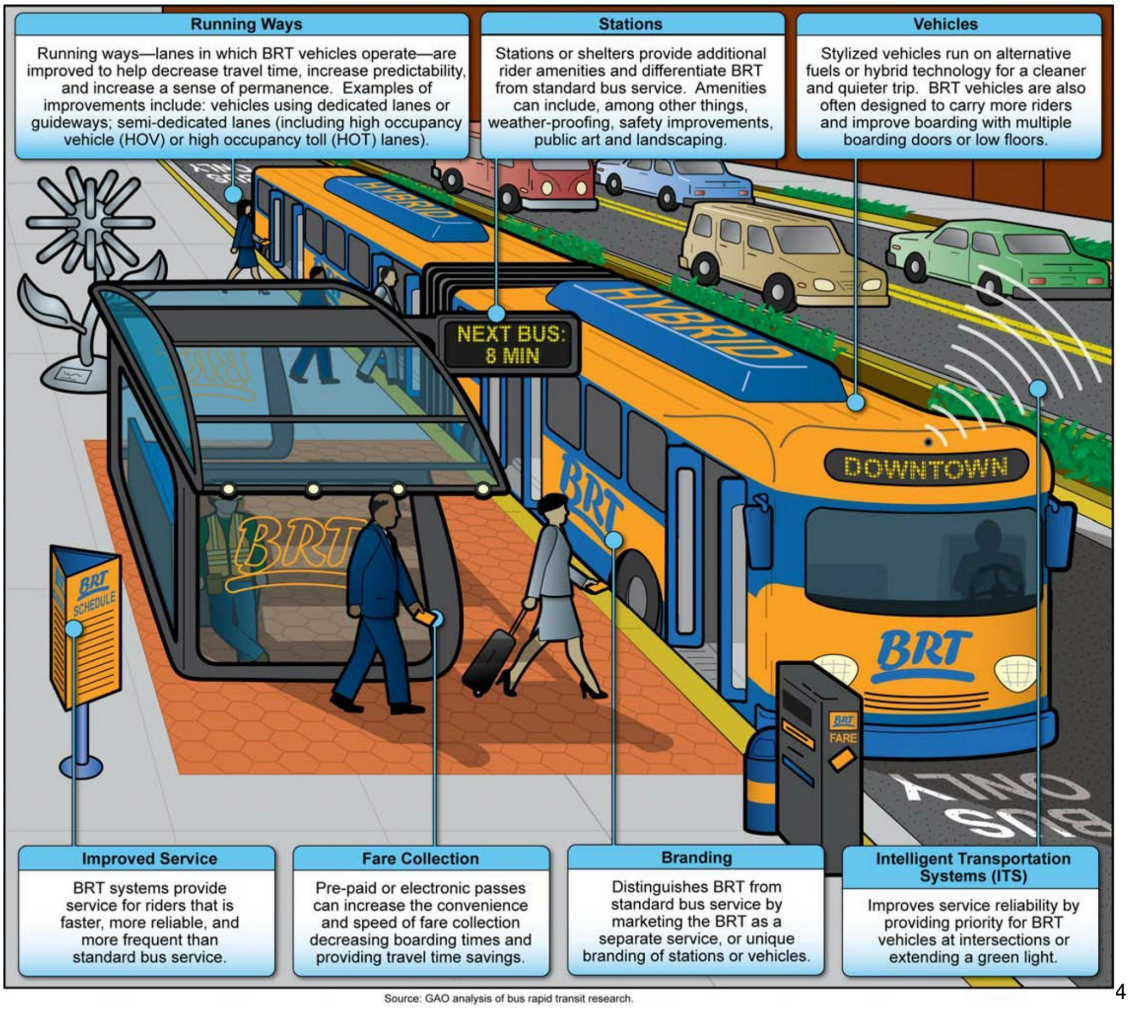

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The pandemic has had an enormous impact on transit operations and economic activity. In 2020, fewer people needed to ride the bus, whether to commute to work or get around the city for personal errands and activities. Schools and colleges closed their campuses and several office workers began working from home. Although there has been a recovery in ridership[10] beginning in 2021, pre-pandemic levels have not been reached. Fiscal Year 2021-2022 saw an annual ridership of almost 29 million customers, which was a 36% increase (7.6 million riders) over the previous fiscal year. Service is at around 85% of pre-pandemic levels, which is the equivalent of deleting one out of every seven trips.

RATIONALE

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The City of Berkeley's Climate Action Plan,[11] adopted in 2009, envisions public transit, walking, cycling, and other sustainable mobility modes as the primary means of transportation for residents and visitors. To do so, it lists various goals, such as increasing the safety, reliability, and frequency of public transit and managing parking effectively to minimize driving demand and encourage and support alternatives to driving. It also addresses the fact that transportation emissions are the largest source of greenhouse gas emissions, a trend that has continued as of the 2019 Greenhouse Gas Inventory.

The Berkeley Strategic Transportation Plan[12], adopted in 2016, envisions the city's streets, sidewalks, and pathways as multimodal, serving people walking, bicycling, riding transit, driving, and moving goods. To do so, it lists various goals, such as encouraging people to walk, bicycle, and ride transit, improving transit efficiency, designing street networks that ensure comfortable, safe environments for users of all abilities, and prioritizing transit services along transit routes.

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The Berkeley Vision Zero Action Plan[14], adopted in 2019, is a strategy to eliminate all traffic fatalities and severe injuries while increasing safe, healthy, and equitable mobility for all. To do so, it lists various goals, such as creating safer transportation options for people who walk, bike, and take transit, which would make these modes more attractive and reduce the number of car trips in Berkeley, which can mean fewer severe and fatal collisions.

AC Transit's Recovery

Supporting AC Transit's recovery enhances the mobility and safety of Berkeley residents while simultaneously improving the walkability and bikeability of the city as well as breathing life into the local economy.

Any successful transportation project that seeks to increase the speed and reliability of AC Transit service in Berkeley will need to serve a longer route than the single relatively short corridor segment within Berkeley. There are several transit corridors within Berkeley connecting to other cities that AC Transit has identified as needing upgraded types of service. It would be important for the city to work with AC Transit to identify the routings which would be the most productive.

Shattuck, University, and Telegraph Avenues

The central location of University Avenue and the variety of communities it connects makes this corridor an incredibly important focus for the city's housing and transportation planning for the coming decades. University Avenue has had a number of housing developments completed recently, with additional developments under construction. With University Avenue likely seeing a growth in new housing development under the forthcoming Housing Element, it is important for Berkeley's transportation infrastructure to keep up with the changing needs of its old and new residents. On top of the expected growth in Berkeley's population and thus its transportation needs, climate change and the urgency of pedestrian and cyclist safety require that the transportation system of the City's future be one that prioritizes public transit and bicycle travel over the use personal automobiles. With this in mind, the 2017 Bicycle Plan recommends a Complete Streets Corridor Study for University Avenue.[15]

Furthermore, these three avenues are each unique and each present their own problems when considering the addition of BRT. The application of BRT on the downtown stretch of Shattuck Avenue, which could improve the service of AC Transit's

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Breakdown of Recommended Improvements

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The recommended improvements also help advance the city's goal of increasing mobility access for transit riders and cyclists with disabilities. ADA Accessibility Standards for transportation facilities are issued by the US Department of Transportation and include guidance for bus boarding and alighting areas, shelters, signs, and more.[16]

Impact to Local Businesses and Economy

In addition to advancing various climate and public safety goals of the city, investing in bus and bicycle infrastructure benefits local businesses and the economy. The League of American Bicyclists's report entitled "Bicycling Benefits Business"[17] illustrates that the bicycle industry and its related transportation, tourism, and health benefits spur job creation, economic activity, and cost savings. The Outdoor Industry Association reported that outdoor recreation consumers spend $887 billion annually and create 7.6 million jobs.[18]

The National Institute for Transportation and Communities published a peer-reviewed study examining BRT lines and found that the areas within a half-mile of BRT corridors increased their share of new office space by one third from 2000-2007, and new multifamily apartment construction doubled in those half-mile areas since 2008.[19] PolicyLink released a report entitled "Business Impact Mitigations for Transit Projects"[20] that address BRT projects, concluding that best practices include providing the right

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[17]https://bikeleague.org/sites/default/files/Bicycling%20Benefits%20Business.pdf

[18]https://outdoorindustry.org/resource/2017-outdoor-recreation-economy-report/

[19]https://t4america.org/wp-content/uploads/2016/01/NATIONAL-STUDY-OF-BRT-DEVELOPMENT-OUTCOMES-11-30-15.pdf

[20]https://www.policylink.org/sites/default/files/FINAL%20PolicyLink%20Business%20Impact%20Mitigation%20Strategies_0.pdf

type of financial and technical assistance and proactive outreach to businesses built on constant communication, flexibility, and trust.

ENVIRONMENTAL IMPACTS

The City estimates that transportation-related emissions accounts for approximately 60% of our community's total annual greenhouse gas emissions.[21] By encouraging alternatives to car transportation by making public transportation options quicker and more appealing, policy stands to lower the emissions from our community's dominant source of carbon emissions.

The goal of any new public transportation initiative must be to increase the local mode share of residents choosing public transportation over personal automobiles for commuting and other trips.. BRT offers many advantages for this pursuit. The U.S. Government Accountability Office reviewed implemented BRT projects in 2012 and found that "13 of the 15 project sponsors…reported increases in ridership after 1 year of service and reduced average travel times of 10 to 35 percent over previous bus services."[22] Paired with the multimodal project along Telegraph Avenue, Berkeley has the potential for a large increase in transit ridership and thus a decline in greenhouse gas emissions if the City follows through on BRT in the coming years.

FISCAL IMPACTS

Staff costs. An estimated $300,000 for the staff costs of engaging a consultant for the Multimodal Corridor Project. An estimated $30,000 for two elevated platforms, or "bus bulbs", at an estimated cost of $15,000 per platform.[23]

CONTACT

Councilmember Terry Taplin, District 2, (510) 981-7120, TTaplin@cityofberkeley.info

ATTACHMENTS

1. AC Transit Multimodal Corridor Guidelines

[21] https://www.cityofberkeley.info/Clerk/City_Council/2018/12_Dec/Documents/2018-12-06_WS_Item_01_Climate_Action_Plan_Update_pdf.aspx

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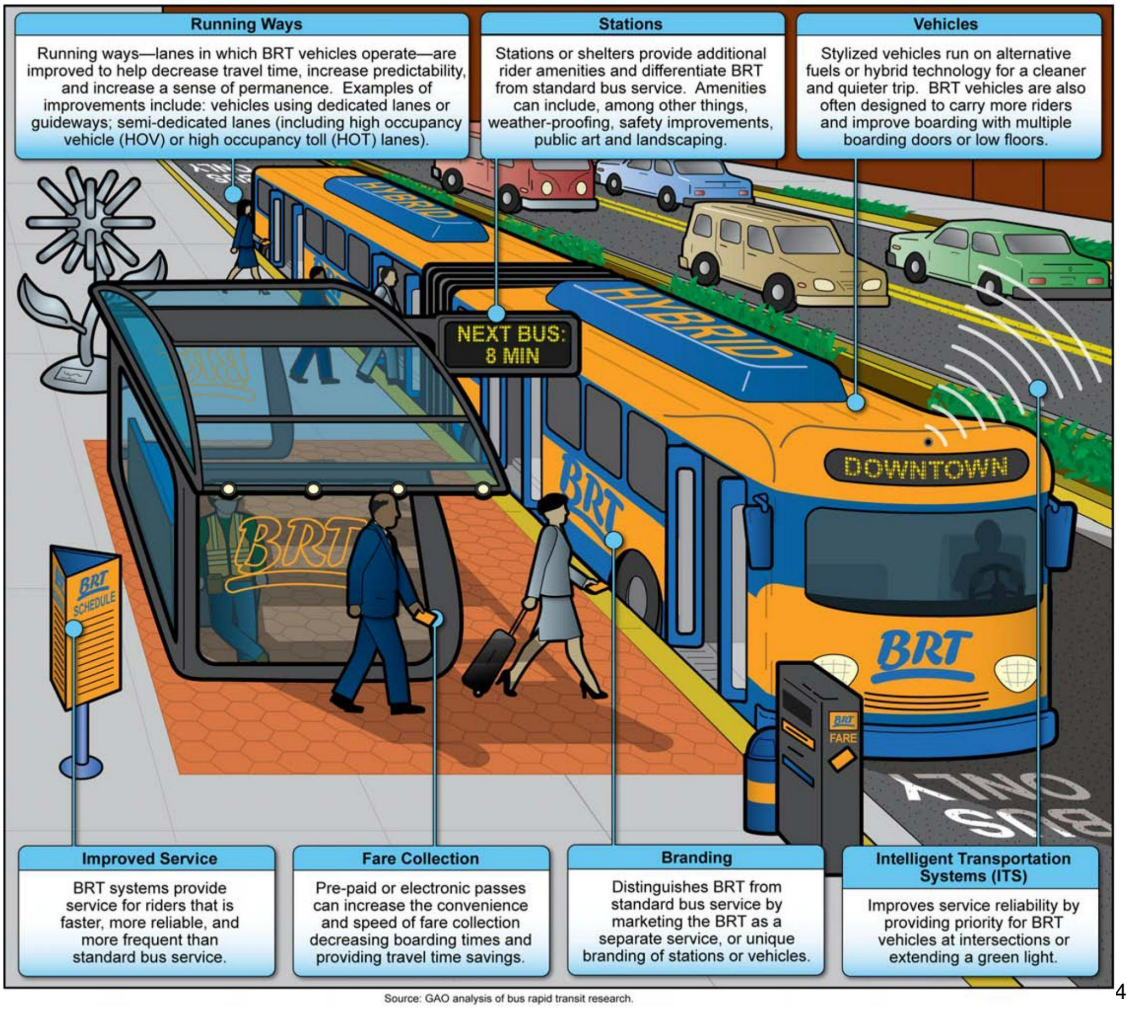

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In addition to advancing various climate and public safety goals of the city, investing in bus and bicycle infrastructure benefits local businesses and the economy. The League of American Bicyclists's report entitled "Bicycling Benefits Business"[17] illustrates that the bicycle industry and its related transportation, tourism, and health benefits spur job creation, economic activity, and cost savings. The Outdoor Industry Association reported that outdoor recreation consumers spend $887 billion annually and create 7.6 million jobs.[18]

The National Institute for Transportation and Communities published a peer-reviewed study examining BRT lines and found that the areas within a half-mile of BRT corridors increased their share of new office space by one third from 2000-2007, and new multifamily apartment construction doubled in those half-mile areas since 2008.[19] PolicyLink released a report entitled "Business Impact Mitigations for Transit Projects"[20] that address BRT projects, concluding that best practices include providing the right

[16]https://federalist-e3fba26d-2806-4f02-bf0e-89c97cfba93c.app.cloud.gov/preview/atbcb/usab-uswds/ada-alternative/ada/#ada-810

[17]https://bikeleague.org/sites/default/files/Bicycling%20Benefits%20Business.pdf

[18]https://outdoorindustry.org/resource/2017-outdoor-recreation-economy-report/

[19]https://t4america.org/wp-content/uploads/2016/01/NATIONAL-STUDY-OF-BRT-DEVELOPMENT-OUTCOMES-11-30-15.pdf

[20]https://www.policylink.org/sites/default/files/FINAL%20PolicyLink%20Business%20Impact%20Mitigation%20Strategies_0.pdf

type of financial and technical assistance and proactive outreach to businesses built on constant communication, flexibility, and trust.

ENVIRONMENTAL IMPACTS

The City estimates that transportation-related emissions accounts for approximately 60% of our community's total annual greenhouse gas emissions.[21] By encouraging alternatives to car transportation by making public transportation options quicker and more appealing, policy stands to lower the emissions from our community's dominant source of carbon emissions.

The goal of any new public transportation initiative must be to increase the local mode share of residents choosing public transportation over personal automobiles for commuting and other trips.. BRT offers many advantages for this pursuit. The U.S. Government Accountability Office reviewed implemented BRT projects in 2012 and found that "13 of the 15 project sponsors…reported increases in ridership after 1 year of service and reduced average travel times of 10 to 35 percent over previous bus services."[22] Paired with the multimodal project along Telegraph Avenue, Berkeley has the potential for a large increase in transit ridership and thus a decline in greenhouse gas emissions if the City follows through on BRT in the coming years.

FISCAL IMPACTS

Staff costs. An estimated $300,000 for the staff costs of engaging a consultant for the Multimodal Corridor Project. An estimated $30,000 for two elevated platforms, or "bus bulbs", at an estimated cost of $15,000 per platform.[23]

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ATTACHMENTS

1. AC Transit Multimodal Corridor Guidelines

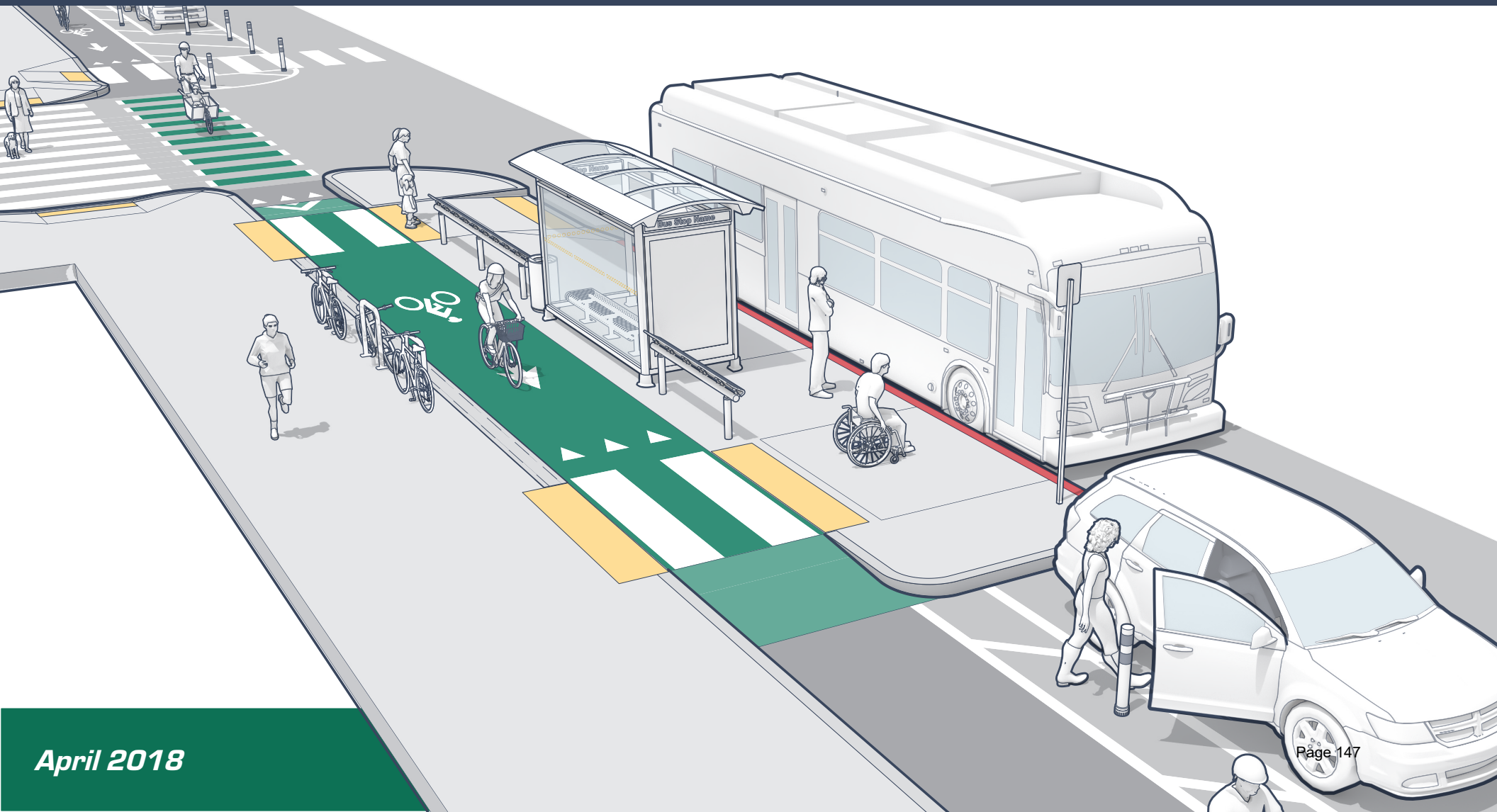
[21] https://www.cityofberkeley.info/Clerk/City_Council/2018/12_Dec/Documents/2018-12-06_WS_Item_01_Climate_Action_Plan_Update_pdf.aspx

[22] https://www.gao.gov/products/gao-12-811

[23] https://berkeleyca.gov/sites/default/files/documents/2020%20Pedestrian%20Plan%20Appendix%20E%20%28adopted%29.pdf

AC TRANSIT

Multimodal Corridor Guidelines



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1.0 Guide Overview

Minneapolis, MN

Introduction

The AC Transit Multimodal Corridor Guidelines was developed to provide clear design standards for a range of typical roadway conditions to help ensure efficient transit operations, accommodate the needs of bicyclists, and facilitate safe access to and from bus stops for AC Transit passengers. This document offers guidance on design elements of bus stops adjacent to bicycle infrastructure. It is organized around five different typologies that vary based on the type of bicycle facility being considered and its location with respect to the curb, parking lane, and moving traffic. Ultimately, this guide will help create a more predictable, safe, and uniform experience for bus patrons, drivers, bicyclists, and pedestrians as they travel through the jurisdictions that comprise the Alameda-Contra Costa Transit District.

