

Nexus Study Bay Point Area of Benefit

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in association with Urban Economics

Prepared For:
Contra Costa County
Public Works Department

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1. Introduction

1.1 Background and Purpose

The purpose of the Bay Point 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 Bay Point 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 it participates fairly in the cost of improving the transportation system. This Program applies only to new development within the unincorporated portions of the Bay Point AOB.

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 Bay Point AOB

On September 24, 1985, the Board of Supervisors passed a resolution forming the West Pittsburg Area of Benefit, now known as the Bay Point 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. In 1991, 1996 and 1998, the Bay Point AOB program was revised to reflect the changing needs of the area. Over the past 28 years, Area of Benefit fees have helped pay for improvements to Willow Pass Road, Bailey Road, Port Chicago Highway, Pacifica Avenue and Driftwood Drive.

The Bay Point AOB has, in recent years, experienced changes in the area's circulation needs and development potential. Most of the residential development potential has been fulfilled, and many of the projects on the original Bay Point AOB project list have been constructed. These changes have prompted this revision to the Bay Point AOB program, resulting in a new project list and fee schedule.

The purpose of this Nexus Study is to provide the technical basis for a comprehensive update of the Bay Point AOB Program. The focus of the updated program is to support a multi-modal transportation system in the Bay Point 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 Bay Point 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 Bay Point AOB boundary, which was established in 1985, is shown in **Figure 1**. The area within the boundary includes a portion of the City of Pittsburg. However, fees will only be collected within the unincorporated portions of the AOB and will only fund projects within the unincorporated portions of the AOB.

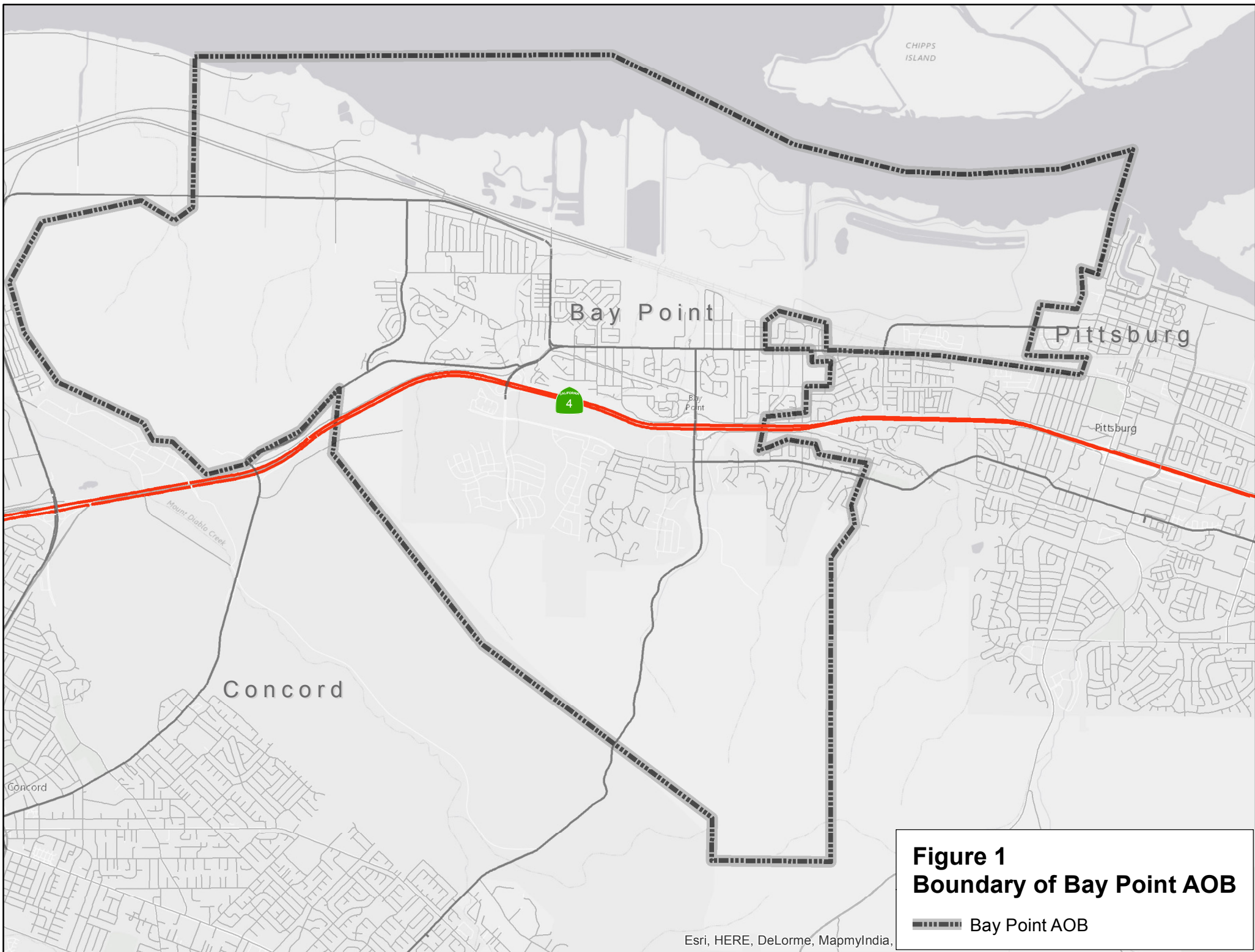
2. Evaluation of Current AOB Program

The current Bay Point AOB Program was last updated in 1998. The current Bay Point AOB Program project list, shown in **Table 1**, has three projects, which were estimated in 1998 to cost about \$6 million, of which \$1 million was to be funded by the AOB Program. The 2016 update of the Bay Point AOB Program has included a 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 1998 Project List for Bay Point AOB Program			
Roadway	Project Description	Project Cost to be Funded by AOB (1998 Dollars)	Estimated Project Cost (1998 Dollars)
1 Port Chicago Highway	Reconstruct and re-stripe from Pacifica Ave to McAvoy Rd and construct intersection improvements at McAvoy Rd	\$200,000	\$600,000
2 Pacifica Avenue	Construct left turn pocket at Rio Vista School	\$75,000	\$375,000
3 Evora Road	Widening from Willow Pass Rd to Pomo St	\$750,000	\$4,984,000
Total		\$1,025,000	\$5,959,000
Source: Development Program Report for Bay Point AOB, 1998			

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.

¹ California Government Code, Sections 66000 through 66026.



However, ITE trip rates only reflect the amount of traffic coming in and out of development's entrances, not the extent of the roadway system that is impacted by those trips. 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.

For example, simple trip rates 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, the updated Bay Point 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 Bay Point AOB is based on the countywide travel demand model developed by the Contra Costa Transportation Authority (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:

<u>Land Use Type</u>	<u>Units</u>
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 summarized in **Table 2**. The table shows estimates of jobs for nonresidential land uses used by the CCTA's model. It also applies estimates of square footage per employee to estimate the growth in building square feet, which are used in the AOB fee program.

4. Transportation Needs Analysis

Defining the transportation needs and project list for the Bay Point 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 roadway system analysis to identify improvement needs
5. Identifying pedestrian and bicycle facilities/improvements
6. Preparing a draft AOB project list

Table 2
Summary of Estimated Development 2010 to 2040 Growth
Bay Point Area of Benefit¹

Land Use Category	Units	Unincorporated Portion of AOB			Unincorporated Area Assumed to be Annexed by 2040 ²			City of Pittsburgh Portion of AOB			Total AOB		
		2010	2040	Growth	2010	2040	Growth	2010	2040	Growth	2010	2040	Growth
Single-Family	DU	4,948	5,364	416	399	3,601	3,202	3,241	13,148	9,907	8,588	22,113	13,525
Multi-family	DU	1,806	2,820	1,014	8	9	1	508	417	-91	2,322	3,246	924
Total	DU	6,754	8,184	1,430	407	3,610	3,203	3,749	13,565	9,816	10,910	25,359	14,449
Retail	Jobs	328	801	473	10	104	94	76	776	700	414	1,681	1,267
Office	Jobs	2,756	3,884	1,128	219	2,159	1,940	319	4,122	3,803	3,294	10,165	6,871
Industrial	Jobs	1,116	1,645	529	50	481	431	63	999	936	1,229	3,125	1,896
Total	Jobs	4,200	6,330	2,130	279	2,744	2,465	458	5,897	5,439	4,937	14,971	10,034
Retail	1,000 sq. ft.	164	401	237	5	52	47	38	388	350	207	841	634
Office	1,000 sq. ft.	758	1,068	310	60	594	534	88	1,134	1,046	906	2,795	1,890
Industrial	1,000 sq. ft.	670	987	317	30	289	259	38	599	562	737	1,875	1,138
Total	1,000 sq. ft.	1,592	2,456	864	95	934	839	164	2,121	1,957	1,850	5,511	3,661

Notes:

¹ See Figure 1 for AOB Boundary

² Growth was assumed in the portion of the AOB west of Bailey Rd and south of Pittsburgh limits but, if it occurs, it was assumed this area would be annexed by the City of Pittsburgh

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

Source: DKS Associates, 2014

7. Presenting analysis and findings at MAC meetings 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 4.8 below.

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 March 2013 at key roadway segments and signalized intersections within the AOB.

4.2 Existing Deficiencies

The technical methods and standards used to identify the impact of new development on roadway and intersection vehicular congestion within the Bay Point AOB 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 proportional share of the total cost of an improvement and cannot pay the cost of 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 CCTA model within and near the Bay Point AOB to improve its accuracy and detail.

4.4 Roadway System Analysis

This section describes the analysis used to determine the improvements on arterial and collector roadways within the Bay Point AOB that are 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 at study intersections within the Bay Point AOB to determine if the traffic signals would be warranted 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 Bay Point AOB Program used the level of service (LOS) standards in the County's General Plan, which has different standards for different areas, based on land use types. In the Bay Point Area, LOS D or better conditions are considered acceptable, while LOS E or F conditions are considered unacceptable. 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. The intersection and roadway segment LOS analysis is summarized in **Tables 3 and 4** as well as **Figures 2 and 3**. The 2040 analysis assumes construction of the extensions of both Pacifica Avenue and Alves Lane within the Bay Point AOB.

Table 3
Intersection Level of Service Analysis
Bay Point Area of Benefit

Intersection		Control	2013				2040 ¹				Comments
			AM		PM		AM		PM		
Street 1	Street 2		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	
Willow Pass Rd	SR 4 EB Ramps	AWSC	43.9	E	45.3	E	73.2	F	67.8	F	2040 LOS assumes current stop sign control. Currently meets warrants for signalization
Willow Pass Rd	SR 4 WB Ramps	AWSC	64.6	F	20.4	C	64.4	F	52.8	F	
Driftwood Dr	Evora Rd	Signal	15.4	B	10.9	B	37.8	D	10.9	B	
Willow Pass Rd	Evora Rd/SR 4 WB Ramps	Signal	15.1	B	8.7	A	72.9	E	20.2	C	
Port Chicago Hwy	Pacifica Ave	Signal	55.1	E	16.5	B	49.7	D	16.2	B	Conditions in 2040 include extensions of Pacifica Ave and Alves Lane
Port Chicago Hwy	Willow Pass Rd	Signal	15.1	B	12.5	B	40.4	D	10.4	B	
Bailey Rd	Willow Pass Rd	Signal	20.7	C	39.8	D	39.3	D	92.9	F	2040 LOS assumes current intersection geometry
Alves Ln	Willow Pass Rd	Signal	2.2	A	3.1	A	43.5	D	19.3	B	
Bailey Rd	Canal Rd	Signal	13.6	B	9.4	A	29.9	C	11.7	B	

¹ The 2040 analysis assumes construction of the extensions of both Pacifica Avenue and Alves Lane

