RCTC TRUCK STUDY AND REGIONAL LOGISTICS MITIGATION FEE

Technical Memorandum:
Task 2 – Funding and Cost Analysis

Prepared for :

RIVERSIDE COUNTY TRANSPORTATION COMMISSION

Prepared by:

WSP

In partnership with

FEHR & PEERS

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Table of Contents

List of Figures

List of Tables

1. INTRODUCTION

The statutory requirements and legal precedents relating to the imposition of impact fees mandate developing a fully fundable program to ensure that the revenues collected are proportional, adequate and can be spent in a reasonable amount of time to effectively mitigate the resulting impacts. Accomplishing the funding and cost analysis task represents a series of critical steps in the nexus process to identify other available funding sources that will contribute to mitigating the impacts of logistics facilities and other development in the County. This includes quantifying the costs of addressing existing deficiencies in highway infrastructure, the costs to address impacts resulting from other development activities not attributable to the warehousing and logistics sector, and the cost to address the impacts of pass through trips, including goods movement. Additionally, this task will need to establish a program of projects that can be implemented to effectively mitigate the cumulative regional impacts of new logistics related developments and to satisfy requirements for timely revenue expenditure.

The various steps of the nexus development process that contribute to accomplishing this task are summarized as follows. This effort starts by using the traffic data outputs of the prior task to identify capacity deficiencies in the highway network, then determining the proportion of those deficiencies that are attributable to new warehousing and logistics related development. The resultant information can then be cross-referenced with project cost information to determine the overall cost of mitigating freight impacts as the basis for estimating a fee.

2. IDENTIFYING CAPACITY DEFICIENCIES

A primary step in the process of determining the basis for any impact fee program is identifying the extent of the impact that will result from new development activity. For the purposes of this study, the SCAG regional travel demand model was the primary tool used for identifying existing and future capacity deficiencies and determining attribution of deficiencies to new logistics trucking[1]. A modified SCAG model was run for existing (2016) and future with no improvement (2040) conditions. Model outputs were processed to identify deficiencies and percent attributable to new logistics trucking, as described in the following sections.

2.1. ADJUSTING THE SCAG MODEL

The SCAG Model's 2016 scenario year network was used for all model runs with the 2016 and 2040 socio-economic data providing the basis for the demand inputs. These model files were from the version of the SCAG model used to develop the 2016 RTP/SCS. In accordance with best industry practice, some adjustments were made to improve the accuracy of the model

[1] The following model analysis was performed by WSP based upon modeling information originally developed by the Southern California Association of Governments (SCAG). SCAG is not responsible for how the model is applied or for any changes to the model scripts, model parameters, or model input data. The resulting modelling data does not necessarily reflect the official views or policies of SCAG. SCAG shall not be held responsible for the modeling results and the content of the documentation.

with respect to freeways in Riverside County. These adjustments are described in an earlier technical memorandum[2].

2.1.1. Model Validation

Best industry practice requires that a regional model be adjusted and re-validated prior to using it for sub-regional studies:

> *"Agencies that use MPO models for purposes other than regional planning should ensure that the model provides the appropriate scale and sensitivity for applications at a sub-regional level such as corridor, sub-area, or local planning studies. Below the regional level, model refinements are likely necessary to ensure the model meets the validation targets established in these guidelines and is appropriately sensitive to smaller scale changes associated with sub-regional studies."* From *2010 California Regional Transportation Plan Guidelines*, California Transportation Commission.

The previous technical memorandum described a series of diagnostic tests that the study team performed on the SCAG model to test its validity for use in a freeway impact fee nexus study. The tests showed that the model represented truck traffic on Riverside County freeways well. For example, Figure 2-1 compares the percentage of trucks in the traffic on various freeways in the model versus the percentage in the Caltrans performance measurement system (PeMS) data, and Figure 2-2 shows a similar comparison for truck volumes. There is a close correlation between the model and actual values, and no systemic tendency towards over- or under-estimating the truck percentage.

[2] See the discussion of diagnostic tests of the SCAG model in *Technical Memorandum 1: Existing and Future Conditions*, WSP, July 2017

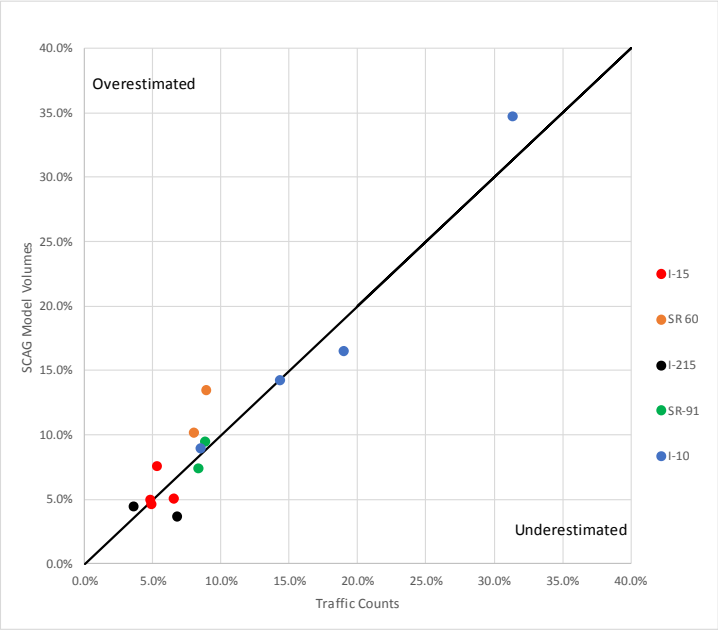

Figure 2-1: Comparison of Modeled to Actual Daily Truck Percentages on Riverside County Freeways

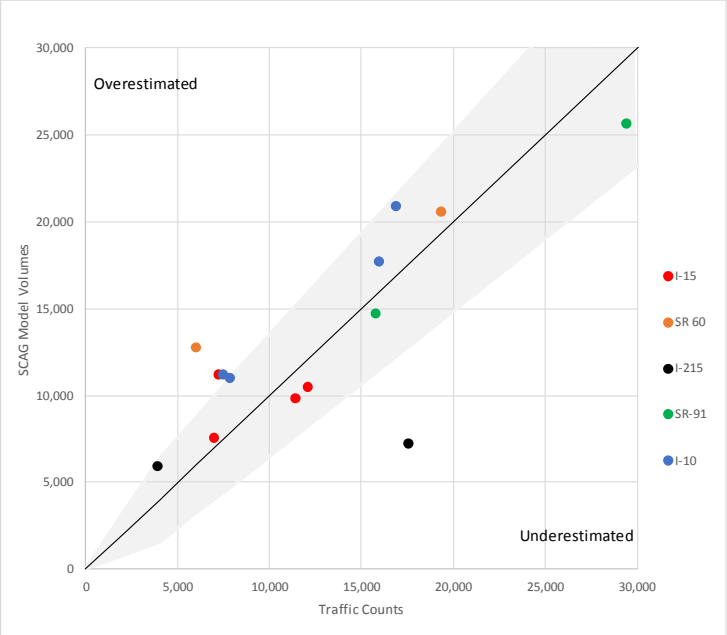

Figure 2-2: Comparison of Modeled to Actual Daily Truck Volumes on Riverside County Freeways

However, the tests also revealed that there was an issue warranting adjustment. Figure 2-3 shows link flows from a SCAG model run for 2016 compared to PeMS data for the same year. This data was evaluated two ways, namely:

- The shaded areas in Figure 2-2 and Figure 2-3 show the allowable deviation based on Caltrans guidelines. The allowable deviation reflects the fact that the actual traffic volumes on roads fluctuate from day to day, so the "normal" traffic volume that a model should replicate is a range rather than a fixed value. A model is considered generally valid if 75% of the points fall within the allowable deviation. In this case 77% of the sites are within the allowable range in the AM peak hour and 86% in the PM peak hour, so the model passes this test of validity.
- The second test was to see whether there was a general tendency for the model to over-estimate or under-estimate freeway volumes on freeways in Riverside County. Figure 2-3 shows that the model failed this test; over-estimating traffic on Riverside County freeways by an average of 26% in the AM peak hour and 20% in the PM peak hour.

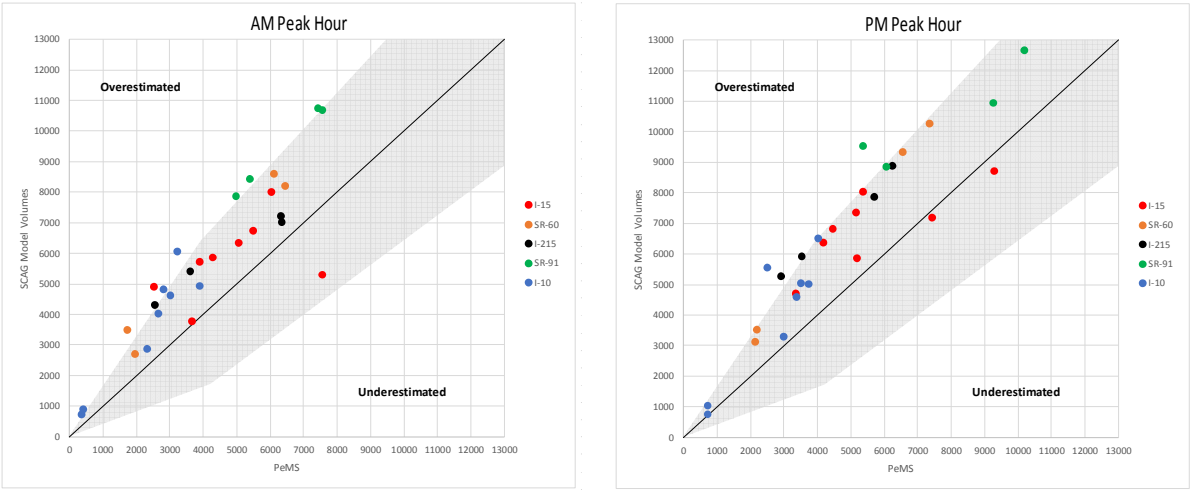

Figure 2-3: AM and PM Peak Hour Comparison of Traffic Counts and SCAG Model Volumes

The model overestimation can be reduced by factoring down model volumes in a post-model adjustment. Only car volumes were factored down, not truck volumes, because truck volumes did not show the same trend (see Figure 2-2).

Figure 2-4 shows the results after applying factors of 0.74 and 0.80 in the AM peak hour and PM peak hour, respectively. After adjustments, the R-squared[3] value increased from 0.11 to 0.79 in the AM peak hour and from 0.51 to 0.84 in the PM peak hour.

3 R-squared is a measure of how well the forecast accounts for variations in the traffic counts. R-squared values can range from 0.00, indicating no relationship between the model values and the counts, to 1.00, indicating that the model accounts for all variation in the count data set.

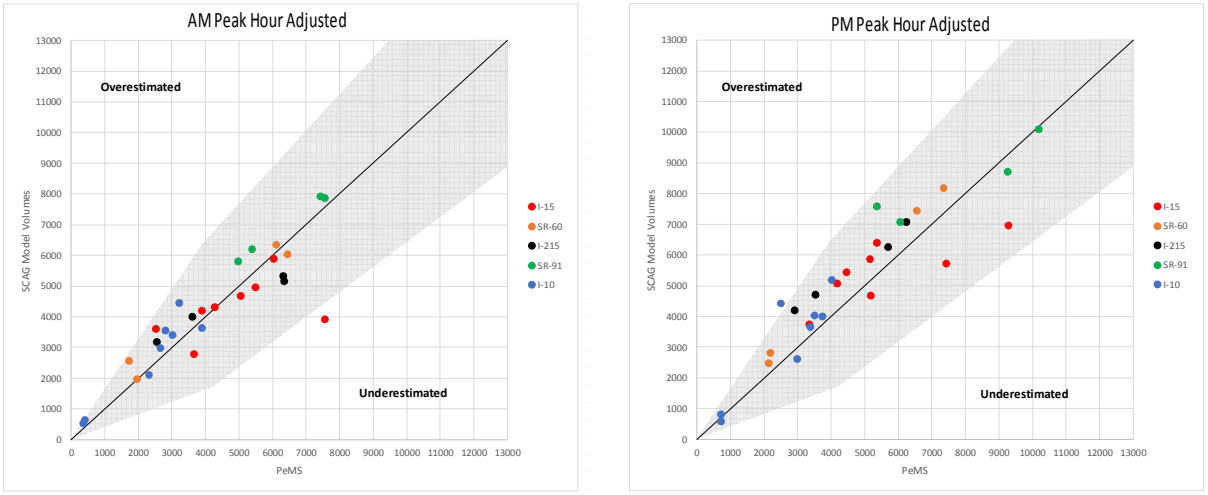

Figure 2-4: AM and PM Peak Hour Comparison of Traffic Counts and SCAG Model Adjusted Volumes

2.1.2. Forecasting the Growth in Logistics Employment in Riverside County

The steps used to forecast for the growth in logistics in Riverside County are outline in Figure 2-5 below.

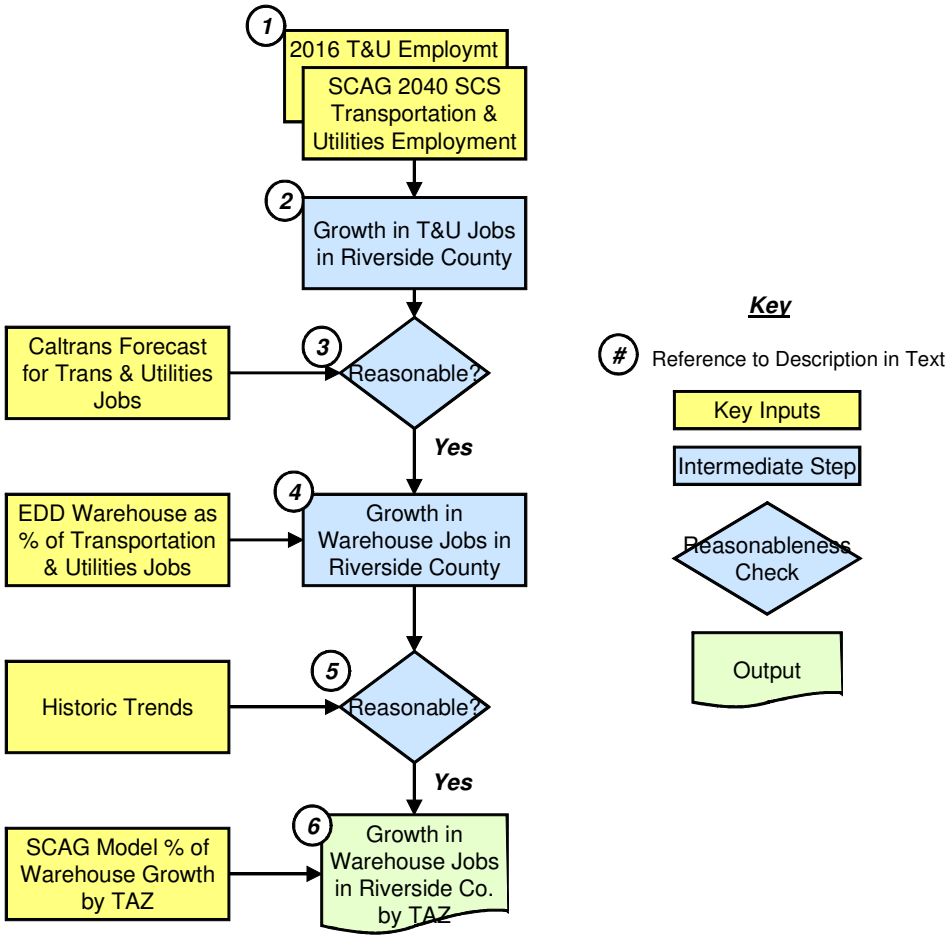

Figure 2-5: Steps Used to Forecast Logistics Growth

The steps in the process were:

1) The starting point for forecasting logistics growth in Riverside County was the adopted SCAG 2016 RTP/SCS. The SCS socio-economic data (SED) included several employment categories, of which the most relevant for this study is Transportation and Warehousing (corresponding to NAICS code 48-49). Warehousing employment (NAICS subcategory code 493) is included within this category, along with other types of employment such as air and rail transportation, trucking, transit, pipeline, and postal service. The SCS data was obtained from SCAG in the form of SED inputs for the latest SCAG model (v6.3).