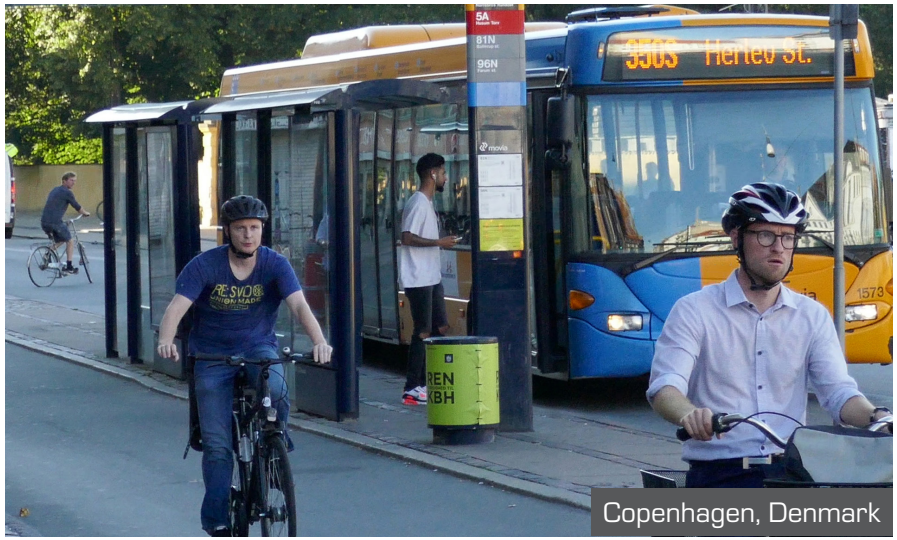
1.1 Goals of the Guide

A. Purpose

This guide has been developed to support the planning and design of bicycle facilities that will complement AC Transit's bus operations. AC Transit has set a goal to improve travel times and reliability on routes throughout its service area, especially on high-ridership corridors. The agency also seeks to promote safe pedestrian environments around its bus stops. This guide will help to establish a basis for collaboration on multimodal corridor projects with local jurisdiction staff and other stakeholders within the AC Transit service area. The guide draws from local, state, and national best practices guidance for multimodal corridor facilities while allowing for design flexibility to provide context-sensitive solutions.

The guide will address the following:

- **Americans with Disabilities Act (ADA) requirements for bus stop access, bus boarding, and sidewalk clearance outlined in the Designing with Transit handbook**
- **Spacing needs at bus stops for buses entering/exiting and clearance from crosswalks outlined in the Designing with Transit handbook**
- **Complementary designs for transit and bicycle facilities to ensure projects are integrated from the outset**
- **AC Transit's preference for in-lane bus stops and far-side bus stops in most scenarios**
- **Corridor typologies that reflect the various types of places present in the AC Transit service area**
- **Best practices for transit operations and accommodations for transit customers and bicyclists in existing designs and for innovative facilities such as separated bike lanes**
- **Methods to reduce conflicts among bicyclists, buses, and pedestrians to ensure safety while maintaining efficient operations**



Copenhagen, Denmark

- **Guidance for designing bicycle facilities to increase bicyclist comfort and encourage more people of all ages and abilities to ride bicycles**

The guide serves as AC Transit's official resource for planning and designing bus stops when accommodating bicycle facilities in transit corridors. The guide is intended to provide additional design guidance that supports existing planning and policy guidance published by the District. Therefore, this document should be used in conjunction with the Designing with Transit handbook and other approved policies or guidelines.

AC Transit hopes that this guide will serve as both an internal and external resource for local jurisdiction staff and developers when planning multimodal facilities and Complete Streets projects in the AC Transit service area. Complete Streets are generally defined as roadways built to enable safe travel for pedestrians, bicyclists, transit riders, and motorists. AC Transit will prioritize project support for projects that incorporate these design elements. These guidelines are a mechanism for AC Transit to clarify its roadway and curbside needs to stakeholders with the goal of streamlining the process of designing streets that support all modes.

B. Project Background

Multimodal corridors are major transportation facilities which accommodate auto, bus, bicycle and pedestrian travel. These corridors provide for travel across town and connect with the regional transportation system. Many cities and agencies in AC Transit's service area are expanding the reach of their multimodal corridors by designing and building innovative bicycle facilities along roadways. Many of these new bicycle facilities are built as Complete Streets projects which seek to enhance alternative modes of transportation, including bicycling, transit, and walking.

For cyclists, these new facilities can reduce the stress of riding a bicycle by providing physical separation from moving vehicles. However, there is an opportunity for Complete Streets designs to better address traditional bus transit operations. In the highly-constrained rights-of-way in Alameda and Contra Costa Counties, facilities such as separated bikeways, parking-protected bike lanes, or conventional bike lanes require reallocation of roadway space. This reallocation can be achieved by relocating or eliminating on-street parking and/or narrowing, realigning, or eliminating traffic lanes. In some cases, these changes have shifted the travel lanes used by buses further from the curbside where bus stops are commonly located, creating challenging and time-consuming maneuvers for bus operators to pull in and out of traffic. Furthermore, the roadway configuration can induce buses to move in and out of bicyclists' path of travel, which affects both bicyclist safety and bus operations (often referred to as a "leap-frogging" effect). With rates of bicycling increasing and jurisdictions rapidly constructing bicycle infrastructure, minimizing conflicts between bicycle and bus operations is critical to the success of these bikeway facilities. Efficiently managing and reallocating roadway space for these specific users will benefit all people using the streets.

Berkeley, CA

Among many considerations, a multimodal corridor should include bicycle facilities that do not impinge on overall bus travel speeds, on-time performance, or safety. Bus stop designs can separate bicyclists from buses by routing bicyclists behind bus stops to avoid bus-bicyclist conflicts. Also, restricting motor vehicle turning movements, a component of some bicycle facility designs, can reduce delay to buses by minimizing motor vehicle conflicts and queues. Bicycle facility projects may also restrict on-street parking in select locations or along entire blocks, which could reduce the likelihood of cars encroaching into bus stops.

AC Transit recognizes that healthy communities require safe pedestrian and bicycle facilities and effective bus services, often in the same corridors. The Bay Area needs regionally-focused guidance that reflects current best practices in reducing conflicts at bus stops and along corridors, promoting pedestrian and bicyclist safety in coordination with bus operations, maintaining or improving transit operations, providing travel time predictability, and recognizing the local context where bicyclists and buses share roadway space. AC Transit's Multimodal Corridor Guidelines addresses this gap in guidance in multimodal corridor design by offering templates for bicycle facilities that are compatible with high-quality bus transit service.

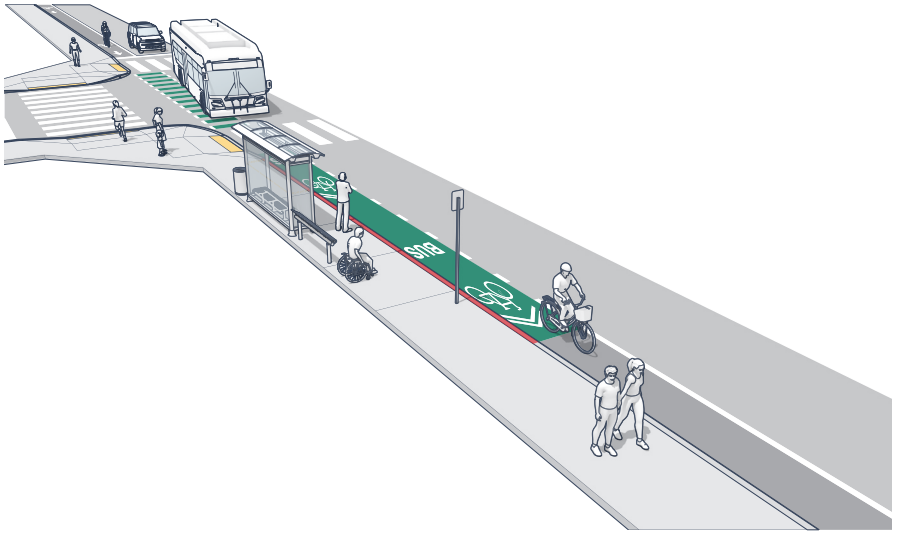
1.2 Guide Outline

The Multimodal Corridor Guidelines document is not a regulatory document. While much of the design guidance presented here represents best practices as published and endorsed by State and national agencies, the practices do not necessarily represent the adopted standards of these agencies. Therefore, users of these Guidelines should also consult regulatory standards such as the Caltrans *Highway Design Manual*[1] (for State facilities), the California *Manual on Uniform Traffic Control Devices*[2] (for State and local facilities), and any adopted local street design standards, to identify where design exceptions may apply.

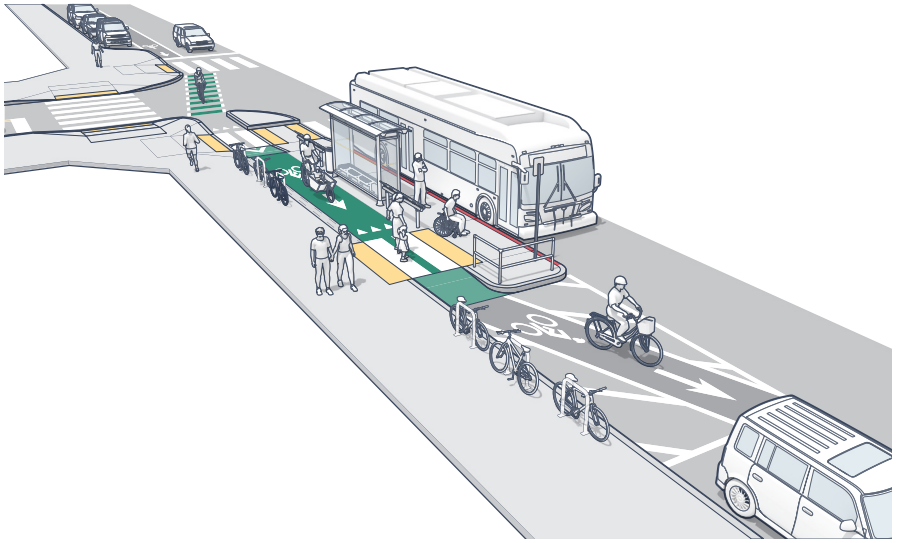
The guide begins with a discussion of general bus stop design elements related to stop spacing, location, design, and dimensions. A list of existing guidelines that may be referenced in conjunction with the Multimodal Corridor Guidelines is also presented.

Next, the guide presents five different bus stop typologies. These typologies vary based on the type of existing or proposed bicycle facility being located at the bus stop with respect to the curb, parking lane, and moving traffic. These bus stop typologies represent common contexts in the AC Transit service area. The five bus stop typologies are:

Typology 1
Class II Bicycle Facility between the Curb and a General Traffic Lane



Typology 2
Class II Bicycle Facility between Curbside Parking Lane and General Traffic Lane



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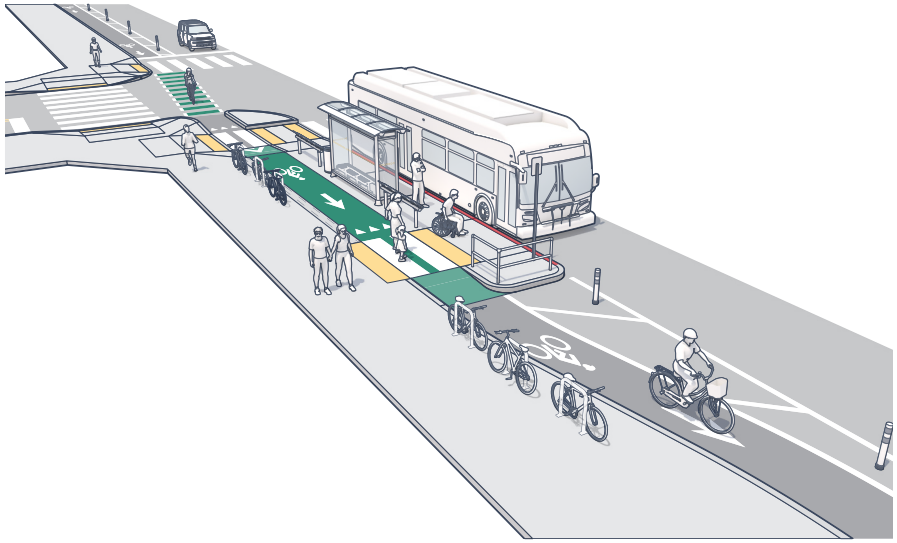
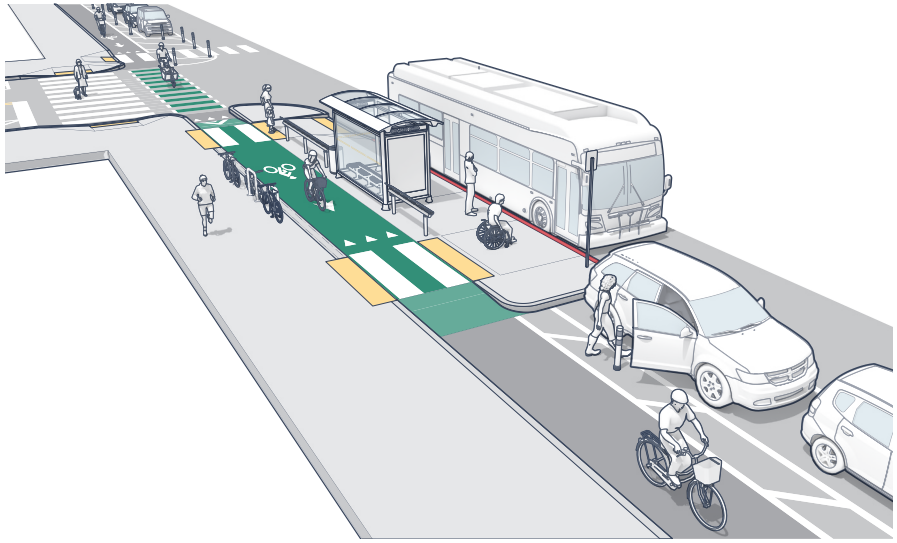
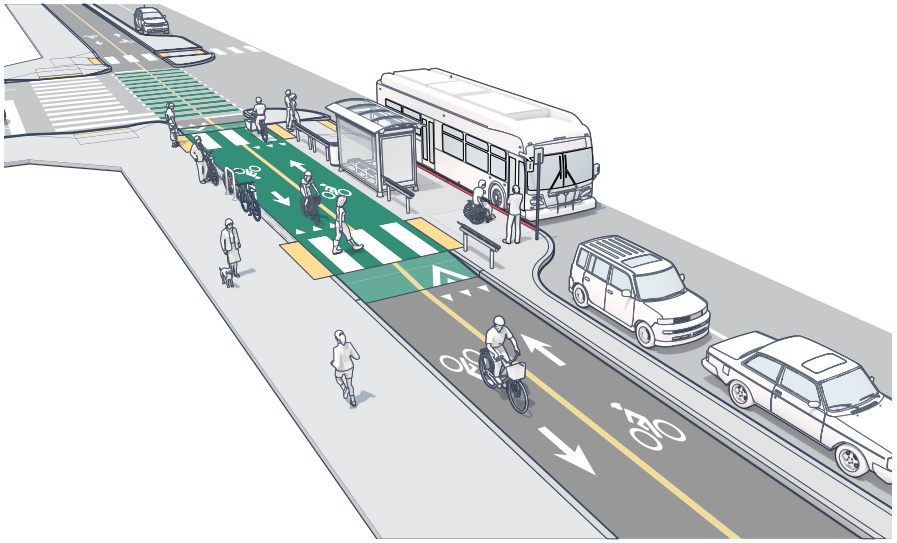
Typology 3
Class IV Bicycle Facility (Separated Bikeway) between the Curb and a General Traffic Lane



Typology 4
Class IV Bicycle Facility (Separated Bikeway) between the Curb and a Parking Lane



Typology 5
Class IV Bicycle Facility (Two-way Separated Bikeway) between the Curb and a Parking Lane



The guide concludes with a discussion on selecting the appropriate bus stop typology. Five guiding principles are presented to help jurisdictions understand the factors that should influence bus stop design and the relationships between these factors.

2.0 General Design Elements

Plainville, CT

The Guide supplements existing engineering practices and requirements to meet the goals of Complete Streets policies in the jurisdictions served by AC Transit. Design guidelines, standards, and other policies on Complete Streets, transit stops, and bikeways, have been published by local and national entities. In implementing the Guidelines, local agencies should consider any supporting documentation required to address existing local and State design standards. Ultimately, local agencies must evaluate, approve, and document design decisions.

Existing conditions in urban environments can be complex; design treatments must be tailored to the conditions present in individual contexts. Good engineering judgment based on comprehensive knowledge of multimodal transportation design, with special consideration to bicyclists, should be part of any multimodal design. Decisions should be thoroughly documented.

The following section (2.1) provides a summary of existing design guidelines that can be referenced when making planning and design decisions about local streets and roads. These resources provide a much wider breadth of information on designing Complete Streets, which fall outside the localized scope of this guidebook. Section 2.2 summarizes key elements of bus stop design, as they relate to the five bus stop typologies presented in this Guide.

2.1 Existing Guidelines

The following design guidelines, prepared by national and local bodies, are a selection of resources which closely relate to the Guide. These resources may be referenced in conjunction with the Guide when making planning and design decisions related to Complete Streets, bikeways, and transit.

AC Transit *Bus Stop Policy*

The AC Transit *Bus Stop Policy*[3] outlines the District's standards for bus stop spacing, bus stop location, bus stop enforcement, and bus stop installation or removal. Some of these policies are reiterated in the Guide.

AC Transit *Designing with Transit*

The *Designing with Transit*[4] handbook supports planning that is centered on transit access. The handbook is also intended to encourage multimodal transportation planning: planning and engineering which supports transit, walking, and bicycling, not just automobiles. The handbook is particularly focused on the often-overlooked needs and potential of bus transit, the most widely-used mode of transit. It outlines AC Transit's analysis of how the East Bay can be rebuilt in a more transit-friendly manner and aims to provide practical guidance about how these can be achieved through land use planning, development of pedestrian facilities, and traffic engineering.

Alameda CTC *Central County Complete Streets Design Guidelines*

The Alameda *Central County Complete Streets Design Guidelines*[5] document helps ensure that Central Alameda County street designs consider the full range of users on every street and accommodate all users wherever possible. While the goal of these design guidelines is to help staff from the three Central Alameda County jurisdictions (San Leandro, Hayward, and Alameda County) clearly understand how to implement Complete Streets for each street type, for different modal priorities, and for varying contexts, the design guidance provided can be applied by jurisdictions throughout Alameda and Contra Costa counties. The *Central County Complete Streets Design Guidelines* build on the street typology developed as part of the Alameda County Transportation Commission (Alameda CTC) Multimodal Arterial Plan (MAP).

Caltrans *Highway Design Manual*

Caltrans encourages local agencies to develop designs that help ensure the needs of non-motorized users in all products and project development activities, including programming, planning, construction, maintenance, and operations.

Design guidance for bikeway projects is provided in Chapters 100, 200, 300, and 1000 of the Caltrans *Highway Design Manual*. Alternatives to bikeway design guidance must meet the criteria outlined in Section 891 of the California Streets and Highways Code.

Projects within State right-of-way must refer to Caltrans standards and guidance, including but not limited to:

- **Caltrans *Highway Design Manual***
- **Design Information Bulletin, Separated Bikeways**
- **Design Information Bulletin, Caltrans ADA standards**

AASHTO *Guide for Development of Bicycle Facilities*

The AASHTO *Guide for the Development of Bicycle Facilities*[6] is the primary national reference for the planning and design of on-street bikeways and shared use paths. This guide represents AASHTO policy on bikeway planning and design, and addresses network planning principles, dimensions and treatments for bikeway design, and transitions between on-street bikeways and shared use paths. State DOTs and local jurisdictions often refer to this document when planning and designing bicycle facilities.

NACTO *Urban Street Design Guide*

A blueprint for designing 21st century streets, the NACTO *Urban Street Design Guide*[7] provides a toolbox and tactics for cities to use to make streets safer, more livable, and more economically vibrant. The guide outlines both a clear vision for Complete Streets and a basic road map for how to bring them to fruition. The guide focuses on the design of city streets and public spaces, emphasizing city street design as a unique practice with its own set of design goals, parameters, and tools.

NACTO *Transit Street Design Guide*

The NACTO *Transit Street Design Guide*[8] provides design guidance for the development of transit facilities on city streets, and for the design and engineering of city streets to prioritize transit, improve transit service quality, and support other goals related to transit. The guide sets a new vision for how cities can harness the immense potential of transit to create active and efficient streets in neighborhoods and downtowns alike.

NACTO *Urban Bikeway Design Guide*

The purpose of the NACTO *Urban Bikeway Design Guide*[9] is to provide cities with state-of-the-practice solutions that can help create Complete Streets that are safe and comfortable for bicyclists. The *Urban Bikeway Design Guide* addresses treatments not directly referenced in the AASHTO *Guide for the Development of Bicycle Facilities*, although they are virtually all (with two exceptions) permitted under the *Manual on Uniform Traffic Control Devices* (MUTCD)[10]. The Federal Highway Administration has posted information regarding MUTCD approval status of all the bicycle-related treatments in this guide.

2.2 Bus Stop Design

It is AC Transit's policy to encourage counties, cities, and developers to coordinate with AC Transit when locating bus stops on roadways. However, AC Transit does not own or maintain the bus stop areas, and the local jurisdiction can make the ultimate decision to site the bus stop.

When properly located, adequately designed, and effectively enforced, bus stops can improve service without disrupting general traffic flow. Decisions regarding bus stop spacing and location call for a careful analysis of passenger service requirements (demand, convenience, and safety), the type of bus service provided (local, rapid, Transbay/express, or flexible service/community circulator), and the interaction of stopped buses with general traffic flow. The following sections summarize general bus stop design elements.

A. Bus Stop Spacing

Bus stops are designated locations for bus passengers to board and alight. Therefore, bus stops must be conveniently located to enable easy passenger access. Convenience and speed must be balanced in determining appropriate bus stop placement, as too many bus stops can slow down travel times. Outside of downtown areas, the ideal spacing of bus stops is 1,000 feet apart. This target has been established with the goal of increasing travel speed for AC Transit buses, and means that some existing stops may be eliminated. Passenger usage of bus stops is an important factor when considering bus stop placement or removal.

