



DATE: May 25, 2021

TO: Mayor and City Council

FROM: Director of Public Works

SUBJECT: I-880/Whipple Road and I-880/Industrial Pkwy Interchange Improvement Project: Select Preferred Alternative to Present to Alameda County Transportation Commission for the I-880/Whipple Rd and I-880/Industrial Pkwy Interchange Improvement Project

RECOMMENDATION

That Council reviews this report and selects a preferred project alternative to present to Alameda County Transportation Commission (Alameda CTC) to move forward to the environmental document project phase.

SUMMARY

The City in partnership with the Alameda CTC, the implementing agency, and the California Department of Transportation (Caltrans) propose to provide interchange improvements at the Whipple Road and Industrial Parkway interchanges along the I-880 corridor. The City of Union City has also participated in all project development meetings to date.

The project proposes improvements at the I-880/Whipple Road / Industrial Parkway Southwest Interchange (Whipple Road Interchange) and the I-880 /Industrial Parkway West (Industrial Parkway Interchange). The combined improvements are referred to as "The Project."

The Draft Environmental Document (DED) analyzed three Build Alternatives for The Project. The alternatives being evaluated are "Build Alternative 1," "Build Alternative 2," "Build Alternative 3," and the "No-Build Alternative." The differences between the Build Alternatives are related to the proposed southbound on-ramp and off-ramp configurations at the Industrial Parkway West interchange. Common to each build alternative are the proposed interchange improvements at the Whipple Road Interchange, for which there is one build alternative and one "Design Variation."

To determine the preferred alternative that will be identified in the Final Environmental Document and Project Report, the project team developed evaluation criteria based on metrics such as cost, right-of-way, operations, constructability, pedestrian and bicycle access, and safety.

Whipple Road Interchange

The Design Variation received the highest overall score and distinguishes itself primarily because of cost when compared to Alternative 1.

Industrial Parkway Interchange

Alternative 1 provides the highest operational improvement when compared to Alternatives 2 and 3; however, the improvement is insignificant. Alternative 2 has operational benefits, but cost, right-of-way risks, and potential safety concerns with the free-right movement lower the overall score for this alternative. Alternative 3 at the Industrial Pkwy Interchange has acceptable operational improvements and higher safety benefits, but slightly higher construction costs and construction staging impacts compared to the other alternatives.

Staff's recommended alternative is Build Alternative 3 with the Design Variation because it improves safety and is superior for non-motorized users because it eliminates one conflict point with an entrance ramp. Specifically, it eliminates a conflict with right-turning vehicles, and minimizes right-of-way impacts. All of which meet the purpose and need of the project.

Staff requests that Council selects preferred Build Alternative 3 for the Project based on the information provided within this report and the accompanying presentation.

BACKGROUND

The City, in partnership with the Alameda CTC, the implementing agency, and Caltrans propose to provide interchange improvements at the Whipple Road and Industrial Parkway interchanges along the I-880 corridor.

The purpose of the project is to:

- Modernize and improve current and expected future traffic operations at the I-880/Whipple Road-Industrial Parkway SW and I-880/Industrial Parkway West interchanges by improving accessibility and enhancing mobility.
- Complete the partial interchange at I-880/Industrial Parkway West.
- Improve bicycle and pedestrian access through both interchange locations.

The need for the project is:

- The Whipple Road interchange currently operates at or over capacity. The following are several key existing traffic operational issues identified at the Whipple Road Interchange:
 - There is currently more travel demand than available capacity for the northbound off-ramp approach, causing traffic queues to occasionally extend onto the freeway mainline.
 - Travel demand model forecasts from the City of Hayward's General Plan Update shows an expected growth at the ramp terminal intersections of approximately 30% during the morning (AM) and 12% during the evening (PM) peak hour by 2035 compared to 2015.

- As traffic volumes grow and capacity remains constrained at the Whipple Road interchange, regional traffic will divert to the surrounding local street network, such as Alvarado-Niles Road, Industrial Parkway and Union City Boulevard to avoid congestion. Diversion of regional traffic onto the local street network may result in the following quality of life impacts to the local community:
 - Increased delay experienced by local commuters
 - Potential economic loss for local businesses, trucking, and delivery companies
 - Reduced air quality resulting from increased vehicle miles travelled

The Industrial Parkway interchange currently lacks a northbound off-ramp, forcing regional traffic to exit at the Whipple Road interchange. Regional traffic then needs to rely on the local roadway network to access Industrial Parkway West. The lack of connection to Industrial Parkway West puts additional strain on the local roadways.

