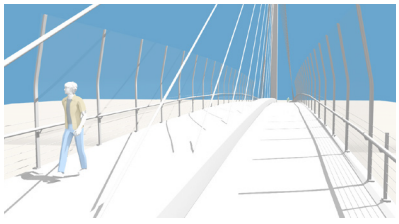
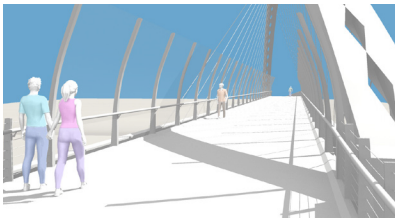
CITY OF Fremont California

SCOPING REPORT
I-880 PACIFIC COMMONS BRIDGE
(BIKE/PED CONNECTION TO WARM SPRINGS BART AREA)





FEBRUARY 2019

PREPARED BY:

BkF 100+ YEARS ENGINEERS . SURVEYORS . PLANNERS

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SGA STEVEN GROVER & ASSOCIATES ARCHITECTURE ENGINEERING

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LIST OF FIGURES

I. EXECUTIVE SUMMARY

Investing in pedestrian and bicycle infrastructure is key for the City of Fremont as it promotes sustainable growth while encouraging transit-oriented development in the region. The Interstate 880 Pacific Commons Bridge (Project) proposes a bicycle and pedestrian bridge to close a key gap in the pedestrian and bicycle network in the Auto Mall Parkway Interstate 880 area, between the Pacific Commons commercial district and the Warm Springs BART transit oriented development district.

In the coming years, population and traffic is projected to grow with the development of the Pacific Commons Shopping Center, Fremont Technology Business Center (FTBC) and over 100 acres of planned commercial development, creating the need for alternative forms of transportation to connect these planned facilities and accommodate future traffic demand. Currently, the location of Interstate 880 prevents bicyclists and pedestrians from safely accessing these proposed developments from the Warm Spring/South Fremont BART Station, 4,000 planned residential units, and over 2.4 million square feet of planned commercial space in the Grimmer and Mission neighborhoods. This Project aims to provide a safe alternative to cross Interstate 880 adjacent to Auto Mall Parkway, and new bicycle and pedestrian facilities on Hannover Place and Brandin Court to improve connectivity with existing and planned facilities. If funded, this Project would create a vital and safe link between residential communities with mixed-use transit hubs, retail centers, offices, recreational opportunities and the Innovation District, thereby enhancing the quality of life for all residents, workers and visitors in the surrounding region. By connecting the existing bicycle and pedestrian facility gaps, the Project assists in supporting the City of Fremont's Vision Zero traffic safety policy, Bicycle Master Plan and Pedestrian Master Plan.

This Scoping Report further outlines the Project's purpose and need, while also detailing possible design alternatives for the Project. In developing these design alternatives, existing utilities and right-of-way were studied to determine the feasibility of a pedestrian and bicycle bridge in the area. An analysis of potential right-of-way impacts, existing utilities and other project constraints is detailed in Section IV of this report. Among the studied main span alignments, the perpendicular I-880 crossing is favorable as it simplifies the structural design and is compliant with Caltrans longitudinal crossing requirements. Several east and west approach alignments were evaluated to determine which options would least impact existing site features and right of way, and would be viable given the Project's purpose and needs.

Presented in this Scoping Report are two bridge design alternatives, the tied-arch bridge and the single tower cable-stayed bridge. Both alternatives were driven by several key guidelines, such as: the compatibility of the structure with the surrounding built environment, the feasibility of the structure given existing conditions, and the visual openness to enhance user safety and experience. The single tower cable-stayed structure, depicted on the next page, is the preferred structure type given its compatibility with the City's I-880 East Bay Greenway Bridge being constructed further south near the Tesla Campus.

This report clearly outlines the scope, cost estimate, delivery plan and potential funding sources of the Project in order to prepare for funding and project programming opportunities. Section VI provides an overview of the conceptual costs associated with the Project, which are summarized below:

Phase	***Estimated Cost***	***Estimated Fiscal Year of Completion***
Preliminary Engineering/ Environmental Studies	$ 2,569,549.00	2021
Final Design (PS&E)	$ 4,017,486.00	2022
Right of Way	$ 5,358,100.00	2022
Construction Capital	$ 27,214,278.00	2025
Construction Support	$ 4,806,027.00	2025
Agency Support	$ 1,405,496.00	2025
Total Project Cost	$ 45,370,937.00	2025

Funding for the Project could be derived from a combination of available grants and funds at the federal, state and local levels. One significant potential source of funding is the *ACTC Measure BB* program from investment categories focused on "Bicycle and Pedestrian Infrastructure and Safety" and "Community Investments That Improve Transit Connections to Jobs and Schools." More information regarding Measure BB and other potential funding sources can be found in Section VII of this report.

The City of Fremont is seeking funds in the amount of $45.4 million for the I-880 Pacific Commons Bridge Project. If funding is secured before Fall 2019, project construction could potentially be completed by the end of 2025, following the preliminary engineering and the environmental approval phase. A detailed project delivery plan can be found in Section VII.

II. PROJECT DESCRIPTION & BENEFITS

Adjacent to the City of Fremont's Innovation District, the Interstate 880 (I-880) Bike & Pedestrian Bridge Trail Project (Project) will provide a vital link between the commercial retail, light industrial, recreational, and transit-oriented office, residential, and commercial developments on the east and west sides of the freeway. Key destinations on the west side include the San Francisco Bay Trail, Pacific Commons Shopping Center, and over 100 acres of planned commercial development. Key destinations on the east side include existing light industrial and offices, the Warm Springs/South Fremont BART Station, 4,000 planned residential units, and over 2.4 million square feet of planned commercial space. The project will also close a gap in the existing and proposed pedestrian and bicycle network in this area.

The Project will provide cyclists and pedestrians with a safer way to cross over I-880 and avoid the busy freeway interchange at Auto Mall Parkway. On the east side of I-880, the Project will link to the Class IV separated bikeways proposed for Grimmer Boulevard and connect to the Warm Springs/South Fremont BART Station. On the west side of I-880, the Project will terminate adjacent to the Pacific Commons Shopping Center and the Fremont Technology Business Center (FTBC), and link to the bike and pedestrian network proposed in the FTBC to connect to the Bay Trail. Project components consist of a new, iconic bicycle and pedestrian bridge over I-880, and new bike/ped facilities on Hannover Place and Brandin Court on the east and west sides of the freeway, respectively.

The Project will benefit the City and Bay Area region by:

- Improving connectivity to the new Warm Springs/South Fremont BART Station
- Extending active transportation and recreational opportunities
- Adding capacity to bicycle and pedestrian transportation infrastructure
- Developing safer routes to schools, jobs, homes, transit hubs, and retail and entertainment destinations

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CITY OF Fremont California

SCOPING REPORT | I-880 PACIFIC COMMONS BRIDGE

(BIKE/PED CONNECTION TO WARM SPRINGS BART AREA)

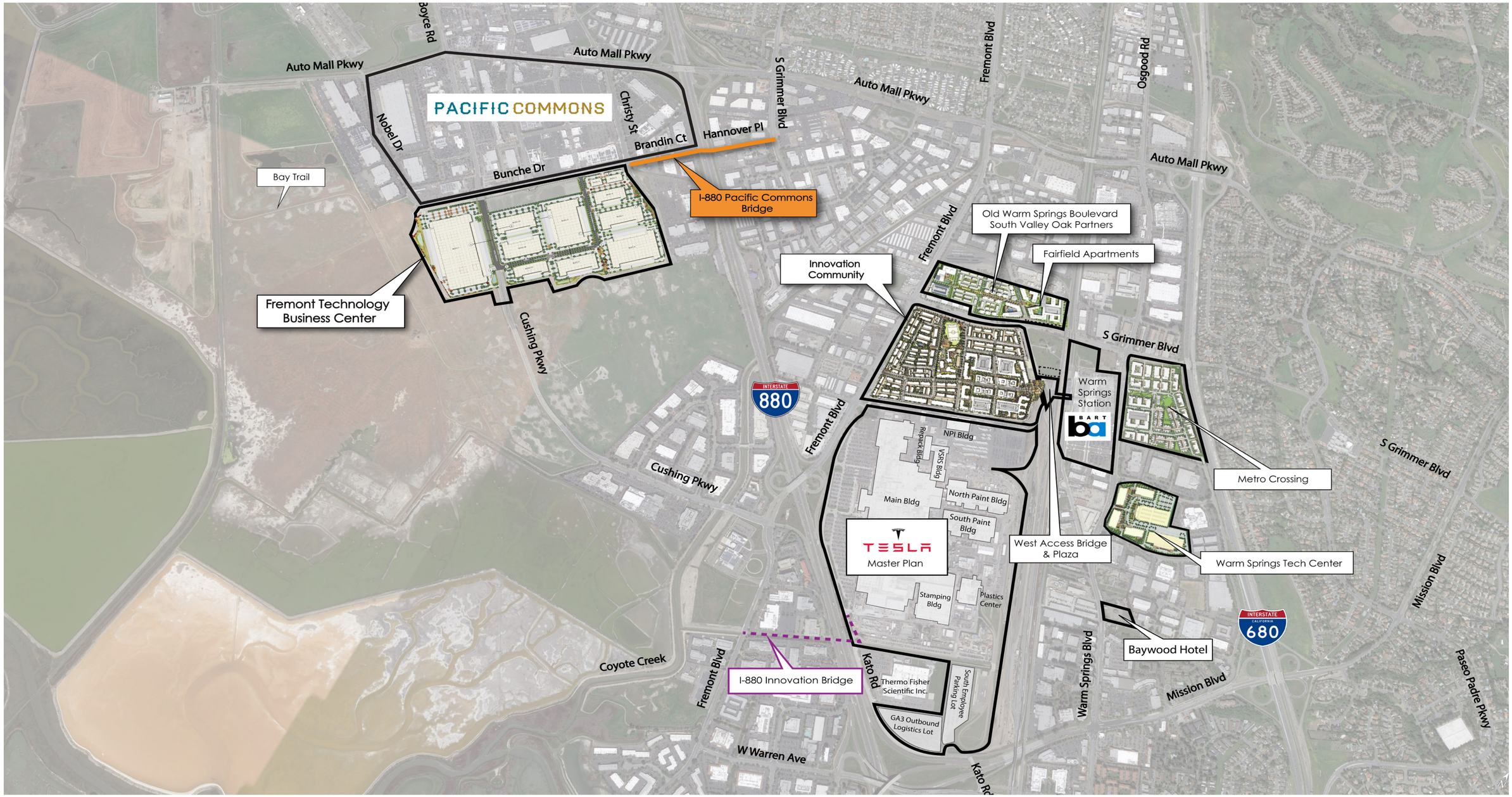

FIGURE 1A CITY MAP WITH PLANNED DEVELOPMENTS

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CITY OF Fremont California

SCOPING REPORT | I-880 PACIFIC COMMONS BRIDGE

(BIKE/PED CONNECTION TO WARM SPRINGS BART AREA)

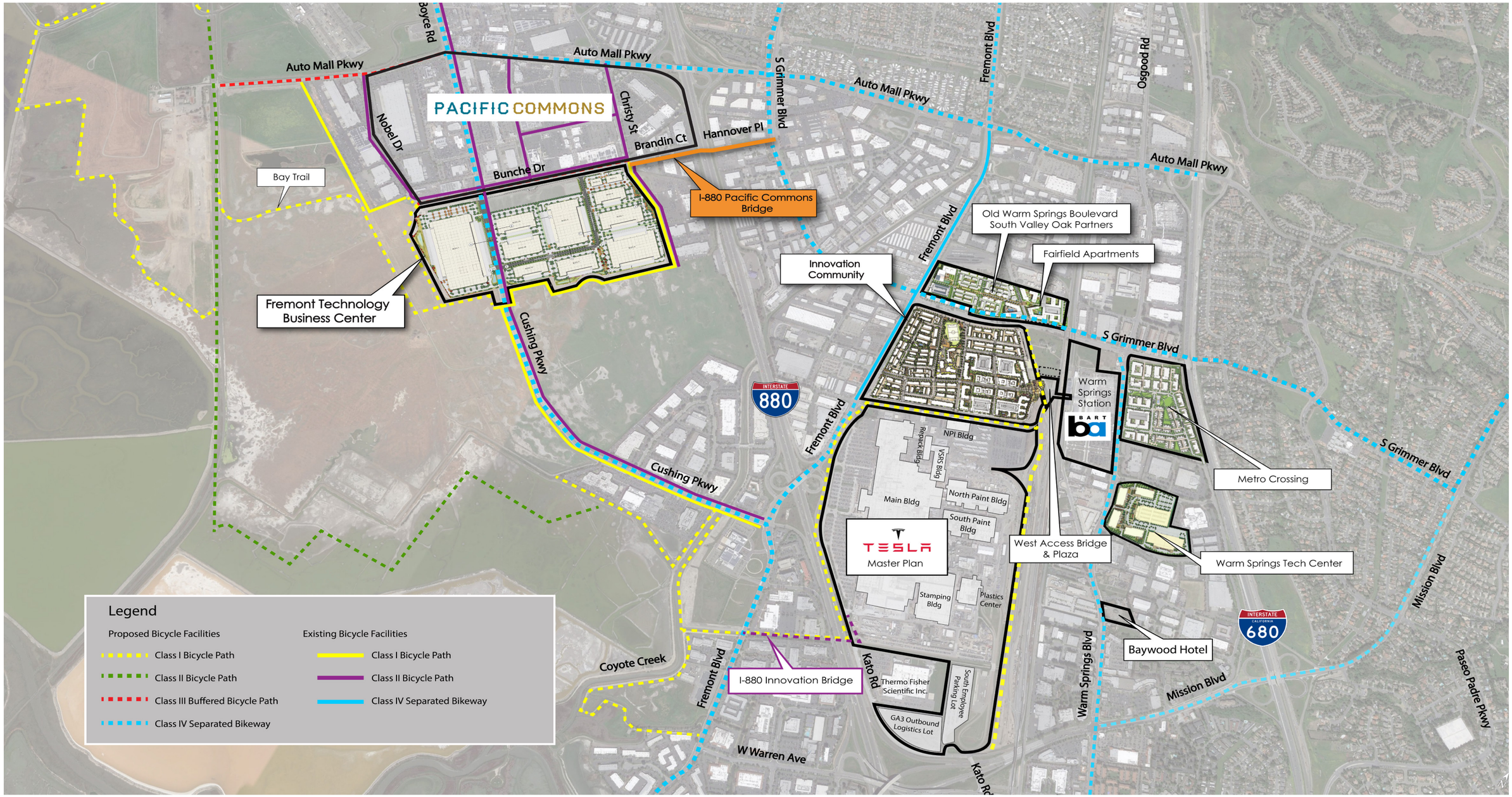

FIGURE 1B **EXISTING AND PROPOSED BICYCLE FACILITIES**

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III. PURPOSE & NEED

III.A. PROJECT PURPOSE

The purpose of the I-880 Pacific Commons Bridge is to provide pedestrians and bicyclists with a safe east-west connection over I-880 that:

1. Improves pedestrian and bicycle connectivity between the following important destinations located east and west of I-880:
    a. Warm Springs/South Fremont BART Station
    b. High Density Residential Communities (in construction)
    c. Pacific Commons Shopping Center
    d. Fremont Technology Business Center (in construction)
2. Improves connectivity with existing and/or planned pedestrian and bike facilities (consistency with City's 2018 Bike Plan):
    a. South Grimmer Boulevard Class IV Bikeway (planned)
    b. Pedestrian and Bicycle Network in Pacific Commons and Fremont Technology Business Center (in construction)
    c. San Francisco Bay Trail (planned)
3. Supports the City of Fremont's Vision Zero to improve traffic safety with a goal to significantly reduce fatalities and severe injuries by 2020

III.B. PROJECT NEED

I-880 creates a barrier for east-west pedestrian and bicycle travel in the vicinity of the Auto Mall Parkway interchange. The needs of this project are to address inadequate access for pedestrians and cyclists to and across the interstate, and to prepare for future increases in population and demand for safer active transportation facilities. These deficiencies and anticipated changes include:

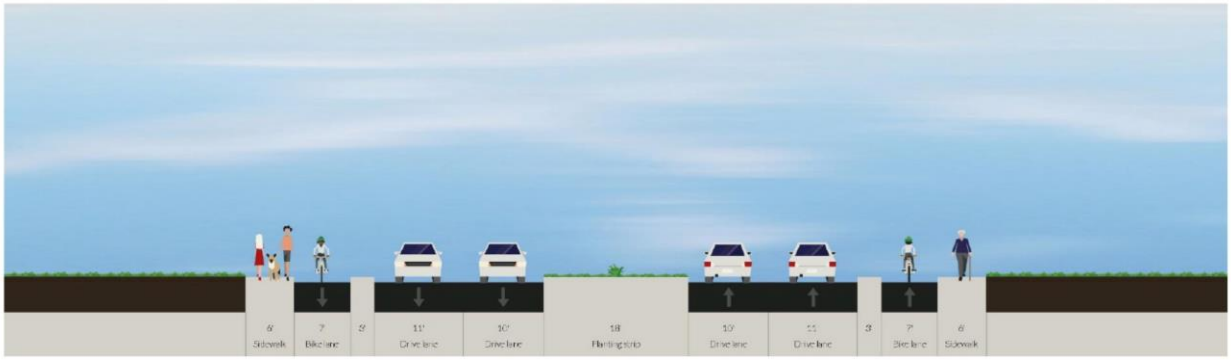
1. Projected growth in population and traffic is expected to drastically increase with the development of the Pacific Commons/Fremont Technology Business Center and the Warm Springs/South Fremont BART and Community Plan
    - Existing bike and pedestrian crossings of I-880 are located approximately 1.5 miles apart at Auto Mall Parkway and Fremont Boulevard
2. Inadequate east-west bicycle and pedestrian facilities at the Auto Mall Parkway and Fremont Boulevard Interchanges
    - Three severe injuries as a result of a bicycle-auto collision within the vicinity of the I-880/Auto Mall Parkway interchange between 2014 and 2016
    - One severe injury and one fatality occurred as a result of a bicycle-auto collision within the vicinity of the I-880/Fremont Boulevard interchange between 2014 and 2016

III.C. CONSISTENCY WITH EXISTING PLANNING DOCUMENTS

III.C.1. City of Fremont *Bicycle Master Plan*

On July 10, 2018, Fremont City Council adopted the City's *Bicycle Master Plan*, which identifies how the City can fund and implement complete streets to encourage cycling. As discussed in the plan, one of Fremont's 16 All Ages and Abilities (AAA) corridor projects is the improvement of the Pacific Commons Area corridor, which includes the development of a bicycle and pedestrian crossing over I-880 between Hannover Place and Brandin Court, south of Auto Mall Parkway, to provide access to recreational trails and areas planned for increased jobs and housing density (*Bicycle Master Plan*, 76). On the east side of the freeway, this project would link to the separated bikeways proposed on Grimmer Boulevard (Figure 2), a component of the City's 5-year project list (*Bicycle Master Plan*, 103). On the west side of the freeway, this project would connect to the existing Class II bike lanes at the intersection of Christy Street and Bunche Drive.