Bus stops should be close enough that passengers can walk to them easily, but far enough apart to help buses move quickly. Table 1 provides general guidelines for bus stop spacing. Some discretion may be applied when balancing AC Transit's interest in improving service and preserving traffic flow with consideration of passenger needs.

Service Type	Spacing (feet)	Explanation
Local (trunk, feeder, etc.)	800-1,300 feet	Stops may be located more closely than listed based on trip attractors, stop activity or demand, transfer points or other land uses that may warrant it.
Rapid	1,700-5,000 feet	Stops may be located more closely than listed based on trip attractors, stop activity or demand, transfer points or other land uses that may warrant it provided that the increased stops do not cause operational delays
Transbay/ Express	1,000-2,600 feet	Service may use local stops as necessary to provide geographic coverage and to minimize delay for longer-distance passengers.
Flexible or Community Circulator	TBD	Stops would be determined on a route by route basis and would consider trip attractors, transfer areas or other factors.

Table 1: AC Transit Bus Stop Spacing Guidelines (AC Transit Policy No. 508)

Table 1 lists AC Transit's intended bus stop spacing for the four different Service Types. It is AC Transit's preference to use the maximum bus stop spacing unless superseded by other determining factors such as topography (hills), limited access areas (freeways, bridges, airports), surrounding attractors, and transfer points. As a result, existing AC Transit routes may have stops that do not conform to the spacing criteria in this policy.

B. Bus Stop Siting

The optimal stop location should improve or minimize impact to bus travel times, maximize reliability and route efficiency, and be safe and accessible, while maintaining or enhancing bus passenger access to destinations and amenities. The siting of a bus stop not only impacts transit passengers, but also motorists, pedestrians, and bicyclists near the stop.

Multiple factors are used to determine the appropriate siting of a bus stop including:

Demographics and Land Use

Ridership – Assess both existing and projected boardings and alightings, as well as the ridership profile (for example, a large proportion of seniors or students) at the stop. Low-ridership stops, particularly those near higher-ridership stops, may be considered for consolidation or removal. The threshold for a low-ridership stop will be determined by comparing its ridership to that at other stops along the route, or by comparing with a similar bus route, while also considering the frequency of service provided at the stop.

Existing and Future Land Uses – Note sensitive land uses, including medical facilities, municipal buildings, senior housing, and major transit trip generators such as shopping malls, schools, and dense commercial or residential complexes. Stop locations may be adjusted or added to provide better access to passenger origins and destinations, although this determination will also be dependent on pedestrian connections and conditions.


Seattle, WA

Existing Service and Passenger Amenities

Bus Route Connections – Consideration should be given to maintaining and/or improving bus stops serving parallel or intersecting bus routes. Under certain circumstances, the relocation of an existing bus stop may be necessary, and doing so may increase the access distance for passengers transferring between intersecting routes. Priority should be given to relocating the stop in close proximity of its former location, thereby minimizing the additional distance a transferring passenger would have to walk between stops.

Passenger Amenities – Evaluate opportunities to add amenities to new or existing stops and maintain or upgrade amenities at existing stops. Many bus stop amenities are justified by high ridership and a desire to improve passenger comfort. Implementation of amenities such as lighting or real-time arrival displays may require a nearby power source or solar panels.

Pedestrian Environment

Connections and Condition – Sidewalks immediately at the stop and those providing access to the stop and surrounding area are an important consideration. When choosing a site to establish or relocate a stop, choose the widest, most level sidewalk near the desired location. Stops should also be located to maximize ridership. A designer will need to balance the demands of pedestrian connections and bus ridership.

Crossings – Where bus stops are located near pedestrian crossings, the crossing should be marked and preferably located behind the stop, so that passengers are encouraged to cross behind the bus. Ideally, crossings should be signalized, especially in high-traffic and high-speed environments. Intersections and at-grade driveway crossings should have ADA-compliant curb ramps.

Safety and Bus Stop Visibility

Lighting – Lighting should be provided at stops for the safety and security of bus patrons. Bus stop lighting simultaneously offers bus operators better visibility of waiting passengers. Lighting can be cast by pedestrian-scale light fixtures, lighted shelters, overhead street lights, or brightly-lit signs.

Sight Distance – Consider sight distance for transit passengers, bus operators, and other motorists. Avoid obstructions to sightlines between bus operators and passengers such as trees, signs, buildings, shelters, and topography.

For optimal sight distance between bus operators and other motorists, bus stops should not be located over the crest of a hill, immediately in or after a roadway curve to the right, or at locations that might reduce visibility between buses and other vehicles.

Speed Limit (MPH)	Sight Distance (feet)
15	200
20	265
25	335
30	400
35	465
40	530
45	600
50	665

Table 2: Sight Distance for Siting Bus Stops

Adapted from AASHTO 2016 and AASHTO 2011.
Note: Assume a 9-second time gap is required for buses to re-enter traffic without undue interference to traffic flow.

Approaching vehicles need to have adequate visibility of stopped buses and buses entering or exiting a stop, particularly when stops are located in the travel lane. Similarly, bus drivers need to be able to see vehicles approaching from behind when exiting a stop. Table 2 provides the recommended sight distance for bus stops, given the posted speed limit. At a minimum, bus stops should be sited to meet the minimum stopping sight distance provided by AASHTO.

It is not recommended to place stops where there is inadequate sight distance, and existing stops with poor visibility should be considered for relocation or removal. In addition, stopped buses can impact sight distance for vehicles exiting side streets. Depending on the location of the stop relative to an intersection, different vehicular turn movements can be affected.

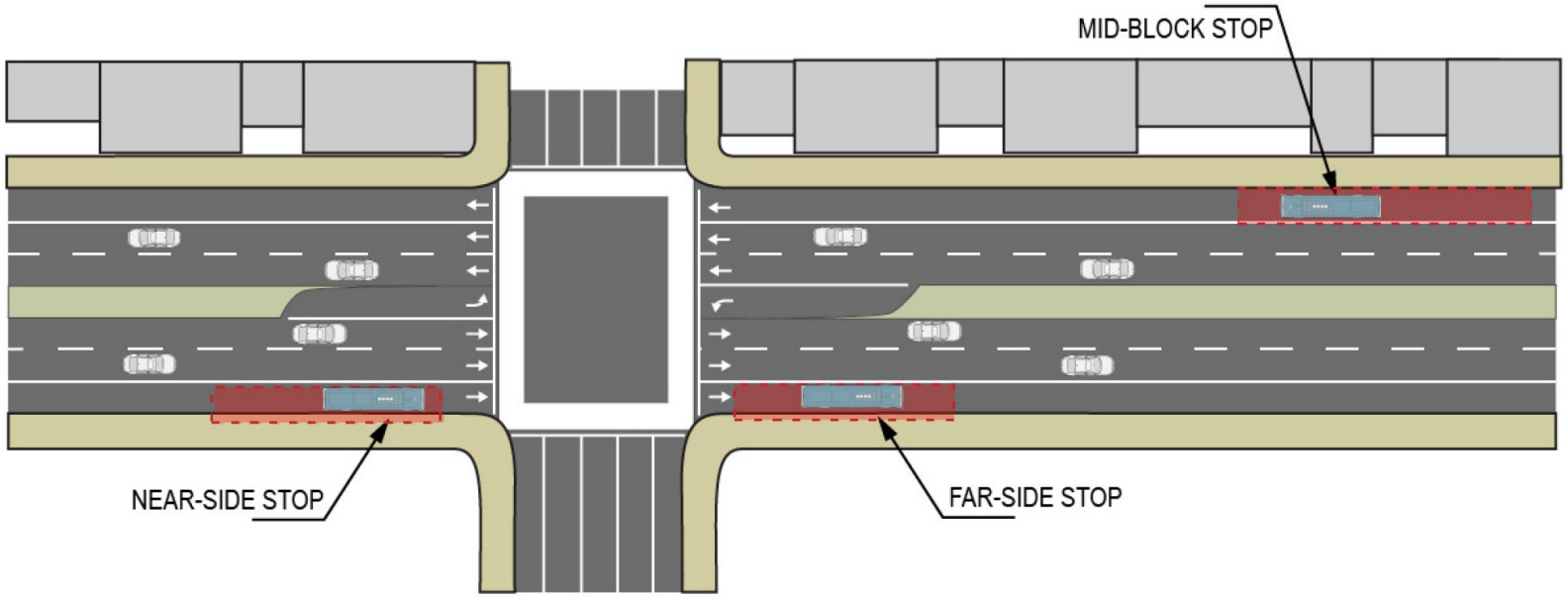
C. Spatial Location of Bus Stop

The specific location of a bus stop within the right-of-way is important for bus operations. A good bus stop location is one that is operationally safe and efficient for buses and is safe and convenient for passengers. The stop should be located where it causes minimal interference with pedestrian movements and other traffic, including bicycle traffic.

On-street bus stops are usually located along the street curb for direct safe passenger access to and from the sidewalk and waiting areas. Stops may be located on the far side of an intersection, the near side of the intersection, or at a point mid-block.

Far-side stops are stops located after an intersection in the direction of travel. They are generally preferred because they reduce conflicts between right-turning vehicles and stopped buses, eliminate sight-distance deficiencies on approaches to an intersection, and encourage pedestrian crossing at the rear of the bus. Additionally, since Rapid and BRT routes use transit signal priority to expedite travel across an intersection, far-side stops are integral to Rapid and BRT route implementation. Also, far-side stops allow passengers to cross the street from multiple directions to access the bus boarding area, due to its location on the corner of the intersection.

Near-side stops are stops located before an intersection in the direction of travel. They are acceptable when a far-side stop is deemed unsafe or impractical. They may also be used when a stop serves multiple routes that go in different directions after the downstream intersection. Like far-side stops, the stop's location allows passengers multiple crossing locations to access the bus boarding area, due to the location on the intersection corner.



Rhode Island bus Stop Design Guide. Providence: Rhode Island Public Transit Authority, 2017.[11]

Mid-block stops are stops that are not located in the general vicinity of an intersection. They are typically considered in special cases and are to be used only when no alternative is available. AC Transit and the jurisdiction where the bus stop will be located must approve any mid-block bus stops. This stop location generally has poor access due to the lack of formal street crossings near the stop, sometimes inducing passengers to reach the bus boarding area by crossing at undesignated locations.

In the typologies presented in Section 3, the diagrams feature far-side stops, as this is the stop location preferred by AC Transit. These typologies can be adapted to near-side or mid-block stops, if necessary.

D. Bus Stop Design

Floating bus stops are bus stops where the boarding platform is separated from the sidewalk by a bike lane. The bike lane is brought behind the bus stop to eliminate any potential conflict points between buses pulling into the stop and cyclists in the bike lane.

The appropriate width of a floating bus stop depends on many factors, including the width of travel lanes, width of bike lanes, and need for sidewalk space. A minimum width of eight feet is required for floating bus stops to ensure ADA-compliant access. However, where space permits, particularly for stops with large passenger volumes, a wider floating bus stop based on preferred dimensions may be designed.

The floating bus stop functions similarly to a bus bulb in that it allows the bus to stop in the travel lane. This design saves travel time for the bus by eliminating the need for the bus driver to merge in and out of traffic. The floating bus stop also provides a waiting area for passengers, and can relieve sidewalk congestion. This design may also save linear space compared to a traditional pull out bus stop, because when buses stop in the travel lane, pull-in or pull-out taper space is no longer required for buses to exit or enter the travel lane.

Vancouver, Canada

It is often a concern that buses stopping in traffic to serve a bus stop will slow traffic, but Federal Highway Administration studies show that stopping in the lane may actually increase traffic speeds on roadways with two travel lanes per direction (Kay Fitzpatrick, Kevin M. Hall, Stephen Farnsworth, and Melisa D. Finley: TCRP Report 65: Evaluation of Bus Bulbs (Washington, D.C.: Transportation Research Board, 2001), 2.).[12] Stopping in the travel lane reduces the phenomenon of bus drivers stopping with the bus protruding into traffic, thereby regularizing traffic flow. Typically, floating bus stops should not be installed on high-speed roads where the average travel speed is 35 miles per hour or greater, as stopping in the travel lane in such conditions may be unsafe.

On roadways with a single travel lane in one or both directions, local conditions, including vehicle volume and bus stop activity, should inform the use of floating bus stops. Floating bus stops may still cause the bus to partially block the travel lane when the bus boards and alights passengers. Therefore, motorists will need to wait for the bus to finish loading before they can progress. At a far-side stop, this wait time could cause cars to queue into the intersection and potentially block the intersection when the signal phase changes. Motorists may also try to divert around a stopped bus by entering the opposite-direction travel lane, which could be a safety concern.

AC Transit prefers that bus pullouts (turnouts) are avoided. Bus pullouts are generally detrimental to bus operations under most circumstances found in the AC Transit district and should be avoided. At a pullout, the roadway is widened just at the bus stop to channel the bus into a special curb lane. The bus then stops and serves the stop outside the travel lanes. Pullouts are generally not desirable for bus operations because they require the bus exit the traffic stream. Leaving the travel lanes can slow bus operations, particularly when the bus seeks to reenter traffic. Pullouts are generally designed for the convenience of other vehicles, not buses. Further, on Complete Street roadways with bicycle lanes, a bus pullout creates conflict with cyclists by requiring buses to fully cross the bike lane to pull in and out of the bus stop, as illustrated in the photo below.

Special cases where pullouts may be appropriate are unusually narrow roadways, such as those consisting of one very narrow travel lane (without a parking lane) in each direction. High-speed roadways without parking lanes may also be appropriate for pullouts. Further, there might be cases where bus pullouts could be useful for schedule adherence or layovers. However, these situations should be analyzed on a case by case basis. Finally, Transit Cooperative Research Program (TCRP) report 65 suggests pullouts for roads where traffic speeds are 40 mph and above.

Portland, OR

E. Bus Stop Dimensions

The required length of a bus stop is made up of the following components. Depending on the configuration of the bus stop (i.e. in lane vs. pull-out stop, near-side stop vs. far-side stop), not all elements will be present. Therefore, the total space required for a bus stop will be informed by the design and placement of the stop.

Bus Stop – total distance/area required for a bus to safely and efficiently pull into a stop, stop and load/unload passengers, and pull away from the stop and return to the travel lane. (Pull-in Taper + Platform + Pull-out Taper)

Platform – the area where the bus comes to a complete stop against the curb and from/to which passengers board and alight.

Pull-in Taper – the distance/area required for a bus to decelerate and exit the travel lane to reach the bus platform.

Pull-out Taper – the distance/area required for a bus to leave the bus platform, accelerate, and reenter the traffic stream.

Clearance from Crosswalk – the distance/area required from the front or rear of the bus and the adjacent crosswalk to ensure pedestrians and drivers have adequate sightlines.

Bus Stop Length

In addition to the selection of an appropriate location, there are other important requirements for bus stops. The required length of a bus stop is determined by the type of stop, stop location, stop amenities, roadway speed limit, and the number and type of buses expected to use the stop. There must be enough curbside space to enable bus operators to pull the bus parallel to the curb, open the doors onto the sidewalk, and pull away from the stop into the travel lane. Providing bus stops with sufficient length also prevents buses from straddling crosswalks, which can block access for pedestrians.

Required bus stop lengths vary depending on several factors:

- **Location of the stop relative to the intersection (far-side, near-side, or mid-block)**
- **Stop configuration**
- **Approach of bus turning movement**
- **Roadway speed, and thereby deceleration and acceleration space**
- **Presence of crosswalks, on-street parking, and driveways**
- **Location of landscaping and street furniture along the sidewalk edge**
- **Number of buses serving and/or laying over at the stop**

Because bus stop length will vary depending on the type and design of a specific bus stop, each typology presented in Chapter 4 includes a table detailing the dimensions required for that bus stop design. General design principles are described in the next subsections.

For buses that stop in the travel lane, the only consideration for the overall bus stop length is the platform itself, since no separate entering and exiting distance is required. The platform length is primarily determined by the size of the bus used on the route and the number of buses servicing the stop at peak hours.

At stops where the bus must pull out of the travel lane, the length required for a bus stop consists of three elements – the pull-in taper, platform/boarding length, and the pull-out taper. The stop must be long enough so that buses can not only stop there, but also get into and out of the stop easily. Adequate-length bus stops make it more likely that the bus driver will pull completely into the stop, rather than leave the back of the bus protruding into the travel lane. Because stopping flush with the curb is key for passengers with mobility impairments, providing a sufficiently long stop is an ADA issue.

Pull-In/Pull-Out Taper

Pull-in/pull-out taper applies only to curbside stops where the buses pull out of the travel lane. The length required for pull-in or pull-out taper is determined from the posted speed limit or prevailing speed, whichever is greater. If prevailing speed data cannot be collected, the posted speed limit should be used.

The stop location also affects the pull-in or pull-out taper distance required. Far-side stops do not require any additional pull-in taper because the bus can use the intersection to decelerate and pull into the stop. Conversely, for near-side stops, no pull-out taper is required because the intersection provides space to accelerate and merge back into the travel lane.

Platform Length

The length required for the platform is primarily a function of the type of bus the stop is designed to serve and the number of buses the stop must serve simultaneously. At a minimum, all AC Transit stops should

be designed to serve a 40-ft bus. On routes where articulated buses are used, stops should be designed to serve 60-ft buses. The length of a platform should increase if it is determined that the stop must accommodate multiple buses simultaneously. The Transportation Research Board provides guidance for determining when stops should be designed to accommodate multiple buses, based on the number of buses per hour, average dwell time, and adjacent intersection signal cycle times.

Stop Amenities

Stop amenities include bus shelters, benches/seating, wayfinding, fare vending machines, bike parking, trees/landscaping, trash cans, lighting, and other amenities that are located within the bus platform area. Stop amenities can help attract customers and increase passenger comfort, improve operational efficiencies, and foster local civic pride and economic development.

The presence of stop amenities, particularly bus shelters or other large amenities, may impact the required platform length. Bus shelters and other large stop amenities restrict the space available for passenger circulation and movement and may require that the platform length be increased. The ADA requires bus stop boarding and alighting areas at the front door landing area, and an accessible route between the landing area, sidewalk, and bus shelters. A clear zone at the first rear door is also required by AC Transit.

Crosswalk Clearance

For all far-side and near-side stops, clearance from the crosswalk is required for pedestrian safety. NACTO's guidelines recommend a minimum of 10 feet of clearance between the rear of the bus and the crosswalk at a far-side stop. With a near-side stop, a minimum of 10 feet of clearance between the front of the bus and the crosswalk is recommended.

F. Door Locations and ADA Access

AC Transit utilizes a variety of fleet types, including 30-ft, 40-ft, and 60-ft buses, which have two, three, or four doors, depending on the vehicle model. Landing areas and clear zones should be laid out to accommodate the bus fleet in operation. Landing areas and clear zones should be free of driveways, curb ramps, and obstructions such as utility poles, hydrants, and other street furniture. AC Transit's design guidelines recommend designing all stops with two door landing areas to accommodate the first two doors of all vehicles, regardless of vehicle length or model.

For the first door landing area, ADA guidelines require that a minimum width of 5 feet along the curb, and a minimum depth of 8 feet perpendicular to the curb, be provided at the landing area, to the extent feasible and within the control of the transit agency. The location of the landing area is primarily dependent on the siting of the stop relative to the intersection, and secondarily, on the availability of sidewalk space to accommodate an ADA-compliant landing area. The first door landing area should begin one foot behind the bus stop pole.

To accommodate rear door passenger activity, bus stops should also have a second door landing area. On AC Transit vehicles manufactured by Van Hool, the second door serves as the ADA-accessible ramp entrance. Therefore, providing a second landing zone is important to ensure that the stop is ADA-compliant. The second door landing area should be 11.5 feet wide along the curb, with a minimum depth of 8 feet perpendicular to the curb. The second door landing area should begin 12.5 feet behind the bus stop pole.

The critical path of travel for passengers at a bus stop is the connection between the landing area and the sidewalk and bus shelters. The ADA requires that there be an accessible route between these points. Sidewalks and bus shelters shall be connected to the landing area by an accessible route. This requirement means that a clear, unobstructed, ADA-compliant path of travel must be provided. AC Transit prefers a 4-foot wide path, although the ADA requires a minimum 3-foot wide path, which can be used in extenuating circumstances.