2) The growth in jobs in the Transportation and Warehousing category was derived as the difference in the employment figures for 2016 and 2040.

3) Caltrans' Transportation Economics Branch provides annual county-level projections of employment by 2-digit NAICS industry categories out to 2050[4]. Their forecast is shown in Figure 2-6. This was compared to the forecast from the adopted SCS as a reasonableness check. As can be seen in Figure 2-7, the two forecasts are reasonably consistent. The SCS forecast is a little lower than the Caltrans' forecast, representing a more conservative forecast as the basis a fee program[5].

4) Next, the growth in employment in the warehouse sub-category needed to be separated out from the growth of the broader Transportation and Warehousing category. The best data available for doing this comes from the California Employment Development Department (EDD). EDD collects data on employment by detailed NAICS industries, but only at the Metropolitan Statistical Area (MSA) geography. Moreover, EDD does not include long-term forecasts. Therefore, the EDD historical data for the Riverside-San Bernardino-Ontario MSA had to be extrapolated into the future.

   First, the proportion of Transportation and Warehouse employment that is in the warehousing sub-category was computed (see Figure 2-8) to observe the historical trend. As seen in Figure 2-8, 2003 marks an inflection point where the rate of growth in warehousing increases relative to the growth of transportation/warehousing employment overall. Therefore, the post-2003 trend was used to extrapolate from 2016 to 2040 for both for the warehousing sub-category and the rest of Transportation sub-categories.

5) As a reasonableness check, the growth in warehouse jobs and non-warehouse jobs in the Transportation and Warehouse category were compared to historic trends. As can be seen in Figure 2-9, the forecasts produced by steps 1 through 4 appear to be reasonable considering the best available data.

6) Steps 1 through 5 produced a control total for the growth in warehouse jobs in Riverside County, but contain no information about where in the county the jobs would be located. Locational data is needed so that the growth will be properly represented in the forecast in terms of where they will affect the freeway system.

   The best available data for the distribution of growth among the traffic analysis zones (TAZs) comes from a study currently underway by SCAG, some products of which are available for modeling purposes[6]. Figure 2-10 shows the TAZs with the highest warehousing growth in the SCAG model SED. The large majority of growth is associated

[4] http://www.dot.ca.gov/hq/tpp/offices/eab/socio_economic.html

[5] Impact fee programs must demonstrate a rational nexus and rough proportionality between the nature of the development that would be subject to the fee, the magnitude of the impact being created, and the cost to mitigate the specific impact. For fee studies, it is important not to *over*-estimate impacts or thr required mitigation, which can be different from other types of traffic impact studies done pursuant to CEQA, where it is typically more important not to *under*-estimate impacts.

[6] The on-going SCAG study also produced some forecasts of warehouse jobs by TAZ, but the SCAG team stated that these were very preliminary and recommended that they not be used for the current nexus study.

with the World Logistics Center—this TAZ contains 91% of the growth for the county. After the five TAZ with the largest growth, there are six TAZs each with less than 1% of the warehousing employment in the county.

The control total from Step 5 was multiplied by the percentage of growth for each TAZ to produce the forecast of the growth in warehouse employment by TAZ.

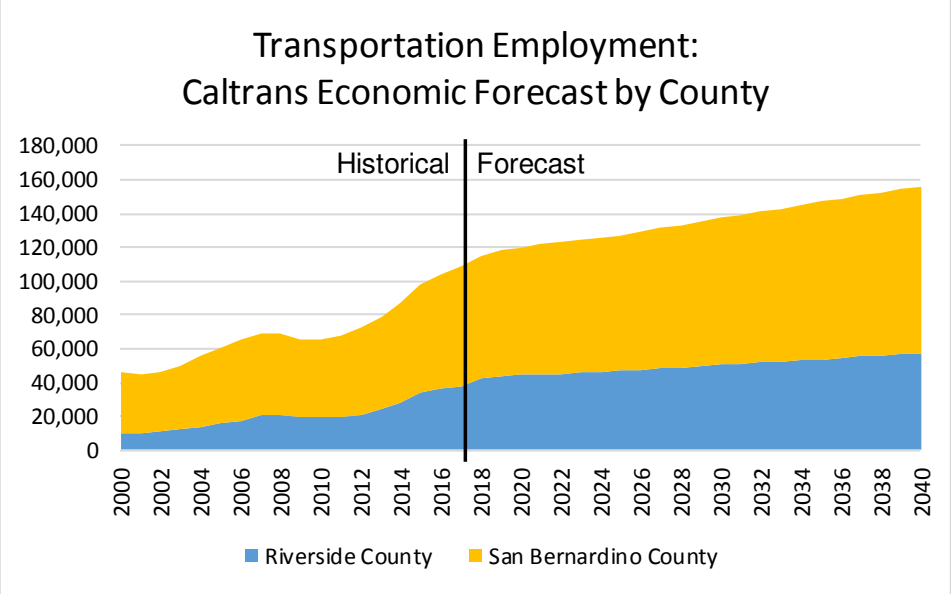

Figure 2-6: Caltrans Economic Forecast for Riverside and San Bernardino Counties

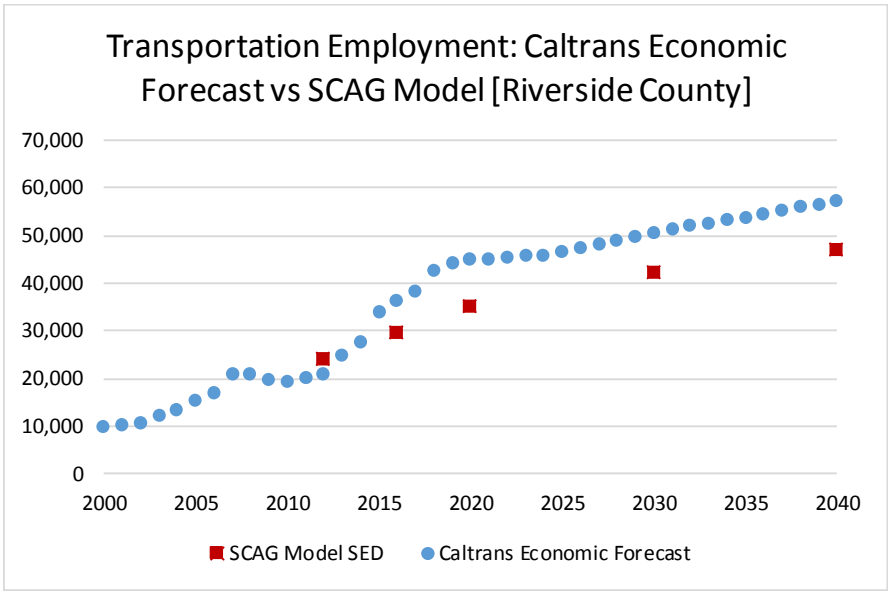

Figure 2-7: Caltrans Economic Forecast Transportation Employment Compared to the SCAG model's Transportation Employment Data for Riverside

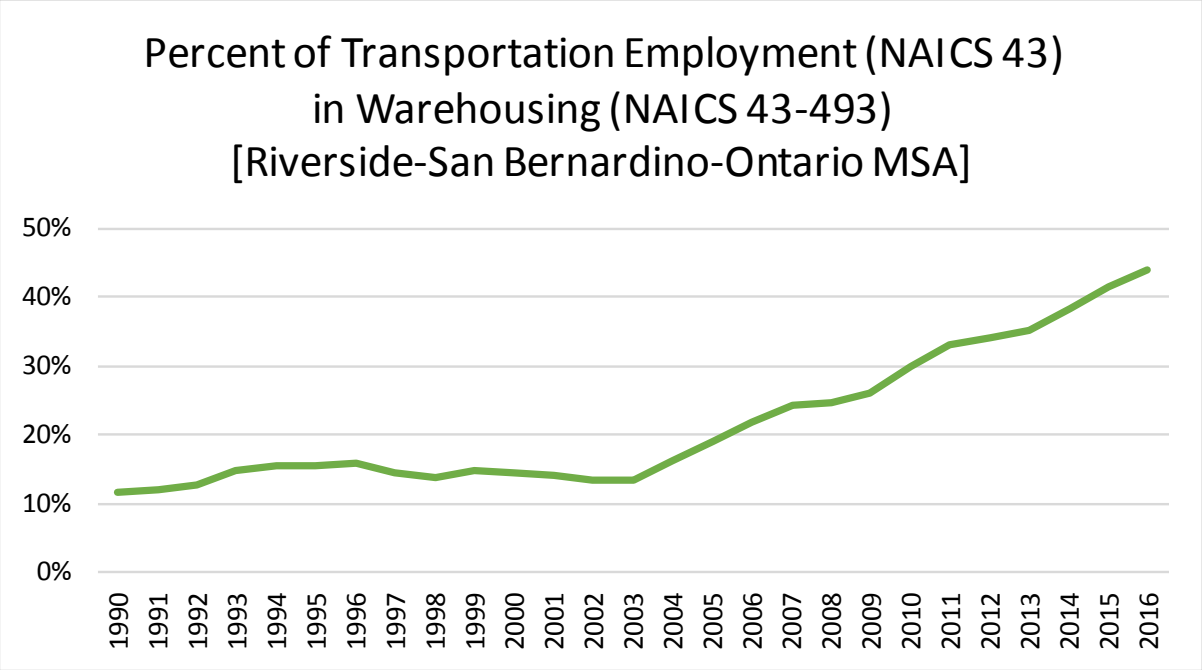

Figure 2-8: The Proportion of Warehousing to Transportation Employment from the Riverside-San Bernardino-Ontario MSA

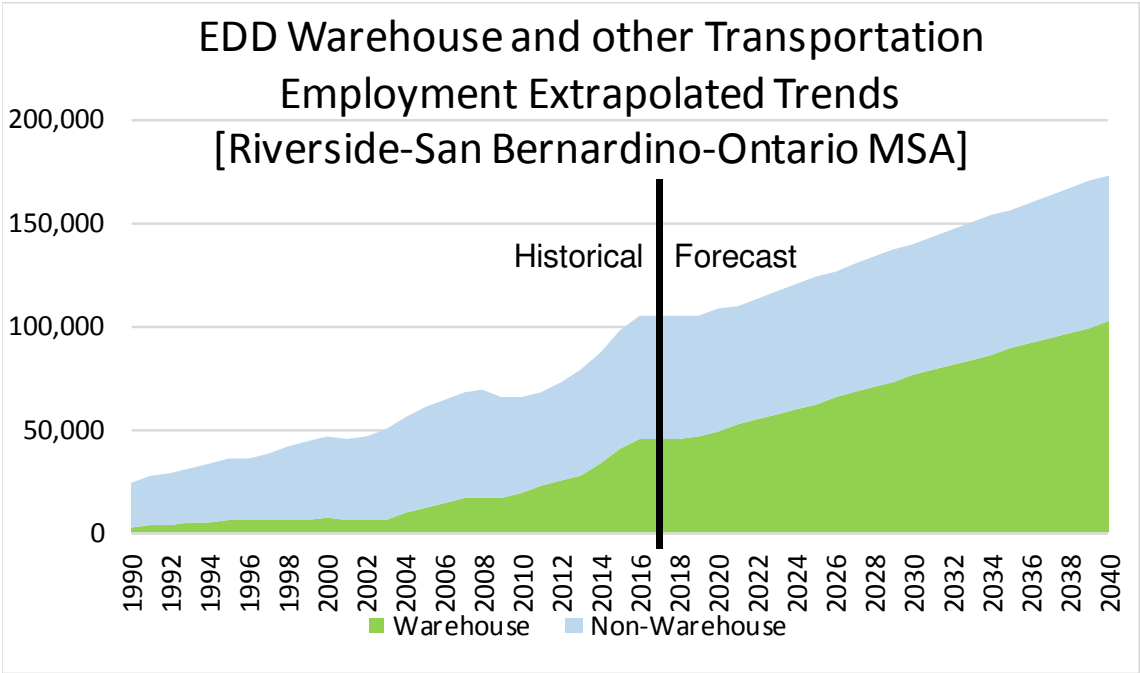

Figure 2-9: Extrapolated EDD to 2040 Using the 2003 to 2016 Trend for Warehousing and Other Transportation Employment

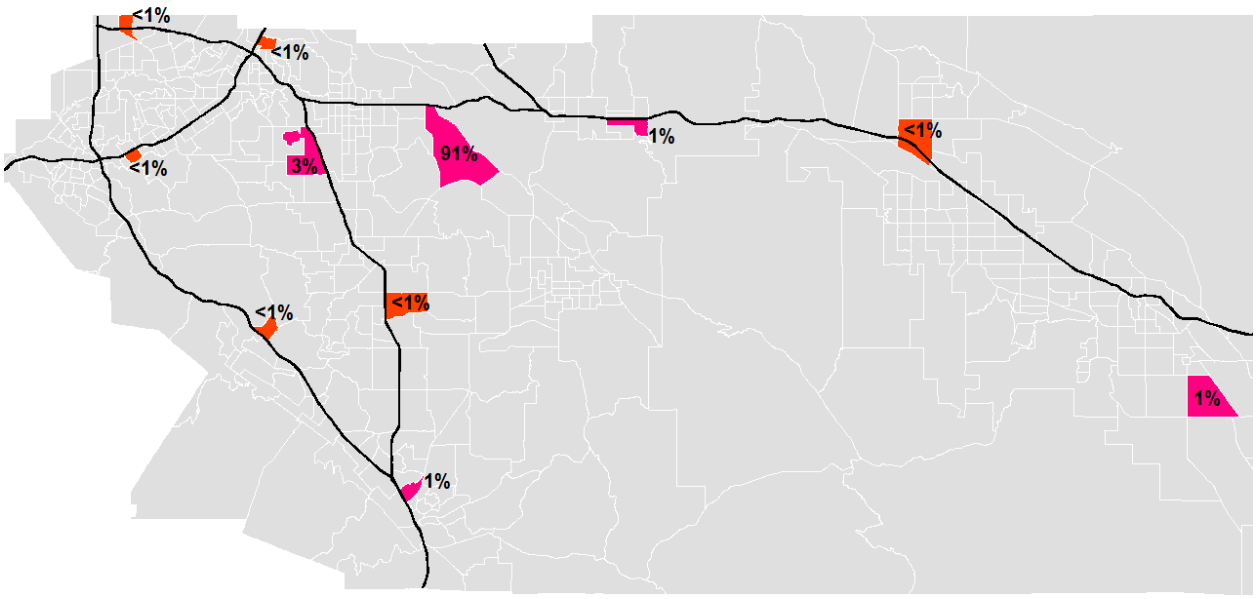

Figure 2-10: TAZs with Largest Warehousing/Logistics Growth in Riverside County

2.1.3. Model Post Processing

The model data was post-processed to calculate peak hour volume-to-capacity (V/C) ratios and identify deficiencies. Link data was processed for all freeway links in Riverside County. The SCAG model generates link flows for the AM peak (3-hour) and PM (4-hour) peak periods. Peak period flows for non-trucks were converted to hourly flows using conversion factors of 0.35 and 0.28 for AM and PM peak hours, respectively. These factors were taken from *San Bernardino County CMP Appendix H – Post Processed Traffic Volume Guidelines* and are widely used in model applications in Riverside and San Bernardino Counties. Trucks were assumed to have a flat demand for each hour within a peak period (i.e. factors of 0.33 and 0.25 for AM and PM). Then, the validation factors discussed in Section 2.1 (0.74 and 0.80 in the AM and PM peak hours, respectively) were applied to non-truck flows.