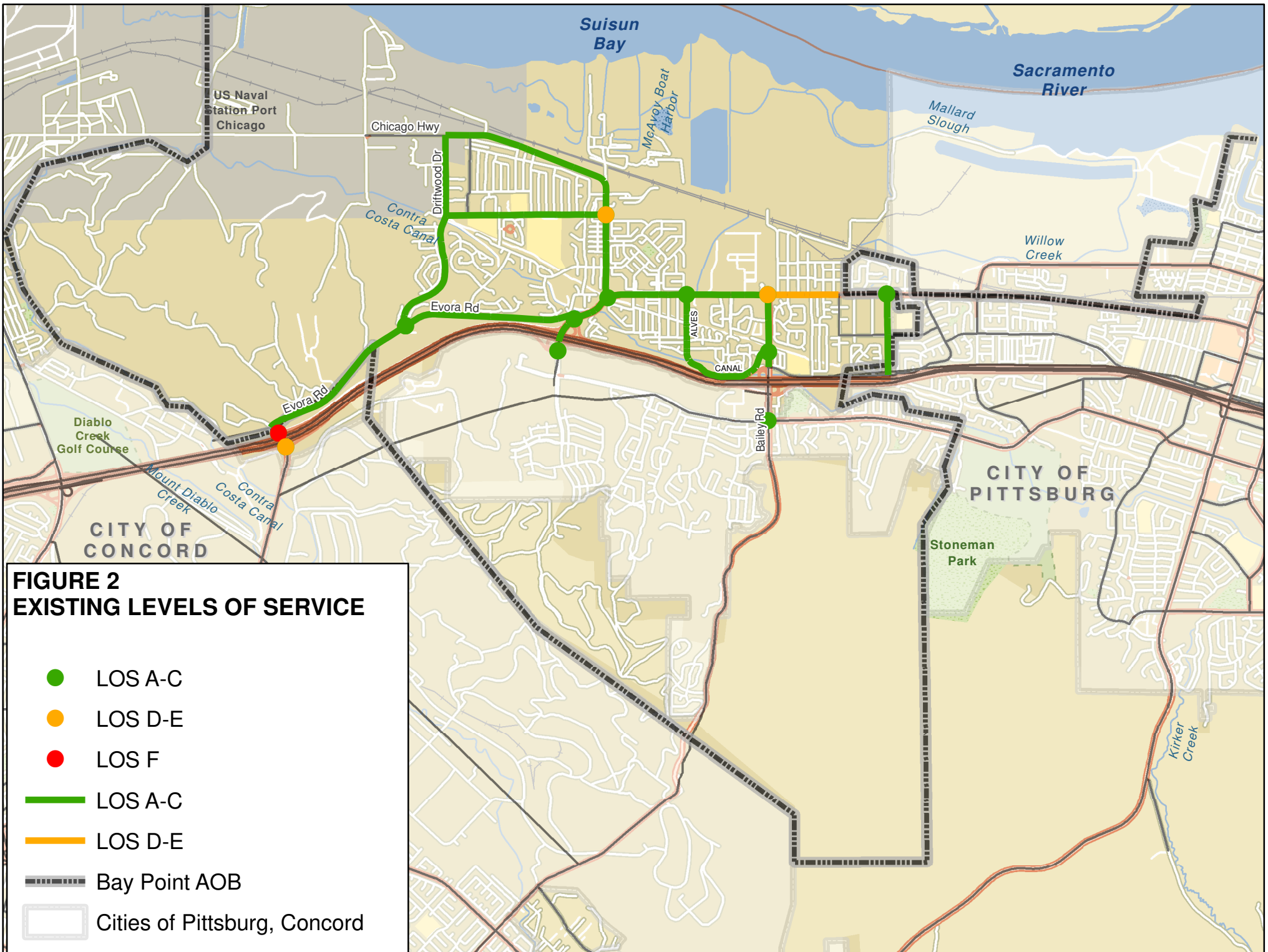
LOS highlighted in **grey** does not meet County's standard

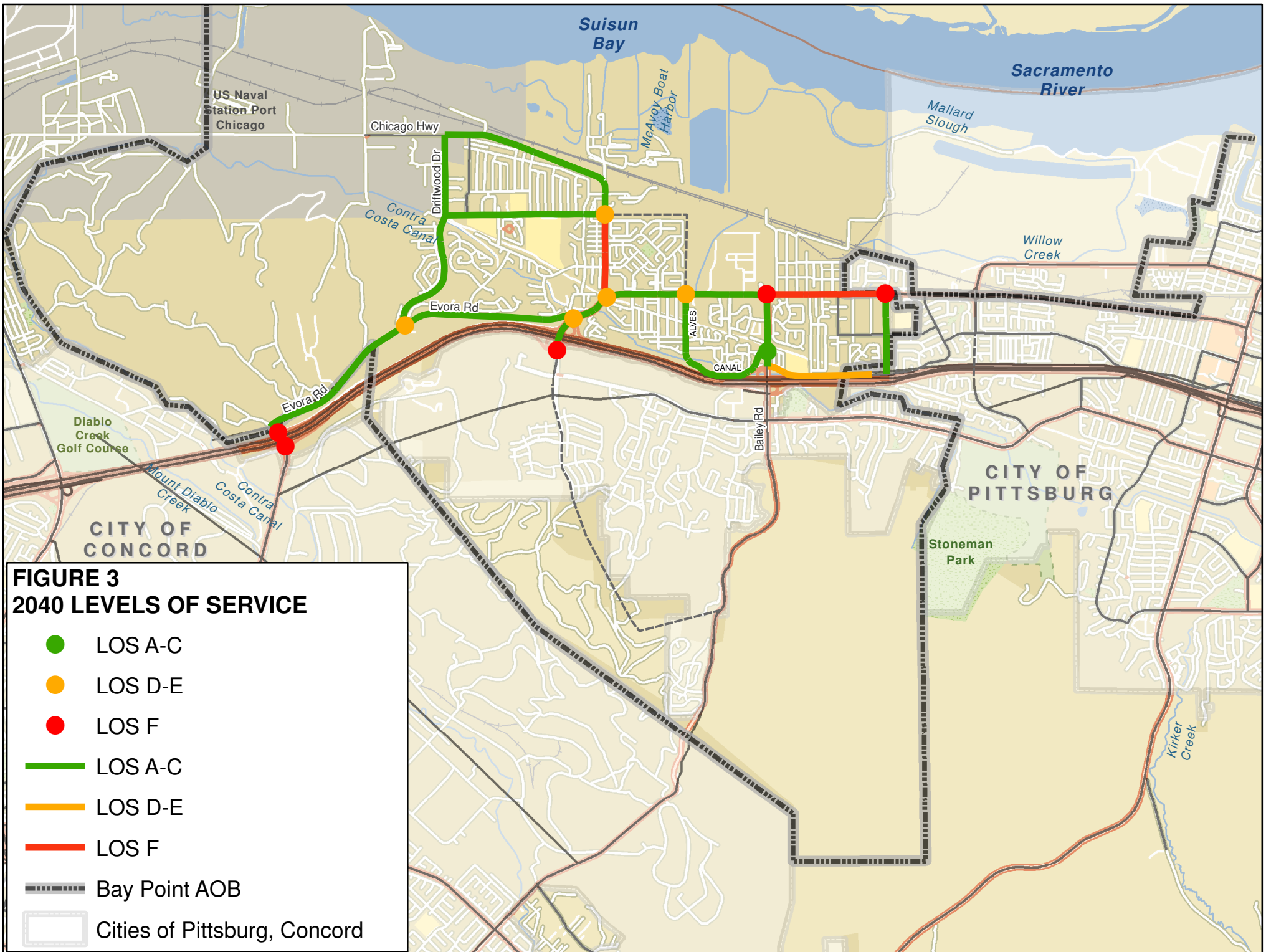
Source: DKS Associates, 2014

Table 4
Roadway Segment Level of Service Analysis
Bay Point Area of Benefit

Roadway	From	To	2013			2040 ¹			Comments
			Lanes	Daily Volume	LOS	Lanes	Daily Volume	LOS	
Evora Road	Willow Pass Rd	Driftwood Dr	2	8,100	A	2	13,400	C	
	Driftwood Dr	Pomo St	4	3,800	A	4	9,700	A	
	Pomo St	Willow Pass Rd	2	5,100	A	2	12,100	B	
Willow Pass Rd	SR 4	Port Chicago Hwy	6	21,500	A	6	38,900	C	
	Port Chicago Hwy	Alves Ln	4	15,500	A	4	25,800	C	
	Alves Ln	Bailey Rd	4	15,500	A	4	28,800	C	
	Bailey Rd	Pittsburg Limits	2	15,100	D	2	27,500	F	Can be restriped to four lanes
Port Chicago Hwy	Driftwood Dr	McAvoy Rd	2	5,000	A	2	8,000	B	
	McAvoy Rd	Pacifica Ave	2	5,200	A	2	10,000	B	
	Pacifica Ave	Willow Pass Rd	3	13,200	C	3	19,400	F	LOS based on northbound direction
Bailey Rd	SR 4	Willow Pass Rd	4	17,800	A	4	26,400	C	
Driftwood Drive	Evora Rd	Pacifica Ave	2	4,500	A	2	4,800	A	
	Pacifica Ave	Port Chicago Hwy	2	500	A	2	2,500	A	
Pacifica Ave	Driftwood Dr	Port Chicago Hwy	2	2,700	A	2	5,000	A	
Loftus Rd	Canal Rd	Willow Pass Rd	2	2,900	A	2	3,100	A	
Alves Lane	Willow Pass Rd	Canal Rd	2	2,600	A	2	3,600	A	
Canal Road	Alves Ln	Bailey Rd	2	4,100	A	2	5,800	A	
	Bailey Rd	Pittsburg Limits	2	12,100	B	2	16,000	D	

¹ The 2040 analysis assumes construction of the extensions of both Pacifica Avenue and Alves Lane
LOS highlighted in **bold** does not meet County's standard
Traffic volumes on roadway segments highlighted in grey warrant shoulder or sidewalk improvements to meet County standards
Source: DKS Associates, 2014





Roadway Pavement Width Standards

Many of the County's two-lane roads within the Bay Point 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 Shoulder/Lane Widths Contra Costa County 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 Transit and Pedestrian/Bicycle 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 (bicycle and pedestrian) 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, bicycle and pedestrian facilities would be implemented to the extent that they are represented in the County's current standard roadway designs.

Transit, bicycle, and pedestrian 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 transit, bike and pedestrian modes in order to provide basic accessibility to those without access to a personal automobile and to help minimize automobile congestion and air pollution.

4.6 Draft AOB Project List

A draft list of capital improvements to the transportation system in the AOB Program was prepared. The project list is focused on the major transportation 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. Providing appropriate pedestrian and bicycle facility improvements

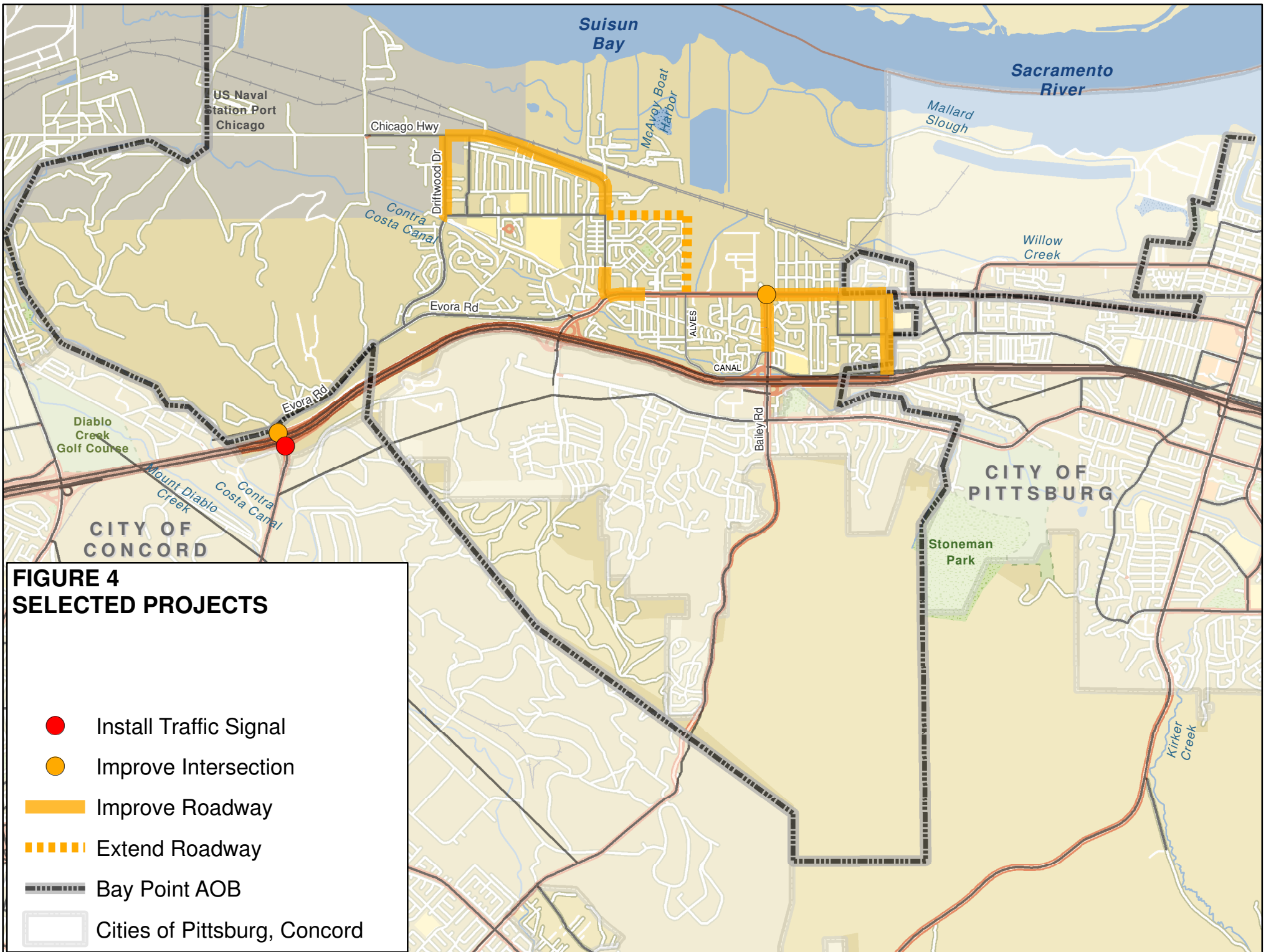
4.7 Presenting Findings at MAC Meetings

The draft project list (see Table 6) was presented to the Bay Point Municipal Advisory Council (MAC), which supported the list as shown in **Table 6** and **Figure 4**.