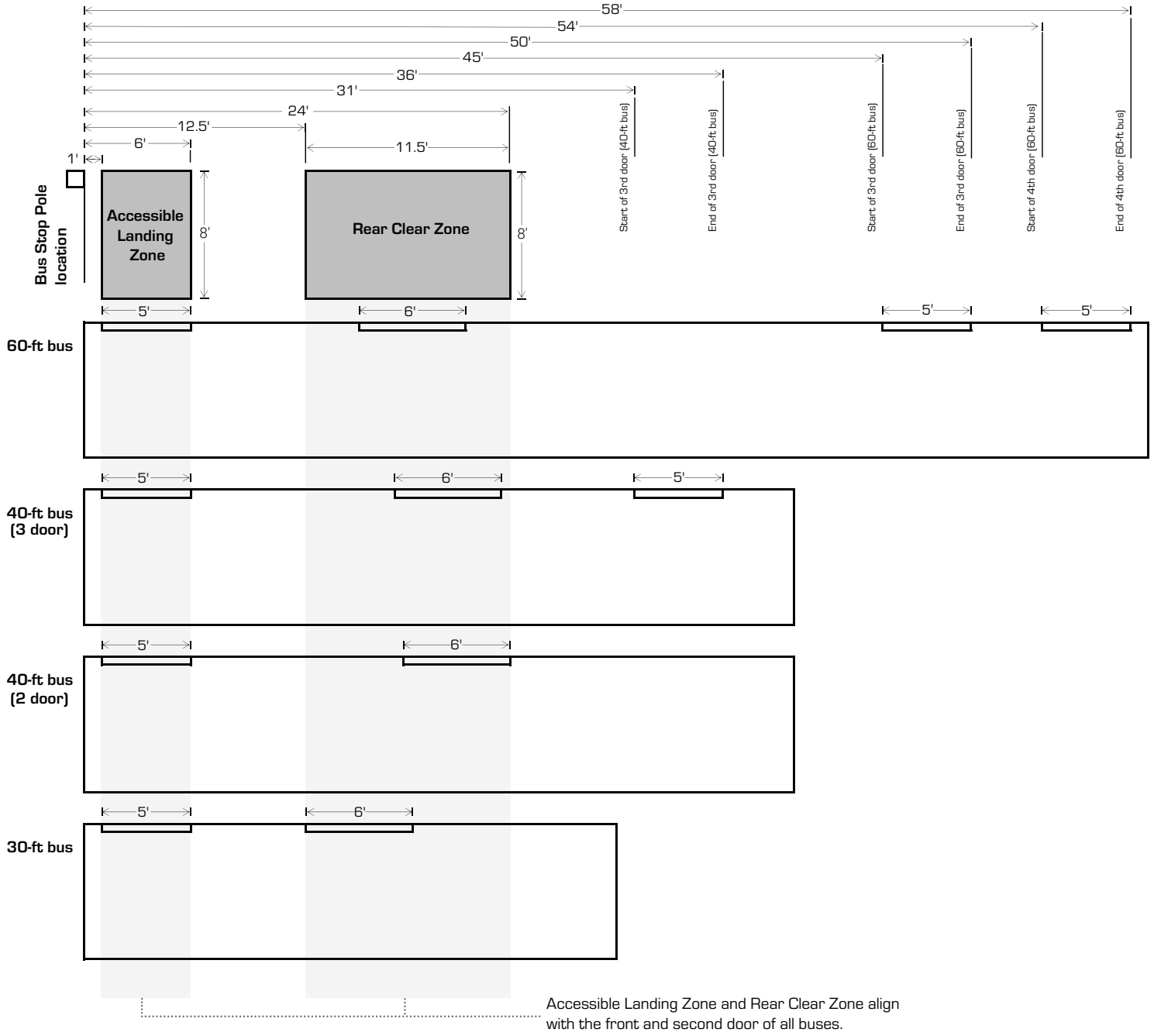


Exhibit 1: AC Transit Landing Area Dimensions of Common Bus Types

G. Bus Stop Pads

Bus pads are highly durable areas of the roadway surface at bus stops, usually constructed of concrete, that address the common issue of asphalt distortion at bus stops.

Conventional asphalt pavement is flexible, and can be moved by the force and heat generated by braking buses and trucks, leading to wave-shaped mounds along the length of a bus stop. This issue is pronounced at high-volume stops where dwelling buses further heat the roadway surface, as well as near-side stops in mixed-traffic lanes where trucks can add to wear.

Bus pads should be at least 8.5 feet wide to accommodate both wheels of a bus, but should be wider at locations without precision loading to provide consistent service when the bus does not pull fully to the curb. Bus pad length should be determined based on the length of the platform area.

At stops where the bus crosses a bike lane, the concrete bus pad should end at either the curbside edge of the bike lane or the outside edge of the bike lane (including its full width) to prevent the creation of a longitudinal joint within the bike lane. Bus pads should end before the crosswalk to prevent lateral or longitudinal pavement joints within the crosswalk. If a bus pad must be extended into the crosswalk, it should extend across the full width of the crosswalk to prevent joints between concrete and asphalt.

H. Curbs

The curb alongside the bus stop should be painted red to prevent cars from parking within the bus stop space or within the pull-in or pull-out zone that is required at traditional bus stops where buses must pull out of the travel lane. If cars are parked at a bus stop or within the pull-in or pull-out zone, then the bus will not be able to stop flush along the boarding platform which is inconvenient and dangerous for passengers, and can prevent bus ramps from being deployed, resulting in ADA accessibility issues. Curb height and design should be informed by local conditions or design standards.

I. Service Type and Level of Service

Finally, the service type and level of service provided on a route and/or corridor should be considered when determining the design of bus stops and prioritizing capital improvements. AC Transit has identified eight primary service types operated by the District. These are outlined in AC Transit Board Policy No. 550.[13]

Trunk Routes and Major Corridors – These are the services operating on corridors where residential densities are at least 20,000 residents per square mile (or comparable commercial densities). Routes in these corridors provide the backbone of the transit system; operate along the arterial streets and provide a high level of local and limited stop service. These routes have the highest priority for capital improvements.

Rapid - Provides limited stop service along a Trunk Route or Major Corridor featuring wide stop spacing, headway based schedules, transit signal priority and passenger amenities. Underlying local service contributes to aggregate service frequency.

Urban Secondary, Crosstowns and Feeder Routes – These are the routes operating in medium density corridors (10,000 – 20,000 residents per square mile or comparable commercial densities). These routes complement the trunk route network, providing a high level of local stop service. These corridors also are candidates for capital improvements to assist in bus operations.

Suburban Crosstowns and Feeder Routes – These are the routes operating in low density corridors (5,000 – 10,000 residents per square mile). These routes feed BART, park and ride lots, or other AC

Transit routes, or serve neighborhood circulation functions with a high level of service.

Low Density Routes – These are primarily routes operating in areas of very low density (fewer than 5,000 residents per square mile).

Community Flex Services – These are primarily routes operating in areas of very low density, again, fewer than 5,000 residents per square mile, that provide a more flexible operation than traditional fixed route service.

All-Nighter (Owl) Routes – These are the routes providing service between 12 midnight and 6 am. All-Nighter routes operate as a lifeline service during the "owl gap" period.

Transbay Routes – These are the routes providing service to downtown San Francisco via the Bay Bridge Corridor.

These service types form a hierarchy of service both in terms of service investment (annual service hours) and ridership. Therefore, AC Transit's policy directs staff to prioritize capital investments for service types with the highest levels of service and highest ridership. Additionally, because the service type classifications closely correspond with service frequency and ridership, they can be used to inform the bus stop design, dimensions, and amenities.

Table 3 outlines AC Transit's service types, span of service standards, and weekday peak frequency standards.

Service Type	Span of Service Standard	Weekday Peak Frequency Standard
Trunk and Major Corridors	19-24 hours daily	15-20 minutes
Rapid	14-16 hours daily	10-14 minutes
Urban Crosstown/ Feeder	14-16 hours daily	15-20 minutes
Suburban Crosstown / Feeder	14-16 hours daily	21-30 minutes
Very Low Density	14-16 hours daily	31-60 minutes
All-Nighter (Owl)	Owl gap period	31-60 minutes
Transbay	17-18 hours daily	21-30 minutes

Table 3: Span of Service and Weekday Peak Frequency Standards

Adapted from AC Transit Board Policy No. 550

3.0
Typology Design Considerations

Seattle, WA

Properly-placed design elements are critical to a positive overall experience for transit users. When reviewing individual bus stops and their context, designers must consider a wide range of issues that are unique to each location. In many transit corridors, the adjacent streetscape design elements may also contribute to the bus stop design. Due to constrained right-of-way, it is not feasible or practical to include all design elements at each bus stop location. The placement and use of design elements at bus stops should maximize safety, visibility, and comfort for all users. Designers are encouraged to consult with AC Transit or local guidance for additional design considerations.

3.1 General Guidance for Context Zones

For the purposes of this guide, establishing context zones simplifies the process of defining the roadway cross section along a corridor. Zones establish a foundation for designers to appropriately locate design elements tailored to the different uses expected of a roadway user. Exhibit 2 illustrates each zone with subsequent text describing the relationship between the zones and the design elements that commonly contribute to multimodal bus stop design.

Pedestrian Zone - This zone is generally reserved for pedestrian mobility for users of all ages and abilities to access pedestrian oriented destinations.

Furnishing Zone - This zone is generally reserved for seating, bicycle racks, street lights, parking pay stations, stormwater infrastructure, street trees, transit shelters, trash receptacles, in addition various utilities that support a multimodal environment. This zone can also be flexible and may vary between blocks and along a corridor.

Bus Stop Bypass Zone - This zone is generally reserved to route the bikeway around the rear of the bus stop between the furnishing zone and floating bus stop furnishing zone.

Bus Stop Furnishing Zone - This zone is generally reserved to function similar to the furnishing zone and may consist of seating, lean bar or railing, transit shelter, or vertical railings as space provides. The available width and length of the floating bus stop will determine the amount, type, and function of design elements placed in the floating bus stop furnishing zone.

Floating Bus Stop - This zone is generally reserved for users waiting in a dedicated space to access transit.

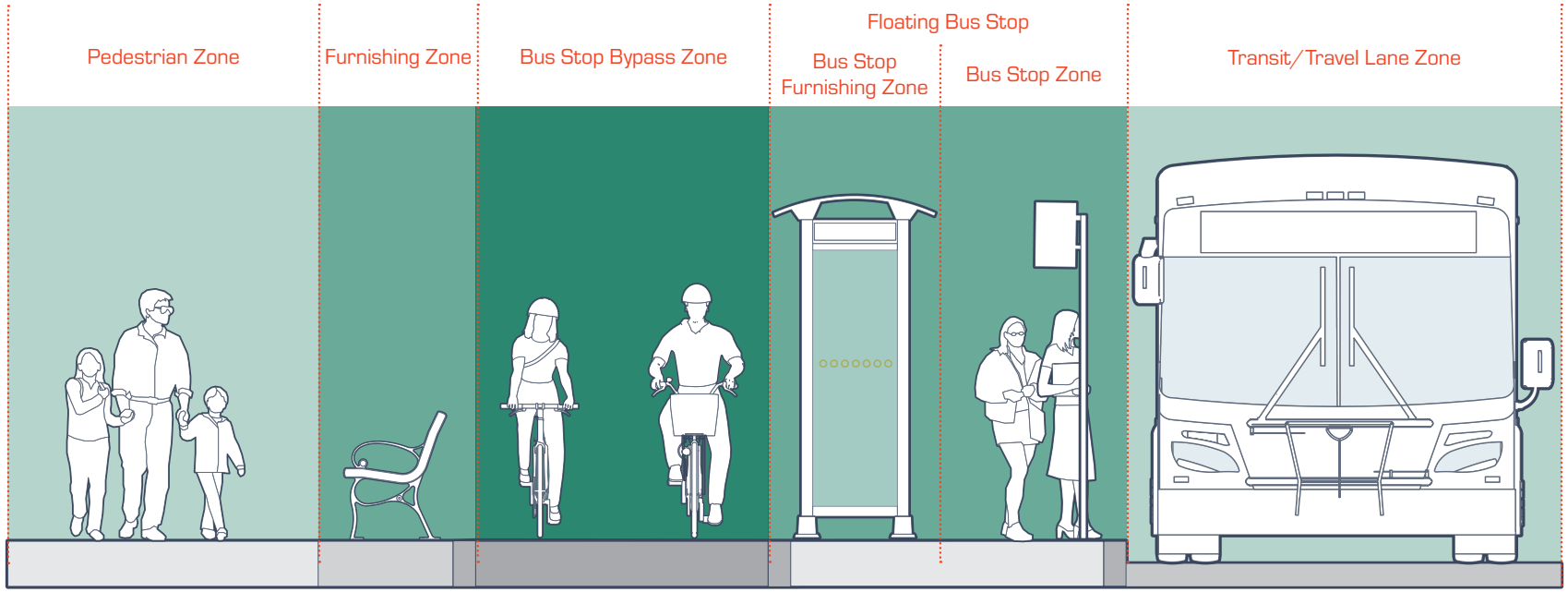


EXHIBIT 2: Context Zones

3.2 Design Elements

All bus stops should consider utilizing appropriate design elements to provide a safe, accessible, and high-quality transit experience. This section defines typical bus stop design elements either as standard, recommended, or optional. Standard design elements are typical of bus stops, bicycle facilities, pedestrian facilities, etc. Including recommended design elements should result in a high quality bus stop for all users. Design elements have been noted as optional to be sensitive to design preferences of jurisdictions.

Accessible Landing Pad (Furnishing/pedestrian zone or bus stop furnishing zone) – Standard

ADA guidelines require a minimum of 5 feet along the curb and a minimum depth of 8 feet perpendicular to the curb to be provided at the landing area. It should be a firm, stable surface, with a maximum 2% cross slope. The landing area should match the roadway running slope to the extent practicable and be parallel to the roadway.

Benches (Furnishing/pedestrian zone or bus stop furnishing zone) – Optional

Providing seating at bus stops is a pleasant amenity for transit users waiting for the bus. Benches may be stand-alone or integrated into a shelter. ADA does not provide guidance for outdoor benches, however the Proposed Guidelines for Pedestrian Facilities in the Public Right-of-Way (PROWAG) suggests that benches providing full back support and armrests better assist pedestrians with mobility impairments to sit and stand.

Vancouver, Canada

Bicycle Facility Elevation (Bus stop bypass zone) – Standard

Bicycle facilities may be provided at the same elevation with the sidewalk, at street level, or at an intermediate height with a 2- to 3-inch curb reveal between the sidewalk and street level. The appropriate elevation of the bicycle facility will often be based on known physical constraints or design feasibility. The advantages or disadvantages of these designs are discussed thoroughly in separated bike lane guidance. A designer should consult these references prior to choosing the appropriate bikeway elevation treatment.

Bicycle Racks (Furnishing zone or bus stop furnishing zone) – Recommended

Installing bicycle parking at bus stops increases a transit passenger's flexibility to park their bicycle and take transit. These decisions may be based on many external factors including distance, weather, convenience, and effort. This amenity improves first- and last-mile connections and can increase the desirability of combined bicycle and transit trips.

Furthermore, if the bus bicycle rack is at capacity, bicycle parking allows bicyclists to lock their bike if they choose. Bicycle racks should be placed outside of the path of travel at the bus stop and positioned so that no matter how a bicycle is locked, a one foot buffer from the bikeway and the edge of the locked bike will be maintained. Refer to the Association of Pedestrian and Bicycle Professionals (APBP) Bicycle Parking Guidelines for the appropriate type and placement of bike racks.

Essentials of Bike Parking: Selecting and Installing Bike Parking that Works. Association of Pedestrian & Bicycle Professionals. 2015.[14]

Bike Ramp (Bus stop bypass zone) – Standard

When the elevation of the bicycle facility changes at a floating bus stop, a smooth ramp transition should be provided to allow comfortable passage for bicyclists through the bus stop influence area.

Cambridge, MA

Bus Shelters (Furnishing zone or bus stop furnishing zone) – Optional

Shelters provide a safe, secure, and comfortable space for users waiting for their bus. Shelters offer protection from inclement weather, and, in some cases, include lighting, heating, and opportunities for additional seating. Transit information, including route numbers, timetables, and, in some cases, maps, may also be provided at shelters.

The design of shelters should be simple, functional, and easy to maintain. The size of shelters will largely depend upon the amount of available space at a bus stop location.

Bus Stop Pole (Furnishing zone or bus stop furnishing zone) – Standard

Bus passengers need information to understand which bus routes will stop at their location. This pole and sign can also include information such as the route direction, schedule, etc.

Channelization (Bus stop bypass zone) – Recommended

Channelizing infrastructure can be designed to manage pedestrian and bicyclist movements between the travel lane, bikeway, and pedestrian facility. Pedestrians and bicyclists can be separately and effectively channelized by locating a vertical object (e.g., planter) to physically deflect and direct users to desired areas. For example, pedestrians could be channelized to designated crossings of the bikeway between sidewalk and floating bus stop. Effectively channelizing bicyclists and pedestrians through a bus stop can improve safety, provide maximum convenience, and enhance functionality.

Portland, OR

Crosswalks (Pedestrian zone) – Standard

Crosswalks provide designated routes for pedestrians to cross another facility. Maintaining a pedestrian access route between the sidewalk, floating bus stop, and additional bus stop design elements is required. All crosswalks should be located to maximize visibility for pedestrians and of pedestrians by drivers and bicyclists. Bus stops should connect to a marked pedestrian crossing, preferably a crosswalk behind the stop, so that passengers are encouraged to cross behind the bus. Intersections and at-grade driveway crossings should have ADA-compliant curb ramps.

Detectable Warning Surface (Pedestrian zone) – Standard

The ADA requires that bus stop boarding and alighting areas shall be connected to streets, sidewalks, or pedestrian paths by an accessible route. Detectable warning surfaces provide a tactile and noticeable message that a change of environment will occur between these areas.

Green Colored Pavement (Bus stop bypass zone) – Optional

The consistent use of green colored pavement may be used to delineate the bicycle zone or to emphasize areas of potential conflict. An alternative option is to use contrast to mark the separate zones, such as different colored concrete, or using asphalt for the bikeway and concrete for the floating bus stop and sidewalk.

Green colored pavement may be considered for optional use in marked bicycle facilities and in extensions of bicycle facilities through intersections and other traffic conflict areas. The use of dashed green colored pavement indicates merging areas for the bicycle facility and vehicular traffic. Solid green colored pavement may be used to designate the bike lane zone

Lean Bar or Lean Rails (Pedestrian/Furnishing Zone or bus stop furnishing zone) – Optional

Lean rails may be used in place of traditional benches. These amenities establish a narrow barrier between the bus island and the bus stop bypass to deter transit passengers from crossing the bicycle facility in non-designated spots. They also invite passengers to use these amenities casually as they wait for their bus.

Lighting (Furnishing Zone or bus stop furnishing zone) – Recommended

Bus stop lighting provides safety and security for all users while also increasing visibility of waiting passengers for bus operators. Sufficient illumination can be achieved with pedestrian-scale fixtures, lighted shelters, and street lights. The Illuminating Engineering Society provides guidance on how much illuminance to provide. Refer to Illuminating Engineering Society (IES), Roadway Lighting RP-8-14. 2014.[15]

Railings (Bus stop furnishing zone) – Optional

Vertical railings may be useful at channelizations (bus stop bypasses), as they establish a barrier between the bus island and the bicycle facility routing behind it, deterring transit users from crossing the bicycle facility in non-designated locations.

Rear Landing Area (pedestrian/furnishing zone, bus stop furnishing zone) – Standard

The clear zone is the area where the back doors of the bus open onto the sidewalk or floating island. AC Transit requires bus stops to have a clear zone for the first rear door. The clear zone should be free of driveways, curb ramps, and obstructions such as utility poles, hydrants, and other street furniture. Although there is no requirement for the clear zone to be ADA-compliant, it is desirable, and at a minimum should be a level surface area. The clear zone should be 11.5 feet wide by 8 feet deep.

Street Trees and Stormwater Infrastructure (furnishing zone or bus stop zone) – Optional

Properly selected and maintained landscaping helps enhance passenger comfort at a bus stop and may improve the overall aesthetic of transit service. Street trees at bus stops can help provide shade and protection from adverse weather. Placement of street trees or stormwater infrastructure should not disrupt safety, visibility, or service at the bus stop location. Street trees, landscaping, and stormwater infrastructure should be selected based on environmental performance, maintenance, and aesthetic goals of the jurisdiction.

Trash receptacles (furnishing zone) – Optional

Trash and recycling receptacles or solar compactors are desirable at higher-ridership stops, stops in commercial areas and retail centers, and stops with shelters. AC transit recommends locating trash and recycling receptacles on the sidewalk to clarify that maintenance is a City responsibility, which may assist with keeping the overall buildup of debris to a minimum.

Sydney, Australia

4.0
Bus Stop Design Typologies

Seattle, WA

Designing a safe, comfortable, and functional bus stop for all users with special consideration to bicycle users is a primary purpose of this guide. Local jurisdictions are implementing more separated bike lanes on transit corridors and need design guidance to safely and seamlessly maintain bikeways through the bus stop. Based on common roadway and bikeway configurations, transit operations, and other considerations, five bus stop design typologies have been identified:

- **Typology 1: Class II Bicycle Facility between the Curb and a General Traffic Lane**
- **Typology 2: Class II Bicycle Facility between Curbside Parking Lane and a General Traffic Lane**
- **Typology 3: Class IV Bicycle Facility (Separated Bikeway) between the Curb and a General Traffic Lane**
- **Typology 4: Class IV Bicycle Facility (Separated Bikeway) between the Curb and a Parking Lane**
- **Typology 5: Class IV Bicycle Facility (Two-way Separated Bikeway) between the Curb and a Parking Lane**

Each design typology contains design elements reflecting the context of the roadway environment. Required and optional design elements are specified within the typologies, but the designer should use engineering judgment when selecting and locating design elements for a bus stop design. These bus stop typologies are intended to illustrate how and why design elements are included to provide a safe, comfortable, and functional bus stop.

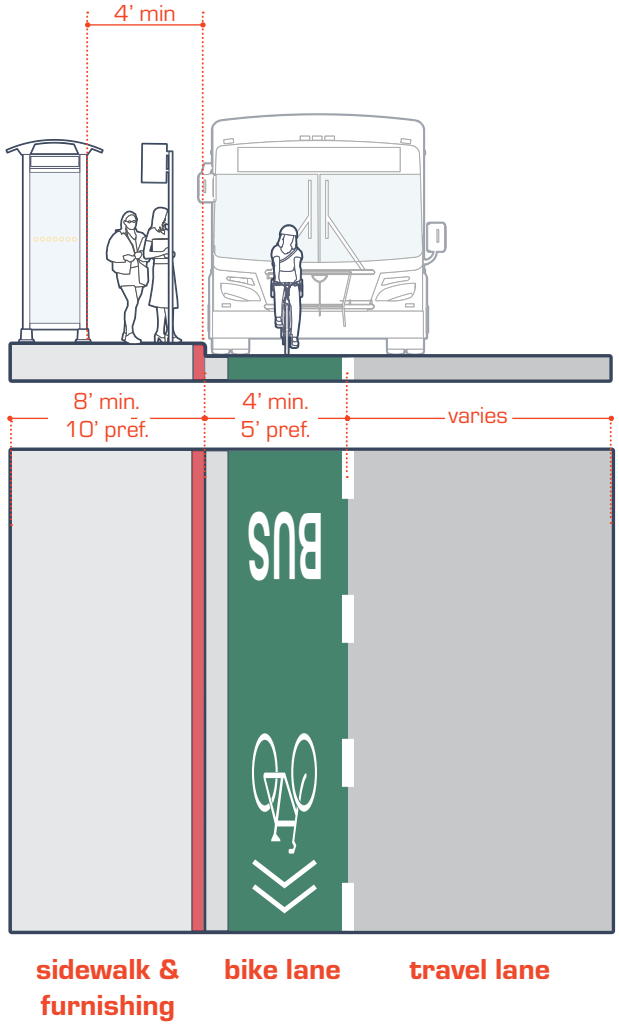
Bus stops should be provided curbside (against a curb) in most instances, as this is the most functional location for a bus stop. In the typologies, the bus stop curb is located either along the sidewalk (Typology 1) or along a floating bus stop (Typologies 2-5).

