Nexus Study
Pacheco
Area of Benefit

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Contra Costa County
Public Works Department

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Nexus Study
Pacheco Area of Benefit Program

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1. Introduction

1.1 Background and Purpose

The purpose of the Pacheco Area of Benefit (AOB) Program is to help fund improvements to the County's roadway, bicycle and pedestrian facilities needed to accommodate travel demand generated by new land development within the unincorporated portion of this AOB.

Contra Costa County has various methods for financing transportation improvements. One of the methods is the AOB Program. The AOB Program collects funds from new development in the unincorporated portion of the AOB to finance a portion of the transportation improvements associated with travel demand generated by that development. Fees are differentiated by type of development in relationship to their relative impacts on the transportation system. The intent of the AOB program is to provide an equitable means of ensuring that future development contributes its proportional share of the cost of transportation improvements, so that the County's General Plan Circulation policies and quality of life can be maintained.

One of the objectives of the County General Plan is to relate new development directly to the provision of community facilities necessary to serve that new development. Accordingly, there is a mechanism in place to provide the funding for the infrastructure necessary to serve that development. The Pacheco AOB Program is a fee mechanism providing funds to construct transportation improvements to serve new residential, commercial and industrial development within the AOB. Requiring that all new development pay a transportation improvement fee ensures that each new development participates fairly in the cost of improving the transportation system. This Program applies only to new development within the unincorporated portions of Pacheco.

Each new development project or expansion of an existing development will generate new travel demand for all travel modes. Where the existing transportation system is inadequate to meet future needs based on new development, improvements are required to meet the new demand. The purpose of this development program is to determine improvements that will ultimately be needed to serve estimated future development and to require the developers to pay a fee to fund its proportional share of the cost of these improvements. Because the fee is based on the relative impact of new development on the transportation system and the costs of the necessary improvements to mitigate this impact, the fee amount is roughly proportional to the development impact. This Nexus Study establishes this impact and mitigation relationship to new development and the basis for the fee amount.

1.2 Pacheco AOB

On June 17, 1986, the Board of Supervisors passed a resolution (County Resolution 86/376 & Ordinance No. 86-52) forming the Pacheco Area of Benefit (then known as the West Concord (Pacheco) Area of Benefit). At that time, there were many vacant parcels in the AOB with potential for residential development, and the existing transportation system was inadequate to handle the additional traffic generated from the projected development. Over the past 35 years, Area of Benefit fees have helped pay for ongoing improvements to Concord Avenue, Pacheco Boulevard, Center Avenue, and Marsh Drive.

The purpose of this Nexus Study is to provide the technical basis for a comprehensive update of the Pacheco AOB Program. The focus of the updated program is to support a multi-modal transportation system in the Pacheco AOB that serves the expected future demand based on changes in regional and local land use projections, planned and approved development projects, and associated changes to capital improvements and updated cost estimates.

This report documents the analytical approach for determining the nexus between the fees, the local impact created by new development in the Pacheco AOB, and the transportation improvements to be funded with fee revenues to mitigate transportation impacts. A traffic and fair-share cost analysis was conducted to equitably distribute the costs of the necessary improvements to developments that cause the impacts, in accordance with the provisions of the Mitigation Fee Act.[1] The most up-to-date versions of the analytical tools and techniques available at the time this study commenced were used to ensure the highest level of consistency with current standards.

The Pacheco AOB has not experienced big changes in the area's circulation needs and development potential in recent years. Yet, new development and expansion of existing development continues, which will generate new travel demand across all travel modes (auto, transit, bicycle, and pedestrian). Also, infrastructure deficiencies are limiting the ability within the AOB to serve future needs of all travel modes. These demand changes and infrastructure deficiencies have prompted the current revision to the Pacheco AOB program, resulting in a new project list and fee schedule.

The Pacheco AOB boundary, which was established in 1986, is shown in **Figure 1.** The area within the boundary includes the unincorporated area of Pacheco, as well as Buchanan Field Airport.

2. Evaluation of Current AOB Program

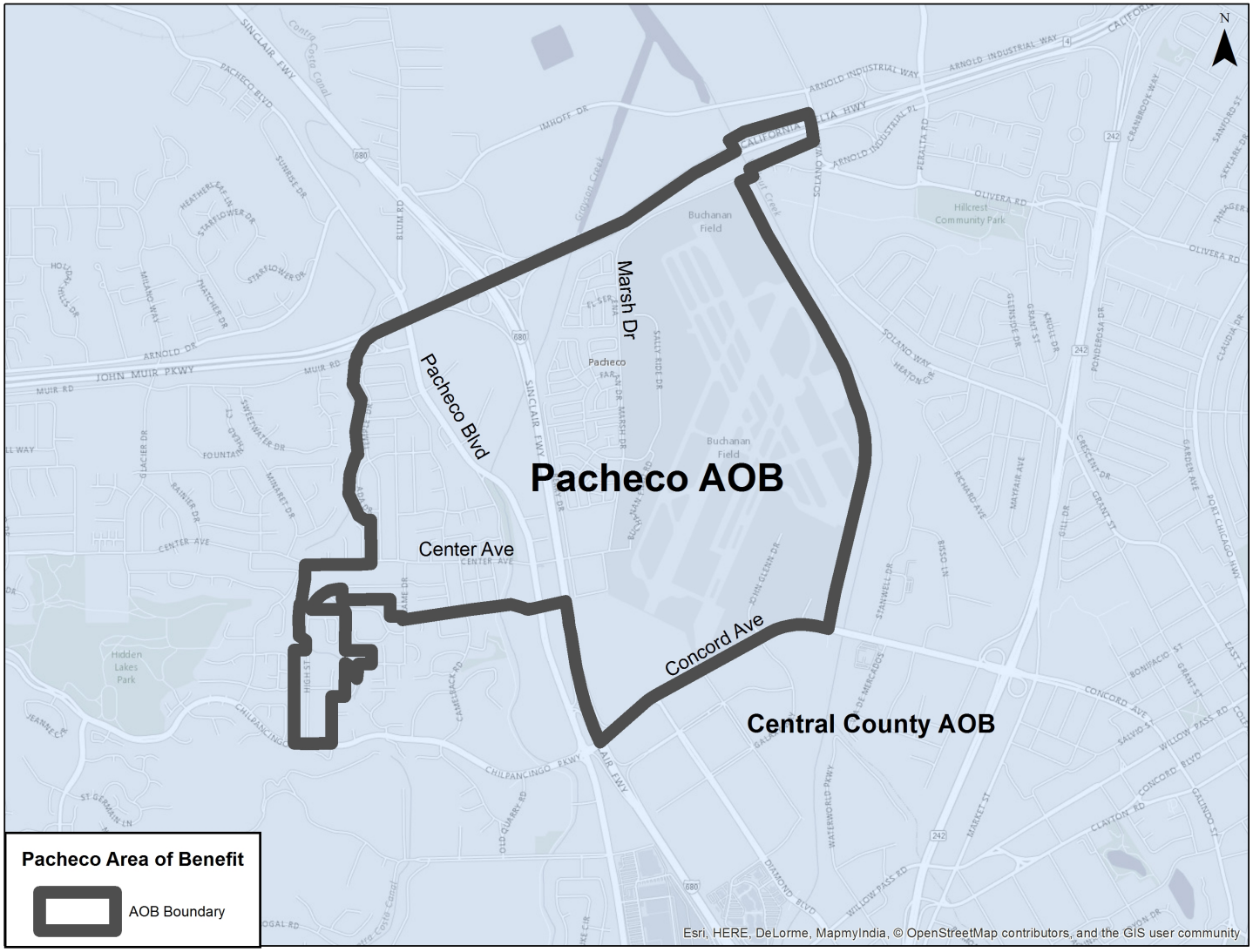
The current Pacheco AOB Program was last updated in 1986. The current Pacheco AOB Program project list, shown in **Table 1**, includes safety and capacity improvements on four major arterials and a roadway extension. The total cost of the projects was estimated in 1986 to be about $6.9 million, with about $2.9 million to be funded by the AOB Program. The 2016 update of the Pacheco AOB Program has conducted a new needs analysis to update this project list along with new project cost estimates, which are described in **Sections 3, 4 and 5** of this Nexus Study.

Table 1: 1986 Project List for Pacheco AOB Program

	Roadway	Project Description	Project Cost to be Funded by AOB (1986 Dollars)	Estimated Project Cost (1986 Dollars)
1	Concord Avenue, Pacheco Boulevard, Center Avenue, Marsh Drive	Safety and capacity improvements	$2,939,000	$6,896,000
2	Diamond Boulevard	Extend Diamond Boulevard from Concord Avenue to Center Avenue		
		Total	**$2,939,000**	**$6,896,000**
Source: Development Program Report for Pacheco AOB, 1986				

[1] California Government Code, Sections 66000 through 66026.

Figure 1: Pacheco AOB Boundary



The current AOB Program uses "peak hour factors" to allocate trips by land use types based on Institute of Transportation Engineers (ITE) trip generation rate estimates for the evening (PM) peak hour based on the amount of traffic coming in and out of development's entrances. This Nexus Study refines this approach to reflect current best practices for impact fee programs when estimating the impact of new development on the transportation system. The use of simple trip generation rates tends to over-estimate the traffic impact of retail development on the overall roadway system. The average length of trips coming in and out of a new residential development is longer than trips coming in and out of a retail development. Furthermore, studies show that about 25 to 50 percent of the trips that will go in and out of a new retail development will already be traveling on roadways near that development, and thus are "pass-by" or "diverted" trips, not "new trips" to the surrounding roadway system. All of the trips going to and from a new residential unit are "new trips".

To integrate best practices for the current fees, the updated Pacheco AOB Program will instead use estimates of vehicle-miles of travel (VMT) added by new development. The VMT rates multiply the trip rate for a land use type by its average trip length and also use percentages to reflect "pass-by trips" versus "new trips." The calculation of fee rates based on this methodology is discussed in **Section 4** of this study.

3. Determination of AOB Development Potential

The transportation needs analysis and allocation of improvement costs for the Pacheco AOB is based on the countywide travel demand model developed by the Contra Costa Transportation Agency (CCTA) using a 2040 horizon year. The calculation of fees is based on the following general land use categories and associated measurement units that are used as a basis for the land use inputs in CCTA's travel demand model:

Land Use Type	Units
Single-Family	Dwelling units (DU)
Multi-Family	Dwelling units (DU)
Commercial/Retail	Jobs
Office	Jobs
Industrial	Jobs

CCTA's latest land use estimates of existing conditions and 2040 forecasts of new development by Traffic Analysis Zones (TAZs) in the AOB were summarized and reviewed with County Planning staff. Based on that review, adjustments were made and the resulting growth estimate for the AOB is summarized in **Table 2**. The table converts the estimates of jobs for nonresidential land uses used by the CCTA's model to estimates of building square feet used in the AOB fee program.

Table 2: Summary of Estimated Development 2010 to 2040 Growth

Land Use Category	Units	Due per Unit	Units			DUEs		
			2010	2040	Growth	2010	2040	Growth
Single-Family	DU	1.00	762	1,003	241	762	1,003	241
Multi-family	DU	0.61	854	882	28	524	541	17
Total	**DU**		**1,616**	**1,885**	**269**	**1,286**	**1,544**	**258**
Retail	Jobs		671	785	114			
Office	Jobs		860	1,024	164			
Industrial	Jobs		169	210	41			
Total	**Jobs**		**1,700**	**2,019**	**319**			
Retail	1,000 sq. ft.	0.00142	336	393	57	477	557	81
Office	1,000 sq. ft.	0.00115	237	282	45	272	324	52
Industrial	1,000 sq. ft.	0.00091	101	126	25	92	115	22
Total	**1,000 sq. ft.**		**674**	**801**	**127**	**841**	**995**	**155**
					Total:	**2,127**	**2,540**	**413**
					Proportion of DUE Growth to the Total DUEs in 2040:	413/2,540 = **0.1627**		

Source: DKS Associates, 2016

Notes:

Land Use	Assumed Square Feet per Job
Retail	500
Office	275
Industrial	600

4. Transportation Needs Analysis

Defining the transportation needs and project list for the Pacheco AOB involved the following steps:

1. Collecting traffic count data (intersections and roadway segments)
2. Identifying existing deficiencies, including level of service (LOS) and roadway standard deficiencies
3. Preparing travel demand forecasts of 2040 conditions
4. Conducting transportation system analysis to identify improvement needs
5. Identifying pedestrian and bicycle facilities/improvements
6. Preparing a draft AOB project list
7. Presenting analysis and findings at a neighborhood outreach meeting to obtain input on the draft project list
8. Finalizing project list

The key technical tasks used to determine the transportation improvements needed to accommodate new development within the AOB and select a project list are described in **Sections 4.1 through 4.6**.

4.1 Traffic Count Data

Traffic count data is required to determine existing deficiencies and to support the future year roadway/intersection needs analysis. Traffic counts were collected on weekdays in May 2013 on major roadway segments and intersections within the AOB (see **Tables 3 and 4**).

4.2 Existing Deficiencies

The technical methods and standards used to identify the impact of new development on roadway and intersection vehicular congestion are described in **Section 4.4** below. The same methods and standards are used to identify existing deficiencies in the roadway network. When an existing deficiency is identified, it affects how the cost of an improvement is allocated to new development. New development can only fund its fair share of the total cost of an improvement not associated with correcting an existing deficiency (see **Section 6**).

4.3 Travel Demand Forecasting

The transportation needs analysis and allocation of improvement costs were based on CCTA's travel demand model using a 2040 horizon year and the development assumptions summarized in **Table 2**. Before its use, the output of the CCTA travel demand model for existing conditions was compared to existing traffic count data in the AOB area and some adjustments were made to the model within and near the AOB to improve its accuracy and detail.

4.4 Roadway/Intersection Analysis

This section describes the analysis used to determine the roadway improvements needed to accommodate new development within the AOB.