4.8 Finalize AOB Project List

The MAC did not request changes in the draft project list and thus it represents the final AOB project list.

Table 6 Selected Bay Point AOB Project List								
Roadway	#	Location	Existing Conditions			2040 Conditions		Recommended Project ²
			Daily Volume	LOS	Deficiency	Daily Volume	LOS ¹	
Willow Pass Rd	1.1	West interchange at SR 4	NA	F	LOS/ Warrants		F	Signalize EB and WB off-ramps
	1.2	Evora Rd at Willow Pass Ct	8,100	B	None	13,400	D	Intersection improvements
	2.1	Bailey Rd to Pittsburg City Limits	15,100	D	LOS	27,500	F	Restripe to improve capacity
	2.1	Intersection at Bailey Rd		D	LOS		F	Intersection improvements
Port Chicago Highway	3.1	Driftwood to West of McAvoy Rd	5,000	A	Design	8,000	B	Pedestrian and bicycle improvements
	3.2	West of McAvoy Rd to Pacifica Ave	5,200	A	Design	10,000	B	Re-align curve and add pedestrian and bicycle improvements
	4	Port Chicago Hwy at Willow Pass Rd	13,200 to 15,500	B	Design	19,400 to 28,800	D ³	Multi-modal safety improvements
Driftwood Dr	5	Port Chicago Hwy to Pacifica Ave	500	A	Design	2,500	A	Pedestrian and bicycle improvements
Pacifica Ave	6	Port Chicago Hwy to Alves Lane Ext	NA	NA		4,000		Extend roadway
Alves Lane	7	Willow Pass Rd to Pacifica Ave Ext	NA	NA		4,000		Extend roadway
Loftus Rd	8	Canal Rd to Willow Pass Rd	2,900	A	Design	3,100	A	Pedestrian and bicycle improvements
Bailey Rd	9	Willow Pass Rd to Canal Rd	15,200	A	Design	16,000	A	Pedestrian and bicycle improvements
	10	Canal Rd to BART	17,800	B	Design	26,400	F	
<div>Notes:</div> <div><div>1.</div><div>2.</div><div>3.</div></div> <div>LOS without recommended improvement</div> <div>Project list approved by Bay Point Municipal Advisory Council (MAC)</div> <div>LOS reflects conditions at Willow Pass Rd/Port Chicago Hwy intersection with Pacifica Avenue and Alves Lane extensions.</div>								
Source: DKS Associates, 2014								



**FIGURE 4
SELECTED PROJECTS**

- Install Traffic Signal
- Improve Intersection
- Improve Roadway
- - - Extend Roadway
- - - Bay Point AOB
- ▭ Cities of Pittsburg, Concord

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 "soft costs" 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 Bay Point AOB, shown in **Table 6** are provided in **Appendix A**.

6. Basis for Allocating Costs to New Development

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

The allocation of costs of roadway and intersection improvements in the Bay Point 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 Bay Point 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 Bay Point 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 significant increase in through traffic. This method was used to allocate costs for improvements to Driftwood Drive (see Table 7).

Table 7
Cost Allocation Analysis for Bay Point AOB Project List

Roadway	#	Location	Recommended Project	Existing Conditions			2040 Conditions		Percent of 2040 Total Volume			Percent of 2013 to 2040 Growth		Percent Allocated to AOB
				Daily Volume	LOS	Deficiency	Daily Volume	LOS ¹	Existing	Growth		Local	Through	
										Local	Through			
Willow Pass Rd	1.1	West interchange at SR 4	Signalize EB & WB off-ramps	NA	F	LOS/ Warrants		F	58	12	30	29	71	12
	1.2	Evora Rd at Willow Pass Ct	Intersection improvements	8,100	B		13,400	D	60	28	12	70	30	70
	2.1	Bailey Rd to Pittsburg Limits	Restripe to improve capacity	15,100	D		27,500	F	55	18	27	40	60	40
	2.2	Intersection at Bailey Rd	Intersection improvements		D			F	55	18	27	40	60	40
Port Chicago Highway	3.1	Driftwood to West of McAvoy Rd	Pedestrian and bicycle improvements	5,000	A	Standards	8,000	B	62	38	0	100	0	38
	3.2	West of McAvoy Rd to Pacifica Ave	Re-align curve and add pedestrian and bicycle improvements	5,200	A	Standards	10,000	B	52	48	0	100	0	48
	4	NE quadrant of Intersection with Willow Pass Rd	Multi-modal safety improvements	13,200 to 15,500	B		19,400 to 28,800	D	60	32.8	7.2	82	18	32.8
Driftwood Dr	5	Port Chicago Hwy to Pacifica Ave	Pedestrian and bicycle improvements	500	A		2,500	A	20	80	0	100	0	100

Table 7
Cost Allocation Analysis for Bay Point AOB Project List

Roadway	#	Location	Recommended Project	Existing Conditions			2040 Conditions		Percent of 2040 Total Volume			Percent of 2013 to 2040 Growth		Percent Allocated to AOB
				Daily Volume	LOS	Deficiency	Daily Volume	LOS ¹	Existing	Growth		Local	Through	
										Local	Through			
Pacifica Ave	6	Port Chicago Hwy to Alves Lane Ext	Extend roadway	NA	NA		4,000	A	68	32	0	100	0	100
Alves Lane	7	Willow Pass Rd to Pacifica Ave Ext	Extend roadway	NA	NA		4,000	A	68	32	0	100	0	100
Loftus Rd	8	Canal Rd to Willow Pass Rd	Pedestrian and bicycle improvements	2,900	A	Standards	3,100	A	94	6	0	100	0	6
Bailey Rd	9	Willow Pass Rd to Canal Rd	Pedestrian and bicycle improvements	15,200	A		16,000	A	90	6	4	60	40	6
	10	Canal Rd to BART		17,800	B		26,400	F	67	6	27	18	82	6

Percentages were estimated using Contra Costa Transportation Authority's (CCTA) travel demand model with the growth estimates summarized in Table 2
 LOS reflects conditions without improvement. Percent allocated to AOB is based on percentage shaded in grey
 Source: DKS Associates, 2014

2. If the current and future LOS conditions are the same as described under #1 but a significant increase in through traffic is projected, 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 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 of improvements along Willow Pass Road, except the cost of installing signals at the SR 4 interchange, since that is an existing deficiency (see Table 7).
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 the costs of installing signals at the Willow Pass Road interchange with SR 4, as well as the cost of improvements along Port Chicago Highway, Bailey Road and Loftus Road (see Table 7).

6.2 Widening to meet Roadway Pavement Width Standards

The allocation of costs to improve 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. This is the case for improvements to Driftwood Drive. 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 Bay Point AOB project list.

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 applies to improvements along Port Chicago Highway, Bailey Road and Loftus Road (see Table 7)

6.3 Bikeway and Walkway Improvements

On roadways that require improvements to meet the County's LOS or pavement width standards, bicycle and pedestrian facilities will be incorporated and the costs will be allocated to new development by the methods described under improvements needed to meet LOS standards, in Section 6.1 above

For projects that focus on bicycle and pedestrian safety, including Bailey Road and Loftus Road, the improvements would benefit both existing and future residents and the cost allocated to new development will equal new development's proportional share of the total future traffic volumes on those roadways.

6.4 Summary of Cost Allocation

Table 8 summarizes the allocation of the cost for each of the selected projects that will have funding from the Bay Point AOB Program.

Table 8
Allocation of Project Costs to Bay Point AOB Program

Roadway		Location	Recommended Project	Estimated Total Cost	Percent Allocated to AOB	Cost Allocated to AOB
Willow Pass Rd	1.1	West interchange at SR 4	Signalize EB and WB off-ramps	\$1,088,000	12	\$130,560
	1.2	Evora Rd at Willow Pass Ct	Intersection improvements	\$803,000	70	\$562,100
	2.1	Bailey Rd to Pittsburg City Limits	Restripe to improve capacity	\$214,000	40	\$85,600
	2.2	Intersection at Bailey Rd	Intersection improvements	\$1,058,000	40	\$423,200
Port Chicago Highway	3.1	Driftwood to West of McAvoy Rd	Pedestrian and bicycle improvements	\$2,830,000	38	\$1,075,400
	3.2	West of McAvoy Rd to Pacifica Ave	Re-align curve and add pedestrian and bicycle improvements	\$2,267,000	48	\$1,088,160
	4	NE quadrant of Intersection with Willow Pass Rd	Multi-modal safety improvements	\$1,784,000 ⁽¹⁾	32.8	\$585,152
Driftwood Dr	5	Port Chicago Hwy to Pacifica Ave	Pedestrian and bicycle improvements	\$2,457,000	100	\$2,457,000
Pacifica Ave	6	Port Chicago Hwy to Alves Lane Ext	Extend roadway	\$4,773,000	100	\$4,773,999
Alves Lane	7	Willow Pass Rd to Pacifica Ave Ext	Extend roadway	\$4,516,000	100	\$4,516,000
Loftus Rd	8	Canal Rd to Willow Pass Rd	Pedestrian and bicycle improvements	\$1,873,000	6	\$112,380
Bailey Rd	9	Willow Pass Rd to Canal Rd	Pedestrian and bicycle improvements	\$9,731,000 ⁽²⁾	6	\$583,860
	10	Canal Rd to BART		\$7,140,000 ⁽²⁾	6	\$428,400
Total				\$40,534,000	41	\$16,820,812
Sources: DKS Associates except (1) Contra Costa County Public Works and (2) BMS Design Group						

The County has various methods for funding transportation improvements within the Bay Point AOB boundary. While the Bay Point 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 Bay Point 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.

7. Method for Calculating Fees

Land Use Categories

The calculation of fees for the Bay Point AOB Program Update 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:

<u>Land Use Type</u>	<u>Units</u>
Single-Family	Dwelling units (DU)
Multi-Family	Dwelling units (DU)
Commercial/Retail	Sq. Ft.
Office	Sq. Ft
Industrial	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 used to estimate the AOB fees are shown in **Table 9**.

Table 9 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, 2014						

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) minus the current fund balance in the Bay Point AOB by the total growth in DUEs in the AOB by 2040 (see **Table 10**).

The cost for each land use type is then based on its DUE rate. The nexus-based fee rates are shown in **Table 11**.

Table 10 Growth in DUEs				
Land Use Category	Unit	Growth in Units ¹	DUE per Unit	Growth in DUEs
Singe Family	Dwelling Unit	416	1.00	416
Multi-Family		1,014	0.61	619
Retail	Square Feet	237,000	0.00142	337
Office		310,000	0.00115	357
Industrial		317,000	0.00091	288
				2,017
¹ See Table 2: "Summary of Estimated Development 2010 to 2040 Growth"				
Source: DKS Associates, 2014				

Table 11 Nexus-Based Fee Rates for Bay Point AOB			
Cost of Improvements Allocated to AOB Growth		\$16,820,812	
Current AOB Fund Balance		\$946,311	
Unfunded Costs of Improvements Allocated to AOB Growth		\$15,874,501	
Growth in Dwelling Unit Equivalents (DUE's)		2,017	
Cost per DUE		\$7,870	
Land Use	Units	DUE per Unit	Fee per Unit ¹
Single Family	Dwelling Unit	1.00	\$7,870
Multi-Family	Dwelling Unit	0.61	\$4,801
Retail	Square Foot	0.00142	\$11.18
Office	Square Foot	0.00115	\$9.05
Industrial	Square Foot	0.00091	\$7.16
¹ Fee per Unit = (Cost per DUE) x (DUE per Unit)			
Source: DKS Associates, 2015			

8. Nexus Analysis

A nexus analysis has been prepared on the Bay Point 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 the portion of the public facility attributable to the development on which the fee is imposed.