Four of the five typologies utilize floating bus stops, which are sidewalk-level platforms built between the bicycle lane and the roadway travel lane. When using floating bus stops, bicyclists are directed behind the bus stop, reducing or eliminating most conflicts between buses and bicyclists. By eliminating the need for buses and bicycles to interact, floating bus stops have large safety benefits for bicyclists. They can also benefit pedestrians, as the floating bus stop doubles as a pedestrian refuge, which if designed efficiently, can shorten crossing distances and enable shorter signal cycles.

4.1 Typology 1
Class II Bicycle Facility between Curb and a General Traffic Lane

The first Typology illustrates locations where the bike lane is located adjacent to the curb on a roadway. This typology more likely pertains to transit routes outside of a priority bicycle network. The section view illustrates that the bus will position itself on top of the bike lane to board and alight passengers. This means the bus may block motorists and bicyclists. These roadway users may have to wait or move around a bus during boarding/alighting operations.

A. Typology 1: Section View



If a transit corridor consistently implements Typology 1, normal bus operations may cause a "leap-frogging" effect for bicyclists. Leap-frogging is described as: A) a bus will pass a bicyclist between bus stops, B) the bus boards/alights passengers, C) the bicyclist passes the dwelling bus, and D) then the bus passes the bicyclist between the bus stops again. The leap-frogging process could repeat several times, especially if the average bus speed is similar to a bicyclist's riding speed. This effect is uncomfortable for bicyclists and increases the likelihood they will exit the bike lane into mixed traffic to pass a dwelling bus, which increases their crash risk with automobiles.[16] Leap-frogging is a known operational issue and is usually mitigated by implementing more separation between the vehicle lane and the bike lane, which may then necessitate the use of the subsequent design typologies described in this document.

Several design elements have been explicitly called out for Typology 1. A bus stop has minimum design constraints so that an accessible landing zone and a rear clear zone are provided. The location of these zones at the bus platform varies depending on the prevailing bus size. Also, this typology includes design elements typically employed at roadways and bus stops such as a furnishing zone, bus stop pole, and detectable warning surfaces on the sidewalk ramps. Lastly, note the optional design elements such as the bus shelter, green pavement markings, and red curb zone. The exact location and scale of these design elements may vary based on the constraints and context of the bus stop.

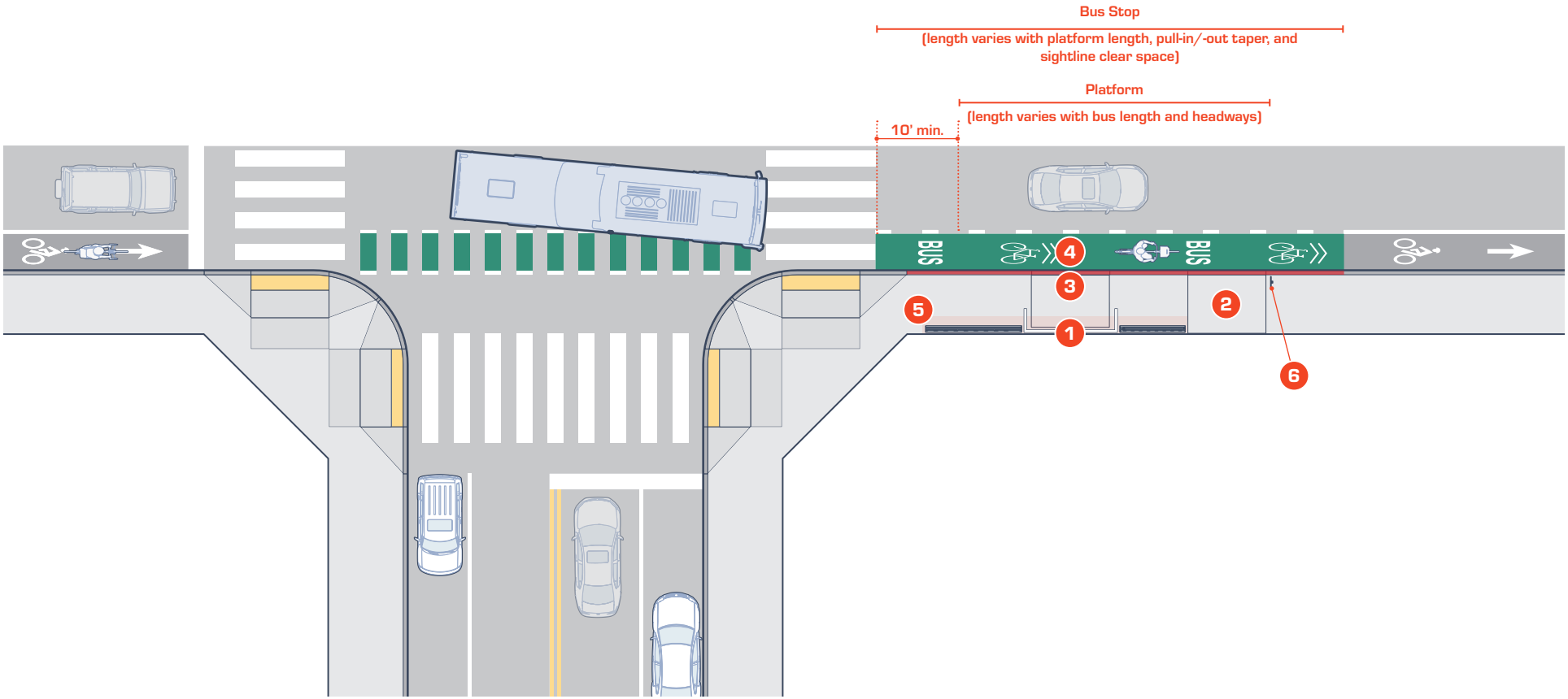
The bus stop and platform length will vary based on many factors including the pull-in/-out taper, sight distance, physical bus dimensions, and headways. Table 4 provides guidance for these dimensions on Typology 1, but the designer should use engineering judgment based on the roadway context and design constraints.

	Arterial Speed Limit		
	< 20 MPH	20-35 MPH	>35 MPH
Platform			
40' Bus	40'	40'	40'
60' Bus	60'	60'	60'
Two 40' Buses	120'	120'	120'
One 40' Bus and One 60' Bus	140'	140'	140'
Two 60' Buses	180'	180'	180'
Pull-in Taper			
Far-side Bus Stop	N/A	N/A	N/A
Near-side Bus Stop	10'	15'	20'
Mid-block Bus Stop	10'	15'	20'
Pull-out Taper			
Far-side Bus Stop	10'	15'	20'
Near-side Bus Stop	N/A	N/A	N/A
Mid-block Bus Stop	10'	15'	20'
Clearance from Crosswalk			
Far-side Bus Stop	10'	10'	10'
Near-side Bus Stop	10'	10'	10'
Mid-block Bus Stop	N/A	N/A	N/A

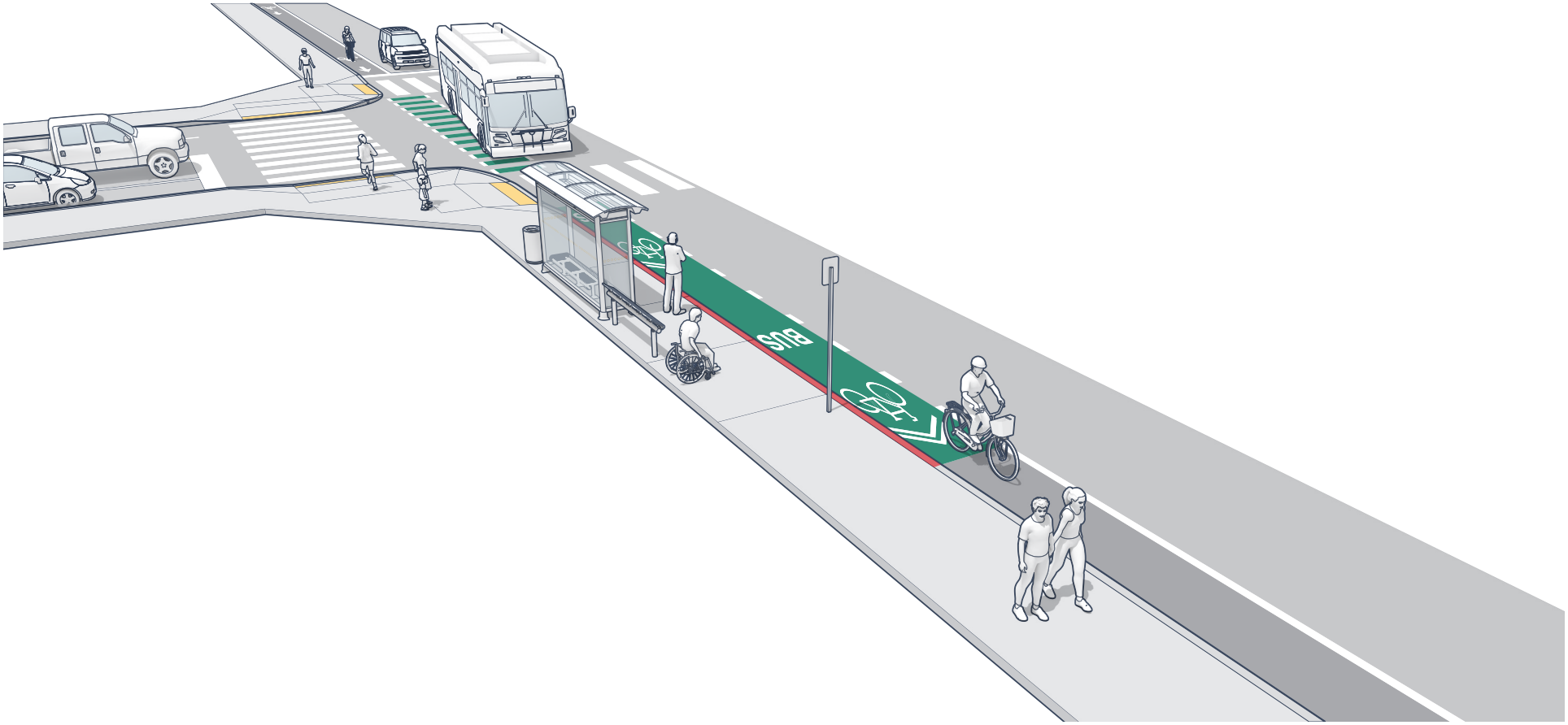
Table 4: Typology 1 Influence Area Minimum Dimensions

B. Typology 1: Plan View

1. Bus shelter (optional)
2. Accessible landing zone (min. 5' x 8')
3. Rear clear zone (11.5' x 8')
4. Green pavement (optional)
5. Furnishing zone
6. Bus stop pole



C. Typology 1: Perspective View



4.2 Typology 2
Class II Bicycle Facility between Curbside Parking Lane and a General Traffic Lane

A. Stop Placement and Bike Facility Alignment

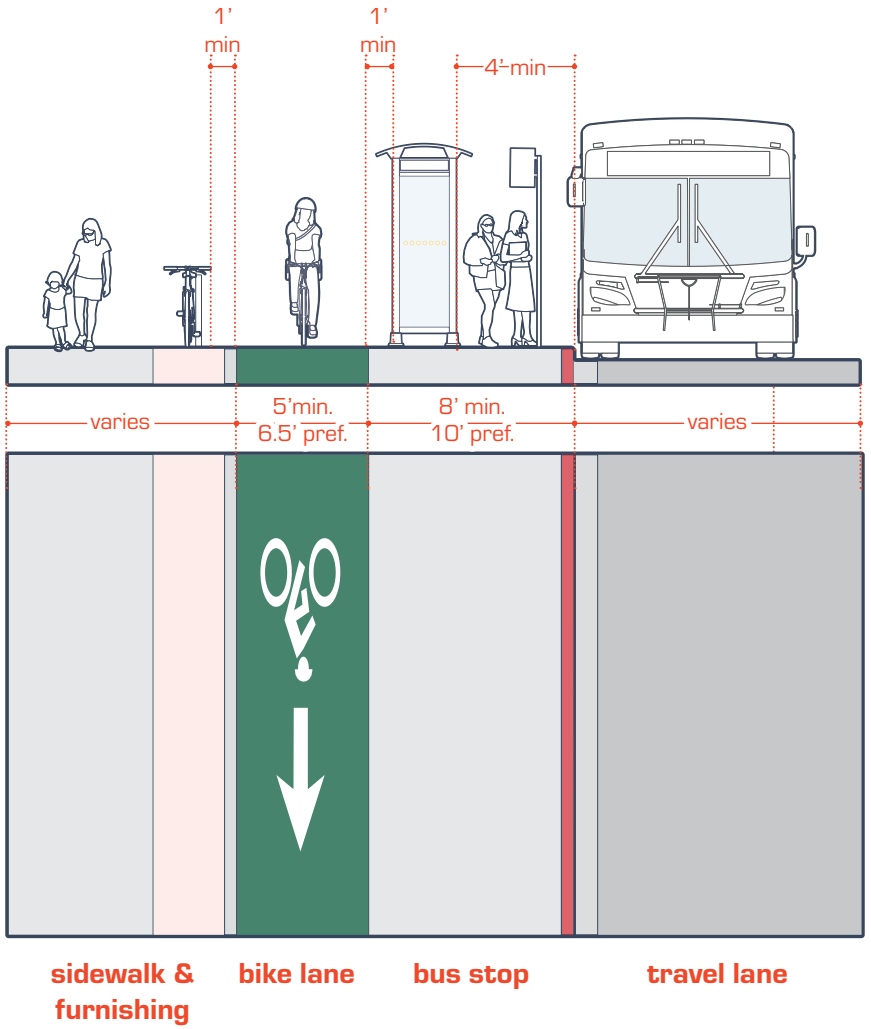
Adding parking to the roadway influences the spatial relationship between the bus boarding/alighting operation and the bike lane. Parking operations may cause conflicts with bus operations, and the door zone of parked vehicles can be a hazard for bicyclists. However, implementing a floating bus stop is an improvement for bicycle and transit operations, because the bus boarding/alighting operations can be performed independently of through bicycle movements.

AC Transit prefers far-side bus stops for a variety of bus-related operational reasons (AC Transit Policy No. 508); however, the designer can consider using near-side or mid-block bus stops. Note that conventional mid-block bus islands are illustrated but are not a preferred design because they create a potential conflict with bicyclists by requiring buses to fully cross the bike lane to pull in and out of the bus stop.

The key design characteristic of Typology 2 is the routing of the bike lane behind the bus stop, which minimizes conflicts between the bicycle movement and the bus boarding/alighting operation. The design elements at the floating bus stop and the furnishing zone should be located at least one foot from the edge of the bike facility. If a bicycle rack is located in the furnishing zone, the edge of a parked bicycle should be at least one foot from the edge of the bike facility, which may necessitate moving the bike rack further toward the building frontage. This shy distance improves bike operations and minimizes safety hazards from handlebar or pedal strikes.

Bus passengers have two designated bike lane crossings from the sidewalk to the floating bus stop, which helps manage pedestrian/bicycle interactions. Importantly, bicyclists are required to yield to pedestrians

B. Typology 2: Section View



at these designated crossings with the use of yield markings and an optional “Bike Yield to Pedestrians” MUTCD R9-6 sign. The furnishing zone and/or detectable edge assists with managing bus passenger crossings at those two locations.

Furnishing elements could include bicycle racks, trash receptacles, etc. Alternatively, detectable longitudinal panels can be embedded along the bike lane to guide visually impaired pedestrians to the designated bike lane crossing, as shown in exhibit 3 and in the photo to the right. These directional indicators are in accordance with International Standard 23599 and their color should contrast with adjoining concrete or asphalt pavement.


Delft, Netherlands

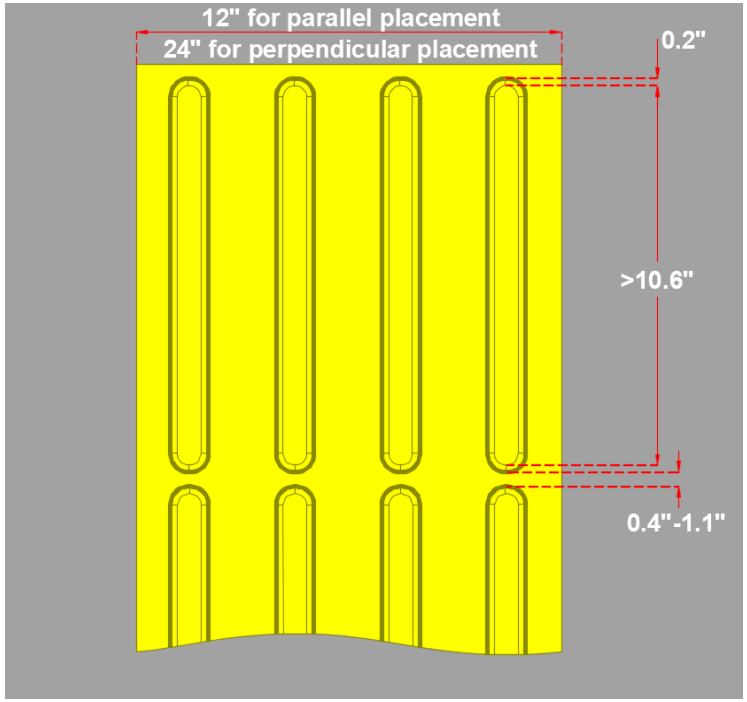


Exhibit 3: Longitudinal detectable edge

There are several bike lane-specific design elements which should be included when designing a bus stop based on Typology 2.

6 The bicyclist yield area provides space for bicyclists to stop for crossing pedestrians while also being protected from traffic.

7 The maximum bicycle ramp slope should be 1:12 from street to sidewalk level.

9 The bike lane transition taper of 1:10 is preferred, with a maximum of 1:5.[17]

Providing more space for bicyclists to yield for pedestrians and/or constructing a gentler slope or taper for the bike lane will improve comfort for bicyclists.

Lastly, vertical railings or lean rails may be optionally employed in Typology 2.

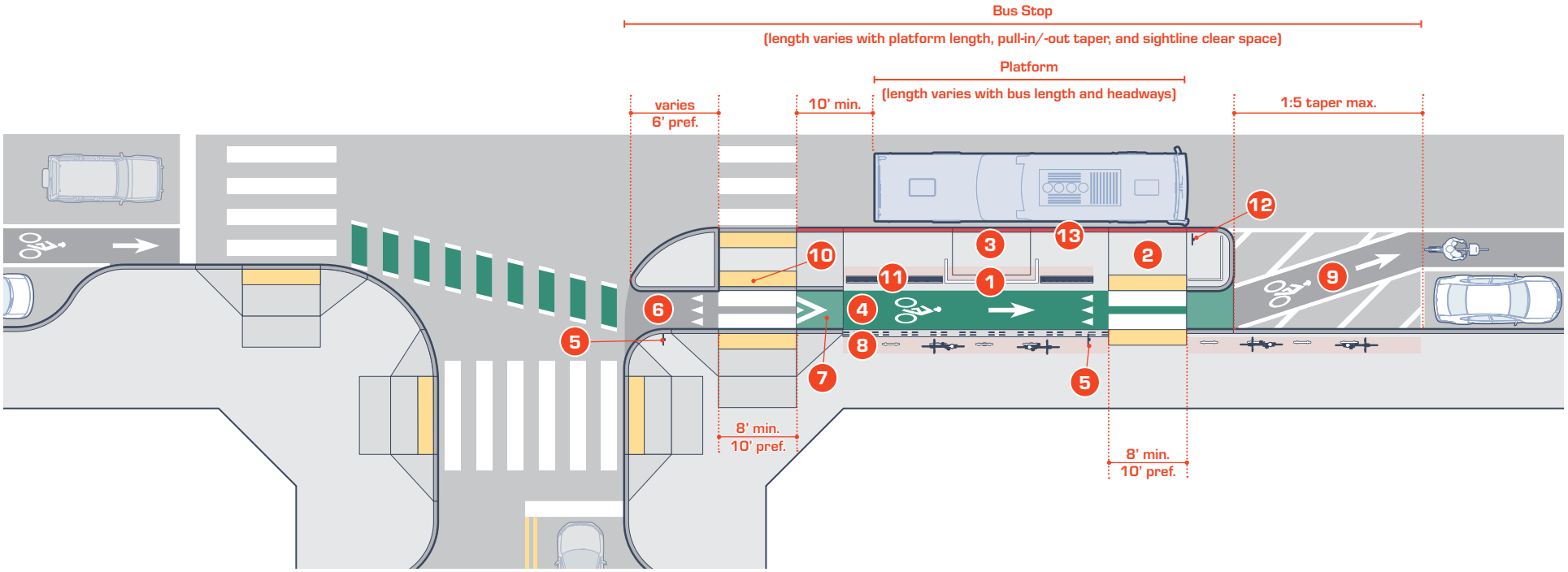
Table 5 provides guidance for these dimensions on Typology 2.

