

Benicia Industrial Park

TRANSPORTATION & EMPLOYMENT CENTER PLAN



Prepared by

DYETT & BHATIA

Urban and Regional Planners

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Adopted May 2017

Prepared for the City of Benicia by

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ACKNOWLEDGEMENTS

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1. INTRODUCTION

The Benicia Industrial Park is a significant employment center in Solano County. Home to over 600 firms employing more than 5,000 workers, which comprises over a third of the total jobs in Benicia, the Industrial Park serves as the economic engine for the city, contributing approximately two-thirds of the city's sales tax revenue. The Park is strategically located, served by I-680, a private deep water port, and Union Pacific Railroad mainline and spurs.

1.1 PLAN OBJECTIVES

The Industrial Park has been recognized as an Employment Center Priority Development Area (EC-PDA) by the Association of Bay Area Governments (ABAG). PDAs are places that local jurisdictions have identified within their communities where new development will support the day-to-day needs of residents and workers in a multi-modal environment served by transit. While the addition of residential uses is not anticipated as part of the Industrial Park's EC-PDA designation, as an employment-based PDA, the Industrial Park has the added goal of advancing employment growth by attracting new business and providing for the renovation of established areas.

The Benicia Industrial Park Transportation and Employment Center Plan (TEC Plan) will help the City achieve these goals in the Industrial Park by creating a more complete business and transportation environment. In order to do so, the TEC Plan has the following objectives:

- Implement "Complete Streets" in the Industrial Park through improvements that benefit trucks, cars, bicyclists, pedestrians and transit riders;
- Retain existing and attract new business;
- Promote sustainability by reducing fuel consumption and air pollutant emissions; and
- Increase the potential for grant funding for roadway and streetscape improvements.

COMMITMENT TO COMPLETE STREETS

As defined by State law and the California Department of Transportation, Complete Streets are roads that provide safe mobility for all users, including bicyclists, pedestrians, transit vehicles, truck drivers and motorists, while remaining appropriate to the function and context of where they are located.¹ Complete Streets have a number of benefits for the communities that implement them, such as supporting increased physical activity, improving public health and safety, providing mobility and access options for non-drivers, and decreasing vehicle trips and associated greenhouse gas emissions. In accordance with the Metropolitan Transportation Commission (MTC) policy for eligibility to obtain One Bay Area Grant 2 funds, Benicia adopted a Complete Streets policy in January 2016 with City Council Resolution No. 16-2 (Appendix A).²

In order to successfully implement context appropriate Complete Streets in the Industrial Park, consideration of existing operations is critical. There is consistent truck and rail traffic throughout the Park at all hours of the day, which has the potential to cause safety and health concerns when paired with increased bike and pedestrian traffic. The goals and policies of the TEC Plan aim to address this potential conflict through thoughtful streetscape design that limits multimodal improvements to select, well-marked routes that provide safe access to transit lines and places of employment. This will allow Industrial Park workers traveling by all modes to enjoy safe routes to work without impeding the movement of goods and materials that is essential to the Park's success.

1. California Department of Transportation. (2014). Complete Streets: Implementation of Deputy Directive 64-R2: Complete Streets – Integrating the Public Transportation System. [Brochure]. Sacramento, CA

2. OBAG 2 refers to the second round of funding for the One Bay Area Grant program, which is projected to total roughly \$916 million for projects from 2017-18 through 2021-22. The OBAG 2 program is divided into a Regional Program, managed by the Metropolitan Transportation Commission (MTC), and a County Program, managed by the nine Bay Area Congestion Management Agencies (CMAs).

1.2 REGIONAL SETTING AND PLAN AREA

REGIONAL SETTING

The city of Benicia is located in southwest Solano County, bordered by the Carquinez Strait to the south, Suisun Bay to the east, the Benicia State Park to the west, and Lake Herman Road to the north. Two major highways – Interstate 780 and Interstate 680, run along the southern and eastern side of the city and connect at the Benicia-Martinez Bridge. The city can be divided into three sections: South of Interstate 780, North of Interstate 780 (Southampton) and the Benicia Industrial Park. The area south of Interstate 780 is the older part of the city, where a mix of residential, commercial, and service activities can be found. Southampton is occupied primarily by single family homes and condominiums. The Benicia Industrial Park hosts the majority of industrial, warehousing and distribution activities in the city. The regional setting is depicted in Figure 1-1.

PLAN AREA

The Plan Area is located at the northeast corner of the city, bordered by Lake Herman Road, East Channel Road, and the city's eastern boundary. The Plan Area can be accessed by Interstate 680 and other local roads such as East 2nd Street and Park Road from the south. Figure 1-2 shows the Plan Area in the context of the city.

The Plan Area can be broken down into two main components. The first is the older portion of the Industrial Park, generally located south of East 2nd Street and referred to throughout this Plan as the “existing Industrial Park” or the “Industrial Park interior.” This area is largely developed and experiences significant truck, auto, and rail traffic. The second component is a large amount of vacant land located between East 2nd Street and Lake Herman Road, referred to throughout the Plan as the “Northern Gateway property.” At over 500 acres, the Northern Gateway property offers the potential for a large scale development opportunity in the future. Refer to Chapter 7 for additional information on land uses in the Industrial Park.

Within the Industrial Park interior, there are several distinct sub-areas. The heaviest industrial uses and rail traffic occur in the western portion of the Park along East Channel Road, Industrial Way, and Bayshore Road. This area borders the Valero Refinery, which is largely located just to the west of the Plan Area. East of I-680, Industrial Way takes on a different character with lighter manufacturing and industrial businesses situated overlooking marsh lands and Suisun Bay. The heart of the Industrial Park interior, centered around Park Road and Stone Road, features a mix of manufacturing, warehousing, light industrial, and commercial businesses that receive consistent truck traffic throughout the day. Gateway Plaza Drive and the northeast corner of the Park contain a concentration of commercial businesses that are easily accessible from the freeway. In addition, a privately owned and operated deep water port is located just outside the Plan Area boundary to the south.

Throughout the Plan, policies and recommendations may apply to all or some of these sub-areas. Streetscape, pedestrian, bicycle, and other targeted roadway improvements are designed to be context-sensitive, responding to the unique characteristics of the sub-areas within the Industrial Park. Other policies may apply more broadly to the Park as a whole, as appropriate.

FIGURE 1-1 REGIONAL CONTEXT

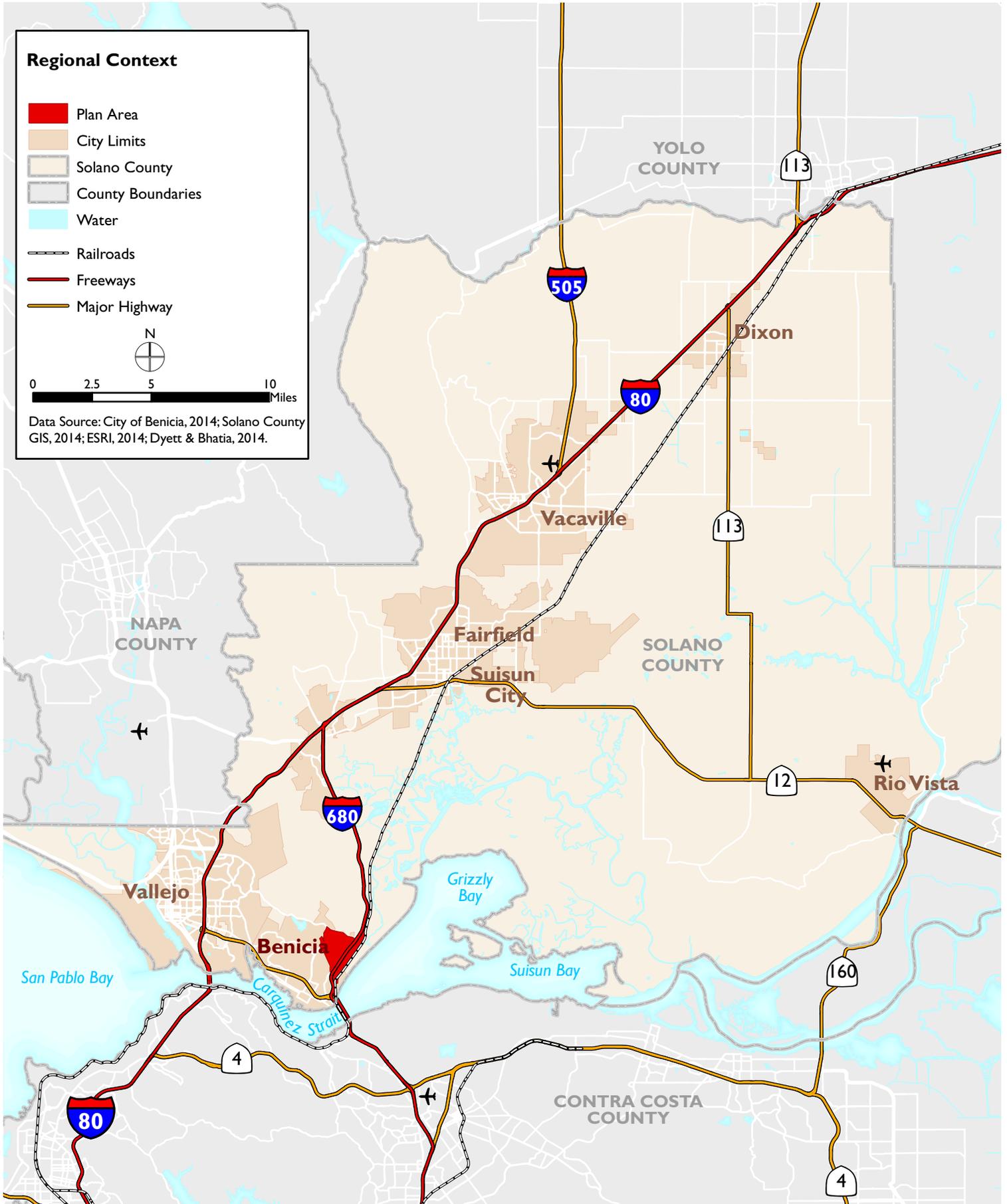


FIGURE 1-2 CITYWIDE CONTEXT



1.3 PLANNING PROCESS

The City of Benicia, in partnership with the Solano Transportation Authority (STA) and the Dyett & Bhatia consulting team, led the planning process for the TEC Plan.

BACKGROUND RESEARCH

At the project outset, interviews were conducted with a variety of community and business leaders who have significant interest in the future of the Industrial Park. Those interviewed included representatives from businesses within the Industrial Park, the STA Bicycle Advisory Committee, the STA Pedestrian Committee and the Benicia Industrial Park Association (BIPA). A summary of the key insights gained from these stakeholder interviews was produced in December 2014.

Concurrently, background research analyzed existing land uses as well as the current roadway, bicycle, pedestrian, and transit networks in the Plan Area. Results of this research were published in two reports – Land Use and Growth Potential Background Report (March 2015) and Existing Transportation Conditions and Needs Assessment Report (August 2015).

SCENARIOS ANALYSIS

Following completion of background research, three potential “land use scenarios” were developed in order to consider different approaches to achieving the project’s dual goals of context-appropriate Complete Streets and economic development. Each scenario maintained consistency with the General Plan, but assumed a different outcome for future land use changes in the Industrial Park, thus providing different options and recommendations for roadway, bike, pedestrian, wayfinding and streetscape improvements. A Scenarios Report detailing the recommendations for each scenario was released in August 2016.

To gather community input on the Scenarios Report and the range of potential improvements presented, a community workshop was held in September 2016 at the Community Center in Benicia. A report summarizing the comments received at the workshop was produced in late September 2016. In addition to feedback gathered at the workshop, the City received letters and written comments from three additional parties.

BENICIA INDUSTRIAL PARK TEC PLAN

Based on the feedback gathered on the Scenarios Report and input from City Staff, the Benicia Industrial Park TEC Plan was developed, the organization and contents of which are outlined in the next section. Following release of the Public Review Draft of the Plan, City Staff will conduct any necessary environmental review before Plan adoption, which is anticipated in Spring 2017

1.4 PLAN ORGANIZATION

TEC PLAN OUTLINE

Chapters in the TEC Plan are organized by topic as follows. Chapters 2 through 8 include goals and policies pertaining to each topical area to guide the City and future development project proponents in achieving the Plan's objectives.

Chapter 1: Introduction outlines the objectives of the TEC Plan, describes the Plan Area and regional setting, reviews the planning process to date, and provides an overview of the Plan's organization.

Chapter 2: Roadways and Truck Movement assesses the Industrial Park's existing roadway network and its constraints, including deficiencies related to geometric roadway design, pavement maintenance, drainage and flooding. The chapter also describes recommended improvements to address these deficiencies as well as possible additional improvements to further improve the roadway network.

Chapter 3: Transit and Transportation Demand Management describes the Industrial Park's transit network and planned bus hub and provides an overview of recommended Transportation Demand Management (TDM) measures to encourage commuting by alternate modes of transportation.

Chapter 4: Bicycles characterizes the existing bicycle network in the Industrial Park, identifies potential bicycle user groups and needs, and describes improvements to complete and enhance the bicycle network.

Chapter 5: Pedestrians provides an overview of existing pedestrian facilities in the Industrial Park, describes the potential needs of pedestrians, and outlines improvements to provide safe pedestrian routes on select streets.

Chapter 6: Streetscape Design describes the elements that make up a streetscape, assesses current streetscapes in the Industrial Park, and provides recommendations for improvements.

Chapter 7: Land Use addresses existing land uses in the Industrial Park as well as General Plan designations, zoning regulations, and electric vehicle charging stations.

Chapter 8: Signage and Wayfinding outlines different types of signage and wayfinding elements and provides recommendations for their usage within the Industrial Park.

Chapter 9: Implementation summarizes the actions that will be necessary to implement the TEC Plan, as well as the responsibility for and suggested timing of each action. Potential funding sources for improvements are also discussed.

Appendix A: Complete Streets Policy – City Council Resolution No. 16-2 includes the full text of the City's Complete Streets Policy adopted on January 5, 2016.

Appendix B: LOS Summary provides information about existing LOS conditions within the Plan Area as well as 2040 LOS forecasts.

Appendix C: Cost Summary for Baseline Improvements estimates the total costs of completing the baseline roadway, bicycle, and pedestrian improvements outlined in this Plan.

Appendix D: Bicycle and Pedestrian Intersection Counts provides data on peak hour bicycle and pedestrian activity in the Industrial Park.

Appendix E: Land Use Regulations in Industrial Zoning Districts provides text from Section 17.32.020 of the Benicia Municipal Code regarding allowable uses in industrial zoning districts.

Appendix F: Glossary of Acronyms includes a list of acronyms used through the TEC Plan.

BASELINE IMPROVEMENTS AND ADDITIONAL IMPROVEMENTS TO ACHIEVE COMPLETE STREETS

The roadway, bicycle, pedestrian, and streetscape improvements outlined in this Plan are divided into two categories: baseline improvements and additional improvements to achieve Complete Streets. Baseline improvements address existing deficiencies and include improvements identified by the City's General Plan and other relevant planning documents. These improvements should be prioritized and completed soon after Plan adoption.

Changes identified as “additional improvements to achieve Complete Streets” constitute the heart of this Plan and serve to transition the Industrial Park into an accessible, multimodal environment that supports bicycling, walking, and riding transit as feasible commute modes. Implementation of these improvements will require coordination with property owners, the Benicia Industrial Park Association (BIPA), transit providers, and others. See Chapter 9 for additional information on implementation.



2. ROADWAYS AND TRUCK MOVEMENT

This chapter describes the Benicia Industrial Park's roadway network. Roadway improvements will enhance the Park's accessibility and its role as a regional center of economic activity. This chapter outlines the baseline improvements needed to address deficiencies in the existing roadway network as well as additional improvements that could enhance circulation.

2.1 EXISTING ROADWAY NETWORK

This section briefly lists the main roadways in the Plan Area. The regional roadway network in and around the Industrial Park includes Interstates 680 and 780, both four-lane freeway facilities. All existing conditions are described as of late 2016. The main, local and arterial streets serving the Industrial Park are shown in Table 2-1 below. The locations of each of these roadways is shown in Figure 2-1.

Table 2-1 also lists the approximate right-of-way width for each roadway. Even along a single roadway, the right-of-way often varies in width; in these cases, a range is shown. There may be some instances in which additional available right-of-way exists beyond where the roadway is currently built. However, this too can vary significantly and is difficult to determine with precision. In subsequent sections of this Plan, where improvements to the roadway are illustrated, the typical available right-of-way width is shown.

TABLE 2-1: MAIN ARTERIAL AND LOCAL STREETS IN THE INDUSTRIAL PARK

<i>Street</i>	<i>Description</i>	<i>Right-of-Way Width</i>
East 2nd Street	Arterial roadway extending northeast from downtown Benicia to Lake Herman Road. Between Industrial Way and Lake Herman Road, the roadway varies from two lanes to two travel lanes and a center turn lane through much of the Plan Area. West of Industrial Way, the street widens to a four-lane roadway with a median, turn lanes, and bicycle lanes.	40-120 feet
Lake Herman Road	Two lane east-west roadway that forms the northern boundary of the Plan Area.	50-150 feet
Reservoir Road	Two lane, north-south roadway that runs in the northwestern portion of the Plan Area, connecting East 2nd Street and Lake Herman Road.	60 feet
Industrial Way	Two lane arterial roadway that connects I-680 to East 2nd Street and Lake Herman Road. Between Oregon Street and Noyes Court, Industrial Way is a three-lane street, with two lanes in the southbound direction and one lane in the northbound direction.	44-75 feet
Park Road	Two lane, north-south arterial roadway that runs parallel to I-680 before veering northwest to intersect with East 2nd Street. It serves as the connection between the interchange ramps at Industrial Way and Bayshore Road and the rest of the Industrial Park. It also links the Park to the Arsenal and serves as a viable route to downtown Benicia.	40 feet
Bayshore Road	Two lane arterial roadway located in the southern portion of the Plan Area, that connects the waterfront and the Port with the Industrial Park interior, I-780 interchanges, and the Port surface parking lots fronting Suisun Marsh.	25-44 feet
Stone Road	Two lane roadway serving the interior of the Plan Area that provides a second connection between East 2nd Street and Park Road.	35-40 feet
Goodyear Road	Two lane roadway serving the northeast corner of the Plan Area adjacent to I-680. Its southern terminus intersects with the I-680 northbound ramps and Lake Herman Road.	60 feet
East Channel Road	Two lane roadway connecting West Channel Road and Bayshore Road and providing access to properties east of the refinery and west of the rail spur.	40 feet

Source: DKS Associates, 2016; Solano County Assessor; Google Earth

ROADWAY CAPACITY

Based on traffic volumes measured in September 2014, all study intersections are meeting the City's Level of Service (LOS) standards, meaning that capacity is not an issue at this time when considering only roadway traffic. However, trains crossing Park Road at-grade can sporadically degrade the LOS to unacceptable levels (E or F) at the adjacent intersection of Park Road and Bayshore Road.³

Future traffic levels and the resulting roadway LOS will depend on the land uses present in the Industrial Park. The eventual development of the Northern Gateway property will have a significant impact on the transportation network, especially along East 2nd Street. However, until an actual project is proposed, it would be premature to plan specific improvements. Using the best available information on regional traffic growth,⁴ only the intersections at 2nd Street and the I-780 ramps are expected to need improvement by 2040 to meet the City's LOS standard during the afternoon peak hour. Refer to Appendix B for an LOS summary of 15 intersections within the Plan Area.

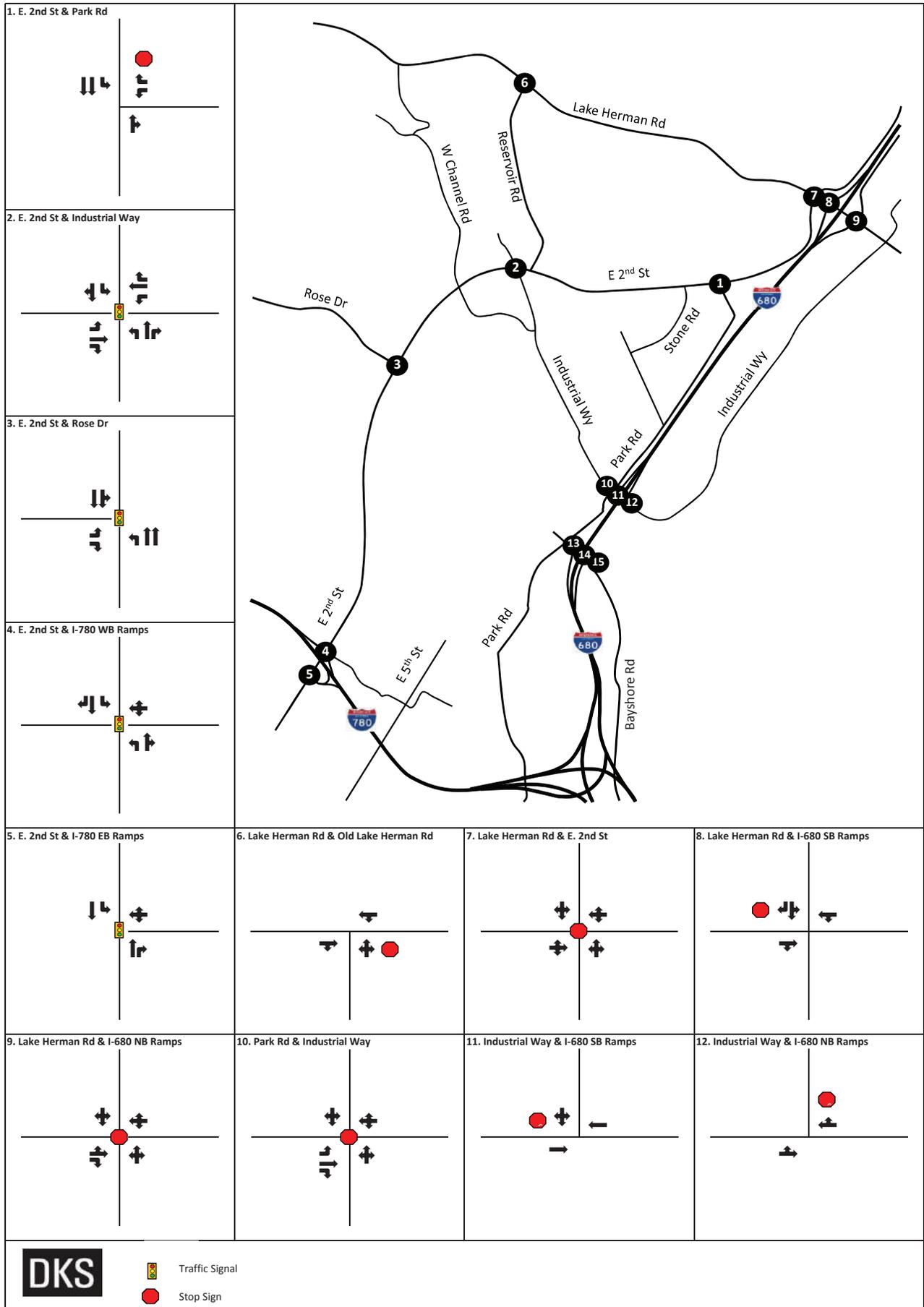


Improvements to the freeway ramp intersections would improve safety at the entrances of the Industrial Park.

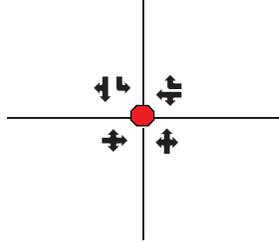
3. Fehr and Peers. Draft Transportation Impact Analysis Report. Valero Benicia Refinery Crude by Rail Project. May 2013.