2.2. Identifying Deficiencies

The V/C ratio was computed for each link in the AM and PM peak hours using the capacities and passenger car equivalent (PCE) factors[7] embedded in the SCAG model which account for grade. Per the RCTC Congestion Management Program, the adopted minimum Level of Service (LOS) threshold for freeways in Riverside County is LOS "E" meaning that facilities with a V/C ratio of 1.0 or higher are considered deficient.

Figure 2-11 and Figure 2-13 show the existing V/C ratios for the AM peak hour and PM peak hour, respectively. There are three current deficiencies identified in Riverside County: SR-91 in Corona during the both the AM and PM peak hours, I-15 in the Jurupa Valley during the PM peak hour, and I-215 between Riverside and Moreno Valley during the PM peak hour. These congested sections may result in queuing in upstream sections whose V/C ratios would not in themselves be problematic, so drivers may perceive the problem sections to be longer than shown.

Figure 2-12 and Figure 2-14 shows 2040 traffic demand assigned to the existing network[8] with no capacity improvements for the AM and PM peak hours, respectively. The existing deficiencies would worsen and two additional deficiencies in the AM peak hour and five additional deficiencies in the PM peak hour would be created.

7 PCE factors are used to account for the difference in size, speed, and maneuverability between different classes of vehicles, including the effect of slopes on the operating characteristics of trucks.

8 The SCAG existing model network represents the current state of the transportation system in 2016 and does not reflect those projects completed since 2016. In Riverside County, the SR-91 Express Lanes Extension project that included various freeway improvements along SR-91 from the Orange County line to I-15 was completed after 2016. Projects completed after 2016 (as well as projects currently under construction) get reconciled during subsequent study steps, as described in Chapter 4 of this technical memorandum.

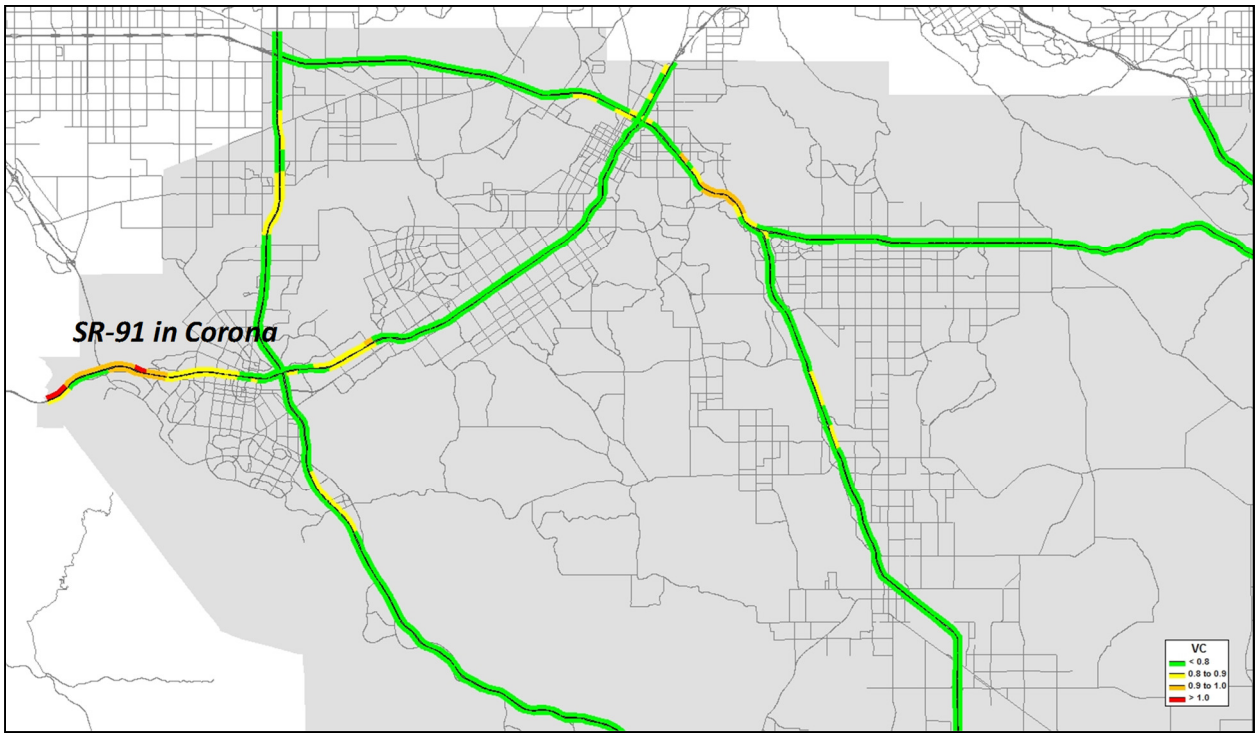

Figure 2-11: Existing Deficiencies in Riverside County during the AM Peak Hour

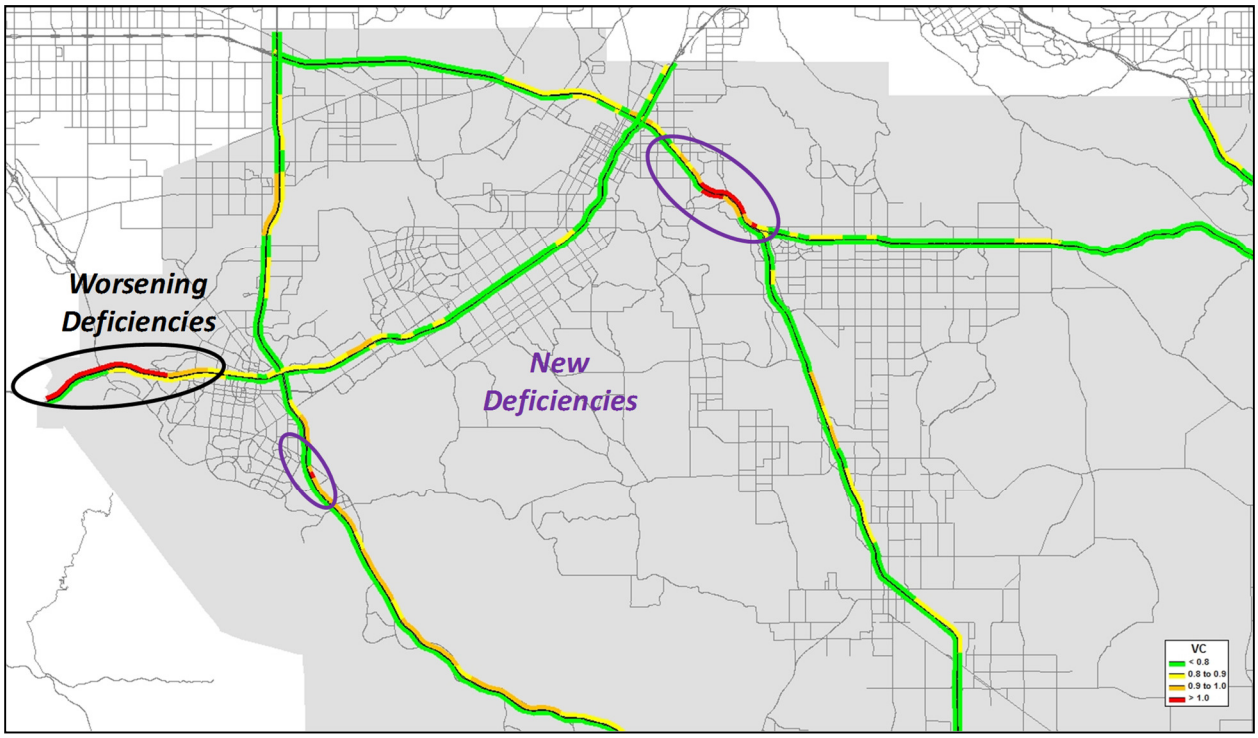

Figure 2-12: Future Deficiencies in Riverside County during the AM Peak Hour

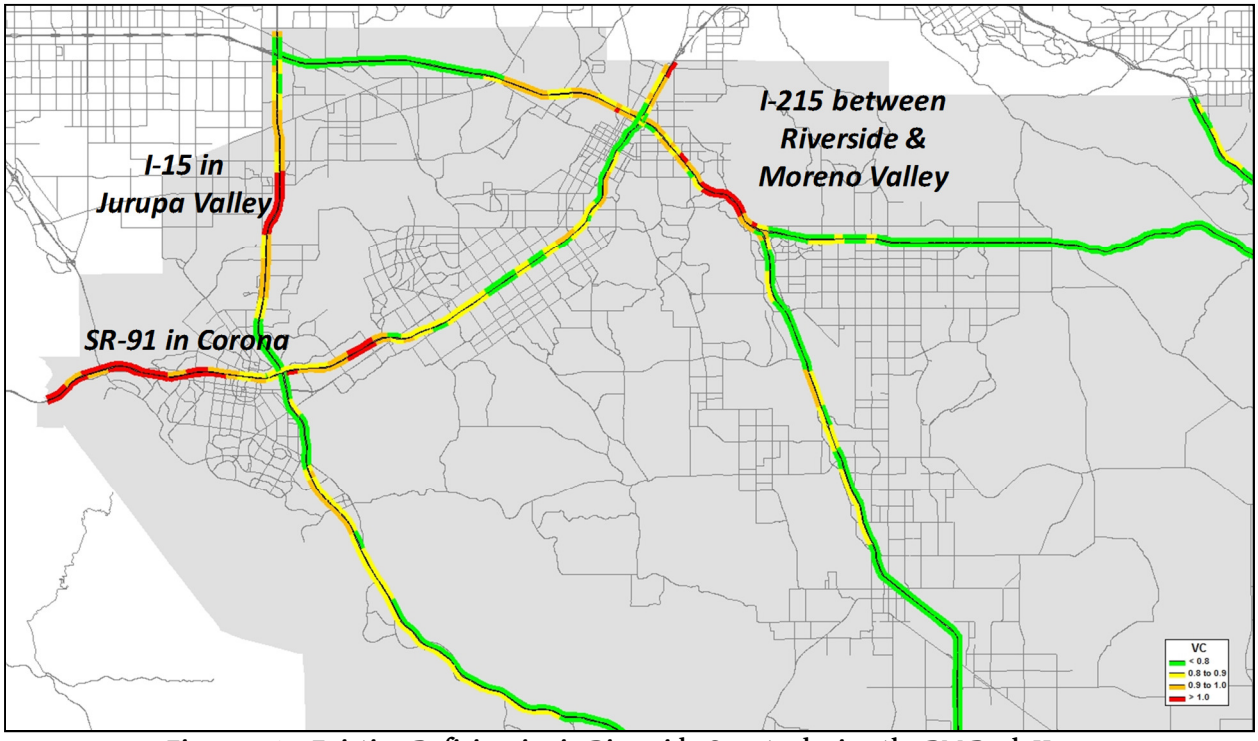

Figure 2-13: Existing Deficiencies in Riverside County during the PM Peak Hour

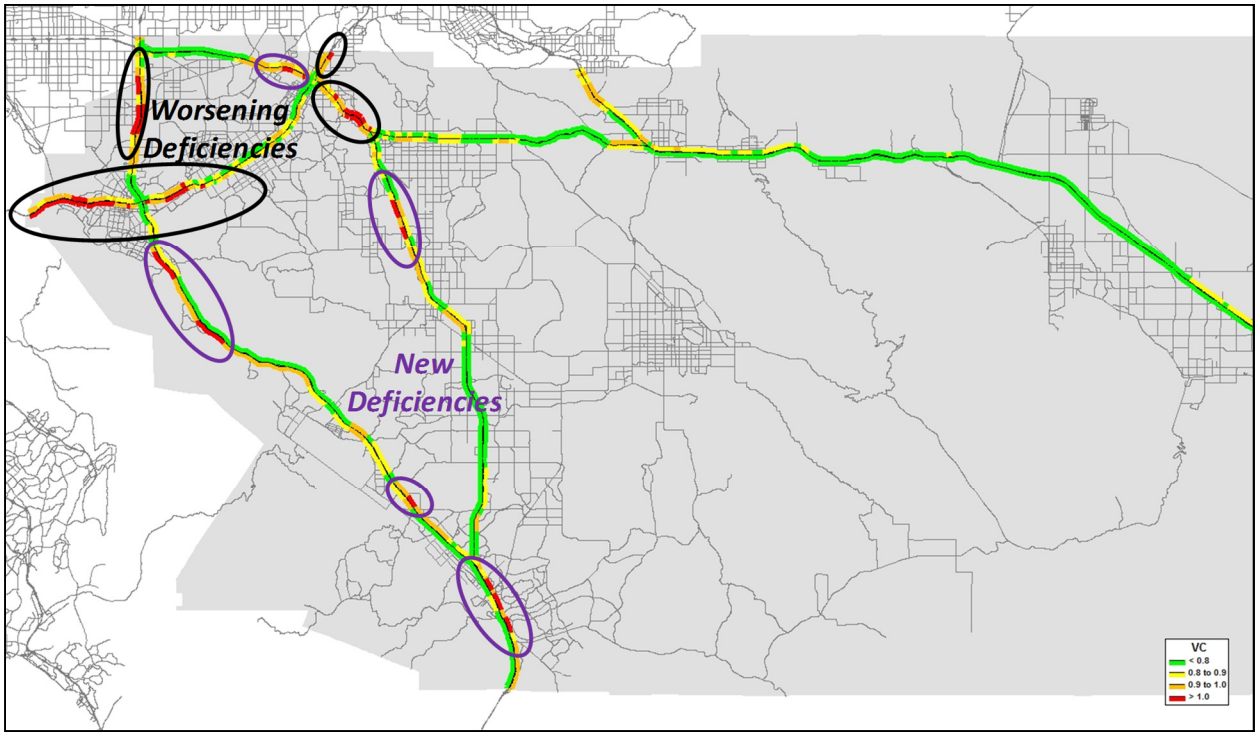

Figure 2-14: Future Deficiencies in Riverside County during the PM Peak Hour

3. ATTRIBUTING CAPACITY DEFICIENCIES TO NEW LOGISTICS DEVELOPMENT

3.1. Percent Attributable to Future Development

The Mitigation Fee Act limits impact fees to new development's "fair share" of the cost of needed improvements. For that reason, once the existing and future freeway deficiencies were identified, the next step was to determine how much of each future deficiency can be attributed to traffic from future development. There are three possible situations for each freeway link:

- Freeway volumes are below the capacity of the freeway, even when the traffic from new development is added in. In such cases there is no deficiency. No fee can be collected because no improvement is needed.
- Existing traffic volumes are below the capacity of the freeway, but the addition of traffic from new growth creates a deficiency where none previously existed. In such cases 100% of the deficiency can be attributed to new development.
- There is an existing deficiency that will worsen with the addition of traffic from new growth. In these cases, the percent of the deficiency attributable to new growth is the portion of the excess traffic (excess being the traffic above the capacity of the road) that arises from new growth rather than from existing traffic.