	Arterial Speed Limit
	All Speeds
Bus Stop Island	
40' Bus	40'
60' Bus	60'
Two 40' Buses	120'
One 40' Bus and One 60' Bus	140'
Two 60' Buses	180'
Entering Bike Lane Taper Distance	
Far-side Bus Stop	N/A
Near-side Bus Stop	24'
Mid-block Bus Stop	24'
Exiting Bike Lane Taper Distance	
Far-side Bus Stop	24'
Near-side Bus Stop	N/A
Mid-block Bus Stop	24'
Clearance from Crosswalk	
Far-side Bus Stop	10'
Near-side Bus Stop	10'
Mid-block Bus Stop	N/A

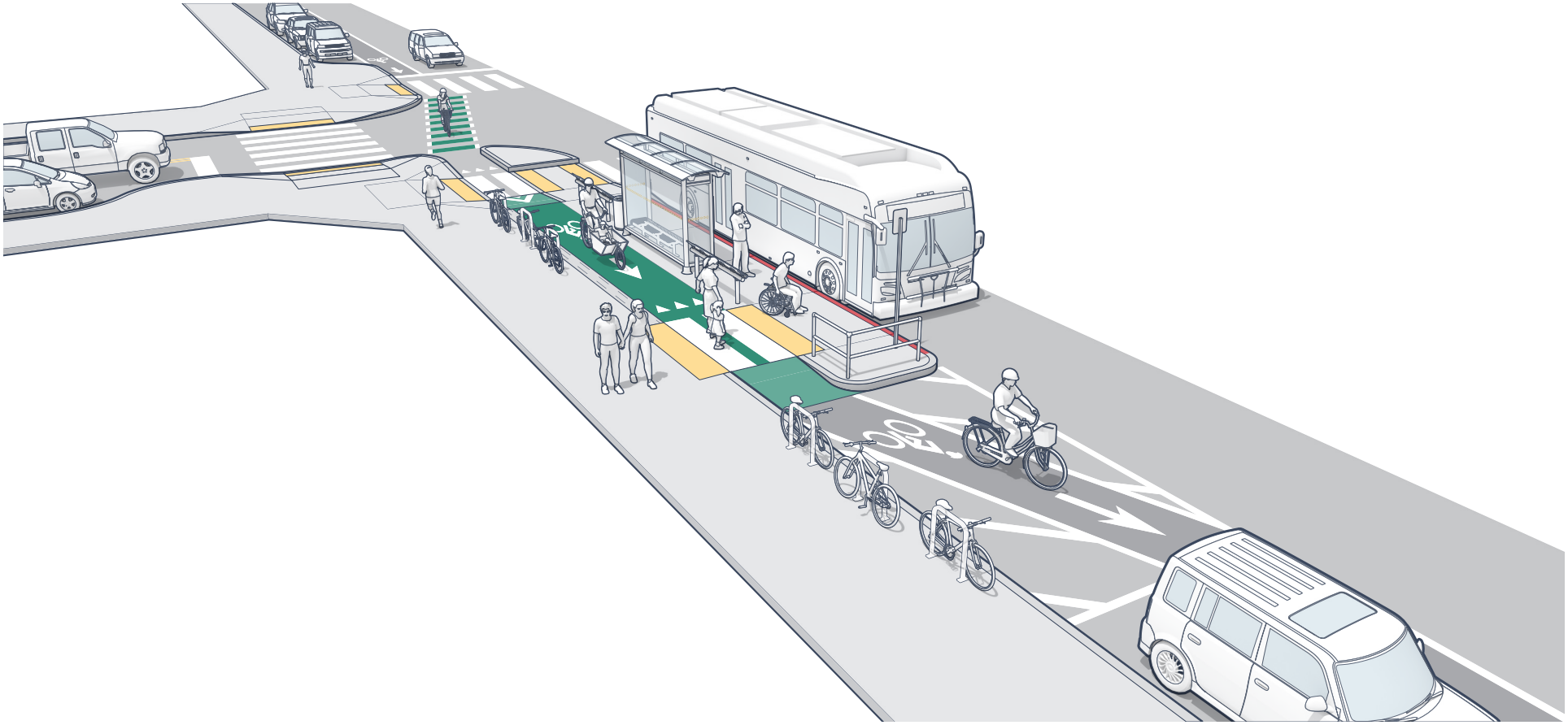
Table 5: Typology 2 Influence Area Minimum Dimensions

C. Typology 2: Plan View

1. Bus shelter (optional)
2. Accessible landing zone (min. 5' x 8')
3. Rear clear zone (11.5' x 8')
4. Green pavement (optional)
5. Bikes yield to peds sign (optional)
6. Bicyclist yield area
7. Bicycle ramp (max 1:12 slope)
8. Furnishing zone/Detectable edge
9. Bike lane taper (preferred 1:10 / max. 1:5)
10. Detectable warning surface
11. Vertical railing (optional)
12. Bus stop pole
13. Red curb zone (optional)



D. Typology 2: Perspective View



4.3 Typology 3
Class IV Bicycle Facility (Separated Bikeway) between the Curb and a General Traffic Lane

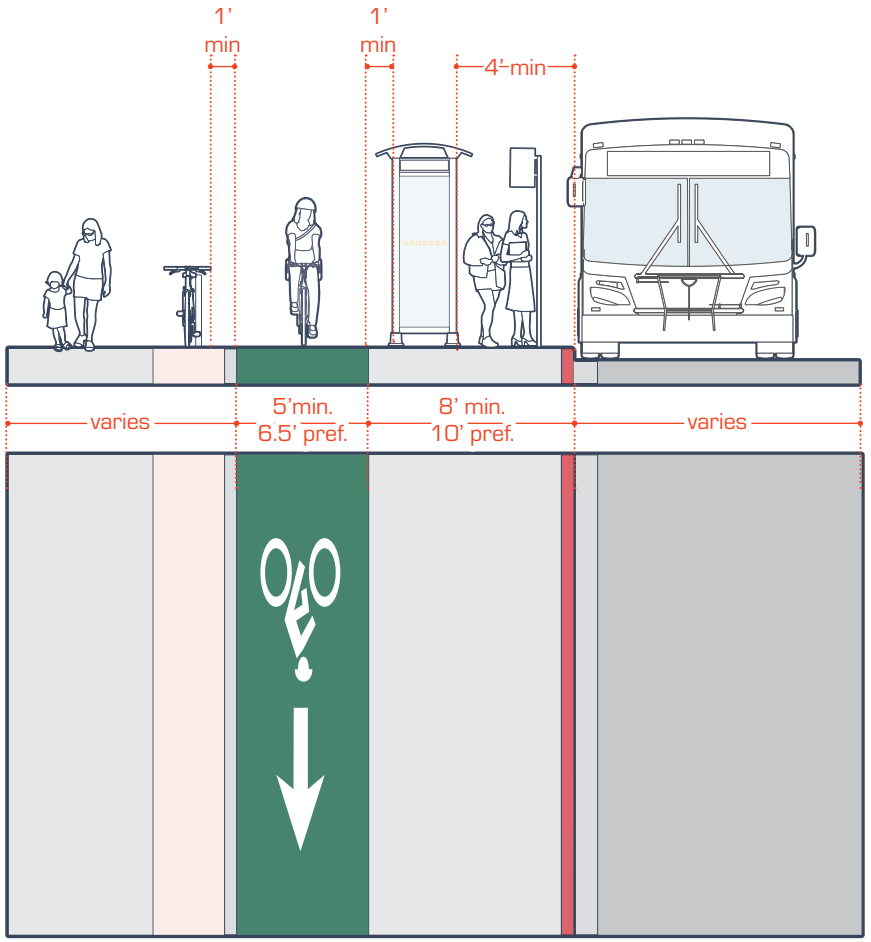
Typology 3 contains the same elements and dimensions in the cross-sectional view as Typology 2. Both designs route the bike lane behind the floating bus stop platform with a 1-foot shy distance between the bike lane and any furnishing or bus stop elements.

The difference between Typologies 2 and 3 is the presence of parking. In Typology 2, a parking lane is located to the inside of the bicycle lane; in Typology 3, there is no parking lane. Parked vehicles influence the bike lane taper lengths through intersections and exiting the bus platform area.

Typology 3 illustrates vertical separation with white plastic flexposts between the travel lane and the bikeway. There are many different forms of vertical separation that can be employed and there are several guidebooks discussing their benefits and drawbacks. In general, choosing any form of approved vertical separation will be appropriate in conjunction with a floating bus stop design.

Table 6 provides guidance for these dimensions on Typology 3.

A. Typology 3: Section View

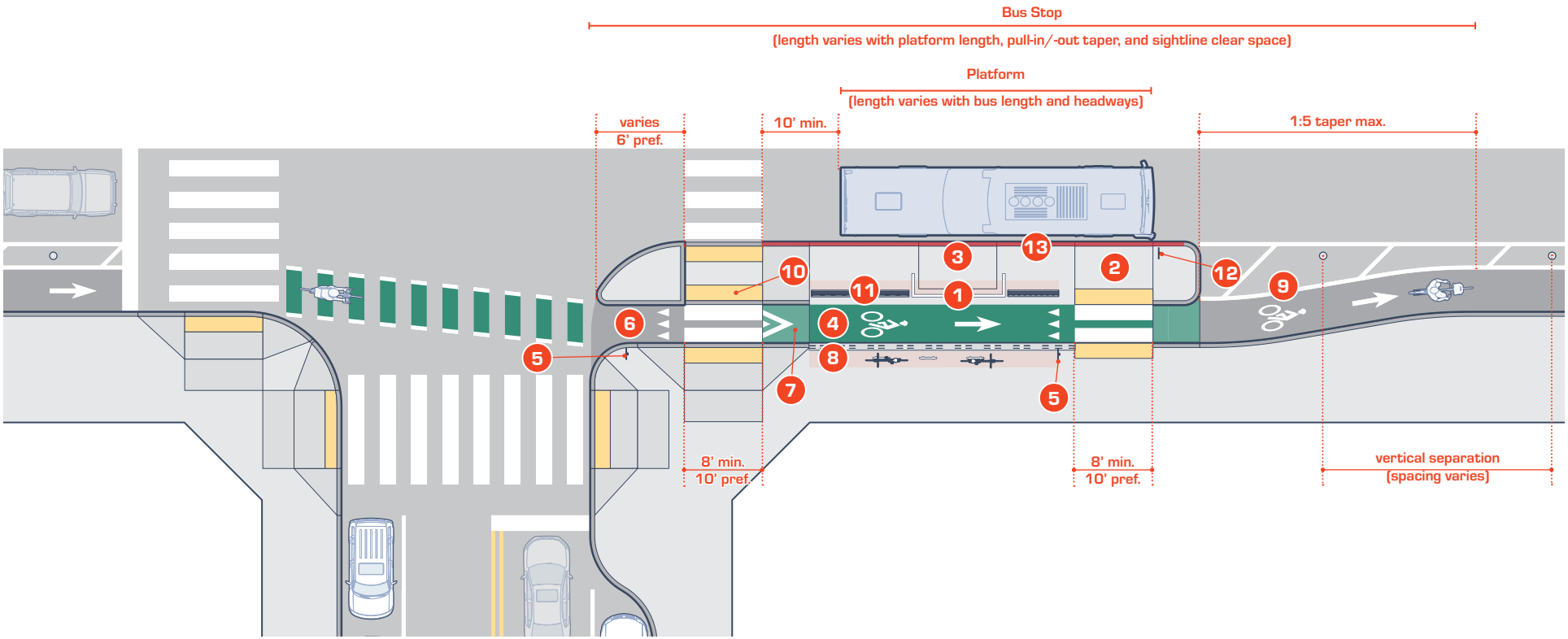


	Arterial Speed Limit
	All Speeds
Bus Stop Island	
40' Bus	40'
60' Bus	60'
Two 40' Buses	120'
One 40' Bus and One 60' Bus	140'
Two 60' Buses	180'
Entering Bike Lane Taper Distance	
Far-side Bus Stop	N/A
Near-side Bus Stop	18'
Mid-block Bus Stop	18'
Exiting Bike Lane Taper Distance	
Far-side Bus Stop	18'
Near-side Bus Stop	N/A
Mid-block Bus Stop	18'
Clearance from Crosswalk	
Far-side Bus Stop	10'
Near-side Bus Stop	10'
Mid-block Bus Stop	N/A

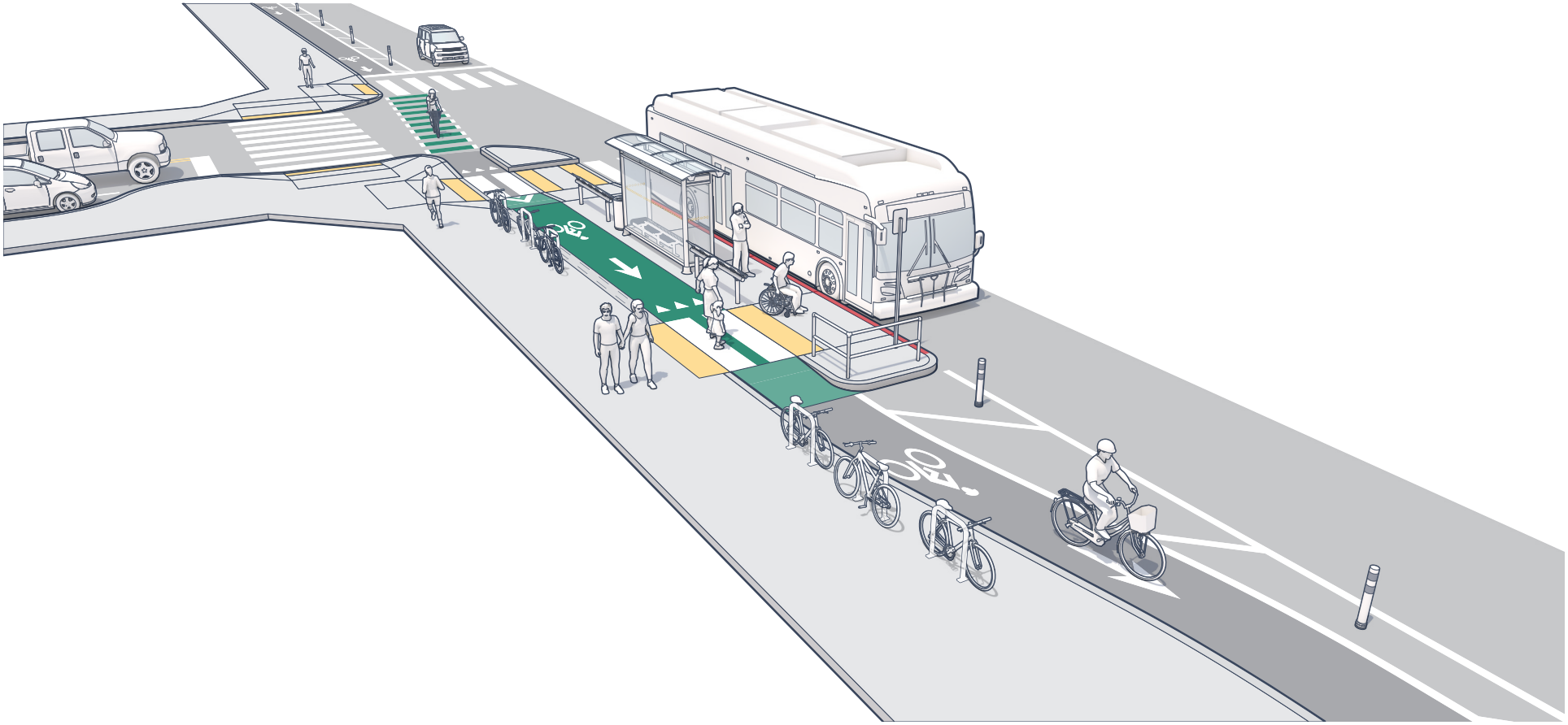
Table 6: Typology 3 Influence Area Minimum Dimensions

B. Typology 3: Plan View

1. Bus shelter (optional)
2. Accessible landing zone (min. 5' x 8')
3. Rear clear zone (11.5 x 8')
4. Green pavement (optional)
5. Bikes yield to peds sign (optional)
6. Bicyclist yield area
7. Bicycle ramp (max 1:12 slope)
8. Furnishing zone/Detectable edge
9. Bike lane taper (preferred 1:10 / max. 1:5)
10. Detectable warning surface
11. Vertical railing (optional)
12. Bus stop pole
13. Red curb zone (optional)



C. Typology 3: Perspective View



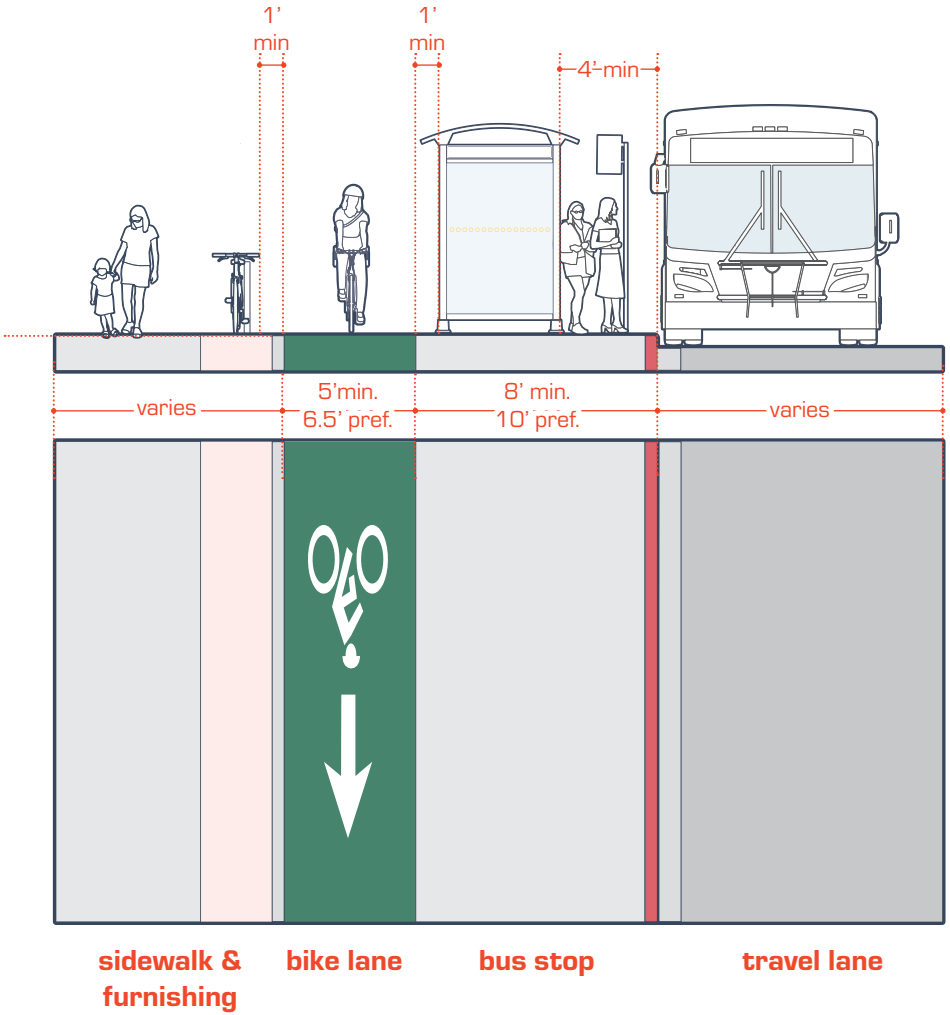
4.4 Typology 4
Class IV Bicycle Facility (Separated Bikeway) between the Curb and a Parking Lane

Typology 4's section view is also the same as the section views shown in Typologies 2 and 3.

A separated bikeway adjacent to parking can create a geometric cross section eliminating bikeway tapers through the intersection and exiting the floating bus platform area. Like Typologies 2 and 3, required, preferred, and optional design elements are annotated. The designer should consider the context of the area when including or excluding these design elements.

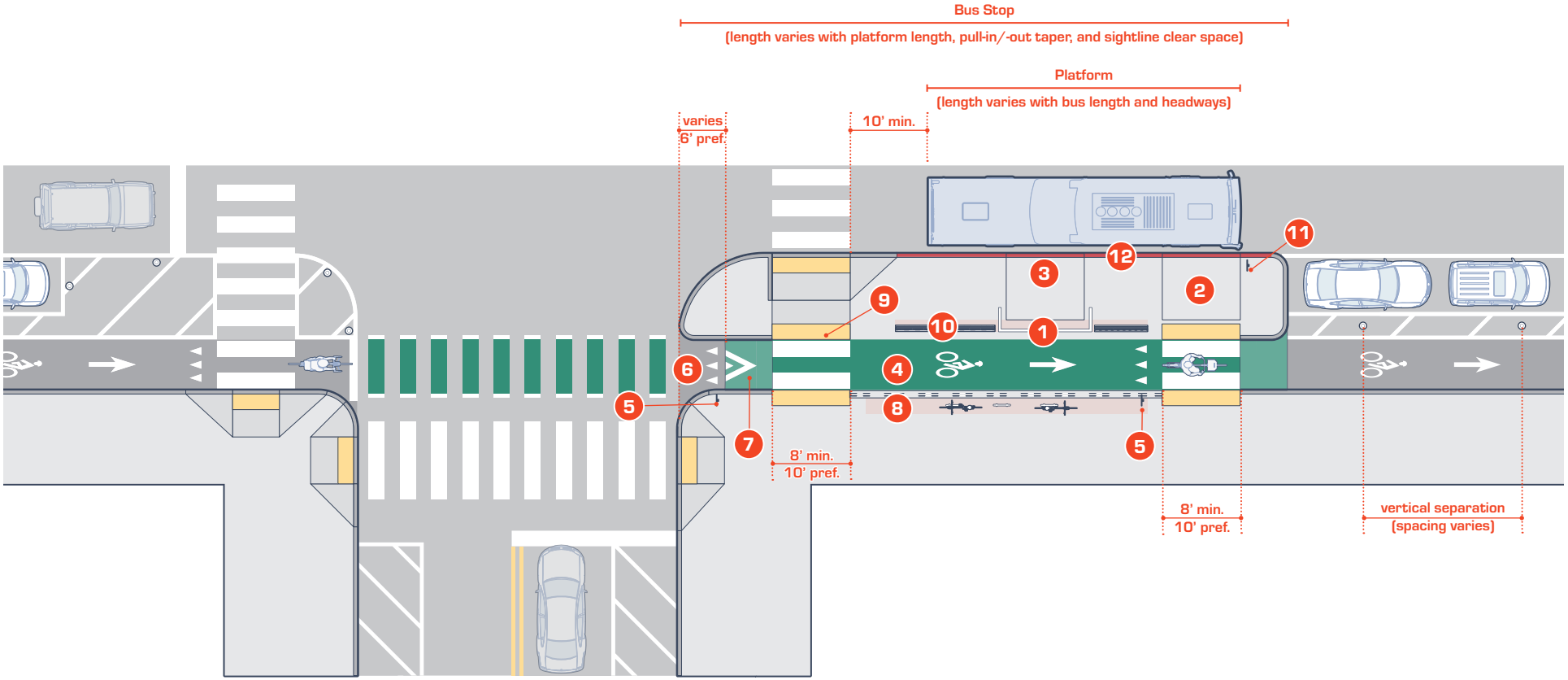
Table 7 provides guidance for these dimensions on Typology 4.