8.1 Purpose of fee

The purpose of the Bay Point 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 Bay Point AOB over the next 27 years (through 2040).

The Bay Point 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 Bay Point 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 Bay Point AOB Program will help fund transportation facilities necessary to accommodate new residential and non-residential development in the unincorporated portions of the Bay Point AOB.

8.2 Use of Fees

The fees from new development in the Bay Point 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 Bay Point AOB. The Bay Point AOB Program will help fund improvements to roadways (include the widening or extensions of arterial and collector roadways, intersection improvements and provision of shoulders) 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 Bay Point 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 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 (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 Bay Point 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 March 2015 the Bay Point AOB had a fund balance of \$946,311. One of the projects on the 1998 list, Port Chicago Highway west of McAvoy Road to Pacifica Avenue, has not yet been completed and will carry over to the proposed project list as Project 3.2. The existing balance will be earmarked to fund this project.



Appendix A
Cost Estimates for Selected Projects in Bay Point AOB

**Bay Point Area of Benefit
Engineers Estimate Summary**

Project	Roadway	Location	Item Description	Total Cost
1.1	Willow Pass Road	Willow Pass Road at SR-4 EB and WB off-ramps	Project work includes the installation of two new traffic signals at the interchange of Willow Pass Rd with both eastbound and westbound off ramps plus the restriping of the intersection approaches.	\$1,088,000
1.2	Willow Pass Road	Willow Pass Road between Evora Road and SR-4	Project work includes the widening of Willow Pass Road. Project also includes the the modification of the Willow Pass Road/Evora Road traffic signal and restriping of the intersection approaches.	\$803,000
2.1	Willow Pass Road	Willow Pass Road between Bailey Road and Pittsburg City Limits	Project work includes the restriping of Willow Pass Road to provide four travel lanes and application of a slurry seal.	\$214,000
2.2	Willow Pass Road	Willow Pass Road at Bailey Road	Project work includes the widening of Willow Pass Rd to accommodate an additional WBL and a new EBR turn lane. Project also includes restriping Bailey Rd to accommodate an additional NBR turn lane.	\$1,058,000
3.1	Port Chicago Highway	Port Chicago Hwy from Driftwood Dr to west of McAvoy Road	Project work includes the addition of an 8' bike lane/shoulder along both sides of Port Chicago Highway, and a 6.5' sidewalk along on the south side.	\$2,830,000
3.2	Port Chicago Highway	Port Chicago Hwy from west of McAvoy Rd to Pacifica Ave	Project would realign the sharp horizontal curve in Port Chicago Highway, add an EBL turn pocket at McAvoy Road, and add sidewalks along both sides of Port Chicago Highway.	\$2,267,000
4	Port Chicago Highway (1)	Port Chicago Highway at Willow Pass Road	Project would widen Port Chicago Highway to provide two 4' bike lanes and a 6.5' sidewalk along the east side of the roadway. Project would also add a 6.5' sidewalk along the north side of Willow Pass Road and a 5' bike lane in the westbound direction of Willow Pass Road. Finally, project would demolish the existing sweeping free right turn along westbound Willow Pass Road and replace with a 200' westbound right turn pocket.	\$1,784,000
5	Driftwood Drive	Driftwood Drive from Port Chicago Highway to Pacifica Avenue	Project work includes the addition of 6' shoulders and 6.5' sidewalk along both sides of Driftwood Drive.	\$2,457,000
6	Pacifica Avenue	Port Chicago Highway to Alves Lane Extension	Project work includes the construction of a new roadway (including bike lanes and sidewalk) and modification of the existing traffic signal and Pacifica Avenue and Port Chicago Highway.	\$4,773,000
7	Alves Lane	Willow Pass Road to Pacifica Avenue Extension	Project work includes the construction of a new roadway (including bike lanes and sidewalk) and modification of the existing traffic signal and Alves Lane and Willow Pass Road.	\$4,516,000
8	Loftus Road	Loftus Road from Willow Pass Road to Canal Road	Project would add 5' bike lanes and 5' sidewalk on both sides of Loftus Road.	\$1,873,000
	Bailey Road (2)	Willow Pass Rd to Canal Rd	Pedestrian & bike Improvments	\$9,731,000
		Canal Rd to BART	Pedestrian & bike Improvments	\$7,140,000
TOTAL				\$40,534,000

Sources: DKS Associates except (1) Contra Costa County Public Works and (2) BMS Design Group

DKS Associates

1970 Broadway Ste 740, Oakland CA 94612

Planning Cost Estimate**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: Signalization of Willow Pass Road & SR-4 Ramp Intersections

Project Location: Willow Pass Road at SR-4 EB and WB off-ramps

Description: Signalize EB and WB off-ramps

Project Length (ft): 200

Date of Estimate: Apr. 11, 2014

Prepared by: T. Krakow

Revision No.

Revision Date

Revised by

No.	Description	Quantity	Units	Unit Cost	Total
1	Install traffic signal with safety lighting	6	EA	\$ 90,000.00	\$ 540,000
2	Temporary traffic control	1	LS	\$ 14,000.00	\$ 14,000
3	Removal of signs	1	LS	\$ 500.00	\$ 500
4	Removal of pavement legends	1	LS	\$ 1,000.00	\$ 1,000
5	Thermoplastic striping for crosswalks	1	LS	\$ 2,000.00	\$ 2,000
6	ADA curb ramps	15	EA	\$ 3,000.00	\$ 45,000
7	Mobilization	1	LS	\$ 59,000.00	\$ 59,000

CONTRACT ITEMS LESS MOBILIZATION (TO NEAREST 1,000) \$ 603,000

Planning Engineering (TE)	\$ 66,200	Contract Items	\$ 662,000
Preliminary Engineering (Design/Survey)*	\$ 100,000	Other Costs (CON)	\$ 100,000
Utility Coordination (Design)	\$ 30,000	Contingency*	\$ 100,000
Environmental (Environmental, Real Property)	\$ 30,000	Subtotal (Contract Items)	\$ 862,000
R/W Engineering (Survey)	\$ -	Subtotal (Plan)	\$ 66,200
Real Property Labor	\$ -	Subtotal (PE)	\$ 160,000
R/W Acquisition	\$ -	Subtotal (R/W)	\$ -
Construction Engineering *	\$ 100,000		
Environmental Monitoring and Mitigation Fees	\$ -		
SUBTOTAL of OTHER COSTS (ALL)	\$ 326,200		
		Grand Total	\$ 1,088,200

* 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.)

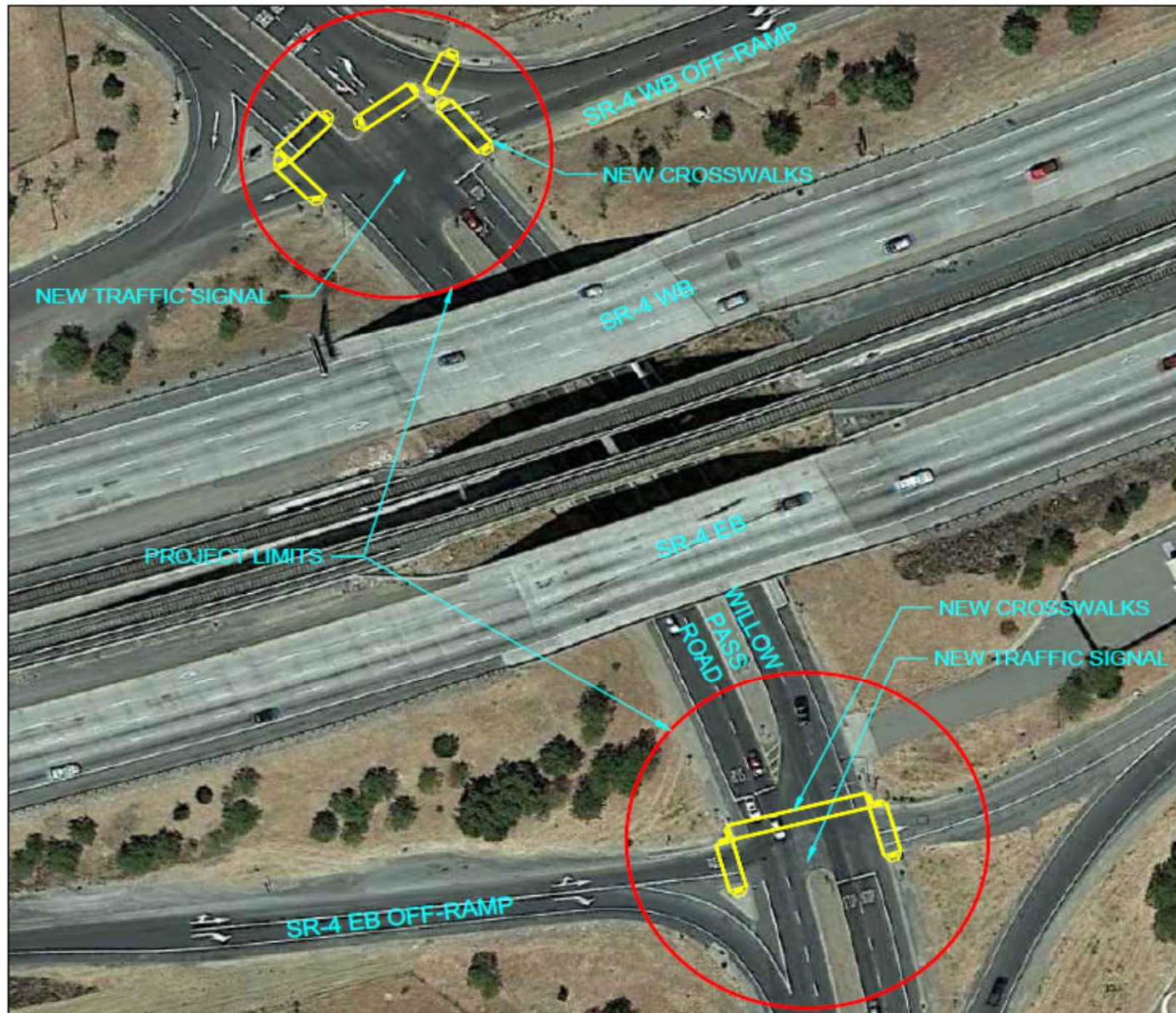
Current Year 2014

Escalation Year 2014

Escalation Rate 0.0%

➤ **TOTAL (in 2014 dollars) \$ 1,088,000**

Project 1.1: Signalization of Willow Pass Road & SR-4 Ramp Intersections



DKS Associates

1970 Broadway Ste 740. Oakland CA 94612

Planning Cost Estimate**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: Willow Pass Road Widening

Project Location: Willow Pass Road between Evora Road and SR-4

Description Intersection improvements

Project Length (ft): 340

Date of Estimate: Apr. 11, 2014

Prepared by: T. Krakow

Revision No.