3.2. Percent Attributable to New Logistics Development

3.2.1. Tracking new logistics truck traffic in the SCAG model

In order compute the percent of each deficiency that is attributable to new logistics development, it was necessary to keep track of trips generated by new logistics uses during the model assignment. The socio-economic data (SED) input files were modified in such a way that only growth in warehousing employment were allocated to traffic analysis zones (TAZ), so all trips to or from these TAZ can be attributed to only new logistics activity. A select-zone query was generated during the assignment step so the new logistics trips were recorded for each link in the model. The SCAG model classifies vehicles by class including trucks, so trucks in the select-zone query represent all the truck traffic attributable to new logistics development.

Figure 3-1 shows the truck traffic due to new logistics, with bandwidth proportional to traffic flow. The largest flows are forecast to come from the proposed World Logistics Center, with the location of the World Logistics Center highlighted for easy reference. The largest increases in truck flows would occur on SR-60 and I-215 west of the World Logistics Center.

3.2.2. Percent Attributable to New Logistics Development

First, for each link, the growth in traffic volumes (measured as passenger car equivalents or PCE) from 2016 to 2040 was calculated. Then new logistics truck traffic was taken as a percent of that overall growth. This percent of growth attributable to new logistics trucks was

multiplied by the percent of deficiencies attributable to growth to find the percent of each deficiency specifically attributable to new logistics truck traffic. All these steps were done for both AM and PM peak hour traffic, then the peak hour with the higher percent attributable was selected to represent the link.

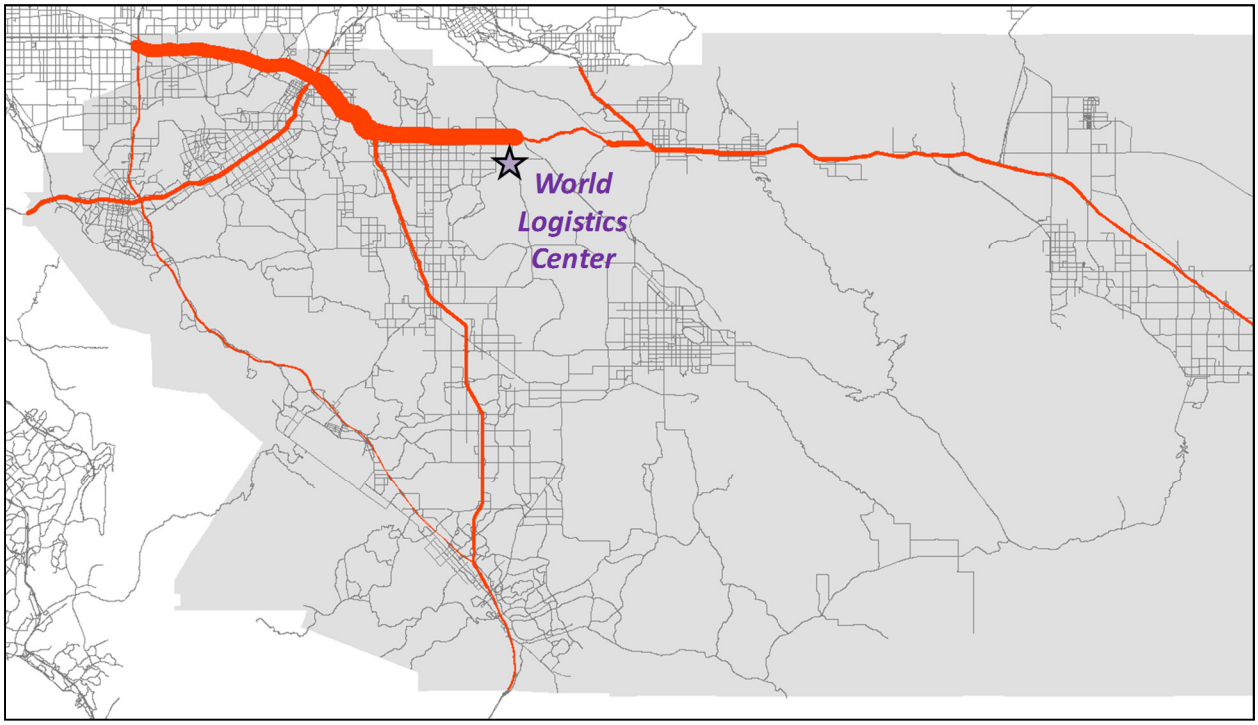

Figure 3-1: New Logistics Trucks in western Riverside County

3.3. IDENTIFYING PROJECTS

Links with new or increased deficiencies in either peak hour relative to existing conditions were identified as potential locations for improvement projects. Continuous sequences of model links were grouped into locations represented by a critical link for determining percent attributable to new logistics.

Table 3-1 shows the critical V/C ratios, deficiencies, and percent attributable for each project location. Figure 3-2 visually represents the components of traffic (existing, non-logistics growth, and logistics growth) relative to the capacity for each project location. For example, existing demand is less than capacity at project 4, so there is no existing deficiency. Therefore, the deficiency that is expected to appear by 2040 is entirely attributable to new development. At project 5, the existing demand exceeds capacity, and growth increases the deficiency. Figure 3-3 shows the project locations on a map.

Table 3-1: Deficient Segment Locations and Percent Attributable

Project ID	Route Name	Dir	Critical Segment		2016 GP Lanes on Critical Segment	Critical V/C ratio				Percent Deficiency Attributable to New Development		New Logistics Trucks as Percent of 2016 to 2040 Growth		Percent Deficiency Attributable to New Logistics Trucks by Peak Hour		Percent Deficiency Attributable to New Logistics Trucks
			Start	End		2016 AM V/C	2016 PM V/C	2040 AM V/C	2040 PM V/C	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	
						(A)		(B)		(C) = 100%, for (A) < 1.0 and (B) > 1.0 (C) = [(B)-(A)]/[(B)-1], for (A) > 1.0		(D)		(E) = (C) * (D)		(F) = Max (E)
1	I-15	NB	SR-79 S	Rancho California Rd	4	0.35	0.66	0.52	1.01	No Deficiency	100%	1.2%	0.7%	No Deficiency	0.7%	0.7%
			Rancho California Rd	Winchester Rd	4	0.45	0.74	0.60	1.01	No Deficiency	100%	1.4%	0.7%	No Deficiency	0.7%	0.7%
2	I-15	NB	Winchester Rd	Lane Add south of I-15/I-215 Split	4	0.46	0.79	0.58	1.02	No Deficiency	100%	2.3%	0.9%	No Deficiency	0.9%	0.9%
3	I-15	NB	Clinton Keith Rd	Baxter Rd	3	0.52	0.80	0.65	1.03	No Deficiency	100%	1.1%	0.3%	No Deficiency	0.3%	0.3%
4	I-15	NB	El Cerrito Rd	Ontario Ave	3	0.86	0.90	1.03	0.88	100%	No Deficiency	1.1%	100.0%	1.1%	No Deficiency	1.1%
5	I-15	NB	Norco Dr/6th Street	Limonite Ave	3	0.82	1.10	0.87	1.14	No Deficiency	29%	4.1%	2.5%	No Deficiency	0.7%	0.7%
6	I-15	SB	Cantu Galeano Ranch Rd	Limonite Ave	3	0.77	0.96	0.77	1.02	No Deficiency	100%	100.0%	4.3%	No Deficiency	4.3%	4.3%
			Limonite Ave	Norco Dr/6th Street	3	0.87	1.01	0.90	1.04	No Deficiency	88%	4.7%	5.9%	No Deficiency	5.2%	5.2%
7	I-15	SB	El Cerrito Rd	Dos Lagos Dr	3	0.65	0.92	0.61	1.03	No Deficiency	100%	100.0%	2.2%	No Deficiency	2.2%	2.2%
8	I-15	SB	Temescal Canyon Rd	Indian Truck Trail	3	0.61	0.83	0.56	1.01	No Deficiency	100%	100.0%	1.4%	No Deficiency	1.4%	1.4%
9	SR-60	EB	Rubidoux Blvd	Market St	3	0.84	0.95	0.81	1.03	No Deficiency	100%	100.0%	30.9%	No Deficiency	30.9%	30.9%
			Market St	Main St	3	0.87	1.00	0.82	1.06	No Deficiency	100%	100.0%	39.0%	No Deficiency	39.0%	39.0%
10	I-215	NB	Box Springs Rd	Central Ave	4	0.94	1.08	1.09	1.07	100%	0%	14.3%	100.0%	14.3%	0.0%	14.3%
			Watkins Dr	Martin Luther King Jr	4	0.94	1.05	1.12	1.16	100%	66%	24.8%	57.9%	24.8%	38.4%	38.4%
10c	I-215	NB	University Ave Off-Ramp	Upstream of Univ Ave On-ramp	3	0.90	1.04	0.98	1.04	No Deficiency	13%	26.9%	100.0%	No Deficiency	13.3%	13.3%
11	I-215	NB	Center St Off-Ramp	Riverside County Line/Iowa Ave	3	0.79	1.00	0.79	1.03	No Deficiency	97%	91.5%	12.2%	No Deficiency	11.8%	11.8%
12	I-215	SB	Martin Luther King Jr	Sycamore Canyon Rd	4	0.96	1.13	1.07	1.25	100%	50%	57.1%	55.2%	57.1%	27.7%	57.1%
13	I-215	SB	Van Buren Blvd	Harley Knox Blvd	3	0.67	0.95	0.64	1.06	No Deficiency	100%	100.0%	4.4%	No Deficiency	4.4%	4.4%
14	SR-91	NB	Riverside County Line	Green River Rd Off-Ramp	5	0.89	1.18	0.76	1.23	No Deficiency	23%	100.0%	6.1%	No Deficiency	1.4%	1.4%
			Green River Rd Off-Ramp	SR-71	5	0.79	1.01	0.72	1.02	No Deficiency	69%	100.0%	14.1%	No Deficiency	9.8%	9.8%
			SR-71	Serfas Club Dr Off-Ramp	4	0.92	1.17	0.85	1.27	No Deficiency	36%	100.0%	4.1%	No Deficiency	1.5%	1.5%
15	SR-91	NB	Serfas Club Dr Off-Ramp	Grand Blvd Off-Ramp	4	0.85	1.00	0.80	1.03	No Deficiency	100%	100.0%	8.9%	No Deficiency	8.9%	8.9%
16	SR-91	NB	On-Ramp from SB I-15	On-Ramp from NB I-15	3	0.81	1.03	0.76	1.07	No Deficiency	55%	100.0%	13.6%	No Deficiency	7.5%	7.5%
17	SR-91	NB	McKinley St Off-Ramp	Pierce St	3	0.81	0.98	0.76	1.02	No Deficiency	100%	100.0%	10.1%	No Deficiency	10.1%	10.1%
18	SR-91	NB	Magnolia Ave	La Sierra Ave	3	0.76	0.93	0.69	1.00	No Deficiency	100%	100.0%	8.3%	No Deficiency	8.3%	8.3%
19	SR-91	SB	Serfas Club Dr Off-Ramp	Lane Add at SR-71	4	0.97	1.08	1.05	1.01	100%	0%	2.8%	100.0%	2.8%	0.0%	2.8%
			Lane Add at SR-71	Riverside County Line	5	0.92	1.00	1.02	0.91	100%	No Deficiency	1.8%	100.0%	1.8%	No Deficiency	1.8%

