

Draft Nexus Study Alamo Area of Benefit

Prepared By:



in association with Urban Economics

Prepared For:
Contra Costa County
Public Works Department

October 2016

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1. Introduction

This section describes the background and purpose of the Nexus Study as it applies to the Alamo Area of Benefit Program.

1.1 Background and Purpose

The purpose of the Alamo 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 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 fee program is to provide an equitable means of ensuring that future development contributes its proportional share of the costs 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 Alamo AOB Program is a fee mechanism providing funds to construct transportation improvements to serve new residential, commercial and industrial development within their AOB. Requiring that all new development pay a transportation improvement fee will help ensure 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 Alamo AOB.

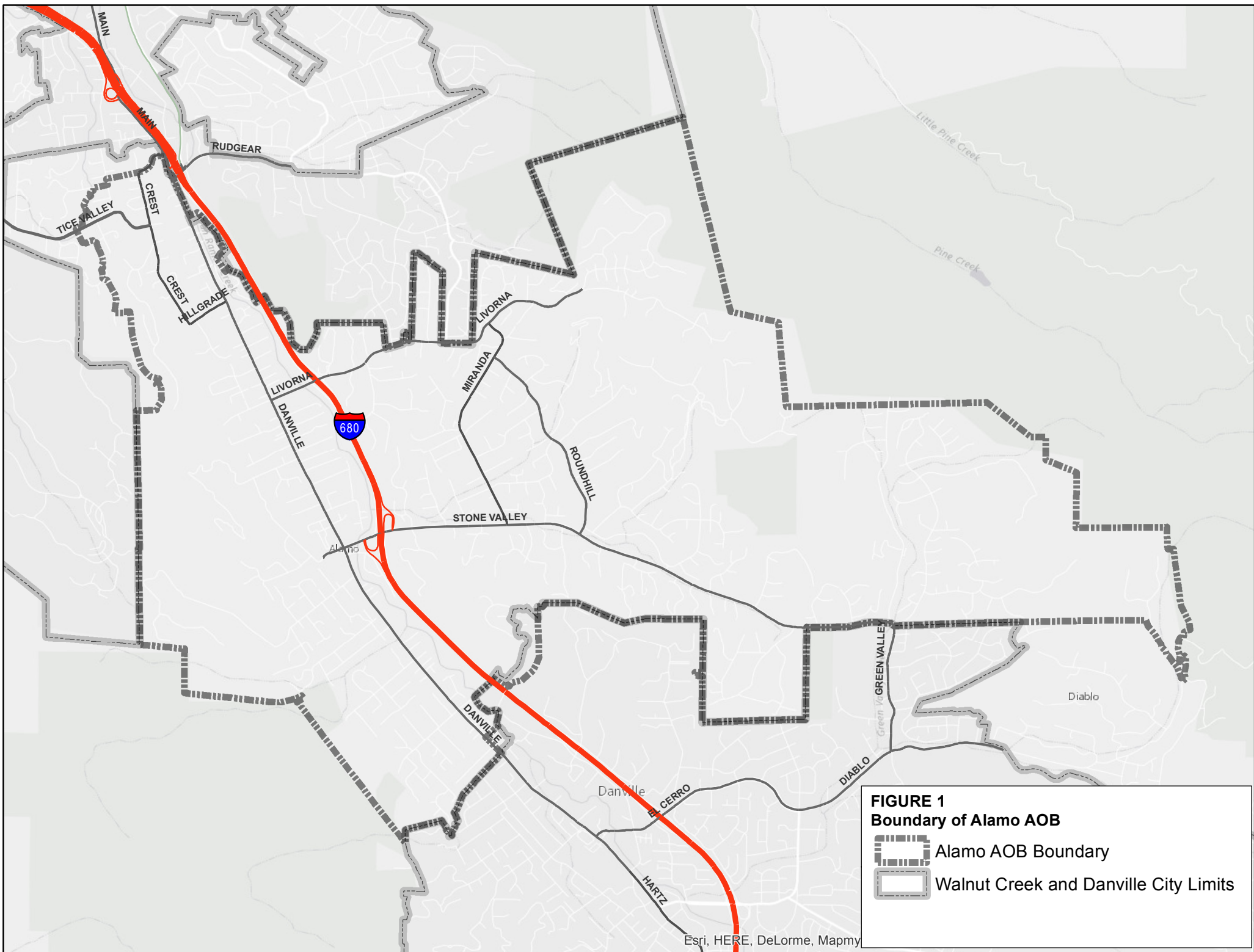
The purpose of this Nexus Study is to provide the technical basis for a comprehensive update of the Alamo AOB Program. The focus of the updated program is to support an overall transportation system (roadways, bikeways and pedestrian facilities) in the Alamo AOB that serves the expected future demand based on changes in local land use projections, planned and approved development projects, and associated changes to capital improvements and updated cost estimates.

This Nexus Study documents the analytical approach for determining the nexus between transportation mitigation fees imposed on new development within the Alamo AOB, the local impact created by anticipated development in the Alamo AOB, and the transportation improvements to be funded with fee revenues. A traffic impact and fair-share cost analysis was conducted to equitably distribute the costs of the necessary transportation 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 information and practices.

1.2 Alamo AOB

On September 24, 1985, the Board of Supervisors passed a resolution forming the Alamo AOB. The Alamo AOB boundary is shown in **Figure 1**. Fees will only be collected within the unincorporated portions of the AOB and will only fund projects within the unincorporated portions of the AOB.

¹ California Government Code, Sections 66000 through 66026.



At the time that the County formed the Alamo AOB, 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 1993, and again in 1998, the Alamo AOB Program was revised to reflect the changing needs of the area. Over the past 29 years, AOB fees have helped pay for improvements to Stone Valley Road, Miranda Avenue, Livorna Road and Danville Boulevard.

The Alamo AOB has experienced changes in the area's circulation needs and development potential. Most of the residential development potential within the AOB has been fulfilled, and many of the original AOB projects have been constructed. Yet new development and expansion of existing development continues, which will generate new travel demand across all travel modes (auto, transit, bicycle, and pedestrian). These changes have prompted the current revision to the Alamo AOB program, resulting in a new project list and fee schedule.

The Alamo AOB is about 98 percent built out, based on projections for a 25-year (2015 - 2040) planning horizon. Being nearly built out has significant implications for measuring development impacts and the types of transportation improvements needed to accommodate remaining projected growth. Consequently, in this nexus study:

- Development impacts are based on maintaining the same level of investment in the transportation system that the County has made to date, measured per vehicle-mile of travel (VMT). Thus new development would fund additions to the existing value of the street system in proportion to growth in new VMT from development. In this way the existing facility standard (defined as the existing system value per existing VMT) is maintained as growth occurs. New development offsets its negative impact on that standard (a decline in system value per VMT) by funding improvements to maintain the standard.
- Funding from the AOB program is targeted to various types of smaller multi-modal upgrade projects needed to complete the transportation system. These projects include, for example, intersection, bicycle, and pedestrian improvements. These types of projects are a more practicable use of funds for offsetting the remaining impacts from development because the community does not want to increase vehicular capacity but rather encourage alternative modes

The purpose of this Nexus Study is to determine improvements that will ultimately be needed to serve estimated future development and to require new development to pay a fee to fund its proportional share of these improvements. Because the fee is based on the investment made by existing development to date in the transportation system, and the value of that investment per VMT, new development will be adding to the existing equity in the street system 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.

2. Evaluation of Current AOB Program

The current Alamo AOB Program was last updated in 1998. The current Alamo AOB Program project list, shown in **Table 1**, had six unfunded projects estimated in 1998. It was estimated that these projects would cost about \$2,863,000 million of which about \$1,473,000 million was to be funded by the AOB Program. The 2016 update of the Alamo AOB Program has included a needs analysis (Section 3), an updated project list based on this analysis (Section 4), and new project cost estimates (Section 5).

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. 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.

Table 1 1998 Project List for Alamo AOB Program			
Roadway	Project Description	Total Cost ¹ (1998 Dollars)	Amount to be Funded by AOB ¹ (1998 Dollars)
1 Stone Valley Rd Improvements: Stone Valley Way to High Eagle Ct	Provide 2 12-foot lanes and 5-foot shoulders, overlay existing pavement, install signal at Miranda Ave intersection.	Funded	
2 Stone Valley Rd/Miranda Ave Intersection	Improve intersection to provide additional capacity on Miranda Avenue	\$60,000	\$60,000
3 Stone Valley Rd Improvements: High Eagle Ct to Roundhill Rd	Widen to accommodate 2 travel lanes, 2 shoulders (5 ft. wide) and a left turn lane at Roundhill Rd.	\$127,000	\$81,000
4 Stone Valley Road Improvements: Roundhill Road to	Widen to accommodate 2 travel lanes and 2 shoulders (5 ft. wide).	\$1,023,000	\$655,000
5 Danville Boulevard/Stone Valley Road Intersection Improvements	Provide left turn channelization from WB Stone Valley Rd to SB Danville Blvd and from SB Danville Blvd to EB Stone Valley Rd. Modify signal accordingly. Estimated cost includes widening of Stone Valley Rd bridge over San Ramon Creek.	\$1,176,000	\$200,000
6 Livorna Road Improvements	Construct pavement as needed to provide standard road width.	\$85,000	\$85,000
7 Miranda Avenue Improvements- Stone Valley Road to Stone Valley School	Construct pavement widening and curb to provide 32-foot section and curbs on each side.	\$392,000	\$392,000
Total		\$2,863,000	\$1,473,000
Notes: ¹ Amounts include funding of two percent for AOB administration costs. The amounts “to be funded by AOB” represent the allocation of costs to future development based on the 1998 study. Source: Development Program Report for Alamo AOB, 1998.			