Grimmer Boulevard	Fremont Boulevard (North) to Fremont Boulevard (South)	• Install separated bikeways in both directions through narrowing lanes to 10-11' feet with 7' bicycle lane and 3' buffer • Work with community to extend No Stopping restrictions to 24-hours where applicable • Install bicycle boulevard crossing improvements at Valley Park Avenue, Seneca Park Avenue, Doane Street/Yellowstone Park Drive, Technology Drive/Enterprise Street, and Business Center Drive	Near-Term
		• Install protected intersections at Blacow Road, Auto Mall Parkway, and Fremont Boulevard (south)	Long-Term



Grimmer Boulevard Proposed Cross-Section (with Median Islands)

* Note: Street section shown is typical only and not indicative for entire segment.

Figure 2. Proposed Improvements to Grimmer Boulevard

III.C.2. City of Fremont *Pedestrian Master Plan*

Adopted by City Council on December 13, 2016, Fremont's *Pedestrian Master Plan* identifies projects that facilitate a more walkable urban environment and provide traffic and air quality, quality of life, public health, and economic benefits. This project is identified in the plan as an I-880 Bicycle and

Pedestrian Overcrossing project (Figure 3), located north of Warren Avenue and south of Auto Mall Parkway, connecting Hannover Place to Bunche Drive (*Pedestrian Master Plan,* 47).

1. I-880 Bicycle and Pedestrian Overcrossing (North of Warren Avenue)			
Route	**Start**	**End**	**Miles**
South Fremont	Auto Mall Parkway	Warren Avenue	N/A
Project Description			

The Warm Springs Community plan shows two proposed bicycle and pedestrian bridge crossings shown below, a third bridge proposed is just south of Auto Mall Parkway.

- At Innovation Way and the BART station (in design phase).
- Between the Fremont Boulevard interchange and the Warren Avenue interchange, an I-880 and Landing Parkway overbridge that would provide a link to the Bay Trail via Kato Road to Fremont Boulevard. It would involve paving of an existing service road parallel to a waterway.
- Located south of Auto Mall Parkway connecting Hannover Place to Bunche Drive.

Cost Estimate	Planning Area
$75,000,000	Baylands

Figure 3. Proposed Pedestrian Crossing Projects North of Warren Avenue

III.C.3. City of Fremont *Vision Zero 2020*

In September 2015, Fremont City Council approved Vision Zero as its traffic safety policy to improve street safety, eliminate traffic fatalities, and reduce severe injuries for all travel modes. Prepared by the City of Fremont, Public Works Department, Engineering Division working in collaboration with the Fremont Police Department, the *Vision Zero 2020 Status Report and Action Plan* was published in March 2016, and identifies actions to improve traffic safety with a goal to significantly reduce fatalities and severe injuries by 2020. Since approved, major traffic crashes involving fatalities and severe injuries have decreased by 57 percent. More information regarding the success of Vision Zero can be found in Figure 4.

The report discusses freeway interchanges as being difficult to traverse for pedestrians and cyclists and identifies the Auto Mall Parkway/I-880 interchange as one of three "highest priority" interchanges for improvement (*Vision Zero 2020 Status Report and Action Plan,* 23). Between 2014 and 2016, at least three severe injury collisions occurred near the Auto Mall Parkway/I-880 interchange. Within the same timeframe, one severe injury and one fatality also occurred within the vicinity of the Fremont Boulevard/I-880 interchange. This project would provide pedestrians and cyclists with a safer crossing of the freeway that avoids traversing the Auto Mall Parkway/I-880 interchange and contributes to Vision Zero goals.

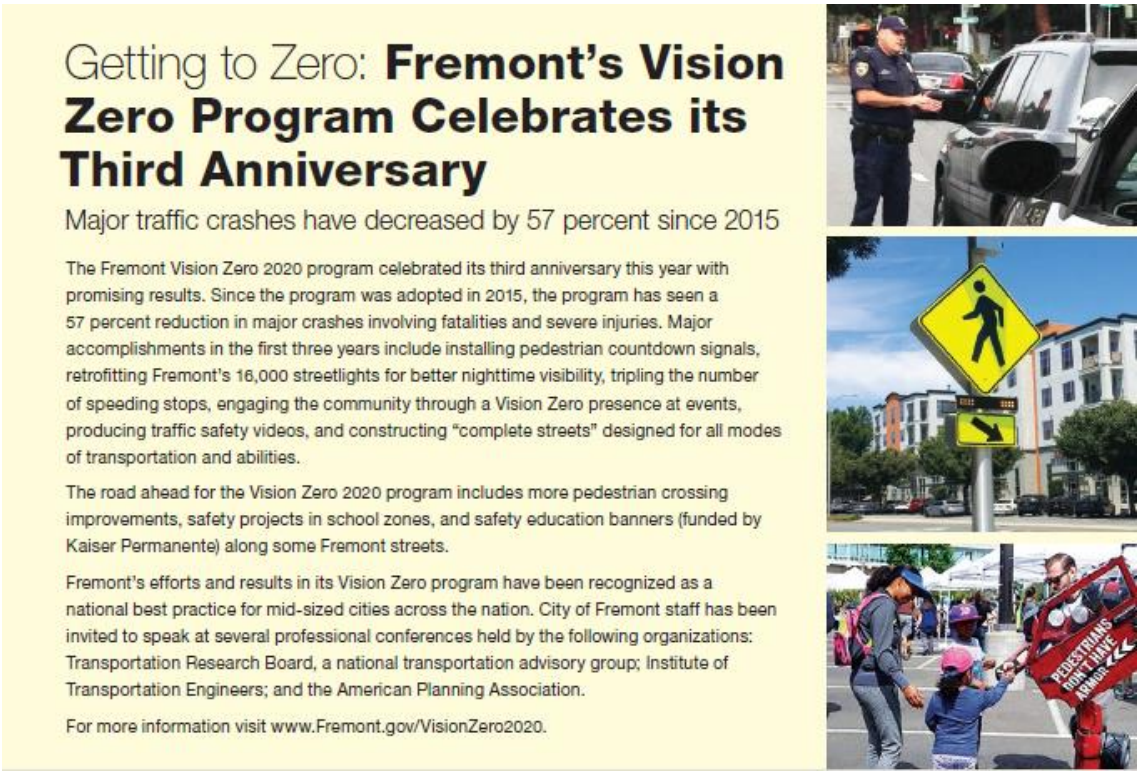


Figure 4. City of Fremont Vision Zero 2020 (image courtesy of the City of Fremont)

III.C.4. Fremont Technology Business Center

On October 3, 2017, City Council approved the development of the Fremont Technology Business Center (FTBC), an advanced manufacturing business park on 153 acres of industrial land. Located south of Bunche Drive and west of Christy Street on both sides of Cushing Parkway, the FTBC plan includes new bike lanes within the project, as well as a Class I multi-use trail that follows the perimeter of the site and integrates with the San Francisco Bay Trail (Figure 5). By connecting to the FTBC's bikeways and multi-use pathway at the intersection of Christy Street and Bunche Drive, this project will provide access to the greater regional bicycle and pedestrian transportation and recreation network.

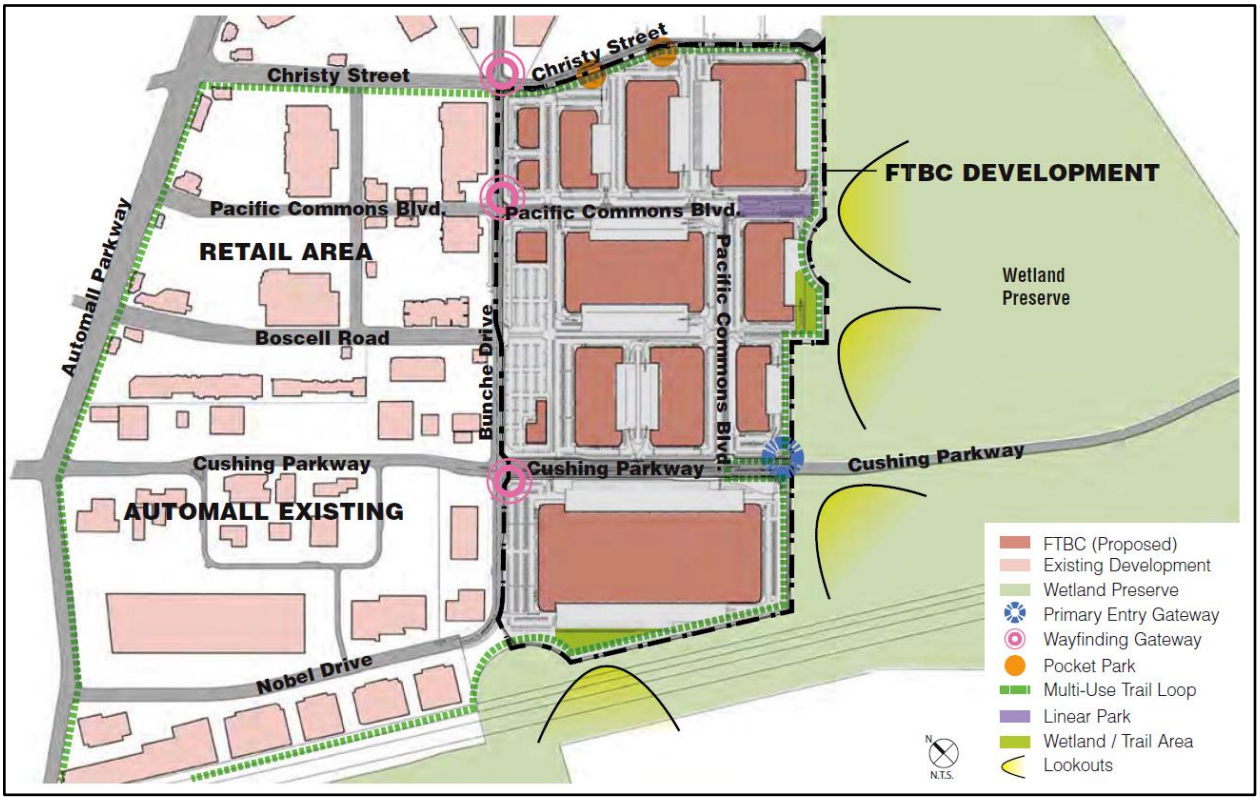


Figure 5. FTBC/Retail Area Relationship Diagram

IV. PROJECT CONSTRAINTS

IV.A. CLEARANCES

- Interstate 880 – 18.5-foot Vertical Clearance per *Caltrans Highway Design Manual, 309.2(2) Vertical Clearance to Minor Structures*
- ACFC Maintenance Path – 16.5-foot Vertical Clearance to allow ACFC maintenance vehicles and equipment to pass beneath the proposed structure.
- Electrical Transmission Lines (West of I-880) – 30-foot Vertical Clearance per *CPUC General Order 95, Section III Table 1*. Note: 25-foot Vertical Clearance is required if access on the structure is limited to pedestrians and bicyclists.

IV.B. UTILITIES

Although several existing utilities are located within the Project limits, those with significance to the improvements are identified in Figure 6 and described below:

- **21kV PG&E Electrical** lines run parallel to the (Alameda County Flood Control (ACFC) channel along the east side of the ACFC maintenance pathway and just north of the (Alameda County Water District (ACWD) property. The segment along the ACFC maintenance pathway is approximately 1,350 feet long and extends from the northwest corner of the Office Solutions Interiors property to approximately 220 feet south of the ACWD property. The segment along the north side of the ACWD property is approximately 950 feet long and extends from the ACFC maintenance pathway to S. Grimmer Boulevard. The lines are located on 50-foot poles within a 10-foot Public Utility Easement along both segments.
- **2 OH AT&T Fiber** lines are located just below the aforementioned electrical lines on the same overhead poles; however, the lines do not run as far south and turn east along the segment that is located just north of the ACWD property.
- **230kV Electrical Transmission** lines run parallel to southbound I-880, just west of the Caltrans Right-of-Way. The overhead transmission lines are supported by large steel towers with heights of 140 feet above existing ground. The lowest overhead line is located approximately 70 feet above existing ground. Although this information provides a general idea of where the existing lines are situated above ground, a catenary survey will be required during final design to consider ultimate sag conditions.
- **34-inch and 36-inch Gas Transmission** lines are located just below the overhead electrical transmission lines described above. Both transmission lines run parallel to the Caltrans Right-of-Way similar to the overhead electrical transmission lines. The 36-inch main runs adjacent to the 34-inch main but turns 90 degrees (west) into the northerly end of the 'parking lot' parcel within an existing 50-foot gas line easement that connects to Brandin Court. The new gas main continues westerly within Brandin Court and extends to Christy Street where it will turn north towards Auto Mall Parkway.

PACIFIC COMMONS SHOPPING CENTER

CHRISTY ST

DAVENPORT PL

175' PG&E ESMT

20' WATER ESMT

15' SD ESMT

10' PUE

HANNOVER PL

INTERSTATE CALIFORNIA 880

230 kV OH ELECTRICAL LINES

15' PG&E ESMT

50' PG&E ESMT

SEE DETAIL A

36" GAS LINE

21kV OH ELECTRICAL LINES
2 OH FIBER OPTIC LINES

34" GAS LINE

S GRIMMER BLVD

FREMONT TECHNOLOGY BUSINESS CENTER

BRANDIN CT

DETAIL A

LEGEND

- RIGHT OF WAY
- UTILITY EASEMENT

I-880 PACIFIC COMMONS BRIDGE

FIGURE 6 - EXISTING UTILITIES

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Other notable utility corridors worth consideration within the project limits are located along Brandin Court, Hannover Place, and south of Davenport Place where the proposed bridge approaches will conform:

- **Brandin Court** – The majority are located within a corridor along the south side of the street behind the existing curb and gutter and consist of the following:
    - 36-inch Gas Transmission
    - 2-inch PG&E Gas
    - 2-21kV PG&E Electrical
    - 12-inch ACWD Water
    - Comcast Television
    - AT&T Telephone
    - Sanitary Sewer
- **Hannover Place** – Existing utilities along Hannover Place are somewhat more scattered and not concentrated along one side as shown in Figure 6. Utilities located within Hannover Place consist of the following:
    - 2-inch PG&E Gas
    - 12-inch ACWD Water
    - Sanitary Sewer
- **Davenport Place** – The following major utilities exist along the southerly end of the parcels located south of the roadway:
    - 2-OH Electrical Transmission Tower Lines
    - 2-21kV OH PG&E Electrical
    - 12-inch ACWD Water

IV.C. RIGHT-OF-WAY

IV.C.1. East Side

- **Alameda County Flood Control (ACFC)** owns the parcel located on the east side of Caltrans Right-of-Way along northbound I-880. An existing maintenance path is located along the east side of the creek. The most significant maintenance operation of the creek is believed to occur every 3-5 years and consists of removing large debris within the creek using large excavator equipment and dump trucks to haul the material off-site. Any project improvements should avoid impacts to this maintenance path as it would create significant impacts to this maintenance operation.
- **Hannover Place** – Realty Associates Fund XI LP owns all six parcels on Hannover Place as shown in Figure 7. The following two tenants occupy the parcels located south of Hannover Place:
    - CRP Industries occupies the building closest to the main span crossing at the southwest corner of the cul-de-sac. The parcel containing the open plot of land located east of the building has been developed into a surface parking lot recently. Ingress/egress to the parking lot is provided via the driveway opening near the CRP Industries building; no direct connection exists from the parking lot to Hannover Place. Loading docks to the building are located on the east building face near the driveway.

  - Allied Auto Stores is located in the parcel at the southwest corner of the Hannover Place/Grimmer Boulevard intersection. The building is situated close to the intersection corner and has a two-way drive aisle and parking spaces located along the west and south sides of the building, with driveways directly connected to both Hannover Place and Grimmer Boulevard. An existing loading dock is located on the west side of the building. Additionally, an existing stormwater treatment facility appears to be located between the parking lot and southerly parcel line.
- **Alameda County Water District (ACWD)** – occupies the large parcel south of Hannover Place as seen in Figure 7. Several storage structures, covered parking structures, utilities, and parking spaces are located along the northerly edge of the parcel where the proposed bridge structure and approach pathway would be located. Many existing solar panels appear to be installed along the top of these structures.
- **Davenport Place** – Several large buildings are located within the 3 parcels along the south side of the roadway. Fenced storage areas and parking facilities are located south of the parking lots that immediately serve each of these buildings, beneath existing overhead PG&E transmission lines. These transmission lines are located within a 175-foot easement at the southerly boundary of these parcels. In addition to the overhead lines, an existing 20-foot water line easement is located at the southerly end of the parcel.