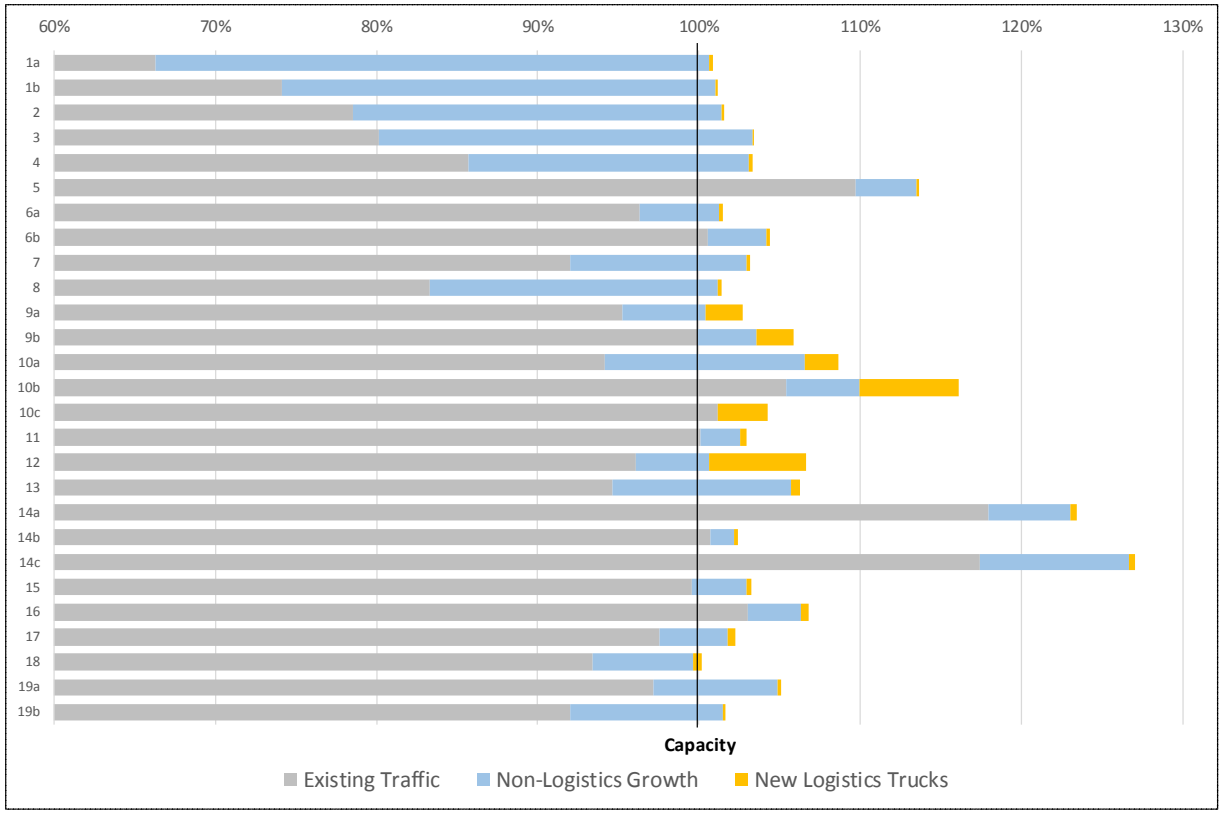

Figure 3-2: Components of 2040 Traffic Demand as a Percentage of Capacity

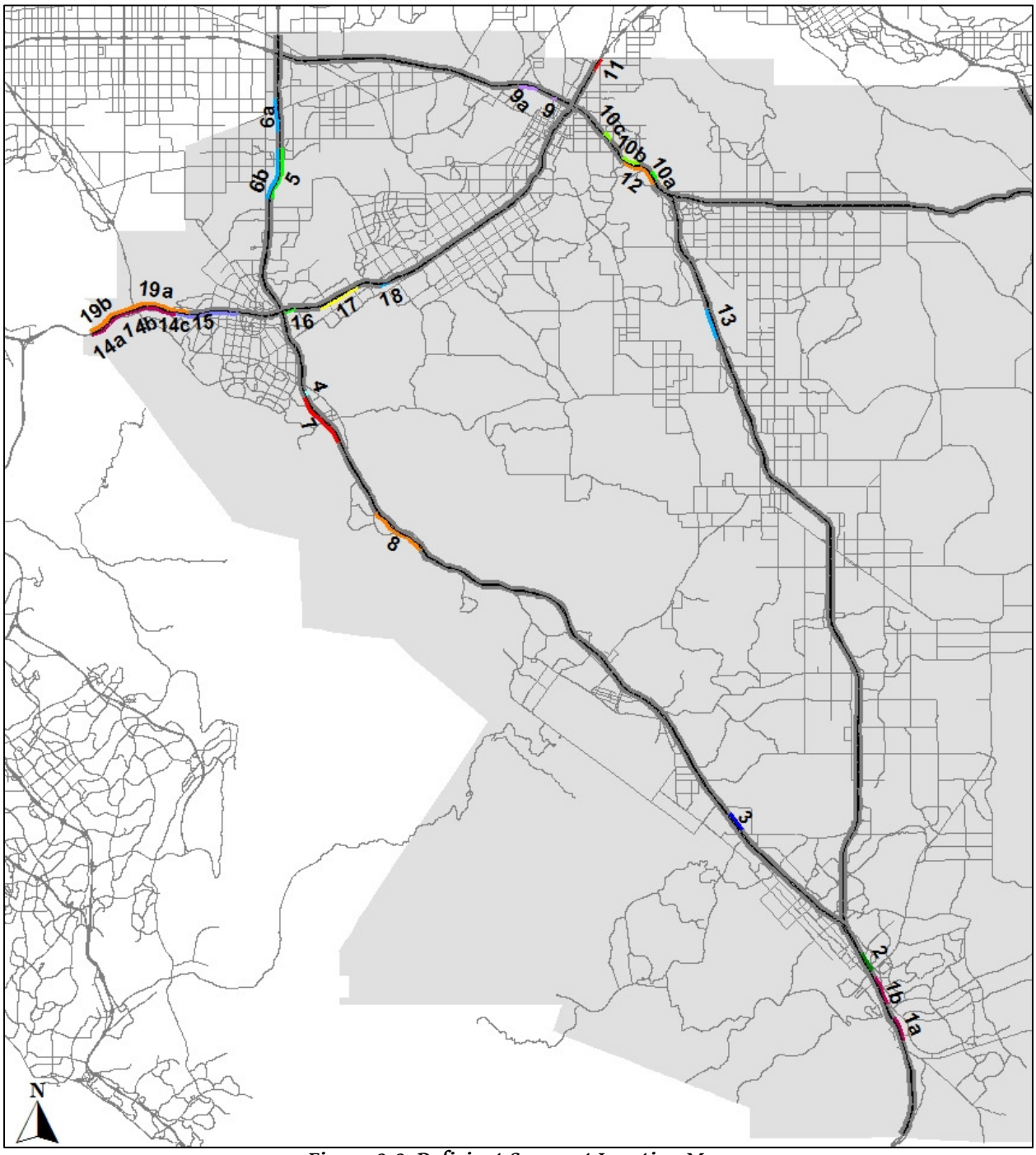

Figure 3-3: Deficient Segment Location Map

4. ESTIMATING FREEWAY PROJECT COSTS

4.1. ASSESSING PROJECT LIMITS

Section 2 of this memorandum described how future capacity deficiencies on the freeway network in Riverside County were identified. The findings of this effort were summarized as a list of directional freeway segments where the future demand exceeded capacity and resulted in a bottleneck in the system. Limiting capacity expansion to the specific identified segment would be expected mitigate the bottleneck in that segment, however it is likely that the bottleneck would be moved to the next adjacent segment without alleviating the capacity deficiency. Therefore, the list of deficient segments was reviewed in relation to the traffic data and the physical characteristics of the existing freeway facility to determine the extent of the improvement projects that would be necessary (i.e. to define the practical limits and logical termini for the associated improvement project) to address the actual operational problem, not just the specific upstream bottleneck location.

At each freeway segment identified as having a capacity deficiency, the traffic data was reviewed to determine the location (typically an off-ramp) where the demand along the corridor was reduced enough to no longer exceed the capacity of the freeway mainline. Other considerations were physical characteristics of the freeway that might also contribute to capacity reduction, such as uphill grades where truck lanes would benefit the operation of the freeway, and system interchanges where demand changed substantially and there were opportunities for lane drops at freeway-to-freeway connectors. The practical limits of each of the 19 projects required to mitigate the deficient segments are listed in Table 4-1.

Table 4-1: Practical Limits of Capacity Deficient Segment Improvement Projects

ID	Route Name	Dir	Beginning	End
1	I-15	NB	SR-79 S	Rancho California Rd
			Rancho California Rd	Winchester Rd
2			Winchester Rd	Lane Add south of I-15/I-215 Split
3			Clinton Keith Rd	Baxter Rd
4			El Cerrito Rd	Ontario Ave
5			Norco Dr/6th St	Limonite Ave
6		SB	Cantu Galeano Ranch Rd	Limonite Ave
			Limonite Ave	Norco Dr/6th
7			Cajalco Rd	Indian Truck Trail
8			El Cerrito Rd	Cajalco Rd
9	SR-60	EB	Rubidoux Blvd	Market St
			Market St	Main St
10	I-215	NB	Box Springs Rd	Central Ave/Watkins Dr

ID	Route Name	Dir	Beginning	End
			Central Ave/Watkins	Martin Luther King
10c			Martin Luther King Blvd	SR-91
11			Center St Off-Ramp	Riverside County Line/Iowa
12		SB	Martin Luther King Jr	Sycamore Canyon Rd
13			Van Buren Blvd	Case Rd
14	SR-91	EB	Riverside County Line	Green River Rd Off-Ramp
			Green River Rd Off-Ramp	SR-71
			SR-71	Serfas Club Dr Off-Ramp
15			Serfas Club Dr Off-Ramp	Grand Blvd Rd Off-Ramp
16			On-Ramp from SB-I-15	On Ramp from NB- I-15
17			McKinley St Off Ramp	Pierce St
18			Pierce St	Magnolia St
19		WB	Serfas Club Dr Off-Ramp	Lane Add at SR-71
			Lane Add at SR-71	Riverside County Line

The limits of one project, Number 13, were slightly ambiguous based on the review of traffic and physical features, as well in consideration of the proximity of future warehousing and logistics development activity. For these reasons, Project 13 was presented with two options – from Van Buren Boulevard to D Street and from Van Buren Boulevard to Case Road – and cost estimates were prepared for each option so that the Study Advisory Team could assess the value of each option separately and determine which option adequately addressed the capacity constraint. The Study Advisory Team, at the meeting held on February 22, 2018, recommended Option 2 be advanced for the purposes of the study.

4.2. Review of Currently Funded/Programmed Improvements

Once the practical limits of the improvements were defined, each project was compared to known, funded/programmed projects that were recently completed (and are not included in the SCAG 2016 Model existing network), are currently under construction, or are currently in development and are funded for construction. There are three projects that are within the study area that were identified as meeting these criteria:

- The I-15/French Valley Parkway Interchange Project, Phases 1 and 2
- The I-15 Express Lane Project
- The SR-91 Express Lane Extension Project

The French Valley Parkway Project includes the implementation of the I-15/French Valley Parkway Interchange as well as improvements to the Winchester Road Interchange and a

collector-distributor road system along I-15 between Winchester Road and the I-15/I-215 system interchange. This project adds as many as three lanes in each direction north of Winchester Road. Based on the Preferred Alternative Layout Plans included in the IS/EA (January 2010), the FVP Phasing Exhibit (December 2, 2015) and the Ultimate Project Exhibit (July 12, 2017), it was determined that the French Valley Parkway Project successfully eliminates the need to further mitigate deficient segment 2.

The I-15 Express Lane Project will implement one or two tolled managed lanes in each direction northbound and southbound between Cajalco Road and SR-60. This project also adds general purpose lanes and auxiliary lanes at specific locations. Based on a review of the I-15 Express Lane Project Tolling Concept Plans (June 21, 2017), the I-15 Express Lane Project successfully eliminates the need to further mitigate deficient segments 4, 5, and 6.

The SR-91 Express Lane Extension Project extends from west of the Orange County Line to east of I-15 both eastbound and westbound. In addition to the tolled express lanes, additional general purpose lanes were also constructed as part of this project. Based on a field review of the project as it has been constructed, the SR-91 Express Lane Extension Project successfully eliminates the need to further mitigate deficient segments 14, 15, 17, and 19.

Table 4-2 lists the remaining deficient segments and associated mitigation projects that would be included as the basis for the logistics fee program.

Table 4-2: Capacity Deficient Segment Improvement Projects to be Included in the Fee Program

ID	Route Name	Dir	Beginning	End
1	I-15	NB	SR-79 S	Rancho California Rd
			Rancho California Rd	Winchester Rd
3			Clinton Keith Rd	Baxter Rd
7		SB	Cajalco Rd	Indian Truck Trail
8			El Cerrito Rd	Cajalco Rd
9	SR-60	EB	Rubidoux Blvd	Market St
			Market St	Main St
10	I-215	NB	Box Springs Rd	Central Ave/Watkins Dr
			Central Ave/Watkins	Martin Luther King
10c			Martin Luther King Blvd	SR-91
11			Center St Off-Ramp	Riverside County Line/Iowa
12		SB	Martin Luther King Jr	Sycamore Canyon Rd
13			Van Buren Blvd	Case Rd
16	SR-91	EB	On-Ramp from SB-I-15	On Ramp from NB- I-15
18			Pierce St	Magnolia St

4.3. Development of Project Concepts

Using scalable, georeferenced aerial photography, project concept plans were developed that show the primary quantifiable cost items for each project, including:

- Right-of-Way Impact
- Retaining Walls
- Freeway Mainline Widening
- Structure Construction
- Ramp Realignment
- Roadway Excavation
- Street Improvements
- Signalization

The concept plans show colored lines and areas that can be measured and used to estimate quantities for the various categories of construction or property acquisition. These project concept drawings were reviewed by the Study Advisory Team to confirm that they reasonably represent the minimum improvements necessary to mitigate the identified deficiency.

The resultant improvement concept plans are included in Appendix A of this technical memorandum.

4.4. Project Cost Estimating

For the initial assessment and development of project concept plans, Google Earth was used to determine existing conditions for the corridors. The conditions recorded include number of lanes, width of pavement, HOV lanes, inside (left) shoulder width, outside (right) shoulder width, assumed right-of-way boundary, freeway structures, ramp locations, major drainage facilities, retaining walls, sounds walls, signage, and signals. All widths and lengths provided were obtained by doing desktop research on Google Earth and limited field reviews, and were based on sound engineering judgement.

The unit costs for the various construction components were taken from the Caltrans cost database and other recent project cost estimates for project of similar scale and scope within the Inland Empire. Right-of-way cost per residential unit and per square foot are based on current property valuations in Riverside County.

Roadway Item Costs

- Roadway costs include PCC pavement, tie-back walls, pavement markings and markers and replacement of signs. Unit costs were extrapolated from a similar freeway construction project.

- The quantity of each component was then multiplied by the unit cost to produce a cost item for the roadway component.

Drainage Item Costs
- Per our initial assessment, widening affects the existing drainage. Further analysis is needed as impacts to drainage can increase the costs.
- The costs associated with the potential impacts to drainage are 15% of the roadway items cost.

Specialty Item Costs
- Specialty item costs include retaining walls due to proposed widening, removal of existing retaining walls, sounds wall replacement, tie back walls and ramp adjustments.
- The quantity of each component was then multiplied by the unit cost to produce a cost item for the specialty item costs.

Minor Items Costs
- Minor items can include anything from ADA items to other minor items that are not considered high costs items. Typical Caltrans value is 5-10%.

Mobilization Costs
- Mobilization includes costs incurred due to mobilization of personnel and equipment as well as pre-construction expenses. Typical value of 10% can be adjusted when actual costs are available.

Roadway Additions
- Roadway addition items can include price index fluctuations, value analysis, maintaining traffic, removal of rock and debris, etc. These supplemental items cover work for items that cannot be quantified as contract bid item. All roadway supplemental items would be within the FHWA approved items list. At this stage it is appropriate to assume there will be supplemental items. Typical Caltrans value is 5-10%.

Contingency
- Contingency of 25% is within Caltrans recommended values. Pre-PSR 30%, PSR 25%, Draft PR 20%, PR 15%, after PR approval 10% and final PS&E is 5%. Caltrans contingencies allow for unforeseen increases. Due to the level of detail and engineering available, the contingency percentage is appropriate. As more information becomes available, costs would be refined and contingency would be decreased. This is typical per Caltrans.

Support Costs
- Support costs are 35% of the capital outlay costs. Support costs include design costs, construction management, Caltrans reimbursed costs and Metro internal costs. These

costs are functional overhead costs not administrative overhead. The support costs can be refined as more information becomes available.

The costs presented are based on a conceptual engineering assessment using Google desktop research. All costs and impacts are based on a visual analysis and it should be noted that no detailed engineering or surveying has been done to verify the assumptions.

The proposed improvement project conceptual cost estimates were compared to the Western Riverside Council of Governments (WRCOG) Transportation Uniform Mitigation Fee (TUMF) program, with a focus on identifying arterial-freeway interchange and bridge projects that are also included in TUMF. The TUMF program assesses all development types, including warehouse and logistics uses, impact fees to mitigate the cumulative regional transportation impacts of new development on the arterial highway system, including arterial-freeway interchanges and bridges. As such, new warehouse and logistics uses are already contributing toward the cost of these improvement projects to the extent they are included in the TUMF program. Where the conceptual improvement projects were determined to include project elements that were also identified in the TUMF program, the conceptual cost estimate for the project was reduced by an amount equal to the lesser of the estimated conceptual cost of the relevant project element (i.e. the conceptual cost of the arterial interchange and/or bridge improvements) or the maximum eligible amount prescribed in the 2016 TUMF Nexus Study. This reduction in the conceptual improvement costs as part of this study eliminates overlap with the TUMF program in terms of the cost for implementing arterial interchange and bridge improvements necessary to accommodate the proposed freeway capacity expansion necessary to mitigate the cumulative regional impacts of new development, including warehousing and logistics uses, on the freeway network.

The resultant conceptual project cost estimates are summarized it

Table 4-3. A more detailed breakout of the conceptual project cost estimates to mitigate the deficient segments is included in Appendix B of this technical memorandum.

Table 4-3: Capacity Deficient Segment Improvement Project Conceptual Cost Estimates

ID	Route Name	Dir	Beginning	End	Cost Estimate
1	I-15	NB	SR-79 S	Rancho California Rd	$36,237,000
			Rancho California Rd	Winchester Rd	
3			Clinton Keith Rd	Baxter Rd	$7,406,000
7		SB	Cajalco Rd	Indian Truck Trail	$37,825,000
8			El Cerrito Rd	Cajalco Rd	$10,408,000
9	SR-60	EB	Rubidoux Blvd	Market St	$40,234,000
			Market St	Main St	
10	I-215	NB	Box Springs Rd	Central Ave/Watkins Dr	$26,513,000
			Central Ave/Watkins	Martin Luther King	
10c			Martin Luther King Blvd	SR-91	$55,081,000
11			Center St Off-Ramp	Riverside County Line/Iowa	$42,212,000
12		SB	Martin Luther King Jr	Sycamore Canyon Rd	$13,403,000
13			Van Buren Blvd	Case Rd	$95,365,000
16	SR-91	EB	On-Ramp from SB-I-15	On Ramp from NB- I-15	$7,611,000
18			Pierce St	Magnolia St	$13,040,000
Total Project Cost Estimate				**$385,335,000**	

5. FUNDING SOURCES AND FUNDING GAP

This section of the memorandum reviews transportation funding projections in existing documents and describes recent or anticipated additional sources that might be available to complete freeway[9] capacity expansion projects identified as part of this study. This analysis starts with a recent, comprehensive analysis of potential funding - the Riverside County Strategic Assessment – which is described in the next section. It takes the results of this assessment and uses similar assumptions to add in more recent funding sources, such as those associate with California Senate Bill (SB) 1.