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

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 Alamo 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 4.1 of this study.

3. Determination of AOB Development Potential

The transportation needs analysis and allocation of improvement costs for the Alamo 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 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

As explained in Section 1.2, above, the nearly built out status of the Alamo AOB has significant implications for measuring development impacts and the types of transportation improvements needed to accommodate remaining projected growth. This nexus study: (1) measures development impacts based on maintaining the same level of investment per trip in the transportation infrastructure that the County has made to date, and (2) targets funding to various types of smaller multi-modal upgrade projects needed to complete the transportation system. So in this nexus study defining the transportation needs and project list for the Alamo AOB involved the following steps:

1. Converting development estimates to a single measure of impact on the transportation system (dwelling unit equivalents or DUEs).
2. Estimating the replacement value of the existing transportation system.
3. Calculating the impact of development based on maintaining the existing facility standard (existing transportation system value per DUE).
4. Calculating total facility costs to accommodate new development based on maintaining the existing facility standard as growth occurs.
5. Determining the types of improvements needed to complete the transportation system.
6. Preparing the AOB project list.

Table 2 Summary of Estimated Development Growth (2010 to 2040) Alamo Area of Benefit ¹				
Land Use Category	Units	Unincorporated Portion of AOB		
		2010	2040	Growth
Single-Family	Dwelling Units	6,505	6,607	102
Multi-family		324	324	0
Total		6,829	6,931	102
Retail	Jobs	430	430	0
Office		1,800	1,910	110
Total		2,230	2,340	110
Retail ²	1,000 sq. ft.	215	215	0
Office ²		495	525	30
Industrial		0	0	0
Total		710	740	30

¹ See Figure 1 for AOB Boundary.

² Conversion of jobs to building square feet based on:
Retail: 500 building square feet per job
Office: 275 building square feet per job

Source: DKS Associates, 2014.

4.1 Development Impacts

This section describes how estimates of development are converted to a single measure of impact on the transportation system.

Land Use Categories

For the Alamo AOB update the calculation of development impacts is based on the general land use categories that can be derived for all areas of the County from CCTA's travel demand model and shown in Section 3 (dwelling units and jobs by land use category).

Dwelling Unit Equivalents

Each development type is 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 which 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 are assigned values less than 1.

DUEs are developed by comparing both the trip generation and trip length characteristics of various land uses to those of 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 generator. 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 3**. Thus 1,000 square foot of retail development is estimated to have a traffic impact on the roadway system which is 1.42 times that of a typical single-family residential unit.

Table 3 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	1,000 Square Feet	2.3	76	7.167	1.42
Office	1.40		4.5	92	5.796	1.15
Industrial	0.98		5.1	92	4.598	0.91
¹ ITE Trip Generation 7th Edition. ² ITE Journal, May 1992. Source: DKS Associates, 2014.						

Table 4 provides the growth in DUEs based on the development estimates from Table 2 and the DUE rates from Table 3.

Table 4 Alamo AOB DUEs								
Land Use Category	Unit	DUE per Unit ¹	2010 Units ²	2010 DUEs	2040 Units ²	2040 DUEs	Growth in Units ²	Growth in DUEs
Singe Family	Dwelling	1.00	6,505	6,505	6,607	6,607	102	102
Multi-Family	Unit	0.61	324	198	324	198	0	0
Retail	1,000 Square Feet	1.42	215,000	305	215,000	305	0	0
Office		1.15	495,000	569	525,000	604	30,000	35
Industrial		0.91	0	0	0	0	0	0
Total				7,577		7,714		137
¹ See Table 3: "Dwelling Unit Equivalent (DUE) Rates". ² See Table 2: "Summary of Estimated Development Growth (2010 to 2040)". Source: DKS Associates, 2014.								

4.2 Existing Transportation System Value

The facility standard calculated to measure the impact of development is based on the existing value of the transportation system in the AOB. Replacement cost, not depreciated cost, is used to calculate system value because existing facilities were new when initially constructed to accommodate growth, so new development should likewise fund the cost of new facilities.

An estimate was made of the cost required to replace the existing roadway system within the Alamo AOB. That estimate was based on County data that includes the linear feet of roadway by categories associated with pavement width. The average cost per linear foot of roadway was estimated for each pavement width category and multiplied by the linear feet of existing roadway in that category, as shown in **Table 5**.

Table 5 Estimated Replacement Value of Existing Roadways in Alamo AOB			
Roadway Pavement Width (feet)	Total Linear Feet	Average Replacement Cost per Linear Foot	Estimated Replacement Cost
16	510	\$433	\$220,600
17	2,484	\$459	\$1,140,800
18	581	\$486	\$282,400
19	5,544	\$513	\$2,842,500
20	8,211	\$539	\$4,429,300
21	686	\$566	\$388,400
22	7,997	\$593	\$4,741,200
24	5,789	\$646	\$3,741,500
25	8,832	\$673	\$5,944,100
26	4,480	\$700	\$3,134,800
27	2,112	\$726	\$1,534,300
28	5,832	\$753	\$4,392,500
29	12,883	\$780	\$10,047,400
30	6,493	\$807	\$5,237,300
31	2,535	\$833	\$2,112,500
32	13,944	\$860	\$11,992,500
33	50,345	\$887	\$44,644,300
35	1,869	\$940	\$1,757,200
36	1,988	\$967	\$1,922,200
37	18,658	\$994	\$18,539,300
38	8,990	\$1,020	\$9,173,000
40	506	\$1,074	\$543,300
45	680	\$1,207	\$821,000
47	2,375	\$1,261	\$2,994,400
53	470	\$1,421	\$667,900
54	1,080	\$1,448	\$1,563,700
60	2,580	\$1,608	\$4,149,000
61	1,955	\$1,635	\$3,196,200
80	2,450	\$2,143	\$5,249,200
Total	182,859	\$861	\$157,402,800
Traffic Signals (4 @ \$360,000)			\$1,440,000
Estimated Value for Major Roadways			\$158,842,800
Source: DKS Associates, 2014.			

The AOB has roadway, bikeway and sidewalk improvements along major roadways, which are typically arterial and collector roadway. The Nexus Study only includes these larger transportation facilities (roadways that are designated arterial and collector roadways plus roadways that function as residential collectors) in the estimate of the existing system value because these facilities represent the type that will require improvement to accommodate growth. AOB fee revenues will be limited to these larger facilities only. The Nexus Study also includes traffic signals that exist at four intersections in the AOB because these facilities are also part of backbone transportation system. These existing signalized intersections are the following:

- Danville Boulevard and Stone Valley Road
- Danville Boulevard and Livorna Road
- Danville Boulevard and Hemme Avenue
- Stone Valley Road and Miranda Avenue

The average replacement cost per linear foot in **Table 5** includes the following cost elements:

Non-construction cost elements

- Planning and environmental studies
- Design and construction engineering
- Utilities
- Right-of-way

Construction cost elements

- Mobilization
- Clearing and grubbing
- Earthwork
- Aggregate base
- Asphalt pavement
- Striping and signage
- Drainage

The cost estimates in **Table 5** capture all of the basic elements that would be required to plan, design and construct the existing roadway system in the AOB. Yet these estimates can be considered to be conservatively low for the following reasons:

- There a limited number of sidewalks in the AOB and the estimates do not include the cost of any sidewalks.
- Data was not available for the value of that existing right-of-way adjacent to each roadway segment. Therefore, the cost only includes the value of that right-of-way needed for the paved roadway section. Current right-of-way typically extends beyond the paved roadway section.
- The estimates include costs for typical drainage facilities along a roadway segment but do not include the cost for significant culverts or bridges which occur in some locations
- The costs include typical cost for excavation but do not include the cost for substantial excavation needed in some areas with challenging terrain.

4.3 Existing Facility Standard

The existing facility standard shown in **Table 6** is **\$20,964 per DUE** and is calculated by dividing the total transportation system value shown in Table 5 by the total number of existing DUEs shown in Table

4. This amount represents the impact of new development associated with maintaining the existing level of investment in AOB roadways as defined in the last section.

Table 6 Existing Transportation System Facility Standard	
Existing Transportation System Value ¹	\$158,842,800
Existing DUEs ²	7,577
Existing Facility Standard (\$ per DUE)	\$20,964
¹ See Table 5: “Estimated Replacement Value of Existing Roadways in Alamo AOB”.	
² See Table 4: “Alamo AOB DUEs”.	
Source: Urban Economics, 2014.	