The pedestrian and bicycle facilities at each interchange are minimal, discontinuous, and generally do not meet Americans with Disability Act (ADA) standards. There are no dedicated bicycle facilities crossing I-880 through the project area, either on Whipple Road or Industrial Parkway West. The south side of Whipple Road does not have a sidewalk and the sidewalk on the north side is narrow. The Industrial Parkway Overcrossing has 5-foot-wide sidewalks on both sides, but no dedicated bike lanes are provided.

Alameda CTC initiated the Project Approval & Environmental Document (PA&ED) phase of Caltrans project development process after the completion of the Project Study Report-Project Development Support (PSR-PDS) in Fall 2018. As part of the PA&ED process, the project team conducted extensive public and stakeholder outreach. Stakeholder outreach targeted four key groups: Bicycle-Pedestrian; Local Agencies; Local Businesses, Auto Auction, and Trucking Industry; and Transit and Paratransit Agencies. Stakeholder meetings were held in August 2018 at the offices of each key stakeholder near the project site. In addition, a public open house was held on January 23, 2019. Further, a project presentation was made to the Council Infrastructure Committee on January 23, 2019¹ and two pop-up events were held in close proximity to the project site: Back-to-School Night at Treeview Elementary School in Hayward, and the Farmers' Market in Union City.

Design alternatives were last presented to Council on June 2, 2020. Since June 2020, the design team has worked on addressing feedback from Council, Caltrans, Bike East Bay, California Department of Fish and Wildlife (CDFW) and all other stakeholders in finalizing of the Draft Environmental Document (DED). The DED was open for public review and comment between January 20, 2021 and March 5, 2021.

A virtual meeting was held on February 18, 2021 where questions on the DED were brought forward by interested members of the public.

Union City staff have received support of this project from their Council and community members. Union City staff expressed support of City of Hayward staff's recommended alternative during the Project Development Team meeting on April 21, 2021.

¹ <https://hayward.legistar.com/MeetingDetail.aspx?ID=672133&GUID=235DE6B9-E212-4F4E-B88A-DEDA8EA1F5A3&Options=info|&Search=>

DISCUSSION

The alternatives being evaluated are “Build Alternative 1,” “Build Alternative 2,” “Build Alternative 3,” and the “No-Build Alternative.” The differences between the Build Alternatives are related to the proposed southbound on-ramp and off-ramp configurations at the Industrial Parkway interchange. Common to each build alternative are the proposed interchange improvements at the Whipple Road Interchange, for which there is one build alternative and one “Design Variation.” All proposed alternatives can be seen in Attachment II – Build Alternatives.

The table below shows a summary description of the proposed alternatives.

	<u>Industrial Pkwy Interchange</u>	<u>Whipple Rd Interchange - Alt 1</u>	<u>Whipple Rd Interchange - Design Variation</u>
Build Alternative 1	Reconfigure IC to L-1 (NB / SB) Configuration	Replace Existing UC / Widen Whipple Road Under I-880	Maintain Existing UC
Build Alternative 2	Reconfigure IC to L-1 (NB) / L-9 (SB) Hybrid		
Build Alternative 3	Reconfigure IC to L-1 (NB) / L-7 (SB) Hybrid		

Industrial Parkway Interchange

Build Alternative 1 would replace the existing I-880/Industrial Parkway West overcrossing and the northbound and southbound I-880 ramps to Industrial Parkway West would be reconfigured to a tight diamond (Type L-1) interchange. The following key improvements are proposed:

- Replace the I-880/Industrial Parkway West overcrossing with a structure to the north. The new structure would accommodate seven lanes of traffic and include dedicated bicycle facilities and sidewalks in both directions.
- Construct a new two-lane northbound I-880 diagonal off-ramp to Industrial Parkway West.
- Approximately 1,000 linear feet of Ward Creek would be realigned 75 feet east to accommodate the new northbound I-880 off-ramp to Industrial Parkway West.
- Convert the outside northbound 5th lane to a northbound auxiliary lane between the Whipple Road on-ramp and Industrial Parkway West off-ramp.
- Realign and widen the northbound I-880 diagonal on-ramp to connect with the new I-880/Industrial Parkway West overcrossing
- Construct a new southbound I-880 diagonal on-ramp from Industrial Parkway West
- Remove the existing southbound I-880 loop on-ramp