The various funding sources are then assessed for their potential to fulfill identified project needs and costs described in Chapters 2 to 4 of this memorandum. The potential revenues and anticipated needs are then compared to conclude a gap analysis in the following chapter.

5.1. RIVERSIDE COUNTY STRATEGIC ASSESSMENT

In 2015, the RCTC directed its staff to conduct an assessment to assist the Commission in examining the County's need for transportation investments. The objective was to produce findings and recommendation on actions the Commission could take to proactively prepare for the future. In early 2016, the RCTC approved the Riverside County Strategic Assessment[10]. It considered demographics, state local, federal transportation policies and revenues and a survey of public and stakeholder perspectives. The assessment includes recommendations regarding future planning, asset maximization, increasing funding and communication.

The Strategic Assessment includes a detailed review of federal, state and local revenues through 2040.[11] [12] It looked at 37 different funding sources covering all modes and categorized them into three levels (A, B and C), depending on their level of certainty. Category A represents existing revenues that can be reasonably expected to be available in the future, Category B includes existing and programmed revenues that Riverside County might realistically secure on a discretionary or competitive basis and those in Category C are considered strategy revenues. Category C revenues represent the highest risk as they are contingent upon implementation of future legislation or funding mechanisms.

The Strategic Assessment conducted an analysis for the 24-year period from 2016-2039. It assumed that most programs continued with increases at the rate of inflation throughout this period, with noted exceptions[13]. It found that, of the total $23 billion in projected need, categories A and B left a funding gap of $16 billion. New revenues from Category C were only expected to cover $6 million of the need, leaving a $10 billion gap.

In looking more closely at funding by project type, the Strategic Assessment reviewed the following funding sources for freeways and interchanges:

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[9] Arterial funding sources are not addressed in this analysis as there are separate fee mechanisms already in place for arterial projects.
[10] HDR, January 2016, Riverside County Strategic Assessment: Executive Summary, RCTC.
[11] Since the document was prepared in 2015, it did not include several recent funding sources, which are discussed later in this memo.
[12] HDR, November 4, 2015, RCTC Strategic Assessment Technical Memorandum: Task 4 Funding Gap Analysis.
[13] Ibid. Details of programs and assumptions are contained the tables 8-12 in the appendix to the technical memo.

Federal

- Congestion Mitigation and Air Quality (CMAQ)
- Regional Surface Transportation Program (RSTP)

State

- Regional Improvement Program (RIP)
- Interregional Improvement Program (IIP)
- Mileage Based User-Fees (MBUF)

Local

- Measure A
- SR 91 toll revenues
- I-15 Express Lane toll revenues
- Mid County Parkway (MCP) toll revenues

CMAQ and RSTP funds can go to various modes. The Strategic Assessment assumed that, while historically much of the CMAQ funds have gone to toll lanes, over time transit projects will receive a greater portion of the funding. It assumed that 30% of the CMAQ and 50% of RSTP funds will go to freeway projects in the future.

The Regional Improvement Program (RIP) is the largest funding source over which RCTC has programming authority. The State Transportation Improvement Program (STIP) is developed and approved by the California Transportation Commission (CTC) by April of every even year. Each county transportation agency in the state is responsible for programming projects on or off the state highway system with Regional Improvement Program (RIP) funds, which represent 75% of the total STIP funds available for project programming. Eligible projects include capital improvement projects (e.g. interchange improvements, freeway and arterial widening, commuter rail stations, etc.) and planning and rideshare activities.

The Strategic Assessment includes federal Highway Safety Improvement Program (HSIP) funds under arterials rather than freeways, although funds can be devoted to any public road. The HSIP requires a data-driven, performance based approach to improving highway safety. It provides a maximum of $10 million in federal funds on projects that reduce traffic fatalities and serious injuries and can be designed and constructed expeditiously.

Another fund that has been used on freeways but was not included in the Strategic Assessment is the State Highway Operation and Protection Program (SHOPP). SHOPP is the State's "fix-it-first" program that funds the repair and preservation of the State Highway System (SHS), safety improvements, and some highway operational improvements. While the Strategic Assessment did not address preservation and maintenance, the SHOPP is worth noting as it

protects the enormous investment that has been made over many decades to create and manage the approximately 50,000 lane-mile SHS. All projects funded by the SHOPP are limited to capital improvements that do not add capacity (no new highway lanes) to the SHS, although auxiliary lanes (including truck climbing lanes) are eligible for SHOPP funding. Revenues for the SHOPP are generated by federal and state gas taxes and are fiscally constrained by the State Transportation Improvement Program Fund Estimate (Fund Estimate) that is produced by Caltrans based on established criteria and adopted by the California Transportation Commission.

According to the Strategic Assessment, the total costs of freeway and interchange projects between 2016 and 2039 were expected to be $8.724 billion and the revenues are $5.326 billion. So, only 61% of the freeway needs are funded, leaving an unfunded gap of $3.326 billion through 2039. Table 5-1 shows the breakdown of funding by program and risk.

Table 5-1: Freeway Funding Program, Amount (in millions) and Risk

Funding Program	Category A	Category B	Category C
Federal			
Congestion Mitigation and Air Quality (CMAQ)	$219.7		
Regional Surface Transportation Program (RSTP)	$315.2		
State			
Regional Improvement Program (RIP)	$441.9		
Interregional Improvement Program (IIP)		$58.8	
Mileage Based User-Fees (MBUF)			$2,233.5
Local			
Measure A*	$915.7		
SR 91 Net Toll Revenues*	$618.5		
I-15 Express Lane Toll Revenues*	$319.7		
Mid County Parkway (MCP) toll revenues			$153.5
Total (2016-2039)	$2,880	$59	$2,387

*Debt service and operations and maintenance costs have been deducted from these amounts.

The Strategic Assessment points out that funds for freeway and interchanges rely most heavily on the highest risk (Category C) funding sources. So, of the funding that was anticipated for

freeways and interchanges, fully 67% was from Category C. As shown in Table 5-1, a large portion of the Category C funds are from MBUF and tolled-based financing of the MCP.

The Assessment also noted that Measure A programs are further suballocated to additional geographies and programs. For example, while the majority appears to be allocated to freeways, there are specific suballocations to counties and, within those, to various modal programs. While the majority of the amount apportioned to freeways falls within the western part of the County, some is dedicated to Coachella Valley. We have not completed further disaggregation based on geography for this analysis.

Because the assessment was prepared in 2015 it did not include certain funding sources approved after that. New funding sources and their potential implications are described in the following sections.

5.2. Fixing America's Surface Transportation Act

On December 4, 2015 President Obama signed Fixing America's Surface Transportation Act (FAST) Act[14] into law. It was the first law enacted in over ten years that provides long-term funding certainty for surface transportation. The FAST Act allows states and local governments greater confidence in federal funding for transportation projects.

Overall, the FAST Act largely maintains program structures and funding shares between highways and transit. It was viewed as a down-payment for building a 21st century transportation system.

The law also makes changes and reforms to many Federal transportation programs, including streamlining the approval processes for new transportation projects, providing new safety tools, and establishing new programs to advance critical freight projects. The relevant funding programs are described below. The funding implications of all FAST Act funding programs on RCTC are discussed at the end of this section.

5.2.1. Nationally Significant Freight and Highway Projects

The Nationally Significant Freight and Highway Projects (NSFHP) program[15] provides financial assistance—competitive grants, known as INFRA grants, or credit assistance—to nationally and regionally significant freight and highway projects. Funding is $800 million to $1 billion annually over the program life. Both large (over $100 million) and small (more than $5 million) projects are eligible, but 90% of program funds are reserved for large projects.

Projects must support the national program goals to:

- improve the safety, efficiency, and reliability of the movement of freight and people;
- generate national or regional economic benefits and an increase in global economic competitiveness of the U.S.;
- reduce highway congestion and bottlenecks;
- improve connectivity between modes of freight transportation;

[14] Pub. L. No. 114-94
[15] FAST Act § 1105; 23 U.S.C. 117

- enhance the resiliency of critical highway infrastructure and help protect the environment;
- improve roadways vital to national energy security; and
- address the impact of population growth on the movement of people and freight.

Both highway and freight projects - including rail intermodal projects, grade crossings and rail and port projects – are eligible. Highway projects must be either on the NHS or the National Highway Freight network. Funding for non-highway freight projects is limited to $500 million over the life of the program.

Funding may go to any project phase including planning, construction, and operational improvements. However, the project must have completed preliminary engineering and be reasonably expected to begin construction within 18 months of obligation of funds.

States, MPOs, local governments, public authorities, political subdivision, tribal governments and groups of these entities may apply. The program encourages the use of nontraditional financing, innovative design and construction techniques, innovative technologies, and non-Federal contributions as well as geographic diversity among grant recipients. Non-federal funding commitments, however, must be backed by contingency and have additional stable and dependable sources of funding to construct operate and maintain and operate the project.

Projects must:

- generate national or regional economic, mobility, or safety benefits;
- be cost effective;
- contribute to the accomplishment of one or more of the national goals

5.2.2. Advanced Transportation and Congestion Management Technologies Deployment Program

The Advanced Transportation and Congestion Management Technologies Deployment Program[16] makes competitive grants for the development of model deployment sites for large scale installation and operation of advanced transportation technologies that improve safety, efficiency, system performance, and infrastructure return on investment.

Program funding totals $60 million annually. The federal share cannot exceed 50% of the cost of the project.

Eligible projects include deployment of advanced transportation and congestion management technologies, such as:

- advanced traveler information systems;
- advanced transportation management technologies;
- infrastructure maintenance, monitoring, and condition assessment;
- advanced public transportation systems;

[16] FAST Act § 6004; 23 U.S.C. 503(c)(4)

- transportation system performance data collection, analysis, and dissemination systems;
- advanced safety systems, including vehicle-to-vehicle and vehicle-to-infrastructure communications;
- technologies associated with autonomous vehicles, and other collision avoidance technologies, including systems using cellular technology;
- integration of intelligent transportation systems with the Smart Grid and other energy distribution and charging systems;
- electronic pricing and payment systems; or
- advanced mobility and access technologies, such as dynamic ridesharing and information systems to support human services for elderly and disabled individuals.[17]

5.2.3. Surface Transportation System Funding Alternatives Program

The Surface Transportation System Funding Alternatives Program[18] provides grants to States or groups of States to demonstrate user-based alternative revenue mechanisms that utilize a user fee structure to maintain the long-term solvency of the Highway Trust Fund.

The objectives of the program are:

- to test the design, acceptance, and implementation of two or more future user-based alternative mechanisms;
- to improve the functionality of the user-based alternative revenue mechanisms;
- to conduct outreach to increase public awareness regarding the need for alternative funding sources for surface transportation programs and to provide information on possible approaches;
- to provide recommendations regarding adoption and implementation of user-based alternative revenue mechanisms; and
- to minimize the administrative cost of any potential user-based alternative revenue mechanisms.

A total of $20 million is available annually. The Federal share of the cost of an activity carried out under the program may not exceed 50 percent. Geographic diversity will be considered in award of grants.

Program funds will test the design, acceptance, and implementation of a user-based alternative revenue mechanism, consistent with the program's objectives. Revenue collected through a user-based alternative revenue mechanism established with program funds may not be considered a toll under 23 U.S.C. 301. Because of the program's limitations and focus on testing, no estimates have been included among the funds available for freeway projects in this analysis.

[17] 23.U.S.C. 503(c)(4)(E)
[18] FAST Act § 6020

5.2.4. FAST Act Funding Implications for RCTC

As described in the previous section, the FAST Act provided two new grant programs – NSFHP and the Advanced Technology and Congestion program – that could reasonably be relied upon to provide funding for freeway and interchange projects in Riverside County. As stated previously, this analysis took similar assumptions as the Strategic Assessment. In the Assessment, RCTC assumed that it could win competitive grants commensurate with the proportion its population represents. For federal grants, Riverside County represented .74 percent of the national population[19]. Table 5-2 shows the new FAST funding amounts by program and risk category that could reasonably be expected to be available to RCTC each year based on this proportion of total program funding:

Table 5-2: Projected Annual RCTC Funding from FAST (in millions)

Funding Program	Category A	Category B	Category C
NSFHP (INFRA)		$6.66	
Advanced Technology and Congestion Management Deployment Program		$.444	
Total		$7.104	

5.3. Road Repair and Accountability Act of 2017 (Senate Bill 1)

In 2017 the California legislature passed and the governor signed into law a major transportation funding bill.[20] The Road Repair and Accountability Act of 2017 (referred to as SB1) provided additional funding to several existing programs, including the STIP, and established several new funding programs that are relevant to this project. The relevant SB1 programs and their implications for RCTC are described below.

5.3.1. Trade Corridor Enhancement Program

The objective of the Trade Corridor Enhancement Program is to fund infrastructure improvements on federally designated Trade Corridors of National and Regional Significance, on the Primary Freight Network, as identified in the California Freight Mobility Plan, and along other corridors that have a high volume of freight movement as determined by the Commission.[21] The Trade Corridor Enhancement Program is also intended to support the goals of the National Highway Freight Program, the California Freight Mobility Plan, and the guiding principles in the California Sustainable Freight Action Plan.

[19] https://www.census.gov/quickfacts/fact/table/riversidecountycalifornia,US/PST045216

[20] http://catc.ca.gov/
[21] http://catc.ca.gov/programs/sb1/tcep/

The Commission intends to allocate $1.3 Billion, in roughly equal annual installments, in the initial three-year program. Allocations are anticipated to continue after 2020, but the amounts aren't known. The initial program is funded by three years of Trade Corridor Enhancement Account funding ($794 million), five years of federal National Highway Freight Program funding ($535 million) and a one-time appropriation of $11 million the Budget Act of 2015. Caltrans is targeted to receive 40% for projects it applies for administers.

Funding is available for projects that significantly contribute to the freight system's economic activity or vitality; relieve congestion on the freight system; improve the safety, security, or resilience of the freight system; improve or preserve the freight system infrastructure; implement technology or innovation to improve the freight system or reduce or avoid its negative impacts; or reduce or avoid adverse community and/or environmental impacts of the freight system. Qualifying project costs include permits and environmental studies; plans, specifications and estimates; right-of-way; and construction.

The Commission has already identified the following corridors as eligible under this program: Bay Area, Central Valley, Central Coast, Lost Angeles/Inland Empire and San Diego/Border. Other regions are eligible to apply if they have a high volume of freight movement and otherwise meet the criteria for funding. The initial target for the Los Angeles/Inland Empire (which includes Los Angeles, Orange, Riverside, San Bernardino, and Ventura counties) is $467 million.

Eligible applicants include local, regional, and public agencies such as cities, counties, Metropolitan Planning Organizations, Regional Transportation Planning Agencies, port authorities, public construction authorities, and Caltrans. Project proposals from private entities must be submitted by a public agency.