Signal Warrants

Traffic signal warrants are a series of standards that provide guidelines for determining if a traffic signal is appropriate. A planning-level signal warrant analysis based on traffic volumes was conducted to determine if the traffic signals would be warranted at study intersections under existing and future (2040) conditions. If one or more of the signal warrants are met, signalization of the intersection may be recommended.

Level of Service

The needs analysis for the Pacheco AOB Program used the level of service (LOS) standards in the County's General Plan, which has different standards for different area types, based on land use types. In the Pacheco Area, which is composed of different area types ranging from "suburban" to "central business district (CBD)", acceptable LOS varies between low-LOS D or better to low-LOS E or better. LOS is calculated separately for intersections and roadway segments. Intersection LOS analysis is based on average vehicle delay and analysis methods recommended by the Highway Capacity Manual (Transportation Research Board, 2010). Roadway segment LOS analysis compares traffic levels with roadway segment capacities determined by the number of travel lanes and the roadway type and bases its standard on volume-to-capacity ratio (v/c ratio). The intersection and roadway segment LOS analyses for the AM and PM peak hours are summarized in **Tables 3 and 4** as well as **Figures 2 and 3.**

Table 3: Intersection Level of Service Analysis

	Intersection	Area Type[1]	Control Type	LOS Standard[1]	Delay Standard (seconds)	2013				2040			
						AM		PM		AM		PM	
						Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1	Diamond Blvd & Concord Ave	CBD	Signal	low E	67.5	3.9	A	3.1	A	3.5	A	3	A
2	Meridian Park Blvd & Concord Ave	CBD	Signal	low E	67.5	19.3	B	21.3	C	19.2	B	21.4	C
3	John Glenn Dr & Concord Ave	CBD	Signal	low E	67.5	17.6	B	39.4	D	19.2	B	24.4	C
4	Imhoff Dr & Solano Way	Suburban	Signal	low D	45.0	21.1	C	30.9	C	31.5	C	40.5	D
5	Muir Rd & Pacheco Blvd	Suburban	Signal	low D	45.0	29.4	C	37.8	D	42.2	D	**54.7**	**D**
6	Pacheco Blvd & Center St	Urban	Signal	high D	55.0	29.7	C	40.1	D	**59.7**	**E**	45	D

[1]Contra Costa County General Plan, 2005
LOS highlighted in gray does not meet County standards

Source: DKS Associates, 2016

Table 4: Roadway Segment Level of Service Analysis

Roadway	Location	Area Type[1]	LOS Standard[1]	V/C Ratio Standard[1]	2013				2040			
					AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
					V/C	LOS Range	V/C	LOS Range	V/C	LOS Range	V/C	LOS Range
Muir Rd	West of Pacheco Blvd	Suburban	Low D	≤ 0.85	0.65	A-C	0.61	A-C	0.73	A-C	0.64	A-C
Pacheco Blvd	North of Muir Rd	Suburban	Low D	≤ 0.85	0.29	A-C	0.46	A-C	0.37	A-C	0.45	A-C
	South of Muir Rd	Suburban	Low D	≤ 0.85	0.37	A-C	0.51	A-C	0.46	A-C	0.57	A-C
	South of Center St	Urban	High D	≤ 0.90	0.46	A-C	0.61	A-C	0.60	A-C	0.64	A-C
Marsh Dr	Between Aria Way and Mobile Dr	Suburban	Low D	≤ 0.85	0.37	A-C	0.57	A-C	0.33	A-C	0.27	A-C
	North of Buchanan Field Rd	Suburban	Low D	≤ 0.85	0.38	A-C	0.64	A-C	0.33	A-C	0.29	A-C
Center Ave	West of Pacheco Blvd	Urban	High D	≤ 0.90	0.49	A-C	0.53	A-C	0.26	A-C	0.32	A-C
	East of Pacheco Blvd	Urban	High D	≤ 0.90	0.39	A-C	0.53	A-C	0.30	A-C	0.24	A-C
Concord Ave	West of Diamond Blvd	CBD	Low E	≤ 0.95	0.68	A-C	0.88	D-E	0.74	A-C	0.92	D-E
	Between Diamond Blvd and Meridan Park Blvd	CBD	Low E	≤ 0.95	0.66	A-C	0.74	A-C	0.70	A-C	0.73	A-C
	Between Meridian Park Blvd and John Glenn Dr	CBD	Low E	≤ 0.95	0.66	A-C	0.71	A-C	0.70	A-C	0.71	A-C
	East of John Glenn Dr	CBD	Low E	≤ 0.95	0.67	A-C	0.74	A-C	0.71	A-C	0.64	A-C
Diamond Blvd	South of Concord Ave	CBD	Low E	≤ 0.95	0.15	A-C	0.20	A-C	0.16	A-C	0.23	A-C
Meridian Park Blvd	South of Concord Ave	CBD	Low E	≤ 0.95	0.16	A-C	0.18	A-C	0.16	A-C	0.20	A-C
John Glenn Dr	North of Concord Ave	CBD	Low E	≤ 0.95	0.07	A-C	0.08	A-C	0.09	A-C	0.09	A-C
	South of Concord Ave	CBD	Low E	≤ 0.95	0.15	A-C	0.27	A-C	0.16	A-C	0.14	A-C
Imhoff Dr	West of Solano Way	Suburban	Low D	≤ 0.85	0.10	A-C	0.20	A-C	0.18	A-C	0.11	A-C
	East of Solano Way	Suburban	Low D	≤ 0.85	0.15	A-C	0.18	A-C	0.33	A-C	0.23	A-C
Solano Way	South of Imhoff Dr	Suburban	Low D	≤ 0.85	0.11	A-C	0.13	A-C	0.21	A-C	0.12	A-C

[1]Contra Costa County General Plan, 2005
Source: DKS Associates, 2016

Figure 2: Existing Levels of Service in Pacheco AOB

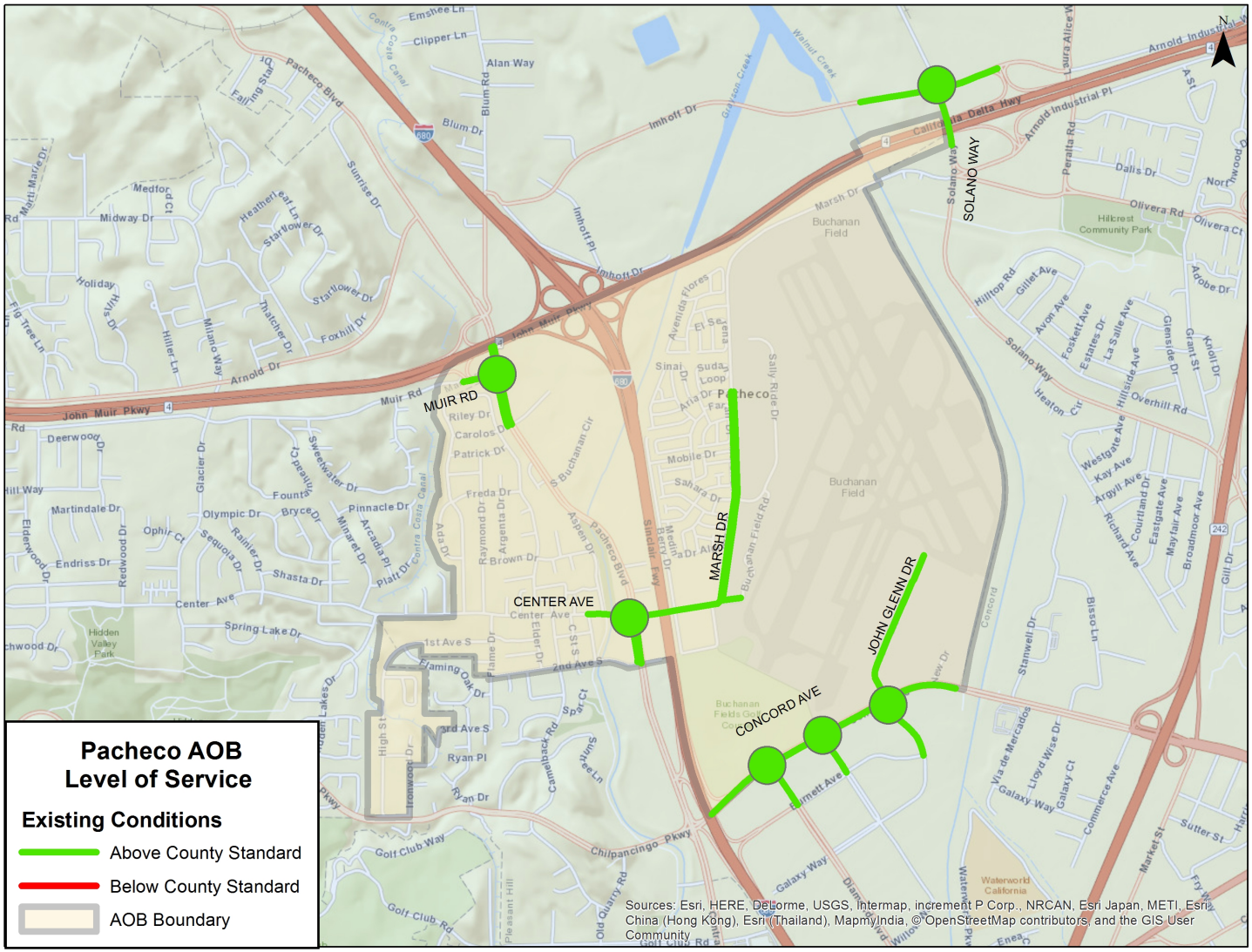
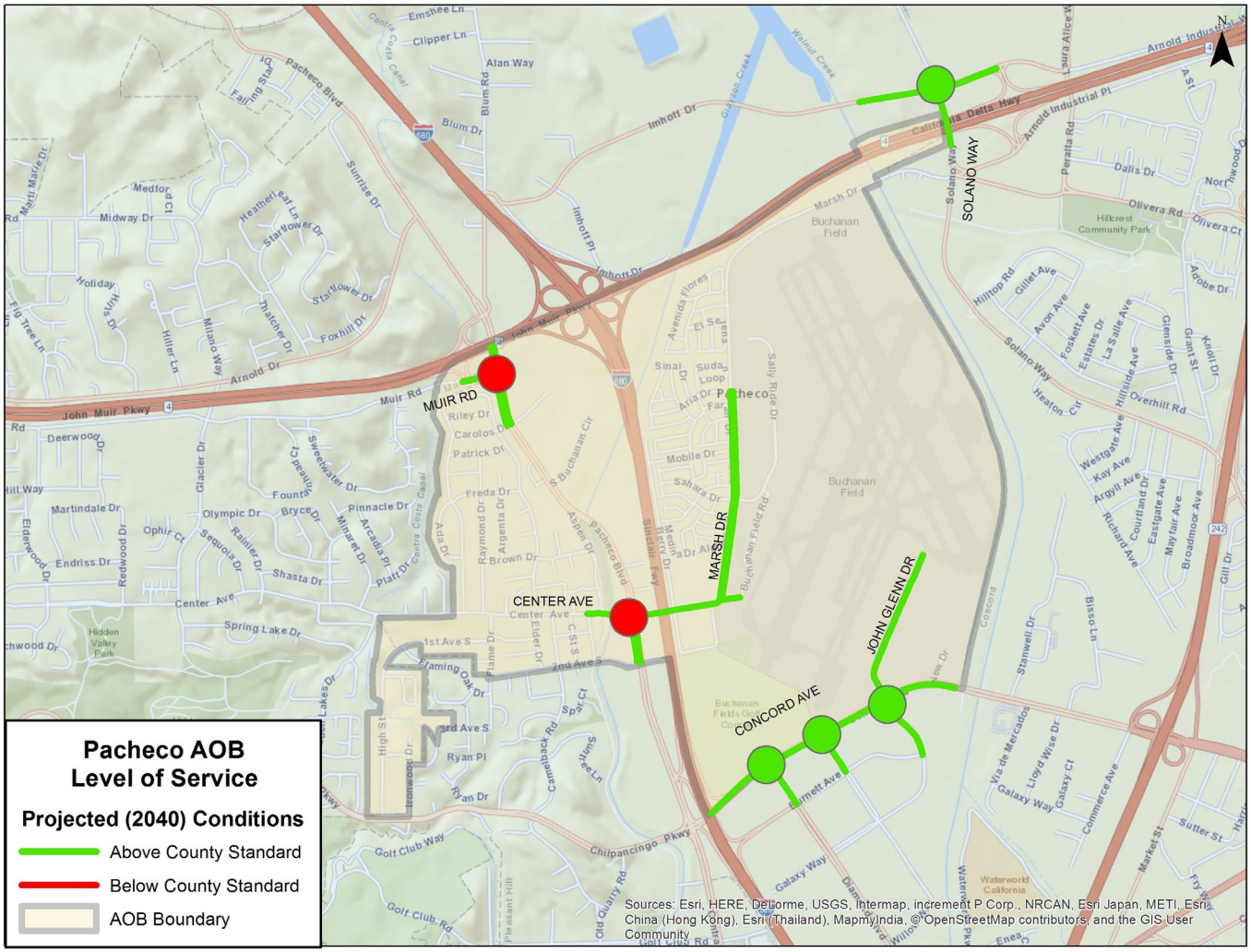


Figure 3: 2040 Levels of Service in Pacheco AOB



Roadway Pavement Width Standards

Many of the County's two-lane roads within the Pacheco AOB will not have LOS problems but volume increases on narrow roads within the AOB is a safety issue that should be addressed in the AOB Program. Providing adequate roadway width including adding shoulders to two-lane roadways would increase safety as traffic increases and shoulders would provide a bicycle lane/walkway. FHWA recommends that rural roadways that carry more than 2,000 average daily vehicles (ADT) should have 5 to 6-foot wide shoulders. Contra Costa County's standards for two-lane roadways, shown in **Table 5**, call for shoulders on roadways with more than 1,000 ADT.