4. Solano Napa Activity Based Travel Model, 2016.

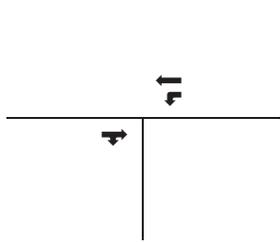
FIGURE 2-1 EXISTING LANE CONFIGURATIONS



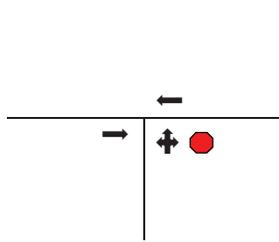
13. Park Rd & Bayshore Rd



14. Bayshore Rd & I-680 SB Ramps



15. Bayshore Rd & I-680 NB Ramps



 Traffic Signal

 Stop Sign

ISSUES AND CONSTRAINTS

GEOMETRIC AND DESIGN DEFICIENCIES

Due to high truck volumes in the Industrial Park, good truck circulation and ramp access are of critical importance. Existing lane configurations (as of late 2016) are illustrated in Figure 2-1. The current geometric design of some roadways and intersections is inadequate for accommodating long trucks, thus creating safety concerns at some intersections and near freeway ramps. Analysis was conducted at several key locations with potential deficiencies within the Industrial Park. Stopping sight distances were assessed according to the Caltrans Highway Design Manual, intersection spacing was assessed using the City of Benicia Engineering Design Standards and Standard Plans, and turn radii on freeway ramp intersections was evaluated using recommended dimensions to accommodate a California “STAA” truck tractor.⁵

Based on these metrics, the locations below have been identified as deficient as of late 2016:

- The intersection at **Lake Herman Road and Gateway Plaza Drive** is located at a distance from the adjacent intersection of **Lake Herman Road and the northbound I-680 ramps** that is below the City’s spacing requirement.⁶
- The intersection at **Industrial Way and the southbound I-680 off-ramp** is located at a distance from the adjacent intersection of **Industrial Way and Park Road** that is below the City’s spacing requirement. In addition, the I-680 overpass structure to the east of the intersection does not allow for adequate stopping sight distance⁷ for westbound vehicles. Also, the left-turn design radius is not adequate to allow a STAA truck to make a left turn from the freeway off-ramp onto Industrial Way, and thus the truck would be forced to encroach past the pavement edge.
- The intersection at **Industrial Way and the northbound I-680 on-ramp** does not have adequate right-turn design radius for a STAA truck, and thus the truck would be forced to encroach past the pavement edge.
- The intersection at **Bayshore Road and the northbound I-680 off-ramp** does not allow for adequate stopping sight distance for eastbound and westbound vehicles. Also, the right-turn design radius is not adequate to allow a STAA truck to make a right turn from the freeway off-ramp onto Bayshore Road, and thus the truck would be forced to encroach past the pavement edge.
- The intersection at **West Channel Road and East Channel Road** does not allow for adequate stopping sight distance for eastbound vehicles.

In addition, based on a field visit conducted in 2014 and through discussion with City Staff, several additional design deficiencies were identified. The locations of all identified deficiencies are listed in Table 2-2 and shown on Figure 2-2. Further discussion about key design issues can be found in the Existing Transportation Conditions and Needs Assessment Report (August 2015).

5. “STAA” - Surface Transportation Assistance Act of 1982.

6. According to the City of Benicia Engineering Design Standards and Standard Plans (December 1992), the minimum spacing between intersections is 200 feet.

7. See the Caltrans Highway Design Manual (2014), Table 201.1 for sight distance standards.

PAVEMENT MAINTENANCE

In addition to the deficiencies discussed above, the high volume of commercial vehicle traffic within the Park has degraded the condition of roadway pavement over the years. Based on an analysis using the Pavement Condition Index (PCI), roadway segments in the Plan Area in need of pavement maintenance are listed in Table 2-2 and shown on Figure 2-2. In general, pavement materials should be suitable for heavy truck and bus traffic. In locations with less truck and bus traffic, and as appropriate to road usage and soil conditions, the use of permeable pavers or porous pavement could be explored as a way to manage stormwater. Additional detail about pavement maintenance can be found in the Existing Transportation Conditions and Needs Assessment Report.

FLOODING AND DRAINAGE ISSUES

As shown in Figures 2-3 and 2-4, areas of the Industrial Park that are at a low elevation, close to Suisun Bay, and/or adjacent to Sulfur Springs Creek (including Park Road and Bayshore Road), are located within Special Flood Hazard Areas as documented by FEMA Flood Insurance Rate Maps (FIRM). The City's Adaptation Plan identifies the need to develop strategies that may help mitigate some of these flooding issues as sea levels rise and storm intensity increases due to global climate change. These conditions may also be addressed by the City's Stormwater Management and Flood Mitigation Plan, planned as part of the Measure C Expenditure Plan for fiscal years 2017-19.

Although drainage for these areas is of high importance, as of late 2016 only a few streets provide curbs and gutters to allow proper drainage. Of the Industrial Park roadways east of I-680, only Industrial Way and Bayshore Road provide curbs and gutters, while all other streets (including Mallard Drive, Sprig Drive and Teal Drive) lack drainage infrastructure. Drainage deficiencies within the Plan Area are listed in Table 2-2.

2.2 ROADWAY IMPROVEMENTS

The Benicia Industrial Park requires a baseline level of investment in roadway infrastructure in order to address deficiencies and thrive as a Transportation and Employment Center. The roadway improvements listed in Table 2-2 and shown in Figure 2-2 should be addressed at a minimum. Refer to Appendix C for a complete summary of the estimated costs associated with the baseline roadway, bicycle, and pedestrian improvements in this Plan. Figure 2-3 and Figure 2-4 on the following pages show flood hazard areas affecting the Industrial Park that will be addressed with roadway improvements.

TABLE 2-2: BASELINE ROADWAY IMPROVEMENTS

<i>Roadway Intersection or Segment</i>	<i>Deficiency</i>	<i>Improvements</i>	<i>Planning-Level Estimated Cost^{1,2}</i>
Geometric Deficiencies			
Industrial Way from East 2nd Street to I-680 NB on-ramp	Number of lanes varies between 2 and 3; lack of center left turn lane	Widen to a three lane road with center left turn lane or pocket where feasible.	\$1,684,000
I-680/Lake Herman Road & Gateway Plaza Drive	Inadequate spacing from intersection of Lake Herman Road and I-680 NB ramps (per City's spacing requirement)	Due to geometric and intersection spacing constraints, consider installing traffic signals at the Lake Herman Road/ Gateway Plaza Drive and Lake Herman Road/I-680 NB off ramp intersections. The traffic signals should operate with one controller such that the traffic phasing can be programmed to operate in a manner to eliminate the occurrence of queuing and blocking between the two intersections.	\$1,395,000
West Channel Road & East Channel Road	Inadequate stopping sight distance for eastbound vehicles.	Install advisory curve speed warning sign. Also consider a speed feedback sign if speeding occurs on the roadway.	\$43,000 ³
Industrial Way & SB I-680 off-ramp	Inadequate spacing from intersection of Industrial Way and Park Road. Inadequate stopping sight distance for westbound vehicles due to I-680 overpass structure. Inadequate STAA turning radius for left turn from ramp onto Industrial Way.	Provide a separate sign announcing distance to Park Road intersection. Provide warning sign for westbound vehicles. Pavement widening to accommodate STAA trucks.	\$210,000
Industrial Way & NB I-680 on-ramp	Inadequate STAA turning radius for right turn from Industrial Way onto ramp.	Widen ROW/intersection to accommodate STAA trucks	\$221,000

TABLE 2-2: BASELINE ROADWAY IMPROVEMENTS (CONTINUED)

<i>Roadway Intersection or Segment</i>	<i>Deficiency</i>	<i>Improvements</i>	<i>Planning-Level Estimated Cost^{1,2}</i>
Bayshore Road & NB I-680 off-ramp	Inadequate stopping sight distance for westbound vehicles.	Warning sign for westbound vehicles	\$308,000
Bayshore Road & SB I-680 on-ramp	Insufficient turning radius for STAA vehicles from freeway turning right.	Widen ROW/intersection to accommodate STAA trucks.	
Geometric Deficiencies			
West Channel Road from Industrial Way to Channel Court	Inadequate geometry creates safety concerns	Widen road where feasible	\$2,605,000
Pavement Maintenance			
Bayshore Road south of East Channel Road to south of Industrial Way	Pavement Condition Index (PCI) ⁴ of 11	Reconstruct or resurface to "good" condition	\$48,000
Industrial Way north of Teal Drive to south of Lake Herman Road	PCI of 33	Reconstruct or resurface to "good" condition *Project in Measure C Expenditure Plan for FY 2016-2017	\$1,407,000
Lake Herman Road from Gateway Plaza Court to east of Industrial Way	PCI of 36	Reconstruct or resurface to "good" condition	\$216,000
Park Road north of Bayshore Road to south of Industrial Way	PCI 35	Reconstruct or resurface to "good" condition	\$230,000
Park Road north of Stone Road to south of East 2nd Street	PCI 73	Resurface to maintain "good" condition	\$30,000
Goodyear Road north of Lake Herman Road to 6800 Goodyear Road	PCI 42	Reconstruct or resurface to "good" condition	\$249,000
East 2nd Street north of Rose Drive to 800' north of Wanger Street	PCI 55-68	Reconstruct or resurface to "good" condition	\$1,400,000
East Channel Road	PCI 68	Reconstruct or resurface to "good" condition	\$103,000
Reservoir Road north of East 2nd Street to south of Lake Herman Road	PCI 43	Reconstruct or resurface to "good" condition	\$458,000
Address Flooding/Drainage			
Roadways east of I-680 ⁵	Lack of curbs and gutters to allow proper drainage	Provide curbs and gutters with storm drains along Mallard Drive, Spring Drive, and Teal Drive	\$1,724,000

Notes:

- Costs shown are planning level cost estimates in 2016 dollars based on unit costs derived from Bay Area projects. Estimates include planning engineering, preliminary engineering, utility coordination, environmental, ROW engineering (survey), and ROW acquisition where necessary or appropriate.
- Planning Level Estimated Costs are rounded to the nearest thousand.
- Cost estimate includes speed feedback sign.
- The Pavement Condition Index (PCI) ranges from 0 to 100. A newly constructed street will have a PCI of 100 while a failed street will have a PCI of 25 or less. The pavement condition categories are "good" (PCI greater than 70), "fair" (PCI of 50 – 69), "poor" (PCI of 25 – 49) and "very poor/failed" (PCI less than 25).
- There may be spot locations west of I-680, such as along Industrial Way where it parallels the railroad, that should also be assessed for proper drainage infrastructure.

ADDITIONAL IMPROVEMENTS

FREEWAY RAMP IMPROVEMENTS OR RECONSTRUCTION

Freeway ramp intersection improvements would help to improve the safety and efficiency of entrances to the Industrial Park. However, extensive ramp reconstruction and/or realignment may be challenging due to cost and right-of-way constraints. The locations listed in Table 2-3 warrant further study to determine whether and how best to improve or reconstruct the freeway ramps.

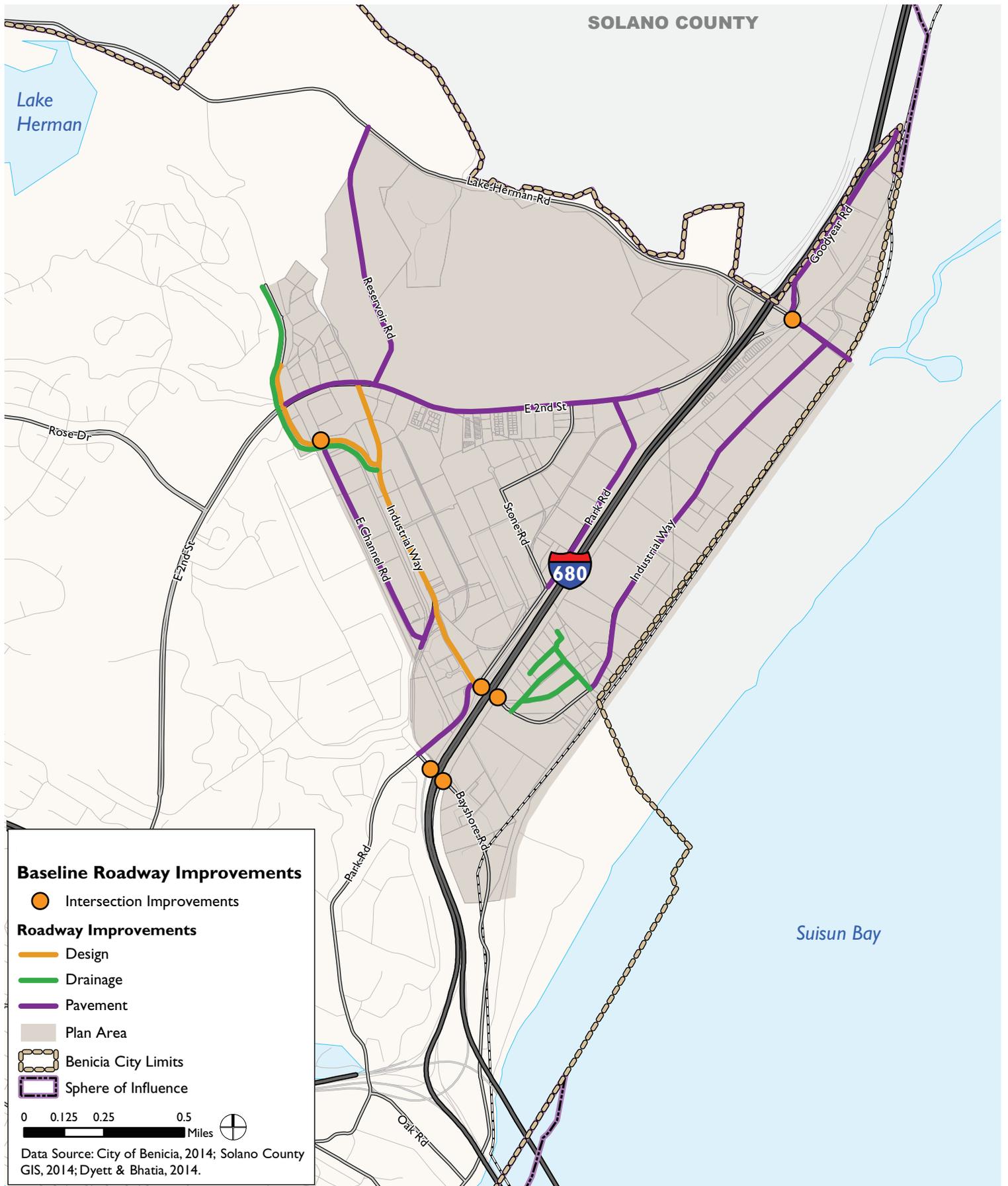
TABLE 2-3: ADDITIONAL ROADWAY IMPROVEMENTS

<i>Intersection or Segment</i>	<i>Deficiency</i>	<i>Improvements</i>
Geometric Deficiencies		
I-680 NB ramps from Gateway Plaza Drive	Inadequate spacing from intersection of Lake Herman Road	Ramp improvements or reconstruction
Industrial Way & SB I-680 off-ramp	Inadequate spacing from intersection of Industrial Way and Park Road. Inadequate stopping sight distance for westbound vehicles due to I-680 overpass structure. Inadequate STAA turning radius for left turn from ramp onto Industrial Way.	Ramp improvements or reconstruction
Industrial Way & NB I-680 on-ramp	Inadequate STAA turning radius for right turn from Industrial Way onto ramp.	Ramp improvements or ramp reconstruction
Bayshore Road & NB I-680 off-ramp and I-680 SB on-ramp	Inadequate stopping sight distance for westbound vehicles. Insufficient turning radius for STAA vehicles from freeway turning right. Circuitous and confusing routing to get to SB on-ramp and from NB off ramp.	Ramp improvements or reconstruction, potentially connecting the off ramps and on ramps directly in both directions.
E 2nd Street & I-780 WB ramps ¹	Will likely not meet LOS standard by 2040. Consider improving intersection if/when performance deteriorates.	Restripe northbound approach on E. 2nd Street for dual left turn lanes onto I-780 westbound. Modify ramp and traffic signal to accommodate new geometry.
E 2nd Street & I-780 EB ramps ¹	Will likely not meet LOS standard by 2040. Consider improving intersection if/when performance deteriorates.	Widen I-780 eastbound off ramp to provide separate right and left turn lanes. Modify traffic signal and island to accommodate new geometry.

Notes:

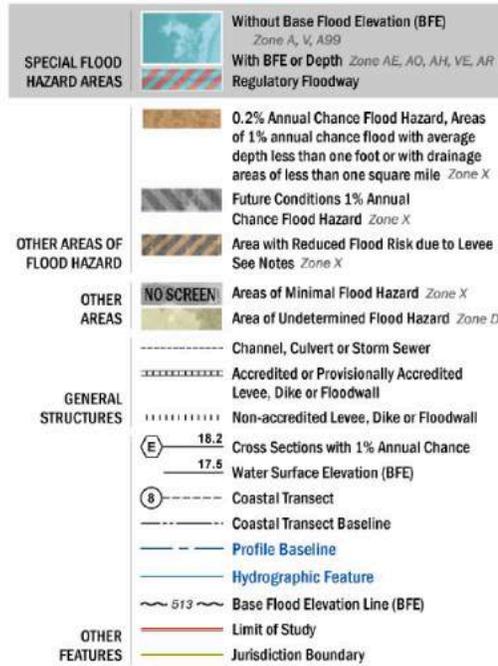
1. This project is shown as an additional improvement because intersection is currently meeting LOS standard. Because of significant constraints posed by highway bridge structure, improvements to alternate access point to I-780 should be considered as well.

FIGURE 2-2 BASELINE ROADWAY IMPROVEMENTS



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT
THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT [HTTP://MSC.FEMA.GOV](http://MSC.FEMA.GOV)



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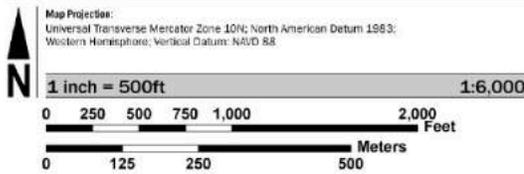
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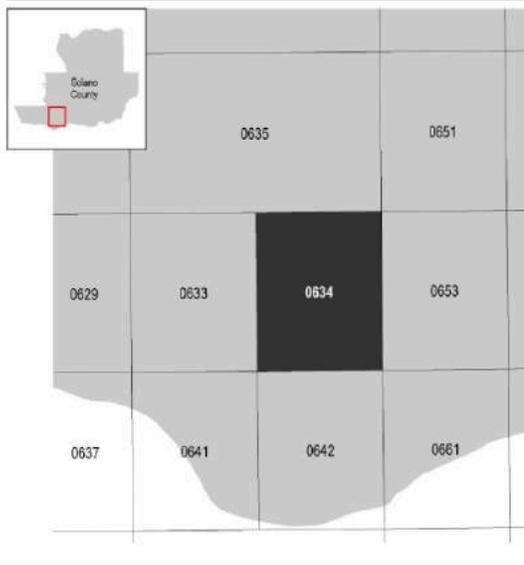
To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

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SCALE



PANEL LOCATOR





National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

SOLANO COUNTY,
CALIFORNIA
 and Incorporated Areas

Panel 634 of 730



FEMA

Panel Contains:		
COMMUNITY	NUMBER	PANEL SUFFIX
BENICIA, CITY OF	060368	0634 F
SOLANO COUNTY	060631	0634 F

VERSION NUMBER
2.3.2.0

MAP NUMBER
06095C0634F

MAP REVISED
AUGUST 3, 2016

FLOOD HAZARD INFORMATION

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SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) Zone A, V, A99
		With BFE or Depth Zone AE, AO, AH, VE, AR Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
		Future Conditions 1% Annual Chance Flood Hazard Zone X
		Area with Reduced Flood Risk due to Levee See Notes Zone X
OTHER AREAS		NO SCREEN Areas of Minimal Flood Hazard Zone X
		Area of Undetermined Flood Hazard Zone D
GENERAL STRUCTURES		Channel, Culvert or Storm Sewer
		Accredited or Provisionally Accredited Levee, Dike or Floodwall
		Non-accredited Levee, Dike or Floodwall
		18.2 Cross Sections with 1% Annual Chance Water Surface Elevation (BFE)
		8 Coastal Transect
OTHER FEATURES		Coastal Transect Baseline
		Profile Baseline
		Hydrographic Feature
		51.3 Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary

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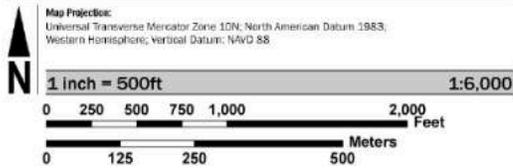
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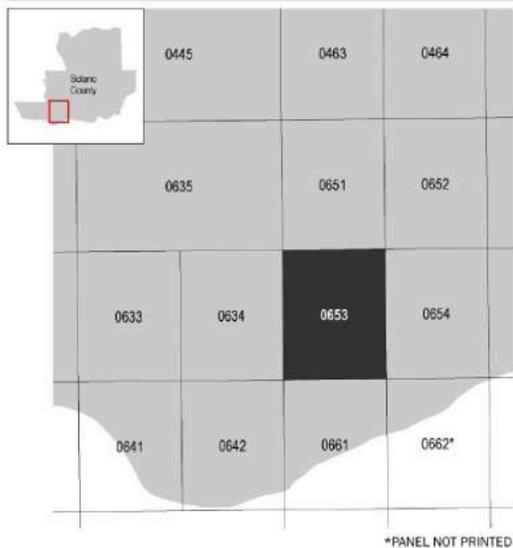
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SCALE



PANEL LOCATOR





National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

SOLANO COUNTY, CALIFORNIA
 and Incorporated Areas

Panel **653** of 730



FEMA

Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
BEACONIA, CITY OF	060368	0653	F
SOLANO COUNTY	060651	0653	F

VERSION NUMBER
2.3.2.0

MAP NUMBER
06095C0653F

MAP REVISED
AUGUST 3, 2016

2.3 GOALS AND POLICIES

2.A Roadway Network. Improve roadway conditions throughout the Industrial Park to address deficiencies and promote safety.

2.A.1 Baseline Improvements. Within the existing Industrial Park, prioritize addressing the baseline deficiencies listed in Table 2-2.

2.A.2 Freeway Ramp Reconstruction. Assess the ramp deficiencies listed in Table 2-3 to determine whether or not reconfigured and/or reconstructed freeway ramps would be appropriate and feasible.

2.A.3 Level of Service. Consistent with the General Plan, strive to maintain Level of Service (LOS) D on roadway segments and intersections within the Plan Area as new growth and development occur. Balance the need for roadway and intersection widening with the impacts that these improvements may have on other modes of travel (such as bicycles and pedestrians) and seek alternatives where feasible and appropriate.

2.A.4 Permeable Pavement. In locations with low amounts of truck and bus traffic, explore opportunities to use permeable pavers or porous pavement, as appropriate to road usage and soil conditions, in order to better manage stormwater.

2.A.5 Connectivity to the Northern Gateway Property. As the Northern Gateway property develops, create roadway connections between the new development and the Industrial Park interior to promote connectivity between the new and established portions of the Park. Consistent with General Plan policy, maintain Lake Herman Road as a rural scenic route.



3. TRANSIT AND TRANSPORTATION DEMAND MANAGEMENT

This chapter describes the transit network that serves the Industrial Park. In addition, it provides goals and policies related to Transportation Demand Management, which aims to reduce traffic congestion by promoting alternative modes of transportation.

3.1 TRANSIT NETWORK

Fairfield and Suisun Transit (FAST) operates an express intercity route—Route 40—which serves the Plan Area with an on-street stop in each direction on Park Road near Industrial Way. Route 40 provides commute-period service between Benicia and regional transportation hubs, including the Walnut Creek and Pleasant Hill BART stations, as well as the bus transit centers in Fairfield and Vacaville. FAST has plans to expand SolanoExpress connections to the Industrial Park in 2017, which will provide more frequent service to the Plan Area. In the future, developing FAST connections between the Industrial Park and Downtown Benicia should also be considered.

Though Route 40 is the only regional or local route offering service within the Plan Area as of late 2016, Solano County Transit (SolTrans) operates regional routes that make stops south of I-780 in Downtown Benicia. While SolTrans offers Dial-A-Ride pick up and drop off services upon request, expansion of SolTrans service directly to the Industrial Park should be explored to provide a direct transit connection for Industrial Park workers who live in Vallejo.