4.4 Costs to Accommodate New Development

The cost to accommodate new development is shown in **Table 7** and equals \$2,872,000. This amount is based on the existing facility standard shown in Table 6 and the estimated growth in DUEs from Table 4.

Table 7 Costs To Accommodate New Development	
Existing Facility Standard (\$ per DUE) ¹	\$20,964
Growth in DUEs (2010-2040) ²	137
Total Costs To Accommodate Growth (2010-2040)	\$2,872,000
¹ See Table 6: “Existing Transportation Facility Standard”.	
² See Table 4: “Alamo AOB DUEs”.	
Source: Urban Economics, 2014.	

4.5 Transportation System Improvement Needs

The Alamo AOB is about 98 percent built out under the current Contra Costa County General Plan. Approaching build out has implications for the types of transportation improvements needed to accommodate growth. Large capacity-increasing roadway projects, such as street extensions and additional travel lanes on street segments, are not needed to accommodate growth. Rather, the AOB’s existing system of street improvements requires a range of smaller multi-modal upgrades to provide a comprehensive transportation system.

The primary issues identified in the evaluation of existing and future through (2040) needs were problems of safety and congestion related to traffic using Alamo streets to avoid congested portions of I-680. Safety for pedestrians and bicyclists around schools and in the Downtown Alamo shopping district was also identified as a significant concern because of the semi-rural nature of Alamo and the limited facilities for non-motorized modes. These types of improvements are typically needed to accommodate additional growth in nearly built out areas such as the Alamo AOB. Based on identification of gaps in the current transportation system and input from the Alamo Municipal Advisory Council and other interested members of the community, the types of improvements needed included:

- Bicycle and pedestrian improvements to better accommodate trips on these modes
- Traffic calming improvements to reduce cut-through traffic and improve pedestrian and bicycle safety
- Intersection improvements to improve vehicular traffic flow and safety for all modes

4.6 Selected Project List

New projects for the Alamo AOB program were developed in close collaboration with the Municipal Advisory Council and with substantial community input. Four highly advertised community-outreach meetings were held over a six-month period. The purpose of each meeting and the dates each was held are as follows:

- **Meeting #1:** Provide an introduction of the AOB analysis process and schedule to the Municipal Advisory Council and solicit community input- February 26, 2013
- **Meeting #2:** Present and discuss the results of the evaluation of existing and future (2040) needs and deficiencies and solicit ideas for projects from the community – April 23, 2013
- **Meeting #3:** Identify potential projects and a preliminary screening and solicit additional community input – June 19, 2013
- **Meeting #4:** Present a recommended set of improvements to the Municipal Advisory Council and get community input – August 21, 2013

The meeting summaries and process used to develop and select the projects for the Alamo AOB Program is discussed in **Appendix B**. Based on this extensive community input process, several specific projects were identified for the Alamo AOB program list. The draft project list was presented to the Alamo Municipal Advisory Council (MAC), which supported the following list:

1. Stone Valley Road Bike Lane Gap Closure
2. Danville Boulevard/Orchard Court Complete Streets Improvements
3. Livorna Road and Wilson Road Intersection Improvements
4. Pedestrian Safety Improvements at Stone Valley Middle School, Alamo Elementary and Rancho Romero School – This project consists of following:
 - 4.1. Hemme Avenue Sidewalk
 - 4.2. Miranda Avenue Natural Pathway
 - 4.3. Livorna Avenue Sidewalk Improvements
5. Safety Improvements at intersection of Danville Boulevard and Hemme Avenue

The locations of these projects are shown in **Figure 2**. The Stone Valley Road Bike Lane Gap Closure and Livorna Road and Wilson Road Intersection Improvements (Projects 1 and 3 above) have since been constructed. Before implementation, the remaining improvements on the project list will require environmental review and approval by the County Board of Supervisors.

5. Improvement Cost Estimates

The County provided recent cost estimates for the Danville Boulevard/Orchard Court Complete Streets Improvements

For the remaining projects, planning-level cost estimates were prepared based on conceptual designs for each project. The estimates for roadway segment improvements are based on implementing the County's design standards. The cost estimates reflect the known issues, such as relocation of 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.

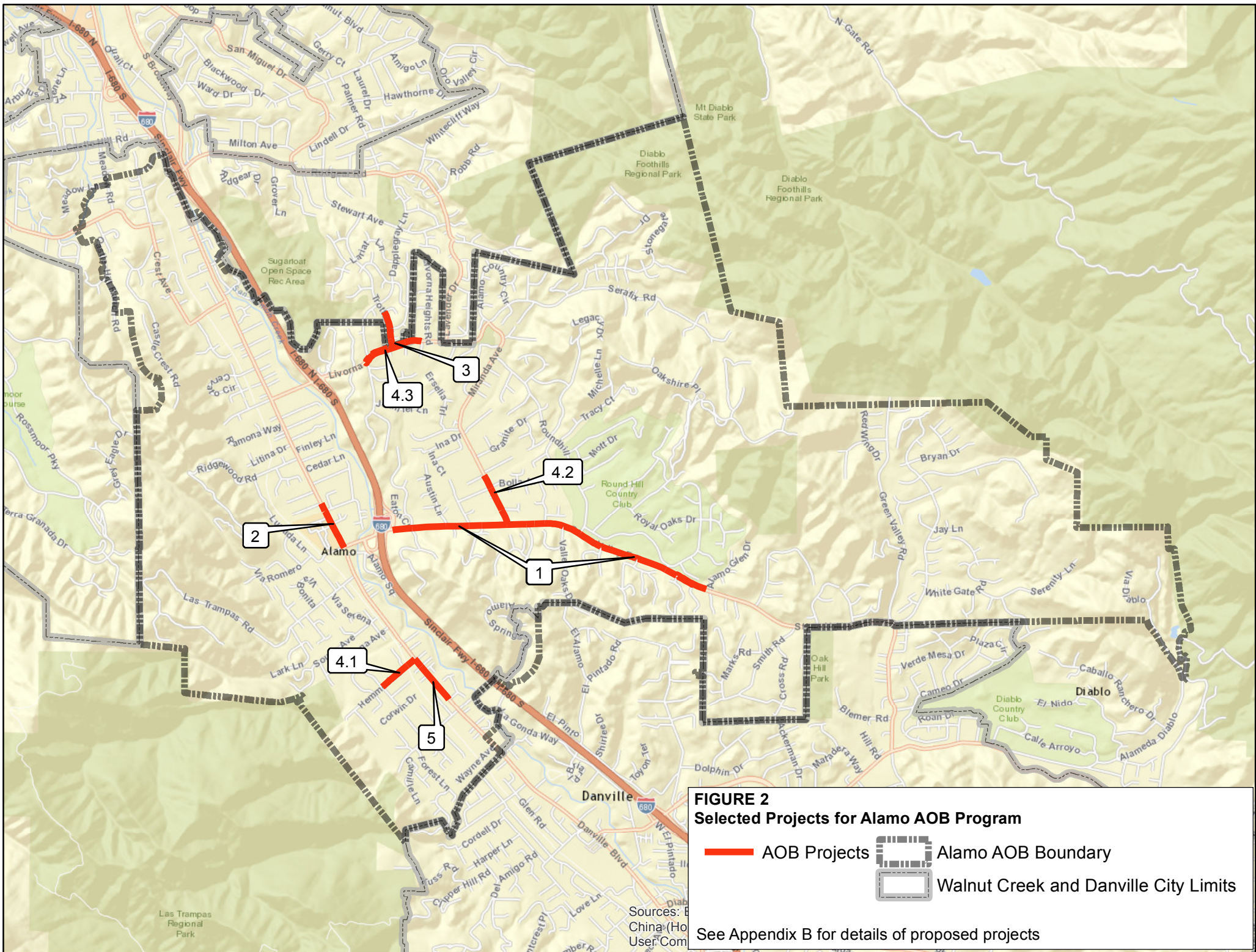


FIGURE 2
Selected Projects for Alamo AOB Program

- AOB Projects
- Alamo AOB Boundary
- Walnut Creek and Danville City Limits

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See Appendix B for details of proposed projects

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 Alamo AOB, shown in **Table 8** are provided in **Appendix C**.

Table 8 Costs of Selected Projects	
Project	Estimated Cost
2. Danville Boulevard/Orchard Court Complete Streets Improvements	\$3,614,000
4. Pedestrian Safety Improvements at Stone Valley Middle School, Alamo Elementary School and Rancho Romero Elementary School	
4.1 Hemme Avenue Sidewalk	\$566,000
4.2 Miranda Avenue Natural Pathway	\$922,000
4.3 Livorna Road Sidewalk Improvements	\$831,000
5. Safety Improvements at intersection of Danville Boulevard and Hemme Avenue	\$504,000
Total	\$6,437,000
Current Alamo AOB Fund Balance	\$0
Unfunded Cost of Improvements	\$6,437,000
Source: Appendix B; DKS Associates 2014.	