- New traffic signals at the ramp intersections with Industrial Parkway West

Build Alternative 2 is identical to Build Alternative 1, except for the proposed southbound I-880/Industrial Parkway West on-ramp and off-ramp configurations. Instead of demolishing the existing loop on-ramp to southbound I-880 and replacing it with a diagonal on-ramp, Build Alternative 2 would leave the existing loop on-ramp from westbound Industrial Parkway West in place and widen the ramp to add a High Occupancy Vehicle (HOV) preferential lane in addition to the one general purpose lane. Build Alternative 2 would add a new two-lane diagonal on-ramp to southbound I-880 that would diverge from eastbound Industrial Parkway West and merge with the southbound loop on-ramp after the meter point before the merge onto southbound I-880. The southbound diagonal on-ramp in Build Alternative 2 differs from the on-ramp proposed under Build Alternative 1 in terms of its footprint and the resulting intersection with Industrial Parkway West that is free flow versus a signalized intersection for Build Alternative 1.

Build Alternative 3 is identical to Build Alternatives 1 and 2, except for the proposed southbound I-880/Industrial Parkway West on-ramp and off-ramp configurations. Unlike Build Alternative 1 and 2, Build Alternative 3 would retain the existing loop on-ramp as the only southbound on-ramp at the Industrial Parkway West interchange. The southbound loop on-ramp would be realigned and widened to provide for three lanes. Compared to Build Alternative 1 and 2, the I-880/Industrial Parkway West southbound off-ramp would be realigned further west and widened to accommodate retention and widening of the existing southbound loop-on ramp while providing necessary lane improvements to accommodate southbound traffic.

Whipple Road Interchange

Alternative 1 would replace the three existing I-880/Whipple Road undercrossing structures with one undercrossing structure along mainline I-880, improve bicycle and pedestrian facilities through the interchange area along Whipple Road, and include improvements to the interchange and local road network including:

- Replace the current I-880 mainline structure, the northbound I-880 on-ramp structure, and the southbound I-880 off-ramp structure along mainline I-880 with one continuous undercrossing bridge structure. The new structure would increase the vertical clearance between I-880 and Whipple Road from 14 feet 10 inches (current) to a minimum of 15 feet.
- Widen Whipple Road between Industrial Parkway SW and Dyer Street from five lanes to eight lanes (three westbound lanes and five eastbound lanes).
- Construct dedicated bicycle facilities and pedestrian sidewalk along the north and south side of Whipple Road, between Dyer Street and Industrial Parkway SW.
- Add an auxiliary lane on northbound I-880 from the Alvarado Niles Road interchange to the Whipple Road-Industrial Parkway SW interchange.
- Realign and widen the northbound I-880 loop on-ramp from Whipple Road and “square-up” the ramp terminus intersection.

- Realign the northbound I-880 diagonal on-ramp to “square-up” the ramp terminus intersection.

The Design Variation would preserve the three existing Whipple Road Undercrossing structures along mainline I-880 and make improvements to the interchange and local roads within the constraints of the existing structures. This design variation includes the ramp and auxiliary lane modification improvements, in addition to the following improvements:

- Restripe Whipple Road near the Industrial Parkway SW Intersection to improve left turn movements from Eastbound Whipple Road to Northbound Industrial Parkway Southwest.
- Widen Industrial Parkway SW to 6 lanes north of the Whipple Road intersection.
- Widen the existing sidewalk along the north and south side of Whipple Road to accommodate pedestrians and bicycles on shared multi-use paths by constructing retaining walls at the existing undercrossing bridge abutments.

Alternative Comparisons

The project team developed evaluation criteria based on the following metrics: cost, right-of-way, operations, constructability, pedestrian and bicycle access, and safety.