BUS HUB

To accommodate additional bus service in the Plan Area, the City of Benicia is constructing an Industrial Park bus hub at the intersection of Park Road and Industrial Way. When completed in 2017, the bus hub will serve as the transit gateway to the Industrial Park, offering convenient access to workers commuting by public transportation.

The bus hub facility will feature up to 50 parking spaces and other transit-related amenities, such as a bicycle storage area and a “kiss and ride” passenger drop off area. The existing on-street bus stops for Route 40 will be improved with designated bus pull-out areas, new sidewalks, and covered benches. To provide space for a popular taco truck that was displaced during construction, designated parking spots for up to two mobile food trucks are also included in the site design. Moreover, the bus hub will serve as a model of sustainability by including bioswales and bioretention areas and featuring a plant palette of native and drought-tolerant plants. The bus hub project has also resulted in a minor realignment and restriping of Park Road to better accommodate the large trucks that travel through the intersection of Park Road and Industrial Way.



Completed in 2017, the Industrial Park bus hub serves as the transit gateway to the Industrial Park.

3.2 TRANSPORTATION DEMAND MANAGEMENT (TDM) MEASURES

Transportation Demand Management (TDM) is a general term for strategies that increase the overall efficiency of a transportation system by encouraging a shift away from driving alone and/or traveling during peak periods. From a sustainability perspective, TDM measures have a range of benefits that include reducing vehicle miles traveled (VMT), air pollutants, and greenhouse gas emissions. TDM can also encourage and support new development by reducing the amount of costly off-street parking spaces required.

TDM MEASURES IN THE INDUSTRIAL PARK

Increasing transportation options for Industrial Park commuters through TDM measures not only supports the goals of the City's Complete Streets Policy, but it also helps ensure future eligibility for One Bay Area Grant program funding. It would also allow businesses with 50 or more employees to satisfy the Bay Area Air Quality Management District (BAAQMD) requirement that they provide a commuter benefit option to employees.⁸

For existing Industrial Park businesses, the best option is to form a Park-wide Transportation Management Agency (TMA) to provide services on behalf of all employers. This way, individual employers would not have the burden of providing TDM measures themselves; rather, they could participate in and financially contribute to the TMA, which would provide these services at scale for the whole Industrial Park.

Even without a Transportation Management Agency in place, individual Industrial Park businesses can still be encouraged and incentivized to provide TDM measures for their employees. This would be especially feasible for larger employers who can use TDM benefits as a way to attract a wider pool of prospective employees. For new development, TDM measures should be made a requirement through a Development Agreement or Specific Plan.

RECOMMENDED TDM STRATEGIES

TDM strategies recommended for the Industrial Park may include, but are not limited to:

- Facilitate improvements to the bicycle and pedestrian networks in the Industrial Park so that they better integrate with the transit network. Refer to Chapters 4, 5, and 6 for additional information, goals, and policies related to the bicycle and pedestrian networks.
- Provide pre-tax commuter benefits for Industrial Park workers who commute by non-auto transportation modes.
- Make subsidized transit passes available to all employees.
- Coordinate rideshare opportunities for workers with similar shift schedules and commute routes.
- Provide "guaranteed ride home" services for those who commute by transit or rideshare and must leave at a non-scheduled time due to family emergency or similar reason.

8. Bay Area Air Quality Management District (2014). BAAQMD Regulation 14, Rule 1: Bay Area Commuter Benefits Program. Retrieved July 30, 2015, from [http://www.baaqmd.gov/~media/Files/Planning and Research/Commuter Benefits Program/Proposed Rule Packet/Staff Report-CBP.ashx](http://www.baaqmd.gov/~media/Files/Planning%20and%20Research/Commuter%20Benefits%20Program/Proposed%20Rule%20Packet/Staff%20Report-CBP.ashx)

- Develop an internal bike-share system that provides connections between the bus hub and jobs. Refer to Chapter 4 for additional information, goals, and policies related to a potential bike-share system in the Industrial Park.
- Operate a shuttle system between the bus hub, major employers and other key destinations within the Industrial Park.
- Locate car share vehicles in the Industrial Park.
- Provide cash or other incentives for commuting by alternative modes.
- Employ a range of marketing tools that promote alternative transportation modes.

Ultimately, implementation of a successful multi-business/tenant TDM program will rely on successful management. Specific TDM measures offered may change over time based on program monitoring and evaluation.

3.3 GOALS AND POLICIES

3.A Transit Network. Improve the transit network servicing the Industrial Park so that transit is a viable and attractive commute mode.

3.A.1 Needs Assessment. Collaborate with major employers and transit providers to conduct a needs assessment to determine where Industrial Park workers are commuting from and what transit service options would best support their needs.

3.A.2 Expanded Service. Collaborate with transit providers to provide expanded and more frequent service to the Industrial Park over time.

3.A.3 Subsidized Transit Passes. Work with FAST and SolTrans to make subsidized transit passes available to all employees to encourage increased use of bus routes that serve the Industrial Park.

3.B Transportation Demand Management. Use Transportation Demand Management (TDM) strategies to promote transit ridership and other forms of non-auto commuting for Industrial Park workers.

3.B.1 Transportation Management Agency. Partner with the Benicia Industrial Park Association to form a Transportation Management Agency (TMA) that organizes a TDM program for Industrial Park employers.

3.B.2 Pre-Tax Commuter Benefits. Implement a pre-tax commuter benefit program for Industrial Park workers who commute by non-auto modes, including transit and biking. The program should follow the guidelines of Federal tax law and the Internal Revenue Code.

3.B.3 Rideshare. Coordinate rideshare opportunities, including carpool and vanpool, for workers with similar shift schedules and commute routes.

3.B.4 Shuttle System. Conduct a feasibility study of operation of a shuttle system that provides frequent service between the bus hub, major employers, and other key destinations within the Industrial Park during common commute times and shift changes, and implement the system as feasible.

3.B.5 Car Share. Locate car share vehicles in the Industrial Park.

3.B.6 Marketing Tools. Employ a range of marketing tools that promote alternative transportation modes, including transit, biking, walking, carpooling, and/or a combination of these.

3.B.7 New Development. For new development, require that one or more TDM measures be included as part of any Development Agreement or Specific Plan, including any future Specific Plan for the Northern Gateway property.

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4. BICYCLES

This chapter describes the bicycle network for the Benicia Industrial Park. Well-designed bicycle facilities on select streets allow bicycle commuters and recreational cyclists to safely travel to and through the Industrial Park without impeding the movement of goods that is essential to the Park's success. This chapter outlines goals and policies related to bicycle circulation, and describes specific changes to the street network that will promote these goals and policies.

4.1 EXISTING BICYCLE NETWORK

EXISTING FACILITIES

Bicycle routes are commonly classified in four different categories:

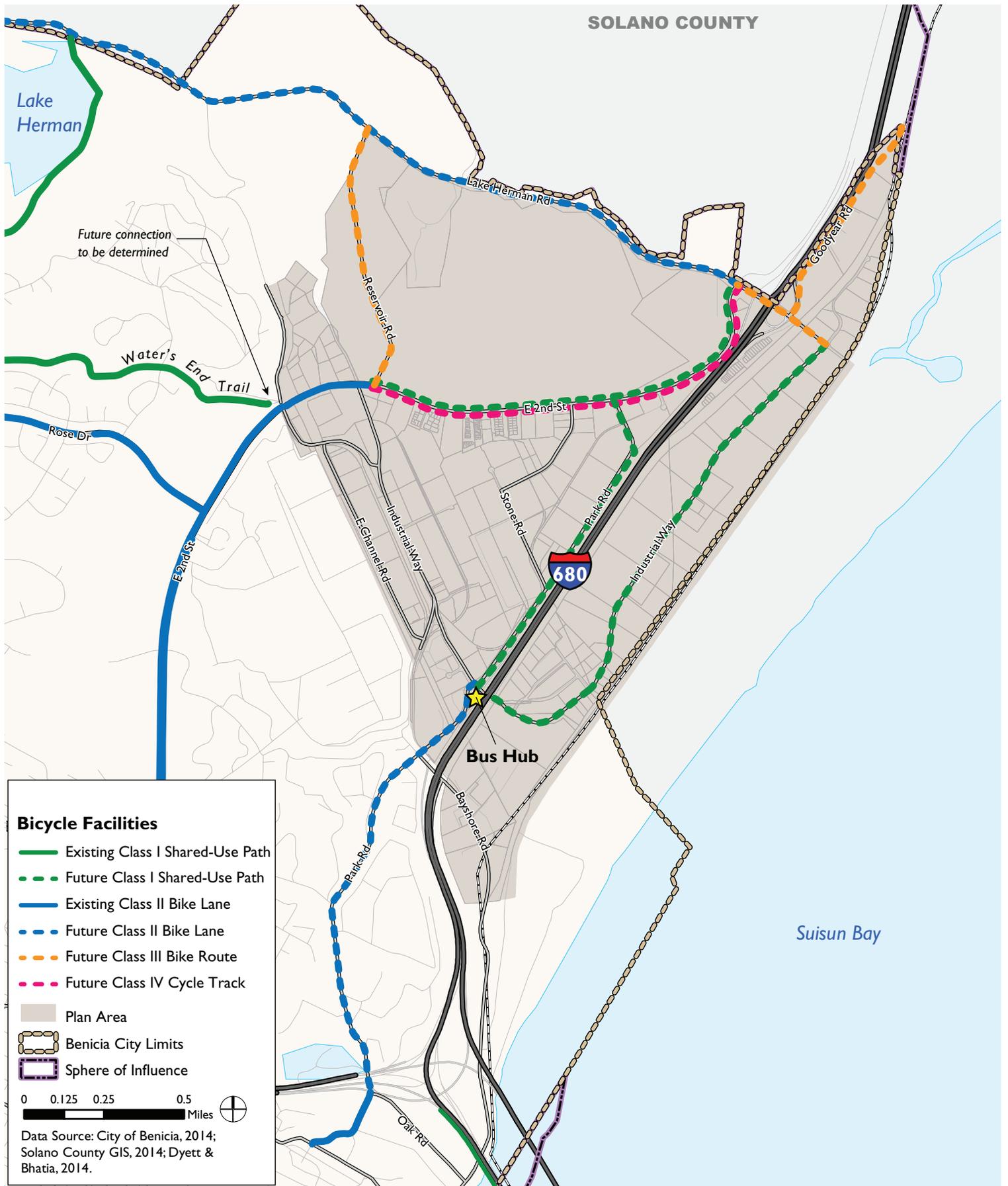
- **Class I** bike paths are separated from vehicular traffic for the exclusive use of bicycles and pedestrians.
- **Class II** bike lanes provide a striped and stenciled lane for one-way travel on a street or highway adjacent to vehicular traffic.
- **Class III** bicycle routes are signed routes where bicycles share the roadway with vehicular traffic and no separate right-of-way is provided for bicyclists. Pavement markings that identify the routes are often referred to as “sharrows.”
- **Class IV** bicycle facilities or cycle tracks are a recently-designated category introduced by AB1193 – Protected Bikeways Act. As described in Caltrans’ Design Information Bulletin Number 89, Class IV bikeways are facilities exclusively for use of bicycles with a required separation between the bikeway and through vehicular traffic.

As shown in Figure 4-1, as of late 2016, the only existing bicycle route in the Industrial Park is a short Class II segment along East 2nd Street, west of Industrial Way.



A variety of bike facilities, Class I (top left), Class II (bottom left), Class III (top right), or Class IV (bottom right), can be used to achieve Complete Streets.

FIGURE 4-1 BICYCLE FACILITIES



ISSUES AND CONSTRAINTS

Adopted by the City Council in January 2016, Benicia's Complete Streets Policy expresses a commitment to creating and maintaining streets that accommodate all users, including bicyclists. However, there are challenges to providing safe bicycle infrastructure in an industrial context where there is a high volume of truck and rail traffic. In particular, safety concerns may arise at intersections and driveways where turning trucks may not be expecting bicycle cross traffic. Limited rights-of-way and complicated circulation patterns at freeway off ramps and railroad crossings create additional constraints.

More detailed information on rights-of-way and constraints on the provision of bicycle infrastructure may be found in the Existing Transportation Conditions and Needs Assessment Report (August 2015).

4.2 BICYCLE FACILITY IMPROVEMENTS

To provide the opportunity for Benicia Industrial Park workers to safely commute by bicycle, and for recreational cyclists to be able to move through the Park safely, a network of bicycle facilities on appropriate streets will provide well-marked access to and through the Park while still allowing for the efficient movement of truck, train, and vehicle traffic.

BICYCLE USER GROUPS AND NEEDS

When proposing bicycle improvements to support the Benicia Industrial Park, the Plan must consider the different user populations and their needs. Two potential user groups have been identified:

- **Destination commuters** – This group needs to travel safely and conveniently to jobs or services located within the Industrial Park, typically on weekdays. For this group, safe and clear connections within the Park are important, as well as connections to adjacent bicycle facilities that link to other parts of the city.
- **Recreational users** – This group needs to safely move through the Industrial Park on East 2nd Street, Park Road, and Industrial Way. Recreational use is likely to be concentrated more on weekends versus weekdays, however there is also some potential for lunchtime cyclists. For this group, safe and clear connections to bicycle facilities adjacent to the Park are important, as well as an efficient route through the Park that minimizes potential conflicts with trucks and turning movements.

BASELINE IMPROVEMENTS

Baseline bicycle improvements within the Industrial Park focus on completing the bicycle network identified in the General Plan and the Solano County Bicycle Plan, completing a peripheral bicycle network covering all access points to and from the Industrial Park, and enabling safer and more direct through travel. Bicycle facilities called for in the General Plan, including those along Industrial Way, are largely Class III bicycle routes with Class II lanes proposed only along East 2nd Street. Baseline bicycle improvements that are consistent with the General Plan and/or Solano County Bicycle Plan include:

- The continuation of Class II bike lanes along East 2nd Street (from Lake Herman Road to Industrial Way);
- New Class II bike lanes along Lake Herman Road (west of East 2nd Street); and
- Class III bike routes along Reservoir Road and Goodyear Road.

In addition, the City is currently seeking funding to extend the Class II bike lanes recently installed along Park Road adjacent to the new bus hub, south to I-780.

ADDITIONAL IMPROVEMENTS TO ACHIEVE COMPLETE STREETS

BICYCLE NETWORK

In addition to the baseline improvements described above, the following additional improvements to East 2nd Street, Industrial Way, and Park Road will be made to achieve Complete Streets in the Industrial Park.

East 2nd Street – Class IV Cycle Track and Class I Shared-Use Path

As the Northern Gateway property develops, East 2nd Street will become a central spine that connects the newer development with the established Industrial Park core. In order to promote safety and enhance connections along this corridor, the Class II bike lane identified above as a baseline improvement will be enhanced to a Class IV cycle track on the east/south side of the street that features rolled curbs that separate cyclists from vehicular traffic. The west/north side of the street will feature a Class I shared-use bicycle and pedestrian path. This will not only benefit Industrial Park workers traveling to the Northern Gateway property or businesses in the Park’s interior, but it will also provide some additional buffer for recreational cyclists passing through the Park. The City will make bicycle facility connections between East 2nd Street and the Water’s End Trail once it acquires the necessary land or trail easement. The cycle track and shared-use path will be accompanied by pedestrian and landscaping improvements described in Chapters 5 and 6 to create a pleasant boulevard that safely accommodates all modes of transportation.

Industrial Way and Park Road – Class I Shared-Use Path

While roadways internal to the Industrial Park will remain primarily auto and truck routes, select roads will provide well-marked bike access as well. Class I shared-use bicycle and pedestrian paths along Industrial Way (Park Road to Lake Herman Road) and Park Road (East 2nd Street to Industrial Way) will provide safe access to the Park’s interior for bicycles and pedestrians, including those travelling to and from the planned bus hub. Illustrated in greater detail in Chapter 6, the shared-use paths will be well-marked and located on one side of the street so as to preserve as much right-of-way for truck maneuvering as possible.

Northern Gateway Property

If and when development is proposed for the Northern Gateway property, sufficient bikeway facilities should be included that connect to and complement the bicycle network in the Industrial Park and other adjacent areas. At this time, the baseline improvements proposed for Reservoir Road should be reconsidered and possibly upgraded to Class II bike lanes or a Class I shared-use path.

Bicycle Support Facilities

In addition to new bicycle routes, bicycle support facilities such as secure bicycle parking and shower facilities will be critical to encouraging increased ridership. Bicycle parking requirements for new development should be increased, and existing businesses should be encouraged to provide bike racks or lockers as an amenity to their employees. In addition, bicycle racks or lockers should be installed in well-lit areas at the planned bus hub, as well as at key public and commercial locations throughout the Park.

Bike Share

Bike share systems, in which individuals can access bicycles for shared use on a very short term basis, are effective ways of encouraging bicycle travel, especially for trips where a bike is only needed on one end. Not only could bike share in the Industrial Park assist workers arriving at the bus hub solve the “last mile problem” to reach their places of employment, but it could also reduce unnecessary auto trips during the day by allowing workers to bike to eating establishments or other commercial businesses during breaks.

The City should assess the feasibility of bike share with locations at the bus hub and key employment and commercial destinations throughout the Park. If a Transportation Management Association (TMA) is established for the Industrial Park to facilitate commute alternatives and vehicle miles traveled reduction, the bike share program could be integrated into, or coordinated with, the TMA's programming and management. A bike-share program would satisfy the requirements of the Bay Area Air Quality Management District (BAAQMD) Commuter Benefits Program for businesses with 50 or more full-time employees (BAAQMD Regulation 14, Rule 1). Refer to Chapter 3 for additional information on Transportation Demand Management.

4.3 GOALS AND POLICIES

4.A Bicycle Network. Provide a comprehensive and integrated bicycle system in the Industrial Park that facilitates bicycling as a viable mode of travel and minimizes conflicts with other travel modes and goods movement.

4.A.1 Bikeway Network. Promote the development of the comprehensive system of commuter and recreational bicycle routes illustrated in Figure 4-1 to provide safe and convenient connections to employment destinations, transit, supportive commercial businesses, recreation, and nearby residential neighborhoods.

4.A.2 Bicycle and Transit Integration. Work with STA to integrate public transportation systems and facilities with bike networks and accommodations.

4.A.3 Funding. Utilize grant monies, development/transportation impact fees, and capital improvement monies to help fund the development and installation of bikeways and bicycle parking facilities.

4.A.4 Bikeways in the Northern Gateway. If and when development is proposed for the Northern Gateway property, reevaluate the bicycle facilities planned for the area to ensure compatibility with future land uses. Require any development proposal for the Northern Gateway to include bikeway facilities that connect to and complement those in the Industrial Park and other adjacent areas. At this time, consider upgrading the Class III facilities on Reservoir Road to Class II bike lanes.

4.A.5 Bicycle Connection to Water's End Trail. Create a safe and well-marked connection from the existing Water's End Trail to the bicycle network within the Industrial Park by acquiring land or an easement, as necessary.

4.A.6 Network Evaluation. At the time of the next General Plan update, evaluate designated bicycle routes to determine if they remain the safest and most direct options for routing commuter and recreational cyclists. Recreational routes may first be considered in the Parks, Trails & Open Space Master Plan update.

4.B Design of Bicycle Facilities. Develop safe and pleasant bikeways that are comfortable and highly visible.

Additional goals and policies regarding bicycle facility design are found in Chapter 6, Streetscape Design.

4.B.1 Lighting. Maintain adequate lighting near bikeways, bike racks, and other bicycle facilities to improve visibility and provide a safe cycling environment.

4.B.2 Visibility. Incorporate clear signage, highly visible and reflective striping and lane marking, and other tactics to improve visibility of bicyclists for trucks and autos.

4.B.3 Education and Awareness. Partner with the Benicia Industrial Park Association, Industrial Park businesses, bicycle advocacy groups, and other relevant stakeholders to promote awareness of cyclists in the Industrial Park and provide bicycle safety education classes.

4.C Bicycle Parking. Encourage the installation of ample, secure bicycle parking at key locations throughout the Industrial Park.

4.C.1 Bicycle Racks on Private Property. Support existing programs or develop new programs that encourage installation of bicycle racks on private properties, at the property owners' request or expense.

4.C.2 Bicycle Parking at the Bus Hub. Provide secure bike racks or lockers at the planned bus hub in well-lit areas.

4.C.3 Parking Code. Amend parking code requirements for new development to increase the amount of bicycle parking required for industrial and commercial development.

4.C.4 Tiered Bicycle Infrastructure Requirement for New Development. Implement a tiered bicycle infrastructure requirement for new development that necessitates varying levels of infrastructure depending on the size and type of development, as recommended in the City's Climate Action Plan.

4.D Transportation Demand Management to Promote Bicycle Ridership.

Meet citywide goals of reducing automobile trips through the implementation of Transportation Demand Management strategies that promote bicycle use in the Industrial Park.

Refer to Chapter 3 for more information, goals, and policies regarding TDM.

4.D.1 TDM Incentives to Promote Bicycle Ridership. Provide new incentives as part of a Transportation Demand Management (TDM) program for installing showers or other bicycle support facilities on existing or newly developed sites.

4.D.2 Bike Share. Partner with the Benicia Industrial Park Association (BIPA), Industrial Park businesses, stakeholders, and/or the potential Transportation Management Association (TMA) to implement an internal bike share system for use within the Industrial Park, with stations at the bus hub and key employment and commercial locations.



5. PEDESTRIANS

This chapter describes the pedestrian network for the Benicia Industrial Park that will complement the rest of the Complete Streets transportation network. Protected sidewalks and pedestrian paths along select roads will allow Industrial Park workers to safely walk to their places of employment from the planned bus hub, as well as to eating establishments and other commercial businesses within the Park. This chapter outlines goals and policies related to pedestrian circulation, and describes specific changes to the street network that will promote these goals and policies.

5.1 EXISTING PEDESTRIAN NETWORK

EXISTING FACILITIES

There is a lack of pedestrian infrastructure, which limits safety and accessibility, in the Industrial Park. As of 2016, there is only one marked crosswalk (located near the planned bus hub at the intersection of Industrial Way and Park Road) in the Industrial Park. In addition, as shown in Figure 5-1, major roadways largely lack sidewalks, with a few exceptions, including:

- Surrounding Bio-Rad Laboratories at the intersection of East 2nd Street and Wanger Street;
- Industrial Way between Noyes Court and Park Road; and
- The East 2nd Street bridge over West Channel Road.

This lack of pedestrian infrastructure likely contributes to the very low pedestrian volumes observed in the Industrial Park. Refer to Appendix D for peak hour pedestrian counts at key intersections in the Plan Area.

ISSUES AND CONSTRAINTS

Constraints and limitations to expanding the pedestrian network are similar to those described for the bicycle network. Generally, this includes limited rights-of-way in certain locations and proximity to heavy vehicle traffic that potentially makes for an unpleasant pedestrian environment and raises safety concerns for truck drivers who may not be anticipating the presence of pedestrians. More detailed information on rights-of-way and constraints may be found in Chapters 2 and 4, as well as in the Existing Transportation Conditions and Needs Assessment Report.

5.2 PEDESTRIAN FACILITY IMPROVEMENTS

Providing safe and adequate pedestrian facilities is an important component in meeting Complete Streets planning requirements and objectives. Provision of pedestrian infrastructure will enhance safety in the Industrial Park by providing clearly marked paths and crossing points, while alerting drivers to the potential presence of pedestrians.

PEDESTRIAN USER GROUPS AND NEEDS

Two potential types of pedestrians that would benefit from an improved pedestrian network in the Industrial Park include:

- **Transit commuters** – This group needs to travel safely and conveniently to and from the planned bus hub to work sites, typically on weekdays.
- **Lunchtime walkers** – This group needs to safely access commercial businesses, such as eating establishments or service businesses, at lunchtime or on breaks. In addition, some Industrial Park employees may desire to walk for exercise during lunchtime.