IV.C.2. West Side

- **PG&E Parcel** – PG&E owns the parcel located directly on the west side of SB I-880 as seen in Figure 7. The parcel houses the overhead electrical transmission lines and underground gas transmission lines.
- **Parking Lot Parcel** – An existing surface parking lot owned by Dutra Enterprises is located between the aforementioned PG&E parcel and Brandin Court. The parking lot serves the adjacent Dutra Enterprises building and is located immediately at the proposed bridge crossing and west approach.
- **15-foot PG&E Gas Easement** – An existing 15-foot easement is located at the northerly end of the Parking Lot parcel identified above.
- **50-foot PG&E Gas Easement** – The existing 36-inch gas main resides within a 50-foot easement located between Brandin Court and the PG&E and Parking Lot parcels.

The existing gas and electric transmission utilities located adjacent to southbound I-880 and within the Parking Lot parcel likely have protected rights that prohibit structures within their easements. These existing rights will need to be studied further in final design as CPUC approval will likely be required to place any public structures within the vicinity of these utilities.

525-1670-005
Pacific Commons Shopping Center

525-1670-006
Pacific Commons Shopping Center

525-1330-010
TUV Rheinland Lot Excellence Center & Sparqtron Corporation

525-1330-011-01
1-800 LoanMart

525-1330-009
Scott Specialty Gases

525-1330-008
Ultra HD Forum

525-1330-013
Dutra Enterprises

525-1330-017
Schwan Home Services

525-1330-016
Schwan Food

525-1330-015
Dutra Enterprises (Uni-Fab Industries)

525-1330-014
Dutra Enterprises (Uni-Fab Industries)

525-1325-006-30
CARMAX

525-1327-038
Quick Towing & PPG Collision Repair Center

525-1327-039
Tubz

525-1327-040
ZMC Products & Bayview Plastic Solutions Inc.

525-1327-009
Realty Associates (Office Solutions Interiors)

525-1327-007-01
Realty Associates (Wildcat Transportation & Land Metal Precision)

525-1327-006
Realty Associates (Langears)

525-1327-010
Realty Associates (CRP Industries)

525-1327-011-01
Realty Associates (CRP Industries)

525-1327-013-01
Realty Associates (Allied Auto Stores)

525-1327-001-02
Alameda County Water District

525-1325-015 PG&E

525-1325-013 ACFC

CHRISTY ST

BRANDIN CT

DAVENPORT PL

HANNOVER PL

S GRIMMER BLVD

INTERSTATE CALIFORNIA 880

15' PG&E ESMT

50' PG&E ESMT

175' PG&E ESMT

20' WATER ESMT

15' SD ESMT

10' PUE

FREMONT TECHNOLOGY BUSINESS CENTER

LEGEND

RIGHT OF WAY

UTILITY EASEMENT

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I-880 PACIFIC COMMONS BRIDGE

FIGURE 7 - RIGHT-OF-WAY

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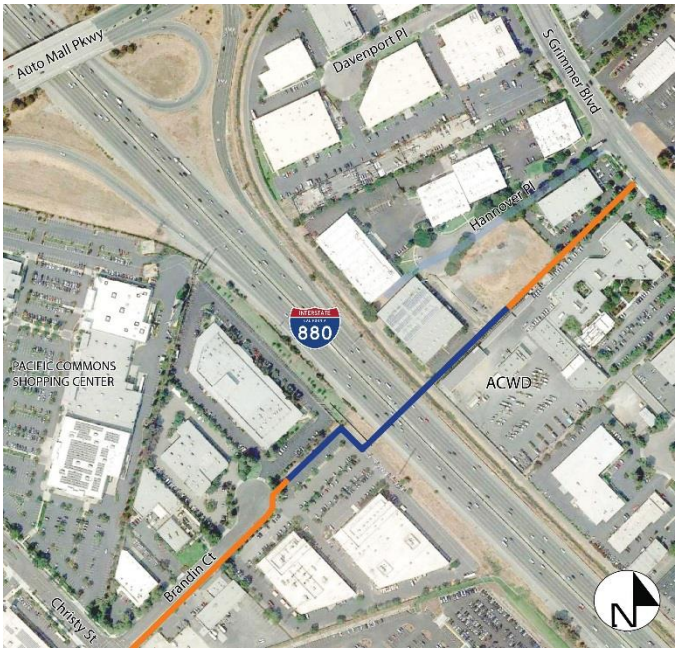
V. PROJECT ALTERNATIVES

The general design criteria used to develop and analyze the alignments presented in this study assume the following:

- 16-foot wide walkable pathway
- 18-foot wide structure
- 2.5-foot structure depth; The noted structural depth was determined based on approximate span lengths with column supports located west of the PG&E parcel, along the NB I-880 Shoulder, and east of the ACFC channel. Positioning the column supports in this manner will minimize impacts to existing utility and site constraints. The vertical profile can meet required clearances to the freeway and overhead electrical transmission lines with the noted structure depth.
- Mechanically stabilized earth (MSE) walls can be utilized along bridge approaches instead of viaducts to minimize structure costs. Potential MSE wall locations would be along the approach alignments west of the PG&E parcel and east of the ACFC channel.

V.A. I-880 CROSSING

Several alignments were studied for the main span crossing and approaches at the west and east sides. Alignments for the main span crossing consisted of a perpendicular, skewed, and U-shaped crossing of I-880 as shown in Figure 8. While all alignments can theoretically be accommodated, each has its benefits and drawbacks as described on the next page. The study found that the perpendicular crossing is generally favorable to the others as it provides the most direct connection between Brandin Court and Grimmer Boulevard and the least impact to existing utilities and right-of-way. Moreover, the perpendicular alignment simplifies the structural design and complies with Caltrans standards for longitudinal crossing requirements.



Perpendicular Crossing
The perpendicular crossing provides the most direct connection across the freeway, simplifies the structural design, and complies with Caltrans longitudinal crossing requirements. This alignment is preferred amongst those studied in this report.

Skewed Alignment Crossings

Two skewed crossing alignments were evaluated as shown - one with more skew and another with less. Although the alignment with more skew minimizes impacts to the existing parking lot and parcel at the west side, placing it near the northerly parcel line will create impacts with the existing 15-foot gas easement but will avoid impacting the existing 36-inch transmission line and 50-foot easement located at the southerly end of the parking lot parcel. Moreover, the alignment will likely violate Caltrans requirements for longitudinal crossings and add complexity to the structure type. As a result, the less skewed alignment is the more favorable of the two as it may be the better compromise for spanning I-880 and avoiding conflict with the large 36-inch transmission gas main and 50-foot easement. Any proposed improvements within this parcel will need to be studied further and the less skewed alignment should be considered if there is a possibility to minimize impacts and simplify the project design.

U-Shaped Alignment Crossings

Two alignments with this type of crossing were studied - one alignment located north of Brandin Court and Hannover Place and another to the south. In both alignments, the segment located at the west end would propose the elevated structure directly above the existing 36-inch and 34-inch gas transmission lines, making it very difficult to avoid conflicts between the structure foundations and gas lines. Similar conflicts exist at the east end with overhead electrical distribution and fiber lines. While these impacts are not as significant as those on the west, accommodating the structure without impacting the existing ACFC maintenance path along the east side of the creek would be difficult. Given these impacts and the circuitous route of the bridge crossing from the approaches, both U-Shaped alignments have been rejected from further consideration.

Figure 8. I-880 Main Span Crossing Alignment Alternatives (cont.)

V.B. BRIDGE APPROACHES & CONNECTIONS

The existing land uses east and west of I-880 between Christy Street and Grimmer Boulevard are industrial and privately owned, which will require the Project to acquire right-of-way to accommodate each bridge approach. Several alignments were developed at each approach and studied carefully to determine which requires the least amount of right-of-way and creates the least impact to existing site features while still meeting the Project's purpose and need. As noted in Section IV.B. and Figure 6, there are several significant existing overhead and underground utilities located within the vicinity of each approach with the potential to increase project costs significantly. These existing facilities were also studied as part of the east and west bridge approach alternative analysis and summarized in the following section.

V.B.1. East Side

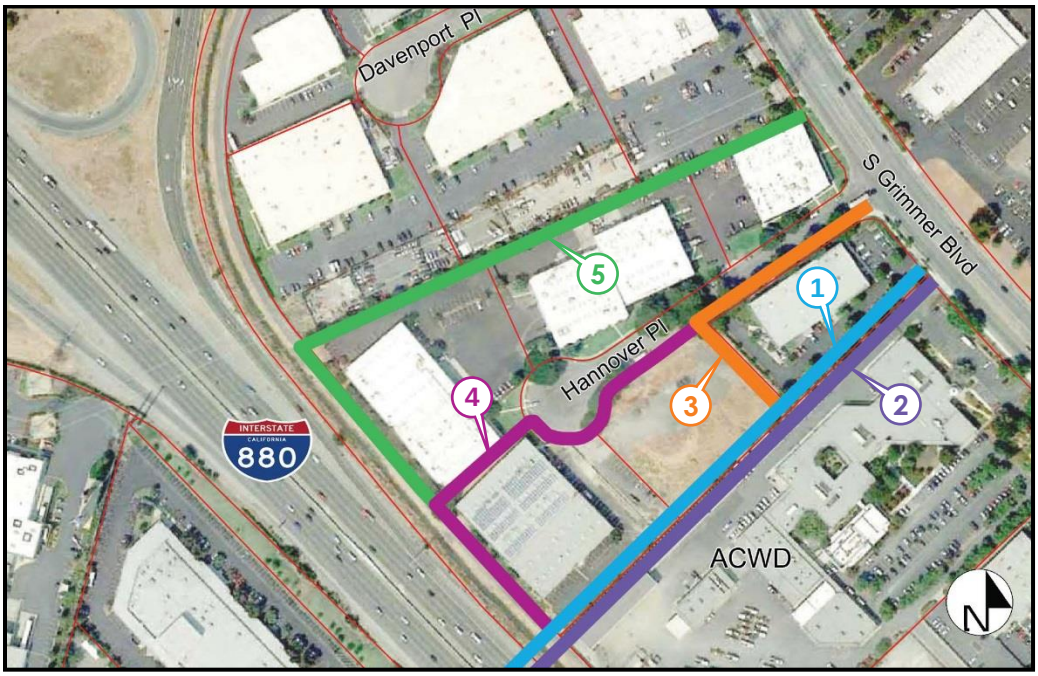
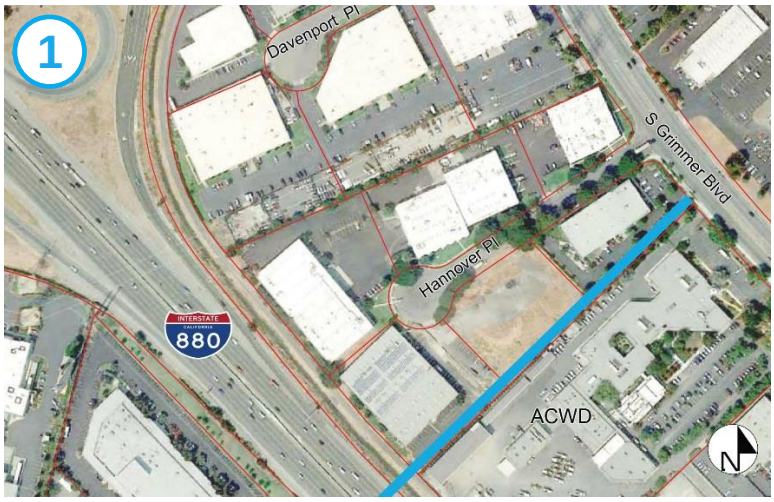
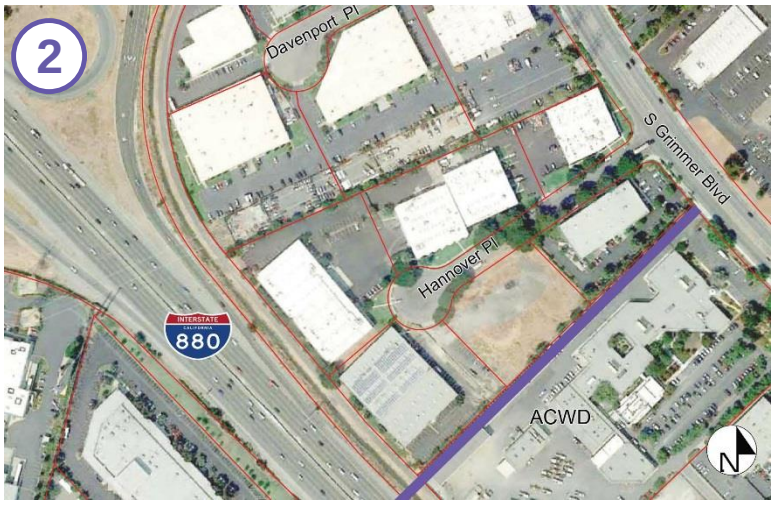


Figure 9. East Bridge Approach Alternatives

As illustrated in Figure 9 above, several different alignments were studied at the east bridge approach, mainly to provide alternative solutions in the event that issues with property owners occur during final design. Each of the options above need to be studied further in final design, however, a cursory review of the various options and their impacts are summarized in Figure 10.

	• Provides direct connection with clear line of sight to separated bikeways proposed for Grimmer Boulevard. • Loss of at least 30 unmarked parking spaces; loss of parking spaces in new surface lot on Hannover Place; loss of several large trees. • Requires public access easement from at least 3 parcels. • Can easily accommodate approach slopes 5% or less. • Reconfiguration of entrance to new surface parking lot on Hannover Place required. • Drive aisle and parking space modifications at Allied Auto. • Requires utility undergrounding of OH electrical and fiber utilities along southerly end of parcels.
	• Provides direct connection similar to Alternative 1. • Significant impacts to existing storage structures, covered parking, utilities, and solar panels. • Security issues due to proximity of ACWD buildings. • May require skewed main span crossing if west approach is limited to Parking Lot parcel. Perpendicular crossing can be provided but with additional impacts to existing parking at Dutra. • Property impacts limited to one owner – ACWD. • Existing OH electrical and fiber optic in 10-foot PUE can be maintained but with additional utility impacts at Grimmer Boulevard.
	• Provides indirect connection but can maintain connectivity to Grimmer Boulevard with roadway improvements for bike/ped facilities at Hannover Place. • Similar to Alternative 1, but only requires acquisition or public access easement from at least 2 parcels. • Greater impacts to recently constructed parking lot at CRP Industries. • Requires less utility undergrounding of OH electrical and fiber optic utilities along the southerly end of parcels than Alternatives 1 and 2.

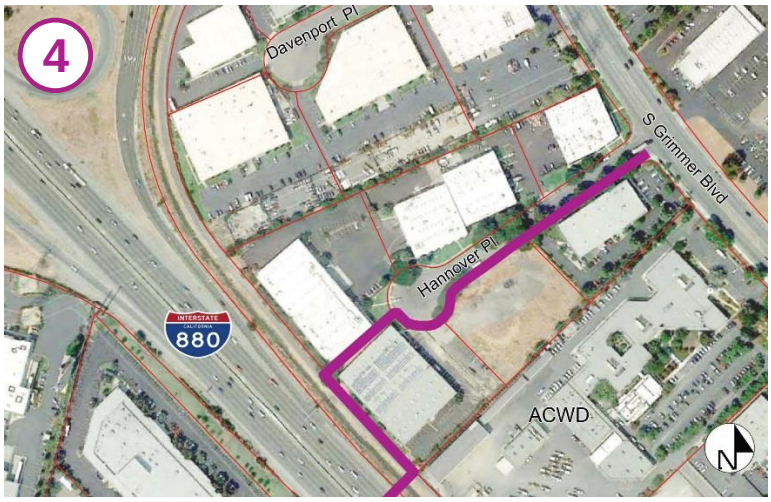
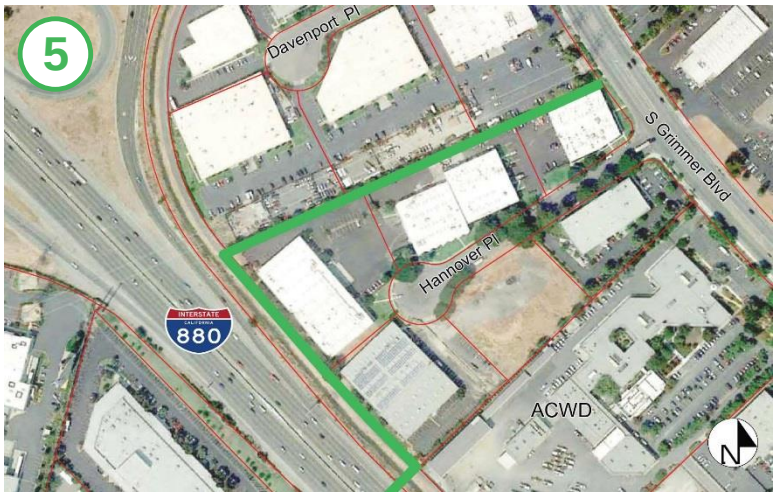
	• There is at minimum 18.1 feet of clearance between the ACFC maintenance path and the two adjacent building structures. The at-grade pathway and elevated structure can likely be accommodated in this area but will likely impact the maintenance path and OH utilities. • 28-foot clear width at easterly end of buildings and 38-foot clear width at westerly end. This option can squeeze an alignment between both utilities while still providing a minimum clearance of 6 feet from each structure. An existing 15-foot SD easement is located in this area which may make it easier to acquire public access rights.
	• Approach alignment is indirect, but can be easily accommodated within existing 175-foot utility easement near Davenport Place. • Similar to Alternative 4, this alignment requires utility undergrounding of OH electrical and fiber utilities within 10-foot PUE. However, the limits of undergrounding will be greater than Alternative 4. • Similar to Alternative 4, this alignment requires public access easement from at least 2 parcels but with less impact than Alternatives 1-3 as the spaces are not utilized. • Loss of existing trees and landscaping around existing buildings similar to Alternative 4. However, the impacts will be greater for this alignment due to the longer alignment.