Cost

The cost of each alternative for the Industrial Parkway Interchange is very similar with a difference of roughly \$2,000,000. Alternative 2 includes the additional diagonal on-ramp connecting Industrial Parkway to southbound I-880 which explains most of the additional expense. Right-of-way capital and support costs are highest for Alternative 3, given the impacts to the light industrial buildings in the northwest quadrant. Ultimately, Alternative 2 has the highest estimated total cost at \$243,318,266. The Design Variation retains the structures along I-880. Adopting the Design Variation would save \$28,000,000 total Project Cost for each alternative. Detailed cost estimates can be seen Attachment III – Cost Estimates.

Right-of-Way

Right-of-way for this project includes sliver takes from adjacent properties. However, the shipping center property located in the southwest quadrant of the Industrial Parkway Interchange is poses the most challenge. This property would be difficult to relocate and is highly sensitive. Alternative 1 would require relocation while Alternatives 2 and 3 require sliver takes with Alternative 3 having the least impact.

Traffic Operations

At each of the intersections listed for Whipple Road Interchange, the LOS for the No Build is F. For Whipple Road, both Alternative 1 and the Design Variation improve LOS at I-880 SB ramps/Dyer Street and Whipple Road, and I 880 NB Ramps & Whipple Road to D and E respectively, except for the PM Peak Hour where the Build LOS is E and D, respectively.

When comparing the LOS values for Alternative 1 against the design variation, the results are very similar. However, Alternative 1 does minimize overall vehicle delays on the AM and PM peak hours at the NB Whipple Road off-ramp intersection.

The Industrial Parkway Interchange Ramps are forecasted to be LOS F for the No Build but will improve to LOS C for each of the alternatives for the A.M. Peak Hour except Alternative 1 I 880 NB Ramps & Industrial Parkway LOS, which is forecasted to perform at LOS D for the A.M. Peak Hour. For the P.M. Peak Hour, LOS forecast is better with an LOS B for Alternative 2 at each of the I 880 SB Ramps/Industrial Parkway and the I-880 NB Ramps/Industrial Parkway and for Alternative 1 at the I 880 NB Ramps & Industrial Parkway.

When comparing overall vehicular delays, Alternative 2 provide the least delays in all scenarios. Alternatives 1 and 3 show similar overall delays; however, Alternative 3 is superior to Alternative 1. Detailed traffic operations data can be seen Attachment IV – Traffic Operations.

Constructability

Each of the three alternatives will require significant staging including detours and temporary signals and connections. In addition, nighttime closures will be required to complete ramp connections to the new structure. With the replacement of the undercrossing, there will have to be detours to demolish and construct the structure in stages. However, Alternative 2 will be less complex because the I-880 diagonal on-ramp will facilitate the stage construction. The construction of these two ramps will allow access to the southbound I-880 and therefore facilitating the rest of the *improvements*.

Alternative 3 is the most challenging to stage because of the reconstruction of the existing loop ramp. Extended closures of this ramp will be required to make the connection from the new ramp and the new overcrossing approach. Temporary detours may be put in place to facilitate the staging, but this will add cost to the project.

Pedestrian and Bicycle Access

The outreach effort and community input clearly indicated a need for bicycle and pedestrian improvements and was therefore included in the project purpose and need. For all three interchange alternative configurations at the Industrial Parkway interchange, Class I, Class II, or Class IV bike facilities can be accommodated. However, Alternative 3 is superior for non-motorized users because it eliminates one conflict point with an entrance ramp, specifically, it eliminates a conflict with right-turning vehicles. With this configuration, a Class I facility could be construction along in the eastbound direction with no conflicts with right turning vehicles. The westbound direction could be a Class II or Class IV facility.

Safety

By adding the new northbound off-ramp to Industrial Parkway West, including bike lanes and sidewalks, and squaring up ramp geometries, the safety conditions within the project limits will be improved with all three alternatives.

Alternative 3 offers enhanced safety conditions by eliminating a right turn conflict between vehicles and non-motorized users. From a highway safety perspective, Alternative 3 offers unique benefits. With the southbound loop configuration proposed, the merge-weave conflict point in Alternative 2 is eliminated. Also, the ramp entrance to mainline is further upstream when compared to other alternatives, creating the largest distance between the Whipple Road SB off-ramp, providing more distance for weaving maneuvers to occur between the interchanges.

The analysis of the evaluation criteria indicates that Alternative 3 at the Industrial Pkwy Interchange has higher safety benefits, but slightly higher construction costs and construction staging impacts compared to the other alternatives. Alternative 2 has operational benefits, but cost, right-of-way risks, and potential safety concerns with the free-right movement lower the overall score for this alternative. For the Whipple Road Interchange, the Design Variation received the highest overall score and distinguishes itself primarily because of cost. While Alternative 1 does provide superior operations when compared to the design variation, the improvement is insignificant.