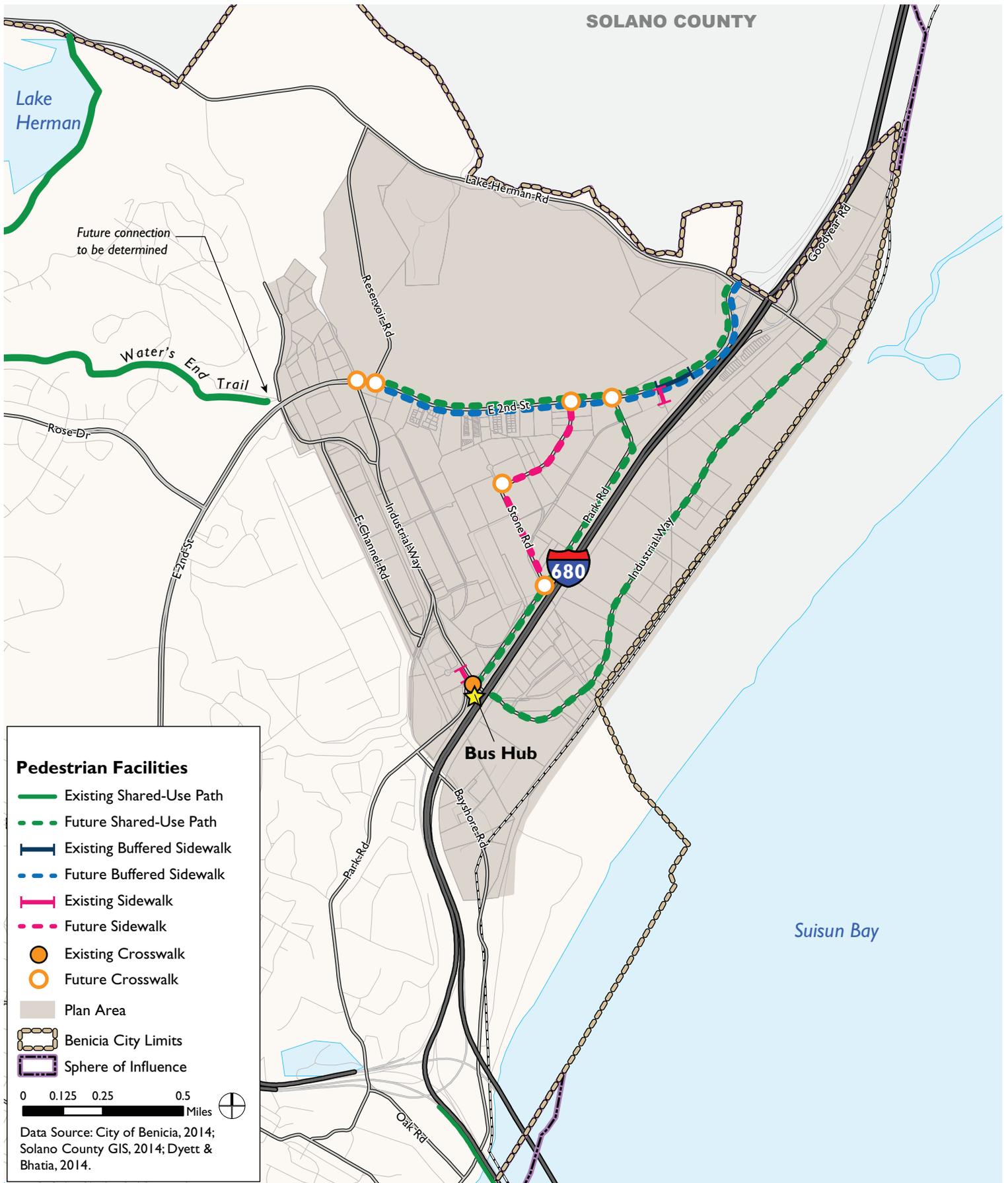
BASELINE IMPROVEMENTS

Baseline pedestrian improvements within the Industrial Park should provide connections between the planned bus hub and nearby businesses. In addition, future developments in the Industrial Park will be required to include connections between any on-site walkways and any adjacent public sidewalks or pedestrian paths, as appropriate. Any future plans for the Northern Gateway property should also include ample pedestrian infrastructure.



Improving pedestrian connections will improve safety and convenience for pedestrians in the Industrial Park.

FIGURE 5-1 PEDESTRIAN FACILITIES



ADDITIONAL IMPROVEMENTS TO ACHIEVE COMPLETE STREETS

PEDESTRIAN NETWORK

In addition to the baseline improvements described above, the following additional improvements to East 2nd Street, Industrial Way, Park Road, and Stone Road will be made to achieve Complete Streets in the Industrial Park.

East 2nd Street – Buffered Sidewalk, Shared-Use Path, and Pedestrian Crossings

As the Northern Gateway property develops, pedestrian connections along and across East 2nd Street between the newly-developed areas and existing sections of the Industrial Park become more important. A sidewalk buffered from vehicular traffic by landscaping and a bicycle lane will line the east/south side of East 2nd Street between Industrial Way and Lake Herman Road, providing a safe and pleasant pedestrian experience along this main thoroughfare. As described in Chapter 4, a shared-use bicycle and pedestrian path will line the west/north side of the street, and the City will acquire the necessary land or trail easement in order to connect bicycle and pedestrian facilities to the Water's End Trail. In addition, as shown in Figure 5-1, crosswalks will be created at existing intersections and across any new roads or major driveways serving the Northern Gateway property. These pedestrian facilities will be designed and built as part of the proposed streetscape improvements described and illustrated further in Chapter 6.

Industrial Way and Park Road – Shared-Use Path and Pedestrian Crossings

As described in Chapter 4, shared-use pedestrian and bicycle paths will line one side of Industrial Way (between Park Road and Lake Herman Road) and Park Road (between East 2nd Street and Industrial Way). This will provide safe walking routes to and from the planned bus hub for Industrial Park workers who work along these corridors. As shown in the renderings in Chapter 6, the shared-use paths will include crosswalks and clear signage that alerts truck and auto traffic to the presence of pedestrians.

Stone Road – Sidewalk and Pedestrian Crossings

To further increase connectivity to the planned bus hub and commercial businesses in the Park's interior, sidewalks will be added to Stone Road, as illustrated in Chapter 6. The addition of sidewalks will provide a safe way for Industrial Park workers to walk along this street, while still preserving the greatest amount of right-of-way possible to accommodate truck maneuvering.

Additional Pedestrian Amenities

In addition to the pedestrian network improvements discussed above, some additional amenities will be important to create a comfortable and pleasant pedestrian environment. This includes attractive and well-maintained landscaping, street trees that provide shade in the hot summer months, and pedestrian-scaled lighting. Recommendations on how and where to include these pedestrian-oriented amenities are illustrated and discussed further in Chapter 6, Streetscape Design.

5.3 GOALS AND POLICIES

5.A Pedestrian Network. Provide a comprehensive and integrated pedestrian network in the Industrial Park that facilitates walking as a viable mode of travel.

- 5.A.1 Pedestrian Network.** Promote the development of the pedestrian routes and crosswalks illustrated in Figure 5-1 to provide safe and convenient pedestrian access to employment destinations, transit, and supportive commercial businesses.
- 5.A.2 New Development.** Require new development to create safe pedestrian networks on-site, as appropriate, with linkages to adjacent existing and planned public sidewalks and pedestrian paths.
- 5.A.3 Pedestrian and Transit Integration.** Work with STA to integrate public transportation systems and facilities with pedestrian networks and accommodations in the Industrial Park.
- 5.A.4 Funding.** Utilize grant monies, development impact fees, and capital improvement monies to help fund the development and installation of sidewalks, pedestrian scaled lighting, and other pedestrian-oriented amenities.
- 5.A.5 Pedestrian Facilities in the Northern Gateway.** If and when development is proposed for the Northern Gateway property, reevaluate the pedestrian facilities planned for the area to ensure compatibility with future land uses. Require any development proposal for the Northern Gateway to include pedestrian facilities that connect to and complement those in the Industrial Park and other adjacent areas. Create well-marked crosswalks across any new roads or major driveways serving the Northern Gateway property.
- 5.A.6 Pedestrian Connection to Water's End Trail.** Create a safe and well-marked connection from the existing Water's End Trail to the pedestrian network within the Industrial Park.

5.B Design of Pedestrian Facilities. Develop safe and pleasant sidewalks and pedestrian paths that are highly visible and accommodate all users.

Additional goals, policies, and conceptual illustrations regarding pedestrian facility design are found in Chapter 6, Streetscape Design.

- 5.B.1 Safe and Complementary Design.** Design sidewalks and pedestrian paths that complement the form and function of the land uses adjacent to each street segment. Where feasible, sidewalks and pedestrian paths should be wide enough to accommodate two-way pedestrian movement and allow sufficient space for any necessary amenities.
- 5.B.2 Lighting.** Maintain adequate pedestrian-scale lighting near sidewalks, pedestrian paths, and parking lots to improve visibility and provide a safe walking environment.
- 5.B.3 Visibility.** Incorporate clear signage, highly visible crosswalk striping, lighted pedestrian crossing beacons in high traffic areas, and other tactics to improve visibility of pedestrians for trucks and autos.



6. STREETScape DESIGN

Streetscape refers to the many elements that make up a street, including the roadway, sidewalks and other paths, bikeways, building facades, trees and landscaping, lighting, and signage. Streetscapes often vary in accordance with adjacent land uses. Industrial areas are often characterized by minimal streetscape features with few ornamental features and little landscaping.

This chapter addresses streetscape design in the Benicia Industrial Park. Streetscape improvements will combine roadway, bicycle and pedestrian improvements into a cohesive design that enhances multimodal connectivity and creates an attractive environment that is appropriate for an Industrial Park. This chapter outlines goals and policies related to streetscape design and describes specific changes that will help achieve these goals and policies.

6.1 EXISTING STREETScape DESIGN

The Benicia Industrial Park currently straddles eras in terms of streetscape design. As discussed in Chapters 4 and 5, much of the older portions of the Industrial Park lacks facilities for any travel mode other than cars and trucks. With the exception of a few of the most recently developed sites, there are no sidewalks or designated bikeways within the Industrial Park. Both are key elements in meeting Complete Streets requirements as well as providing basic amenities throughout the Industrial Park. More recently developed sites do provide frontage sidewalks and landscaping per City standards, but the kind of consistent street tree plantings that typify newer industrial parks are absent.

CONSTRAINTS

A major challenge in transitioning the Industrial Park to an improved circulation and amenity environment is the lack of space within existing rights-of-way to provide sidewalks, bikeways, and frontage shade trees. In the older portions of the Industrial Park, paved parking and loading areas extend to the edge of existing rights-of-way. In the newer areas, mature landscaping and utilities are located in the back of curb area typically dedicated to access- and streetscape-related improvements. Additional constraints include upslope areas within and adjoining the right-of-way along East 2nd Street as well as the limited right-of-way at the I-680 underpass on Industrial Way.

In addition, the Industrial Park has no “master developer,” meaning that the individual parcels and businesses within the Park are under the control of different property owners. This has led to a piecemeal, disjointed aesthetic, rather than unified and cohesive streetscapes.

6.2 STREETScape IMPROVEMENTS

The intent of the following streetscape improvements is to set the stage for retaining and attracting additional high-wage and high-revenue producing companies as envisioned by the City's General Plan. These kinds of improvements can stimulate investment in the Industrial Park as well as improve the sustainability of this important part of the city.

Concept recommendations for streetscape improvements are described below and illustrated with before-and-after renderings. These renderings incorporate the improvements outlined in Chapters 4 and 5 relating to bicycle and pedestrian facilities. Additional detail regarding signage and wayfinding is covered in Chapter 8.

BASELINE IMPROVEMENTS

STREET TREES

Street trees would provide a sense of continuity within the Industrial Park, while also softening the appearance of areas with large expanses of parking, roadways and other hard surfaces. Importantly, shade trees can make bicycle and pedestrian circulation links more attractive, reducing auto use, greenhouse gas emissions, and providing related benefits to public health. They also aid in rainwater capture, stormwater management, and provide shade to offset the "urban heat island effect," which, according to the EPA, further reduces energy use and greenhouse gas generation.⁹

In places where there is a constricted right of way, street tree plantings would need to occur on the street facing edge of private properties. In these cases, tree planting should be made a requirement of redevelopment. Frontage street trees must be species that can be limbed to a minimum height of 14 feet for truck clearance, and/or sufficiently set back from travel lanes so as not to interfere with truck movement.



Street trees provide many benefits including reduced greenhouse gas emissions, shade, stormwater management, and enhanced appearance.

9. As defined by the EPA, the term "heat island" describes built up areas that are hotter than nearby rural areas. Heat islands can affect communities by increasing summertime peak energy demand, air conditioning costs, air pollution and greenhouse gas emissions, heat-related illness and mortality, and water quality.

ADDITIONAL IMPROVEMENTS TO ACHIEVE COMPLETE STREETS

There is an opportunity to incorporate facilities for bicyclists and pedestrians on select Industrial Park roads in order to achieve Complete Streets. Limiting these facilities to a few designated routes with ample signage will help ensure safety by reducing the potential for conflicts between auto/truck traffic and bicyclists/pedestrians.

RIGHT-OF-WAY ALLOCATION

Given the built-out nature of the existing Industrial Park and the low probability that site-by-site property redevelopment will be able to provide contiguous Complete Street access and streetscape improvements within a desirable time frame, improvements are generally recommended within existing curb-to-curb roadway areas, making use of excess roadway wherever it exists. As discussed in Chapter 2, truck turning movements at intersections and driveway entrances are a key concern, and will require location-by-location study to determine specific geometric requirements. East 2nd Street is a special case, with an approximately 120-foot right-of-way between Reservoir Road and Park Road that provides the opportunity for significant streetscape improvements.

Where roadways are reconfigured to include bicycle, pedestrian, and other Complete Streets elements, the greatest width for vehicle travel lanes should be maintained where possible. The Caltrans Highway Design Manual¹⁰ specifies a preferred lane width of 12 feet. Similarly, the American Association of State Highway and Transportation Officials recommends a minimum 12 foot lane width in industrial areas.¹¹

The minimum widths for bicycle facilities specified by Caltrans are as follows:

Class I shared-use path:

- 8 feet for a two-way path (10 feet preferred)
- 5 feet for a one-way path

Class II bicycle lane:

- 4 feet (5 feet where posted speeds are 40 miles per hour or greater)

Class IV cycle track:

- 5 feet for a one-way cycle track
- 8 feet for a two-way cycle track

East 2nd Street - Boulevard with Cycle Track, Buffered Sidewalk, and Shared-Use Path

To complement any future development of the Northern Gateway property, East 2nd Street will be reconfigured as a multi-modal boulevard that serves as a central spine running between the older and newer areas of the Industrial Park. As illustrated by Figure 6-1, the roadway should include a center median with trees and crushed rock, cobbled stone, or other permeable hardscape material. The median will be

10. 6th Edition HDM Change 12/30/15.

11. AASHTO, A Policy on Geometric Design of Highways and Streets 2011, 6th ed. (United States: American Association of State Highway & Transportation Officials, 2011).

16 feet wide, allowing for a six-foot pedestrian refuge and a 10 foot turn lane at major intersections. On the east/south side of the roadway, there will be frontage sidewalks with pedestrian-scaled lighting buffered by landscaped planting strips with street trees. “Cycle tracks” separated from vehicle traffic by a rolled curb will allow for safe and efficient bicycle movement. Depressions in the rolled curb may be necessary to allow for proper stormwater drainage. On the west/north side of the roadway, a shared-use bicycle and pedestrian path with landscaping and pedestrian scaled lighting will create the infrastructure necessary to connect to any future bicycle and pedestrian network within the Northern Gateway property. Though Figure 6-1 depicts hillside conditions on the west/north side of the corridor, this condition is not consistent throughout. Precise conditions would be evaluated at the project level when the recommended improvement is implemented.

Industrial Way and Park Road - Shared-Use Path

Shared-use bicycle and pedestrian paths will line Industrial Way (between Park Road and Lake Herman Road) and Park Road (between Industrial Way and East 2nd Street), providing safe and convenient access from the bus hub to the Park’s interior. As shown in Figure 6-2, Park Road’s existing 17-foot travel lanes would be reduced to 12 feet to allow for a shared-use path. As shown in Figures 6-3 and 6-4, along Industrial Way, the shared-use path would be accommodated within the street right of way between Park Road and Teal Drive and within an existing 10-foot-wide Landscaping and Lighting District between Teal Drive and Lake Herman Road. Curbside parking, which is heavily utilized by trucks in the area, would remain north of Teal Drive. For the section of Industrial Way between the planned bus hub and Mallard Drive, the shared-use path might need to narrow and be located just off the south shoulder of the roadway in order to provide protected safe passage through this constricted section. Overlooks or parklets that face Suisun Marsh may be considered to further enhance the public realm.

On both streets, the shared-use paths are strategically located on the eastern sides of the roadways where there are fewer businesses, driveways, and intersections, thus reducing the potential for conflict with truck and vehicle traffic. In places where the shared-use paths do cross in front of driveways, special markings will be added to increase visibility and alert bicyclists and pedestrians to the possibility of entering/exiting truck and vehicle traffic.

Stone Road – Sidewalk

As illustrated in Figure 6-5, Stone Road will feature a new buffered sidewalk. This will allow for additional pedestrian connections to businesses along this street. As with Industrial Way and Park Road, additional markings would be added to areas where sidewalks cross in front of driveways to increase visibility and alert pedestrians to the possibility of entering or exiting truck and vehicle traffic. To improve the pedestrian experience and overall streetscape aesthetic, infill frontage shade trees and pedestrian-oriented streetlights are recommended where feasible on private property behind the right-of-way. To accommodate these streetscape improvements, travel lanes would be reduced from their present 17 feet to 16 feet.

Streetscape Design for the Northern Gateway Property

Future planning for the Northern Gateway property should account for the Complete Streets objectives of the Transportation and Employment Center Plan and incorporate appropriate streetscapes to align with and complement the recommendations of this Plan. In particular, additional streetscape improvements for Reservoir Road and Lake Herman Road should be considered. TEC Plan recommendations may be further reviewed and modified as part of the planning process for the Northern Gateway property in light of the project’s land uses, circulation, and grading requirements.

FIGURE 6-1 EAST 2ND STREET – BOULEVARD WITH CYCLE TRACK, BUFFERED SIDEWALK, AND SHARED-USE PATH

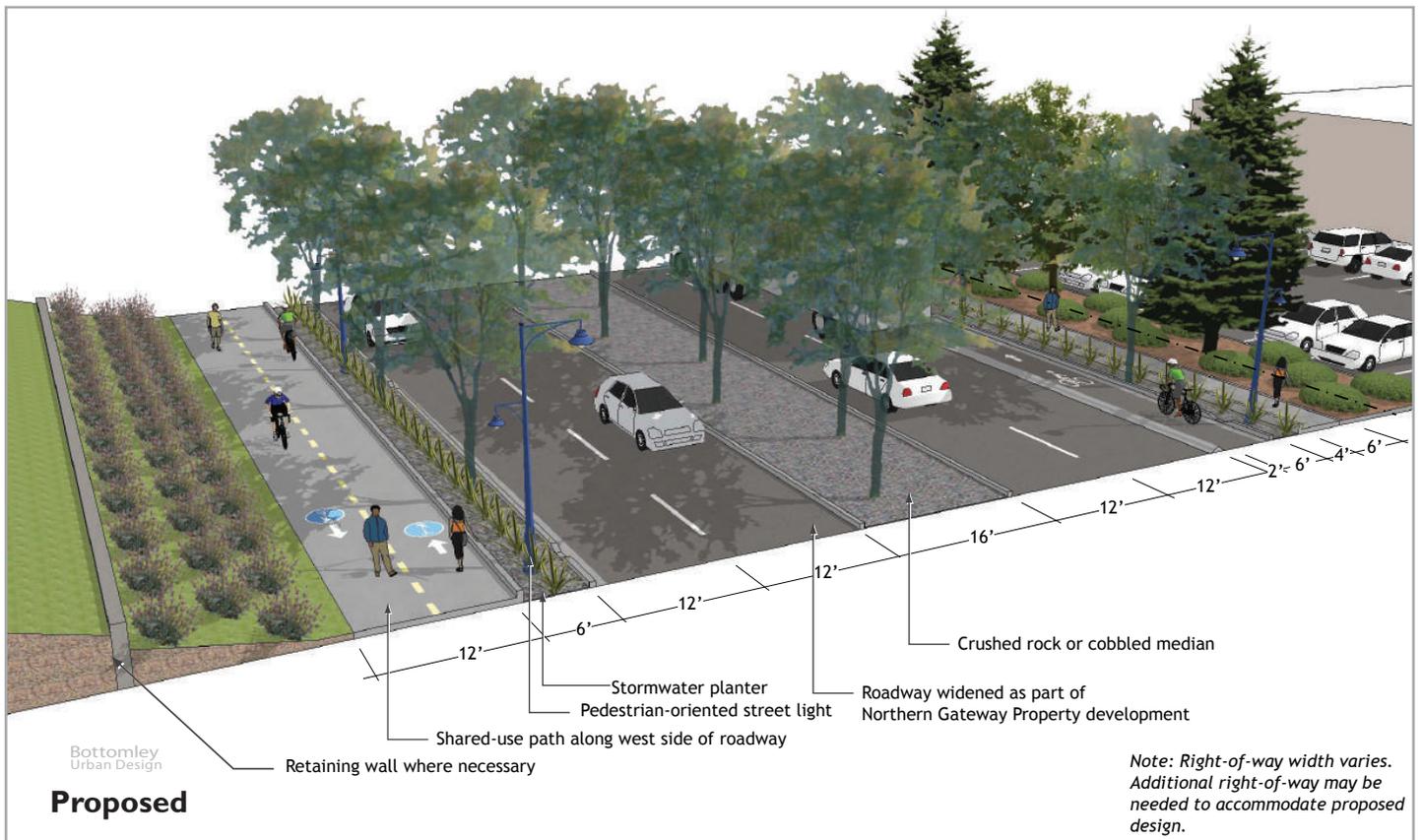
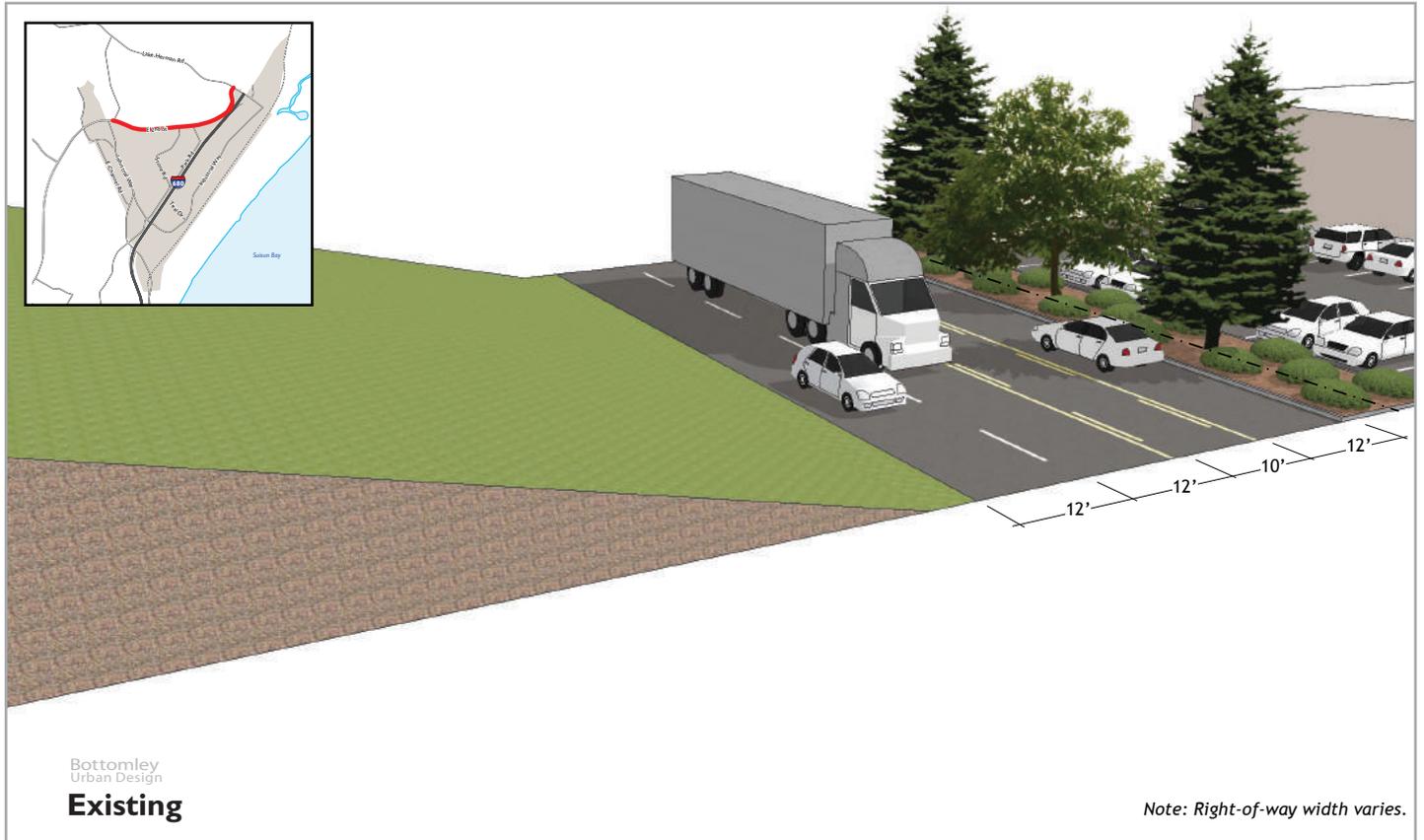