Revision Date

Revised by

No.	Description	Quantity	Units	Unit Cost	Total
1	Construction Area Signs	2	EA	\$550.00	\$ 1,100
2	Temporary traffic control	1	LS	\$20,000.00	\$ 20,000
3	Prepare Water Pollution Control Plan	1	LS	\$6,000.00	\$ 6,000
4	Remove Pavement	3450	SF	\$3.00	\$ 10,350
5	Clearing and Grubbing	1	LS	\$30,000.00	\$ 30,000
6	Saw Cut Pavement Edges	680	LF	\$2.00	\$ 1,360
7	Roadway Excavation	420	CY	\$45.00	\$ 18,900
8	Imported Material (Shoulder Backing)	10	TON	\$45.00	\$ 450
9	Class 2 Aggregate Base	80	CY	\$65.00	\$ 5,200
10	Hot Mix Asphalt (Type A)	80	TON	\$110.00	\$ 8,800
11	Curb and Gutter	490	LF	\$35.00	\$ 17,150
12	Roadside Sign - One Post	2	EA	\$350.00	\$ 700
13	Concrete Sidewalk	2535	SF	\$7.50	\$ 19,013
14	ADA Curb Ramps	5	EA	\$3,000.00	\$ 15,000
15	Misc. Drainage Modifications	1	LS	\$17,900.00	\$ 17,900
16	Sign Relocation	2	EA	\$300.00	\$ 600
17	Thermoplastic Traffic Stripe - Det. 21, No Passing Zones	825	LF	\$3.00	\$ 2,475
18	Thermoplastic Traffic Stripe - Det. 27B, Right Edge Line	825	LF	\$2.00	\$ 1,650
19	Modify Traffic Signal Approach	3	EA	\$ 75,000.00	\$ 225,000
20	Mobilization	1	LS	\$ 40,200.00	\$ 40,200

CONTRACT ITEMS LESS MOBILIZATION (TO NEAREST 1,000) \$ 402,000

Planning Engineering (TE)	\$ 45,000	Contract Items	\$ 442,000
Preliminary Engineering (Design/Survey)*	\$ 100,000	Other Costs (CON)	\$ 89,000
Utility Coordination (Design)	\$ 30,000	Contingency*	\$ 67,000
Environmental (Environmental, Real Property)	\$ 30,000	Subtotal (Contract Items)	\$ 598,000
R/W Engineering (Survey)	\$ -	Subtotal (Plan)	\$ 45,000
Real Property Labor	\$ -	Subtotal (PE)	\$ 160,000
R/W Acquisition	\$ -	Subtotal (R/W)	\$ -
Construction Engineering *	\$ 89,000		
Environmental Monitoring and Mitigation Fees	\$ -		
SUBTOTAL of OTHER COSTS (ALL)	\$ 294,000		
		Grand Total	\$ 803,000

* 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.)

Current Year 2014

Escalation Year 2014

Escalation Rate 0.0%

➤ TOTAL (in 2014 dollars) \$ 803,000

Project 1.2: Willow Pass Road Widening



DKS Associates

1970 Broadway Ste 740, Oakland CA 94612

Planning Cost Estimate**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: Willow Pass Road Restriping

Project Location: Willow Pass Road between Bailey Road and Pittsburg City Limits

Description: Restripe to improve capacity

Project Length (ft): 2563

Date of Estimate: Apr. 11, 2014

Prepared by: T. Krakow

Revision No.

Revision Date

Revised by

No.	Description	Quantity	Units	Unit Cost	Total
1	Restriping lanes with thermoplastic	2563	LF	\$8.00	\$ 20,504
2	Asphaltic emulsion-slurry seal	17087	SY	\$1.00	\$ 17,087
3	Install new traffic signs	2563	LF	\$0.50	\$ 1,282
4	Temporary traffic control	1	LS	\$10,000.00	\$ 10,000
5	Mobilization	1	LS	\$ 4,900.00	\$ 4,900

CONTRACT ITEMS LESS MOBILIZATION (TO NEAREST 1,000) \$ 49,000

Planning Engineering (TE)	\$ 30,000	Contract Items	\$ 54,000
Preliminary Engineering (Design/Survey)*	\$ 100,000	Other Costs (CON)	\$ 20,000
Utility Coordination (Design)	\$ -	Contingency*	\$ 10,000
Environmental (Environmental, Real Property)	\$ -	Subtotal (Contract Items)	\$ 84,000
R/W Engineering (Survey)	\$ -	Subtotal (Plan)	\$ 30,000
Real Property Labor	\$ -	Subtotal (PE)	\$ 100,000
R/W Acquisition	\$ -	Subtotal (R/W)	\$ -
Construction Engineering *	\$ 20,000		
Environmental Monitoring and Mitigation Fees	\$ -		
SUBTOTAL of OTHER COSTS (ALL)	\$ 150,000		
		Grand Total	\$ 214,000

* Preliminary Engineering is minimum 15% of contract items. (See Issues to Consider)

* Construction Engineering is 15% of contract items. (\$20,000 min.)

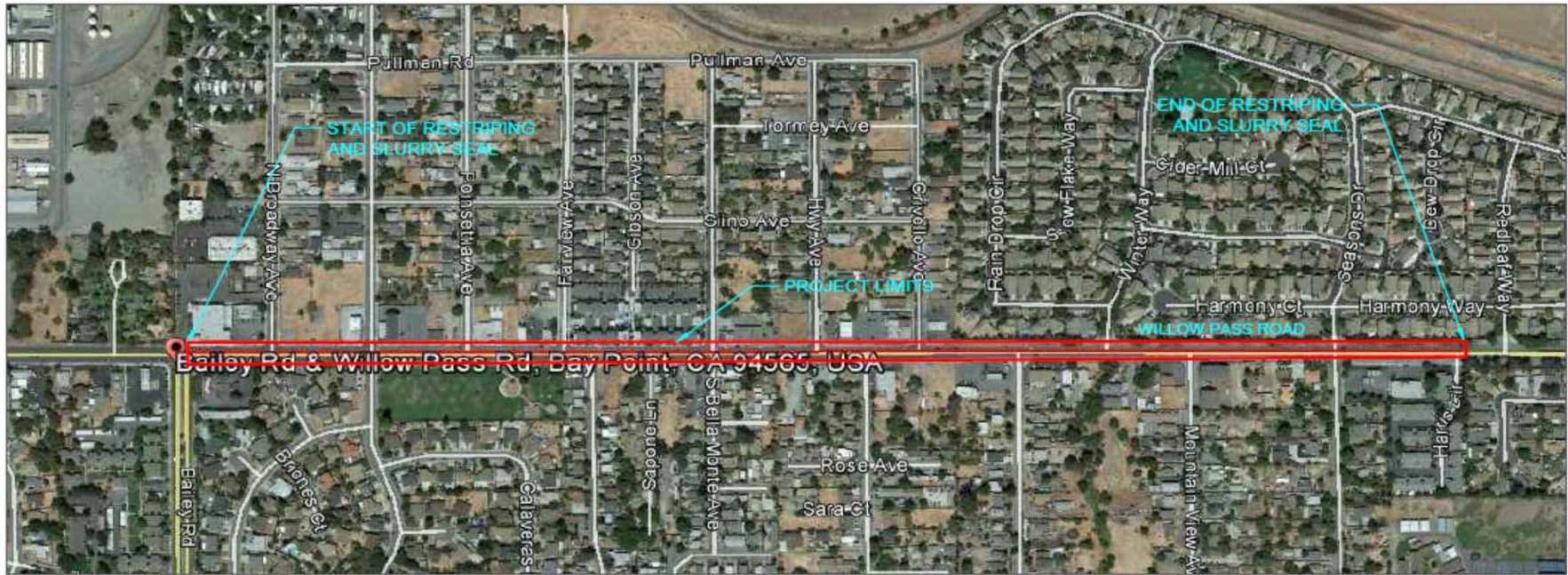
* CONTINGENCY is 15% of contract items. (\$10,000 min.)

Current Year 2014

Escalation Year 2014

Escalation Rate 0.0%

➤ TOTAL (in 2014 dollars) \$ 214,000



DKS Associates

1970 Broadway Ste 740, Oakland CA 94612

Planning Cost Estimate**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: Willow Pass Road & Bailey Road Intersection Improvements

Project Location: Willow Pass Road at Bailey Road

Description: Intersection improvements

Project Length (ft): N/A

Date of Estimate: Apr. 11, 2014

Prepared by: T. Krakow

Revision No.
Revision Date
Revised by

No.	Description	Quantity	Units	Unit Cost	Total
Widen Willow Pass Road to accommodate additional WBL turn lane					
1	Class 2 Aggregate Base	156	CY	\$65.00	\$ 10,200
2	Hot Mix Asphalt (Type A)	116	Ton	\$110.00	\$ 12,800
3	Lane restriping	175	LF	\$8.00	\$ 1,400
4	Demolish existing S/W, landscaping, pavement	1	LS	\$20,000.00	\$ 20,000
5	Excavation	156	CY	\$65.00	\$ 10,200
6	Reconstruct Concrete Curb and Gutter	175	LF	\$35.00	\$ 6,200
7	Reconstruct Concrete Sidewalk	875	SF	\$7.50	\$ 6,600
8	Relocate traffic signal equipment (one quadrant)	1	LS	\$75,000.00	\$ 75,000
9	Construct New Curb Ramp	1	EA	\$3,000.00	\$ 3,000
10	Misc. Drainage Modifications	1	LS	\$28,900.00	\$ 28,900
WB Left Turn Lane Subtotal (LS):					\$ 174,300
Widen Willow Pass Road to accommodate exclusive EBR turn lane					
11	Class 2 Aggregate Base	89	CY	\$65.00	\$ 5,800
12	Hot Mix Asphalt (Type A)	66	Ton	\$110.00	\$ 7,300
13	Lane restriping	100	LF	\$8.00	\$ 800
14	Demolish existing S/W and pavement	1	LS	\$11,500.00	\$ 11,500
15	Excavation	51	CY	\$65.00	\$ 3,400
16	Reconstruct Concrete Curb and Gutter	100	LF	\$35.00	\$ 3,500
17	Reconstruct Concrete Sidewalk	500	SF	\$7.50	\$ 3,800
18	Relocate traffic signal equipment (one quadrant)	1	LS	\$75,000.00	\$ 75,000
19	Construct New Curb Ramp	1	EA	\$3,000.00	\$ 3,000
20	Misc. Drainage Modifications	1	LS	\$22,700.00	\$ 22,700
EB Right Turn Lane Subtotal (LS):					\$ 136,800
Restripe Bailey Road for second NBR turn lane					
21	Lane restriping	210	LF	\$8.00	\$ 1,700
Restriping Subtotal (LS):					\$ 1,700
Modify traffic signal					
22	Modify traffic signal approach	2	EA	\$75,000.00	\$ 150,000
Signal Modification Subtotal (LS):					\$ 150,000
23	Construction Area Signs	1	EA	\$550.00	\$ 550
24	Temporary traffic control	1	LS	\$46,300.00	\$ 46,300
25	Prepare Water Pollution Control Plan	1	LS	\$6,000.00	\$ 6,000
26	Surveying	1	LS	\$30,000.00	\$ 30,000
27	Mobilization	1	LS	\$ 54,600.00	\$ 54,600

CONTRACT ITEMS LESS MOBILIZATION (TO NEAREST 1,000) \$ 546,000

Project Number

2.2

Planning Engineering (TE)	\$ 55,000
Preliminary Engineering (Design/Survey) *	\$ 100,000
Utility Coordination (Design)	\$ 30,000
Environmental (Environmental, Real Property)	\$ 30,000
R/W Engineering (Survey)	\$ 30,000
Real Property Labor	\$ 20,000
R/W Acquisition	\$ 12,600
Construction Engineering *	\$ 90,000
Environmental Monitoring and Mitigation Fees	\$ -
SUBTOTAL of OTHER COSTS (ALL)	\$ 367,600

Contract Items	\$ 600,000
Other Costs (CON)	\$ 90,000
Contingency *	\$ 90,000

Subtotal (Contract Items)	\$ 780,000
Subtotal (Plan)	\$ 55,000
Subtotal (PE)	\$ 160,000
Subtotal (R/W)	\$ 62,600

Grand Total	\$ 1,057,600
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Current Year 2014