Staff's recommended alternative is Build Alternative 3 with the Design Variation because it improves safety, is superior for non-motorized users because it eliminates 1 conflict point with an entrance ramp. Specifically, it eliminates a conflict with right-turning vehicles, and minimizes right-of-way impacts. All of which meet the Purpose and Need of the project.

ECONOMIC IMPACT

Both interchanges serve vital commercial and retail areas of the City. The Project would improve access and reduce congestion-related delays both on I-880 and local streets and address on-going concerns related to access to the local network. By improving access and reducing delay, the Project is expected to have positive impacts on local businesses and retail areas.

FISCAL IMPACT

The project is in preliminary engineering and cost estimates are preliminary. The project is currently not expected to have a fiscal impact on the City. The project utilizes Measure BB funding through Alameda CTC's Transportation Expenditure Plan. Preliminary cost estimates range from \$200 million to \$244 million. The Alameda CTC Transportation Expenditure Plan shows \$104 million in Measure BB funding as a line item for this project. Approximately \$11.25 million in Measure BB funds have been allocated for the pre-scoping, PID and PA&ED phase.

Based upon the range of project improvements being considered, there exists a short fall in funding. Funding sources to cover the shortfall have not been identified and will be determined prior to completion of construction documents and right-of-way acquisition process.

STRATEGIC ROADMAP

This agenda item supports the Strategic Priority of Improve Infrastructure. Specifically, this item relates to the implementation of the following projects(s):

Project 5, Part 5a: Maintain and Improve Pavement; Maintain Pavement Condition Index (PCI) at 70.

Project 8, Part 8a: Implement the Bike & Ped Master Plan; Add 2 miles of sidewalks per year.

Project 8, Part 8b: Implement the Bike & Ped Master Plan; Add 10 miles of bike lanes per year.

SUSTAINABILITY FEATURES

The Project will reduce regional traffic diversions to City streets and therefore reduce carbon and greenhouse gas emissions and vehicle miles travelled within the City. The Project will also fill gaps in the pedestrian and bicycle networks by improving bicycle facilities and sidewalks along both sides of the freeway at both interchanges and connect them to existing bicycle and pedestrian facilities. These improvements are consistent with the goals and objectives of the 2020 Bicycle and Pedestrian Master Plan.

PUBLIC CONTACT

At Council's direction, Alameda CTC and the City collaborated in a series of public outreach/community engagement activities. Those meetings included the following endeavors:

- Sep 26, 2018: Bike/Ped; Eden Bicycles, 3318 Village Drive, Castro Valley, CA 94546
- Sep 27, 2018: Local Agencies; City of Hayward Economic Development, Large Conference Room, 777 B Street, Hayward, CA 94541
- October 11, 2018: Local, Businesses, Auto Auction and Trucking Industry; Manheim San Francisco Bay, 29900 Auction Way, Hayward, CA 94544
- October 17, 2018: TRANSIT AND PARATRANSIT; Union City Transit, 34009 Alvarado-Niles Road, Union City, CA 94587
- September 20, 2018: POP-UP EVENT #1; Treeview Elementary School Back to School Night, Hayward, CA 94544
- September 27, 2018: POP-UP EVENT #2; Union City Farmers' Market, Union City 94587.

In addition, the Draft Environmental Document was made available for public review and comments between January 20, 2021 and March 5, 2021. Given the current limitations of holding large gatherings, a virtual public meeting was held on February 18, 2021.

NEXT STEPS

With Council's recommendation, the Project Development Team will select the preferred alternative in June 2021. Completion of the PA&ED is expected in Fall 2021. Depending on funding availability, design work is tentatively scheduled to begin in Fall 2021, with construction between Spring 2024 and completion by Spring 2027. To reestablish landscape features within the project area, a Highway Planting contract with a three (3) year plan establishment period will commence within one (1) year of the completion of the interchange improvements.

Prepared by: Jorge Simbaqueba, Senior Transportation Engineer

Recommended by: Alex Ameri, Director of Public Works

Approved by:



Kelly McAdoo, City Manager