The total unfunded cost of these selected projects (\$6.4 million) is greater than the \$2.9 million needed to accommodate growth by maintaining the existing facility standard shown in Table 7. This comparison indicates that new development could not fully fund this final list of selected projects. Therefore, this County will need to rely on other funding sources to fund the difference between the total unfunded cost of these projects and the amount attributable to new development.

6. Method for Calculating Fees

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 4). The cost for each land use type is then based on its DUE rate. The nexus-based fee rates are shown in **Table 9**.

Table 9 Maximum Justified Fee Rates for Alamo AOB				
Land Use	Units	DUE per Unit ¹	Existing Facility Standard (\$ per DUE) ²	Maximum Justified Fee per Unit ¹
Single Family	Dwelling Unit	1.00	\$20,964	\$20,964
Multi-Family		0.61	\$20,964	\$12,788
Retail	1,000 Square Foot	1.42	\$20,964	\$29,769
Office		1.15	\$20,964	\$24,109
Industrial		0.91	\$20,964	\$19,077
Other	Dwelling Unit Equivalent	1.00	\$20,964	\$20,964
¹ See Table 3: “Dwelling Unit Equivalent (DUE) Rates”. ² See Table 6: “Existing Transportation Facility Standard”. ³ Maximum justified fee per Unit = (DUE per Unit) x (Existing Facility Standard per DUE). Source: Urban Economics, 2014.				

7. Nexus Analysis

This nexus analysis has been prepared on the Alamo AOB Program in accordance with the procedural guidelines established in AB1600, which is codified as the Mitigation Fee Act 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.

7.1 Purpose of fee

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

The Alamo 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 Alamo AOB will increase the demand for all modes of travel (including walking, biking, transit, automobile and truck/goods movement), and thus, will increase the need for improvements to

transportation facilities. The Alamo AOB Program will help fund transportation facilities necessary to accommodate new residential and non-residential development in the unincorporated portions of the Alamo AOB through 2040.

7.2 Use of Fees

The fees from new development in the Alamo AOB 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 Alamo AOB through 2040. The Alamo AOB Program will help fund improvements to roadways (including, intersection improvements and provision of shoulders) bikeways and walkways. The transportation improvements wholly or partially funded by the program are described in more detail in **Section 4**.

7.3 Relationship between use of Fees and Type of Development

Fee revenues generated by the Alamo 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 (bicycle and 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.

7.4 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 the existing transportation system caused by new development and/or accommodate the increased need for alternative transportation modes (transit, bicycle, pedestrian).

7.5 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.

Development impacts are based on maintaining the same level of investment in the transportation system that the County has made to date, measured per vehicle-mile of travel (VMT). Thus new development would fund additions to the existing value of the street system in proportion to growth in new VMT from development.

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.

7.6 Current AOB Fund Balance

The Stone Valley Road Bike Lane Gap Closure and the Livorna Road and Wilson Road Intersection Improvements (Projects 1 and 3 described in Section 4.6) have recently been constructed using the remaining funds in the Alamo AOB account. Thus, as of January 2016, there is no existing fund balance for the Alamo AOB.



Appendix A
Estimating Replacement Value of Existing Roadways in Alamo AOB

Table A-1 Units Cost for Estimating Replacement Value of Existing Roadways in Alamo AOB		
Roadway Material and Earthwork Costs		
Item	Cost	Notes
Clearing & Grubbing	\$0.50/SF	Area assumed includes footprint of roadway, plus 10% for constructability
Earthwork	\$6.00/SF	Assumes 2.5' of excavation and cost of trucking 80% of the material away
Class 2 Aggregate Base	\$65/CY	AB layer assumed at 1.5' deep
HMA (Type A)	\$110/Ton	HMA layer assumed at 5" for roads <30' wide, 6" for roads 30'-53' wide, and 8" for roads >53' wide
Striping	\$3/LF	LF cost is for a single stripe. The length of the roadway segment is first multiplied by [(# of lanes) +1]
Other Costs		
Item	Percent of Material and Earthwork Cost	Notes
Drainage	10%	Assumes "typical" terrain and surrounding environment. Some locations may require special consideration for drainage, utility, and/or environmental factors, and are expected to cost more than the "typical" percentage assumed in this analysis.
Utility Coordination	5%	
Environmental	4%	
Planning	10%	
Engineering/Survey	15%	
Construction Engineering	15%	
Mobilization	10%	
Item	Cost	Notes
Right-of-way	\$10/SF	Cost only includes the right-of-way needed for the paved roadway section. Current right-of-way typically extends beyond the paved roadway section.
Source: DKS Associates, 2014		

Table A-2 Average Replacement Value per Linear Foot of Existing Major Roadways			
Roadway Pavement Width (feet)	Average Replacement Cost per Linear Foot	Roadway Pavement Width (feet)	Average Replacement Cost per Linear Foot
16	\$433	32	\$860
17	\$459	33	\$887
18	\$486	34	\$913
19	\$513	35	\$940
20	\$539	36	\$967
21	\$566	37	\$994
22	\$593	38	\$1,020
24	\$646	40	\$1,074
25	\$673	45	\$1,207
26	\$700	47	\$1,261
27	\$726	53	\$1,421
28	\$753	54	\$1,448
29	\$780	60	\$1,608
30	\$807	61	\$1,635
31	\$833	80	\$2,143
Average for Major Roadways		\$861	
Source: DKS Associates, 2014.			

Appendix B

Process for Developing and Selecting Projects for the Alamo AOB

New projects for the Alamo AOB program were developed in close collaboration with the Municipal Advisory Council and with substantial community input. Four highly advertised community-outreach meetings were held over a six-month period. The purpose of each meeting and the dates each was held are as follows:

- **Meeting #1:** Provide an introduction of the AOB analysis process and schedule to the Municipal Advisory Council and solicit community input- February 26, 2013
- **Meeting #2:** Present and discuss the results of the evaluation of existing and future (2040) needs and deficiencies and solicit ideas for projects from the community – April 23, 2013
- **Meeting #3:** Identify potential projects and a preliminary screening and solicit additional community input – June 19, 2013
- **Meeting #4:** Present a recommended set of improvements to the Municipal Advisory Council and get community input – August 21, 2013

After an introduction to the AOB project in Meeting #1, the community participants were eager to offer suggestions for what type of project should and should not be considered. Many mentioned a past proposal to fund a widening of Danville Boulevard and Stone Valley Road in the vicinity of their intersection to improve a poor level of service there. The speakers were clear that they did not want either road widened because it would change the semi-rural nature of the community and encourage drivers frustrated by congestion on I-680 to use Danville Boulevard as an alternative. Many in the audience expressed disapproval of funding of any roadway widening through the AOB program. Most of those in the audience who suggested project types for funding suggested pedestrian and bicycle improvements as well as safety projects in Downtown Alamo and around the public schools.

In Community Meeting #2, the results of the needs analysis was given, and several projects were identified by the consulting team that could address deficiencies that had been identified. The participants in the meeting were then given the opportunity to comment on the projects identified by the consultants and identify additional projects that they would support. Participants were also given the opportunity to make additional suggestions by email after the meeting. From this process, 57 projects were identified. The projects on this list were assessed and sorted based upon whether the suggested projects were regional, operational or maintenance projects or capital projects eligible for AOB funding.

Of the 57 potential projects suggested, 32 were considered eligible for AOB funding. They were grouped into the following categories:

- Pedestrian Pathway and Bicycle Lane Improvements (9 projects)
- Pedestrian Safety Improvements (3 projects)
- Pedestrian Overcrossings (3 projects)
- Neighborhood Traffic Management (1 projects)
- Crosswalk Improvements (4 projects)
- Add Left Turn lanes (1 project)

- Create Center Turn Lanes (1 project)
- Lengthening Turn Lane Pockets (1 project)
- Eliminate “No Turn on Red” (3 projects)
- Roundabouts at Intersections (5 projects)
- Sight Distance Improvements (1 project)

The 32 potential project suggestions were then rated on the basis of the following three criteria:

- Feasibility – Is there adequate right of way and feasible from an engineering perspective?
- Benefit – Does it significantly improve the mobility or safety of travel or reduce congestion
- Cost – Are the total implementation costs low, medium or high?

Each project was rated as High, Medium or Low for each criterion.