Escalation Year 2014

Escalation Rate 0.0%

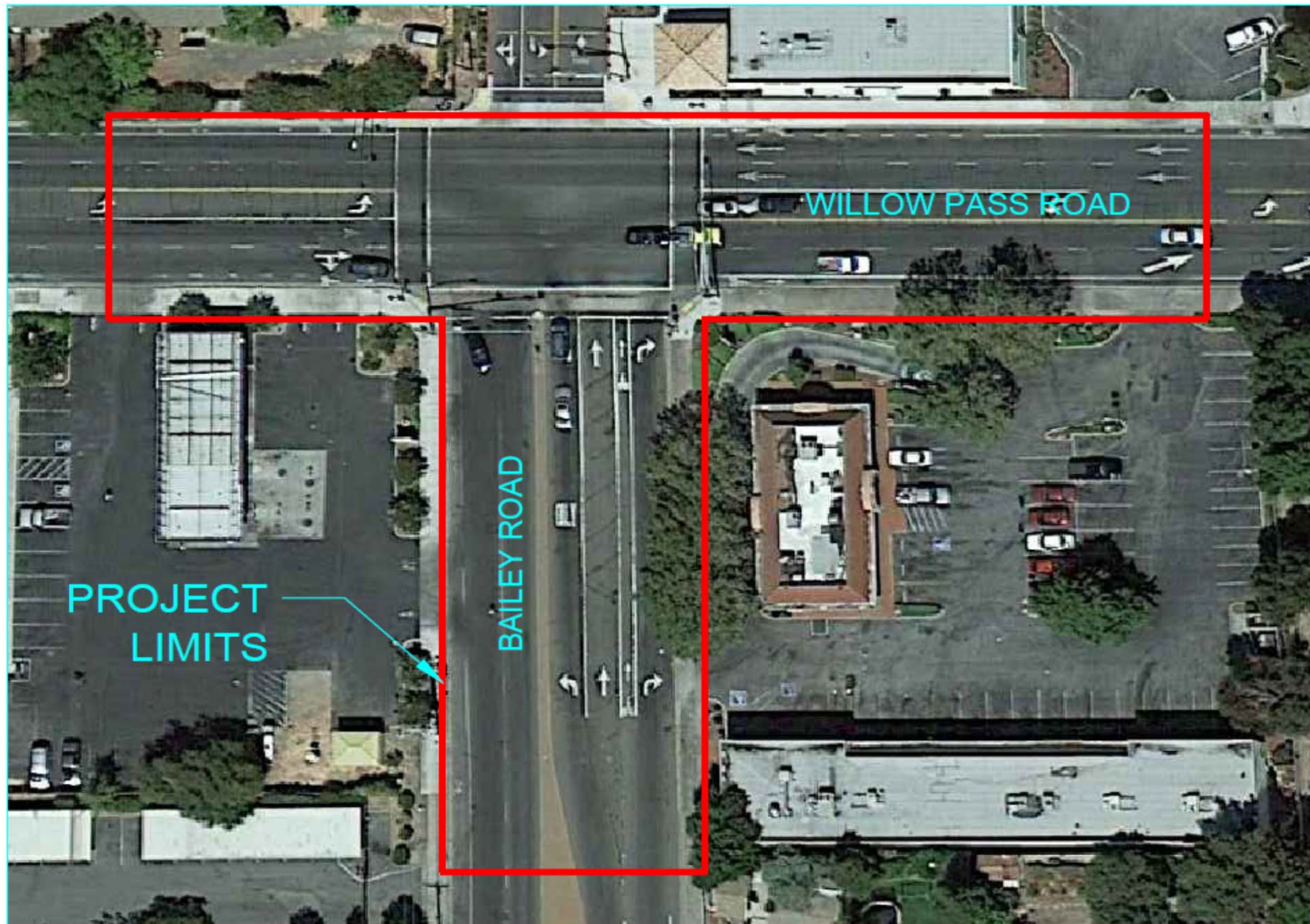
➤ **TOTAL (in 2014 dollars) \$ 1,058,000**

* 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: Willow Pass Road & Bailey Road Intersection Improvements



DKS Associates

1970 Broadway Ste 740, Oakland CA 94612

Planning Cost Estimate**Project Number****3.1**
☒ 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: Port Chicago Highway Sidewalk and Bike Lanes

Project Location: Port Chicago Hwy from Driftwood Dr to west of McAvoy Road

Description: Pedestrian and bicycle improvements

Project Length (ft): 4962

Date of Estimate: Apr. 11, 2014

Prepared by: T. Krakow

 Revision No.
 Revision Date
 Revised by

No.	Description	Quantity	Units	Unit Cost	Total
1	Clearing and grubbing	79392	SF	\$0.50	\$ 39,696
2	Earthwork	79392	SF	\$2.00	\$ 158,784
3	Class 2 Aggregate Base	4416	CY	\$65.00	\$ 287,052
4	Hot Mix Asphalt (Type A)	3291	Ton	\$110.00	\$ 362,042
5	Striping	4962	LF	\$3.00	\$ 14,886
6	Concrete Sidewalk	32253	SF	\$7.50	\$ 241,898
7	Curb & Gutter	9924	LF	\$35.00	\$ 347,340
8	ADA curb ramp	7	EA	\$3,000.00	\$ 21,000
9	Temporary traffic control	1	LS	\$73,600.00	\$ 73,600
10	Mobilization	1	LS	\$ 154,600.00	\$ 154,600

CONTRACT ITEMS LESS MOBILIZATION (TO NEAREST 1,000) \$ 1,546,000

Planning Engineering (TE)	\$ 155,000	Contract Items	\$ 1,701,000
Preliminary Engineering (Design/Survey) *	\$ 256,000	Other Costs (CON)	\$ 256,000
Utility Coordination (Design)	\$ 147,000	Contingency *	\$ 256,000
Environmental (Environmental, Real Property)	\$ 59,000	Subtotal (Contract Items)	\$ 2,213,000
R/W Engineering (Survey)	\$ -	Subtotal (Plan)	\$ 155,000
Real Property Labor	\$ -	Subtotal (PE)	\$ 462,000
R/W Acquisition	\$ -	Subtotal (R/W)	\$ -
Construction Engineering *	\$ 256,000		
Environmental Monitoring and Mitigation Fees	\$ -		
SUBTOTAL of OTHER COSTS (ALL)	\$ 873,000		
		Grand Total	\$ 2,830,000

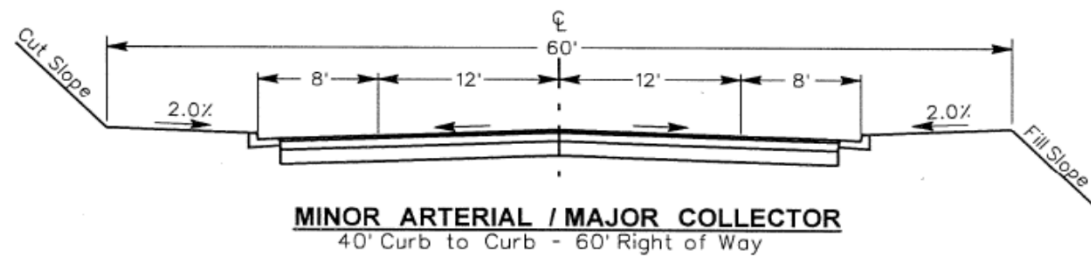
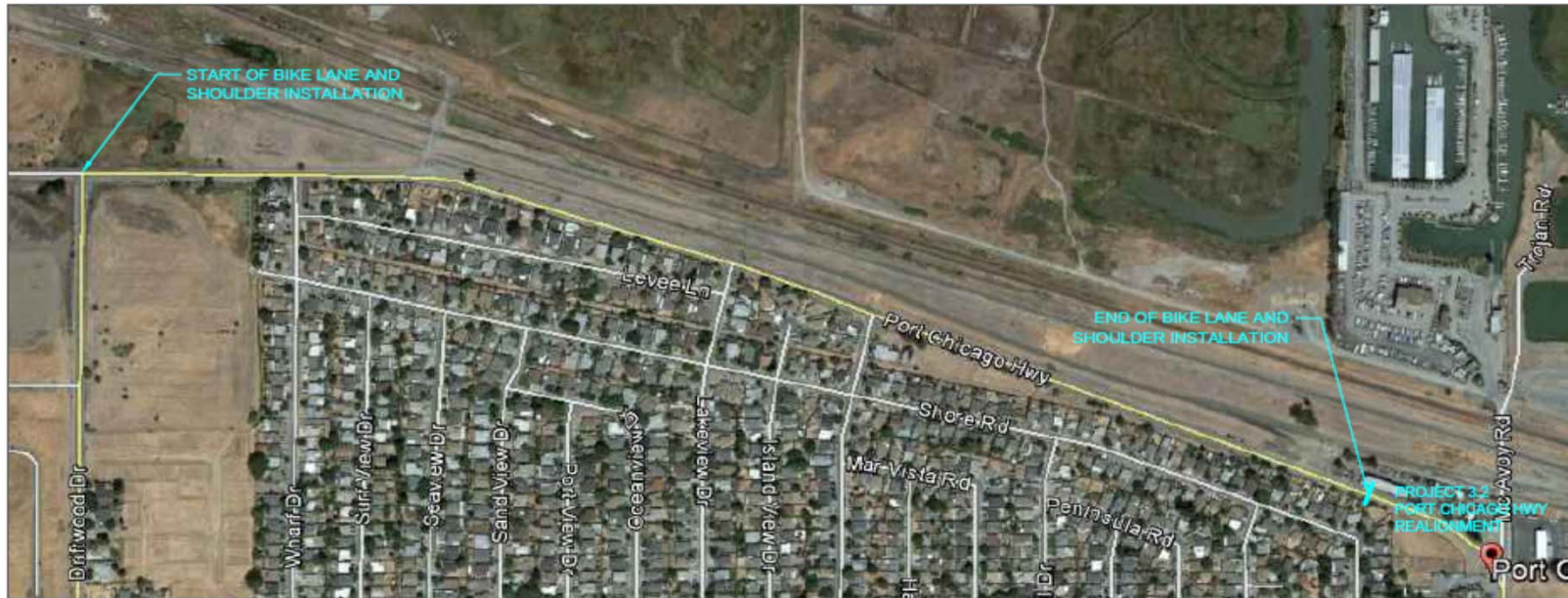
* Preliminary Engineering is minimum 15% of contract items. (See Issues to Consider)

* Construction Engineering is 15% of contract items. (\$20,000 min.)

* CONTINGENCY is 15% of contract items. (\$10,000 min.)

 Current Year 2014
 Escalation Year 2014
 Escalation Rate 0.0%
➤ TOTAL (in 2014 dollars) \$ 2,830,000

Project 3.1: Port Chicago Highway Sidewalk and Bike Lanes



DKS Associates

1970 Broadway Ste 740, Oakland CA 94612

Planning Cost Estimate**Project Number****3.2**☒ 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: Port Chicago Highway Realignment

Project Location: Port Chicago Hwy from west of McAvoy Rd to Pacifica Ave

Description: Project would realign the sharp horizontal curve in Port Chicago Highway, add an EBL turn pocket at McAvoy Road, and add sidewalks along both sides of Port Chicago Highway.

Project Length (ft): 1025

Date of Estimate: Apr. 11, 2014

Prepared by: T. Krakow

Revision No.	1
Revision Date	8/1/2016
Revised by	J. Long

No.	Description	Quantity	Units	Unit Cost	Total
Section 1 Realignment (50' length)					
1	Roadway Excavation	3116	CY	\$70.00	\$ 218,200
2	Class 2 Aggregate Base	148	CY	\$65.00	\$ 9,700
3	Hot Mix Asphalt (Type A)	83	Ton	\$110.00	\$ 9,100
4	Striping	50	LF	\$3.00	\$ 200
5	Curb & gutter	100	LF	\$35.00	\$ 3,500
6	Concrete sidewalk	650	SF	\$7.50	\$ 4,900
Section 1 Subtotal (LS):					\$ 245,600
Section 2 Realignment (400' length)					
7	Roadway Excavation	1704	CY	\$70.00	\$ 119,300
8	Class 2 Aggregate Base	1363	CY	\$65.00	\$ 88,600
9	Hot Mix Asphalt (Type A)	501	Ton	\$110.00	\$ 55,200
10	Striping	400	LF	\$3.00	\$ 1,200
11	Curb & gutter	800	LF	\$35.00	\$ 28,000
12	Concrete sidewalk	5200	SF	\$7.50	\$ 39,000
Section 2 Subtotal (LS):					\$ 331,300
Section 3 Realignment (350' length)					
13	Roadway Excavation	1458	CY	\$70.00	\$ 102,100
14	Class 2 Aggregate Base	1167	CY	\$65.00	\$ 75,900
15	Hot Mix Asphalt (Type A)	780	Ton	\$110.00	\$ 85,800
16	Striping	350	LF	\$3.00	\$ 1,100
17	Curb & gutter	700	LF	\$35.00	\$ 24,500
18	Concrete sidewalk	4550	SF	\$7.50	\$ 34,200
Section 3 Subtotal (LS):					\$ 323,600
Section 4 Realignment (100' length)					
19	Roadway Excavation	139	CY	\$70.00	\$ 9,800
20	Hot Mix Asphalt (Type A)	62	Ton	\$110.00	\$ 6,900
21	Striping	100	LF	\$3.00	\$ 300
22	Curb & gutter	100	LF	\$35.00	\$ 3,500
23	Concrete sidewalk	650	SF	\$7.50	\$ 4,900
24	ADA Curb Ramp	2	EA	\$3,000.00	\$ 6,000
Section 4 Subtotal (LS):					\$ 31,400
Section 5 Realignment (125' length)					
25	Roadway Excavation	185	CY	\$70.00	\$ 13,000
26	Class 2 Aggregate Base	148	CY	\$65.00	\$ 9,700
27	Hot Mix Asphalt (Type A)	99	Ton	\$110.00	\$ 10,900
28	Striping	125	LF	\$3.00	\$ 400
29	Curb & gutter	250	LF	\$35.00	\$ 8,800
30	Concrete sidewalk**	6175	SF	\$7.50	\$ 46,400
31	ADA Curb Ramp	2	EA	\$3,000.00	\$ 6,000
Section 5 Subtotal (LS):					\$ 95,200