Table 5: Two Lane Rural/Lane Widths Contra Costa Public Works Department Standard Plans

Average Daily Traffic	Shoulder Backing (ft.)	Shoulder (ft.)	Lane (ft.)
< 250	0	1	11
< 400	2	1	11
< 1,000	2	4	12
< 3,000	2	5	12
< 6,000	2	6	12
> 6,000	0	8	12
Source: Contra Costa County Public Works Department Standard Plans, 2008			

4.5 Pedestrian and Bicycle Infrastructure Needs Analysis

New development also necessitates changes to roadway design that are not geared toward increases in vehicle capacity or improvements to vehicle safety. New development generates non-vehicular trips (pedestrian and bicycle) that will need to be accommodated by improving roadway shoulders to provide bicycle lanes and pedestrian walkways. On roadways that require improvements based on the roadway/intersection analysis described above, pedestrian and bicycle facilities would be implemented to the extent that they are represented in the County's current standard roadway designs.

Pedestrian and bicycle infrastructure improvements may also reduce vehicular congestion by shifting trips from autos to these alternative modes. The County's General Plan has goals to encourage the use of transit (Goal 5-I) and to reduce single-occupant auto commuting and encourage walking and bicycling (Goal 5-J). The General Plan also has policies to encourage all efforts to develop alternative transportation systems to reduce peak period traffic congestion (Policy 5-23) and to encourage the use of alternative forms of transportation, such as pedestrian, bicycle and transit modes which will help minimize automobile congestion and air pollution.

4.6 Selected Project List

A draft list of capital improvements to the transportation system in the AOB Programs was prepared. The project list is focused on the major transportation system in the County's General Plan (see Sections 5.6 and 5.8 of the General Plan, which describe the major roadway, transit, bikeway and pedestrian facilities). This list generally consists of the following types of projects:

1. Installing traffic signals at intersections that meet warrants for their installation
2. Adding turn lanes at intersections to meet LOS standards
3. Adding lanes on roadway segments to meet LOS standards
4. Upgrading roadways to be consistent with County design standards
5. Making improvements to improve safety for all modes of transportation
6. Providing appropriate pedestrian and bicyclist facility improvements

The draft project list was prepared to meet the needs defined above and then was presented at a public meeting for neighborhood residents. Based on comments from the residents, the drafted list was revised. The revised list is shown in **Table 6** and **Figures 4.**

5. Improvement Cost Estimates

Planning-level cost estimates were prepared based on conceptual designs for each project (**Table 6**) and the design could change based on future studies. The estimates for roadway segment improvements are based on implementing the County's design standards (for roadway cross-sections) by facility type and number of lanes. The cost estimates reflect the known issues, such as creek crossings, relocation of major known utilities, etc. Typical excavation quantities were used except in areas where significant excavation was identified. The cost estimating does not have geotechnical or survey support information. Thus unknowns (such as rock excavation, removal of unsuitable material, relocation of unseen utilities, etc.) were assumed in a project contingency percentage.

The cost estimates include the following appropriate percentages that are key elements in the implementation of each project:

- Project contingencies,
- Survey, design and construction management,
- Environmental mitigation,
- Right-of-way acquisition

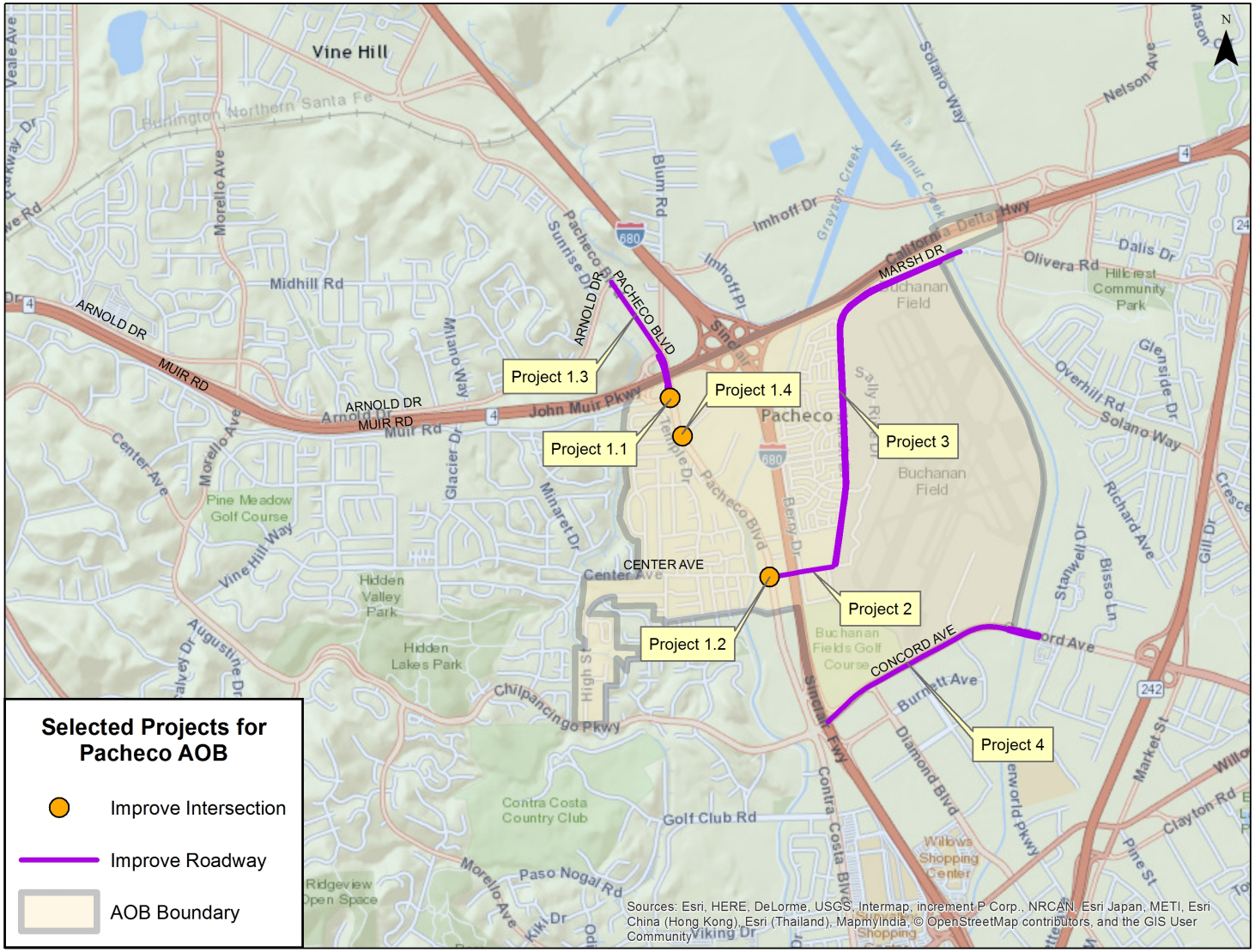
The cost estimates for each of the selected projects for funding by the Pacheco AOB, shown in **Table 6** are provided in **Appendix A**.

Table 6: Selected Pacheco AOB Project List

Roadway	Project	Location	Recommended Project	Basis for Recommendation
Pacheco Boulevard	1.1	Intersection with Muir Road	Improve intersection operations to include a second eastbound right turn lane	Contra Costa County General Plan LOS Standards
	1.2*	Intersection with Center Avenue	Improve intersection operations to include a second eastbound right turn lane	
	1.3	Arnold Drive to Muir Road	Provide continuous multimodal infrastructure from Arnold Drive to Muir Road	CCTA's Comprehensive Transportation Project List
	1.4	Intersection with Buchanan Circle	Safety improvements at the Carolos Drive/N Buchanan Circle intersection to include signalization	Community Input
Center Avenue	2*	Pacheco Boulevard to Marsh Drive	Provide continuous multimodal infrastructure improvements from Pacheco Blvd to Marsh Drive	Countywide Bicycle and Pedestrian Plan
Marsh Drive	3	Center Avenue to Walnut Creek Bridge	Provide continuous multimodal infrastructure improvements from Center Avenue to the Walnut Creek Bridge	Countywide Bicycle and Pedestrian Plan
Concord Avenue	4	I-680 Off-ramp to Iron Horse Trail	Provide continuous multimodal improvements from I-680 to the Iron Horse Trail	Countywide Bicycle and Pedestrian Plan
Source: DKS Associates, 2016				

*Carryover projects: these projects will be combined with the other projects in Table 6 to determine the overall AOB fee. The existing fund balance will be used for carryover projects only and total allocation for each project is determined by Table 9.

Figure 4: Selected Projects for Pacheco AOB Program



6. Basis for Allocating Costs to New Development

This section describes the process used to allocate transportation improvement costs to new development in the AOB and the estimated transportation mitigation fees that result from this analysis.

The allocation of costs of roadway and intersection improvements in an AOB is based on answering the following questions:

- Is there an existing deficiency?
- Would the improvement project be required without new development?
- Who uses the roadway/intersection?

The allocation of costs is based on estimates of who will use the roadways or intersections that require improvements based on 2040 traffic forecasts. The allocation of improvement costs is based on the percentage of trips on the roadways and intersections from 1) existing development, 2) new development in the AOB and 3) new development outside the AOB (referred to as through traffic). An increase in through traffic represents an increase in trips that both start and end outside the AOB and pass through the AOB. **Table 7** summarizes the estimated percentages for the selected AOB project list. The methods used to allocate costs are described below.

6.1 Improvements to Meet County LOS Standards

Costs for improvements needed to address LOS impacts (either intersection or roadway LOS) are allocated to new development in the Pacheco AOB using one of three methods:

1. For a roadway segment or intersection that is currently operating at an acceptable LOS but would operate at an unacceptable LOS in 2040, the entire cost of improving that segment or intersection is allocated to new development if there is no increase in through traffic. This method did not apply to any improvements on the Pacheco project list.
2. If the current and future LOS conditions are the same as described under #1 but there is an increase in the amount of through traffic then new development within the AOB is not allocated the full cost of the improvement. Instead, new development within the AOB is allocated a percentage of costs based on the number of new trips on a roadway segment or intersection that have either their origin or destination within the AOB divided by the total amount of trips from new development. The remaining percent of costs, reflecting new trips that have neither their origin nor destination in the AOB, are not allocated to development in the AOB. This method was used to allocate costs for improvements on Pacheco Boulevard at the intersections with Muir Road and Center Avenue.
3. For a roadway segment or intersection that currently does not meet the County's LOS standards (an existing deficiency), the percent cost share for new development in the AOB is equal to the number of new trips on a roadway segment that have either their origin or destination within the AOB divided by all trips on that roadway, both from existing and new development (including through traffic). This method was used to allocate costs for improvements on Pacheco Boulevard at the intersection with Buchanan Circle.

6.2 Widening to Meet Roadway Pavement Width Standards

The allocation of costs to improve the roadway to County cross-section standards is similar to the allocation of cost for improvements to address LOS impacts. For a roadway segment that is currently below the traffic volume thresholds shown in **Table 5** but would exceed those thresholds by 2040, the entire cost of improving that segment to the County standard will be allocated to new development. If that roadway has an increase in the amount of through traffic then new development within the AOB is allocated a percentage of costs based on the number of trips associated with new development within the AOB. This method did not apply to any improvements on the Pacheco project list.

Table 7: Cost Allocation Analysis for Pacheco AOB Project List - Level of Service Improvements

Roadway	Location	Recommended Project	Existing Conditions		2040 Conditions		Percent of 2040 Volume				Percent of 2013 to 2040 Growth		Percent Allocated to AOB
			Peak Period Volume[4]	LOS	Peak Period Volume[4]	LOS[1]	Existing Local	Local Growth	Existing Through	Through Growth	Local	Through	
Pacheco Boulevard	Intersection with Muir Road	Improve intersection operations to include a second EBR lane	7,322	Low D[2]	8,255	High D[2]	19.73	3.83	68.98	7.46	33.00	67.00	33.00
	Intersection with Center Avenue[3]	Improve intersection operations to include a second EBR lane	8,125	C[3]	9,357	E[3]	36.74	7.14	50.10	6.02	54.24	45.76	54.24
	Intersection with Buchanan Circle	Safety improvements to include signalization	687	F	1,995	F	29.47	5.73	4.96	59.84	8.74	91.26	5.73

[1] LOS without improvement
[2] PM peak hour LOS
[3] AM peak hour LOS
[4] 4-hour peak period
Source: DKS Associates, 2016

For a roadway segment that currently has a traffic volume above the volume thresholds in **Table 5** and does not meet the County's applicable cross-section standards (an existing deficiency), the percent cost share for new development in the AOB is equal to the number of new trips on a roadway segment that have either their origin or destination within the AOB divided by all trips on that roadway, both from existing and new development. This method did not apply to any improvements on the Pacheco project list.

6.3 Bikeway and Walkway Improvements

Bicycle and pedestrian improvements in the Pacheco AOB are localized improvements serving trips that have their origin or destination within the AOB rather than through trips. Lack of bicycle and pedestrian facilities is an existing deficiency in the AOB; hence the improvements will benefit both existing and future residents. Since the improvements will serve the existing and future bicycle and pedestrian demand, the cost of those projects allocated to new development will equal the new development's proportional share of the total future development (existing plus new development) in the Pacheco AOB (measured in Dwelling Unit Equivalents). This method was used to allocate costs for improvements described in **Table 8**.

Table 8: Cost Allocation Analysis for Pacheco AOB Project List – Pedestrian and Bicycle Infrastructure Improvements

Roadway	Location	Project	Recommended Project	Percent Allocated to AOB*
Pacheco Boulevard	Arnold Drive to Muir Road	1.3	Complete Streets Improvements	16.27
Center Avenue	Pacheco Boulevard to Marsh Drive	2	Complete Streets Improvements	16.27
Marsh Drive	Center Avenue to Walnut Creek Bridge	3	Complete Streets Improvements	16.27
Concord Avenue	I-680 Off-ramp to Iron Horse Trail	4	Complete Streets Improvements	16.27

*Percentage allocation to AOB is the proportion of DUE growth to the total DUEs in 2040 (see Table 2).
Source: DKS Associates, 2016

6.4 Summary of Cost Allocation

Table 9 summarizes the allocation of the cost for each of the selected projects that will have funding from the Pacheco AOB Program.