A. Typology 4: Section View

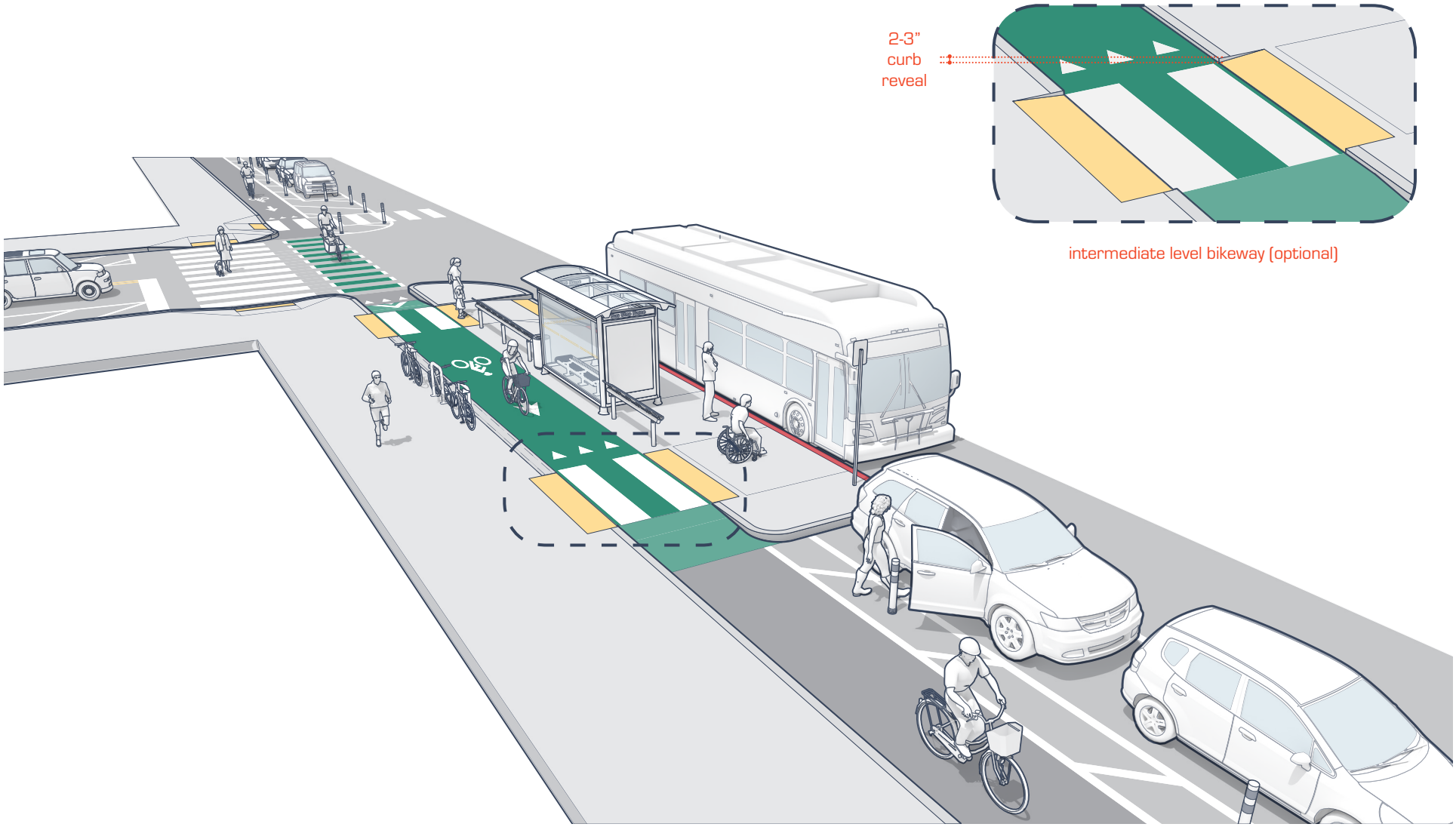


B. Typology 4: Plan View

1. Bus shelter (optional)
2. Accessible landing zone (min. 5' x 8')
3. Rear clear zone (11.5' x 8')
4. Green pavement (optional)
5. Bikes yield to peds sign (optional)
6. Bicyclist yield area
7. Bicycle ramp (max 1:12 slope)
8. Furnishing zone/Detectable edge
9. Detectable warning surface
10. Vertical railing (optional)
11. Bus stop pole
12. Red curb zone (optional)



C. Typology 4: Perspective View



	Arterial Speed Limit
	All Speeds
Bus Stop Island	
40' Bus	40'
60' Bus	60'
Two 40' Buses	120'
One 40' Bus and One 60' Bus	140'
Two 60' Buses	180'
Clearance from Crosswalk	
Far-side Bus Stop	10'
Near-side Bus Stop	10'
Mid-block Bus Stop	N/A

Table 7: Typology 4 Influence Area Minimum Dimensions

The perspective view of Typology 4 on the previous page features a callout diagram of an intermediate level bikeway design. A 2- to 3-inch curb reveal can be used to create an intermediate-level bikeway in lieu of a sidewalk-level bikeway adjacent to the floating bus stop island. There are several benefits and drawbacks of this optional design:

Benefits of Intermediate-level Bikeway Design

- **Vertical separation helps define the pedestrian and bicycle operating space. Cities with mature bicycling infrastructure regularly construct vertical separation between bicycle and pedestrian facilities.**
- **Decreased bike ramp length is needed between the street and bus platform level.**
- **The curb reveal provides a detectable edge between the sidewalk and the bikeway, eliminating the need for other longitudinal detectable elements. However, ADA-compliant ramps including detectable elements are required at pedestrian crossings of the bikeway.**

Drawbacks of Intermediate-level Bikeway Design

- **This design increases construction complexity.**
- **Drainage and maintenance of the bikeway in the bus stop platform area will require extra attention due to water pooling, leaf and debris buildup, etc.**

Importantly, curbs 4 inches or greater increase the risk of bicycle pedal strikes, so a 2- to 3-inch curb reveal is critical. Lastly, the 2- to 3-inch curb can be used in Typologies 2 through 5.

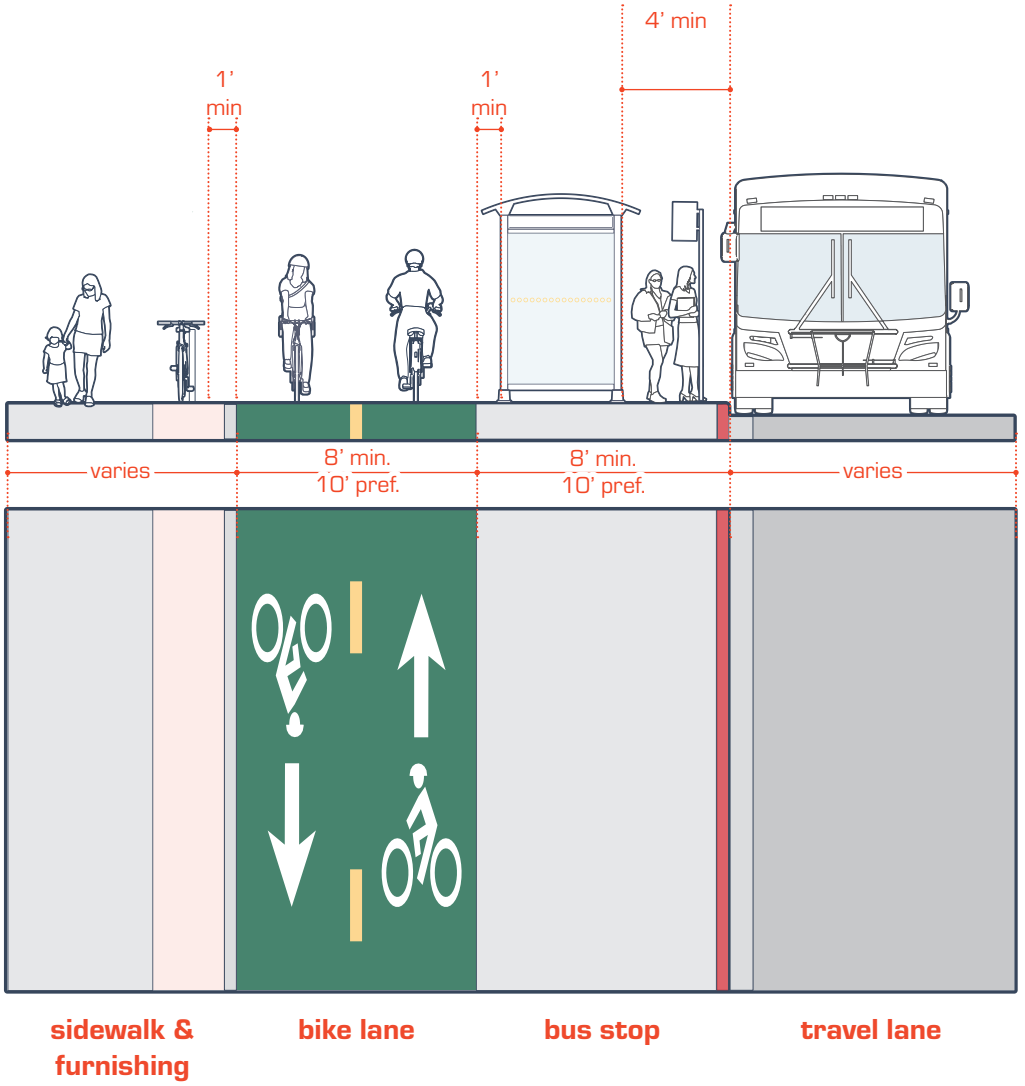
4.5 Typology 5
Class IV Bicycle Facility (Two-way Separated Bikeway) between the Curb and a Parking Lane

The cross section of Typology 5 uses the basic form of Typologies 2 - 4 where the bikeway is routed behind the floating bus stop platform and adjacent the sidewalk. Unique to Typology 5, the bikeway is designed for two-way travel, which necessitates increased minimum and preferred bikeway widths.

The plan view in Typology 5 illustrates fully curbed separated bikeway designs adjacent to parking. Again, there are many different vertical buffer treatments available to the designer, who should consider the context and constraints. When implementing Typology 5, special consideration should be given to increasing awareness of two-way bikeway travel at the floating bus stop platform. Signs, pavement markings, and other visual cues should be employed near the bus stop consistent with design guidance for two-way separated bike lanes.

Table 8 provides guidance for these dimensions on Typology 5.

A. Typology 5: Section View

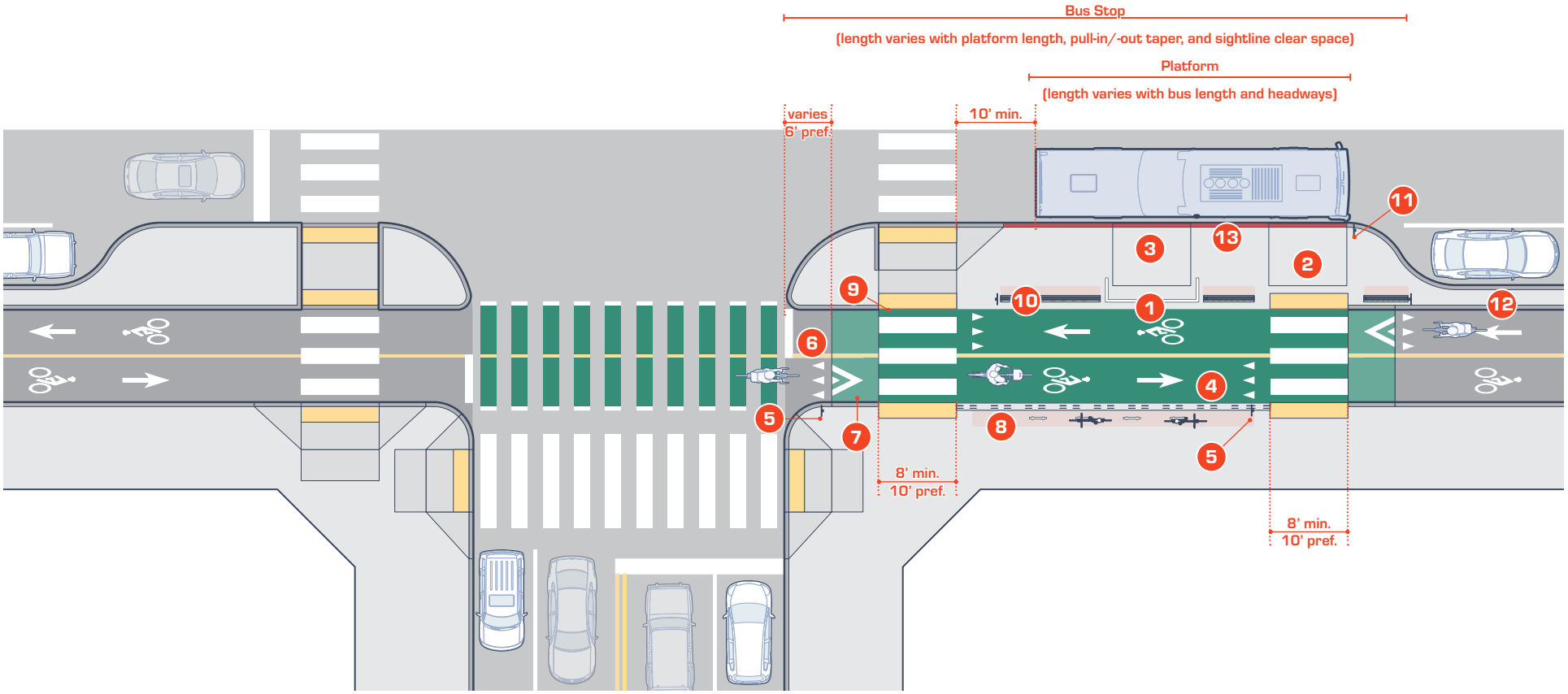


	Arterial Speed Limit
	All Speeds
Bus Stop Island	
40’ Bus	40’
60’ Bus	60’
Two 40’ Buses	120’
One 40’ Bus and One 60’ Bus	140’
Two 60’ Buses	180’
Clearance from Crosswalk	
Far-side Bus Stop	10’
Near-side Bus Stop	10’
Mid-block Bus Stop	N/A

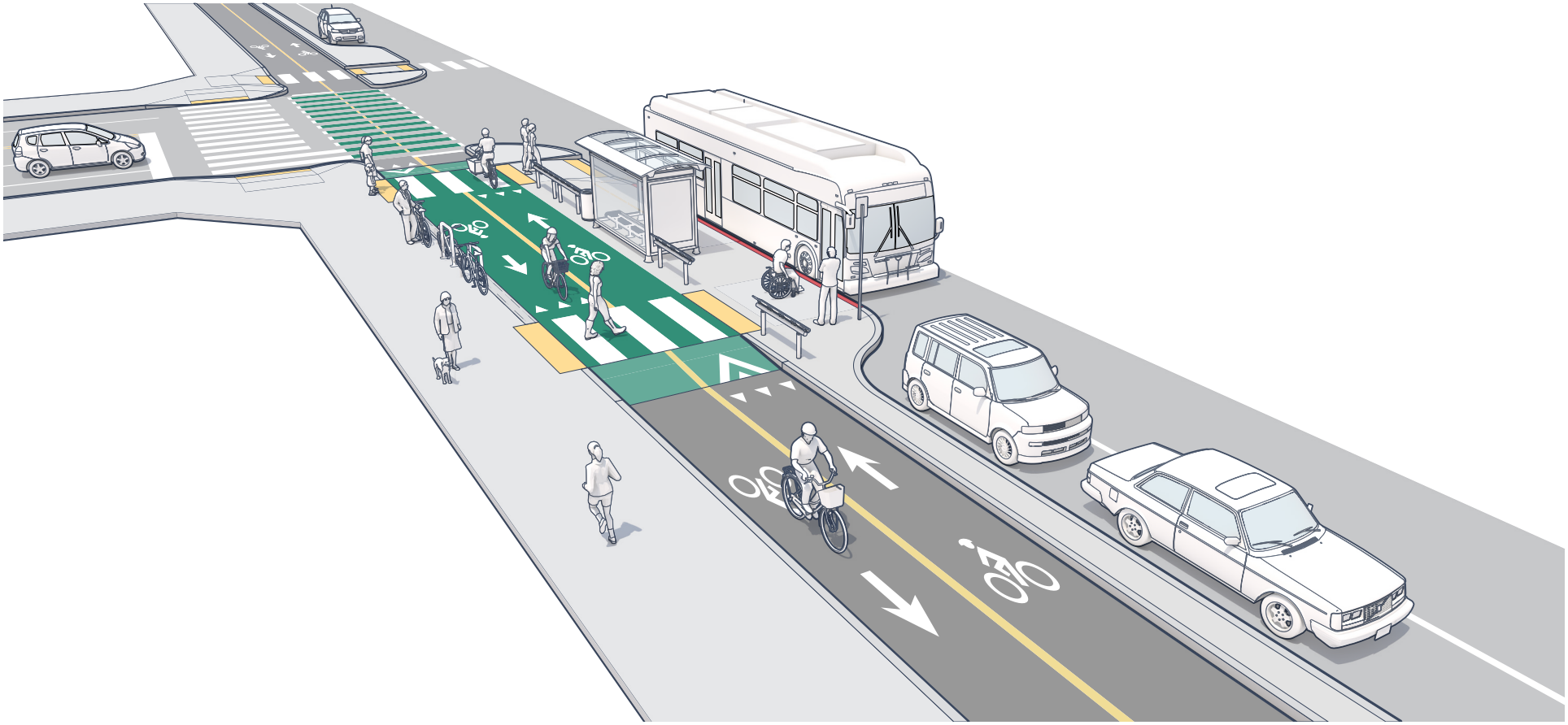
Table 8: Typology 5 Influence Area Minimum Dimensions

B. Typology 5: Plan View

1. Bus shelter (optional)
2. Accessible landing zone (min. 5' x 8')
3. Rear clear zone (11.5' x 8')
4. Green pavement (optional)
5. Bikes yield to peds sign (optional)
6. Bicyclist yield area
7. Bicycle ramp (max 1:12 slope)
8. Furnishing zone/Detectable edge
9. Detectable warning surface
10. Vertical railing (optional)
11. Bus stop pole
12. Buffer treatment varies
13. Red curb zone (optional)



C. Typology 5: Perspective View



5.0 Typology Selection

Edmonton, Canada

Designing an appropriate bus stop depends on many factors including but not limited to the roadway configuration, posted/actual vehicle speeds, and bus passenger activity. Due to this contextual variability, it is possible to select multiple typologies on a single transit corridor. Subsequently, tailoring design elements for each bus stop will depend on site constraints, context, and local jurisdictional preference. While designers should strive for consistency, being flexible with the final design could result in a safer, more comfortable, and better-functioning bus stop for all users

5.1 Typology Selection Guidance

Selecting a typology is influenced by several factors:

- **Roadway classification**
- **Roadway constraints**
- **Traffic posted/actual speeds**
- **Vehicle volumes**
- **Bike volumes**
- **Bus volumes**
- **Passenger activity**

Choosing a bus stop typology based on the relationship between these factors is challenging because a local jurisdiction may prioritize some roadway uses over others. AC Transit is sensitive to these local priorities and encourages designers to consider these alongside the guiding principles presented in this Guide when selecting a typology and eventual bus stop design.

Guiding Principle 1 – The proposed roadway configuration should be the primary determinant in the choice of a typology.

The presence of vehicle lanes, parking, buffers, bike lanes, and other roadway elements may be the more static elements of a roadway configuration as compared with dynamic roadway characteristics such as posted speeds, user volumes, and passenger activity. The presence of a bike lane, separated bike lane, or two-way separated bike lane provides one filter of typology choice. The presence of parking is another important consideration in choosing a typology.

Also, some static objects within the roadway configuration are less permanent than others. Vehicle lanes, parking and design elements of the furnishing zone are commonly removed, rearranged, or re-sized to accommodate other uses. Removing or resizing vehicle lanes and/or parking spaces may be needed to provide appropriate entering/exiting tapers for the bikeway. If there are existing design elements such as bus shelters, they could be too large to fit into a new floating bus stop location based on the typology dimensions. The local jurisdiction should work with AC Transit to develop solutions to design issues considering the range of roadway users.

However, there are several unique roadway configurations which could make selecting a typology difficult:

- **Suburban/rural locations with no sidewalks**
- **Roadway configurations with mixed-traffic bicycle facilities**
- **Locations with exclusive bus lanes**
- **Roadways with angled parking**
- **Shared street**
- **Other roadway configurations**

In these cases, the stop location should be examined in detail and engineering judgment should be applied to develop a design solution that balances the needs of all roadway users.

Guiding Principle 2 – Floating bus islands are preferred for bus routes with headways of 15 minutes or less.

Floating bus islands have two types of bus operational benefits. When a bus approaches a floating bus stop, it does not need to exit and re-enter the vehicle lane to serve each request for boarding or alighting. Merging back into the travel lane can be challenging for bus operators due to motorists failing to yield to the merging movement. Eliminating this issue can lead to travel time savings, which translates into operational cost savings and improved travel experience for customers. The other operational benefit includes a designated area for passengers to wait for their bus. This additional space allows AC Transit, and potentially

the local jurisdiction, to add further bus stop amenities to improve the passenger transit experience. Given a bus route with 15-minute headways, the operational and passenger benefits of floating bus islands may accumulate over a typical day and beyond.

Guiding Principle 3 – Floating bus islands are not preferred for roadways with posted speeds of 35 mph or higher.