Projects will first be screened to ensure they: meet the project eligibility requirements and program objectives, are in an adopted RTP that is consistent with regional greenhouse gas emissions reductions targets, demonstrate that negative environmental/community impacts will be mitigated and will stimulate economic activity and jobs. High scoring projects will be evaluated on freight system factors (throughput, velocity and reliability), transportation system factors (safety, congestion reduction, bottleneck relief, multi-modal strategy, interregional benefits, advanced technology) and community impact factors (air quality impact, community impact mitigation, economic/jobs growth).

5.3.2. Solutions for Congested Corridors Program

Solutions for Congested Corridors Program[22] (Congested Corridors Program) appropriates two hundred and fifty million dollars ($250,000,000) annually to projects designed to achieve a balanced set of transportation, environmental, and community access improvements within highly congested travel corridors throughout the state. The primary objective of the Congested Corridors Program is to fund projects that make specific improvements and are part of a comprehensive corridor plan designed to reduce congestion in highly traveled corridors by providing more transportation choices while preserving the character of the local community and creating opportunities for neighborhood enhancement projects.

[22] http://catc.ca.gov/programs/sb1/sccp/

Funds are allocated by the California Transportation Commission (Commission). Improvements may be on the state highway system, local streets and roads, public transit facilities, bicycle and pedestrian facilities or required mitigation or restoration or some combination thereof.

A regional transportation planning agency or county transportation commission or authority responsible for preparing a regional transportation improvement plan under Section 14527 of the Government Code or Caltrans may nominate projects for funding.

5.3.3. Local Partnership Program

The Local Partnership Program (LPP) appropriates two hundred million dollars ($200,000,000) annually to local or regional transportation agencies that have sought and received voter approval of taxes or that have imposed fees that are dedicated solely for transportation improvements. [23]

Funds are allocated by the California Transportation Commission (Commission) - half competitively and the balance by formula. Projects will require at least a one-to-one match of private, local, federal, or state funds except jurisdictions with a voter approved tax or fee which generates less than $100,000 annually need only provide a match equal to 50% of the requested funds.

Eligible projects include: (a) improvements to the state highway system; (b) improvements to transit facilities; (c) acquisition, retrofit, or rehabilitation of rolling stock, buses, or other transit equipment; (d) improvements to the local road system; (e) improvements to bicycle or pedestrian safety or mobility; (f) improvements to mitigate the environmental impact of new transportation infrastructure on a locality's or region's air quality or water quality; (g) a separate phase or stage of construction for an eligible project may include mitigation of the project's environmental impacts; (h) sound walls for certain freeways; (i) road maintenance and rehabilitation; and (j) other transportation improvement projects.

Eligible applicants are the taxing authorities that have sought and received voter approval of taxes, tolls, or fees, or that have imposed fees, including uniform developer fees as defined by subdivision (b) of Section 8879.67 of the Government Code, which are dedicated solely to transportation improvements.

The Commission will give higher priority to projects that (a) are more cost-effective; (b) can commence construction or implementation earlier; (c) can leverage more committed funds per program dollar; (d) can demonstrate quantifiable air quality improvements, including a significant reduction in vehicle-miles traveled; (e) can demonstrate regional and community project support; and (f) within a Metropolitan Planning Organization, projects that further the implementation of the sustainable communities strategy.

5.3.4. SB1 Funding Implications for RCTC

Most of the SB1 funds that could go to freeways and interchanges are via competitive grant programs. In 2016, Riverside County represented about six percent of the population in the

[23] http://catc.ca.gov/programs/sb1/lpp/

state.[24] Assuming, on average, transportation projects are awarded approximately proportionate to county population, Table 5-3 shows the projected annual allocation projects in Riverside County could reasonably be expected to obtain.

Table 5-3: Projected Annual SB1 Funding for RCTC (in millions)

Funding Program	Category A	Category B	Category C
LPP (county allocation)	$6.786		
TCEP		$25.997	
SCCP		$15	
LPP (competitive grant)		$6.786	
	$6.786	$47.783	

5.4. Summary of Available Funding from All Sources

To quantify the total funds that might be available to freeway and interchange projects in Riverside County through 2040, sources identified in the Strategic Assessment were combined those from FAST and SB1 programs. Taking the approach used in the Strategic Assessment, unless otherwise specific, program funding levels were assumed to continue at the rate of inflation throughout the study period. Table 5-4 summarizes newly identified funding sources, while Table 5-5 combines new funding sources with those identified previously as part of the Strategic Assessment to establish a total of anticipated freeway project funding through 2040 from all sources by risk category.

[24] https://www.census.gov/quickfacts/fact/table/riversidecountycalifornia,US/PST045216

Table 5-4: Freeway Project Funding from New Sources 2017-2040 (in millions)

Funding Program	Category A	Category B	Category C
Federal			
NSFHP (INFRA)		$159.8	
Advanced Technology and Congestion Management Deployment Program		$10.7	
State			
LPP (County Allocation)	$162.9		
TCEP		$623.9	
SCCP		$360	
LPP (competitive grants)		$162.9	
Grand Total New Sources	$162.9	$1,317.3	

Table 5-5: RCTC Projected Freeway Project Funding 2017-2040 - All Sources (in millions)

Funding Source	Category A	Category B	Category C
Total Strategic Assessment Sources	$2,948.6	$61	$2,465.8
Total New Sources	$162.9	$1,317.3	
Grand Total Old and New Sources	$3111.5	$1,378.3	$2,465.8

As can be seen in Table 5-4 and Table 5-5, the infusion of SB1 funds, which are considered risk category B, creates better balance across the risk categories than that found in the Strategic Assessment, which was heavily reliance on high-risk, category C funds. However, although the SB1 program has been legislated there is also an on-going repeal effort, hence they have been identified as risk category B rather than category A.

A sensitivity analysis was completed to assess the impact of a potential repeal on future transportation funding in the County. Table 5-6 shows the projected funds for freeway and interchange projects from all sources without SB1 funds.

Table 5-6: Projected RCTC Projected Freeway Project Funds without SB1, 2017-2040 (millions)

Funding Source	**Category A**	**Category B**	**Category C**
Total Strategic Assessment Sources	$2,948.6	$61	$2,465.8
Total New Sources	$162.9	$170.5	
Grand Total Old and New Sources	$3111.5	$231.5	$2,465.8

Table 5-7 shows the total funding that is expected to be available for freeway and related interchange projects in Riverside County over the next 24 years. As can be seen, the total projected funding that might reasonably be expected to be available for freeway and interchange projects in Riverside County through 2040 is expected to be nearly $6 billion, with approximately half of this funding expected to be made available through low risk category A funding sources, even without SB1 funding. This amount substantially exceeds the estimated cost to complete the various mitigation projects previously identified in Chapter 4 and summarized in

Table 4-3 of this report making the various improvement projects viable to be completed, even following the adjustment of funds to be generated through a potential logistics fee program to account for the portion of impact attributable to logistics uses.

Table 5-7: Projected RCTC Funding with and without SB1, 2017-2040 (in millions)

Scenario	Total Funding
With SB1	$6,955.6
Without SB1	$5,808.8

6. FUNDING GAP ANALYSIS

As described in Chapters 3, the fair share of costs to mitigate future freeway deficiencies that are attributable to new warehousing and logistics uses varies by segment, but is a relatively small proportion of the total cost to complete the necessary improvements. Furthermore, although the project concepts associated cost estimates have identified a minimum level of improvement necessary to reasonably mitigate the identified impact, it is likely the scale and scope of any proposed improvement project would be greater to account for the accomplishment of other transportation goals and/or freeway operational needs, including rehabilitation and roadway maintenance, resolution of existing needs, or anticipation of addition future demands beyond the horizon year of the fee program. Since the resolution of these items cannot be fairly attributed to the mitigation of new development impacts, it is necessary to ensure that sufficient alternative funding sources are expected to be available to complete the necessary improvements.

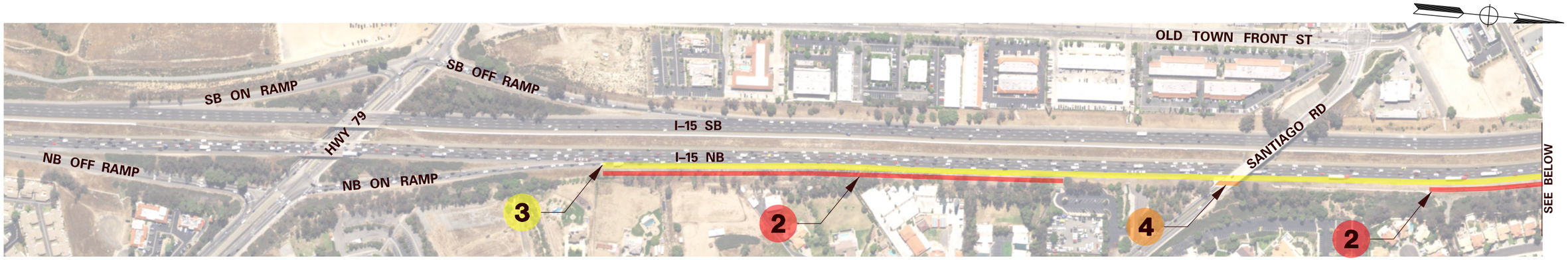
The total estimated conceptual cost to complete the reasonable mitigation of deficient segments identified as part of this study is $385,335,000. Although a relatively small proportion of this cost can be attributed to new warehousing and logistics developments, and therefore this fair share of the mitigation cost could be derived from a logistics impact fee, the estimates of alternative funding sources described in Chapter 5 clearly indicate that the remaining costs to complete these improvement projects could reasonably be expected to be obtained from existing and proposed funding sources. Furthermore, the projected availability of future funding for freeway and interchange improvement projects is over ten times the amount of the conceptual cost estimates to mitigate the impacts of new development on the freeway system indicating that sufficient funding might reasonably be expected to account for the expansion of scale and scope of associated freeway projects to address other project needs not directly attributable to the impacts of new development.

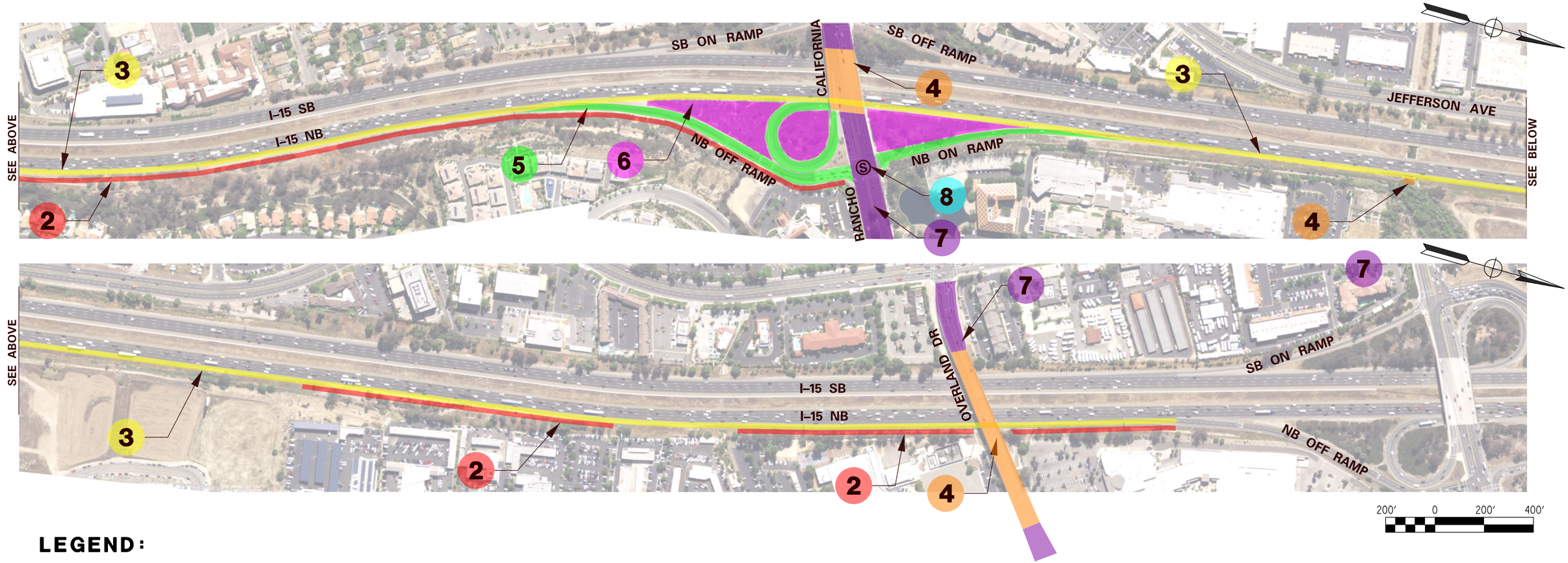
7. APPENDICES

Appendix A – Capacity Improvement Concept Plans

Appendix B – Conceptual Project Cost Estimate Tables

APPENDIX A – CAPACITY IMPROVEMENT CONCEPT PLANS





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3 WIDENING	6 ROADWAY EXCAVATION	

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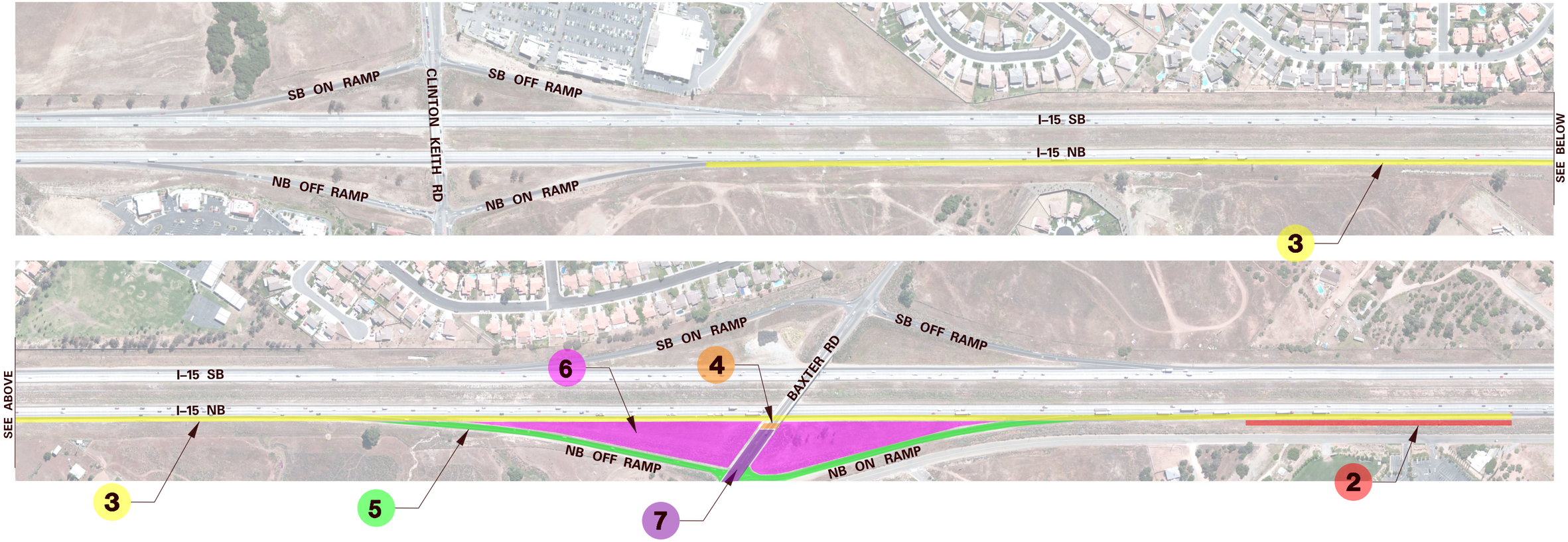