Figure 10. East Bridge Approach Alternatives (cont.)

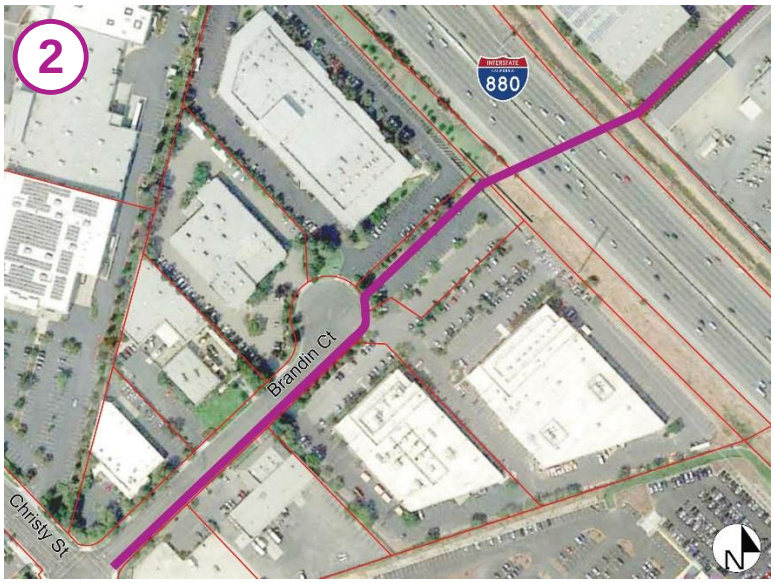
Based on the preliminary study and impacts identified in Figure 10, Alternatives 2, 3, and 5 are considered to have significant impacts unfavorable to those of Alternatives 1 and 4. As a result, Alternatives 1 and 4 are preferred and should be studied further in final design.

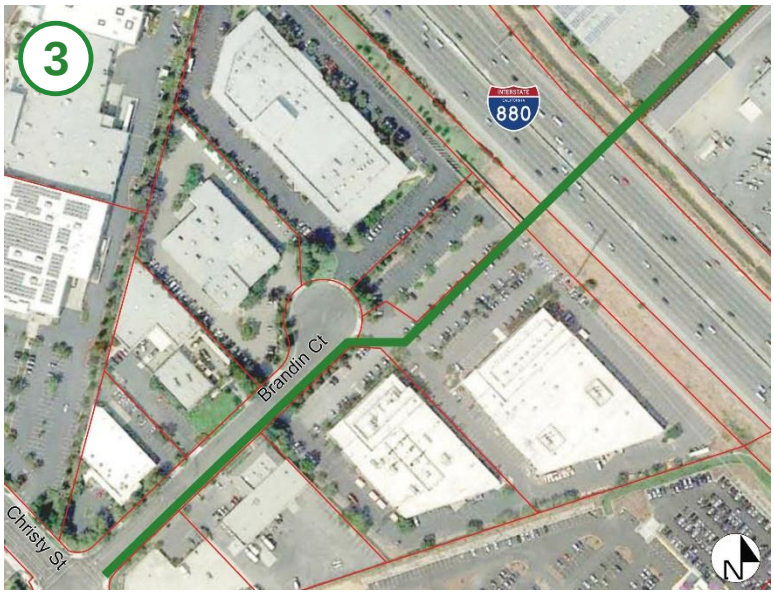
Alternative 1 will be able to accommodate a profile grade of 5% or less given the available length between the ACFC channel and Grimmer Boulevard. However, Alternative 4 will not, given the limited distance that the structure has to meet grade. Fire access restrictions prohibit erecting a structure in between the two existing structures; therefore, the profile of the structure will need to meet grade before turning east and continuing between the two existing buildings near Hannover Place. The minimum distance between the existing structure and right-of-way fence is approximately 18.1 feet. Further study will need to be done to determine if fire code will allow the placement of the bridge so close to the existing structure, or if there is an opportunity to slightly reduce the ACFC maintenance pathway and right-of-way to provide additional clearance to the adjacent building. The profile grade will instead be increased to 8.3%, with 5-foot landings sloped at 2% every 30 feet to accommodate the limited touchdown distance while still meeting ADA standards. The path in-between the two existing buildings

will be constructed within the existing 15-foot Storm Drain Easement, as identified in Figure 7, which the City of Fremont already owns. Further study may need to be done to determine if the path will impact this existing storm drain.

V.B.2. West Side

At the west bridge approach, several alignments were considered and one was ultimately rejected because of its impacts to the property owner and the existing 36-inch gas transmission line and 50-foot easement. The three plausible alternatives and their impacts are summarized in Figure 11. More information on the rejected alternative is stated in Figure 12. There is a limited amount of space on the west approach for descent from the structure, so a profile grade of 5% or less will not be obtainable. Both alignments will require a profile grade of 8.3%, with 5-foot landings sloped at 2% every 30 feet to meet ADA requirements. With steeper grades and increased grade changes, the west approach design will have to study ways to maintain user experience.

	• Property impacts limited to one owner. • Approach alignment is indirect, but will minimize impacts to the existing parking lot and nearby businesses. • Requires two 90-degree turns on the bridge, limiting sight distance and requiring bicycles to reduce speed. • Loss of approximately 30 parking spaces but greater loss of more mature trees than Alternative 3. • Loss of approximately 30 parking spaces but greater loss of more mature trees than Alternative 3.
	• Property impacts limited to one owner. • Alignment can be oriented just south of the existing 15-foot PG&E Easement but will require coordination with PG&E to determine future access of this easement adjacent to the structure. • Avoids the 36-inch gas transmission line and 50-foot easement entirely. • Approach alignment is indirect, but will minimize impacts to the existing parking lot and nearby business. • Approach access to Brandin Ct is favorable to that of Alternative 3. • Loss of approximately 30 parking spaces but greater loss of more mature trees than Alternative 3.



- Provides a straight alignment over I-880 with minimal turns for bicycles and a greater sight distance.
- Requires the reconfiguration of "Uni-Fab Industries" driveway and parking lot. Approximately 60 parking spaces will be eliminated.
- Structure will create a barrier within the parking lot and address how best to accommodate pedestrian facilities from the parking lot to the nearby building.
- Impacts more right-of-way than Alternatives 1 and 2.
- Can likely avoid the 36-inch transmission gas and 50-foot PG&E Easement, but will need to be studied closely given that the easement likely restricts structure encroachments.

Figure 11. West Bridge Approach Alternatives (cont.)

Based on the preliminary study and impacts identified in Figure 11, Alternatives 1 and 2 are preferred and should be studied further in final design.

Rejected West Side Approach Alternative

This alignment was ultimately rejected during the initial scoping phase. Given available information of the existing gas easements and site grades, the proposed approach alignment was designed to meander in order to provide enough distance to conform to existing grades at Brandin Court with a profile grade of 5% or less that meets ADA requirements. This alignment was initially favored because it limited impact to one parcel. Even though the alignment would have impacted approximately 100 parking spaces, it provided an opportunity for a public park/open space around the pathway to enhance user experience. The alignment was initially thought to have avoided a future gas main planned by PG&E, but the gas main has since been constructed, eliminating the feasibility of this alternative.

Figure 12. West Bridge Approach Alternative

V.B.3. Class IV Pathway Connections at Brandin Court and Hannover Place

Both the east and west bridge approaches discussed will require modifications to existing local roadways at Brandin Court and Hannover Place as each lack bicycle and pedestrian facilities. Pictures illustrating existing conditions along each roadway are included on the next page for reference.

View Northeast on Brandin Court.

View Southwest on Brandin Court.

View Northeast on Hannover Place.

As seen in the photos, existing roadway configurations consist mainly of travel lanes, street parking, and landscaped frontages. The curb-to-curb distance along each roadway is 46-feet per the City's standard for Commercial/Industrial Street Standards. The south side of each street section can be modified to include a 10-foot shared pathway to complete connectivity from the bridge to proposed pedestrian and bicycle facilities at Grimmer Boulevard and Christy Street/FTBC. As shown in Figure 13, several existing at-grade utility features are located along the south side of Brandin Court where the shared path will be constructed. These features include: utility vaults, water meters, fire hydrants, fire department connections, domestic water and irrigation backflow preventers, street lights, etc. Each would need to be adjusted to grade and/or relocated to accommodate the new shared path along the south side of the roadway. In addition, the shared path along the south side of Brandin Court will require a small retaining wall to accommodate vertical grade changes where needed with the adjacent properties.

Improvements along the south side of Hannover Place, as shown in Figure 14, will be slightly less complicated given that a 4-foot wide concrete path already exists. The Project will therefore only need to construct a 6-foot pathway adjacent to this existing pathway. However, several large heritage trees are located where the 6-foot pathway is needed and would require removal.

Additionally, to improve safety and enhance visibility, green bike striping should be installed at potential conflict locations at driveways. Furthermore, the incorporation of the 10-foot shared path on the south side at each local roadway will require driveway reconstructions to meet ADA requirements. Accommodating the proposed improvements along the south side will need to be studied further during final design.

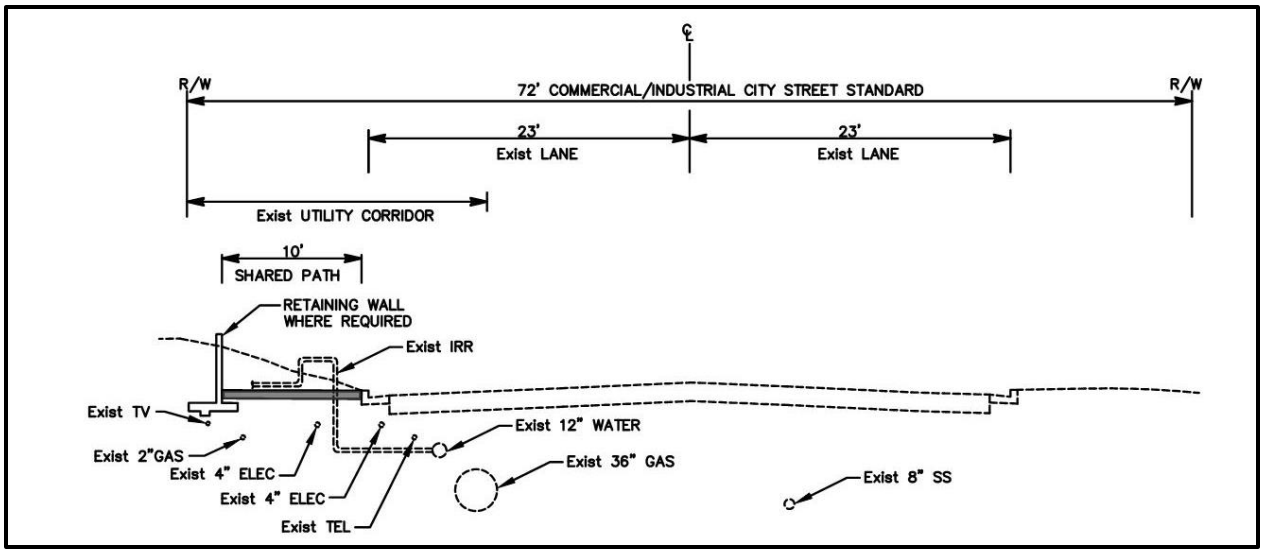


Figure 13. Brandin Court Proposed Roadway Section (Facing West)

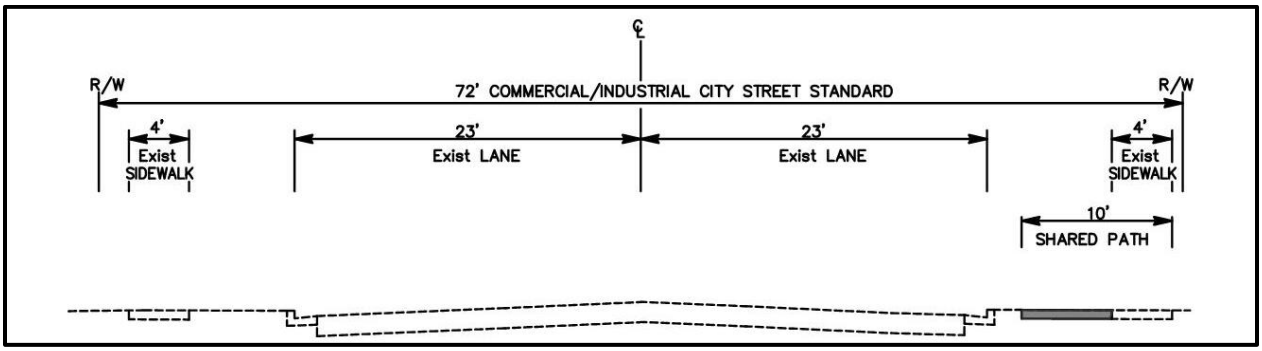


Figure 14. Hannover Place Proposed Roadway Section (Facing East)

Alternatively, the City should consider modifying the roadway section as shown in Figure 15 in the event that significant utility relocations or other site modifications are required in final design. The feasibility of this alternative will need to be studied further in final design, but as shown in Figure 15, this existing section can be modified by shifting the traveled lanes further north while still providing a 32-foot curb-to-curb distance for vehicles/trucks. Given the industrial setting and large trucks accessing each roadway, a physical barrier should be constructed to protect bicyclists and pedestrians. Ideally, the physical barrier would include landscaping and green space as shown in Figure 15 on the next page.

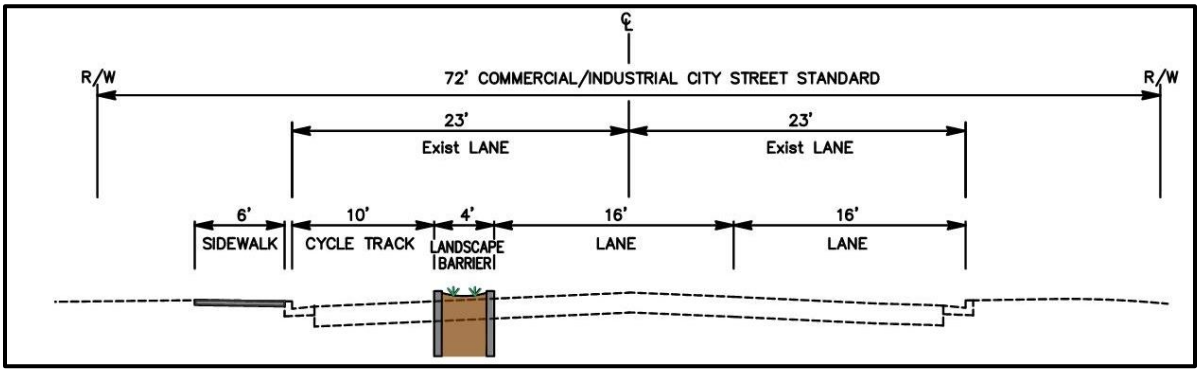


Figure 15. Alternate Brandin Court and Hannover Place Proposed Roadway Section

Modifying the existing section would allow a 4-foot landscaped barrier and 10-foot two-way Class IV cycle track for bicyclists, and 6-foot sidewalk along the south side. This proposed design would likely keep required roadway improvements at the surface level, which is important given the potential conflicts that may arise with existing utilities (see Figure 6). Impacts would need to be studied further during final design, however, a concrete median can be proposed in lieu of landscaping if conflicts with utilities are encountered. The location of the proposed curbed barrier will need to be designed to avoid conflicts with truck turning movements in/out of existing driveways. Additionally, on-street parking would need to be eliminated to accommodate the roadway improvements at each connecting roadway.

Based on the preliminary analysis of several alignment alternatives for both the western and eastern approach, the overall preferred alignment is shown in Figure 16. This alignment provides direct connection on the eastern approach, while minimizing the impact to local businesses and parking lots. Due to the higher number of variables that exist on the eastern approach, such as utility relocation and right-of-way encroachments, an alternative alignment is also shown. Moving forward, these alignments are the most feasible and will be further studied in the final design.