32	Construction Area Signs	1	EA	\$550.00	\$ 550
33	Clearing and grubbing	1	LS	\$30,000.00	\$ 30,000
34	Temporary traffic control	1	LS	\$102,700.00	\$ 102,700
35	Prepare Water Pollution Control Plan	1	LS	\$6,000.00	\$ 6,000
36	Surveying	1	LS	\$30,000.00	\$ 30,000
37	Mobilization	1	LS	\$ 119,600.00	\$ 119,600

CONTRACT ITEMS LESS MOBILIZATION (TO NEAREST 1,000) \$ 1,196,000

Planning Engineering (TE)	\$ 120,000	Contract Items	\$ 1,316,000
Preliminary Engineering (Design/Survey) *	\$ 198,000	Other Costs (CON)	\$ 198,000
Utility Coordination (Design)	\$ 90,000	Contingency *	\$ 198,000
Environmental (Environmental, Real Property)	\$ 51,000	Subtotal (Contract Items)	\$ 1,712,000
R/W Engineering (Survey)	\$ 30,000	Subtotal (Plan)	\$ 120,000
Real Property Labor	\$ 30,000	Subtotal (PE)	\$ 339,000
R/W Acquisition	\$ 36,400	Subtotal (R/W)	\$ 96,400
Construction Engineering *	\$ 198,000		
Environmental Monitoring and Mitigation Fees	\$ -		
SUBTOTAL of OTHER COSTS (ALL)	\$ 753,400		
		Grand Total	\$ 2,267,400

* 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.)

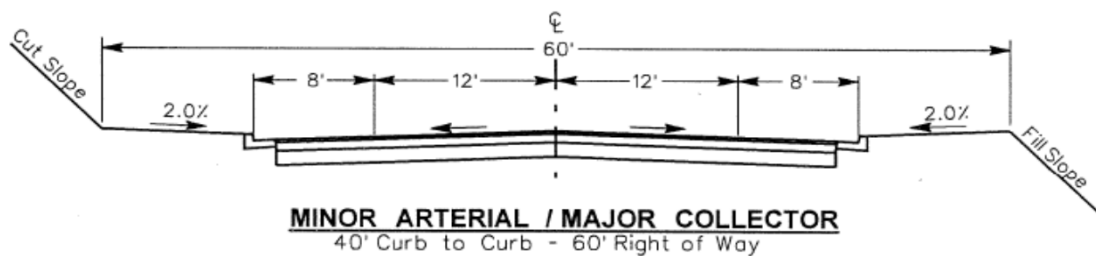
** Project includes additional 700 ft. of sidewalk between Skipper Rd and Pacifica Ave

Current Year 2014
Escalation Year 2014
Escalation Rate 0.0%

➤ TOTAL (in 2014 dollars) \$ 2,267,000

Project 3.2: Port Chicago Highway Realignment

Note: Project also includes 700 feet of sidewalk along Port Chicago Hwy between Skipper Rd and Pacifica Ave



Transportation Engineering

Planning Cost Estimate

Contra Costa County Department of Public Works

WO 4051

- ☒ Click here if the project schedule for this project is to be 50 days or
☐ Click here if this project is a surface treatment or overlay project.

Project Name: Port Chicago HWY-Willow Pass Road Bike Lane and Pedestrian Improvements

Alternative: Ultimate Alternative: Sidewalk/curb Improvements, revised bike lanes , signal modifications, and island modifications to T-Intx

Project Location: Port Chicago HWY-Willow Pass Road Intersection from Lynbrook Drive to Weldon Street

Assumptions: R=5.0, TI = 9.0

Project Length (ft): 1400

Date of Estimate: Apr. 30, 2014

Prepared by: L. Leong

Revision No.
Revision Date
Revised by

No.	Description	Quantity	Units	Unit Cost	Total
1	Mobilization	1	LS	\$ 57,000.00	\$ 57,000
2	Traffic Control	1	LS	\$ 40,000.00	\$ 40,000
3	Construction Area Signs	6	EA	\$ 550.00	\$ 3,300
4	Pavement Striping Removal	870	LF	\$ 1.50	\$ 1,305
5	Pavement Marking Removal	126	SF	\$ 10.00	\$ 1,260
6	Saw Cut	1000	LF	\$ 3.25	\$ 3,250
7	Clearing and Grubbing	1	LS	\$ 14,000.00	\$ 14,000
8	Remove AC Curb	617	LF	\$ 9.00	\$ 5,553
9	Roadway Excavation	640	CY	\$ 50.00	\$ 31,983
10	Minor Concrete Sidewalk	12520	SF	\$ 12.50	\$ 156,500
11	Curb and Gutter	1353	LF	\$ 35.00	\$ 47,355
12	ADA Curb Ramps	5	EA	\$ 3,500.00	\$ 17,500
13	Minor Utility Adjustment	1	LS	\$ 15,000.00	\$ 15,000
14	Driveway Conform	1	EA	\$ 5,000.00	\$ 5,000
15	Aggregate Base	1209	TON	\$ 40.00	\$ 48,359
16	Hot Mix Asphalt	307	TON	\$ 185.00	\$ 56,756
17	Traffic Sign Installation - Bike Lane	4	EA	\$ 350.00	\$ 1,400
18	Traffic Sign Replacement	6	EA	\$ 350.00	\$ 2,100
19	Island Modifications (remove Curb, Landscape, Irr.)	1	LS	\$ 210,900.00	\$ 210,900
20	Pavement Markings	1	LS	\$ 37,600.00	\$ 37,600
21	Traffic Signal Modifications	1	LS	\$ 60,000.00	\$ 60,000
22	Enhancement @ intx (comm. sign, wayfinding signage, etc.)	1	LS	\$ 40,000.00	\$ 40,000
23	Slurry Seal + \$10k add'l mobilization	13000	SY	\$ 1.75	\$ 32,750
24	Storm Drain Pipe, 18 in dia	80	LF	\$ 600.00	\$ 48,000
25	Type A DI	2	EA	\$ 5,000.00	\$ 10,000

PLANNING	Planning Engineering (TE)	\$ 102,000	CONTRACT ITEMS	\$ 947,000
PE	Preliminary Engineering (Design)	\$ 187,000	OTHER COSTS (CON)	\$ 186,000
	Utility Coordination (Design)	\$ 87,000	CONTINGENCY*	\$ 90,000
	Environmental	\$ 152,000	SUBTOTAL (Pre-Con)	\$ 561,000
	Survey Work	\$ 15,000	SUBTOTAL (PLAN)	\$ 102,000
R/W	Real Property Labor (including TCE's)	\$ 18,000	SUBTOTAL (PE)	\$ 426,000
	R/W Acquisition	\$ -	SUBTOTAL (R/W)	\$ 33,000
CON	Construction Engineering	\$ 163,000		
	Environmental Monitoring and Mitigation Fees	\$ 23,000	GRAND TOTAL	\$ 1,784,000
	SUBTOTAL of OTHER COSTS (ALL)	\$ 747,000		

* Preliminary Engineering is minimum 15% of contract items. (See Issues to Consider)

* Construction Engineering is 15% of contract items (\$20,000 min.)

* CONTINGENCY is 10% of contract items plus construction engineering. (\$10,000 min.)

➤ **TOTAL (in 2013 dollars) \$ 1,784,000**

Project 4: Port Chicago Highway Complete Street



DKS Associates

1970 Broadway Ste 740, Oakland CA 94612

Planning Cost Estimate**Project Number****5**
☐ 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: Driftwood Drive Safety Improvements

Project Location: Driftwood Drive from Port Chicago Highway to Pacifica Avenue

Description: Pedestrian and bicycle improvements

Project Length (ft): 2590

Date of Estimate: Apr. 11, 2014

Prepared by: T. Krakow

Revision No.

Revision Date

Revised by

No.	Description	Quantity	Units	Unit Cost	Total
1	Clearing and grubbing	64750	SF	\$0.50	\$ 32,375
2	Earthwork	64750	SF	\$2.00	\$ 129,500
3	Class 2 Aggregate Base	863	CY	\$65.00	\$ 56,117
4	Hot Mix Asphalt (Type A)	641	Ton	\$110.00	\$ 70,513
5	Striping	2590	LF	\$3.00	\$ 7,770
6	Concrete sidewalk	33670	SF	\$7.50	\$ 252,525
7	Curb & Gutter	5180	LF	\$35.00	\$ 181,300
8	Misc drainage modifications	1	LS	\$388,500.00	\$ 388,500
9	Temporary traffic control	1	LS	\$55,900.00	\$ 55,900
10	Mobilization	1	LS	\$ 117,400.00	\$ 117,400

CONTRACT ITEMS LESS MOBILIZATION (TO NEAREST 1,000) \$ 1,174,000

Planning Engineering (TE)	\$ 118,000	Contract Items	\$ 1,292,000
Preliminary Engineering (Design/Survey) *	\$ 194,000	Other Costs (CON)	\$ 194,000
Utility Coordination (Design)	\$ 56,000	Contingency*	\$ 194,000
Environmental (Environmental, Real Property)	\$ 45,000	Subtotal (Contract Items)	\$ 1,680,000
R/W Engineering (Survey)	\$ 59,000	Subtotal (Plan)	\$ 118,000
Real Property Labor	\$ 59,000	Subtotal (PE)	\$ 295,000
R/W Acquisition	\$ 246,000	Subtotal (R/W)	\$ 364,000
Construction Engineering *	\$ 194,000		
Environmental Monitoring and Mitigation Fees	\$ -		
SUBTOTAL of OTHER COSTS (ALL)	\$ 971,000		
		Grand Total	\$ 2,457,000

* 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.)

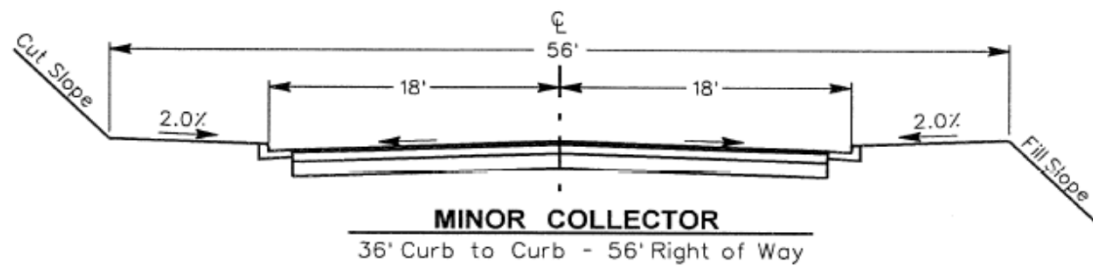
Current Year 2014

Escalation Year 2014

Escalation Rate 0.0%

➤ **TOTAL (in 2014 dollars) \$ 2,457,000**

Project 5: Driftwood Drive Safety Improvements



1970 Broadway Ste 740, Oakland CA 94612

Project Number

6

☐ 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: Pacifica Avenue Extension
 Project Location: Port Chicago Highway to Alves Lane Extension

Description: Extend roadway

Project Length (ft): 2660

Date of Estimate: Apr. 11, 2014

Prepared by: T. Krakow

Revision No.
 Revision Date
 Revised by

No.	Description	Quantity	Units	Unit Cost	Total
1	Clearing and grubbing	148960	SF	\$0.50	\$ 74,480
2	Earthwork	148960	SF	\$2.00	\$ 297,920
3	Class 2 Aggregate Base	5200	CY	\$65.00	\$ 337,968
4	Hot Mix Asphalt (Type A)	2560	Ton	\$110.00	\$ 281,628
5	Striping	2660	LF	\$3.00	\$ 7,980
6	Concrete Sidewalk	34580	SF	\$7.50	\$ 259,350
7	Curb & Gutter	5320	LF	\$35.00	\$ 186,200
8	Utility pole relocation	1	LS	\$133,000.00	\$ 133,000
9	Install traffic signal per approach	1	EA	\$90,000.00	\$ 90,000
10	Modify traffic signal per approach	3	EA	\$75,000.00	\$ 225,000
11	Temporary traffic control	1	LS	\$94,700.00	\$ 94,700
12	Mobilization	1	LS	\$ 198,800.00	\$ 198,800