FIGURE 6-2 PARK ROAD (INDUSTRIAL WAY TO EAST 2ND STREET) – SHARED-USE PATH

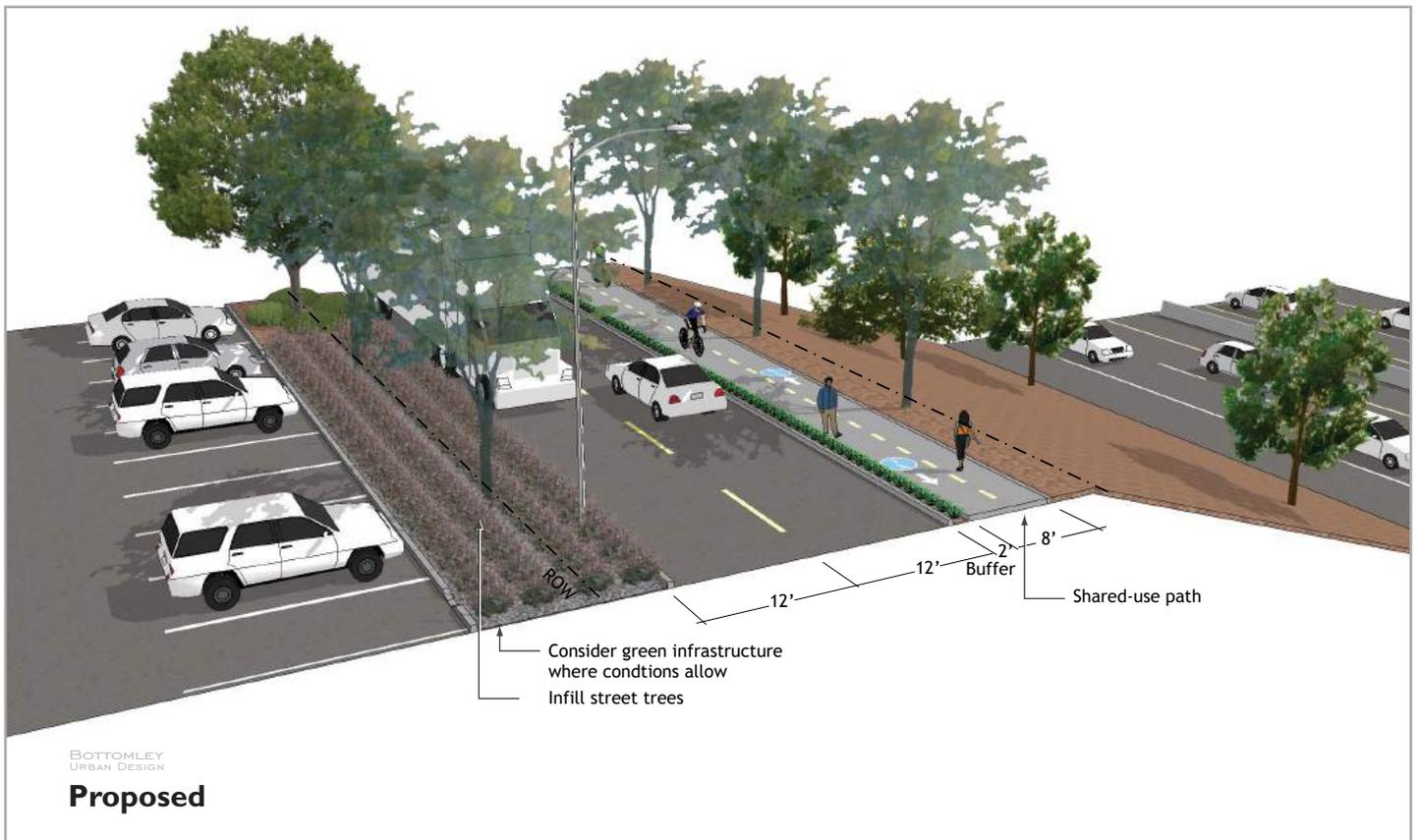


FIGURE 6-3 INDUSTRIAL WAY (PARK ROAD TO TEAL DRIVE) – SHARED-USE PATH

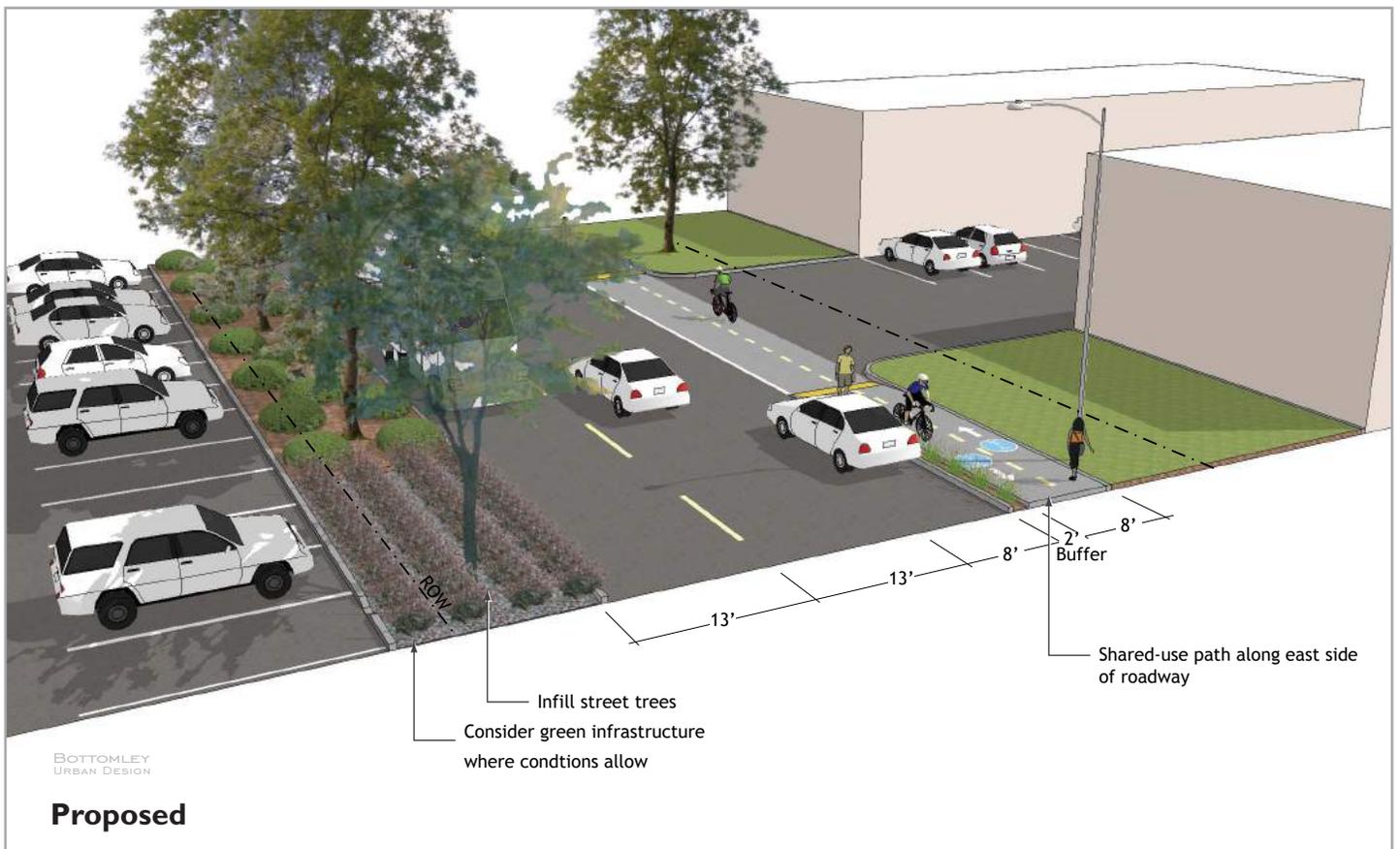


FIGURE 6-4 INDUSTRIAL WAY (TEAL DRIVE TO LAKE HERMAN ROAD) – SHARED-USE PATH

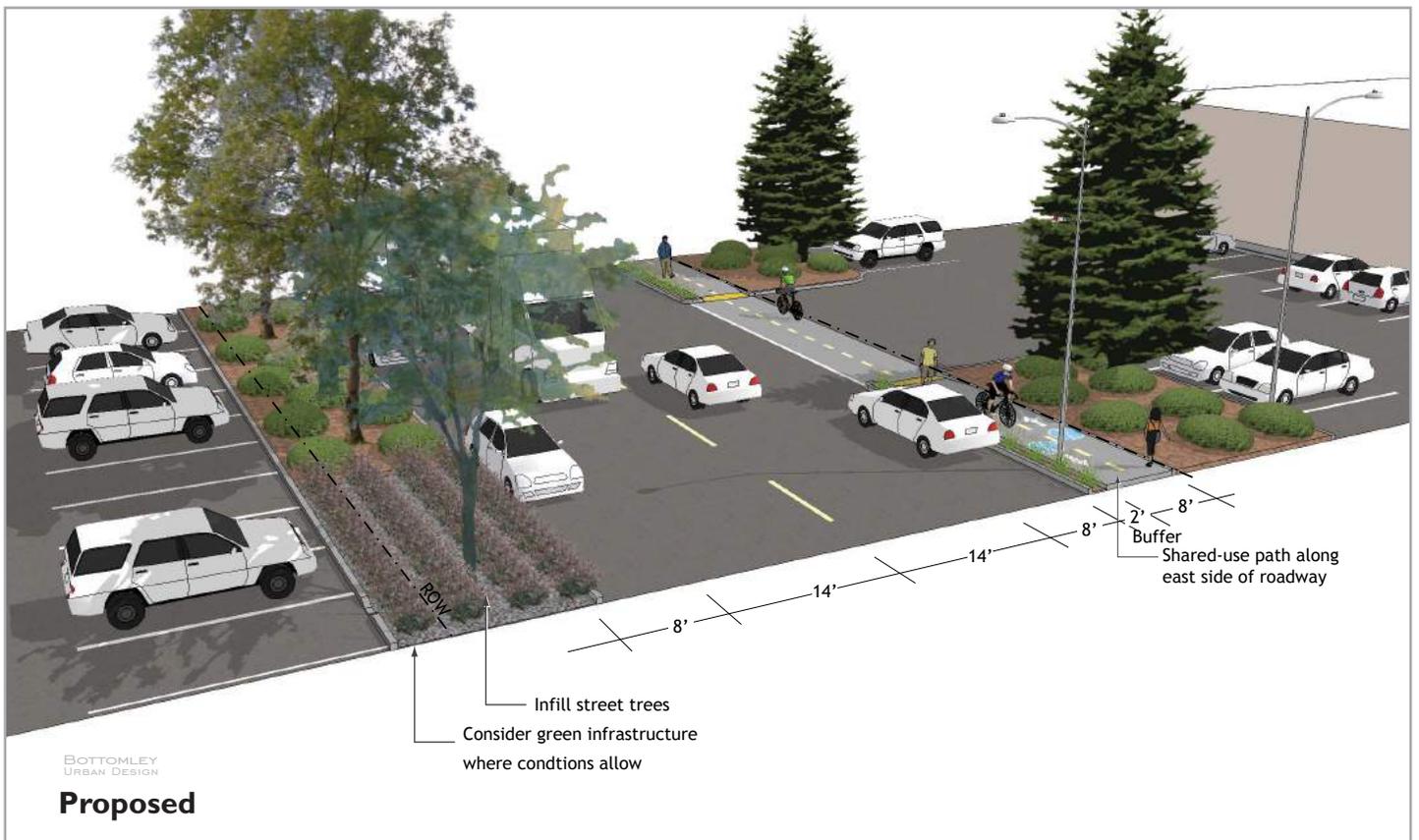
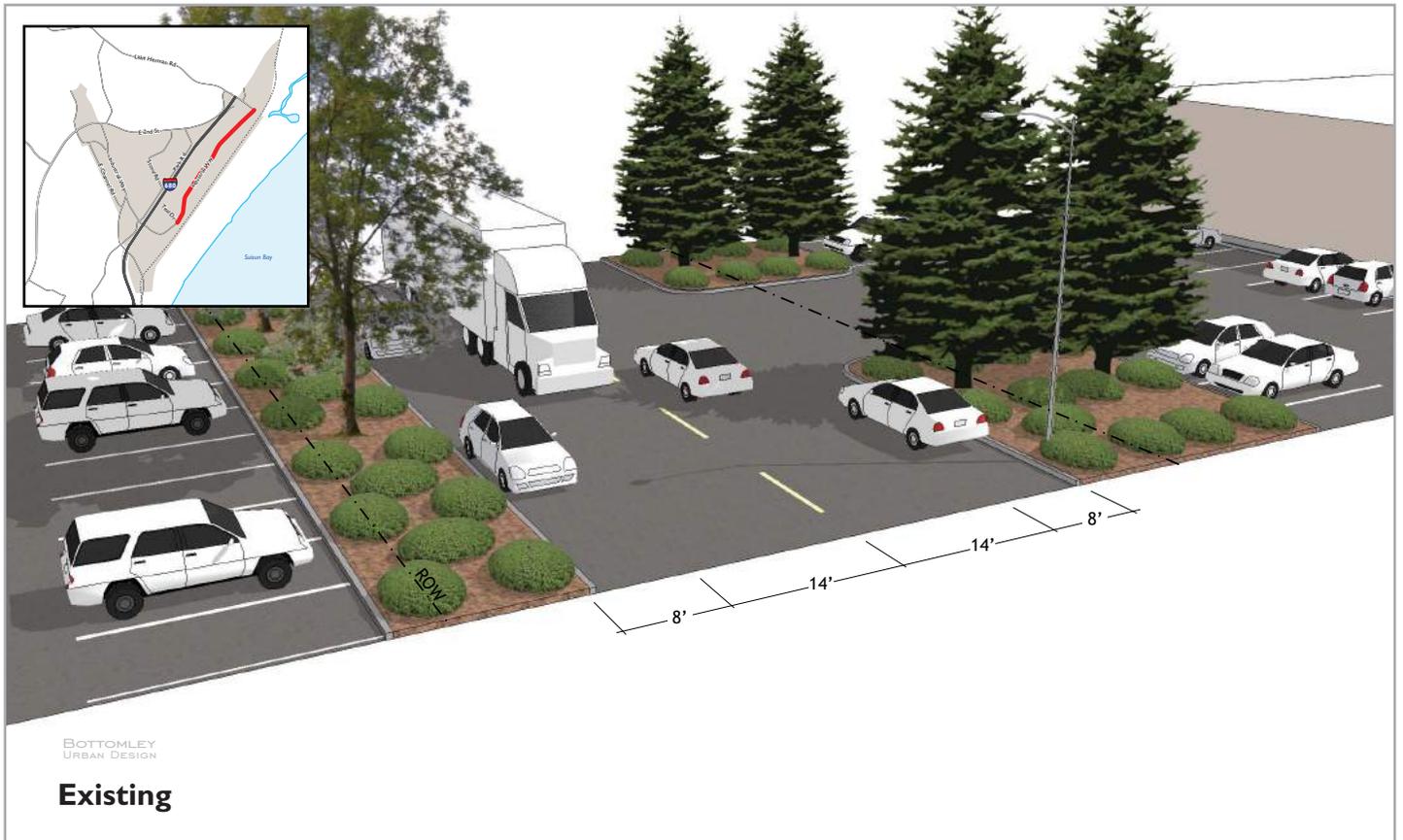
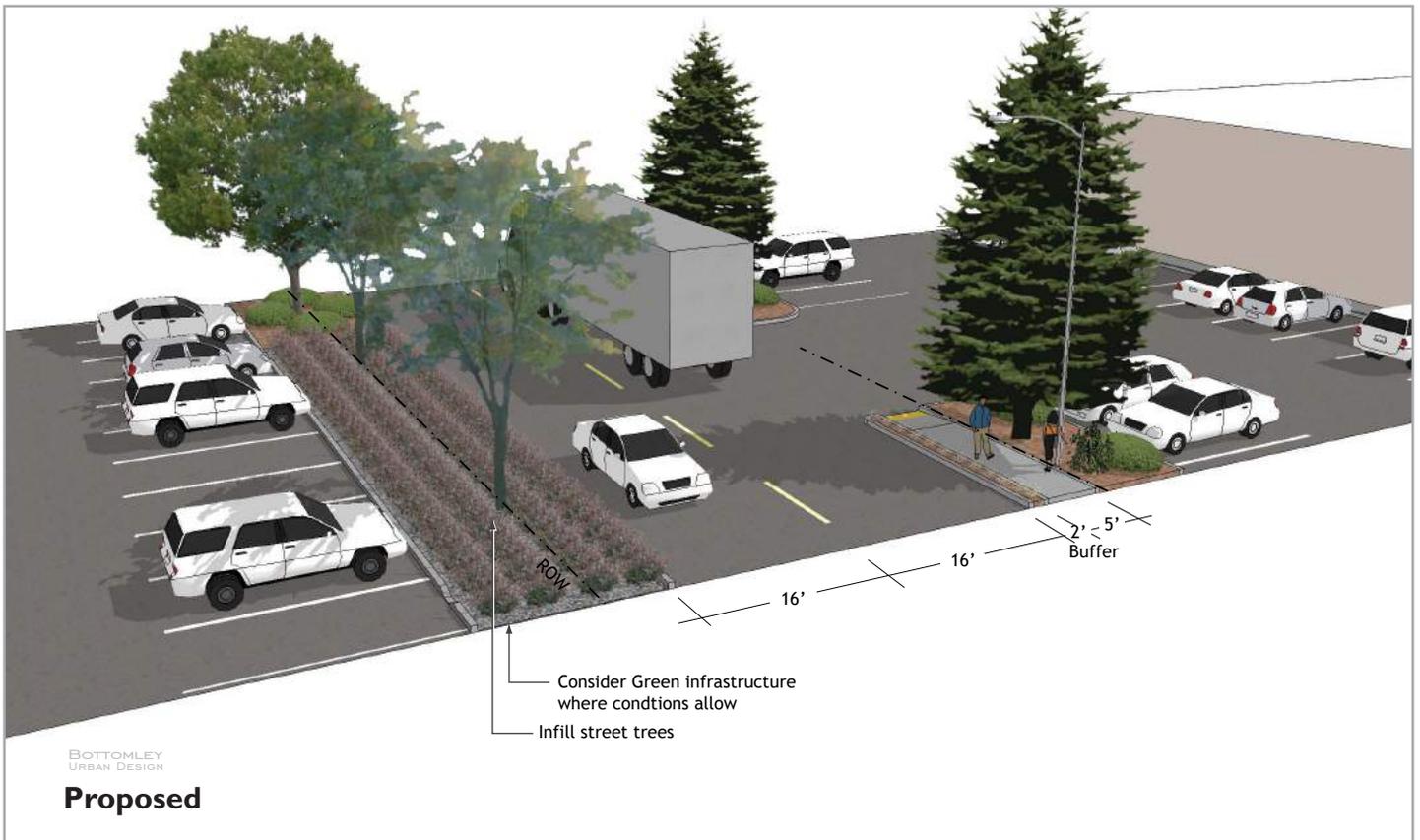
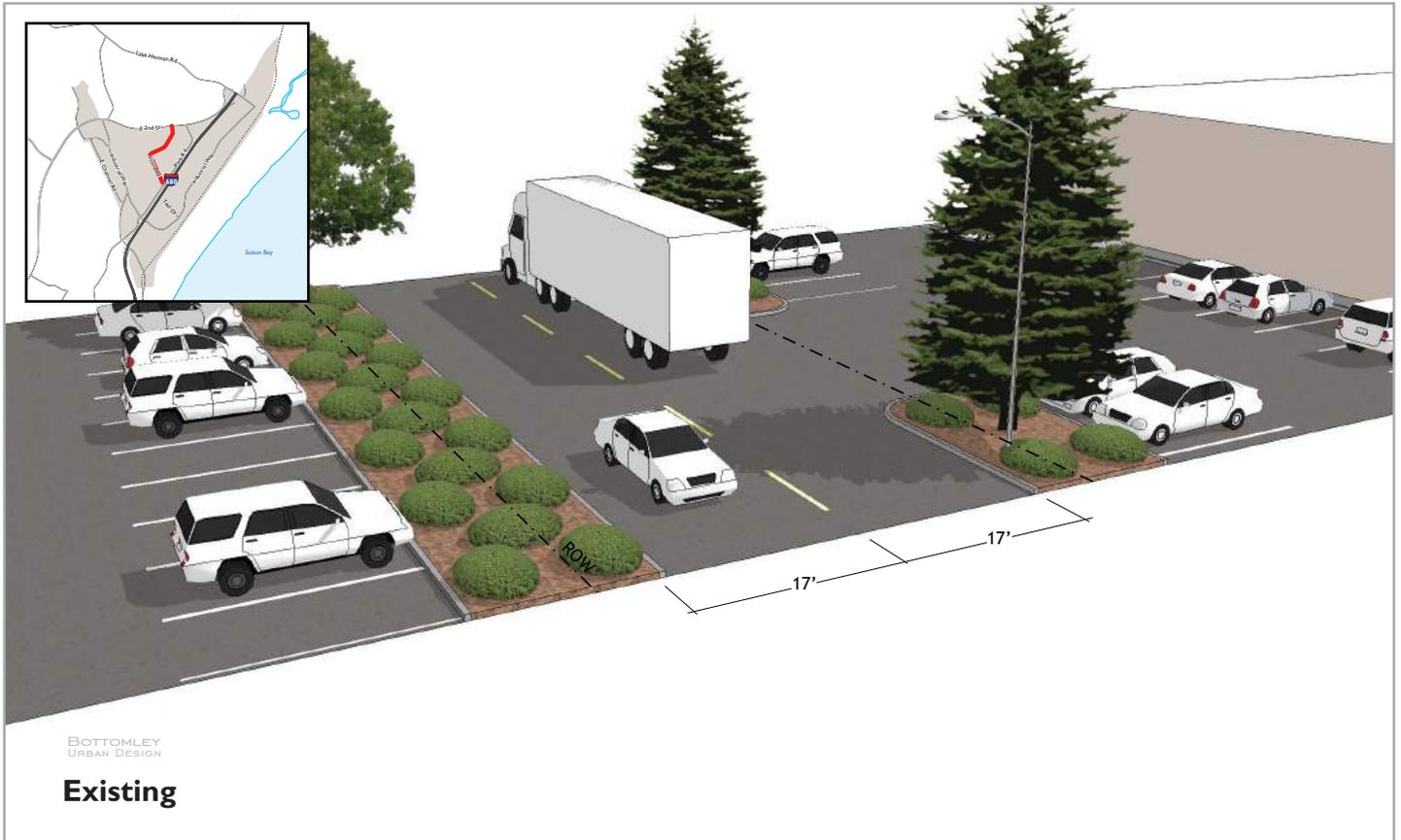


FIGURE 6-5 STONE ROAD – SIDEWALK



6.3 GOALS AND POLICIES

6.A Streetscape Design. Enhance streetscape design in the Industrial Park to increase connectivity, facilitate active transportation, and retain and attract new business.