CITY OF Fremont California

SCOPING REPORT | I-880 PACIFIC COMMONS BRIDGE

(BIKE/PED CONNECTION TO WARM SPRINGS BART AREA)

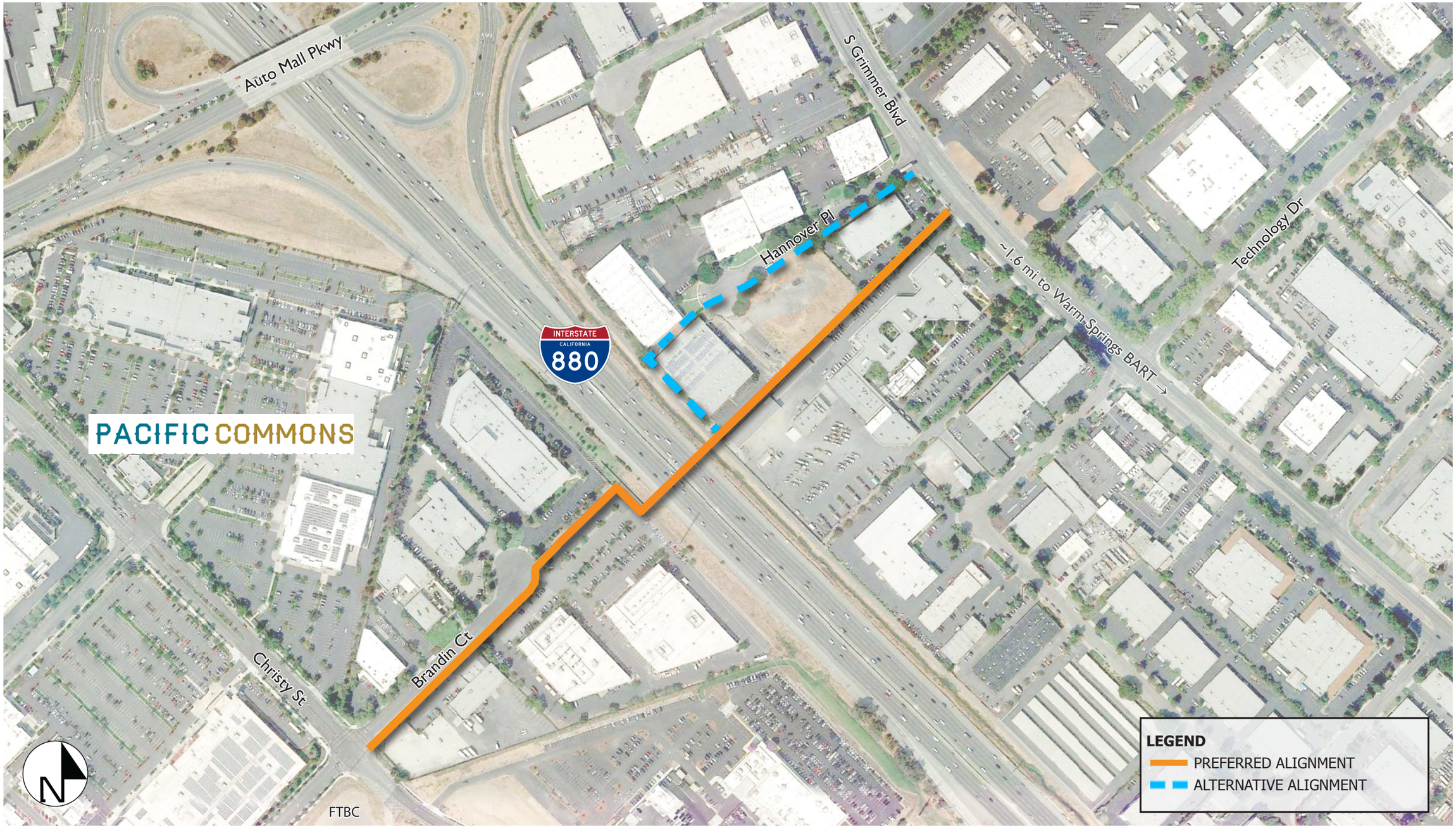


FIGURE 16 ALIGNMENT ALTERNATIVES

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V.C. BRIDGE CONCEPTS

V.C.1. Design Goals

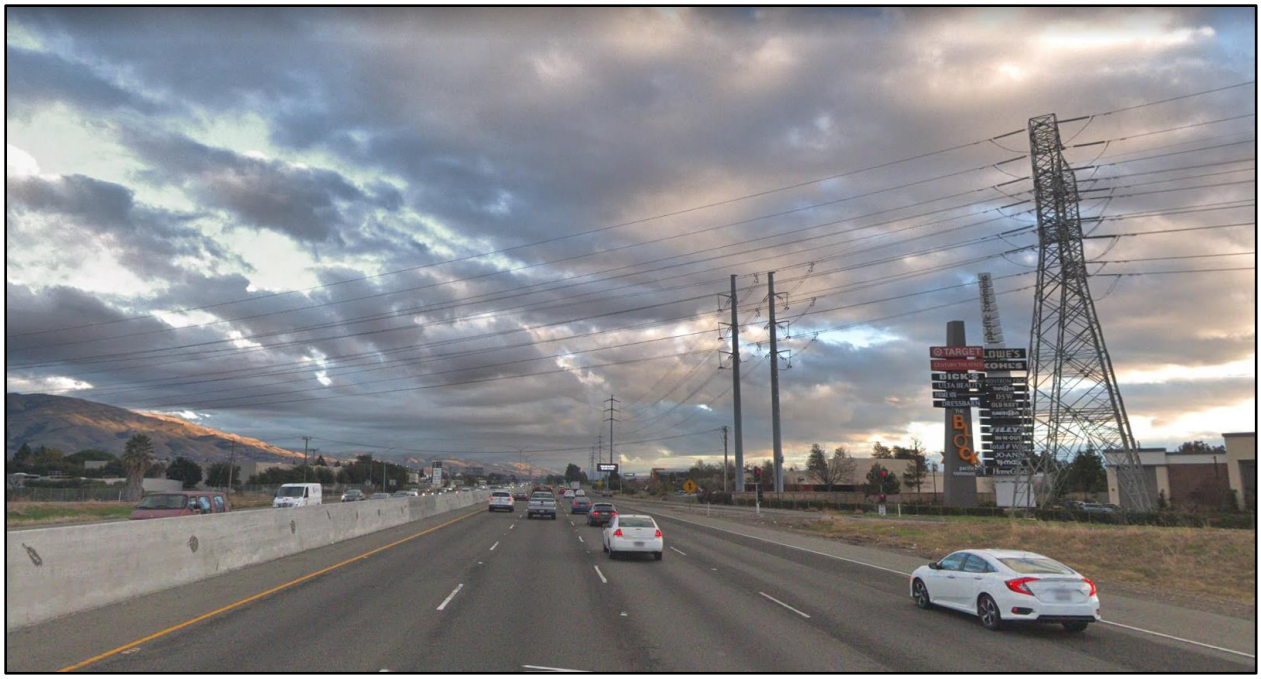
The design of the I-880 Pacific Commons Bridge is guided by the following goals:

1. The bridge should be iconic, timeless, elegant, and refined.
2. The bridge should be compatible with the surrounding built environment, connect to existing and future bike and pedestrian routes, and complement the two nearby bike/ped bridges planned by the City in the vicinity of the Warm Springs/South Fremont BART station and the Tesla factory.
3. The bridge should be designed with visual openness to enhance user safety and experience by providing sightlines for travel, as well as views of the surrounding hills and natural environment.
4. The bridge should be cost effective and be able to be implemented efficiently, with low risk for project delay or cost overruns.

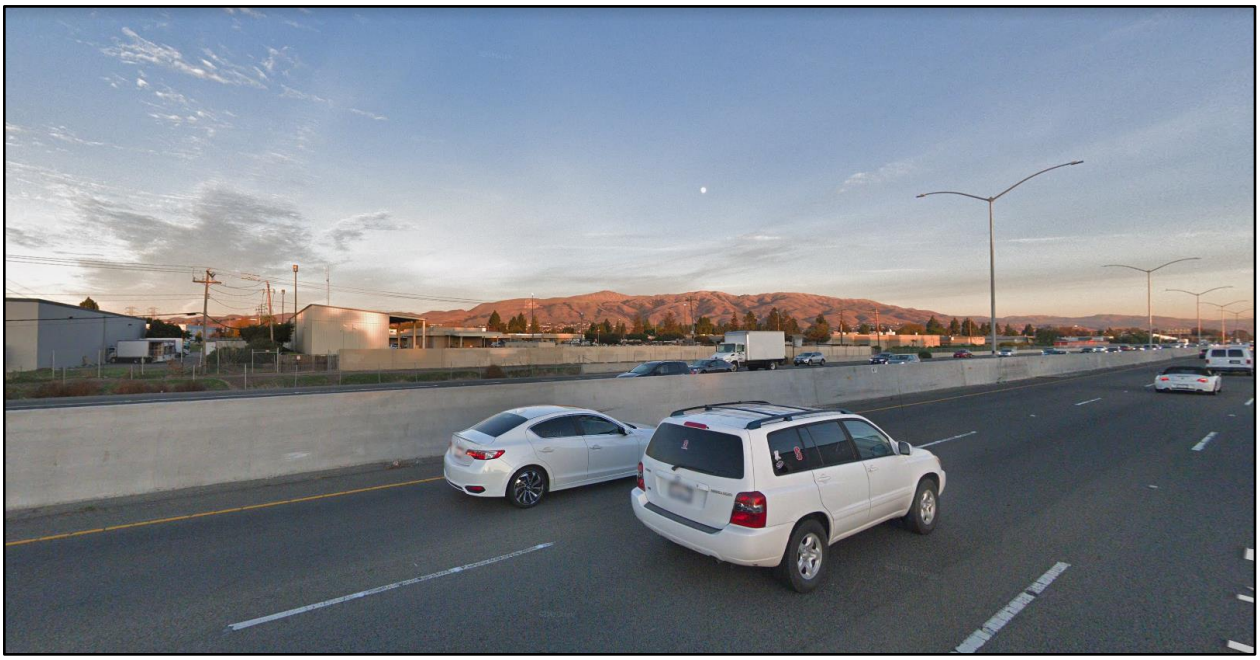
V.C.2. Visual Context

Located between the East Industrial and Bayside neighborhoods of Fremont, the project site is visually characterized by a wide 10-lane freeway, low industrial buildings, surface parking lots with trees, catenary electrical wires, transmission poles, lattice towers, shopping mall signage towers, and the nearby hills of the Mission Peak Regional Preserve.

View south from Auto Mall Parkway Overpass



View on I-880 south


Hills of the Mission Peak Regional Preserve

To meet the project's design goals, a clear-span bridge over I-880 would make a bold statement, while simultaneously streamlining Caltrans approval processes, since a support in State right-of-way would not be required. A simple and refined bridge design would also reduce surfaces, junctions, and maintenance needs. Although this bridge should be compatible with the two asymmetrical, single-tower, cable-stayed bike/ped bridges planned near the BART station and the Tesla factory, it would also need to be compatible with the numerous tower forms in the project site. While existing electrical transmission poles

and lines are high and unlikely to impact bridge geometry, their vertical and catenary forms would affect the visual massing and aesthetics of the bridge.

Warm Springs/South Fremont BART Access Bridge Concept

I-880 Innovation Bridge

V.C.3. Structure

The pedestrian bridge will be constructed within a busy existing urban context, in which property right-of-way (ROW), easements, and utilities place constraints on the bridge location that inform the construction considerations. Considering these constraints, the alternatives described below meet the project goals of creating a gateway structure over I-880 and providing users with an enjoyable crossing experience.

When selecting structural alternatives, considerations include constructability, aesthetics, user experience, safety, right-of-way constraints, and avoidance of existing overhead power lines and underground gas lines. Keeping these factors in mind, the selected alternatives provide a unique experience for the end user within the context of a landmark structure. This merging of functionality with aesthetics creates a structurally unique design.

Bridges naturally have a primary technical function, but if the supporting elements are thoughtfully shaped, the result will have a structurally expressive quality. The City has expressed a strong desire for the bridge to exhibit landmark qualities. The clear objective is to design a bridge that becomes a point of attraction along the freeway and highlights the City of Fremont as a destination. Presented below are two alternatives that are light, transparent, and elegant.

Alternative 1: Tied Arch Bridge

View on I-880 South of Tied Arch Bridge Concep

CITY OF Fremont California

SCOPING REPORT | I-880 PACIFIC COMMONS BRIDGE

(BIKE/PED CONNECTION TO WARM SPRINGS BART AREA)

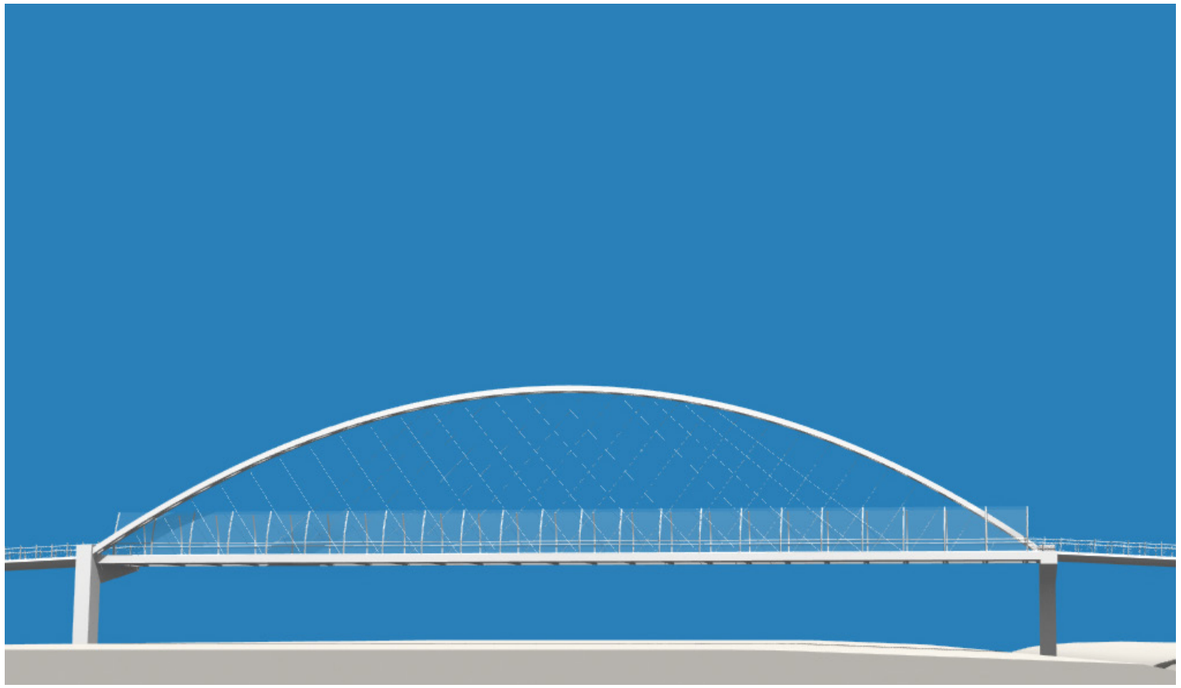


FIGURE 17 ALTERNATIVE 1 - TIED ARCH BRIDGE

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The arch alternative provides a single clear span over both I-880 and the utility easement immediately to the west of the Caltrans ROW. The thrust of the arch is resisted through a longitudinal tie-in at deck level such that no longitudinal demands need to be resisted by the main span piers.

One architecturally expressive option would be a single arch rib spanning the roadway while crossing diagonally over the deck to land on the piers on opposite corners. In this concept, diagonal cable hangers support each edge of the deck with opposite orientation to create a crisscrossing pattern when viewed in elevation. While this alternative provides some interesting challenges structurally due to the high degree of unbalanced loads, the overall concept achieves the goal of creating a landmark structure. With a single arch and unique hanger arrangement, it will be important to study the aeroelastic stability of the span under wind loading.

More structurally-efficient arch solutions could utilize two arch ribs leaning together or away from one another. Examples of these include the Happy Hollow Bridge for the former and the Iron Horse Trail Bridge for the latter. With two arch planes, the throw barrier over the freeway could be seamlessly incorporated into the arch hangers as was achieved in the McLaughlin Boulevard Bridge.

Happy Hollow Bridge, San Jose, CA

Iron Horse Trail Pedestrian Bridge, Walnut Creek, CA

McLoughlin Boulevard Pedestrian Bridge, Milwaukie, OR

With respect to construction of the arch span, there are several different options, however, a steel span has the benefit that it could be assembled in a staging area adjacent to the site and lifted into position as a single unit using a tandem lift with two cranes on opposite sides of I-880. This arch placement procedure could take place in a single nighttime closure of I-880, and placement of precast deck panels across the main span would require subsequent single-lane nighttime closures. A likely staging area for the on-site assembly of the arch(es) could be the parking lot just west of the site. Once the span is erected, a durable concrete deck could be installed using either full depth cast-in-place methods or partial depth precast

panels with a composite concrete overlay. This would provide the city with a durable, low-maintenance, and high traction riding surface.

Alternative 2: Single Tower Cable-Stayed Bridge

View on I-880 South of Single-Tower Cable-Stayed Bridge Concept

A single-tower cable-stayed bridge alternative locates the tower on the east side of I-880 just outside the Caltrans ROW. Cable-stayed systems are known for their structural efficiency, resilience, and visual interest. By locating its single tower on the east side of I-880, it becomes a paired counterpart with the I-880 crossing to the south for the Tesla factory, which has its single cable-stayed tower on the west.

Stay cables can take on several arrangement patterns and could be connected to both sides of the deck or within a single plane along the center of the deck. The two-plane main span arrangement has the added benefit of using the stays to support the throw fence over I-880 as was done with the Delta Ponds Pedestrian Bridge. The span configuration could potentially include a longer back span across the ACFC ROW and adjacent parcel to minimize impacts to the parking lot associated with that property. In this configuration, there are design efficiencies where the back span balances out the main span over I-880.