CONTRACT ITEMS LESS MOBILIZATION (TO NEAREST 1,000) \$ 1,988,000

Planning Engineering (TE)	\$ 199,000	Contract Items	\$ 2,187,000
Preliminary Engineering (Design/Survey)*	\$ 329,000	Other Costs (CON)	\$ 329,000
Utility Coordination (Design)	\$ 76,000	Contingency*	\$ 329,000
Environmental (Environmental, Real Property)	\$ 61,000	Subtotal (Contract Items)	\$ 2,845,000
R/W Engineering (Survey)	\$ 110,000	Subtotal (Plan)	\$ 199,000
Real Property Labor	\$ 110,000	Subtotal (PE)	\$ 466,000
R/W Acquisition	\$ 1,042,720	Subtotal (R/W)	\$ 1,262,720
Construction Engineering *	\$ 329,000		
Environmental Monitoring and Mitigation Fees	\$ -		
SUBTOTAL of OTHER COSTS (ALL)	\$ 2,256,720		
		Grand Total	\$ 4,772,720

* Preliminary Engineering is minimum 15% of contract items. (See Issues to Consider)

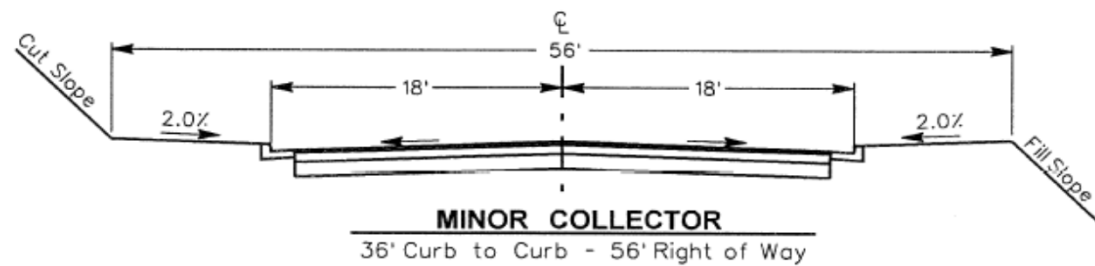
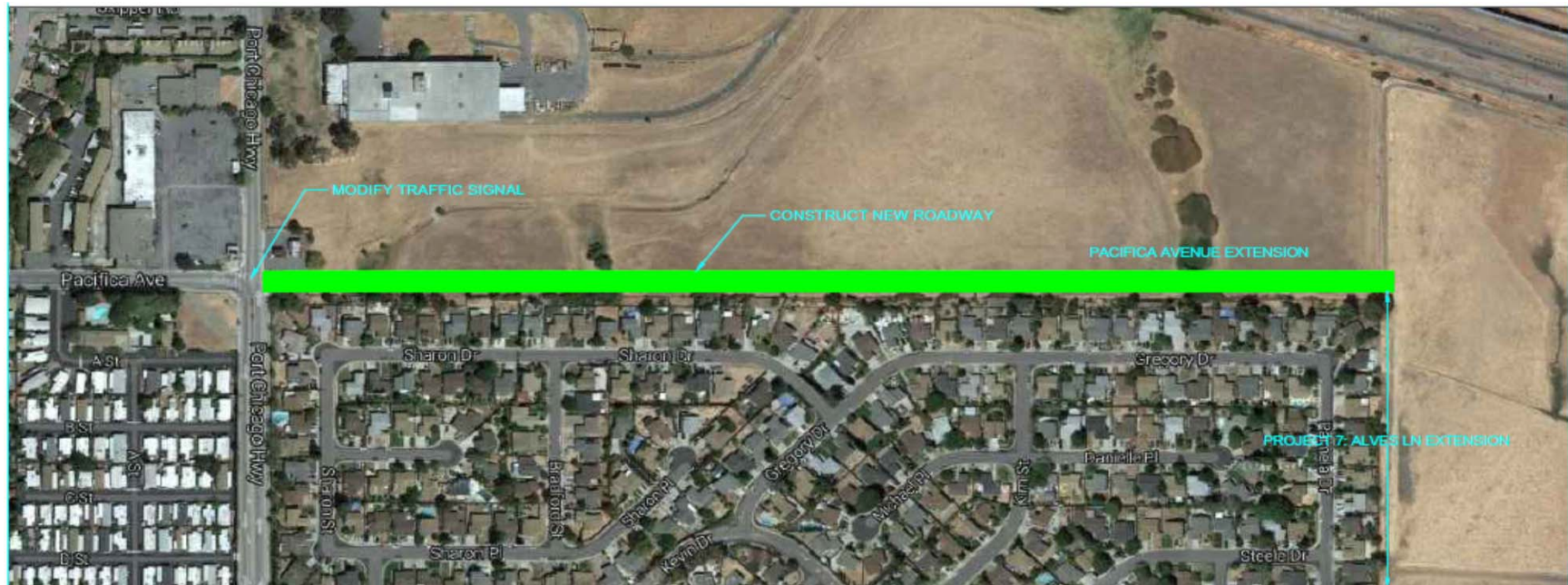
* Construction Engineering is 15% of contract items. (\$20,000 min.)

* CONTINGENCY is 15% of contract items. (\$10,000 min.)

Current Year 2014
 Escalation Year 2014
 Escalation Rate 0.0%

➤ TOTAL (in 2014 dollars) \$ 4,773,000

Project 6: Pacifica Avenue Extension



DKS Associates

1970 Broadway Ste 740, Oakland CA 94612

Planning Cost Estimate**Project Number****7**
☒ 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: **Alves Lane Extension**

Project Location: **Willow Pass Road to Pacifica Avenue Extension**

Description: **Extend roadway**

Project Length (ft): **2575**

Date of Estimate: **Apr. 11, 2014**

Prepared by: **T. Krakow**

Revision No.
Revision Date
Revised by

No.	Description	Quantity	Units	Unit Cost	Total
1	Clearing and grubbing	144200	SF	\$0.50	\$ 72,100
2	Earthwork	144200	SF	\$2.00	\$ 288,400
3	Class 2 Aggregate Base	5150	CY	\$65.00	\$ 334,750
4	Hot Mix Asphalt (Type A)	2889	Ton	\$110.00	\$ 317,807
5	Striping	2575	LF	\$3.00	\$ 7,725
6	Concrete Sidewalk	33475	SF	\$7.50	\$ 251,063
7	Curb & Gutter	5150	LF	\$35.00	\$ 180,250
8	Install traffic signal per approach	1	EA	\$90,000.00	\$ 90,000
9	Modify traffic signal per approach	3	EA	\$75,000.00	\$ 225,000
10	Temporary traffic control	1	LS	\$88,400.00	\$ 88,400
11	Mobilization	1	LS	\$ 185,500.00	\$ 185,500

CONTRACT ITEMS LESS MOBILIZATION (TO NEAREST 1,000) \$ 1,855,000

Planning Engineering (TE)	\$ 186,000	Contract Items	\$ 2,041,000
Preliminary Engineering (Design/Survey) *	\$ 307,000	Other Costs (CON)	\$ 307,000
Utility Coordination (Design)	\$ 85,000	Contingency *	\$ 307,000
Environmental (Environmental, Real Property)	\$ 68,000	Subtotal (Contract Items)	\$ 2,655,000
R/W Engineering (Survey)	\$ 103,000	Subtotal (Plan)	\$ 186,000
Real Property Labor	\$ 103,000	Subtotal (PE)	\$ 460,000
R/W Acquisition	\$ 1,009,400	Subtotal (R/W)	\$ 1,215,400
Construction Engineering *	\$ 307,000		
Environmental Monitoring and Mitigation Fees	\$ -		
SUBTOTAL of OTHER COSTS (ALL)	\$ 2,168,400		
		Grand Total	\$ 4,516,400

* Preliminary Engineering is minimum 15% of contract items. (See Issues to Consider)

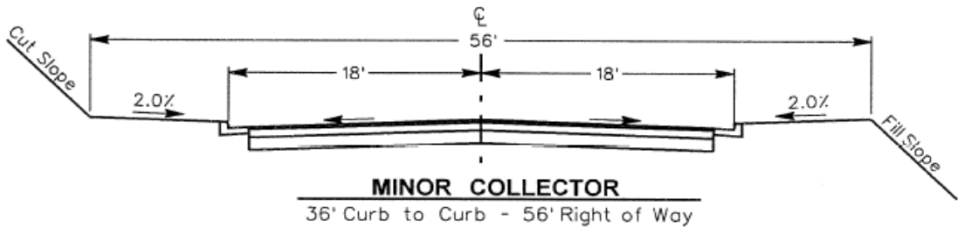
* Construction Engineering is 15% of contract items. (\$20,000 min.)

* CONTINGENCY is 15% of contract items. (\$10,000 min.)

Current Year 2014
Escalation Year 2014
Escalation Rate 0.0%

➤ **TOTAL (in 2014 dollars) \$ 4,516,000**

Project 7: Alves Lane Extension



- ☒ 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: Loftus Road Safety Improvements
 Project Location: Loftus Road from Willow Pass Road to Canal Road

Description: Pedestrian and bicycle improvements

Project Length (ft): 2535

Date of Estimate: Apr. 11, 2014

Prepared by: T. Krakow

Revision No.
 Revision Date
 Revised by

No.	Description	Quantity	Units	Unit Cost	Total
Section 1: Willow Pass Road to Hanlon Way (1268' length)					
1	Clearing and grubbing	38040	SF	\$0.50	\$ 19,100
2	Earthwork	38040	SF	\$2.00	\$ 76,100
3	Class 2 Aggregate Base	939	CY	\$65.00	\$ 61,100
4	Hot Mix Asphalt (Type A)	348	Ton	\$110.00	\$ 38,400
5	Striping	1268	LF	\$3.00	\$ 3,900
6	Curb & gutter	2536	LF	\$35.00	\$ 88,800
7	Concrete sidewalk	12680	SF	\$7.50	\$ 95,100
8	ADA curb ramp	4	EA	\$3,000.00	\$ 12,000
9	Driveway cut	40	EA	\$1,400.00	\$ 56,000
10	Misc Drainage Modifications	1	LS	\$45,000.00	\$ 45,000
Section 1 Subtotal (LS):					\$ 495,500
Section 2: Hanlon Way to Canal Road (1267' length)					
11	Clearing and grubbing	25360	SF	\$0.50	\$ 12,700
12	Earthwork	25360	SF	\$2.00	\$ 50,800
13	Class 2 Aggregate Base	939	CY	\$65.00	\$ 61,100
14	Hot Mix Asphalt (Type A)	418	Ton	\$110.00	\$ 46,000
15	Striping	1267	LF	\$3.00	\$ 3,900
16	Curb & gutter	2534	LF	\$35.00	\$ 88,700
17	Concrete sidewalk	12670	SF	\$7.50	\$ 95,100
18	ADA curb ramp	4	EA	\$3,000.00	\$ 12,000
19	Driveway cut	37	EA	\$1,400.00	\$ 51,800
20	Misc Drainage Modifications	1	LS	\$45,000.00	\$ 45,000
Section 2 Subtotal (LS):					\$ 467,100
21	Temporary traffic control	1	LS	\$48,100.00	\$ 48,100
22	Mobilization	1	LS	\$ 101,070.00	\$ 101,070

CONTRACT ITEMS LESS MOBILIZATION (TO NEAREST 1,000) \$ 1,010,700

Planning Engineering (TE)	\$ 102,000	Contract Items	\$ 1,111,770
Preliminary Engineering (Design/Survey)*	\$ 167,000	Other Costs (CON)	\$ 167,000
Utility Coordination (Design)	\$ 38,000	Contingency*	\$ 167,000
Environmental (Environmental, Real Property)	\$ 31,000	Subtotal (Contract Items)	\$ 1,445,770
R/W Engineering (Survey)	\$ 30,000	Subtotal (Plan)	\$ 102,000
Real Property Labor	\$ 30,000	Subtotal (PE)	\$ 236,000
R/W Acquisition	\$ 29,575	Subtotal (R/W)	\$ 89,575
Construction Engineering *	\$ 167,000		
Environmental Monitoring and Mitigation Fees	\$ -		
SUBTOTAL of OTHER COSTS (ALL)	\$ 594,575		
		Grand Total	\$ 1,873,345

* 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.)

Current Year 2014
 Escalation Year 2014
 Escalation Rate 0.0%

➤ **TOTAL (in 2014 dollars) \$ 1,873,000**

Project 8: Loftus Road Safety Improvements