6.A.1 Improvements to Key Streets. Facilitate streetscape improvements to East 2nd Street, Park Road, Industrial Way, and Stone Road in accordance with Figures 6-1 through 6-5, as feasible, in order to promote connectivity and improve the overall appearance of the Park’s key streets.

6.A.2 Travel Lane Width. Maintain a travel lane width of at least 12 feet on all Industrial Park roads to facilitate truck maneuvering. Where possible, increase this width to 14 feet or more in areas with heaviest truck activity.

6.A.3 Driveway Markings. Require special markings and/or signage at driveways that cross bicycle and pedestrian paths to increase visibility and alert bicyclists and pedestrians to the possibility of entering or exiting truck and vehicle traffic.

6.A.4 Consistent Street Trees and Landscaping. Install consistent rows of street trees and landscaping where feasible to create a unified aesthetic. Utilize landscaping that is native and drought-tolerant, and that minimizes upkeep and maintenance. In places where right-of-way is constricted, require frontage street trees on the street-facing side of private property when sites redevelop or undergo significant renovation. If infeasible due to physical site characteristics, an alternative landscaping plan may be approved that complements the public streetscape scheme.

6.A.5 Tree Selection and Placement. Frontage street trees must be species that can be limbed to a minimum height of 14 feet for truck clearance. Trees shall not be placed such that, at maturity, they interfere with safe site distances for vehicular, pedestrian, or bicycle traffic or conflict with overhead utilities or lighting.

6.A.6 Green Infrastructure. Incorporate green infrastructure elements into streetscape design to capture stormwater flow and increase groundwater recharge. This may include provisions such as, but not limited to:

- Landscaped drainage swales along roadways;
- Tree box filters for on-street filtration; and
- Medians with permeable hardscape or landscaping.

Include green infrastructure elements along East 2nd Street, Industrial Way, Park Road, and Stone Road, as shown in Figures 6-1 to 6-5. Consider additional green infrastructure elements along Channel Road and elsewhere in the Industrial Park where feasible.

- 6.A.7 Public/Private Investment.** Improve and enhance the Industrial Park’s physical image and desirability as a place to invest through public investments in streetscape improvements. Partner with the Benicia Industrial Park Association and private property owners on creative funding and financing strategies to fund needed improvements to achieve Complete Streets.
- 6.A.8 Northern Gateway Property.** If and when development is proposed for the Northern Gateway property, reevaluate the streetscape design planned for the area to ensure compatibility with future land uses. Require any development proposal for the Northern Gateway to include streetscape improvements that align with and complement the goals and policies of the TEC Plan. At this time, additional streetscape improvements for Reservoir Road and Lake Herman Road should be considered.



7. LAND USE AND ZONING

This chapter describes land use and zoning in the Benicia Industrial Park. How land is utilized and developed impacts traffic and transportation, the appearance of buildings and their uses, and the overall experience of being in the Industrial Park. This chapter presents goals and policies related to land use and zoning, and includes actions to achieve these aims via the intensification of development in the Industrial Park interior and the development of the Northern Gateway.

7.1 EXISTING LAND USE

For the purposes of this Plan, “existing land use” describes the pattern of uses that are currently present on parcels within the Plan Area (as of 2014). These existing uses may or may not be consistent with the current General Plan and zoning designations, which are discussed further in the next sections. Figure 7-1 illustrates the existing pattern of land uses in the Plan Area and Table 7-1 summarizes existing land use by acreage.

Industrial is the most prominent existing land use type in the Planning Area, constituting 43 percent of the total land. Vacant or Open Storage is the second largest land use type, accounting more than one third of the total Plan Area, the majority of which is located on the Northern Gateway property. While land designated as Open Storage is usually associated with adjacent industrial activities, it has a high redevelopment potential. Open Storage is defined as land where open storage is the primary intended use (compared to vacant land) and there is no permanent structure.

Commercial Services, Utilities, Religious Facilities, Open Space/Marsh, and Railroad Right of Way constitute the remaining 20 percent of the Plan Area. Commercial Services include gas stations, auto service stations, and restaurants. City and State-owned properties, a PG&E electrical substation and the Valero wastewater treatment plant are categorized under Utilities. As of late 2016, the New Harbor Community Church is the only religious facility in the Plan Area.

TABLE 7-1: EXISTING LAND USE SUMMARY

<i>Land Use</i>	<i>Acres</i>	<i>Percent of Plan Area</i>
Industrial	558	42.5%
<i>Heavy Industrial</i>	16	1.2%
<i>Manufacturing/Warehousing</i>	477	36.3%
<i>Light Industrial</i>	65	0.5%
Commercial Services	19	1.4%
Religious Facilities	<1	<0.1%
Utilities	71	5.4%
Railroad Right of Way (ROW)	67	5.1%
Open Space/Marsh	105	8.0%
Vacant or Open Storage	493	37.5%
TOTAL	1,313	100.0%

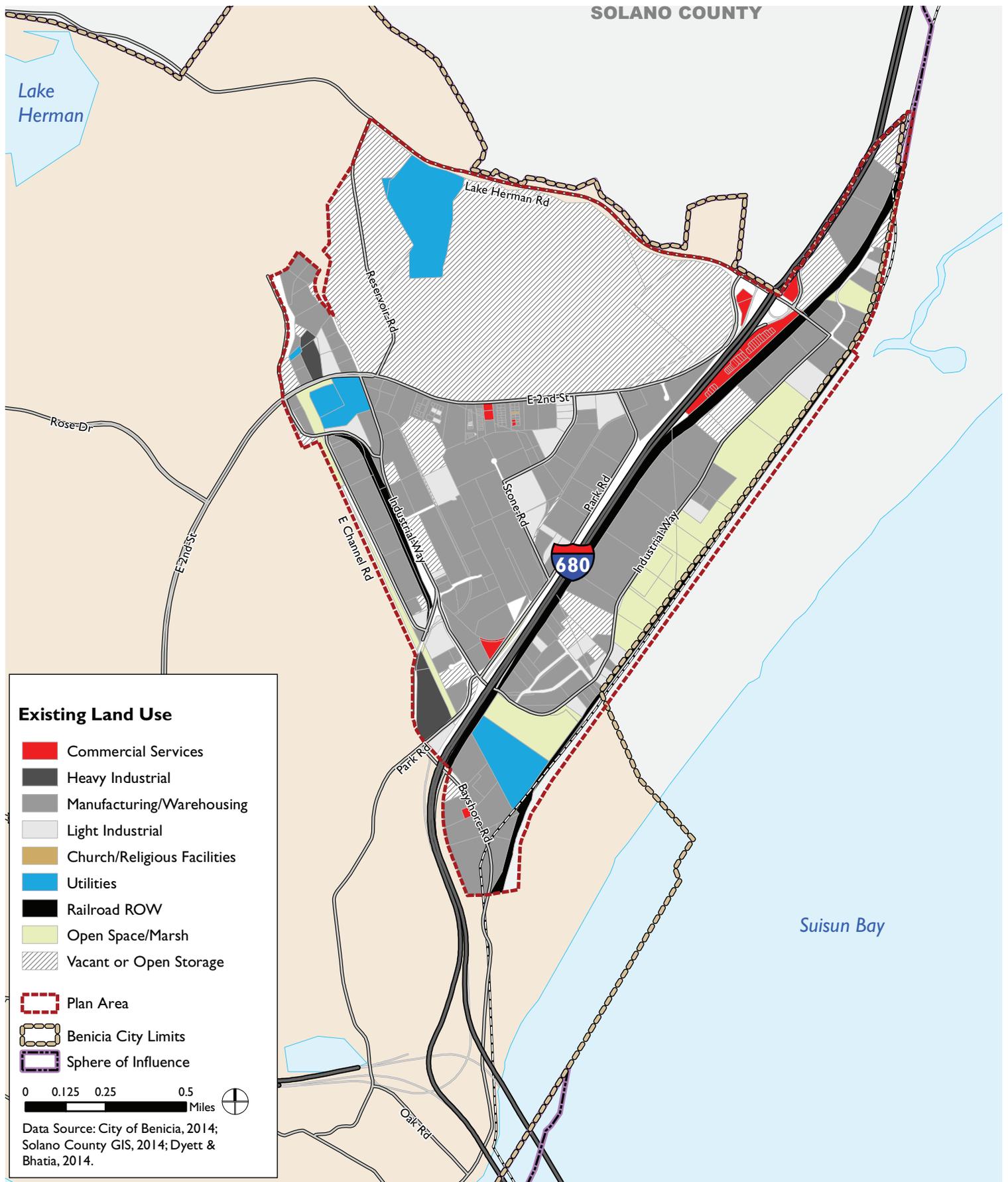
Note:
Does not include roadway Right of Way

Source: Solano County Assessor, Dyett & Bhatia, 2014



Existing land uses in the Industrial Park include a mix of industrial, commercial, open space/marsh, and public.

FIGURE 7-1 EXISTING LAND USE



7.2 GENERAL PLAN

Adopted in 1999, the Benicia General Plan provides goals, policies, and programs for future conservation and development in the city. Figure 7-2 and Table 7-2 illustrate and summarize the General Plan land use designations in the Plan Area. These General Plan designations will not change as a result of the TEC Plan.

Land designated in the General Plan for industrial land use (General Industrial and Limited Industrial) constitutes 87 percent of the Plan Area's total developable land (excluding Right of Way). East 2nd Street roughly draws the boundary between the General Industrial and Limited Industrial designations. The remaining land in the Plan Area is designated as General Commercial, Public/Quasi-Public, or Marsh by the General Plan.

The General and Limited Industrial General Plan designations have the same maximum allowable floor area ratio (FAR) of 0.7; their difference lies in allowable uses. General Industrial is the least restrictive, allowing manufacturing, assembly, and packaging of goods and products from raw and previously prepared materials. Limited Industrial allows these activities only from previously prepared materials, not raw materials. Limited Industrial also is intended to support wholesale, warehousing, distribution, and research & development activities. Because of its more limited industrial activities, Limited Industrial uses are intended to provide a buffer between General Industrial land and the rest of the city.

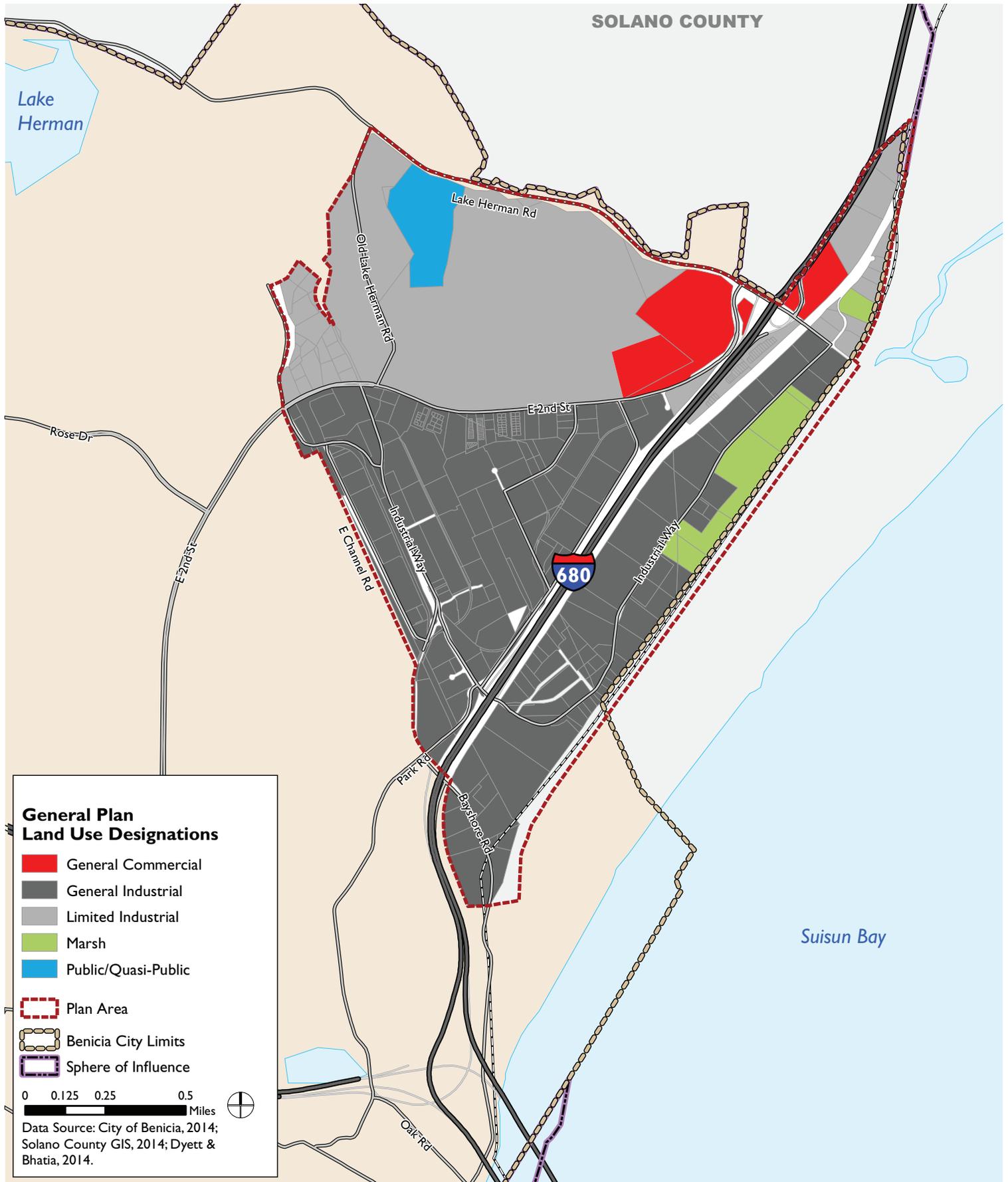
TABLE 7-2: GENERAL PLAN DESIGNATIONS BY ACREAGE

<i>General Plan Land Use</i>	<i>Acres</i>	<i>Percent of Plan Area</i>
General Commercial	77	6.1%
General Industrial	641	50.9%
Limited Industrial	455	36.1%
Marsh	51	4.1%
Public/Quasi-Public	36	2.9%
TOTAL	1,260	100.0%

Note:
Does not include roadway Right of Way

Source: *City of Benicia, Dyett & Bhatia, 2014*

FIGURE 7-2 GENERAL PLAN LAND USE DESIGNATIONS



7.3 ZONING

As with General Plan designations, zoning districts will not change as a result of the TEC Plan. However, some slight modifications to the allowable uses in each of the Industrial zoning districts are currently being considered by the Planning Commission as of 2017.

EXISTING ZONING

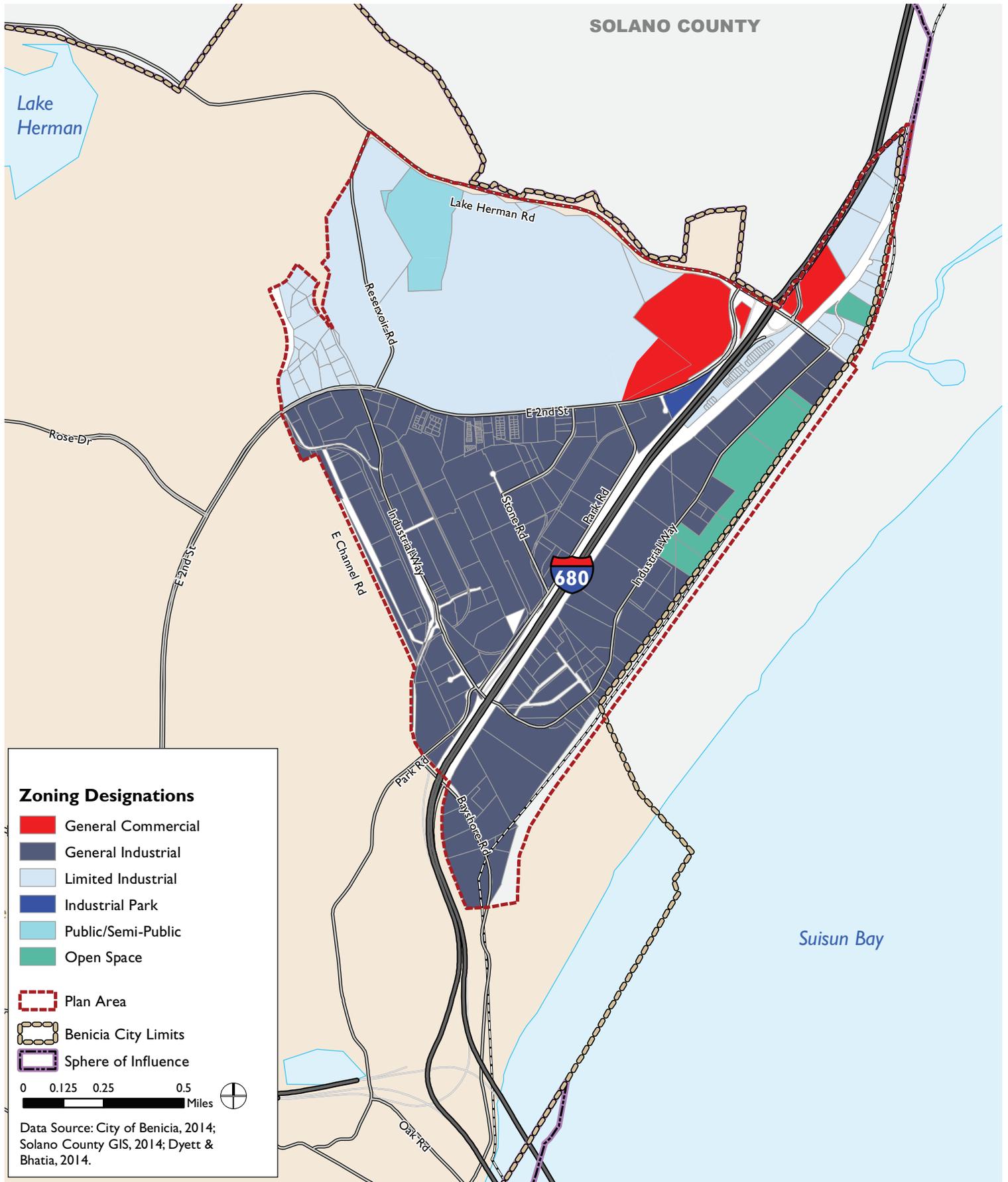
As shown in Figure 7-3, the majority of land located north of East 2nd Street is zoned for Limited Industrial use, while land to the south is largely zoned for General Industrial use. Key distinctions between these two districts relate to the allowance of a wider range of industrial uses in the General Industrial district, including the manufacturing, assembly and packaging of goods and products from extracted and raw materials. The Limited Industrial district serves to buffer outlying open space and residential areas from the heavier industrial uses located in the General Industrial district. Commercially zoned land is concentrated around the Lake Herman Road interchange at I-680. Additionally, there are also a few pockets zoned as Public/Semi-Public, Industrial Park, and Open Space. Table 7-3 summarizes zoning designations by acreage.

TABLE 7-3: ZONING DESIGNATIONS BY ACREAGE

<i>Zoning District</i>	<i>Acres</i>	<i>Percent of Plan Area</i>
General Industrial	641	50.9%
Limited Industrial	450	35.7%
Industrial Park	5	0.4%
General Commercial	77	6.1%
Open Space	51	4.0%
Public and Semi-Public	36	2.9%
TOTAL	1,259	100%

Source: Solano County Assessor, Dyett & Bhatia, 2014

FIGURE 7-3 ZONING DESIGNATIONS



DEVELOPMENT REGULATIONS

Allowable density and intensity will remain consistent with current development regulations, as they already allow sufficient density and intensity for the land uses and development types that are appropriate to the area. Table 7-4 summarizes select development regulations for the Industrial Park’s zoning districts.

TABLE 7-4: DEVELOPMENT REGULATIONS IN INDUSTRIAL PARK ZONING DISTRICTS

<i>Regulation</i>	<i>Limited Industrial (IL)</i>	<i>General Industrial (IG)</i>	<i>Industrial Park (IP)</i>	<i>General Commercial (CG)</i>
Maximum Height of Structures (ft.)	50	-	50	40
Maximum Lot Coverage	50%	75%	50%	75%
Maximum FAR	0.8	1.0	0.6	1.2
Minimum Site Landscaping	10%	10%	15%	10%

Source: Benicia Municipal Code, Section 17.32.030

USES

In the Limited Industrial, General Industrial and Industrial Park zoning districts, a number of public/semi-public and commercial uses are permitted as of right, with certain limitations or with a use permit. These uses include day cares, eating and drinking establishments, mobile food vending, commercial recreation and entertainment, and beauty and barbershops. This has led to a variety of non-industrial businesses to be located within the Industrial Park, such as cafes, a Cross-Fit gym, an archery range and a popular taco truck. Refer to Appendix E for a full list of uses allowed within industrial zoning districts as of late 2016.

ISSUES AND CONSTRAINTS

While flexible zoning allows the opportunity for Park employees to access a range of non-industrial amenities without traveling out of the Park, this flexibility attracts people and businesses to the Park who otherwise would not be there for purposes related to industrial activities. Industrial business owners have expressed safety concerns over having unnecessary traffic in the interior of the Park's General Industrial area due to the high volume of truck and rail movement at all hours. Additionally, outside visitors are likely unaccustomed to driving, biking and/or walking around the level of truck and rail traffic that is typical in the Benicia Industrial Park, increasing the potential for accidents.

SUPPORTIVE USES

Non-industrial uses in the Industrial Park should largely be supportive of the Park's businesses and employees. Supportive uses include eating establishments, food trucks, ATMs, service stations, repair shops, or other similar services. At a community workshop held during the TEC Plan planning process, members of the public expressed that the City should reconsider allowing the following uses in the Park:

- Adult and child day care facilities
- Churches and religious assembly facilities
- Cultural institutions
- Government offices
- Beauty or barber shops
- Crematories, columbaries, mausoleums
- Nurseries/plant sales
- Recreation and entertainment facilities
- Residential

Non-industrial uses should be located primarily in the area zoned as General Commercial near the intersection of Lake Herman Road and I-680 as well as along the enhanced East 2nd Street corridor. Additional supportive commercial uses catering to the daily needs of Industrial Park workers and businesses could be located in the interior of the Park along Park Road, Stone Road, or Industrial Way (between Park Road and Lake Herman Road), where appropriate. Services located on these streets would have the added benefit of complementing and encouraging use of the bicycle, pedestrian, and streetscape improvements described in Chapters 4, 5, and 6.

As of late 2016, the Planning Commission is considering which personal and supportive uses should be allowed in the Industrial Park. Additional guidance on this subject is expected in 2017. At the time of Plan publication, no changes to uses allowed in the Industrial Park are recommended.

7.4 DEVELOPMENT POTENTIAL

This Plan assumes the eventual development of the Northern Gateway property in addition to new development and redevelopment in the Industrial Park interior, as described below.

NORTHERN GATEWAY PROPERTY

The Northern Gateway property should primarily develop into an “innovation park”¹² corresponding to the range of light industrial and commercial uses permitted by the Benicia Municipal Code (See “Restricted Uses” for exceptions). A 2008 development proposal for the Northern Gateway property (which was not approved) assumed the development of 280 acres of Limited Industrial uses (approximately 4.4 million square feet of new building space) and 35 acres of Commercial uses (approximately 857,000 square feet of building space). While the ultimate development mix of this property will most likely differ from these calculations, they provide a good estimate of the amount of new development that can be reasonably supported on the Northern Gateway property.