The County has various methods for funding transportation improvements within the Pacheco AOB boundary. While the Pacheco AOB fee program is one method, additional funding will need to be obtained from Federal, State and local grants (such as ATP, SRTS, BTA, etc.) or other sources to fund the cost of the improvements not allocated to new development in the Pacheco AOB. On an on-going basis, the County will assess the unconstructed projects on the AOB project list and determine project priorities. As enough funding becomes available from all sources to implement "priority" projects, the County will implement those projects.

Table 9: Allocation of Project Costs to Pacheco AOB Program

Roadway	Project	Location	Recommended Project	Estimated Total Cost	Percent Allocated to AOB	Cost Allocated to AOB
Pacheco Boulevard	1.1	Intersection with Muir Road	Improve intersection operations to include a second eastbound right turn lane	$851,000	33.00	$280,830
	1.2	Intersection with Center Avenue	Improve intersection operations to include a second eastbound right turn lane	$7,911,000	54.24	$4,291,249
	1.3	Arnold Drive to Muir Road	Provide continuous multimodal infrastructure from Arnold Drive to Muir Road	$1,770,000	16.27	$287,987
	1.4	Intersection with Buchanan Circle	Safety improvements at the Carolos Drive/N Buchanan Circle intersection to include signalization	$1,094,000	5.73	$62,654
Center Avenue	2	Pacheco Boulevard to Marsh Drive	Provide continuous multimodal infrastructure improvements from Pacheco Blvd to Marsh Drive	$1,367,000	16.27	$222,417
Marsh Drive	3	Center Avenue to Walnut Creek Bridge	Provide continuous multimodal infrastructure improvements from Center Avenue to the Walnut Creek Bridge	$4,879,000	16.27	$793,835
Concord Avenue	4	I-680 Off-ramp to Iron Horse Trail	Provide continuous multimodal improvements from I-680 to the Iron Horse Trail	$5,346,000	16.27	$869,817
			Total	**$23,218,000**	**29.50**	**$6,808,789**

Source: DKS Associates, 2021

7. Method for Calculating Fees

Land Use Categories

The calculation of fees for the AOB Program Updates will be based on the general land use categories that can be derived for all areas of the county from CCTA's travel demand model. These general categories are the following:

Land Use Type	Units
Single-Family	Dwelling units (DU)
Multi-Family	Dwelling units (DU)
Commercial/Retail	1,000 Sq. Ft.
Office	1,000 Sq. Ft
Industrial	1,000 Sq. Ft

Dwelling Unit Equivalents

In the allocation of costs to various types of development, each development type will be assigned a "dwelling unit equivalent" or "DUE" rate. DUEs are numerical measures of how the trip-making characteristics of a land use compare to a typical single-family residential unit, which is assigned a DUE of 1. Land uses that have greater overall traffic impacts than a typical single-family residential unit are assigned values greater than 1, while land uses with lower overall traffic impacts than a typical single-family residential unit are assigned DUE values less than 1.

DUEs are developed by comparing both the trip generation and trip length characteristics of various land uses to those same rates for a typical single-family residential unit. Since roadway needs are primarily based on traffic flows and conditions during the PM peak hour on an average weekday, the DUEs reflect the relative trip generation for the peak hour. Also considered in the calculation of DUEs are "percent new" trips since some of the vehicles attracted to non-residential uses would have been on the roadway system regardless of the presence of the traffic generated by the new development. Average trip lengths for the remaining "primary" trips generated by a development are then utilized to better reflect overall impact of longer trips on the County's roadway system.

The DUE rates will thus be based on estimates of the average vehicle-miles of travel (VMT) generated during the PM peak hour for each general land use type. The DUE rates that will be used to estimate the Pacheco AOB fees are shown in **Table 10**.

Table 10: Dwelling Unit Equivalent (DUE) Rates

Land Use Category	PM Peak Hour Trip Rate per Unit[1]	Unit	Trip Length (miles)[2]	Percent New trips[2]	VMT per Unit	DUE per Unit
Singe Family	1.01	Dwelling Unit	5.0	100	5.050	1.00
Multi-Family	0.62		5.0	100	3.100	0.61
Retail	4.10	Square Feet	2.3	76	7.167	0.00142
Office	1.40		4.5	92	5.796	0.00115
Industrial	0.98		5.1	92	4.598	0.00091

[1] ITE Trip Generation 7th Edition
[2] ITE Journal, May 1992
Source: DKS Associates, 2016

Fee Calculation

The cost per DUE (i.e. cost for a typical single-family dwelling unit) is calculated by dividing the total costs allocated to new development in the AOB (methods described above) by the total growth in DUEs in the AOB by 2040 (see **Table 11**). The cost for each land use type is then based on its DUE rate. The nexus-based fee rates are shown in **Table 12**.

Table 11: Growth in DUEs

Land Use Category	Unit	Growth in Units[1]	DUE per Unit	Growth in DUEs
Singe Family	Dwelling Unit	241	1.00	241
Multi-Family		28	0.61	17
Retail	Square Feet	57,000	0.00142	81
Office		45,100	0.00115	52
Industrial		24,600	0.00091	22
			Total	**413**

[1] See Table 2: "Summary of Estimated Development 2010 to 2040 Growth"

Source: DKS Associates, 2016

Table 12: Nexus-Based Fee Rates

Cost of Improvements Allocated to AOB Growth	$6,808,789
AOB Fund Balance (as of December 2020)	$446,000
Unfunded Costs of Improvements Allocated to AOB Growth	$6,362,789
Growth in Dwelling Unit Equivalents (DUEs)	413
Cost per DUE	$15,406

Land Use	Units	Fee per Unit[1]
Single-Family	Dwelling Unit	$15,406
Multi-Family	Dwelling Unit	$9,398
Retail	Square Foot	$21.88
Office	Square Foot	$17.72
Industrial	Square Foot	$14.02

[1]Fee per Unit = (Cost per DUE) x (DUE per Unit)
Source: DKS Associates, 2021

8. Nexus Analysis

A nexus analysis has been prepared on the Pacheco AOB Program in accordance with the procedural guidelines established in AB1600 which is codified in California Government Section 66000 *et seq*. These code sections set forth the procedural requirements for establishing and collecting development impact fees. These procedures require that "a reasonable relationship or nexus must exist between a

governmental exaction and the purpose of the condition." Specifically, each local agency imposing a fee must:

- Identify the purpose of the fee;
- Identify how the fee is to be used;
- Determine how a reasonable relationship exists between the fee's use and the type of development project on which the fee is imposed;
- Determine how a reasonable relationship exists between the need for the public facility and the type of development project on which the fee is imposed; and,
- Demonstrate a reasonable relationship between the amount of the fee and the cost of public facility or portion of the public facility attributable to the development on which the fee is imposed.

8.1 Purpose of Fee

The purpose of the Pacheco AOB Program is to fund improvements to the County's major roadway, bicycle and pedestrian facilities needed to accommodate travel demand generated by new land development in the unincorporated portion of Pacheco AOB over the next 20 years (through 2040).

The Pacheco AOB Program will help meet the County's General Plan policies including maintenance of adequate levels of service and safety for roadway facilities. New development in the unincorporated portions of the Pacheco AOB will increase the demand for all modes of travel (including walking, biking, transit, automobile and truck/goods movement) and thus the need for improvements to transportation facilities. The Pacheco AOB Program will help fund transportation facilities necessary to accommodate new residential and non-residential development in the unincorporated portions of the Pacheco AOB.

8.2 Use of Fees

The fees from new development in the Pacheco AOB Program will be used to fund additions and improvements to the transportation system needed to accommodate future travel demand resulting from residential and non-residential development within the Pacheco AOB. The Pacheco AOB Program will help fund improvements to roadways (include the widening or extensions of arterial and collector roadways, intersection improvements and provision of shoulders and complete streets) bikeways and walkways plus fee program administration costs. The transportation improvements wholly or partially funded by the program are described in more detail in **Section 4.**

8.3 Relationship between use of Fees and Type of Development

Fee revenues generated by the Pacheco AOB Program will be used to develop the transportation improvements described in **Section 4**. All of these improvements increase the capacity, improve the safety, or facilitate the use of alternative modes (transit, bicycle, pedestrian) on those segments of the transportation system affected by new development. The results of the transportation modeling analysis summarized in this report demonstrate that these improvements either mitigate impacts from and/or provide benefits to new development.

8.4 Relationship between Need for Facility and Type of Development

The projected residential and non-residential development described in **Section 3** will add to the incremental need for transportation facilities by increasing the amount of demand on the transportation system. The transportation analysis presented in **Section 4** demonstrates that improvements are required

to minimize the negative impact on current levels of service caused by new development and/or accommodate the increased need for alternative transportation modes (transit, bicycle, pedestrian).

8.5 Relationship between Amount of Fees and the Cost of Facility Attributed to Development upon which Fee is Imposed

The basis for allocating improvement costs to development is described in **Section 6**. Construction of necessary transportation improvements will directly serve residential and non-residential development within the unincorporated portions of the AOB and will directly benefit development in those areas.

New development within the AOB is allocated a percentage of costs based the number of new trips on a roadway segment or intersection that have either their origin or destination within the AOB divided by the total amount of trips from new development. The remaining percent of costs, reflecting new trips that have neither their origin nor destination in the AOB (through trips), are not allocated to development in the AOB. For facilities that have an "existing deficiency", the cost of the improvement that is allocated to the Pacheco AOB Program is modified to account for that deficiency.

The fee that a developer pays for a new residential unit or commercial building varies by the type of development based on its impact on the transportation system. Each development type is assigned a "dwelling unit equivalent" or "DUE" rate based on its estimated vehicle-miles of travel (VMT) per unit of development.

DUE's are numerical measures of how the trip-making characteristics of a land use compare to a single-family residential unit. DUE's were developed by comparing both the trip generation and trip length characteristics of various land uses to those of the single-family residential units. Since roadway needs are primarily based on traffic flows and conditions during the peak hour on an average weekday, the DUE's reflect the relative trip generation for the peak hour. Also considered in the calculation of DUE's are "percent new" trips. The DUE rates were thus based on estimates of the average vehicle-miles of travel (VMT) generated during the peak hour for each general land use type.

8.6 Current AOB Fund Balance

As of December 2020, the Pacheco AOB had a fund balance of approximately $446,000 (see **Table 12**). The fees collected were intended to fund the five projects on the list developed in 1986 (see **Table 1**). Four of the projects on that 1986 list (on Concord Avenue, Pacheco Boulevard, Center Avenue and Marsh Drive) have not been completed and are included on the new project list. The Diamond Boulevard extension project from the 1986 list is considered no longer viable and has been dropped from the list. The costs allocated to the Pacheco AOB for the projects on Concord Avenue, Pacheco Boulevard, Center Avenue and Marsh Drive (see **Table 9**) exceed the current fund balance of the Pacheco AOB. Thus, the current fund balance will be used to fund the carryover projects from the 1986 list that are recommended to be included on the new approved project list.

Appendix A

Cost Estimates for Selected Projects in Pacheco AOB

Summary of Costs for Selected Projects Pacheco Area of Benefit			
1	**Pacheco Boulevard Intersection and Safety Improvements**		**$ 11,626,000**
1.1	Pacheco Boulevard and Muir Road Intersection Improvements	$ 851,000	
1.2	Pacheco Boulevard and Center Avenue Intersection Improvements	$ 7,911,000	
1.3	Pacheco Boulevard Complete Street Improvements	$ 1,770,000	
1.4	Pacheco Boulevard and Carolos Dr/N Buchanan Cir Intersection Improvemer	$ 1,094,000	
2	**Center Avenue Complete Street Improvements**		**$ 1,367,000**
3	**Marsh Drive Complete Street Improvements**		**$ 4,879,000**
4	**Concord Avenue Complete Street Improvements**		**$ 5,346,000**
		Total	**$ 23,218,000**

Pacheco-West Concord Area of Benefit

Engineers Estimate Summary

Project	Roadway	Location	Item Description	Total Cost
1.1	Pacheco Boulevard	Pacheco Boulevard and Muir Road	Improve intersection operations to include a second eastbound right turn lane	$851,000
1.2	Pacheco Boulevard	Pacheco Boulevard and Center Avenue	Improve intersection operations to include a second eastbound right turn lane	$7,911,000
1.3	Pacheco Boulevard	Pacheco Boulevard from Arnold Drive to Muir Road	Provide continuous multimodal infrastructure from Arnold Drive to Muir Road	$1,770,000
1.4	Pacheco Boulevard	Pacheco Boulevard and Carolos Dr/N Buchanan Cir	Safety improvements at the Carolos Drive/N Buchanan Circle intersection	$1,094,000
2.1	Center Avenue	Center Avenue from Pacheco Boulevard to Buchanan Field Road	Provide continuous multimodal infrastructure improvements from Pacheco Blvd to Marsh Drive	$1,105,000
2.2	Center Avenue	Center Avenue from Berry Drive to Marsh Drive		$262,000
3	Marsh Drive	Marsh Drive from Center Avenue to the bridge near the Iron Horse Trail	Provide continuous multimodal infrastructure improvements from Center Avenue to the Walnut Creek Bridge	$4,879,000
4	Concord Avenue	Concord Avenue from Contra Costa Boulevard to the Iron Horse Regional Trail	Provide continuous multimodal improvements from I-680 to the Iron Horse Trail	$5,346,000
			TOTAL	**$23,218,000**

Source: DKS Associates, 2016

DKS Associates

Planning Cost Estimate

1970 Broadway Ste 740, Oakland CA 94612

Project Number **1.1**

☐ Click here if the project schedule for this project is to be 50 days or more; also click here if this is a bridge project.
☐ Click here if this project is a surface treatment or overlay project.