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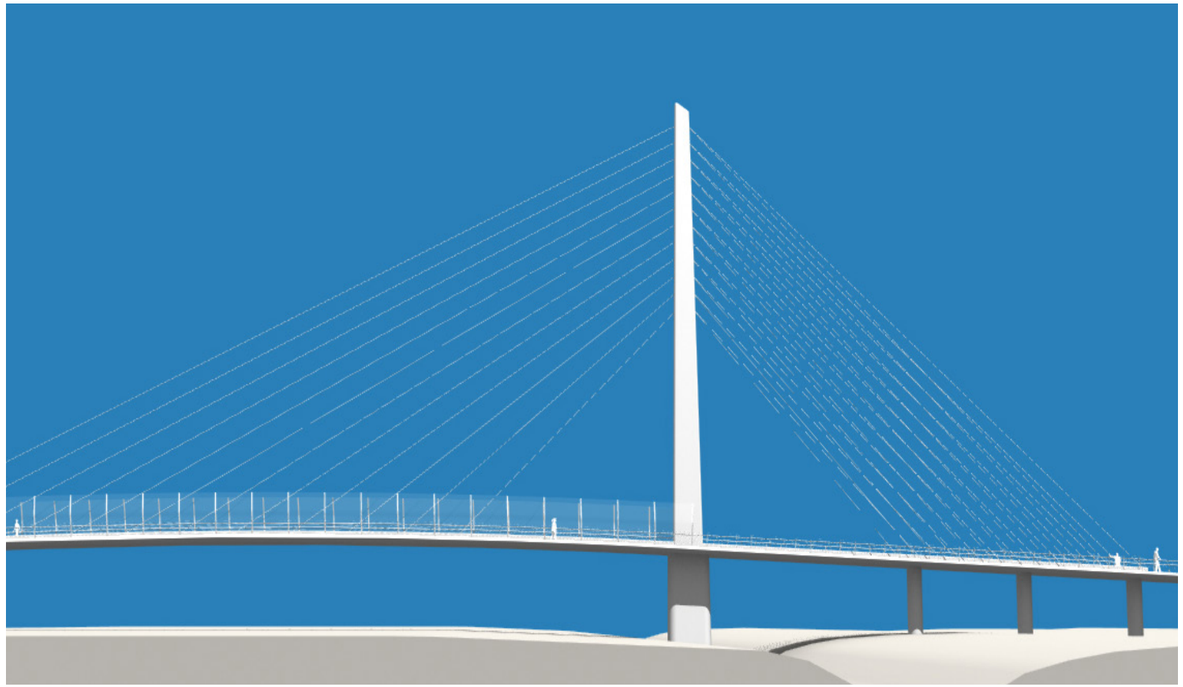
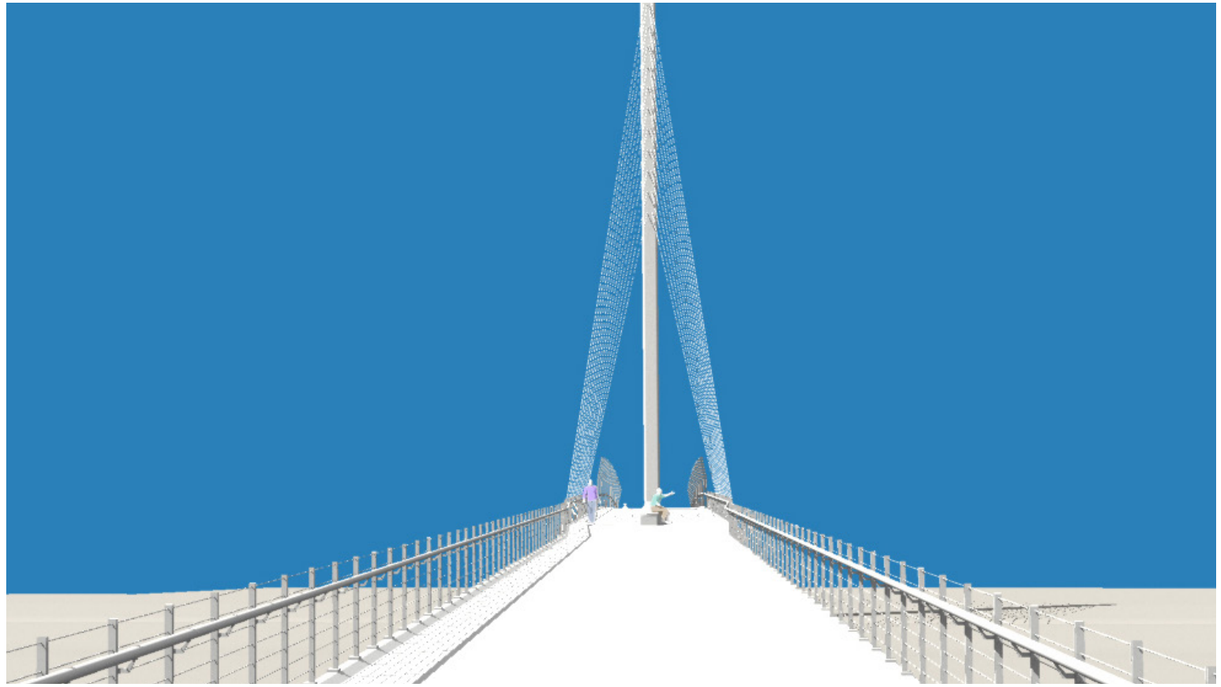
CITY OF Fremont California

SCOPING REPORT

I-880 PACIFIC COMMONS BRIDGE

(BIKE/PED CONNECTION TO WARM SPRINGS BART AREA)





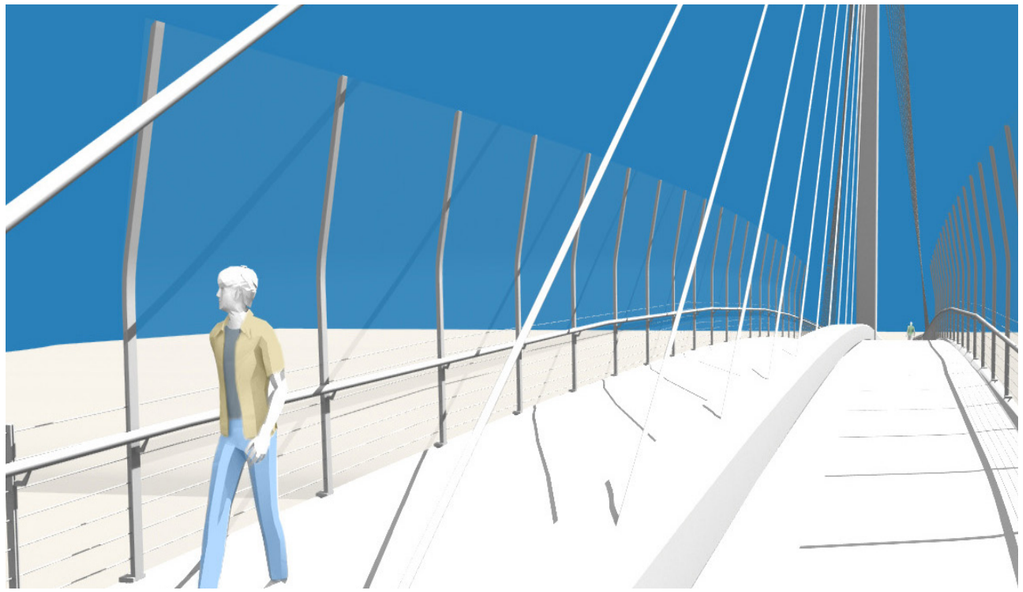


FIGURE 18 ALTERNATIVE 2 - SINGLE TOWER CABLE STAYED BRIDGE

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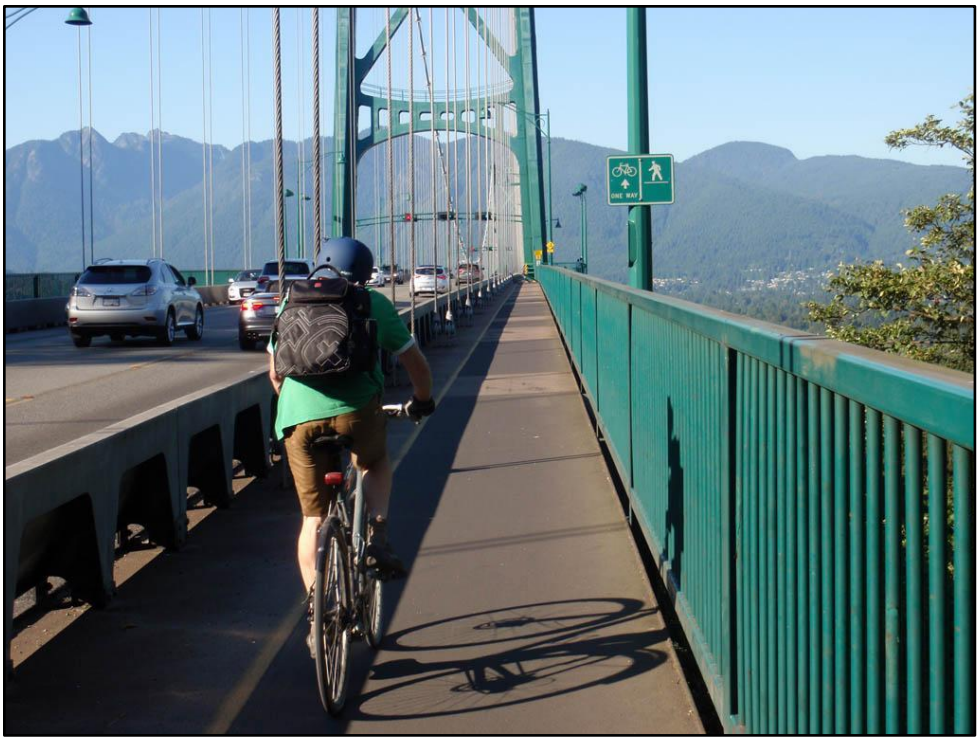
Delta Ponds Pedestrian Bridge, Eugene, OR

Other options could include a shorter back span with a large anchor pier at the edge of the parcel adjacent to the maintenance road. If the alignment requires a 90-degree turn, the back stay cables could be connected to an anchorage block. In each configuration, the main span and back stay cables are intended to counteract longitudinal demands on the tower and resolve forces with minimal bending.

For the alternative where the cables are arranged in a single plane that frames into the deck along the centerline of the bridge, the deck system will utilize a spine torsion box with cantilevered beams to support the bridge deck on each side. The torsion box provides a stiff response under unbalanced loads from users on either side of the single cable plane and helps ensure wind stability of the spans.

For a cable-stayed crossing, different deck types and materials can be used. It could prove economical to minimize earthquake demands by utilizing a lighter weight, all-steel superstructure with an orthotropic deck system. The deck could be painted with a high performance non-slip epoxy wearing surface used on roadway bridges such as the Lions Gate Bridge. Alternatively, a concrete deck can be supported by steel floor-beams using a full depth cast-in-place solution or precast panels made composite. A third alternative could potentially utilize fiberglass reinforced plastic (FRP) decking, which is becoming more common in bridge construction and would keep the bridge lightweight.



Lions Gate Bridge, Vancouver, Canada

Construction of this alternative could use temporary towers installed in the median of the I-880 freeway and at the west edge of the freeway to allow for an incremental cantilevered construction method for the main span over I-880. This alternative would likely require some single-lane nighttime closures for the installation of temporary construction towers and additional lane closures during cantilevered construction of the bridge deck over I-880.

The backstay for Alignment 4 on the east approach will have a slightly different backstay configuration than described for the straight alignment described above. The 90-degree turn in the trail alignment on the east side of the creek presents some structural challenges, however, this is still a feasible bridge alternative for the site. Under this alignment, the back span is significantly reduced to approximately 60-ft. The back stays must be anchored at a very steep angle that is nearly vertical. This creates an interesting space where the backstay cables are attached to the east terminus of the deck above an anchor pier. Another possibility would be to create a curved tower that rises above the creek with vertical stay cables resisting the main span loads. This would require a significant counterweight that could be formed through a large buried pile cap supported by deep drilled shafts.

An example of how this could be done is the Katehaki Pedestrian Bridge in Athens. In this case, the single tower is angled away from the main span and is anchored by a single backstay to transfer the main stay cable forces to the foundation. The single tower also has a curved shape which behaves similarly to an arch as the stay forces are transferred in compression through the tower to the foundation. The horizontal thrust component of the curved tower helps resist the horizontal force in the main span deck resulting in a primarily vertical force component at the tower base.

Katehaki Bridge, Athens, Greece

The Katehaki Bridge is also a good example of a simple backstay that does not require a lot of area or a large above-ground anchoring structure. This type of backstay could be incorporated into a cable-stay alternative on the I-880 site.

Some of the same constructability concerns that are inherent in the asymmetric cable stayed bridge option using Alignment 1 also apply to the structure using Alignment 4. Construction of this alternative could also require temporary support towers in the median of the I-880 freeway and on the west side of the freeway. Incremental cantilevered construction for the main span over I-880 would be possible with the backstay cable(s) installed and tensioned against a temporary strut. As the main span is built, the compression in the temporary strut would be relieved for easy removal. This alternative would also likely require some single-lane nighttime closures for the installation of temporary construction towers and additional lane closures during construction of the bridge deck over I-880.

The approach ramp along the east edge of the creek maintenance road would be constructed as a simple viaduct with regularly spaced columns akin to the west approach ramp.

V.C.4. Architecture

A variety of structure types were considered for this project to meet the design goals. These included truss bridges, single-arch and double-arch bridges, as well as symmetrical and asymmetrical tied-arch and cable-stayed bridges. The following sections discuss the relationship between selected tied arch and cable-stayed structure types, bridge design goals, and visual context. Note: in the renderings of the bridge alternatives on the next page, the bridge has been depicted in white, since the materials for the bridge have not yet been determined, and cable thicknesses have been increased for visibility.

Alternative 1: Tied Arch Bridge

Rendered view southeast of arch alternative

More elegant and iconic than a conventional 2-arch bridge, a single tied-arch bridge design would clear-span perpendicularly across I-880, over a slightly diagonal bridge deck. Visually, the bridge would serve as a gateway for both drivers and bridge users, while the arching form and angled cables would be a sleek and modern interpretation of adjacent hills and Ohlone patterns. Design references for a single tied-arch pedestrian and bicycle bridge include the Griffiths Pedestrian Bridge, Hulme Arch Bridge, and the concept for the South Bayfront Pedestrian Bicycle Bridge.

Griffiths Drive Pedestrian Bridge, Burnaby, Canada

Hulme Arch Bridge, Manchester, England

South Bayfront Pedestrian Bicycle Bridge Concept, Emeryville, CA

Alternative 2: Single Tower Cable-Stayed Bridge

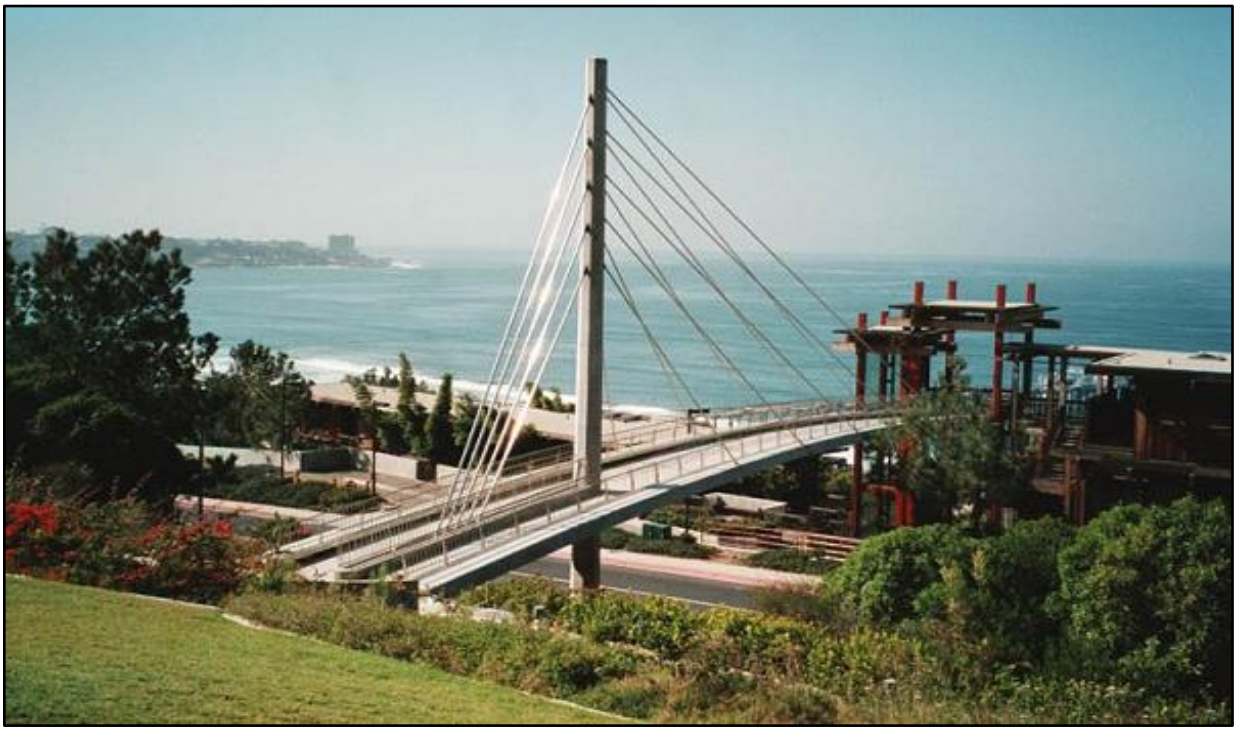
Rendered view southeast of cable-stayed alternative

This bridge design would be very similar to the two cable-stayed bike/ped bridges planned near the Warm Springs BART Station and just to the south over the I-880 Innovation Bridge near the Tesla factory. A single tower on east side of I-880 would be approximately as tall as the nearby electrical transmission towers and serves as a landmark and visual reference for both drivers and bridge users. Instead of using an inclined pylon similar to the bridge proposed for the BART station, or a double plane of cables similar to the bridge proposed adjacent to the Tesla factory, this design proposes a vertical pylon and a single plane of cables for the main span that divides the bridge deck, while a double plane of cables is used for

the back span. Cable-stayed bridges used as design references include the M60 Footbridge, Christchurch Bridge, and Scripps Pedestrian Bridge.