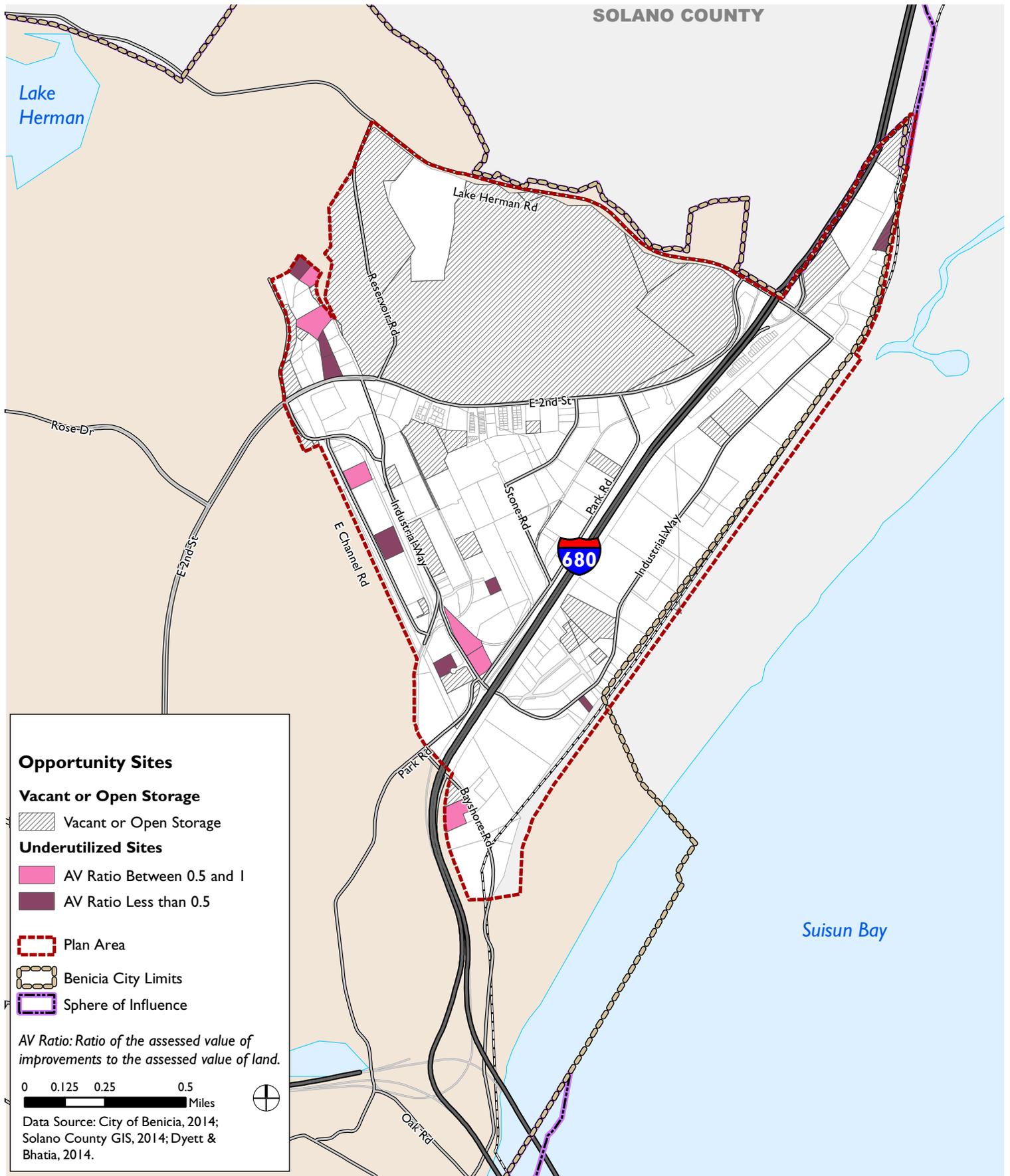
EXISTING INDUSTRIAL PARK

Vacant and underutilized parcels in the Industrial Park interior offer the opportunity for intensification. Excluding the Northern Gateway property, there are 51 acres of vacant land on 23 parcels in the Park (see Figure 7-4). Conservatively assuming an FAR of 0.6, and that 50 percent of vacant parcels might develop in the next 20 years, this could potentially result in approximately 670,000 square feet of new building space. In addition to these vacant parcels, there are 34 acres of underutilized land on 15 parcels in the Plan Area.¹³ Again, assuming an FAR of 0.6 and that 50 percent of these parcels might redevelop over the next 20 years, redevelopment of these parcels could result in 450,000 additional square feet of building space. Adding together the vacant and underutilized land development potential totals, the Industrial Park interior (excluding the Northern Gateway property) could see approximately 1.1 million square feet of new development.

12. Innovation Park is defined in the Benicia Industrial Park Market Study (2014) as being focused “on specific types of technology e.g. IT, software development, life sciences, medical, etc.”

13. Underutilized land is defined by AV ratio, a ratio of the assessed value of improvements (buildings and structures) to the assessed value of land. Any parcels with an AV ratio of less than 1.0 (in other words, where the value of the built improvements is less than the value of the land itself) are considered underutilized. Parcels with an AV ratio of less than 0.5 (sites where the value of the built improvements is less than half of the value of the land) are even stronger candidates for reuse and redevelopment.

FIGURE 7-4 OPPORTUNITY SITES



7.5 ELECTRIC VEHICLE CHARGING STATIONS

Electric vehicles (EVs) have the potential to reduce greenhouse gas emissions and air pollutants while reducing dependence on petroleum. EVs draw energy from electricity, which is then stored in batteries.¹⁴ Vehicles may be all electric or plug-in hybrids that can run on electricity and fuel. While both light-duty and heavy-duty EVs are commercially available, the current industry emphasis is on the light-duty market.

EV charging stations are classified by the rate or speed at which they are able to charge batteries. Charging times can range from 15 minutes to 20 hours or more depending on battery size and type and the type of charging equipment used. While most EV owners charge their vehicles at home, opportunities for workplace charging are significant because many personal vehicles spend a considerable amount of time parked at work. Additionally, having access to charging stations at both work and home can improve the commuting range of an EV. Beyond serving as an amenity for employees, workplace EV charging stations also allow businesses to maintain electric vehicles in their fleets and attract the public to their place of business.

EV CHARGING STATIONS IN THE INDUSTRIAL PARK

Public EV charging stations are becoming increasingly popular in Solano County, including two Level II stations and one, dual port, solar powered fast charging station at Benicia City Hall and one Level II station at the Benicia Community Center. In 2013, the Bay Area Air Quality Management District released the Bay Area Plug-In Electric Vehicle Readiness Plan, which identified Benicia's Industrial Park as a potential location for either workplace or public EV charging stations.¹⁵ Two stations are included in the site plan for the future Industrial Park bus hub.¹⁶

Businesses within the Benicia Industrial Park should be encouraged to provide EV charging for their employees and customers. In particular, it should be required that new development over a certain minimum size, including any future development of the Northern Gateway property, should incorporate EV charging stations. To assist with financing the installation of charging stations, developers and business owners have a number of tools available, including the Business Resource Incentive Program (BRIP), property assessed clean energy (PACE) financing, CaliforniaFIRST Efficiency Financing and the Home Energy Renovation Operation (HERO) program.

14. The City of Benicia joined Marin Clean Energy (MCE) in 2014. MCE provides 51% and 100% renewable electricity to its customers and so, charging an electric car at a station in Benicia is even cleaner than using PG&E power, currently 27% renewable content.

15. Bay Area Air Quality Management District. (2013). Bay Area Plug-In Electric Vehicle Readiness Plan (p. 62-64).

16. Solano Transportation Authority. (2013). Solano County Alternative Fuels and Infrastructure Plan (p. 37).

7.6 GOALS AND POLICIES

7.A Land Use. Allow a mix of allowable uses that reinforce and support the industrial character of the Park and Northern Gateway.

7.A.1 Supportive Uses. Promote commercial development that is supportive of Industrial Park businesses and workers near the intersection of Lake Herman Road and I-680 as well as along the East 2nd Street, Park Road, Stone Road, and Industrial Way corridors, where appropriate.

7.A.2 Attract New Development and Redevelopment. Attract new tenants and investment in the Industrial Park by promoting the Park's many positive features, including convenient freeway and rail access, improved multimodal connections, and attractive streetscapes.

7.A.3 Northern Gateway. Develop the Northern Gateway property into an "innovation park" that complements the existing Industrial Park and is consistent with the range of commercial and industrial uses permitted by the Benicia Municipal Code.

7.B Electric Vehicle Charging Stations. Encourage the installation of electric vehicle charging stations in the Industrial Park to promote the use of low-emissions vehicles.

7.B.1 Parking Requirements. Amend the Zoning Code to make it clear that electric vehicle charging stalls count toward overall parking requirements.

7.B.2 New Development. Require that at least 5 percent of the parking spaces provided in new development (of 20,000 square feet of floor area of greater) be allocated for electric vehicle charging.

7.B.3 Financing. Provide developers and business owners with information regarding programs that provide financial assistance for the installation of electric vehicle charging stations. Such programs include, but are not limited to:

- Business Resource Incentive Program (BRIP)
- Property assessed clean energy (PACE) financing
- CaliforniaFIRST Efficiency Financing
- Home Energy Renovation Operation (HERO) program



8. SIGNAGE AND WAYFINDING

To support improved circulation and navigation within the Industrial Park, signage and wayfinding will achieve the following: 1) provide directional information, particularly for first time visitors and prospective tenants, 2) enhance the image of the Industrial Park for business recruitment and retention, and 3) improve visibility and safety for users of all modes of transportation. It is important that directional and wayfinding signage and maps are placed in clearly visible locations, are intuitively understood, and tailored to the location in which they are used. This chapter proposes wayfinding elements and their recommended placement in the Industrial Park.

8.1 WAYFINDING ELEMENTS

Three types of wayfinding elements are proposed for the Benicia Industrial Park: highway guide signs, gateway/monument signs, and directional and secondary signs. Figure 8-1 shows proposed locations for each type of signage within the Industrial Park, while Figure 8-2 illustrates examples of each. Signs will be required to meet any applicable requirements regarding sign reflectivity set forth in the Manual on Uniform Traffic Control Devices, published by the Federal Highway Administration.

HIGHWAY GUIDE SIGNS

Highway guide signs will guide drivers from I-680 freeway exits to local roads that lead to the Industrial Park. As shown in Figure 8-2, highway guide signs can also highlight connections to bike routes, which would increase awareness about the bicycle network improvements within the Park. Highway guide signs should be simple in format with a “public works” appearance; i.e. custom fonts, logos, and other graphic design elements would not be employed.

Northbound highway guide signs are proposed at Bayshore Road and Lake Herman Road. Southbound highway guide signs are proposed at Lake Herman Road and Industrial Way.

GATEWAY/MONUMENT SIGNS

Gateway/monument signs are large architectural signs that identify the Industrial Park’s boundaries and major roadway entrances. As shown in Figure 8-2, these signs can be configured in a variety of ways, from ornamental walls and panels, to two-dimensional graphic panels with architectural columns, to three-dimensional structures, and/or combinations thereof. Whatever the form, these signs should be designed to project an identity that is exemplified in the design, form, and graphics employed, and should feature a Benicia Industrial Park “brand” logo and the Benicia Industrial Park name.

Gateway/monument signs are proposed at the Industrial Park boundary locations along East 2nd Street, with one just east of the existing Bio-Rad facility, and the other just east of Industrial Way. To mark other entrances into the Industrial Park, additional gateway/monument signs are recommended at the intersections of Park Road and Industrial Way, Lake Herman Road and Reservoir Road, and Lake Herman Road and Goodyear Road. The proposed gateway/monument sign near the Bio-Rad facility is in one of the five locations identified in the General Plan as a future location for a city gateway. Policy 3.9.4 and Program 3.9.E of the General Plan propose gateways to provide a sense of entry and exit to the city, and recommend establishing land use and design guidelines to direct the nature and character of development at the gateways.

DIRECTIONAL SIGNS AND SECONDARY SIGNS

Directional signs are proposed at major intersections within the Industrial Park to assist people in finding major tenants, facilities, and streets. These may be freestanding or incorporated into the design of gateway/monument signs. Directional signs should reflect the branding and graphics theme employed in the gateway/monument signs in order to provide a strong sense of wayfinding continuity within the Industrial Park. Smaller, secondary signs are recommended to provide supplemental direction for difficult-to-find locations. The branded logo may also appear on street signs and other smaller signs (such as bike route signage) to provide even greater visual continuity.

Directional signs are proposed along East 2nd Street at Industrial Way, Stone Road, Park Road, and Lake Herman Road; along Park Road at Stone Road, Industrial Way, and Bayshore Road; along Industrial Way at Lake Herman Road and at the southbound I-680 off-ramp; and at the I-680 off-ramp at Bayshore.

FIGURE 8-1 WAYFINDING

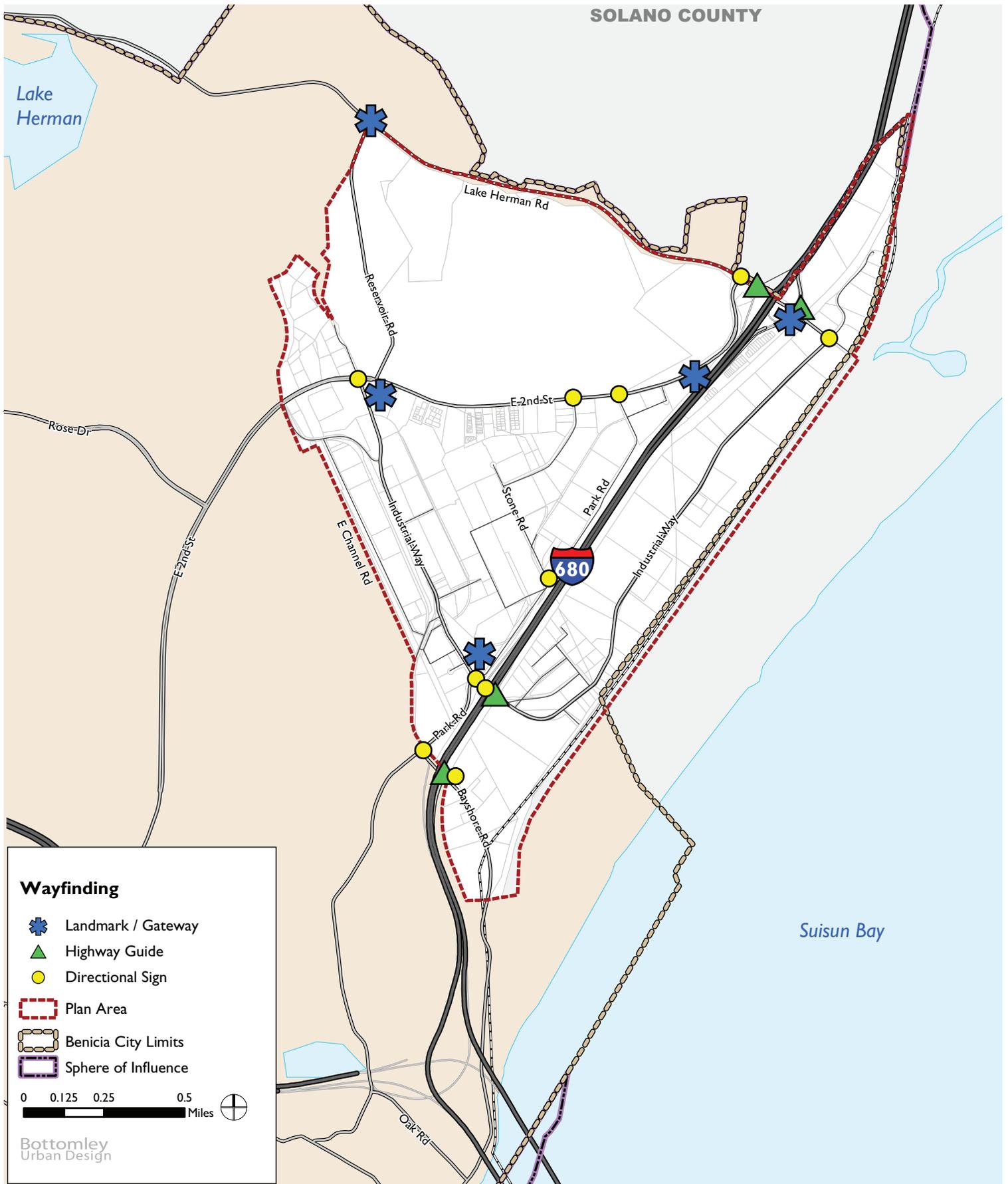


FIGURE 8-2 EXAMPLES OF WAYFINDING ELEMENTS

Highway Guide Signs



Gateway/Monument Signs



Directional Signs and Secondary Signs



8.2 GOALS AND POLICIES

8.A Wayfinding System. Establish an attractive and comprehensive signage system in the Industrial Park that enhances the identity of the Park and ensures users of all modes of transportation can efficiently and safely navigate the area.

8.A.1 Sign Placement. Place signage in locations illustrated in Figure 8-1. Work closely with the Benicia Industrial Park Association and Industrial Park business owners to continually assess the wayfinding system and determine additional locations for signs as needed.

8.A.2 Branding. Hire a branding/graphic design firm to create a branded logo and design standards for the Benicia Industrial Park to promote visual continuity in signage. Ensure involvement of the Benicia Industrial Park Association and other stakeholders in development of the graphic style.

8.A.3 Design. Design wayfinding signage to feature graphics, materials, and colors that are consistent with the scale and character of the Industrial Park.

8.A.4 Wayfinding for Active Transportation. Ensure that directional and secondary signs provide clear guidance for those traveling on foot and by bicycle. Considerations should include:

- Appropriate height and size
- Guidance to safe and appropriate routes where sidewalks and/or bicycle facilities are provided
- Provision of distance or time measurements (e.g. “Bus Hub: Five-minute walk” or “Downtown Benicia: 15-minute ride”) to major destinations

8.A.5 Funding. Develop a signage grant or revolving loan program to enable existing property owners to obtain funds to upgrade their business and directional signs to meet the new Industrial Park design standards.

8.A.6 Signage in the Northern Gateway Property. If and when development is proposed for the Northern Gateway property, incorporate the Industrial Park wayfinding system, as appropriate. Though signage in the Northern Gateway may feature alternate branding and design standards, aesthetics should be coordinated with the overall Industrial Park wayfinding program.

8.A.7 FHA Requirements. Require signs to meet any applicable requirements regarding sign reflectivity set forth in the Manual on Uniform Traffic Control Devices, published by the Federal Highway Administration.



9. IMPLEMENTATION

Implementation of the Benicia Industrial Park TEC Plan will require action by several different departments within the City, including the Community Development, Public Works, and Economic Development departments. This chapter describes key implementation actions, the general responsibilities of various City departments and local agencies and the general timeframe for improvements. Possible funding sources are also identified.

9.1 IMPLEMENTATION AND PHASING PLAN

It is important to note that implementation of many of the strategies recommended in this Plan will not immediately result in a comprehensive network of Complete Streets in the Industrial Park. For example, the strategies that would be implemented by future development will take effect only when new projects are constructed at some point in the future. Strategies to be implemented by the City will occur as funding is available. Over time, this will result in increased connectivity and more attractive streetscapes. Larger scale, street and roadway improvements are likely to have a more dramatic impact; however, initiation of these improvements is anticipated to take several years in order to secure adequate funding.

The forthcoming completion of the bus hub represents a good opportunity to begin implementation of many of these actions. In addition, if and when the Northern Gateway property develops, this will likely spur the major streetscape improvements described for East 2nd Street. More minor changes, such as improved signage, will likely proceed prior to this.

TABLE 9-1: IMPLEMENTATION AND PHASING PLAN

<i>Action</i>	<i>Department or Agency Responsible</i>	<i>Timeframe</i>
Roadways and Truck Movement		
Incorporate the baseline roadway improvements identified in Table 2-1 into the City's next Capital Improvements Program.	City Manager; Public Works Department	1 to 5 years
Conduct a study to determine the costs and feasibility of undertaking the freeway ramp reconstruction and realignment projects listed in Table 2-2.	Public Works Department	1 to 5 years
Undertake freeway ramp construction and realignment projects listed in Table 2-2, if feasible, as determined by study.	Public Works Department; Caltrans	5 to 15 years
Transit and Transportation Demand Management (TDM)		
Conduct a transit needs assessment that analyzes commuting patterns into the Industrial Park to determine the transit services that would best support the needs of Industrial Park workers.	Community Development Department; Benicia Industrial Park Association (BIPA); Fairfield and Suisun Transit (FAST); Solano Transportation Authority (STA)	1 to 5 years
Develop a program that provides reduced cost transit passes to Industrial Park workers.	Community Development Department; FAST; SolTrans	1 to 5 years; may be in conjunction with formation of TMA and implementation of TDM program (below)
Form a Transportation Management Agency (TMA) that coordinates TDM strategies on behalf of all Industrial Park employers. Once the TMA is formed, determine which TDM strategies would best serve Industrial Park employees. Examples of TDM strategies include, but are not limited to: <ul style="list-style-type: none"> • Pre-tax commuter benefits • Rideshare coordination and/or subsidy • Internal bike share system • Internal shuttle system • Marketing tools 	Economic Development Department; BIPA	3 to 8 years

TABLE 9-1: IMPLEMENTATION AND PHASING PLAN (CONTINUED)

<i>Action</i>	<i>Department or Agency Responsible</i>	<i>Timeframe</i>
Bicycles, Pedestrians, Streetscape Design		
Apply for grants and assess the feasibility of establishing a special assessment district to fund streetscape improvements for East 2nd Street, Industrial Way, Park Road and Stone Road.	Public Works; Community Development Department; Parks & Community Services Department	<i>East 2nd Street -</i> Concurrent with development of the Northern Gateway property <i>Other streets –</i> Ongoing, as grant funding is available and cycles occur <i>Formation of Assessment District – 3 to 8 years</i>
Amend the Zoning Code to require bicycle parking equal to five percent of the requirement for automobile parking spaces for industrial use classifications.	Community Development Department	1 to 5 years
Implement a tiered bicycle infrastructure requirement for new development that necessitates varying levels of infrastructure depending on the size and type of development, in accordance with the City's Climate Action Plan.	Community Development Department	1 to 5 years
Employ a public awareness and education campaign related to bicycle safety for Industrial Park businesses.	Community Development Department; BIPA	Concurrent with bicycle network improvements
Acquire the land or easement necessary to build a bicycle and pedestrian connection from East 2nd Street to the Water's End Trail.	Community Development Department; Public Works	Concurrent with bicycle and pedestrian network improvements along East 2nd Street
Land Use		
Consider amending the Zoning Code to disallow the following uses in industrial zoning districts: <ul style="list-style-type: none"> • Adult and child day care facilities (on-site day care facilities provided as an amenity to employees are allowed) • Churches and religious assembly facilities • Cultural institutions • Government offices • Beauty or barber shops • Crematories, columbaries, and mausoleums • Nurseries and plant sales • Recreation and entertainment facilities • Residential uses 	Community Development Department	1 to 5 years
Amend the Zoning Code to allow electric vehicle charging stalls to count towards parking requirements and require new development include at least one electric vehicle charging stall.	Community Development Department	1 to 5 years
Signage and Wayfinding		
Hire a graphic design firm to create a branded logo and design standards for Industrial Park signage.	Economic Development Department; BIPA	1 to 5 years

9.2 POTENTIAL FUNDING SOURCES

The funding sources identified below are a preliminary list of transportation-related funds that could be used to finance the improvements described in the TEC Plan.

STATE

- **Active Transportation Program.** Created in the Department of Transportation by Senate Bill 99, Chapter 359 and Assembly Bill 101, Chapter 354, the ATP consolidates existing federal and state transportation programs, including the Transportation Alternative Program (TAP) and the Bicycle Transportation Account (BTA) into a single program focused on making California a national leader in active transportation.
- **Cap and Trade.** The California legislature passed AB 32 in 2006, requiring the Air Resources Board to undertake a statewide effort to reduce global warming pollution. Revenues are generated from the auction of pollution credits.