Project Name: Pacheco Boulevard and Muir Road Intersection Improvements
Project Location: Pacheco Boulevard and Muir Road

Description

Project would widen Muir Road by 12' to provide a second 12' eastbound right turn lane and 6' shoulder. Project would have to reconstruct the existing south sidewalk and make drainage modifications. Specifically, the existing inlet would be replaced with a manhole and the other inlet further south would be modified so the stormwater is picked up before the crosswalk. Additionally, a mast arm would replace the pole on the east side of the intersection, and the pole on the southwest corner would be relocated.

Project Length (ft): 190

Date of Estimate: Mar. 4, 2015

Prepared by: T. Krakow

Revision No.
Revision Date
Revised by

No.	Description	Quantity	Units	Unit Cost	Total
1	Earthwork	697	CY	$45.00	$ 31,350
2	Class 2 Aggregate Base	169	CY	$65.00	$ 10,978
3	Hot Mix Asphalt (Type A)	113	Ton	$155.00	$ 17,493
4	Striping	190	LF	$5.00	$ 950
5	Curb & gutter	190	LF	$35.00	$ 6,650
6	Reconstruct concrete sidewalk	1235	SF	$12.00	$ 14,820
7	Modifications to Swale	1	LS	$16,400.00	$ 16,400
8	Modifications to Drainage Inlet	1	LS	$25,000.00	$ 25,000
9	Modify traffic signal- mast arm and pole relocation	1	LS	$150,000.00	$ 150,000
10	Temporary traffic control	1	LS	$27,400.00	$ 27,400
11	Clearing and grubbing	1	LS	$30,000.00	$ 30,000
12	Mobilization	1	LS	$ 33,100.00	$ 33,100

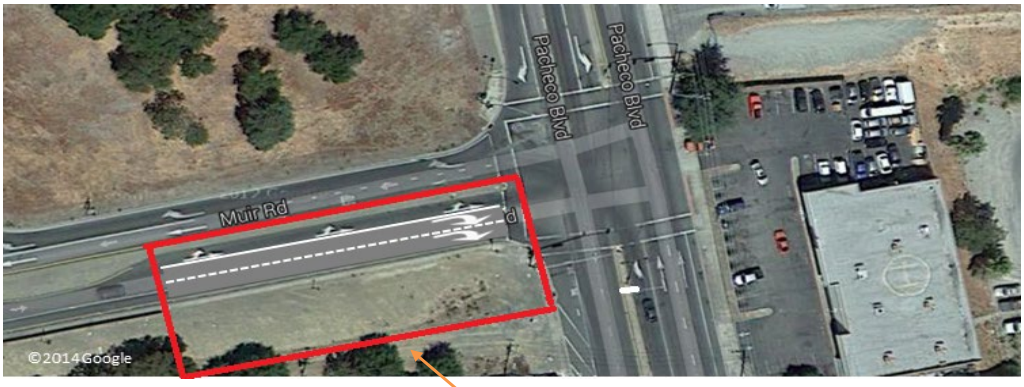
CONTRACT ITEMS LESS MOBILIZATION (TO NEAREST 1,000) $ 331,000

Project Number **1.1**

Planning Engineering (TE)	$ 50,000	Contract Items	$ 364,100
Preliminary Engineering (Design/Survey)*	$ 124,000	Other Costs (CON)	$ 73,000
Utility Coordination (Design)	$ 30,000	Contingency*	$ 55,000
Environmental (Environmental, Real Property)	$ 30,000	Subtotal (Contract Items)	$ 492,100
R/W Engineering (Survey)	$ -	Subtotal (Plan)	$ 50,000
Real Property Labor	$ -	Subtotal (PE)	$ 184,000
R/W Acquisition	$ -	Subtotal (R/W)	$ -
Construction Engineering *	$ 73,000		
Environmental Monitoring and Mitigation Fees	$ -		
SUBTOTAL of OTHER COSTS (ALL)	$ 307,000		
		Grand Total	$ 726,100
		Current Year	2015
		Escalation Year	2021
		Escalation Rate	17.27%
		➢ **TOTAL (in 2021 dollars)**	**$ 851,000**

* Preliminary Engineering is minimum 15% of contract items. (See Issues to Consider)
* Construction Engineering is 15% of contract items. ($20,000 min.)
* CONTINGENCY is 15% of contract items. ($10,000 min.)

Project 1.1: Pacheco Boulevard and Muir Road Intersection Improvements



Project Area

DKS Associates

Planning Cost Estimate

1970 Broadway Ste 740, Oakland CA 94612

Project Number **1.2**

☑ Click here if the project schedule for this project is to be 50 days or more; also click here if this is a bridge project.
☐ Click here if this project is a surface treatment or overlay project.

Project Name: Pacheco Boulevard and Center Avenue Intersection Improvements

Project Location: Pacheco Boulevard and Center Avenue

Description

On the east leg of the intersection, the project would trim the north sidewalk to shift the travel lanes northward. This allows more room for trucks to make a northbound right turn without encroaching into the left turn lane. On the west leg of the intersection, the project would restripe to provide a 13' departure lane, a 12' left turn pocket, a 12' through lane, and two 12' right turn lanes. It is assumed the project would widen the structure to accommodate this lane configuraition, and also provide a pedestrian sidewalk on the south side of the bridge.

Project Length (ft): 625

Date of Estimate: Mar. 4, 2015

Prepared by: T. Krakow

Revision No.
Revision Date
Revised by

No.	Description	Quantity	Units	Unit Cost	Total
Improvements to East Leg of Intersection					
1	Excavation	44	CY	$70.00	$ 3,111
2	Class 2 Aggregate Base	33	CY	$65.00	$ 2,167
3	Hot Mix Asphalt (Type A)	31	Ton	$155.00	$ 4,743
4	Restripe pavement markings	275	SF	$5.00	$ 1,375
5	Curb & gutter	125	LF	$35.00	$ 4,375
6	Sidewalk	600	SF	$12.00	$ 7,200
7	Retaining curb	120	LF	$15.00	$ 1,800
8	ADA curb ramp	2	EA	$6,000.00	$ 12,000
9	Sign relocation	1	EA	$250.00	$ 250
				Subtotal (LS):	$ 37,021
Improvements to West Leg of Intersection					
10	Demolish existing asphalt	900	SF	$3.00	$ 2,700
11	Earthwork	900	SF	$11.00	$ 9,900
12	Class 2 Aggregate Base	67	CY	$65.00	$ 4,333
13	Hot Mix Asphalt (Type A)	45	Ton	$155.00	$ 6,905
14	Widen bridge	3475	SF	$1,000.00	$ 3,475,000
15	Sandblast existing striping	1	LS	$2,500.00	$ 2,500
16	Restripe eastbound approach lanes	680	LF	$5.00	$ 3,400
				Subtotal (LS):	$ 3,504,739
General Items					
17	Temporary traffic control	1	LS	$88,500.00	$ 88,500
18	Mobilization	1	LS	$ 363,000.00	$ 363,000
				Subtotal (LS):	$ 451,500

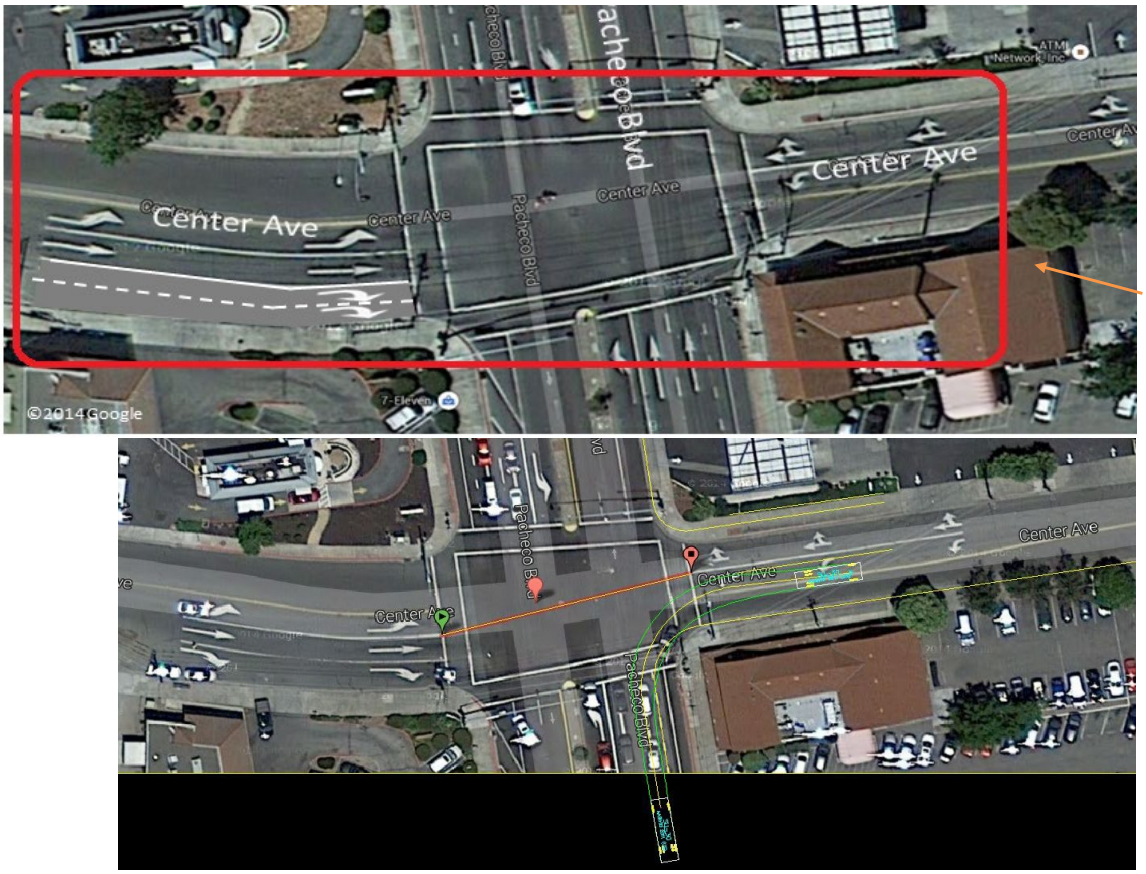
CONTRACT ITEMS LESS MOBILIZATION (TO NEAREST 1,000) $ 3,630,000

Project Number **1.2**

Planning Engineering (TE)	$ 200,000	Contract Items	$ 3,993,000
Preliminary Engineering (Design/Survey)*	$ 1,000,000	Other Costs (CON)	$ 300,000
Utility Coordination (Design)	$ 354,176	Contingency*	$ 599,000
Environmental (Environmental, Real Property)	$ 300,000	Subtotal (Contract Items)	$ 4,892,000
R/W Engineering (Survey)	$ -	Subtotal (Plan)	$ 200,000
Real Property Labor	$ -	Subtotal (PE)	$ 1,654,176
R/W Acquisition	$ -	Subtotal (R/W)	$ -
Construction Engineering *	$ 300,000		
Environmental Monitoring and Mitigation Fees	$ -		
SUBTOTAL of OTHER COSTS (ALL)	$ 2,154,176		
		Grand Total	$ 6,746,176
		Current Year	2015
		Escalation Year	2021
		Escalation Rate	17.27%
		➢ **TOTAL (in 2021 dollars)**	**$ 7,911,000**

* Preliminary Engineering is minimum 15% of contract items. (See Issues to Consider)
* Construction Engineering is 15% of contract items. ($20,000 min.)
* CONTINGENCY is 15% of contract items. ($10,000 min.)

Project 1.2: Pacheco Boulevard and Center Avenue Intersection Improvements



Project 1.2: Pacheco Boulevard and Center Avenue Intersection Improvements

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Planning Cost Estimate

1970 Broadway Ste 740, Oakland CA 94612

Project Number **1.3**

☑ Click here if the project schedule for this project is to be 50 days or more; also click here if this is a bridge project.
☐ Click here if this project is a surface treatment or overlay project.

Project Name: Pacheco Boulevard Bicycle Improvements

Project Location: Pacheco Boulevard from Arnold Drive to Muir Road

Description

Project will construct 5' bike lanes on both sides of Pacheco Boulevard from Arnold Drive to just north of Blum Road, and the missing west side bike lane from north of Blum Road to Muir Road. The scope of work assumes no further installation of curb and gutter would be required (only providing adequate width for bike lanes). The cost estimate also assumes that no modifications would need to be made relating to bridge clearance.