The results of the analysis of eligibility for AOB funds and the application of the screening criteria were presented in Community Meeting #3. The proposed projects were discussed at length and a poll was taken of the participants as to the projects they preferred. The key conclusions from the discussion and the poll were as follows:

- Pedestrian safety improvements rated highest particularly in Downtown Alamo and near schools
- There was no desire for roadway expansion or increase in traffic capacity, particularly on Danville Boulevard
- There was a strong desire to protect trees and other aspects of the semi-rural nature of Alamo

In the community Meeting #4, the Municipal Advisory Council and the community participants were asked to consider a recommendation of new projects in four groupings:

- Danville Boulevard/Orchard Court Complete Streets Improvements
- Pedestrian and Bicycle Improvements on Livorna Road, Stone Valley Road and Danville Boulevard
- Pedestrian Safety Improvements at Stone Valley Middle, Alamo Elementary, and Rancho Romero Schools
- Safety Improvements to the Danville Boulevard and Hemme Avenue intersection

1. After much discussion, several specific projects were approved by the Alamo Municipal Advisory Council for the Alamo AOB program list. The description of these improvements that were used to develop cost estimates are as follows: Stone Valley Road Bike Lane Gap Closure: Provide bike lanes along Stone Valley Road from 230' west of Miranda Avenue to 70' east of Alamo Hills Drive; and from 30' west of Monte Sereno Drive to 430' west of Green Valley Road
2. Downtown Danville Boulevard/Orchard Court Complete Streets Improvements – This project consists of four subprojects: 1. Proposed roundabout at the Intersection of Orchard Court and Danville Boulevard; 2. Installation of a new traffic signal at the intersection of Jackson Way and Danville Boulevard; 3. Installation of a roadway diet on Danville Boulevard between Stone Valley

Road and the proposed roundabout, and between Jackson Way and the roundabout; and 4. Supplemental sidewalk widening work near Stone Valley Road and Danville Boulevard.

3. Livorna Road and Wilson Road Intersection Improvements – Construct a signalized T-Intersection with dedicated left and right turn lanes and approach tapers. Wilson Road will be widened for 110 feet in length for a dedicated right turn lane to travel westbound onto Livorna Road. For eastbound Livorna Road, 580 feet prior to or west of Wilson lane will be widened to the south of centerline for an approach taper, deceleration lane, and a left turn lane pocket to travel northbound on Wilson Road; also approximately 320 feet along Livorna Road and east of Wilson Road will be tapered, to the south of centerline, to transition back to existing roadway width. An additional dedicated right turn lane for westbound Livorna Road traffic will be constructed, north of centerline, from Wilson Road to 320 feet east of Wilson Road. Other improvements include a signalized intersection at Wilson Road and Livorna Road. Improved pedestrian path will be constructed to provide access between Vernal Drive and easterly toward the Walnut Creek city limits. The remaining improvements will replace-in-kind existing shoulders/pathways and existing drainage features along the new road alignments.
4. Pedestrian Safety Improvements at Stone Valley Middle School, Alamo Elementary and Rancho Romero School – This project consists of following:
 - 4.1. Hemme Avenue Sidewalk – Extend the sidewalk on the north side of the road from Barbee Lane to La Sonoma Way which will require reconstruction of a portion of the roadway pavement, and relocation of street improvements.
 - 4.2. Miranda Avenue Natural Pathway – Improvements include the installation of a natural path along the west side between Stone Valley Road and the Stone Valley Middle School. The work will include the installation of a curb along the new path, tree protection, relocation of fencing and widening of pavement in some locations to accommodate on street bike lanes.
 - 4.3. Livorna Avenue Sidewalk Improvements – Provide a new walkway and bike lane improvements along Livorna Road. Improvements also include storm drainage modifications and retaining wall construction.
5. Safety Improvements at intersection of Danville Boulevard and Hemme Avenue – Project includes extension of the existing left turn pocket for the northbound approach to the intersection about 100 feet.



Appendix C
Cost Estimates for Selected Projects in Alamo AOB

Summary of Costs for Selected Projects Alamo Area of Benefit			
2 Danville Boulevard/Orchard Court Complete Streets Improvements			\$ 3,614,000
4 Pedestrian Safety Improvements at Stone Valley Middle and Rancho Romero School			\$ 2,319,000
4.1	Hemme Avenue Sidewalk	\$ 566,000	
4.2	Miranda Ave. Pathway Improvements	\$ 922,000	
4.3	Livorna Road Sidewalk Improvements	\$ 831,000	
5 Safety Improvements at the Intersection of Danville Boulevard and Hemme Avenue		\$ 504,000	\$ 504,000
		Total	\$ 6,437,000

Transportation Engineering

Planning Cost Estimate

Contra Costa County Public Works Department

WO xxxx

- ☐ 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: Danville Boulevard/Orchard Court Complete Streets Improvements
Alternative: With signal at Jackson Way, No driveway consolidation, Roundabout at Danville Blvd & Orchard Ct

Project Location: Danville Blvd between Jackson Way and Stone Valley Rd

Assumptions: R, TI, etc.

Project Length (ft): 1,200

Date of Estimate: Feb. 25, 2014

(Update of cost estimate dated November 29, 2005 by Jason Chen)

Prepared by: A. Villar

Project Description:

Striped median from St Alphonsus Ct to Jackson Way. Hard medians and curb extensions from St Alphonsus Ct to Stone Valley Rd.

Install traffic signal at Danville Blvd/Orchard Ct intersection.

Construct roundabout at Danville Blvd/Orchard Ct intersection.

Revision No.	0
Revision Date	
Revised by	

No.	Description	Quantity	Units	Unit Cost	Total
1	Storm Water Pollution Prevention Plan	1	LS	\$ 70,000.00	\$ 70,000
2	Traffic Control System	1	LS	\$ 50,000.00	\$ 50,000
3	Construction Area Signs	16	EA	\$ 350.00	\$ 5,600
4	Clearing and Grubbing	1	LS	\$ 62,000.00	\$ 62,000
5	Road Excavation	1726	CY	\$ 60.00	\$ 103,556
6	Curb and Gutter Removal	1942	LF	\$ 10.00	\$ 19,420
7	Sidewalk Removal	3131	SF	\$ 10.00	\$ 31,310
8	Median Island Removal (include from interm)	1460	SF	\$ 11.00	\$ 16,060
9	Demo Driveway	765	SF	\$ 11.00	\$ 8,415
10	Remove Striping	1	LS	\$ 20,000.00	\$ 20,000
11	Remove Pavement Marking	1	LS	\$ 10,000.00	\$ 10,000
12	Remove Street Lights	7	EA	\$ 1,500.00	\$ 10,500
13	Raise Manholes	6	EA	\$ 2,000.00	\$ 12,000
14	New Drainage Inlet (Cap old and install new)	3	EA	\$ 3,000.00	\$ 9,000
15	New Drainage Inlet (install new)	4	EA	\$ 2,500.00	\$ 10,000
16	18" RCP (2 locations with short distances)	1	LS	\$ 5,000.00	\$ 5,000
17	12" RCP	40	LF	\$ 100.00	\$ 4,000
18	12" RCP (1 location with short distance)	1	LS	\$ 1,500.00	\$ 1,500
20	Remove Bollards	2	EA	\$ 500.00	\$ 1,000
22	Relocate Gas Station Utilities	1	LS	\$ 100,000.00	\$ 100,000
23	Aggregate Base (1.55 feet thick)	225	TON	\$ 70.00	\$ 15,737
24	Hot Mix Asphalt (0.45 feet thick)	59	TON	\$ 350.00	\$ 20,475
25	Minor Concrete (Sidewalk)	5902	SF	\$ 10.00	\$ 59,020
26	Minor Concrete (Curb and Gutter)	3659	LF	\$ 25.00	\$ 91,477
27	Minor Concrete (Curb Ramps: Type A)	13	EA	\$ 2,500.00	\$ 32,500
28	Minor Concrete (Curb Ramps: Type CM)	4	EA	\$ 2,500.00	\$ 10,000
29	Minor Concrete (Truck Apron)	2263	SF	\$ 10.00	\$ 22,630
30	Driveway Modifications / Conforms	3	EA	\$ 5,000.00	\$ 15,000
31	Striping - Detail 8 & 38 (Lane Lines)	1045	LF	\$ 3.00	\$ 3,135
32	Striping - Detail 21 (no passing two direction)	765	LF	\$ 3.00	\$ 2,295
33	Striping - Detail 24 (around islands)	960	LF	\$ 3.00	\$ 2,880
34	Striping - Detail 31 TWLTL (290 LF)	1	LS	\$ 1,000.00	\$ 1,000
35	Striping - Paint Roundabout (215 LF)	1	LS	\$ 1,000.00	\$ 1,000
36	Striping - Crosswalk	1370	SF	\$ 10.00	\$ 13,700
37	Striping - Stop Bar (125 LF)	1	LS	\$ 1,000.00	\$ 1,000
38	Striping - Detail 38 (Channelizing Line)	400	LF	\$ 3.00	\$ 1,200
39	Striping - Bike Lane Lines (Detail 39 and 39A)	1900	LF	\$ 3.00	\$ 5,700
40	Striping - Misc Parking Lot Striping	1	LS	\$ 3,000.00	\$ 3,000
41	Pavement Marking	1013	SF	\$ 10.00	\$ 10,130
42	New Signs (Metal Post)	45	EA	\$ 350.00	\$ 15,750
43	Sign Relocation or removal	11	EA	\$ 350.00	\$ 3,850
44	Sign Relocation (at SW corner of Orchard and Danv)	1	LS	\$ 5,000.00	\$ 5,000
45	Street Lights	16	EA	\$ 10,000.00	\$ 160,000
46	Miscellaneous Streetscape	1	LS	\$ 120,000.00	\$ 120,000
47	Traffic Signal at Jackson Way	1	LS	\$ 350,000.00	\$ 350,000
49	Mobilization	1	LS	\$ 150,000.00	\$ 150,000