M60 Pedestrian Bridge, Sale, England

Christchurch Bridge, Reading, England



Scripps Pedestrian Crossing, San Diego, CA

VI. CONCEPTUAL COST ESTIMATES

A summary of the estimated costs associated with each phase of the Project is presented in Figure 19. A detailed breakdown of the Project Cost Estimate can be found in Appendix VIII.B, and section 2 of the detailed estimate compares the costs associated with the tied-arch and cable-stayed bridge structure alternatives. The arch structure considered is a single tied-arch bridge, which is marginally more expensive than a single tower cable-stayed bridge. If warranted, a double-tied arch bridge could be considered in the future for potential structural cost savings.

Each of the proposed bridge alignment alternatives present their own set of challenges and costs associated with the Project. The approach alignments identified to be feasible on the east side are Alternatives 1 and 4, and on the west side are Alternatives 1 and 2. On the east side, the alignment with the highest cost is Alternative 1, due to the substantial cost associated with relocating overhead electrical and fiber optic lines to underground facilities. On the west side, Alternative 1 has the highest cost because more right-of-way is required.

In order to ensure sufficient consideration of potential funding needs, only the structure and alignment alternatives with the highest cost are identified in the figure below and in the appended Cost Estimate details.

Phase	*Estimated Cost*	*Estimated Fiscal Year of Completion*
Preliminary Engineering/ Environmental Studies	$ 2,569,549.00	2021
Final Design (PS&E)	$ 4,017,486.00	2022
Right of Way	$ 5,358,100.00	2022
Construction Capital	$ 27,214,278.00	2025
Construction Support	$ 4,806,027.00	2025
Agency Support	$ 1,405,496.00	2025
Total Project Cost	$ 45,370,937.00	2025

Figure 19. Conceptual Cost Estimate

VII. PROJECT DELIVERY STRATEGY

VII.A. DELIVERY PLAN

Information regarding possible sources of funding are detailed in Section VII.B. of this report. Assuming that funding is secure before Fall 2019, Figure 20 on the next page details the approximate delivery plan for this Project. Preliminary engineering and the environmental approval phase are estimated to take approximately 1.5 years to complete. Final Design and Right-of-Way will follow in parallel and require about 1.5 years to complete each. Overall project construction is anticipated to require 2.5 years with planned project completion by the end of 2025.

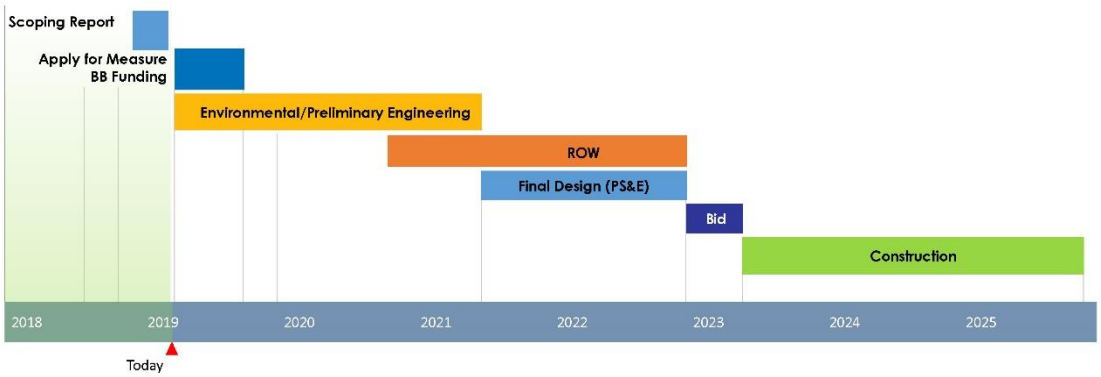


Figure 20. Project Delivery Plan

VII.B. FUNDING

Numerous federal, state and local funding programs exist for projects that encourage the use of active modes of transportation, improve connectivity and reduce motor vehicle emissions. Funding for the Project could be derived from a combination of available grants and funds at the federal, state, and local levels. Below is a brief description of potential applicable programs and funds available for the Project.

Federal Funding

Better Utilizing Investments to Leverage Development Transportation Discretionary Grant Program (BUILD) – BUILD, Formally known as the TIGER Discretionary Grants, provides grants funds that are used for road, rail, transit and port projects that have significant local or regional impact. Eligible applicants include state, local, and tribal governments as well as metropolitan planning organizations (MPO), and transit operators. BUILD funds can cover up to 80 percent of project costs, although the maximum amount that may be awarded to one project is $25 million.

Statewide Funding

The Road Repair and Accountability Act of 2017, known as Senate Bill 1(SB-1), invests $5.4 billion over the next decade in state and local road, transit agencies and the state's growing network of pedestrian and bicycle routes. Over the next ten years, the City of Fremont is estimated to receive $44 million for local streets and roads maintenance and rehabilitation, reduce congestion, and multimodal improvement projects including bicycle and pedestrian trails and bridges. Other state funding grants worth pursuing are identified below.

Active Transportation Program (ATP) – The ATP was created by Senate Bill 99 and Assembly Bill 101 to encourage the increased use of active modes of transportation, increase safety and mobility of non-motorized users and advance the transportation efforts of regional agencies to achieve greenhouse reduction goals. Funds distributed through the ATP include state funds from SB-1 and federal funds from the Recreational Trails Program. Half of the funds are awarded through statewide competitive programs. Forty percent of the funds are awarded to MPO's through the large urbanized area competitive program and the remaining ten percent of funding is awarded through the small rural and urban competitive program. The ATP Cycle 4 call for projects closed in July 2018 and will provide $440 million for the 2020-2023 fiscal years. Therefore, the City would need to pursue the next Cycle 5 call, which is expected to open in March 2020 for the 2022-2025 fiscal years. The ATP grants require a local match of 20%, which allows the City to leverage local funding to secure additional state funding. Additional research will be required to ensure that the Cycle 5 call is not restricted to Cycle 4 submissions.

One Bay Area Grant Program (OBAG) – The current second round of OBAG funding, projected to total roughly $916 million, is divided into a Regional Program and the County Program, managed by MTC and the nine Bay Area Congestion Management Agencies (CMAs), respectively. The county program is allocated $386 million over 5 years to assist cities and counties in bicycle and pedestrian improvements, Local Street and Road Maintenance, among other projects. The CMAs are responsible for administering countywide calls for projects and selecting eligible projects.

Transportation Development Act Article 3 (TDA 3) – TDA 3 provided annual funding for bicycle and pedestrian projects. Two percent of TDA funds are allocated for TDA 3. MTC Resolution 4108 states a project is eligible for funding if it is included in a locally approved bicycle, pedestrian, transit, multimodal, complete streets, or other relevant plan and reviewed by a city or county Bicycle Advisory Committee (BAC). As noted in *Figure 2* of *Section III.C.1* of this report, the Project is identified in the City of Fremont's Bicycle Master Plan as a necessary improvement of the Pacific Commons Area corridor, which includes the development of a bicycle and pedestrian crossing over I-880 between Hannover Place and Brandin Court, south of Auto Mall Parkway to provide access to recreational trails and areas planned for increased jobs and housing density.

Local Funding

The Alameda CTC approved its 2018 Comprehensive Investment Plan (CIP) on April 27, 2017 for funding allocations through fiscal years 2017/2018 to 2021/2022. The CIP is a short-term implementation plan in support of the 2014 Transportation Expenditure Plan (TEP) described below and focuses on investments over a five-year programming window with a two-year allocation plan. The CIP includes programming and allocations for federal, state, and local funds, including Measure BB revenue.

Alameda County voters approved Measure BB in 2014, which authorized an extension and augmentation of the existing Measure B half-cent transportation sales tax by an additional half-cent and extended the full-cent tax through Spring 2045. Measure BB is projected to generate approximately $8 billion in revenue from April 2015 to March 2045 for transportation improvements in Alameda County. The 2014 TEP was developed to guide the investments of Measure BB revenue toward projects that improve the countywide transportation system. Local agencies and transit jurisdictions receive Measure BB direct local distributions amounting to $70 million annually and are prioritized for use locally by the recipient. Measure BB devotes eight percent of total available funding to bicycle and pedestrian projects, which is projected to amount to approximately $651 million through 2044. A breakdown of this funding is shown below:

ACTC Measure BB

- Four percent of Measure BB funds, or $300 million, is allocated towards "Community Investments That Improve Transit Connections to Jobs and Schools" (TEP ID 45). These investments seek to enhance access and improve safety by creating new infrastructure and supporting transit oriented development.

- Three percent of Measure BB funds, or $232.2 million, is distributed directly to cities in Alameda County to fund the planning, construction and maintenance of bicycle and pedestrian projects that work towards completing their Bicycle and Pedestrian Master Plans. Funds are provided monthly to the cities in Alameda County based on their population. The City of Fremont's allocation for the 2019 fiscal year is projected to amount to $614,594.60.

- Two percent of Measure BB funds, or $154.8 million, is distributed by Alameda CTC to fund bicycle and pedestrian projects that, among other objectives, improve coordination between jurisdictions and provide bicycle/pedestrian infrastructure that connect priority developments.

- Measure BB has set aside approximately $120 million for Dumbarton Corridor Area Transportation Improvements (TEP ID 21). Projects located within the cities of Fremont, Newark and Union City that improve local streets and bicycle and pedestrian infrastructure are eligible.

Regional Measure 3 (RM 3) – Regional Measure 3 raises toll on the region's state-owned toll bridges to generate nearly $4.5 billion for highway and transit improvements within toll bridge corridors and approach routes. $150 million dollars is allocated for the San Francisco Bay Trail and Safe Routes to Transit which would include bicycle and pedestrian facilities. The goal for RM 3 is to reduce traffic congestion, promote multimodal transportation options throughout the San Francisco Bay Area's state-owned toll bridge corridors. The Project would be an ideal candidate for RM 3 funding as it will provide a vital connection between Bay Trail located west of I-880 and the new Warm Springs BART Station located east of I-880.

Transportation Fund for Clean Air Program (TFCA) – The TFCA is administered by the Bay Area Air Quality Management District (BAAQMD) and generates revenue from the $4 surcharge on vehicles registered within the San Francisco Bay Area to fund projects that reduce vehicle emissions. Eligible projects must achieve reductions in motor vehicle pollutants which include bicycle facilities projects, among other projects.

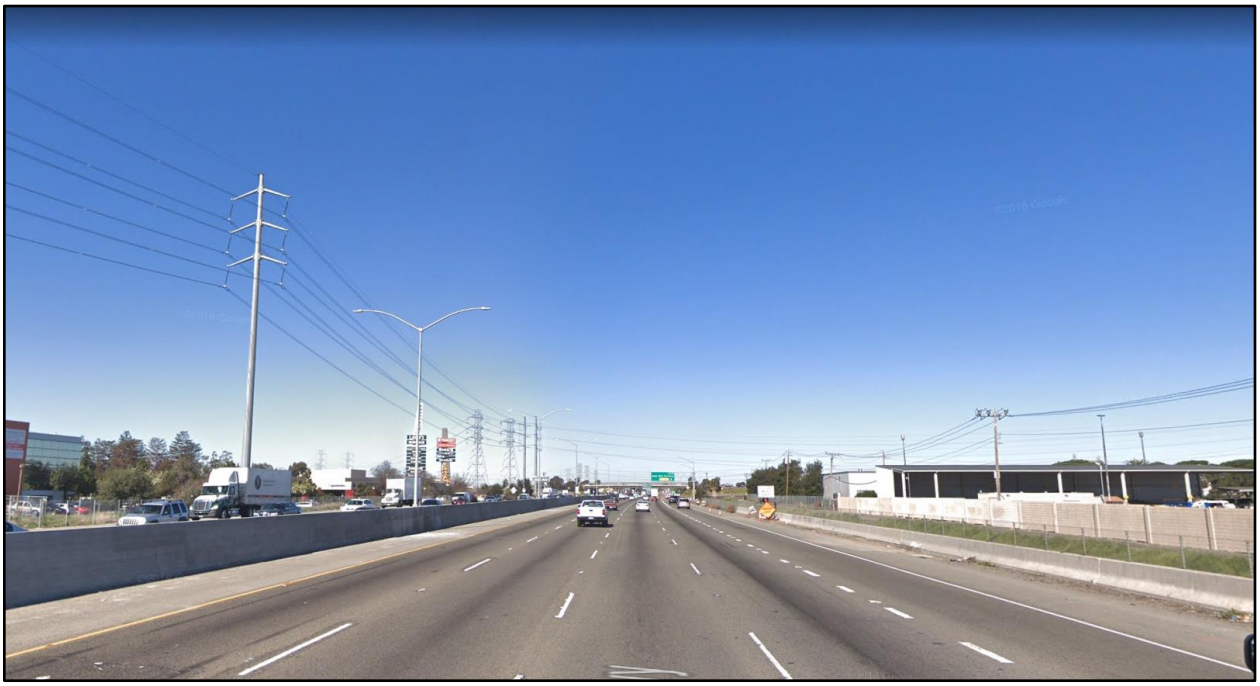
The program allocates sixty percent of the funds to eligible programs and projects through the Regional Fund grant program and the remaining forty percent of the funds are allocated through the County Program Manager Fund and are awarded by the Congestion Management Agencies to eligible programs and projects.

Alameda County Vehicle Registration Fee Program (VRF) – The Vehicle Registration Fee Program was approved in 2010 and will generate $10.7 million per year by means of a $10 per year vehicle registration fee. VRF funds are direct local distribution funds distributed by ACTC among the four planning areas in the County. The goal of the program is to sustain the transportation network, and reduce traffic congestion and vehicle emission within the County. Sixty percent of the funds is allocated to the Local Road Improvement and Repair Program, twenty five percent is allocated to the Transit for Congestion Relief Program, ten percent is allocated to the Local Transportation Technology Program, and five percent is allocated to the Pedestrian and Bicyclist Access and Safety Program.

VIII. APPENDICES

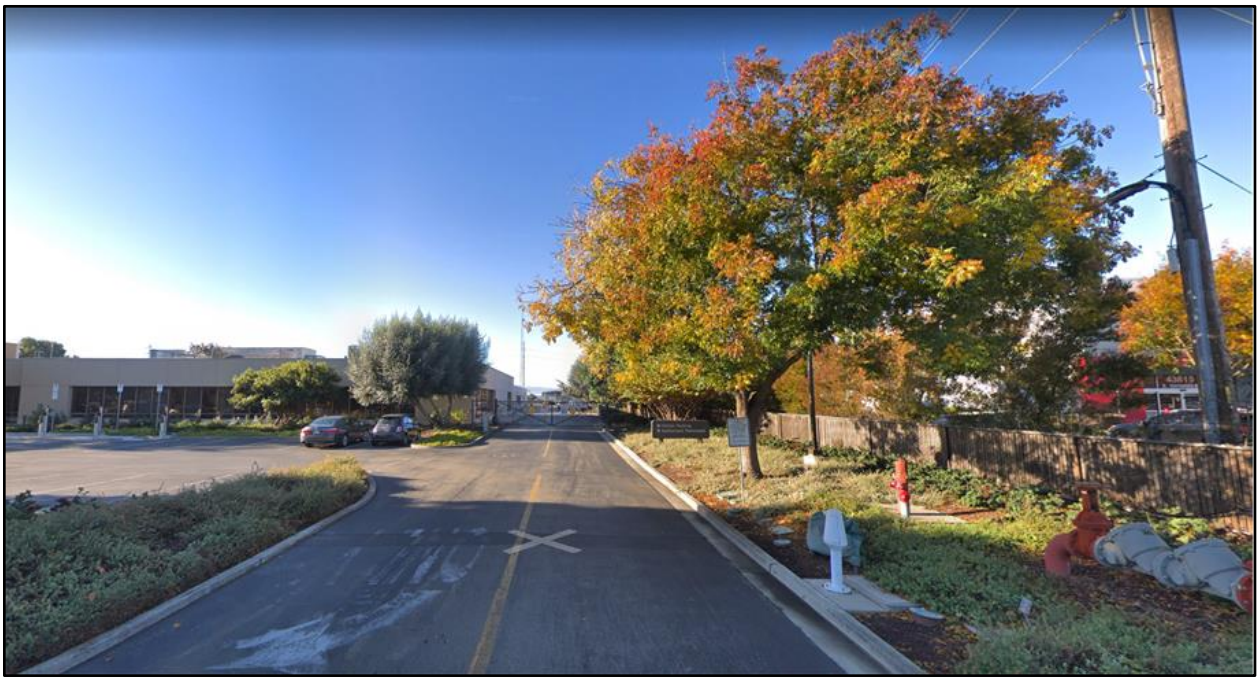
VIII.A. ADDITIONAL REFERENCE PHOTOS

View on I-880 South



View on I-880 North

View on I-880 North Looking East



View Southwest from Entrance to Alameda County Water District

VIII.B. PROJECT COST ESTIMATE

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Project Cost Estimate Summary

Project Sponsor: City Of Fremont DATE: 12/17/2018
Project Name: I-880 Bike & Pedestrian Trail Project (Christy St. to S. Grimmer Blvd.) REV:
Project location and brief description:

The I-880 Bike & Pedestrian Trail Project (Project) will provide cyclists and pedestrians with a safer way to cross over I-880 and avoid the busy freeway interchange at Auto Mall Parkway. On the east side of I-880 , the Project will link to the Class IV separated bikeways proposed for Grimmer Boulevard and connect to the Warm Springs BART Station. On the west side of I-880, the Project will terminate adjacent to the Pacific Commons Shopping Center, and link to the bike and pedestrian network proposed in the Fremont Technology Business Center to connect to the Bay Trail. Project components consist of a new, iconic bicycle and pedestrian bridge over I-880, and new bike/ped facilities on Hannover Place and Brandin Court on the east and west sides of the freeway, respectively.