Project Length (ft): Varies

Date of Estimate: Mar. 4, 2015

Prepared by: T. Krakow

Revision No.
Revision Date
Revised by

No.	Description	Quantity	Units	Unit Cost	Total
Arnold Drive to North of Blum Road (bike lanes needed on both sides)					
1	Earthwork	5160	SF	$11.00	$ 56,800
2	Class 2 Aggregate Base	382	CY	$65.00	$ 24,900
3	Hot Mix Asphalt (Type A)	255	Ton	$125.00	$ 32,000
4	Lane restriping	1210	LF	$8.00	$ 9,700
5	Storm drainage pipe (18-in)	1210	LF	$34.00	$ 41,200
				Subtotal (LS):	$ 164,600
North of Blum Road to Muir Road (bike lane needed on west side only)					
6	Earthwork	4750	SF	$8.00	$ 38,000
7	Class 2 Aggregate Base	352	CY	$65.00	$ 22,900
8	Hot Mix Asphalt (Type A)	235	Ton	$125.00	$ 29,400
9	Lane restriping	950	LF	$8.00	$ 7,600
10	Reconstruct concrete curb and gutter	625	LF	$50.00	$ 31,300
11	Reconstruct concrete sidewalk	572	SF	$12.00	$ 6,900
12	Demolish existing curb ramp	2	EA	$500.00	$ 1,000
13	Construct new ADA curb ramp	3	EA	$6,000.00	$ 18,000
14	Cut back concrete abutment slope return	1350	SF	$60.00	$ 81,000
15	Construct retaining wall	285	LF	$200.00	$ 57,000
16	Misc. Drainage Modifications	1	LS	$58,600.00	$ 58,600
17	Relocate traffic signal equipment (one quadrant)	1	LS	$75,000.00	$ 75,000
				Subtotal (LS):	$ 426,700
General Items					
18	Construction Area Signs	1	LS	$1,000.00	$ 1,000
19	Temporary traffic control	1	LS	$59,100.00	$ 59,100
20	Clearing and Grubbing	1	LS	$30,000.00	$ 30,000
21	Prepare Water Pollution Control Plan	1	LS	$6,000.00	$ 6,000
22	Mobilization	1	LS	$ 68,700.00	$ 68,700
				Subtotal (LS):	$ 164,800

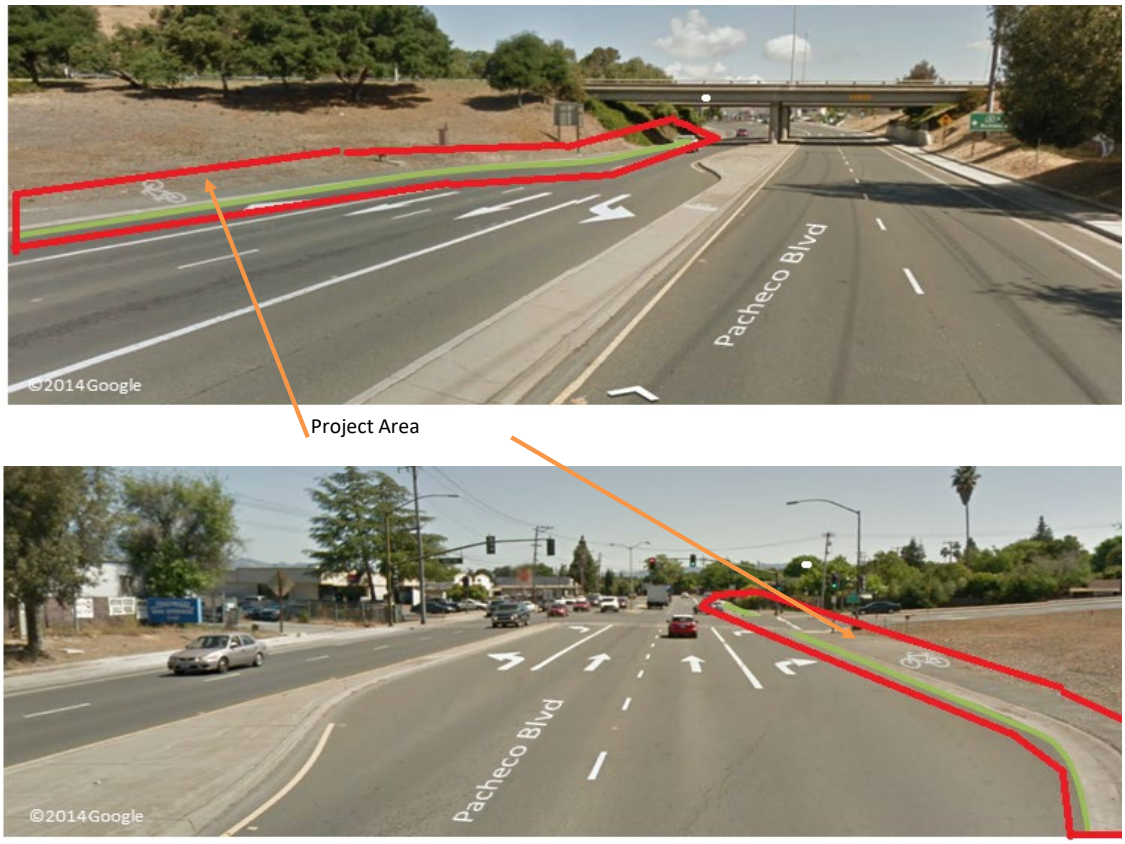
CONTRACT ITEMS LESS MOBILIZATION (TO NEAREST 1,000) $ 687,000

Project Number **1.3**

Planning Engineering (TE)	$ 160,000	Contract Items	$ 756,000
Preliminary Engineering (Design/Survey)*	$ 200,000	Other Costs (CON)	$ 114,000
Utility Coordination (Design)	$ 60,000	Contingency*	$ 189,000
Environmental (Environmental, Real Property)	$ 30,000	Subtotal (Contract Items)	$ 1,059,000
R/W Engineering (Survey)	$ -	Subtotal (Plan)	$ 160,000
Real Property Labor	$ -	Subtotal (PE)	$ 290,000
R/W Acquisition	$ -	Subtotal (R/W)	$ -
Construction Engineering *	$ 114,000		
Environmental Monitoring and Mitigation Fees	$ -		
SUBTOTAL of OTHER COSTS (ALL)	$ 564,000		
		Grand Total	$ 1,509,000
		Current Year	2015
		Escalation Year	2021
		Escalation Rate	17.27%
		➢ **TOTAL (in 2021 dollars)**	**$ 1,770,000**

* Preliminary Engineering is minimum 15% of contract items. (See Issues to Consider)
* Construction Engineering is 15% of contract items. ($20,000 min.)
* CONTINGENCY is 25% of contract items. ($10,000 min.)

Project 1.3: Pacheco Boulevard Bicycle Improvements



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Planning Cost Estimate

1970 Broadway Ste 740, Oakland CA 94612

Project Number **1.4**

☑ Click here if the project schedule for this project is to be 50 days or more; also click here if this is a bridge project.
☐ Click here if this project is a surface treatment or overlay project.

Project Name: Pacheco Boulevard and Carolos Dr/N Buchanan Cir Intersection Improvements
Project Location: Pacheco Boulevard and Carolos Dr/N Buchanan Cir

Description

Project will signalize the intersection of Pacheco Boulevard and Carolos Dr/N Buchanan Cir.

Project Length (ft): N/A

Date of Estimate: May. 25, 2016

Prepared by: C. Shew

Revision No.
Revision Date
Revised by

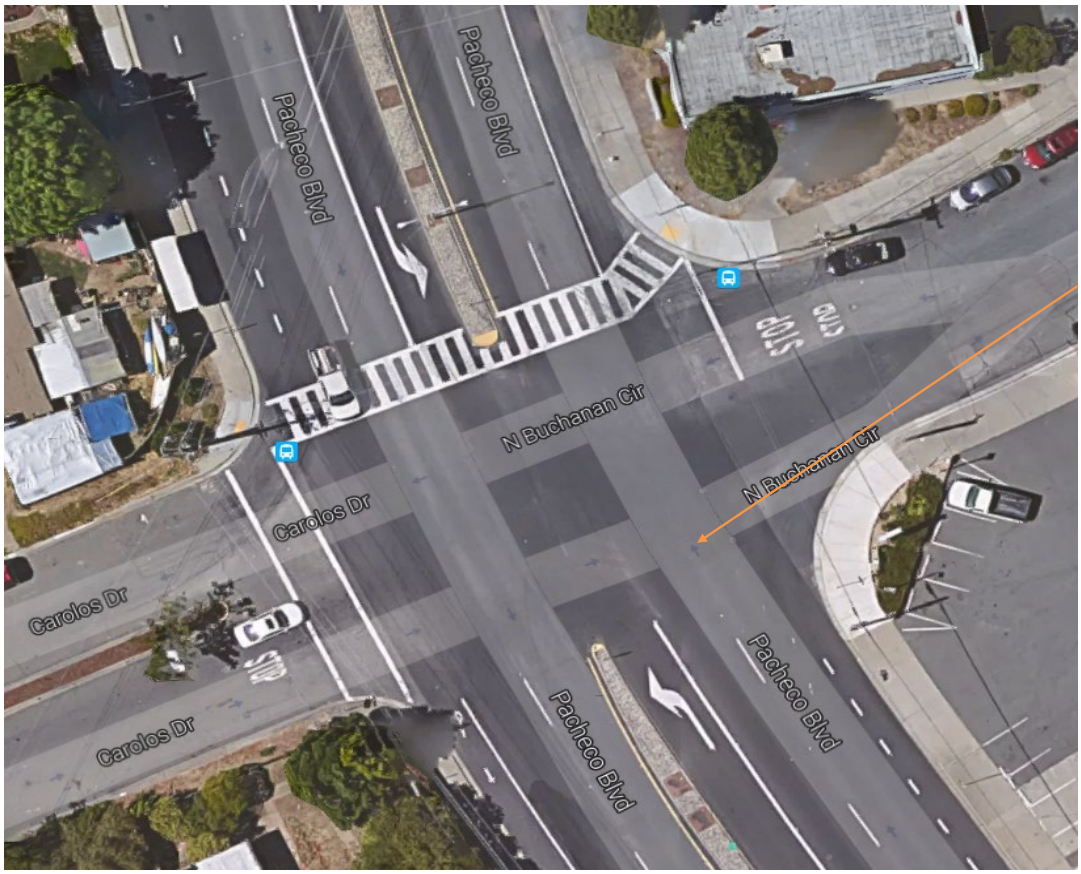
No.	Description	Quantity	Units	Unit Cost	Total
1	Install traffic signal with safety lighting	4	EA	$100,000.00	$ 400,000
2	Removal of signs	1	LS	$500.00	$ 500
3	Sandblast existing pavement legends	1	LS	$1,000.00	$ 1,000
4	Thermoplastic striping for crosswalks	1	LS	$2,000.00	$ 2,000
5	Restripe intersection approach	4	EA	$2,500.00	$ 10,000
6	ADA Curb Ramp	1	EA	$4,200.00	$ 4,200
7	Temporary traffic control	1	LS	$10,000.00	$ 10,000
8	Prepare Water Pollution Control Plan	1	EA	$6,000.00	$ 6,000
9	Mobilization	1	LS	$ 43,400.00	$ 43,400

Project Number **1.4**

Planning Engineering (TE)	$ 66,000	Contract Items	$ 477,400
Preliminary Engineering (Design/Survey)*	$ 163,000	Other Costs (CON)	$ 96,000
Utility Coordination (Design)	$ 50,000	Contingency*	$ 72,000
Environmental (Environmental, Real Property)	$ 40,000	Subtotal (Contract Items)	$ 645,400
R/W Engineering (Survey)	$ -	Subtotal (Plan)	$ 66,000
Real Property Labor	$ -	Subtotal (PE)	$ 253,000
R/W Acquisition	$ -	Subtotal (R/W)	$ -
Construction Engineering *	$ 96,000		
Environmental Monitoring and Mitigation Fees	$ -		
SUBTOTAL of OTHER COSTS (ALL)	$ 415,000		
		Grand Total	$ 964,400
		Current Year	2015
		Escalation Year	2021
		Escalation Rate	13.40%
		➢ **TOTAL (in 2021 dollars)**	**$ 1,094,000**

* Preliminary Engineering is minimum 15% of contract items. (See Issues to Consider)
* Construction Engineering is 15% of contract items. ($20,000 min.)
* CONTINGENCY is 15% of contract items. ($10,000 min.)

Project 1.4: Pacheco Boulevard and Carolos Dr/N Buchanan Cir Intersection Improvements



DKS Associates

Planning Cost Estimate

1970 Broadway Ste 740, Oakland CA 94612

Project Number **2.1**

☑ Click here if the project schedule for this project is to be 50 days or more; also click here if this is a bridge project.
☐ Click here if this project is a surface treatment or overlay project.

Project Name: Center Avenue Bicycle Improvements
Project Location: Center Avenue from Pacheco Boulevard to Buchanan Field Road

Description

Project will construct 5' bike lanes on both sides of Center Avenue. This will be achieved by widening the roadway from Pacheco Boulevard to just before the I-680 undercrossing, and restriping the roadway from the undercrossing to Buchanan Field Road. The widening would be accomplished by reducing the north sidewalk (which is currently 9' wide) so as to avoid impacting the trees and parking lot on the south side.