OTHER COSTS BY PHASE:

PLAN	Planning Engineering (TE)	\$ 50,000	CONTRACT ITEMS	\$ 1,677,000
PE	Preliminary Engineering (Design/Survey)	\$ 580,000	OTHER COSTS (CON)	\$ 671,000
	Utility Coordination (Design)	\$ 75,000	CONTINGENCY*	\$ 336,000
	Environmental (Environmental, Real Property)	\$ 75,000	SUBTOTAL (CON)	\$ 2,684,000
R/W	R/W Engineering (Survey)	\$ 50,000	SUBTOTAL (PLAN)	\$ 50,000
	Real Property Labor	\$ 100,000	SUBTOTAL (PE)	\$ 730,000
	R/W Acquisition	\$ -	SUBTOTAL (R/W)	\$ 150,000
CON	Construction Engineering	\$ 671,000		
	Environmental Monitoring and Mitigation Fees	\$ -	GRAND TOTAL	\$ 3,614,000
	SUBTOTAL of OTHER COSTS (ALL)	\$ 1,601,000	CURRENT YEAR	2014

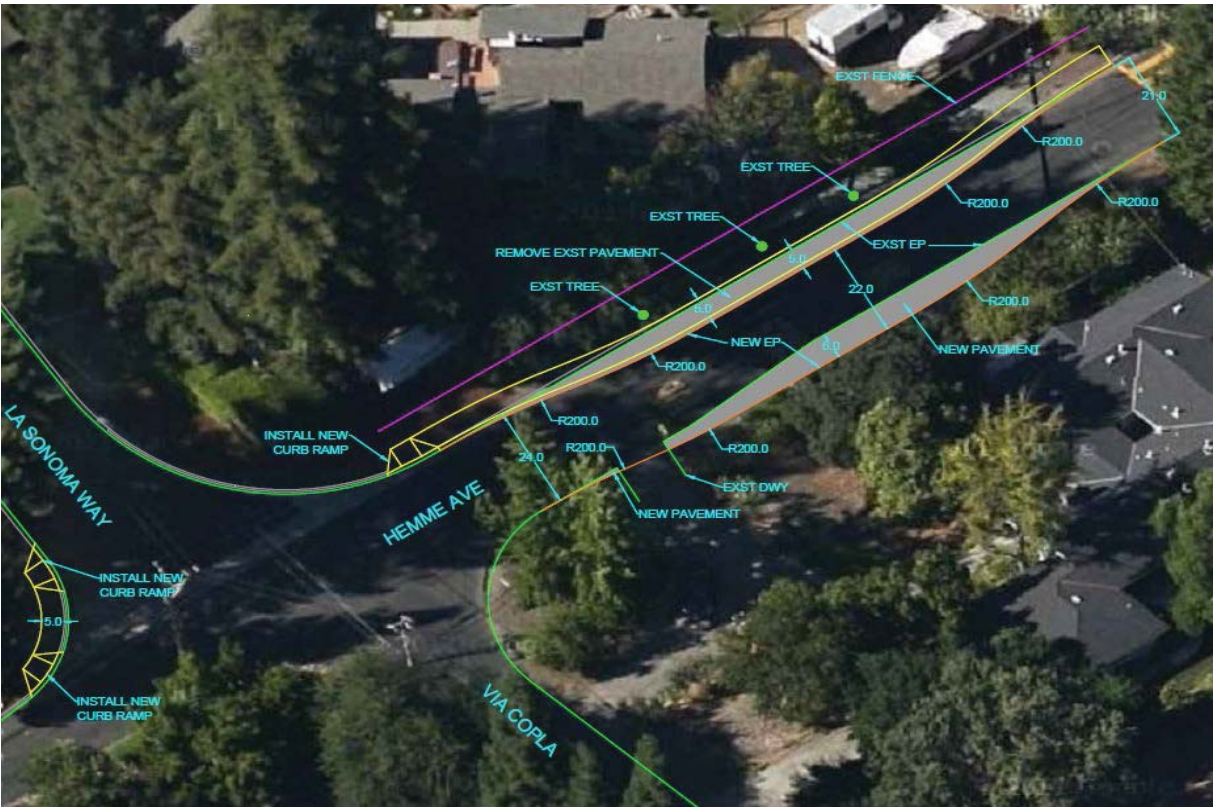
* CONTINGENCY is 20% of contract items. (\$10,000 min.)

ESCALATION YEAR 2014
 ESCALATION RATE 0.0%

TOTAL (in 2014 dollars) \$ 3,614,000



Roundabout Alternative-Hardscaped



Project 4.1 Hemme Avenue Sidewalk

DKS Associates

Planning Cost Estimate

WO 4.2

☒ 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:	Miranda Ave. Pathway Improvements
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Project Location:	Miranda Ave. Stone Valley Rd. to Stone Valley Middle School
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Description	Miranda Avenue improvements include the installation of a natural path along the west side between Stone Valley Road and the Stone Valley Middle School. The work will include the installation of a curb along the new path, tree protection, relocation of fencing and widening of apvement in some locations to accommodate on street bike lanes.
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Project Length (ft): 1650

Date of Estimate: Apr. 8, 2014

Prepared by: T. Krakow

Revision No.
Revision Date
Revised by

No.	Description	Quantity	Units	Unit Cost	Total
1	Construction Area Signs	1	EA	\$ 550.00	\$ 550
2	Traffic Control System	1	LS	\$ 20,000.00	\$ 20,000
3	Prepare Water Pollution Control Plan	1	LS	\$ 6,000.00	\$ 6,000
4	Clearing and Grubbing	1	LS	\$ 30,000.00	\$ 30,000
5	Saw Cut Pavement Edges	1115	LF	\$ 2.00	\$ 2,230
6	Relocate Mailbox and Trim Vegetation	1	EA	\$ 1,000.00	\$ 1,000
7	Remove and Replace Existing Fencing	130	LF	\$ 50.00	\$ 6,500
8	Remove and Replace Masonry Columns	6	EA	\$ 500.00	\$ 3,000
9	Roadway Excavation	211	CY	\$ 45.00	\$ 9,495
10	Imported Material (Shoulder Backing)	25	TON	\$ 45.00	\$ 1,125
11	Class 2 Aggregate Base	141	CY	\$ 65.00	\$ 9,165
12	Hot Mix Asphalt (Type A)	80	TON	\$ 110.00	\$ 8,800
13	Curb and Gutter	1639	EA	\$ 35.00	\$ 57,365
14	Roadside Sign - One Post	2	EA	\$ 350.00	\$ 700
15	Natural Pathway	1654	LF	\$ 100.00	\$ 165,400
16	ADA Curb Ramps	4	EA	\$ 3,000.00	\$ 12,000
17	Misc. Drainage Modifications	1	LS	\$ 5,250.00	\$ 5,250
18	Driveway Aprons	4	EA	\$ 1,400.00	\$ 5,600
19	Trim Vegetation	1	LS	\$ 1,000.00	\$ 1,000
20	Thermoplastic Traffic Stripe - Det. 21,	1650	LF	\$ 3.00	\$ 4,950
21	Thermoplastic Traffic Stripe - Det. 27B, Right Edge Line	3300	LF	\$ 2.00	\$ 6,600
22	Mobilization	1	LS	\$ 35,000.00	\$ 35,000