Implementing a floating bus island means that a bus will stop in traffic and subsequently block traffic. With posted speeds of 35 mph or higher, a boarding/alighting event may create a safety issue between vehicles and bus operations. In these situations, a bus pull-out may be a more appropriate bus stop design treatment.

Consideration should be given to how bicyclists travel through a bus pullout. Bus pullouts may remove the bus completely from the vehicle and bike lane, allowing an unobstructed bicycle through movement. Designers should consider routing the bikeway behind the bus stop pullout, especially on higher speed roads and where bicycle through movements may be blocked by a stopped bus.

Where roadways have posted speeds of 35 mph or higher, separated bike lanes are recommended due to the increased risk bicyclists face on these types of roads. If separated bike lanes are implemented, their separation should be continued through a bus stop and potential bus pullout. In this situation, Typologies 3 to 5 may be appropriate to reference when designing the bus stop.

Guiding Principle 4 – A typology choice should incorporate future curbside use and future roadway configurations.

Choosing a typology could involve planning for future transit and/or roadway projects. AC Transit may make route enhancements or modifications in a corridor, and there could be changes to land use or other transit demand-related contexts. When these transit-related changes are being planned, changes to bus frequency could justify a floating bus stop at certain locations along the new route. Integrating an appropriate typology corresponding to the planned change may be especially important given the presence of bikeways and parking.

Local jurisdictions should consider floating bus stops when redesigning a corridor that carries an existing transit route and has existing bicycle facilities. Even if the transit route is low-frequency, designing the corridor with floating bus stops will allow for higher-quality bikeways and result in a safer, more balanced, comfortable, and functional corridor.


Emeryville, CA

6.0 Maintenance Considerations

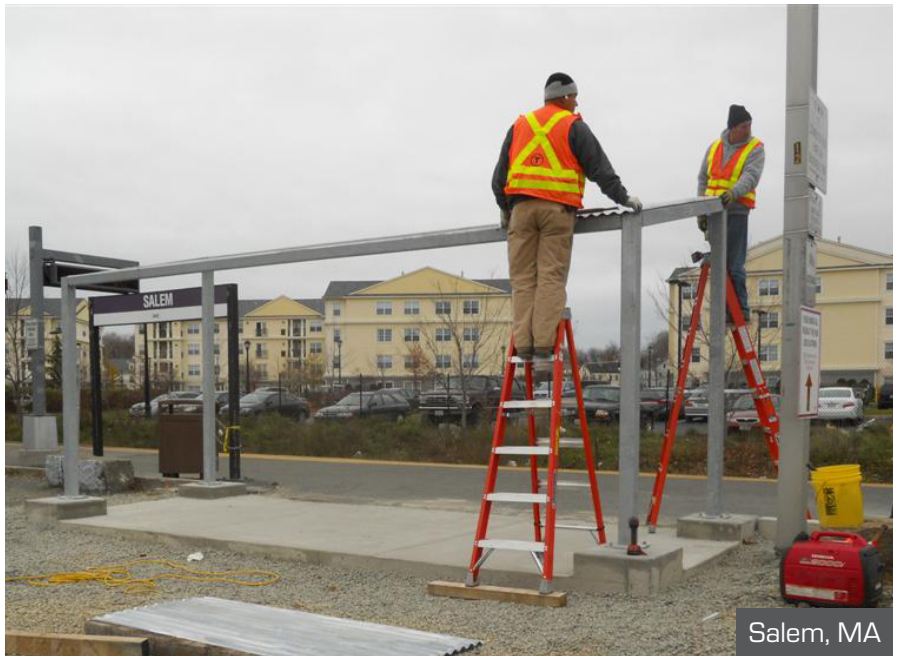
Washington, D.C.

Bus stop locations are typically on the edge of the roadway corridor and located in densely populated environments which accumulate debris during all seasons. Providing and implementing an effective maintenance program ensures continuity throughout the system.

Bus stops require routine maintenance to ensure functionality and provide a pleasant environment for all users. Litter can accumulate at bus stops and trees or other vegetation may drop foliage regularly or seasonally. Vandalism can also occur and should be remedied. Regular, seasonal, and as-needed maintenance agreements should be established with local jurisdictions or property owners. Some of these maintenance costs can be offset with bus stop and bus-related advertising.

Floating bus stops have special maintenance considerations because of the channelization created for the bikeway route. Bikeways may catch debris, dirt, and leaves, which should be swept on a regular or seasonally. Leaves, especially when wet, are very slippery and can create hazards for bicyclists passing through the area. Bus stop maintenance workers can use a variety of techniques to keep these areas clean, including hand sweeping, pressure washing, small hand-operated machines, or narrow maintenance vehicles.

Lastly, bus stops should be regularly inspected and the quality of design elements should be noted over time as they slowly deteriorate and lose their colorful luster. Inspecting and inventorying design elements could yield valuable information on longevity, replacement, and cost expectations. The information could then be used to investigate more robust design elements to be installed for existing or future bus stops.



Salem, MA

7.0
Reference Endnotes

Berkeley, CA

Reference Endnotes

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TRANSIT

06

Kate Harrison
Councilmember District 4

ACTION CALENDAR
November 30, 2021

To: Honorable Mayor and Members of the City Council

From: Councilmember Harrison

Subject: Adopt an Ordinance Adding a New Chapter 12.01 to the Berkeley Municipal Code Establishing Emergency Greenhouse Gas Limits, Process for Updated Climate Action Plan, Monitoring, Evaluation, Reporting and Regional Collaboration

RECOMMENDATION

1. Adopt an ordinance adding a new Chapter 12.01 to the Berkeley Municipal Code (BMC) establishing Emergency Greenhouse Gas Limits with an effective date of [ ], 2022.

2. Refer to the FY23-24 Budget Process $[ ] consistent with implementing the requirements of Sections 12.01.040, 12.01.050, 12.01.060.

CURRENT SITUATION, EFFECTS, AND RATIONALE FOR RECOMMENDATION

Scientific evidence indicates that between the industrial period of 1850 and 2021, economic systems, namely state and free-market forms of capital accumulation and economic growth have increased global atmospheric carbon dioxide levels to a staggering 418 parts per million (ppm), beyond the established planetary boundary of 350 ppm, and warmed global average temperature by approximately 1.1 degrees Celsius. Available scientific evidence indicates there is no ‘safe’ level of warming beyond 350 ppm, only gradations of risk with respect to habitability.

Berkeley is already experiencing unprecedented negative effects of warming associated with 1 degree of warming, and current global growth trends and policies could push humanity past 1.5 degrees by mid-century, leading to a devastating 2-4 degrees by the end of the century. The ‘Global North,’ which includes Berkeley, has far exceeded its fair share of the emissions comprising and exceeding the boundary, and must reduce its emissions rapidly and justly.

2180 Milvia Street, Berkeley, CA 94704 ● Tel: (510) 981-7140 ● TDD: (510) 981-6903 ● Fax: (510) 981-6903 E-Mail: KHarrison@cityofberkeley.info

The City of Berkeley has engaged with the issue of global warming for at least three decades and has unquestionably been a leader in certain climate actions. Yet, in light of the current gravity of the climate emergency, current strategies and targets are not adequate. Exceptionally risky "mitigation" strategies, namely midcentury 'net-zero' pledges have provided for unbridled economic and emissions growth and thus severely dwindled carbon budgets, effectively rendering Berkeley's gradual reduction goals: 80% by 2050 (Measure G, 2005 and Resolution 64,480-N.S., 2009) and net-zero by 2045 (Resolution 69,852–N.S., 2021), untenable. The majority of risk associated with each additional ton of greenhouse gas emitted will be borne by generations who will have not consented to current reduction goals and strategies. Current policies could exacerbate or lead to exceedingly dangerous new tipping points.

This item is timely in light of ongoing reports that national "pledges" under Paris Agreement could lead to at least 3 degrees of catastrophic warming, the inability for Congress to pass meaningful domestic and international climate policies and legislation, and the failure of world leaders to reach an effective and substantive agreement at the 26th UN Climate Change Conference of the Parties (COP26) in Glasgow.

BACKGROUND

The ordinance establishes emergency greenhouse gas limits aimed at reducing sector-based greenhouse gas emissions 90% below 2000 levels and consumption-based emissions 90% below 2013 levels by 2030. These limits would bring Berkeley closer to its global 'fair share' and science-based reduction obligations, and could help achieve reductions at scale as part of a program of regional coordination and collaboration.

While such targets are ambitious, mitigating and minimizing global warming risk and maximizing adaptation, resilience and adherence to planetary boundaries earlier in the century rather than later will likely result in less disruption to society over the long term, and will generate opportunities for more inclusive and sound democratic decision making as compared to waiting until atmospheric carbon levels reach increasingly catastrophic levels.

These limits are consistent with the City's 2006 "precautionary principle" established by BMC 12.29, and which states:

> "The purpose of this chapter is to promote the health, safety, and general welfare of the community by minimizing health risks, improving air quality, protecting the quality of ground and surface water, minimizing consumption of resources, and minimizing the City' s contribution to global climate change by implementing in a phased manner, as provided in this chapter, the City's use of a precautionary principle approach in its decisions."

As enacted by Council, BMC 12.29 requires the City to apply the following precautionary principle tenets in the course of action and decision-making:

1. Anticipatory Action: Anticipatory action may prevent harm. Government, business, community groups, and the public share this responsibility.

2. Right to Know: The community has a right to know complete and accurate information on potential health and environmental impacts associated with the selection of products, services, operations or plans.

3. Alternatives Assessment: Examine a full range of alternatives and select the alternative with the least potential impact on health and the environment including the alternative of doing nothing.

4. Consideration of Significant Costs: Consider significant short-term and long-term costs in comparing product alternatives, when feasible. This includes evaluation of significant costs expected during the lifetime of a product, (e.g. raw materials, manufacturing and production, transportation, use, clean-up, acquisition, extended warranties, operation, supplies, maintenance, disposal costs, long and short-term environmental and health impacts); and that expected lifetime compared to other alternatives.

5. Participatory Decision Process: Decisions applying the Precautionary Principle should be transparent, participatory by including community input, and informed by the best available information.

The ordinance requires the City to develop a new Climate Action Plan and consistent with these GHG limits and precautionary principle tenets, and to establish relevant legislative and budgetary timelines to help the City reach its objectives.

In addition, the ordinance requires the City to consider post-growth climate mitigation strategies and policies as potential alternatives to the growth and market-based and other policies that created the crisis and remain a persistent obstacle to meaningful action. The City's policies and programs *must not* aim to merely increase economic growth for growth's sake, but rather to support the provision of basic human needs and happiness.

It also provides an institutional framework to build solidarity with neighboring Bay Area communities and jurisdictions to achieve collective limits that could change rate of global warming while simultaneously providing sister cities in other countries precious time to improve living standards and pursue decarbonization.

ENVIRONMENTAL SUSTAINABILITY

This item is consistent with the latest climate science and the precautionary principle established by BMC 12.29.

ATTACHMENTS

1. Proposed Ordinance adding a new Chapter 12.01.

FINANCIAL IMPLICATIONS

Staff time will be necessary to implement the new ordinance. This item refers $[ ] to the FY23-24 Budget Process consistent with implementing the requirements of Sections 12.01.040, 12.01.050, 12.01.060.

CONTACT PERSON

Councilmember Kate Harrison, Council District 4, (510) 981-7140

ORDINANCE NO. –N.S.

ADDING CHAPTER 12.01 TO THE BERKELEY MUNICIPAL CODE TO ESTABLISH EMERGENCY GREENHOUSE GAS EMISSIONS LIMITS

BE IT ORDAINED by the Council of the City of Berkeley as follows:

Section 1. That Chapter 12.01 of the Berkeley Municipal Code is added to read as follows:

Chapter 12.01

EMERGENCY GREENHOUSE GAS EMISSIONS LIMITS

Sections:

12.01.010 Findings and purpose.

The Council of the City of Berkeley finds and declares as follows:

A. Available scientific evidence indicates that between the industrial period of 1850 and 2021 economic systems, namely state and free-market forms of capital accumulation and economic growth, have increased global atmospheric carbon dioxide levels to a staggering 418 parts per million (ppm) beyond the established planetary boundary of 350 ppm, and warmed global average temperature by approximately 1.1 degrees Celsius. The 'Global North,' which includes Berkeley, has far exceeded its fair share the emissions comprising and exceeding the boundary, and must reduce its emissions rapidly and equitably.

B. Available scientific evidence indicates there is no 'safe' level of warming beyond 350 ppm, only gradations of risk with respect to habitability. Berkeley, California, the United States, and the world is already experiencing unprecedented negative effects of warming associated with 1 degree of warming, and current global growth trends and policies will push humanity past 1.5 degrees as early as the 2030s and 3 to 4 degrees by the end of the century. Global warming between 1.5 to 2 degrees Celsius is expected to further accelerate existential risks to health and safety including but not limited to, extreme weather, mass extinction, water and food shortages, violent conflict, fire, forced migration, economic collapse, disease, heat stress, and sea level rise. The majority of risk associated with each additional ton of greenhouse gas emitted will be borne by generations who will have not consented to current reduction strategies.

C. In the twenty-first century, Berkeley, California, and the United States have largely and irresponsibly relied on ineffective market-based mechanisms, unrealistic expectations of absolutely decoupling GDP growth from energy use, speculative mass deployment of negative emission reduction technologies and 'net-zero' practices to offset continued fossil fuel production and consumption, and underappreciation of irreversible tipping points, aerosol masking, and non-carbon greenhouse gasses. In light of the current gravity of the climate emergency, these strategies have unequivocally failed; between Measure G and 2018, each jurisdiction only reduced greenhouse gasses by a respective 10%, 12%, and 26%, while at the same time globally, nearly a third of all anthropogenic carbon dioxide was emitted. Exceptionally risky strategies pursued by the Global North, namely midcentury 'net-zero' pledges have provided for unbridled economic and emissions growth and thus severely dwindled carbon budgets, effectively rendering Berkeley's gradual reduction goals: 80% by 2050 (Measure G, 2005 and Resolution 64,480-N.S., 2009) and net-zero by 2045 (Resolution 69,852–N.S., 2021), untenable.

D. It is the intent of the Council to adopt stringent and equitable science-based greenhouse gas emissions limits and related action plans and reports, consistent with the precautionary principle approach established by Chapter 12.29, for the purpose of achieving the rapid, far-reaching, unprecedented and just changes in all aspects of society associated with mitigating and minimizing global warming risk and maximizing adaptation, resilience and adherence to planetary boundaries.

E. The Council further intends to endeavor to build solidarity with neighboring communities and jurisdictions to achieve collective limits that could change rate of global warming while simultaneously providing sister cities in other countries precious time to improve living standards and pursue decarbonization.

12.01.020 Definitions.

A. "Climate Action Plan" means the document required under Section 12.01 outlining the specific actions the City will endeavor to take to reduce Greenhouse gas emissions and to mitigation, resilience and adaptation efforts with respect to climate impacts.

B. “Consumption-Based Greenhouse Gas Emissions” means all the Greenhouse Gas emissions associated with producing, transporting, using, and disposing of products and services consumed by a particular community or entity in a given time period, including emissions generated outside the boundaries of the community or the geographic area where the entity is located.

C. “Greenhouse Gas” means any and all of the following gases: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulfur hexafluoride.

D. “Sector-Based Greenhouse Gas Emissions” means all of the Greenhouse Gas emissions generated within the geographic boundaries of the City in a given time period.

E. “Responsible Production and Consumption” means improving how materials and products are extracted, manufactured, delivered, acquired, used, reused, recycled, and disposed of to ensure that the production and consumption of materials and products promote basic human needs, are distributed in a socially equitable manner, and carried out in a way that minimizes environmental impacts over the lifecycle of those materials and products while matching the carrying capacity of the earth’s resources and adding value so as not to jeopardize present and future generations. “Lifecycle” means the complete material life of a product, good, or service, including resource extraction, manufacture, assembly, construction, maintenance, transportation, operations or use, and end of life (reuse, recycling/composting, and disposal). “Carrying capacity” means the number or amount of people, plants, and other living organisms that an ecosystem can support indefinitely without causing environmental degradation.

F. “Post-Growth Emissions Mitigation” means Greenhouse Gas mitigation strategies and policies that acknowledge and support the following:

(1) rapid emissions reductions may not be compatible with economic policies that support limitless growth, especially growth in the production and consumption of commodities that do not support basic human needs,

(2) in jurisdictions with high aggregate wealth there may be a disassociation between additional capital accumulation, economic growth, and GDP, and key social outcomes, to include but not limited to, health, social wellbeing, happiness and equity,

(3) fairer distribution of income and wealth, and guaranteed access to universal public services.

12.01.030 Emergency Greenhouse Gas Emissions Limits.

A. The following Greenhouse Gas emissions limits are hereby established:

(1) By 2030, reduce Sector-Based Greenhouse Gas Emissions [90%] below 2000 levels.

(2) By 2030, reduce Consumption-Based Greenhouse Gas Emissions to [5] mtCO2e per household or less, equivalent to a [90%] reduction compared to 2013 levels.

(3) By 2026, the Council shall determine an appropriate deadline for achieving 100% zero emissions across both Sector and Consumption-Based inventories.

12.01.040 Climate Action Plan.

A. By [ ], 2022, the City Manager or designee shall prepare and submit for relevant Council policy committee and Council approval a Climate Action Plan (CAP) which shall

do all of the following:
(1) Align with the emissions limits established in Section 12.01.030.
(2) Consider equitable Post-growth Climate Mitigation strategies and policies.
(3) Incorporate an equity framework that addresses historic racial, class-based, and social inequalities; prioritizes social, economic, and environmental benefits derived from implementing the CAP; and ensures an equitable distribution of those benefits. This framework shall consider:
(a) The engagement and prioritization of those who are most impacted by climate change and have historically had the least influence in decision-making processes, including low-income communities of color, communities with disabilities, and other impacted populations;
(b) Burdens and/or unintended consequences of related actions, especially for low-income communities of color, communities with disabilities, and other vulnerable populations; and
(c) Social interventions needed to secure workers' rights and livelihoods when economies are shifting to responsible production and consumption, collectively referred to as a “just transition” framework, and other impacts on workforce and job opportunities.
(4) Include, but not be limited to, the following elements: energy supply; transportation and land use; building operations; housing; Responsible Production and Consumption; carbon sequestration and water conservation.
(5) Identify strategies and/or make recommendations to achieve emissions limits for all elements. The CAP shall recommend approaches on goals and principles. Each strategy or recommendation shall:
(a) Identify parties responsible for implementation;
(b) Incorporate an estimated cost; and
(c) Incorporate estimated legislative and budgetary timelines based consistent with Section 12.01.030; and
(d) Contain key performance indicators and explicit equity metrics to measure progress.
B. The City Manager or their designee shall update the Climate Action Plan at least every two years.

12.01.050 Monitoring, Evaluation, And Reporting.
A. The City shall demonstrate its long-term commitment to reducing Greenhouse Gas emissions and advancing racial and social equity by measuring and reporting emissions, tracking key performance indicators and equity metrics, and monitoring the City’s progress on meeting its climate action goals and commitments.
B. The City Manager or their designee shall, with the assistance from relevant City agencies:
(1) Measure and monitor Sector-Based Greenhouse Gas Emissions, including municipal emissions, using best available global protocols for preparing Citywide Greenhouse Gas emission inventories.
(2) Measure production and consumption emissions using best available global methodologies for preparing consumption-based emission inventories.
(3) Evaluate Sector-Based Greenhouse Gas Emissions against set limits, document production and consumption emissions, and produce an annual Greenhouse Gas emissions report.
(4) Establish a monitoring and reporting process for the implementation of the CAP that:
(a) Tracks key performance indicators and equity metrics for strategies to help

monitor their progress and implementation;
(5) Request and receive data from City departments to support:
(a) The annual Greenhouse Gas emissions inventory. City departments may be asked to provide data on, but not limited to, the following: their energy use; types of fuels used for their operations; fuel volume; vehicle-miles travelled (if applicable) within their jurisdictions; and private sector Greenhouse Gas emission sources regulated by the department. Departments may also be requested to verify emission estimates and assumptions and review resulting reports;
(b) Monitoring and reporting of Climate Action Plan implementation. City departments may be asked to provide data on key performance indicators and equity metrics related to adopted strategies and actions; and
(6) Coordinate with other City agencies to monitor, track, and report on climate action progress to local, state, national, and global partners.
(7) Report its findings in a progress report to the Council and public every year.
(8) Report on at least a biannual basis to relevant Council policy committees and commissions to support policy and budget development consistent with reduction limits established in Section 12.01.030.

12.01.060 Regional Collaboration.
The Council and City staff, working alongside the public, shall endeavor to build solidarity and coalitions with neighboring communities, jurisdictions, and agencies to achieve equitable collective Greenhouse Gas limits and observe planetary boundaries.

11.63.070 Severability.
If any word, phrase, sentence, part, section, subsection, or other portion of this Chapter, or any application thereof to any person or circumstance is declared void, unconstitutional, or invalid for any reason, then such word, phrase, sentence, part, section, subsection, or other portion, or the prescribed application thereof, shall be severable, and the remaining provisions of this Chapter, and all applications thereof, not having been declared void, unconstitutional or invalid, shall remain in full force and effect. The City Council hereby declares that it would have passed this title, and each section, subsection, sentence, clause and phrase thereof, irrespective of the fact that any one or more sections, subsections, sentences, clauses or phrases had been declared invalid or unconstitutional.

12.01.080 Construction.
This Chapter is intended to be a proper exercise of the City's police power, to operate only upon its own officers, agents, employees and facilities and other persons acting within its boundaries, and not to regulate inter-city or interstate commerce. It shall be construed in accordance with that intent.

12.01.090 Effective date.
The provisions in this ordinance are effective [ ], 2022.

Section 2. Copies of this Ordinance shall be posted for two days prior to adoption in the display case located near the walkway in front of the Maudelle Shirek Building, 2134 Martin Luther King Jr. Way. Within 15 days of adoption, copies of this Ordinance shall be

filed at each branch of the Berkeley Public Library and the title shall be published in a newspaper of general circulation.