Project Length (ft): Varies

Date of Estimate: Mar. 4, 2015

Prepared by: T. Krakow

Revision No.
Revision Date
Revised by

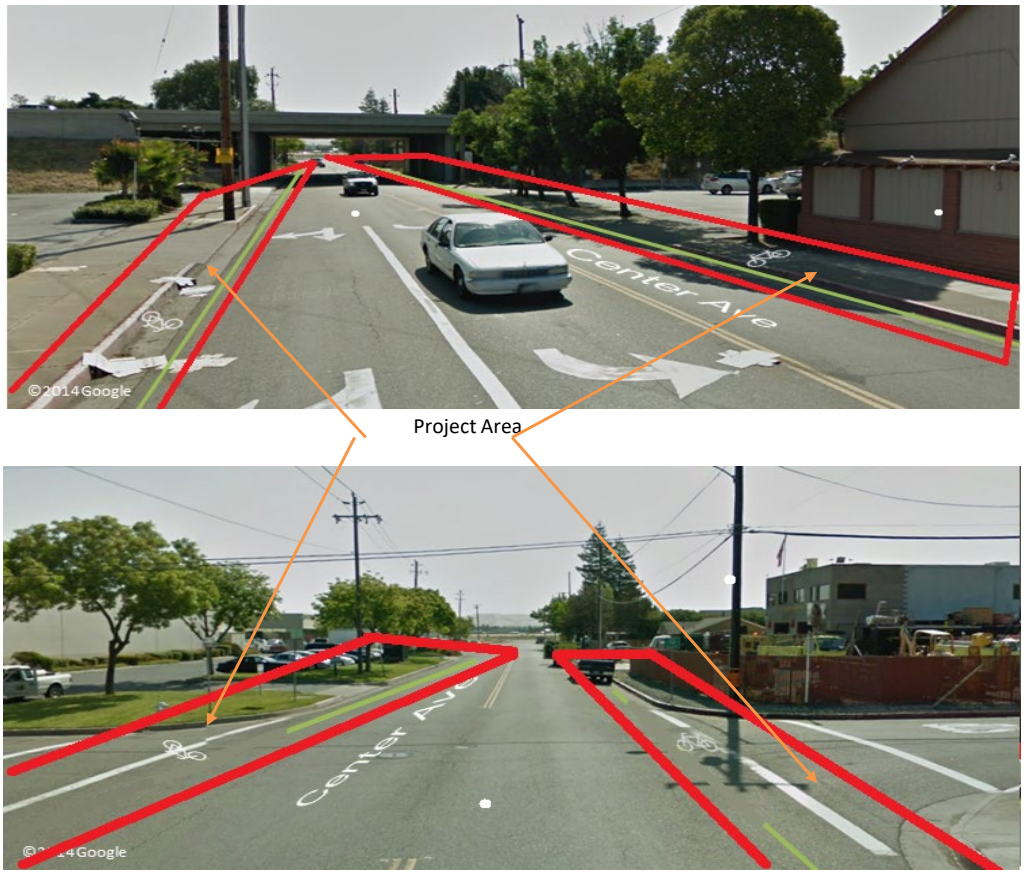
No.	Description	Quantity	Units	Unit Cost	Total
Pacheco Boulevard to west of I-680 undercrossing					
1	Class 2 Aggregate Base	130	CY	$80.00	$ 10,500
2	Hot Mix Asphalt (Type A)	87	Ton	$125.00	$ 10,900
3	Asphaltic emulsion-slurry seal	978	SY	$50.00	$ 48,900
4	Lane restriping	220	LF	$8.00	$ 1,800
5	Reconstruct Concrete Curb and Gutter	440	LF	$35.00	$ 15,400
6	Reconstruct concrete sidewalk	1760	SF	$12.00	$ 21,200
7	"Bike route" sign and pole relocation	1	EA	$1,000.00	$ 1,000
8	Construct New ADA Curb Ramp	2	EA	$6,000.00	$ 12,000
9	Relocate drainage inlets	2	EA	$9,000.00	$ 18,000
				Subtotal (LS):	$ 139,700
West of I-680 undercrossing to Buchanan Field Road					
10	Lane restriping	850	LF	$8.00	$ 6,800
11	Asphaltic emulsion-slurry seal	4911	SY	$50.00	$ 245,600
				Subtotal (LS):	$ 252,400
General Items					
12	Construction Area Signs	1	LS	$1,000.00	$ 1,000
13	Temporary traffic control	1	LS	$39,200.00	$ 39,200
14	Prepare Water Pollution Control Plan	1	LS	$6,000.00	$ 6,000
15	Mobilization	1	LS	$ 43,800.00	$ 43,800
				Subtotal (LS):	$ 90,000

Project Number **2.1**

Planning Engineering (TE)	$ 66,000	Contract Items	$ 482,000
Preliminary Engineering (Design/Survey)*	$ 164,000	Other Costs (CON)	$ 97,000
Utility Coordination (Design)	$ 30,000	Contingency*	$ 73,000
Environmental (Environmental, Real Property)	$ 30,000	Subtotal (Contract Items)	$ 652,000
R/W Engineering (Survey)	$ -	Subtotal (Plan)	$ 66,000
Real Property Labor	$ -	Subtotal (PE)	$ 224,000
R/W Acquisition	$ -	Subtotal (R/W)	$ -
Construction Engineering *	$ 97,000		
Environmental Monitoring and Mitigation Fees	$ -		
SUBTOTAL of OTHER COSTS (ALL)	$ 387,000		
		Grand Total	$ 942,000
		Current Year	2015
		Escalation Year	2021
		Escalation Rate	17.27%
		➢ **TOTAL (in 2021 dollars)**	**$ 1,105,000**

* Preliminary Engineering is minimum 15% of contract items. (See Issues to Consider)
* Construction Engineering is 15% of contract items. ($20,000 min.)
* CONTINGENCY is 15% of contract items. ($10,000 min.)

Project 2.1: Center Avenue Bicycle Improvements



DKS Associates

Planning Cost Estimate

1970 Broadway Ste 740, Oakland CA 94612

Project Number **2.2**

☑ Click here if the project schedule for this project is to be 50 days or more; also click here if this is a bridge project.
☐ Click here if this project is a surface treatment or overlay project.

Project Name: Center Avenue Pedestrian Improvements

Project Location: Center Avenue from Berry Drive to Marsh Drive

Description The project will close gaps in the existing sidewalk network, providing a continuous 5' sidewalk along both the north and south sides of Center Avenue from Berry Drive to Marsh Drive.

Project Length (ft): Varies

Date of Estimate: Mar. 4, 2015

Prepared by: T. Krakow

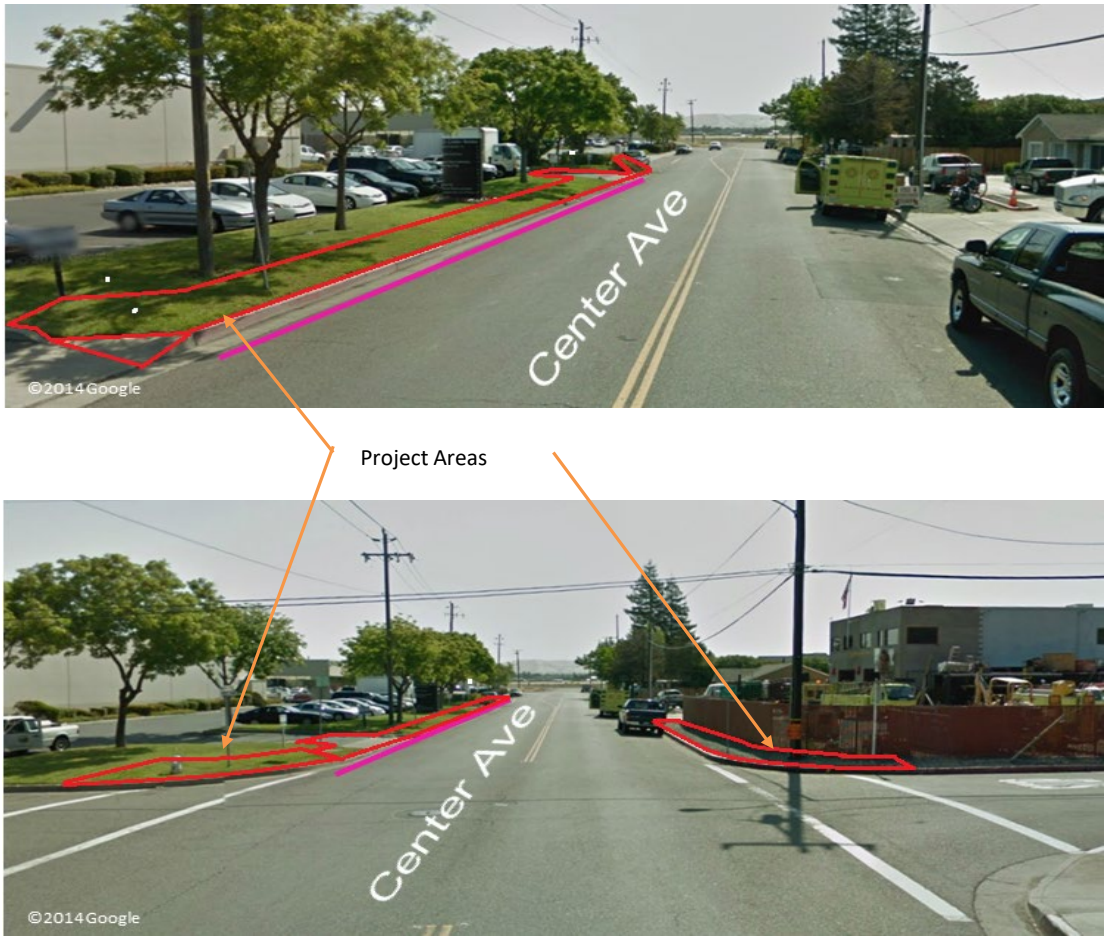
Revision No.
Revision Date
Revised by

No.	Description	Quantity	Units	Unit Cost	Total
North side of Center Avenue					
1	Clearing and grubbing	1105	SF	$3.00	$ 3,315
2	Concrete Sidewalk	1105	SF	$12.00	$ 13,260
3	ADA curb ramp	1	EA	$6,000.00	$ 6,000
4	Reconstruct concrete driveway	2	EA	$5,000.00	$ 10,000
				Subtotal (LS):	$ 32,575
South side of Center Avenue					
5	Concrete Sidewalk	750	SF	$12.00	$ 9,000
6	ADA curb ramp	1	EA	$6,000.00	$ 6,000
7	Relocate mailbox	1	EA	$300.00	$ 300
				Subtotal (LS):	$ 15,300
8	Mobilization	1	LS	$ 4,800.00	$ 4,800

Planning Engineering (TE)	$ 30,000	Contract Items	$ 53,000
Preliminary Engineering (Design/Survey)*	$ 50,000	Other Costs (CON)	$ 20,000
Utility Coordination (Design)	$ 30,000	Contingency*	$ 10,000
Environmental (Environmental, Real Property)	$ 30,000	Subtotal (Contract Items)	$ 83,000
R/W Engineering (Survey)	$ -	Subtotal (Plan)	$ 30,000
Real Property Labor	$ -	Subtotal (PE)	$ 110,000
R/W Acquisition	$ -	Subtotal (R/W)	$ -
Construction Engineering *	$ 20,000		
Environmental Monitoring and Mitigation Fees	$ -		
SUBTOTAL of OTHER COSTS (ALL)	$ 160,000		
		Grand Total	$ 223,000
		Current Year	2015
		Escalation Year	2021
		Escalation Rate	17.27%
		➢ **TOTAL (in 2021 dollars)**	**$ 262,000**

* Preliminary Engineering is minimum 15% of contract items. (See Issues to Consider)
* Construction Engineering is 15% of contract items. ($20,000 min.)
* CONTINGENCY is 15% of contract items. ($10,000 min.)

Project 2.2: Center Avenue Pedestrian Improvements



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Planning Cost Estimate

1970 Broadway Ste 740, Oakland CA 94612

Project Number 3

☑ Click here if the project schedule for this project is to be 50 days or more; also click here if this is a bridge project.
☐ Click here if this project is a surface treatment or overlay project.

Project Name: Marsh Drive Bicycle and Safety Improvements

Project Location: Marsh Drive from Center Avenue to the bridge near the Iron Horse Trail

Description

The project will add sidewalk and restripe the roadway to provide 6' shoulders/bike lanes on both sides of Marsh Drive from Center Avenue up to the bridge near the Iron Horse Trail.

Project Length (ft): Varies

Date of Estimate: Mar. 4, 2015

Prepared by: T. Krakow

Revision No.
Revision Date
Revised by

No.	Description	Quantity	Units	Unit Cost	Total
Marsh Drive to Sahara Drive/Sally Ride Drive					
1	Asphaltic emulsion-slurry seal	4840	SY	$50.00	$ 242,000
2	Restriping	1320	LF	$8.00	$ 10,600
3	Clearing and grubbing	6600	SF	$2.00	$ 13,200
4	Sidewalk	6600	SF	$8.00	$ 52,800
5	Reconstruct Concrete Curb and Gutter	1320	LF	$35.00	$ 46,200
6	Construct New ADA Curb Ramp	2	EA	$6,000.00	$ 12,000
7	Relocate drainage inlets	3	EA	$9,000.00	$ 27,000
				Subtotal (LS):	$ 403,800
Sahara Drive/Sally Ride Drive to Horizontal Curve north of Vista Grande					
8	Asphaltic emulsion-slurry seal	10311	SY	$50.00	$ 515,600
9	Restriping	2900	LF	$8.00	$ 23,200
10	Clearing and grubbing	14500	SF	$2.00	$ 29,000
11	Sidewalk	14500	SF	$8.00	$ 116,000
12	Reconstruct Concrete Curb and Gutter	2900	LF	$35.00	$ 101,500
13	Construct New ADA Curb Ramp	2	EA	$6,000.00	$ 12,000
14	Relocate drainage inlets	6	EA	$9,000.00	$ 54,000
				Subtotal (LS):	$ 851,300
Horizontal Curve north of Vista Grande to bridge near the Iron Horse Trail					
15	Asphaltic emulsion-slurry seal	8840	SY	$50.00	$ 442,000
16	Restriping	2210	LF	$8.00	$ 17,700
17	Clearing and grubbing	22100	SF	$2.00	$ 44,200
18	Sidewalk	22100	SF	$8.00	$ 176,800
19	Reconstruct Concrete Curb and Gutter	2210	LF	$35.00	$ 77,400
20	Relocate drainage inlets	3	EA	$9,000.00	$ 27,000
				Subtotal (LS):	$ 459,700
General Items					
21	Construction Area Signs	1	LS	$1,000.00	$ 1,000
22	Temporary traffic control	1	LS	$171,500.00	$ 171,500
23	Prepare Water Pollution Control Plan	1	LS	$6,000.00	$ 6,000
24	Mobilization	1	LS	$ 189,300.00	$ 189,300
				Subtotal (LS):	$ 367,800

Project Number 3

Planning Engineering (TE)	$ 284,000	Contract Items	$	2,083,000
Preliminary Engineering (Design/Survey)*	$ 709,000	Other Costs (CON)	$	313,000
Utility Coordination (Design)	$ 208,260	Contingency*	$	313,000
Environmental (Environmental, Real Property)	$ 249,912	Subtotal (Contract Items)	$	2,709,000
R/W Engineering (Survey)	$ -	Subtotal (Plan)	$	284,000
Real Property Labor	$ -	Subtotal (PE)	$	1,167,172
R/W Acquisition	$ -	Subtotal (R/W)	$	-
Construction Engineering *	$ 313,000			
Environmental Monitoring and Mitigation Fees	$ -			
SUBTOTAL of OTHER COSTS (ALL)	$ 1,764,172			
		Grand Total	$	4,160,172
		Current Year		2015
		Escalation Year		2021
		Escalation Rate		17.3%
		➢ **TOTAL (in 2021 dollars)**	**$**	**4,879,000**

* Preliminary Engineering is minimum 15% of contract items. (See Issues to Consider)
* Construction Engineering is 15% of contract items. ($20,000 min.)
* CONTINGENCY is 15% of contract items. ($10,000 min.)