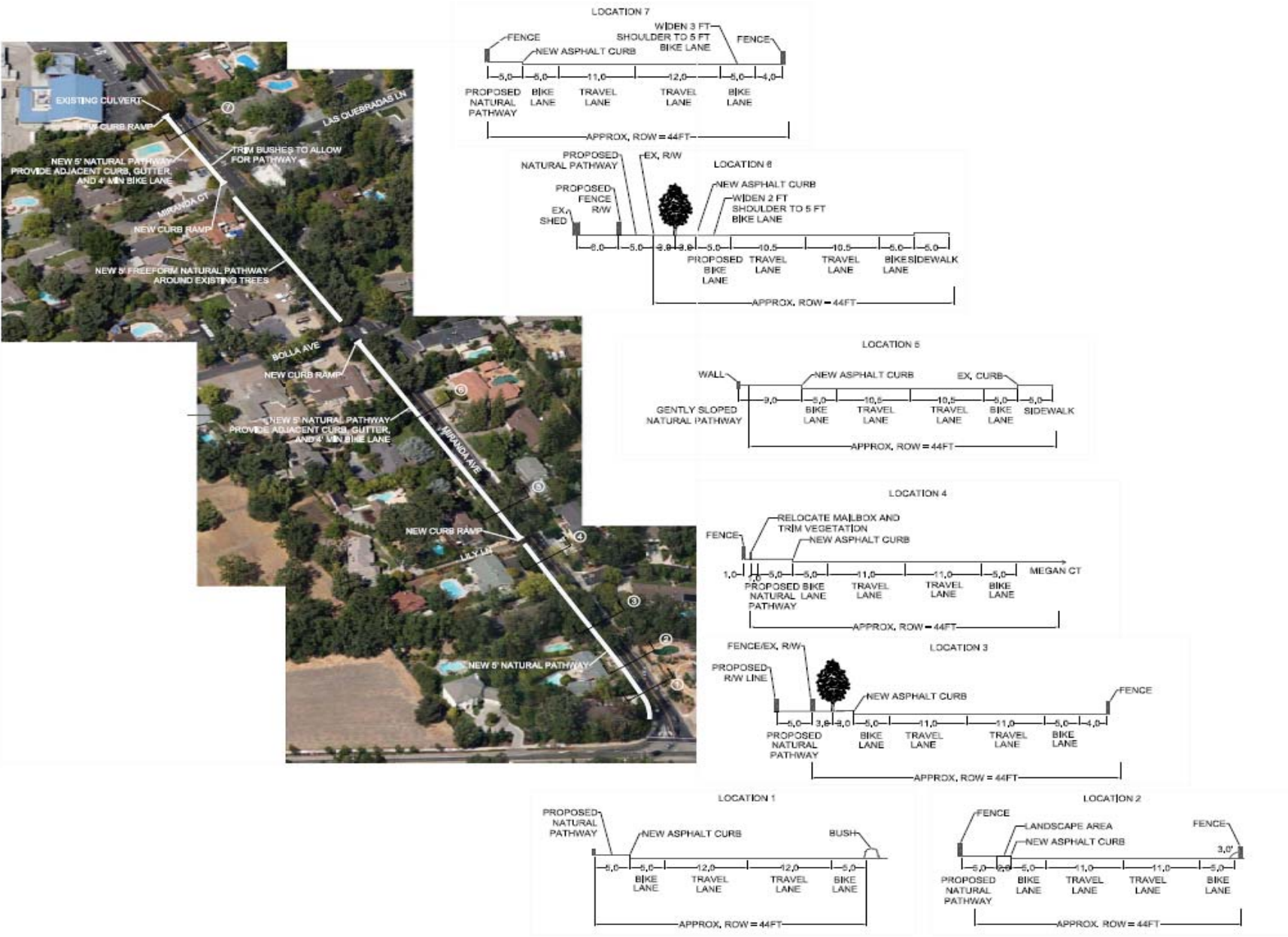
	CONTRACT ITEMS LESS MOBILIZATION (TO NEAREST 1,000)				\$	357,000
	Planning Engineering (TE)	\$	35,000	CONTRACT ITEMS	\$	392,000
	Preliminary Engineering (Design/Survey)*	\$	100,000	OTHER COSTS (CON)	\$	79,000
	Utility Coordination	\$	20,000	CONTINGENCY*	\$	59,000
	Arborist	\$	30,000	SUBTOTAL (CONTRACT IT	\$	530,000
	Environmental (Environmental, Real Property)	\$	30,000	SUBTOTAL (PLAN)	\$	35,000
	R/W Engineering (Survey)	\$	30,000	SUBTOTAL (PE)	\$	180,000
	Real Property Labor	\$	100,000	SUBTOTAL (R/W)	\$	177,000
	R/W Acquisition	\$	47,000			
	Construction Engineering *	\$	79,000			
	Environmental Monitoring and Mitigation Fees	\$	-			
	SUBTOTAL of OTHER COSTS (ALL)	\$	471,000	GRAND TOTAL	\$	922,000

CURRENT YEAR 2014

ESCALATION YEAR 2014

ESCALATION RATE	0.0%
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➤ **TOTAL (in 2014 dollars) \$ 922,000**



Project 4.2 Miranda Avenue Pathway Improvements

DKS Associates

Planning Cost Estimate

1970 Broadway Ste 740, Oakland CA 94612

Project Number WO 4.3

WO 4.3

☒ 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:

Livorna Road Sidewalk Improvements

Project Location:

Livorna Road between Wilson Road and Sugarloaf Drive

Description

This project includes roadway improvements: a new walkway and bike lane improvements along Laverna Road. Improvements also include storm drainage modifications and retaining wall construction.

Project Length (ft):

565

Date of Estimate:

Apr. 8, 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	Traffic Control System	1	LS	\$ 20,000.00	\$ 20,000
3	Prepare Water Pollution Control Plan	1	LS	\$ 6,000.00	\$ 6,000
4	Clearing and Grubbing	1	LS	\$ 30,000.00	\$ 30,000
5	Saw Cut Pavement Edges	565	LF	\$ 2.00	\$ 1,130
6	Demolish Existing Paved Channel	495	LF	\$ 20.00	\$ 9,900
7	Roadway Excavation	295	CY	\$ 45.00	\$ 13,275
8	Imported Material (Shoulder Backing)	25	TON	\$ 45.00	\$ 1,125
9	Class 2 Aggregate Base	141	CY	\$ 65.00	\$ 9,165
10	Hot Mix Asphalt (Type A)	80	TON	\$ 110.00	\$ 8,800
11	Curb and Gutter	865	EA	\$ 35.00	\$ 30,275
12	Roadside Sign - One Post	2	EA	\$ 350.00	\$ 700
13	Pervious interlocking walkway	4325	SF	\$ 25.00	\$ 108,125
14	ADA Curb Ramps	6	EA	\$ 3,000.00	\$ 18,000
15	Storm Drainage Pipe	495	LF	\$ 150.00	\$ 74,250
16	Construct Interlocking Block Retaining Wall	190	LF	\$ 250.00	\$ 47,500
17	Trim Vegetation	1	LS	\$ 1,000.00	\$ 1,000
18	Thermoplastic Traffic Stripe - Det. 21,	565	LF	\$ 3.00	\$ 1,695
19	Thermoplastic Traffic Stripe - Det. 27B, Right Edge Line	1310	LF	\$ 2.00	\$ 2,620
20	Construct Irrigation and Landscaping	4325	SF	\$ 10.00	\$ 43,250
21	Mobilization	1	LS	\$ 35,000.00	\$ 35,000

	CONTRACT ITEMS LESS MOBILIZATION (TO NEAREST 1,000)		\$	385,000
	Planning Engineering (TE)	\$ 35,000	CONTRACT ITEMS	\$ 463,000
	Preliminary Engineering (Design/Survey)*	\$ 100,000	OTHER COSTS (CON)	\$ 93,000
	Utility Coordination	\$ 40,000	CONTINGENCY*	\$ 70,000
	Environmental (Environmental, Real Property)	\$ 30,000	SUBTOTAL (CONTRACT IT	\$ 626,000
	R/W Engineering (Survey)		SUBTOTAL (PLAN)	\$ 35,000
	Real Property Labor		SUBTOTAL (PE)	\$ 170,000
	R/W Acquisition		SUBTOTAL (R/W)	\$ -
	Construction Engineering *	\$ 93,000		
	Environmental Monitoring and Mitigation Fees	\$ -		
	SUBTOTAL of OTHER COSTS (ALL)	\$ 298,000	GRAND TOTAL	\$ 831,000

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

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

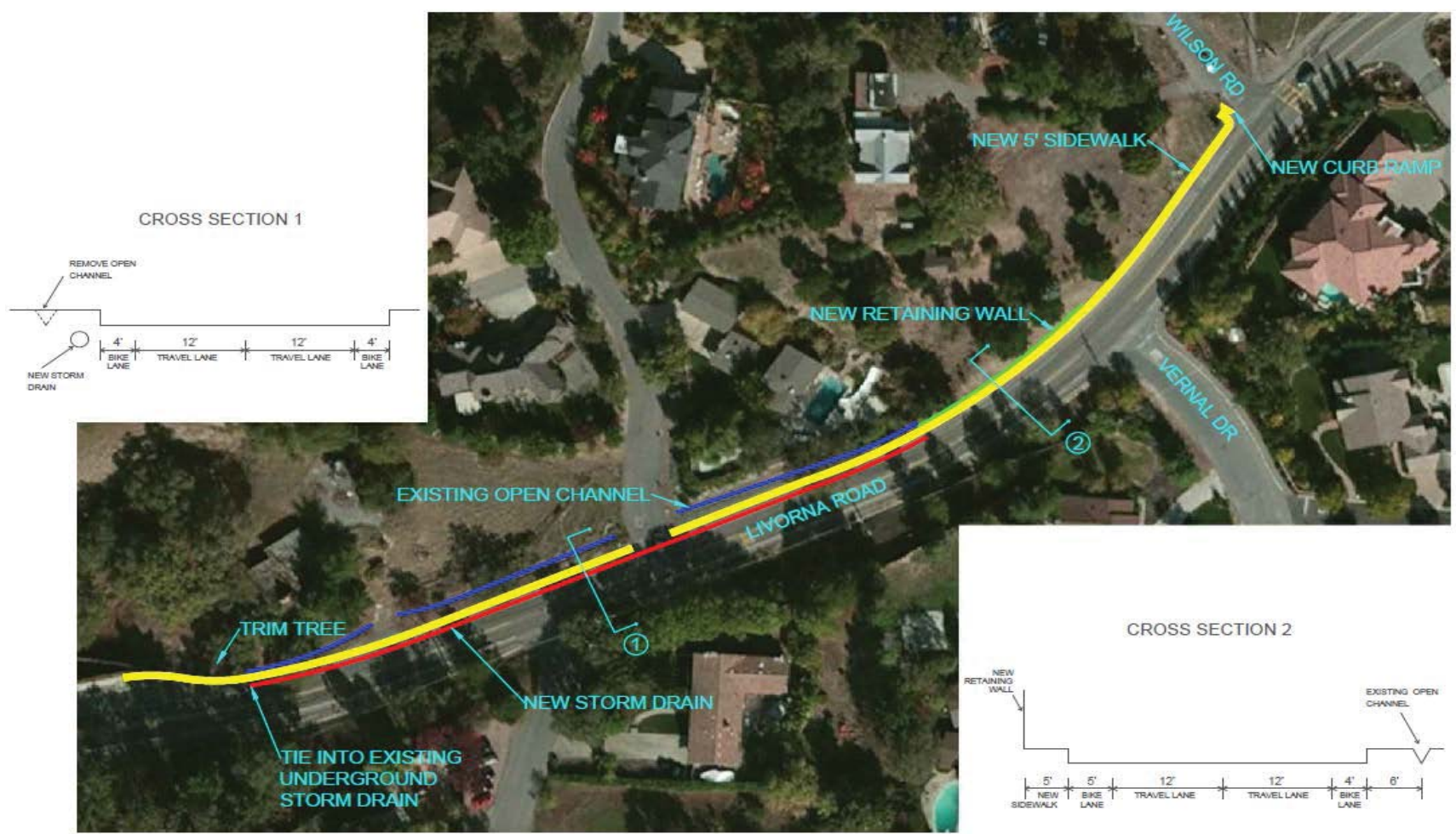
* CONTINGENCY is 15% of contract items. (\$10,000 min.)