TYPE OF ESTIMATE: Preliminary
PREPARED BY: BKF/SGA/COWI

SUMMARY OF PROJECT OUTLAY COSTS

I. ROADWAY..... }	ETCC	$ 24,054,967
II. STRUCTURES..... }		
III. RIGHT OF WAY.....		$ 5,358,100
IV. CONCEPTUAL ENGINEERING STUDIES.....		$ 640,804
V. ENVIRONMENTAL STUDIES.....		$ 640,804
VI. DESIGN ENGINEERING.....		$ 2,776,816
VII. DESIGN SERVICES DURING CONSTRUCTION.....		$ 1,495,209
VIII. CONSTRUCTION STAKING.....		$ 534,003
IX. CONSTRUCTION MANAGEMENT.....		$ 2,776,816
X. RISK BASED ALLOWANCES.....		$ 4,103,002
DIRECT PROJECT COSTS (Sum of ETCC and sections III through X)		$ 42,380,520
XI. AGENCY MANAGEMENT.....		$ 2,990,417
TOTAL PROJECT COSTS		$ 45,370,937

880				
Phase	***Direct Cost***	***Risk Factors***	***Agency Costs***	***Total***
Scoping/Planning	$ -	$ -	$ -	$ -
Preliminary Engineering/Environmental Studies	$ 1,281,607	$ 779,570.47	$ 508,371	$ 2,569,549
Final Design (PS&E)	$ 2,776,816	$ 164,120.10	$ 1,076,550	$ 4,017,486
Right of Way Capital	$ 5,358,100	$ -	$ -	$ 5,358,100
Right of Way Support	$ -	$ -	$ -	$ -
Utility Relocation and Protection	$ -	$ -	$ -	$ -
Construction Capital	$ 24,054,967	$ 3,159,311.91	$ -	$ 27,214,278
Construction Support	$ 4,806,027	$ -	$ 1,405,496	$ 6,211,523
TOTALS	$ 38,277,517	$ 4,103,002	$ 2,990,417	**$ $45,370,937**

Project Cost Estimate Summary, Sections I through XI

SPONSOR: City Of Fremont DATE: 10/29/2018
PROJECT: I-880 Bike & Pedestrian Trail Project (Christy St. to S. Grimmer Blvd.) REV:

		UNIT	ALLOWANCE				
I. ROADWAY							
I.1	Total Earthwork	LS	N/A	$ 418,300.00	$ 418,300.00		
I.2	Total Pavement Structural Section	LS	N/A	$ 839,400.00	$ 839,400.00		
I.3	Total Drainage	LS	N/A	$ 600,000.00	$ 600,000.00		
I.4	Total Specialty Items	LS	N/A	$ 2,659,000.00	$ 2,659,000.00		
I.5	Total Traffic Items	LS	N/A	$ 340,000.00	$ 340,000.00		
I.6	Total Planting and Irrigation	LS	N/A	$ 340,000.00	$ 340,000.00		
I.7	Total Roadside Management	LS	N/A	$ 49,800.00	$ 49,800.00		
I.8	Minor Items (5-10% of total costs of items I.1 thru I.7)	LS	10%	--	$ 524,650.00		
I.9	Roadway Mobilization (10% of total cost of items I.1 thru I.8)	LS	10%	--	$ 577,115.00		
I.10	Roadway Additions						
	Supplemental Work (5-10% of total cost of items I.1 thru I.8)	LS	10%	--	$ 577,115.00		
	Supplemental Contingency (5-20% of total cost of items I.1 thru I.8)	LS	20%	--	$ 1,154,230.00		
	TOTAL FOR SECTION I. ROADWAY				$ 8,079,610.00		
II. STRUCTURES							
	STRUCTURE TYPE	UNIT	TOTAL AREA				
II.1a	Arch Structure over I-880	SF	4644	$ 1,253.02	$ 5,819,011.70		
II.1b	Bridge Approach Viaducts to Arch Structure	SF	8134	$ 476.13	$ 3,872,838.03		
II.1c	MSE Walls to Apprach Viaducts	SF	3617	$ 166.13	$ 600,928.65	$	10,292,778.38
II.2a	Cabled-Stayed Structure over I-880	SF	6966	$ 963.94	$ 6,714,817.55		
II.2b	Bridge Approach Viaducts to Cabled-Stayed Structure	SF	5812	$ 486.06	$ 2,825,002.35		
II.2c	MSE Walls to Apprach Viaducts	SF	3617	$ 176.06	$ 636,858.48	$	10,176,678.38
		UNIT	ALLOWANCE				
	Design Contingency (35% of total cost of items II.1a thru II.1c)	LS	30%	--	$ 3,087,833.51		
	TOTAL FOR SECTION II. STRUCTURES				$ 13,380,611.89		
TCC	TOTAL CONSTRUCTION COST (TCC) - SUM OF SECTION I. ROADWAY AND II. STRUCTURES					$	21,460,221.89
III. RIGHT OF WAY		UNIT	ALLOWANCE				
III.1	Partial Acquisitions	LS	N/A	$ 2,183,200.00		$	2,183,200.00
III.2	Aerial Easements	LS	N/A	$ 140,400.00		$	140,400.00
III.3	Temporary Construction Easements	LS	N/A	$ 3,034,500.00	$ -	$	3,034,500.00
	TOTAL FOR SECTION III. RIGHT OF WAY					$	5,358,100.00

ENGINEERING AND MANAGEMENT COSTS

Note: Depending on the project''s level of development, Sections IV through VI may not be applicable.

	ALLOWANCE			
IV. CONCEPTUAL ENGINEERING STUDIES	3.0%	$ 21,460,221.89		$ 643,806.66
V. ENVIRONMENTAL STUDIES	3.0%	$ 21,460,221.89		$ 643,806.66
VI. DESIGN ENGINEERING	13.0%	$ 21,460,221.89		$ 2,789,828.85
VII. DESIGN SERVICES DURING CONSTRUCTION (DSDC)	7.0%	$ 21,460,221.89		$ 1,502,215.53
VIII. CONSTRUCTION STAKING	2.5%	$ 21,460,221.89		$ 536,505.55
IX. CONSTRUCTION MANAGEMENT	13.0%	$ 21,460,221.89		$ 2,789,828.85
XI. AGENCY MANAGEMENT	14.0%	$ 21,460,221.89		$ 3,004,431.06

X. RISK BASED ALLOWANCES

	RISK CATEGORY		ALLOWANCE (APP. A)		
X.1	Utilities (sum sections I.2, III)	Low	10%	$ 6,197,500.00	$ 619,750.00
X.2	Geotechnical and/or Seismic (sum sections I.1 thru I.4, II)	Low	5%	$ 17,897,311.89	$ 894,865.59
X.3	Environmental (sections I.4, I.6, III, IV, V)	Low	10%	$ 9,644,713.31	$ 964,471.33
X.4	Site Access and Traffic Control (sum sections I.1, I.5, I.7, I.9, II)	Low	5%	$ 14,765,826.89	$ 738,291.34
X.5	Hazardous Materials (sum sections I.1 thru I.4, III)	Low	5%	$ 9,874,800.00	$ 493,740.00
X.6	Controversy and/or Environmental Justice (sum sections IV, V, VI)	Low	10%	$ 4,077,442.16	$ 407,744.22
X.7	Other issues (sponsor defined allowance and sections)		0%		
	TOTAL FOR SECTION X. RISK BASED ALLOWANCES				$ 4,118,862.49

ESCALATION

		VALUE		
1	Anticipated year to begin construction, N_{start}:	2023		
2	Estimated construction duration (in years)	2.5		
3	Number of years to midpoint of construction, N_{Δ}	6		
4	Annual Escalation Rate, AER (percentage)	2.0%		
5	Total Construction Cost (TCC)	$ 21,460,222		
6	Total Escalation	1.13		
	ESCALATED TOTAL CONSTRUCTION COST (ETCC)	$ 24,167,695		$ 24,167,695.40

To escale the TCC to midpoint of construction:

Total Escalation = $(1+AER)^{N_{\Delta}}$

where $N_{\Delta} = N_{mid} - N_{current}$

N_{mid} = duration/2 + N_{start}

ESCALATED TOTAL CONSTRUCTION COST (ETCC) = TCC x Total Escalation

Example: *Determine* N_{Δ}, number of years to midpoint of construction.

First: Determine the year that construction would be at a midpoint. Divide the estimated construction duration in half and add the anticipated year that construction will begin.

1	Anticipated year to begin construction	2023
2	Estimated construction duration	4

N_{mid} = 2.5/2 + 2023 = 2024

Second: The number of years to midpoint of construction equals the difference between the midpoint year of construction and the current year.

N_{Δ} = 2024 - 2018 = 6

TOTAL PROJECT COSTS = SUM OF ETCC AND SECTIONS III THROUGH X = $ 42,550,649.98

Project Cost Estimate Section I. Roadway, Subsections 1-7

SPONSOR: City Of Fremont DATE: 10/29/2018

PROJECT: I-880 Bike & Pedestrian Trail Project (Christy St. to S. Grimmer Blvd.) REV:

GROUP CODE	ITEM DESCRIPTION	UNIT	PRICE	QUANTITY	
01 EARTHWORK					
01	IMPORT BORROW	CY	$ 180.00	290	$ 52,200.00
01	REMOVE ASPHALT PAVING	SF	$ 7.00	14,300	$ 100,100.00
01	REMOVE CONCRETE (CURB, GUTTER, SIDEWALK, DRIVEWAY)	CY	$ 200.00	80	$ 16,000.00
01	CLEARING & GRUBBING	LS	$ 150,000.00	1	$ 150,000.00
01	DIFFERING SITE CONDITIONS	LS	$ 100,000.00	1	$ 100,000.00
	SUBTOTAL FOR ITEM 01 EARTHWORK				$ 418,300.00
02 PAVEMENT STRUCTURAL SECTION					
02	HOT MIX ASPHALT FOR AT-GRADE TRAIL	TON	$ 280.00	430	$ 120,400.00
02	AGGREGATE BASE (CLASS 2)	CY	$ 250.00	660	$ 165,000.00
02	CONCRETE (SIDEWALK, CURB AND GUTTER, CURB RAMPS, DRIVEWAYS)	CY	$ 1,800.00	130	$ 234,000.00
02	PARKING LOT RESURFACING (EAST AND WEST APPROACHES)	LS	$ 320,000.00	1	$ 320,000.00
					$ -
	SUBTOTAL FOR ITEM 02 PAVEMENT STRUCTURAL SECTION				$ 839,400.00
03 DRAINAGE					
03	DRAINAGE FOR AT-GRADE APPROACHES	LS	$ 600,000.00	1	$ 600,000.00
	SUBTOTAL FOR ITEM 03 DRAINAGE				$ 600,000.00
04 SPECIALTY ITEMS					
04	WATER POLLUTION CONTROL	LS	$ 65,000.00	1	$ 65,000.00
04	UTILITY RELOCATION (OVERHEAD ELECTRICAL & FIBER OPTIC TO UNDERGROUND AT EAST APPROACH)	LF	$ 1,800.00	930	$ 1,674,000.00
04	UTILITY MODIFICATIONS (EAST APPROACH)	LS	$ 100,000.00	1	$ 100,000.00
04	UTILITY MODIFICATIONS (WEST APPROACH)	LS	$ 350,000.00	1	$ 350,000.00
04	MODIFY EXISTING LIGHTING IN PRIVATE PROPERTIES	EA	$ 20,000.00	5	$ 100,000.00
04	MISC PROPERTY DEMOLITION	LS	$ 80,000.00	1	$ 80,000.00
04	INSTALL PATHWAY LIGHTING (AT GRADE APPROACHES)	LS	$ 140,000.00	1	$ 140,000.00
04	CONCRETE RETAINING WALL (WEST APPROACH)	LF	$ 1,000.00	150	$ 150,000.00
	SUBTOTAL FOR ITEM 04 SPECIALTY ITEMS				$ 2,659,000.00
05 TRAFFIC ITEMS					
05	SIGNING AND STRIPING	LS	$ 40,000.00	1	$ 40,000.00
05	TRAFFIC HANDLING (including bridge construction)	LS	$ 300,000.00	1	$ 300,000.00
	SUBTOTAL FOR ITEM 05 TRAFFIC ITEMS				$ 340,000.00

06 PLANTING AND IRRIGATION

06	LANDSCAPING IMPROVEMENTS	LS	$	200,000.00	1	$ 200,000.00
06	IRRIGATION MODIFICATIONS	LS	$	80,000.00	1	$ 80,000.00
06	TREE REMOVALS	EA	$	1,000.00	60	$ 60,000.00
			$	-		$ -
	SUBTOTAL FOR ITEM 06 PLANTING AND IRRIGATION					$ 340,000.00

07 ROADSIDE MANAGEMENT AND SAFETY SECTION

07	STREET SWEEPING	LS	$	15,000.00	1	$ 15,000.00
07	TEMPORARY FENCE (TYPE CL-6)	LF	$	10.00	2,280	$ 22,800.00
07	BOLLARDS	EA	$	3,000.00	4	$ 12,000.00
	SUBTOTAL FOR ITEM 07 ROADSIDE MANAGEMENT AND SAFETY SECTION					$ 49,800.00

TOTAL FOR SECTION I.1 THROUGH I.7 = $ 5,246,500.00

Project Cost Estimate Section II. Structures, Subsections 1-2

SPONSOR: City Of Fremont DATE: 10/29/2018

PROJECT: I-880 Bike & Pedestrian Trail Project (Christy St. to S. Grimmer Blvd.) REV:

GROUP CODE	ITEM DESCRIPTION	UNIT	PRICE	QUANTITY	
01 STRUCTURES (ARCH ALTERNATIVE)					
08	BRIDGE MAIN SPAN	SF	$ 1,100.00	4,644	$ 5,108,400.00
08	APPROACH VIADUCTS	SF	$ 400.00	8,134	$ 3,253,621.62
08	MSE WALLS	SF	$ 90.00	3,617	$ 325,556.76
08	RAILINGS	LF	$ 300.00	1,580	$ 474,000.00
08	THROW FENCE	LF	$ 650.00	376	$ 244,400.00
08	AESTHETIC LIGHTING	EA	$ 300,000.00	1	$ 300,000.00
08	FUNCTIONAL LIGHTING	LF	$ 300.00	1,956	$ 586,800.00
	SUBTOTAL FOR ITEM 01 STRUCTURES (ARCH ALTERNATIVE)				$ 10,292,778.38
02 STRUCTURES (CABLE STAY ALTERNATIVE)					
09	BRIDGE MAIN SPAN	SF	$ 850.00	6,966	$ 5,921,100.00
09	APPROACH VIADUCTS	SF	$ 400.00	5,812	$ 2,324,821.62
09	MSE WALLS	SF	$ 90.00	3,617	$ 325,556.76
09	RAILINGS	LF	$ 300.00	1,580	$ 474,000.00
09	THROW FENCE	LF	$ 650.00	376	$ 244,400.00
09	AESTHETIC LIGHTING	EA	$ 300,000.00	1	$ 300,000.00
09	FUNCTIONAL LIGHTING	LF	$ 300.00	1,956	$ 586,800.00
	SUBTOTAL FOR ITEM 02 STRUCTURES (CABLE STAY ALTERNATIVE)				$ 10,176,678.38

Project Cost Estimate Section III. Right of Way, Subsections 1-3

SPONSOR: City Of Fremont DATE: 10/29/2018

PROJECT: I-880 Bike & Pedestrian Trail Project (Christy St. to S. Grimmer Blvd.) REV:

GROUP CODE	ITEM DESCRIPTION	UNIT	PRICE	QUANTITY	
01 PARTIAL ACQUISITIONS					
01	PARCEL NO. 525-1327-010	SF	$ 80.00	6,120	$ 489,600.00
01	PARCEL NO. 525-1327-011-01	SF	$ 80.00	5,700	$ 456,000.00
01	PARCEL NO. 525-1327-013-01	SF	$ 80.00	6,890	$ 551,200.00
01	PARCEL NO. 525-1330-014	SF	$ 80.00	8,580	$ 686,400.00
	SUBTOTAL FOR ITEM 01 PARCEL ACQUISITIONS				$ 2,183,200.00
02 AERIAL EASEMENTS					
02	PARCEL NO. 525-1325-013	SF	$ 60.00	1,260	$ 75,600.00
02	PARCEL NO. 525-1325-015	SF	$ 60.00	1,080	$ 64,800.00
	SUBTOTAL FOR ITEM 02 AERIAL EASEMENTS				$ 140,400.00
03 TEMPORARY CONSTRUCTION EASMENTS					
03	PARCEL NO. 525-1327-010	SF	$ 30.00	7,650	$ 229,500.00
03	PARCEL NO. 525-1327-011-01	SF	$ 30.00	7,120	$ 213,600.00
03	PARCEL NO. 525-1327-013-01	SF	$ 30.00	8,620	$ 258,600.00
03	PARCEL NO. 252-1325-013	SF	$ 30.00	12,570	$ 377,100.00
03	PARCEL NO. 525-1330-013	SF	$ 30.00	39,210	$ 1,176,300.00
03	PARCEL NO. 525-1330-014	SF	$ 30.00	13,240	$ 397,200.00
03	PARCEL NO. 525-1330-015	SF	$ 30.00	1,940	$ 58,200.00
03	PARCEL NO. 525-1325-015	SF	$ 30.00	10,800	$ 324,000.00
03					$ -
	SUBTOTAL FOR ITEM 03 TEMPORARY CONSTRUCTION EASEMENTS				$ 3,034,500.00
				TOTAL FOR SECTION I.1 THROUGH I.3 =	$ 5,358,100.00