Project 3: Marsh Drive Bicycle and Safety Improvements

DKS Associates

Planning Cost Estimate

1970 Broadway Ste 740, Oakland CA 94612

Project Number 4

☑ Click here if the project schedule for this project is to be 50 days or more; also click here if this is a bridge project.
☐ Click here if this project is a surface treatment or overlay project.

Project Name: Concord Avenue Shared Use Path

Project Location: Concord Avenue from Contra Costa Boulevard to the Iron Horse Regional Trail

Description Project will construct a 10' Class I shared use path (with a 2' buffer on both sides) on the south side of Concord Avenue. The path will start just east of the I-680 SB on-ramp and continue to the existing Iron Horse Trail access ramp (located off Concord Avenue, just west of the bridge over Walnut Creek). This will connect the Class II bike route on Chilpancingo Parkway to an important Class I regional facility, as well as enhance safe pedestrian circulation through the Concord Avenue corridor.

Project Length (ft): 4200

Date of Estimate: Mar. 4, 2015

Prepared by: T. Krakow

Revision No.
Revision Date
Revised by

No.	Description	Quantity	Units	Unit Cost	Total
Contra Costa Boulevard to Diamond Boulevard					
Length (ft): 1160					
1	Excavate earth between abutment and exst sidewalk	581	CY	$75.00	$ 43,600
2	Construct retaining wall under fwy overcrossing	160	LF	$200.00	$ 32,000
3	Demolish existing concrete sidewalk	6100	SF	$3.00	$ 18,300
4	Demolish existing concrete "pork chop" island	1400	SF	$3.00	$ 4,200
5	Relocate traffic signal equipment on island	1	LS	$75,000.00	$ 75,000
6	Demolish existing asphalt	1200	SF	$3.00	$ 3,600
7	Demolish existing curb/gutter	370	LF	$5.00	$ 1,900
8	Construct concrete curb and gutter	380	LF	$35.00	$ 13,300
9	Restripe right turn lane and crosswalk	650	LF	$5.00	$ 3,300
10	Remove tree	5	EA	$500.00	$ 2,500
11	Relocate street light fixtures	4	EA	$2,000.00	$ 8,000
12	Relocate sign	1	EA	$250.00	$ 300
13	Earthwork for new shared use path	16240	SF	$4.00	$ 65,000
14	Clearing and grubbing	16240	SF	$3.00	$ 48,800
15	Class 2 Aggregate Base	215	CY	$65.00	$ 14,000
16	Hot Mix Asphalt (Type A)	239	Ton	$155.00	$ 37,100
17	Path striping	3480	LF	$6.00	$ 20,900
18	Construct new ADA curb ramp	2	EA	$6,000.00	$ 12,000
19	Misc. Drainage Modifications	1	LS	$80,800.00	$ 80,800
				Subtotal (LS):	$ 484,600
Diamond Boulevard to Meridian Park Boulevard					
Length (ft): 660					
20	Demolish existing concrete sidewalk	5200	SF	$3.00	$ 15,600
21	Demolish existing concrete "pork chop" island	285	SF	$3.00	$ 900
22	Relocate traffic signal equipment on island	1	LS	$75,000.00	$ 75,000
23	Demolish existing asphalt	3285	SF	$3.00	$ 9,900
24	Demolish existing curb/gutter	680	LF	$5.00	$ 3,400
25	Construct concrete curb and gutter	710	LF	$35.00	$ 24,900
26	Reconstruct concrete driveway	1	EA	$5,000.00	$ 5,000
27	Restripe right lane and crosswalk	810	LF	$5.00	$ 4,100
28	Remove tree	9	EA	$500.00	$ 4,500
29	Relocate street light fixtures	1	EA	$2,000.00	$ 2,000
30	Relocate parking lot light fixtures	5	EA	$2,000.00	$ 10,000
31	Relocate sign	1	EA	$250.00	$ 300
32	Earthwork for new shared use path	9240	SF	$4.00	$ 37,000
33	Clearing and grubbing	9240	SF	$3.00	$ 27,800
34	Class 2 Aggregate Base	122	CY	$65.00	$ 8,000
35	Hot Mix Asphalt (Type A)	136	Ton	$155.00	$ 21,100
36	Path striping	1980	LF	$6.00	$ 11,900
37	Construct new ADA curb ramp	2	EA	$6,000.00	$ 12,000
38	Misc. Drainage Modifications	1	LS	$54,700.00	$ 54,700
				Subtotal (LS):	$ 328,100
Meridian Park Boulevard to John Glenn Drive					
Length (ft): 860					
39	Demolish existing concrete sidewalk	9000	SF	$3.00	$ 27,000
40	Demolish existing concrete "pork chop" island	760	SF	$3.00	$ 2,300
41	Relocate traffic signal equipment on SW corner	1	LS	$75,000.00	$ 75,000
42	Demolish existing asphalt	7480	SF	$3.00	$ 22,500
43	Demolish existing curb/gutter	940	LF	$5.00	$ 4,700
44	Construct concrete curb and gutter	980	LF	$35.00	$ 34,300
45	Restripe right lane	860	LF	$5.00	$ 4,300
46	Trim tree	2	EA	$250.00	$ 500

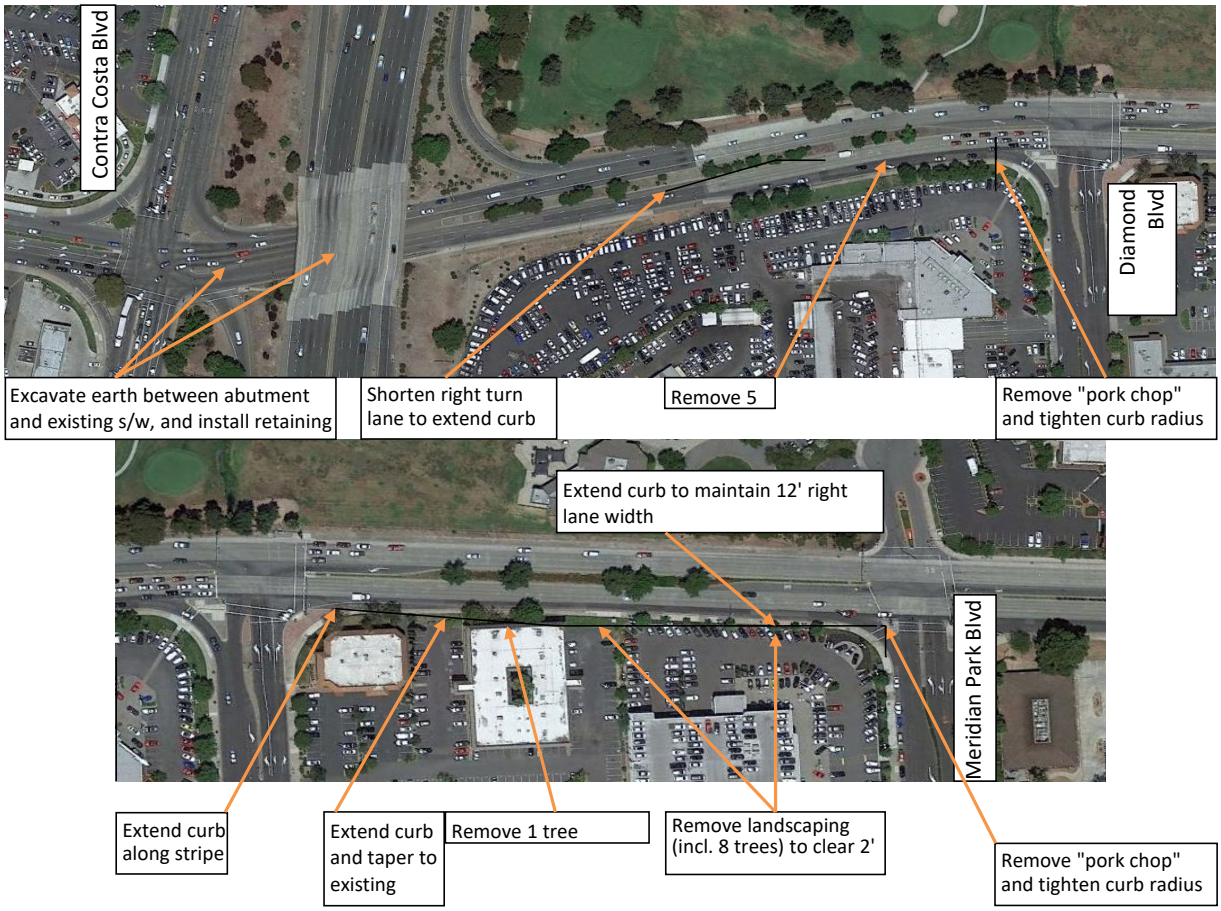
47	Relocate street light fixtures	5	EA	$2,000.00	$ 10,000
48	Earthwork for new shared use path	12040	SF	$4.00	$ 48,200
49	Clearing and grubbing	12040	SF	$3.00	$ 36,200
50	Class 2 Aggregate Base	159	CY	$65.00	$ 10,400
51	Hot Mix Asphalt (Type A)	177	Ton	$155.00	$ 27,500
52	Path striping	2580	LF	$6.00	$ 15,500
53	Construct new ADA curb ramp	2	EA	$6,000.00	$ 12,000
54	Misc. Drainage Modifications	1	LS	$66,100.00	$ 66,100
				Subtotal (LS):	$ 396,500
John Glenn Drive to New Drive					
Length (ft): 570					
55	Demolish existing concrete sidewalk	3600	SF	$3.00	$ 10,800
56	Relocate traffic signal equipment on int. corners	2	LS	$75,000.00	$ 150,000
57	Demolish existing asphalt	2350	SF	$3.00	$ 7,100
58	Demolish existing curb/gutter	400	LF	$5.00	$ 2,000
59	Construct concrete curb and gutter	420	LF	$35.00	$ 14,700
60	Restripe right lane	570	LF	$5.00	$ 2,900
61	Remove tree	8	EA	$500.00	$ 4,000
62	Relocate street light fixtures	3	EA	$2,000.00	$ 6,000
63	Relocate sign	1	EA	$250.00	$ 300
64	Earthwork for new shared use path	7980	SF	$4.00	$ 32,000
65	Clearing and grubbing	7980	SF	$3.00	$ 24,000
66	Class 2 Aggregate Base	106	CY	$65.00	$ 6,900
67	Hot Mix Asphalt (Type A)	118	Ton	$155.00	$ 18,300
68	Path striping	1710	LF	$6.00	$ 10,300
69	Construct new ADA curb ramp	2	EA	$6,000.00	$ 12,000
70	Misc. Drainage Modifications	1	LS	$60,300.00	$ 60,300
				Subtotal (LS):	$ 361,600
New Drive to Iron Horse Trail					
Length (ft): 380					
71	Demolish existing concrete sidewalk	2340	SF	$3.00	$ 7,100
72	Relocate traffic signal equipment on int. corners	1	LS	$75,000.00	$ 75,000
73	Demolish existing asphalt	2770	SF	$3.00	$ 8,400
74	Demolish existing curb/gutter	370	LF	$5.00	$ 1,900
75	Construct concrete curb and gutter	380	LF	$35.00	$ 13,300
76	Restripe right lane	380	LF	$5.00	$ 1,900
77	Remove tree	1	EA	$500.00	$ 500
78	Relocate street light fixtures	2	EA	$2,000.00	$ 4,000
79	Earthwork for new shared use path	5320	SF	$4.00	$ 21,300
80	Clearing and grubbing	5320	SF	$3.00	$ 16,000
81	Class 2 Aggregate Base	70	CY	$65.00	$ 4,600
82	Hot Mix Asphalt (Type A)	78	Ton	$155.00	$ 12,200
83	Path striping	1140	LF	$6.00	$ 6,900
84	Construct new ADA curb ramp	2	EA	$6,000.00	$ 12,000
85	Misc. Drainage Modifications	1	LS	$37,000.00	$ 37,000
				Subtotal (LS):	$ 222,100
General Items					
86	Construction Area Signs	1	LS	$1,000.00	$ 1,000
87	Temporary traffic control	1	LS	$89,600.00	$ 89,600
88	Prepare Water Pollution Control Plan	1	LS	$6,000.00	$ 6,000
89	Mobilization	1	LS	$ 189,000.00	$ 189,000
				Subtotal (LS):	$ 285,600

Project Number **4**

Planning Engineering (TE)	$ 284,000	Contract Items	$	2,079,000
Preliminary Engineering (Design/Survey)*	$ 707,000	Other Costs (CON)	$	312,000
Utility Coordination (Design)	$ 207,850	Contingency*	$	520,000
Environmental (Environmental, Real Property)	$ 353,345	Subtotal (Contract Items)	$	2,911,000
R/W Engineering (Survey)	$ 30,000	Subtotal (Plan)	$	284,000
Real Property Labor	$ 30,000	Subtotal (PE)	$	1,268,195
R/W Acquisition	$ 35,550	Subtotal (R/W)	$	95,550
Construction Engineering *	$ 312,000			
Environmental Monitoring and Mitigation Fees	$ -			
SUBTOTAL of OTHER COSTS (ALL)	$ 1,959,745			
		Grand Total	$	4,558,745
		Current Year		2015
		Escalation Year		2021
		Escalation Rate		17.3%
		➢ **TOTAL (in 2021 dollars)**	**$**	**5,346,000**

* Preliminary Engineering is minimum 15% of contract items. (See Issues to Consider)
* Construction Engineering is 15% of contract items. ($20,000 min.)
* CONTINGENCY is 25% of contract items. ($10,000 min.)

Project 4: Concord Avenue Shared Use Path



Project 4: Concord Avenue Shared Use Path