CURRENT YEAR	2014
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ESCALATION YEAR 2014

ESCALATION RATE 0.0%

➤ **TOTAL (in 2014 dollars) \$ 831,000**



Project 4.3 Livorna Avenue Sidewalk Improvements

DKS Associates

Planning Cost Estimate

1970 Broadway Ste 740, Oakland CA 94612

Project Number

WO 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:

Safety Improvements at the Intersection of Danville Blvd at Hemme Ave

Project Location:

Danville Blvd from Hemme Ave to Johnson Lane

Description

Danville Boulevard project includes extending the existing left turn pocket an additional 100-feet for the northbound approach to the intersection.

Project Length (ft):

400

Date of Estimate:

Apr. 8, 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	Traffic Control System	1	LS	\$ 20,000.00	\$ 20,000
3	Prepare Water Pollution Control Plan	1	LS	\$ 6,000.00	\$ 6,000
4	Demolition	1	LS	\$ 30,000.00	\$ 30,000
5	Saw Cut Pavement Edges	500	LF	\$ 2.00	\$ 1,000
6	Roadway Excavation	65	CY	\$ 150.00	\$ 9,750
7	Imported Material (Shoulder Backing)	25	TON	\$ 45.00	\$ 1,125
8	Class 2 Aggregate Base	65	CY	\$ 65.00	\$ 4,225
9	Hot Mix Asphalt (Type A)	55	TON	\$ 110.00	\$ 6,050
10	Storm Drainage Modifications	1	LS	\$ 25,000.00	\$ 25,000
11	Construct Interlocking Block Retaining Wall	190	LF	\$ 250.00	\$ 47,500
12	Tree Removal	12	EA	\$ 750.00	\$ 9,000
13	ADA Curb Ramp	2	EA	\$ 3,000.00	\$ 6,000
14	Thermoplastic Traffic Stripe - Det. 27B, Right Edge Line	500	LF	\$ 2.00	\$ 1,000
15	Construct Irrigation and Landscaping	4325	SF	\$ 10.00	\$ 43,250
16	Mobilization	1	LS	\$ 16,500.00	\$ 16,500
17					
18					
19					
20					
21	Planning Engineering (TE)	\$ 25,000			
	Preliminary Engineering (Design/Survey)*	\$ 100,000			
	Utility Coordination	\$ 40,000			
	Environmental (Environmental, Real Property)	\$ 30,000			
	R/W Engineering (Survey)				
	Real Property Labor				
	R/W Acquisition				
	Construction Engineering *	\$ 46,000			
	Environmental Monitoring and Mitigation Fees	\$ -			
	SUBTOTAL of OTHER COSTS (ALL)	\$ 241,000			

CONTRACT ITEMS LESS MOBILIZATION (TO NEAREST 1,000)	\$	168,000
CONTRACT ITEMS	\$	228,000
OTHER COSTS (CON)	\$	46,000
CONTINGENCY*	\$	35,000
SUBTOTAL (CONTRACT IT	\$	309,000
SUBTOTAL (PLAN)	\$	25,000
SUBTOTAL (PE)	\$	170,000
SUBTOTAL (R/W)	\$	-
GRAND TOTAL	\$	504,000

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

CURRENT YEAR

2014

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

ESCALATION YEAR

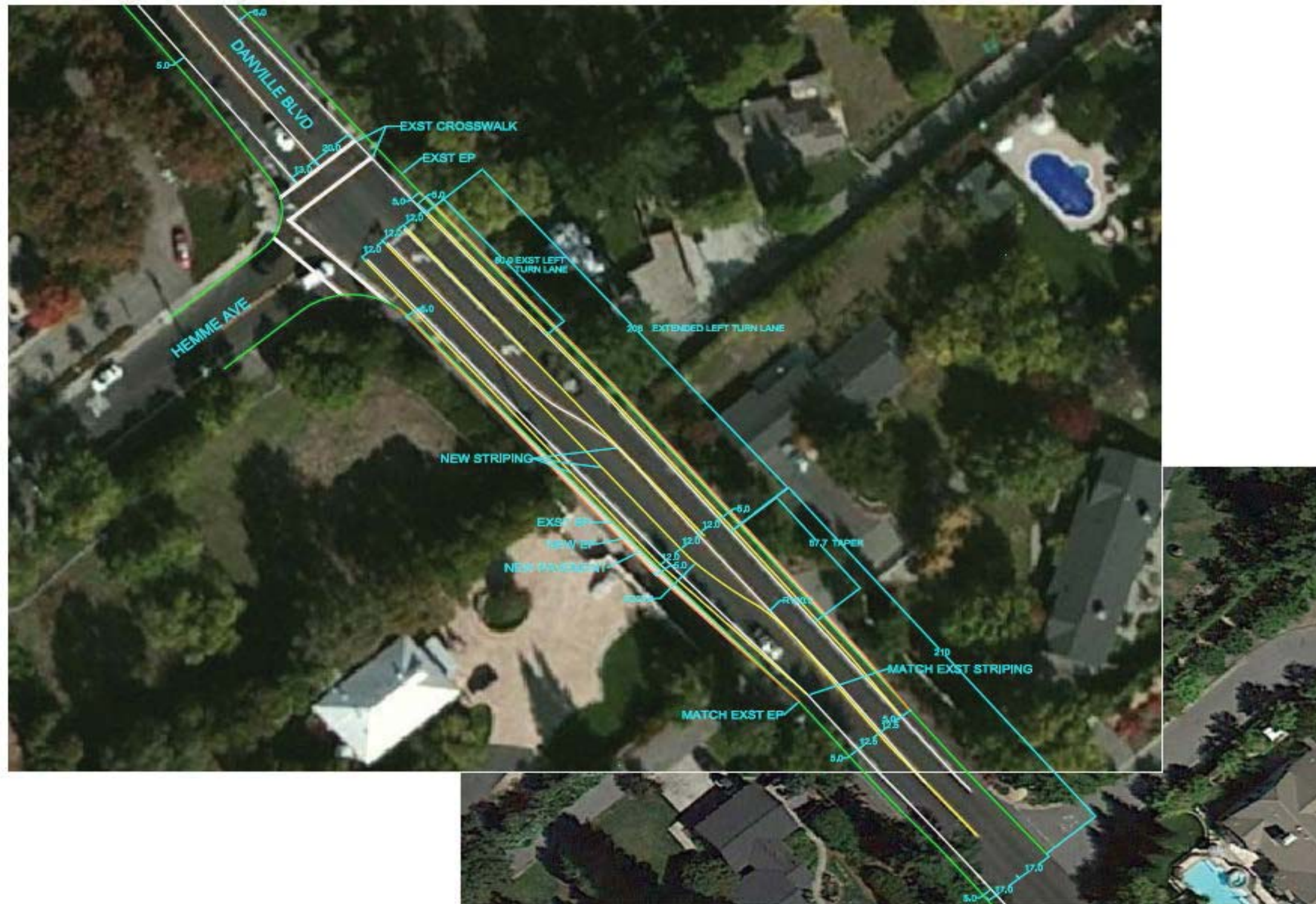
2014

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

ESCALATION RATE

0.0%

➤ TOTAL (in 2014 dollars)\$ 504,000



Project 5 Safety Improvements at the Intersection of Danville Blvd and Hemme Ave