REGIONAL

- **OneBayArea Grant Cycle 2 (OBAG 2).** A grant program administered through the Metropolitan Transportation Commission (MTC). OBAG 2 can fund transportation projects and/or other programs that reduce traffic congestion and/or improve air quality.
- **Solano Bike and Pedestrian Program (SBPP).** Funds bicycle and pedestrian projects through three funding sources: Transportation Development Act (TDA) Article-3 funds, Countywide Bicycle and Pedestrian funds through MTC's Regional Bicycle and Pedestrian Program (RBPP), and Eastern Solano Congestion Mitigation and Air Quality (CMAQ) funds.
- **Regional Transportation Impact Fee (RTIF).** Provides needed infrastructure improvements for local and regional projects in Solano County.

LOCAL

- **Local sales tax/fees.** For most jurisdictions in California, the majority of street and road funding is generated locally. This is done via a mix of local General Funds, developer fees, and dedicated local transportation taxes.

APPENDIX A: COMPLETE STREETS POLICY - CITY COUNCIL RESOLUTION NO. 16-2

This Complete Streets Policy was adopted by Resolution No. 16-2 by the City Council of the City of Benicia on January 5, 2016.

COMPLETE STREETS PRINCIPLES

1. **Complete Streets Serving All Users.** The City of Benicia expresses its commitment to creating and maintaining Complete Streets that provide safe, comfortable, and convenient travel along and across streets (including streets, roads, highways, bridges, and other portions of the transportation system) through a comprehensive, integrated transportation network that serves all categories of users, including pedestrians, bicyclists, persons with disabilities, motorists, movers of commercial goods, users and operators of public transportation, seniors, children, youth, and families.
2. **Context Sensitivity.** In planning and implementing street projects, departments and agencies of the City of Benicia shall maintain sensitivity to local conditions in both residential and business districts as well as urban, suburban, and rural areas, and shall work with residents, merchants, and other stakeholders to ensure that a strong sense of place ensues. Improvements that will be considered include sidewalks, shared use paths, bicycle lanes, bicycle routes, paved shoulders, street trees and landscaping, planting strips, accessible curb ramps, crosswalks, refuge islands, pedestrian signals, signs, street furniture, bicycle parking facilities, public transportation stops and facilities, transit priority signalization, and other features assisting in the provision of safe travel for all users, such as traffic calming circles, transit bulb outs, and road diets.
3. **Complete Streets Routinely Addressed by All Departments.** All relevant departments and agencies of the City of Benicia shall work towards making Complete Streets practices a routine part of everyday operations, approach every relevant project, program, and practice as an opportunity to improve streets and the transportation network for all categories of users, and work in coordination with other departments, agencies, and jurisdictions to maximize opportunities for Complete Streets, connectivity, and cooperation. The following projects provide opportunities: pavement resurfacing, restriping, accessing above and underground utilities, signalization operations or modifications, and maintenance of landscaping/related features.
4. **All Projects and Phases.** Complete Streets infrastructure sufficient to enable reasonably safe travel along and across the right of way for each category of users shall be incorporated into all planning, funding, design, approval, and implementation processes for any construction, reconstruction, retrofit, maintenance, operations, alteration, or repair of streets (including streets, roads, highways, bridges, and other portions of the transportation system), except that specific infrastructure for a given category of users may be excluded if an exemption is approved via the process set forth in section C.1 of this policy.

IMPLEMENTATION

1. **Plan Consultation and Consistency.** Maintenance, planning, and design of projects affecting the transportation system shall be consistent with local bicycle, pedestrian, transit, multimodal, and other relevant plans, except that where such consistency cannot be achieved without negative consequences, consistency shall not be required if the head of the relevant department provides written approval explaining the basis of such deviation. If the City of Benicia has a Bicycle and Pedestrian Advisory Committee, such deviations shall be presented to the Bicycle and Pedestrian Advisory Committee early in the planning and design stage, to ensure the Bicycle and Pedestrian Advisory Committee has an opportunity to provide comments and recommendations.
2. **Street Network/Connectivity.** As feasible, the City of Benicia shall incorporate Complete Streets infrastructure into existing streets to improve the safety and convenience of users and to create employment, with the particular goal of creating a connected network of facilities accommodating each category of users, and increasing connectivity across jurisdictional boundaries and for existing and anticipated future areas of travel origination or destination.
3. **Bicycle and Pedestrian Advisory Committee Consultation.** The City of Benicia Traffic, Pedestrian, Bicycle Safety Committee shall review transportation projects early in the planning and design stage to provide an opportunity to provide comments and recommendations regarding Complete Streets features to be incorporated into the project.
4. **Evaluation.** All relevant agencies or departments shall perform evaluations of how well the streets and transportation network of the City of Benicia are serving each category of users by collecting baseline data and collecting follow-up data on a regular basis.

EXEMPTIONS

Leadership Approval for Exemptions. Projects that seek Complete Streets exemptions must provide written finding of why accommodations for all modes that were not included in the project and signed off by the Public Works Director or equivalent high level staff person. Projects that are granted exceptions must be made publicly available for review. Federal guidance on exceptions can be found from the Federal Highway Administration (FHWA) Accommodating Bicycle and Pedestrian Travel:

http://www.fhwa.dot.gov/environment/bicycle_pedestrian/guidance/design.cfm

APPENDIX B: LEVEL OF SERVICE (LOS) SUMMARY

TABLE B-1: LOS SUMMARY

Intersection	Existing Conditions (2014 Counts)						2040 Forecast ¹					
	AM Peak			PM Peak			AM Peak			PM Peak		
	Existing Control	Delay ²	LOS ³	Delay ²	LOS ³	Delay ²	LOS ³	Delay ²	LOS ³	Delay ²	LOS ³	
1. East 2nd Street & Park Road	Stop	11.6	B	12.4	B	11.8	B	12.3	B	12.3	B	
2. East 2nd Street & Industrial Way	Signal	13.4	B	11.5	B	10.3	B	10.3	B	10.3	B	
3. East 2nd Street & Rose Drive	Signal	8.2	A	19.8	B	8.5	A	23.1	C	23.1	C	
4. East 2nd Street & I-780 Westbound Ramps	Signal	10.7	B	13.2	B	44.6	D	>50	F	>50	F	
5. East 2nd Street & I-780 Eastbound Ramps	Signal	15.2	B	21.8	C	41.3	D	>50	F	>50	F	
6. Lake Herman Road & Old Lake Herman Road	Stop	10.1	B	10.9	B	10.2	B	10.9	B	10.9	B	
7. Lake Herman Road & East 2nd Street	All way stop	24.5	C	24.2	C	24.5	C	22	C	22	C	
8. Lake Herman Road & I-680 Southbound Ramps	Stop	14.7	B	14.2	B	14.7	B	13.9	B	13.9	B	
9. Lake Herman Road & I-680 Northbound Ramps /Goodyear Road	All way stop	16.4	C	16.9	C	16.4	C	16.9	C	16.9	C	
10. Park Road & Industrial Way	All way stop	20	C	20.1	C	20	C	33.6	D	33.6	D	
11. Industrial Way & I-680 Southbound Ramps	Stop	11.3	B	11.2	B	11.3	B	12.5	B	12.5	B	
12. Industrial Way & I-680 Northbound Ramps	Stop	9.9	A	13.9	B	9.9	A	16.4	C	16.4	C	
13. Park Road & Bayshore Road	All way stop	10.4	B	17.2	C	10.3	B	19.7	C	19.7	C	
14. Bayshore Road & I-680 Southbound Ramps	Yield	11.3	B	13.5	C	11.3	B	14.2	B	14.2	B	
15. Bayshore Road & I-680 Northbound Ramps	Stop	11.3	B	11.6	B	11.3	B	11.6	B	11.6	B	

Notes:

- 2040 forecasts also account for increased traffic due to regional growth.
- Delay is in seconds per vehicle and is based on average stopped delay.
- For unsignalized intersections, LOS is reported based on worst approach.
- LOS Standard = "D"

Source: DKS Associates, 2016

APPENDIX C: COST SUMMARY OF BASELINE IMPROVEMENTS

TABLE C-1: SUMMARY OF COSTS FOR ROADWAY, PEDESTRIAN, AND BICYCLE PROJECTS IN THE BENICIA INDUSTRIAL PARK

<i>Project #</i>	<i>Project Name</i>	<i>Cost^{1,2,3}</i>
Baseline Roadway Improvements		
1	Industrial Way TWLTL	\$1,684,000
2	Lake Herman Road Signalization	\$1,395,000
3	West Channel Road & East Channel Road Speed Warning	\$43,000 ⁴
4	Industrial Way & I-680 SB Truck Improvements	\$210,000
5	Industrial Way & I-680 NB Truck Improvements	\$221,000
6	Bayshore Road & I-680 Truck Improvements	\$308,000
7	West Channel Road Safety Improvements	\$2,605,000
8**	E 2nd Street & I-780 WB Intersection Improvements	\$537,000
9**	E 2nd Street & I-780 EB Intersection Improvements	\$561,000
10	Drainage Improvements	\$1,724,000
11*	Bayshore Road south of East Channel Road to south of Industrial Way	\$48,000
12*	Industrial Way north of Teal Drive to south of Lake Herman Road	\$1,407,000
13*	Lake Herman Road from Gateway Plaza Court to east of Industrial Way	\$216,000
14*	Park Road north of Bayshore Road to south of Industrial Way	\$230,000
15*	Park Road north of Stone Road to south of East 2nd Street	\$30,000
16*	Goodyear Road north of Lake Herman Road to 6800 Goodyear Road	\$249,000
17*	East 2nd Street north of Rose Drive to 800' north of Wanger Street	\$1,400,000
18*	East Channel Road	\$103,000
19*	Reservoir Road north of East 2nd Street to south of Lake Herman Road	\$458,000
TOTAL COST OF ALL ROADWAY PROJECTS		\$13,428,000

TABLE C-1: SUMMARY OF COSTS FOR ROADWAY, PEDESTRIAN, AND BICYCLE PROJECTS IN THE BENICIA INDUSTRIAL PARK

<i>Project #</i>	<i>Project Name</i>	<i>Cost^{1,2,3}</i>
Baseline Pedestrian Improvements		
20	Park Road Sidewalk	\$729,000
21	Industrial Way Sidewalk	\$740,000
TOTAL COST OF ALL PEDESTRIAN PROJECTS:		\$1,469,000
Baseline Bicycle Improvements		
22	E. 2nd Street Widening and Class II Bike Lanes	\$2,618,000
23	Lake Herman Road Class III Bike Route	\$72,000
24	Reservoir Road Class III Bike Route	\$42,000
25	Park Road Class III Bike Route	\$29,000
TOTAL COST OF ALL BICYCLE PROJECTS		\$2,761,000
TOTAL COST OF ROADWAY + PEDESTRIAN + BICYCLE PROJECTS		\$17,658,000

Notes:

1. Sums may not total due to rounding.
2. Costs shown are planning level cost estimates in 2016 dollars based on unit costs derived from Bay Area projects. Estimates include planning engineering, preliminary engineering, utility coordination, environmental, ROW engineering (survey), and ROW acquisition where necessary or appropriate.
3. Planning Level Estimated Costs are rounded to the nearest thousand.
4. Cost estimate includes speed feedback sign.

*Denotes Pavement Project

**Additional Improvement (over Baseline)

APPENDIX D: BICYCLE AND PEDESTRIAN COUNTS

TABLE D-1: AM AND PM PEAK HOUR BICYCLE AND PEDESTRIAN INTERSECTION COUNTS (2014)

<i>Intersection</i>	<i>AM Peak Hour</i>		<i>PM Peak Hour</i>	
	<i>Pedestrians</i>	<i>Bicycles</i>	<i>Pedestrians</i>	<i>Bicycles</i>
Park Rd & E 2nd St	0	0	0	0
Industrial Way & E 2nd St	2	5	0	2
E 2nd St & Rose Dr	1	2	1	4
E 2nd St & I-780 WB Ramps	6	6	3	2
E 2nd St & I-780 EB Ramps	5	0	0	1
Old Lake Herman Rd & Lake Herman Rd	0	4	0	0
E 2nd St & Lake Herman Rd	3	3	0	1
I-680 SB Ramps & Lake Herman Rd	0	1	0	1
I-680 NB Ramps & Lake Herman Rd	0	1	0	1
Park Rd & Industrial Way	5	7	3	2
I-680 SB Ramps & Industrial Way	3	2	0	1
I-680 NB Ramps & Industrial Way	0	1	0	1

Source: DKS Associates, 2014

APPENDIX E: LAND USE REGULATIONS IN INDUSTRIAL ZONING DISTRICTS

The following table is from the Benicia Municipal Code and is accurate as of 2016.

17.32.020 IL, IG, IW and IP districts – Land use regulations

In the following schedule, the letter “P” designates use classifications permitted in industrial districts. The letter “L” designates use classifications subject to certain limitations described by the “Additional Use Regulations” which follow. The letter “U” designates use classifications permitted on approval of a use permit. The letters “P/U” designate use classifications permitted on the site of a permitted use, but requiring a use permit on the site of a conditional use. Letters in parentheses in the “Additional Regulations” column refer to the “Additional Use Regulations” following the schedule. Where letters in parentheses are opposite a use classification heading, referenced regulations shall apply to all use classifications under the heading.

P - Permitted

U - Use Permit

L - Limited (See “Additional Use Regulations”)

– - Not Permitted

TABLE E-1: IL, IG, IW, AND IP DISTRICTS: LAND USE REGULATIONS

	<i>IL</i>	<i>IG</i>	<i>IW</i>	<i>IP</i>	<i>Additional Regulations</i>
Residential					(L)
Work/Live Quarters	U	–	–	–	(A)
Public and Semipublic					
Adult Day Health Care	U	U	–	U	(B)
Clubs and Lodges	L18	L18	–	L18	
Cultural Institutions	U	U	–	U	
Day Care, General	U	U	–	U	(B)
Government Offices	U	U	U	U	
Heliports	L1	L1	L1	L1	
Maintenance and Service Facilities	P	P	P	–	
Public Safety Facilities	L20	L20	L20	L20	
Religious Assembly	U	U	–	U	(K)
Utilities, Major	U	U	U	U	
Waste Facility	–	U	–	–	
Utilities, Minor	P	P	P	P	

TABLE E-1: IL, IG, IW, AND IP DISTRICTS: LAND USE REGULATIONS

	<i>IL</i>	<i>IG</i>	<i>IW</i>	<i>IP</i>	<i>Additional Regulations</i>
Commercial Uses					
Adult Business	P	P	–	P	(M)
Ambulance Services	P	P	–	P	
Animal Sales and Services					
Animal Boarding	L20	–	–	–	
Animal Hospitals	L20	L20	–	–	
Artists’ Studios	P	–	–	L20	
Banks and Savings and Loans	L2	L2	–	L2	
Building Materials and Services	P	P	L12	L20	
Catering Services	P	P	–	P	
Commercial Filming	L20	L20	L20	L20	
Commercial Recreation and Entertainment	L5	L21	–	L5	
Game Center	L8	L8	–	L8	
Communication Facilities	P	P	P	P	
Eating and Drinking Establishments	L4	L4	L4	L4	
Mobile Food Vending	P	P	P	P	(N)
With Wine and Beer Service	L4	L4	L4	L4	
With Full Alcoholic Beverage Service	U	U	U	U	
With Take-Out Service	L4	L4	L4	L4	(D)
Limited	L4	L4	L4	L4	(D)
Food and Beverage Sales	L6	L6	–	L7	
Funeral and Interment Services	L9	–	–	–	
Horticulture, Limited	P	P	–	–	
Laboratories	P	P	–	P	
Maintenance and Repair Services	P	P	L12	P	
Marine Sales and Services	–	–	P	–	
Nurseries	P	P	–	U	
Offices, Business and Professional	–	–	–	L13	
Personal Improvement Services	L14	L14	–	L14	
Personal Services	L10	L10	–	L10	

TABLE E-1: IL, IG, IW, AND IP DISTRICTS: LAND USE REGULATIONS

	<i>IL</i>	<i>IG</i>	<i>IW</i>	<i>IP</i>	<i>Additional Regulations</i>
Research and Development Services	P	P	L12	P	
Vehicle/Equipment Sales and Services					
Automobile Washing	U	L15	–	–	(E)
Service Stations	U	L16	L12	U	
Vehicle/Equipment Repair	L17	L17	–	–	
Vehicle/Equipment Sales and Rentals	U	L11	–	–	
Vehicle Storage	U	U	L12	–	
Warehousing and Storage, Limited	P	P	L12	U	
Industrial					
Industry, Custom	P	P	L12	P	
Industry, General	–	L19	L12	U	
Industry, Limited	P	P	L12	P	
Small-Scale	P	P	L12	P	
Industry, Research and Development	P	P	L12	P	
Industry, Technology	P	P	L12	P	
Port Terminals	–	–	P	–	
Wholesaling, Distribution and Storage					
Wholesaling and Distribution	P	P	L12	U	
Warehousing and Transportation	P	P	L12	U	
Trucking Terminal/Freight Transfer Station	U	U	L12	–	
Package Distribution	P	P	L12	U	
Agricultural and Extractive Uses (J)(L)					
Mining and Processing	–	U	–	–	
Agricultural and Extractive Uses	P/U	P/U	P/U	P/U	(F)(G)(H)(L)
Temporary Uses (G)(J)(L)					
Animal Shows	U	U	–	–	
Christmas Tree Sales	P	P	–	–	
Circuses and Carnivals	–	U	–	–	
Retail Sales – Outdoor	U	U	U	–	
Swap Meets – Nonrecurring	U	U	–	–	

TABLE E-1: IL, IG, IW, AND IP DISTRICTS: LAND USE REGULATIONS

	<i>IL</i>	<i>IG</i>	<i>IW</i>	<i>IP</i>	<i>Additional Regulations</i>
Trade Fairs	U	U	U	U	
Nonconforming					(I)
Other Uses					
Medical Marijuana Distribution Facilities	-	-	-	-	
Nurseries	P	P	-	U	

Notes:

IL, IG, IW, and IP Districts: Additional Use Regulations

- L-1 Allowed with a use permit and heliport permit from the California Department of Transportation, Division of Aeronautics if located 1,000 or more feet from a residential district.
- L-2 Only automatic teller machines allowed.
- L-3 Use permit required only for equipment rentals and retail sales.
- L-4 Permitted as a secondary use in a building occupying no more than 2,500 square feet of the building area. A community development director use permit is required for secondary uses occupying building areas greater than 2,500 square feet but not more than 5,000 square feet, or where the use is the primary use of a building. Not permitted for uses larger than 5,000 square feet.
- L-5 Only health fitness clubs and tennis/racquetball clubs are permitted as the principal use in a structure, subject to a use permit. Other activities regulated under this use classification are permitted as a secondary use within a building, occupying no more than 1,000 square feet of the building floor area.
- L-6 Use permit required for establishments occupying more than 1,000 square feet.
- L-7 Only delicatessens and food stores occupying fewer than 1,000 square feet are permitted.
- L-8 Only game centers with five or fewer games permitted; also see BMC 17.70.290, Game centers.
- L-9 Only crematories, columbariums, and mausoleums allowed.
- L-10 Only beauty shops and barbershops permitted.
- L-11 New or used automobile, truck or motorcycle retail sales shall be permitted only as an accessory to wholesale operations.
- L-12 Only water-related uses allowed.
- L-13 Medical/dental offices, insurance brokerage offices, and real estate brokerage offices not permitted.
- L-14 Only business and trade schools permitted.
- L-15 Only truck tractor and trailer washing permitted.
- L-16 Only stations offering controlled services to individual uses within an industrial area are allowed, subject to a use permit.
- L-17 Only truck and equipment repair primarily serving industrial activities are permitted by right; a community development director use permit is required for automobile repair and for repair services that cater to the general public. If the following conditions are met, the community development director may waive the use permit requirement and approve the use upon issuance of a zoning permit:
 1. The proposed use is located in an existing structure on a major arterial or on a street which connects to a major arterial, and is readily accessible to residential and commercial areas;
 2. No outdoor repair or maintenance activities are proposed in conjunction with the use;
 3. No outdoor storage of vehicles or equipment will take place during nonbusiness hours;
 4. The applicant can demonstrate that the proposed site will meet zoning ordinance parking requirements.
- L-18 Only trade union halls, including their accompanying business offices, are permitted.
- L-19 General industrial uses are permitted by right except that a use permit is required for oil and gas refining.

TABLE E-1: IL, IG, IW, AND IP DISTRICTS: LAND USE REGULATIONS

- L-20 Community development director use permit required. If the following conditions are met, the community development director may waive the use permit requirement and approve the use upon issuance of a zoning permit:
1. The proposed use is located in an existing structure which is entirely enclosed, and no outside facilities are proposed;
 2. For animal hospitals, or where boarding or overnight care facilities are proposed, the use is located in a soundproofed and air-conditioned facility.
- L-21 Health fitness clubs, tennis/racquetball clubs, and recreational facilities such as batting cages, indoor golf driving ranges, and firing and archery ranges are permitted within a structure, subject to a use permit when occupying more than 1,000 square feet. All activities regulated under this use classification are permitted when occupying no more than 1,000 square feet of the building floor area.
- (A) See BMC 17.70.020, Relocated buildings (use permit required).
 - (B) Limited to facilities accessory to manufacturing, wholesaling, or distribution, and not exceeding 25 percent of the floor area occupied by the principal use.
 - (C) Limited to facilities accessory to manufacturing, wholesaling, or distribution, and not exceeding 25 percent of the floor area occupied by the principal use.
 - (D) See BMC 17.70.090, Eating and drinking establishments with take-out service.
 - (E) See BMC 17.70.110, Service stations, vehicle/equipment repair, and automobile washing.
 - (F) See BMC 17.70.050, Nonresidential accessory structures.
 - (G) See Chapter 17.104 BMC, Use Permits and Variances.
 - (H) Maximum: One dwelling unit per site as caretaker's housing.
 - (I) See Chapter 17.98 BMC, Nonconforming Uses and Structures.
 - (J) See BMC 17.70.260, Hazardous materials.
 - (K) No day care facilities or schools shall be permitted as part of a religious assembly facility.
 - (L) Evaluate a nonindustrial or noncommercial project against the following criteria when considering findings for use permits or variances:
 - (1) Will the project create substantial conflicts with existing industrial and commercial traffic?
 - (2) Will the project be subject to excessive glare, noise or vibration from adjacent industrial/commercial uses?
(Refer to
general plan for noise criteria, Chapter 4, p. 178.)
 - (3) Will the project be exposed to hazardous materials or risks that would create health and safety hazards for persons
occupying or visiting the project?
 - (4) Will the project be located on an arterial street, or located in an area which would bring nonindustrial traffic onto local streets?
 - (M) An adult business offering live entertainment shall be subject to the requirements of Chapters 5.44 and 17.102 BMC.
 - (N) Mobile food vending shall be subject to the requirements of BMC 17.70.380, Mobile food vendors.

APPENDIX F: GLOSSARY OF ACRONYMS

- ABAG.** Association of Bay Area Governments
- BAAQMD.** Bay Area Air Quality Management District
- BIPA.** Benicia Industrial Park Association
- BRIP.** Business Resource Incentive Program
- CEQA.** California Environmental Quality Act
- EC-PDA.** Employment Center Priority Development Area
- FAST.** Fairfield and Suisun Transit
- FEMA.** Federal Emergency Management Agency
- FIRM.** Flood Insurance Rate Maps
- HERO Program.** Home Energy Renovation Operation Program
- MTC.** Metropolitan Transportation Commission
- OBAG 2.** Second round of funding for the One Bay Area Grant program
- PACE.** Property Assessed Clean Energy
- PCI.** Pavement Condition Index
- PDA.** Priority Development Area
- STA.** Solano Transportation Authority
- STAA.** Surface Transportation Assistance Act of 1982
- TDM.** Transportation Demand Management
- TEC Plan.** Transportation and Employment Center Plan
- TMA.** Transportation Management Agency
- VMT.** Vehicle Miles Traveled

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