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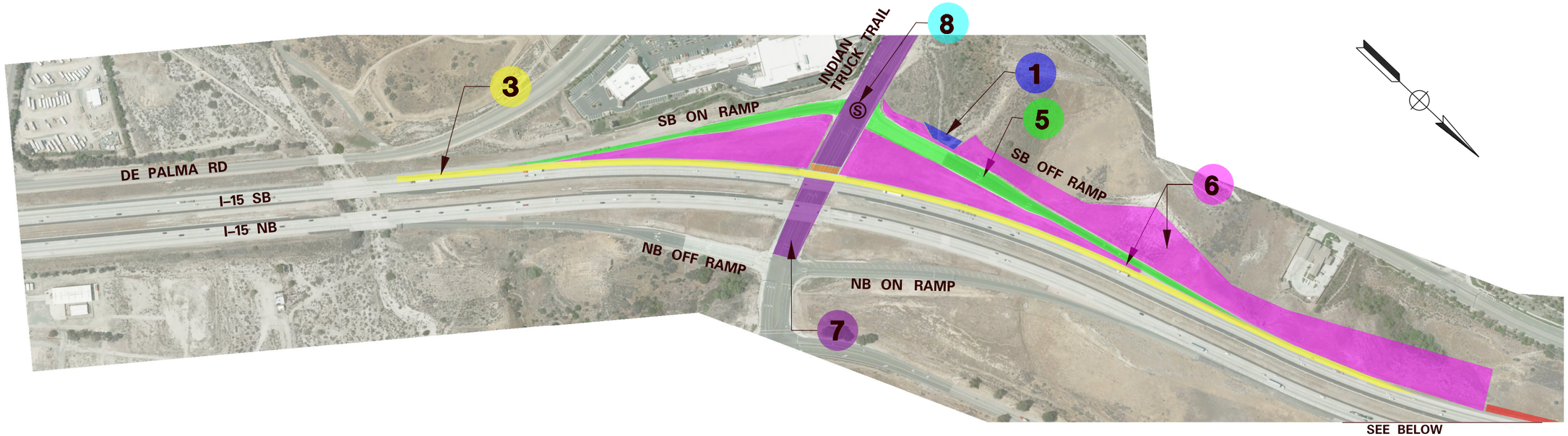

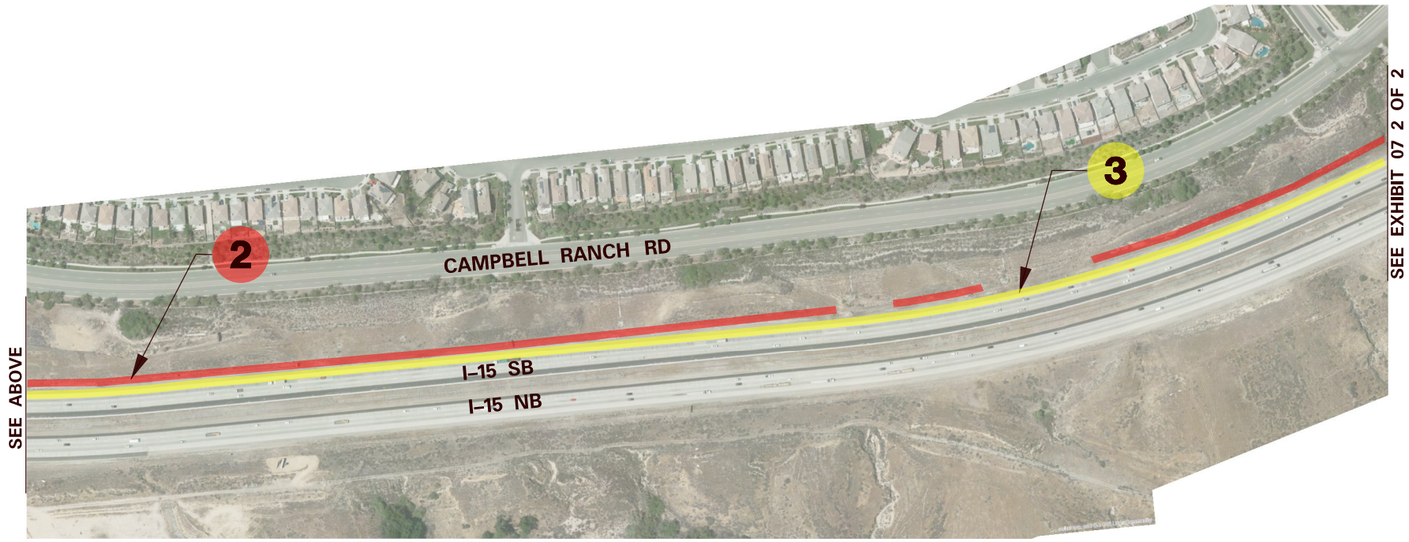

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7. STREET IMPROVEMENTS
8. SIGNALIZATION

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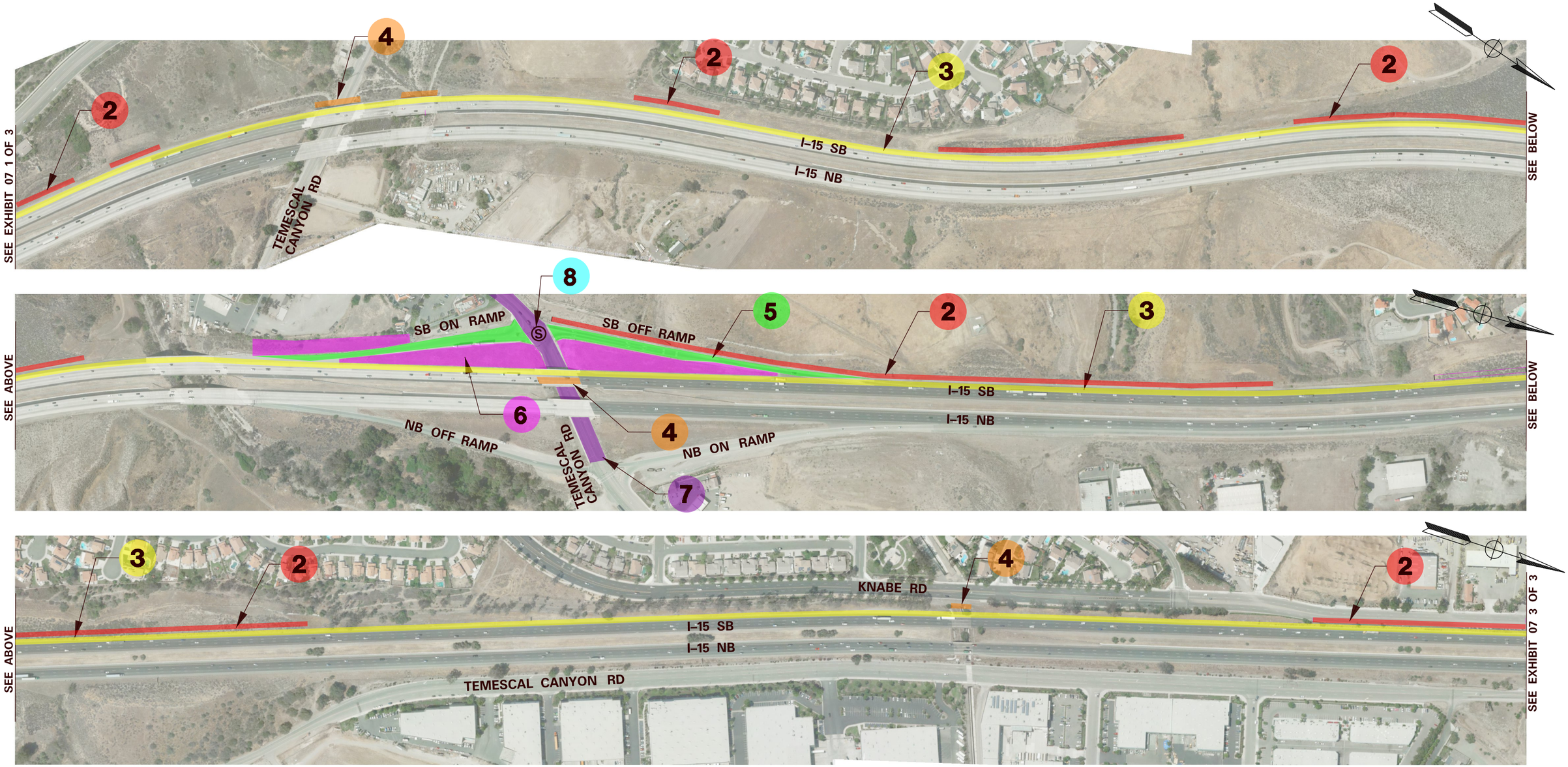

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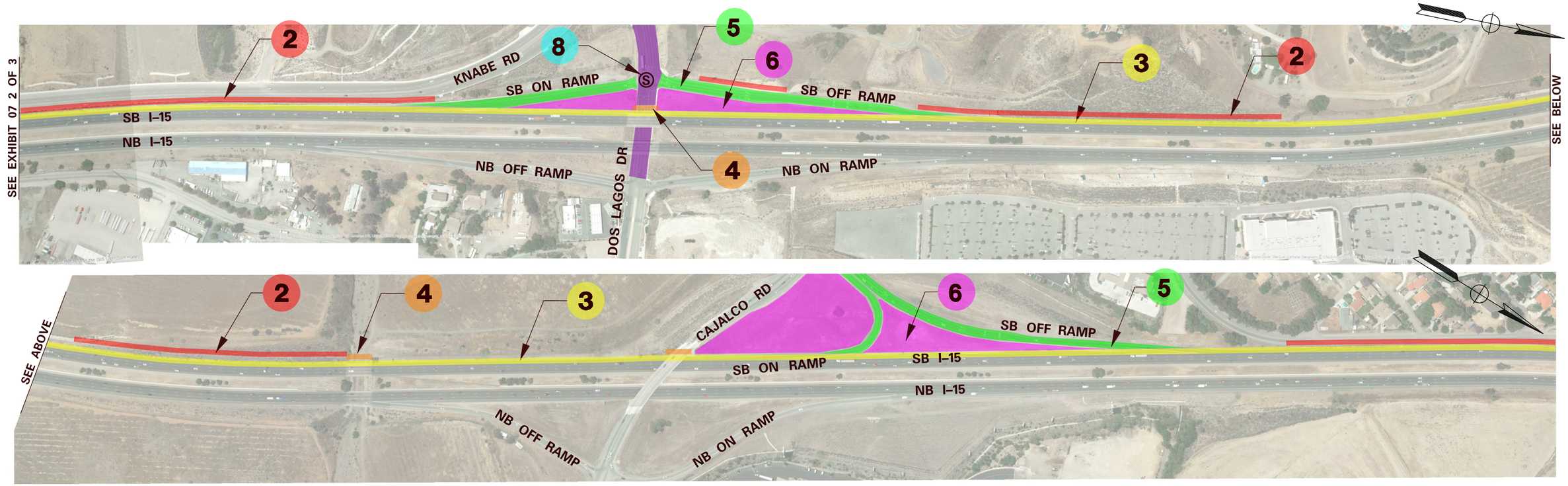

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6. ROADWAY EXCAVATION
7. STREET IMPROVEMENTS
8. SIGNALIZATION

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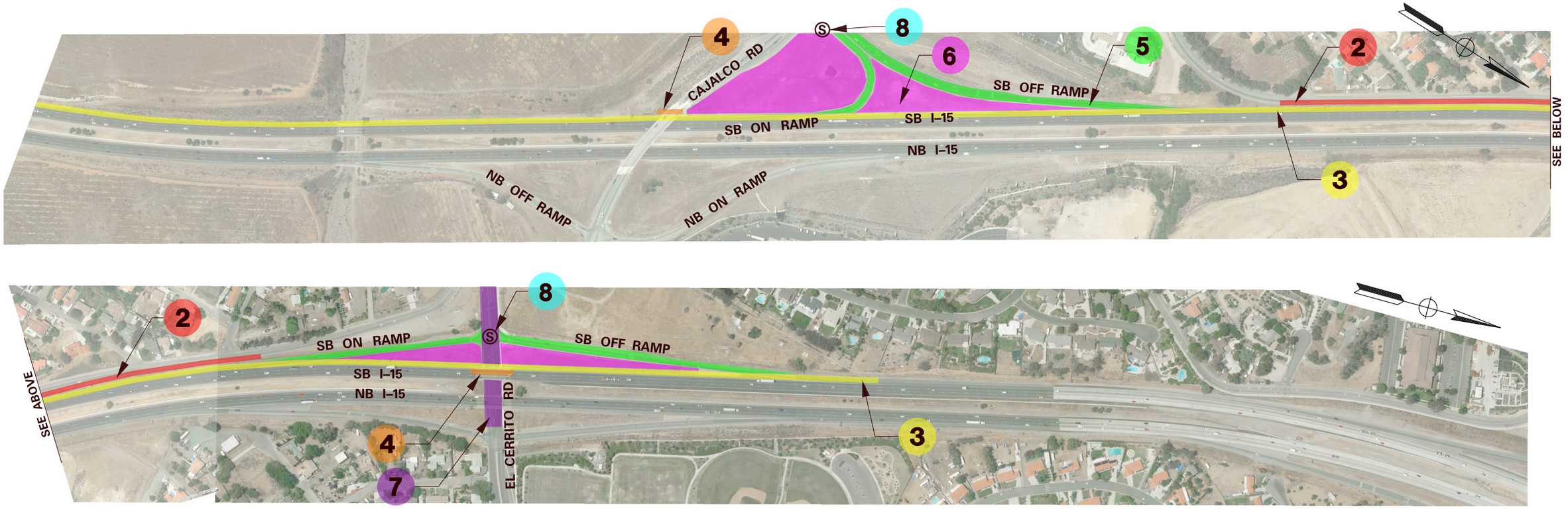

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8. SIGNALIZATION

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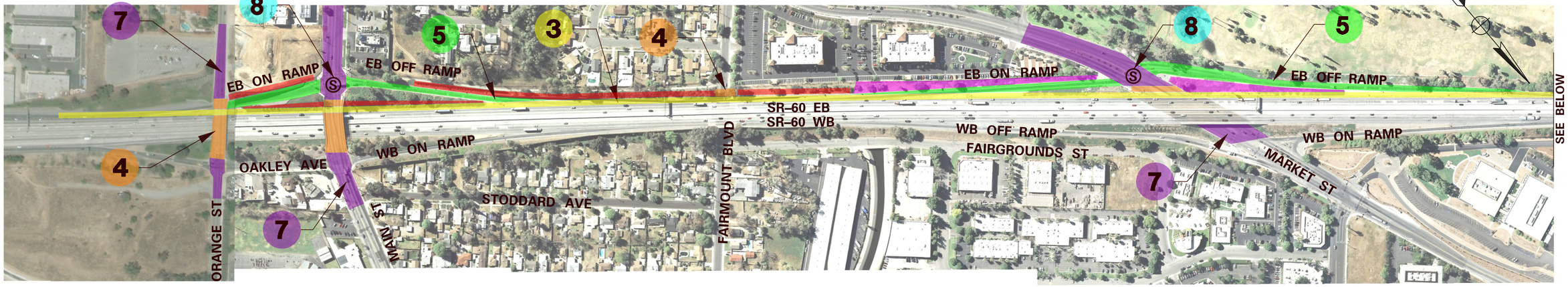

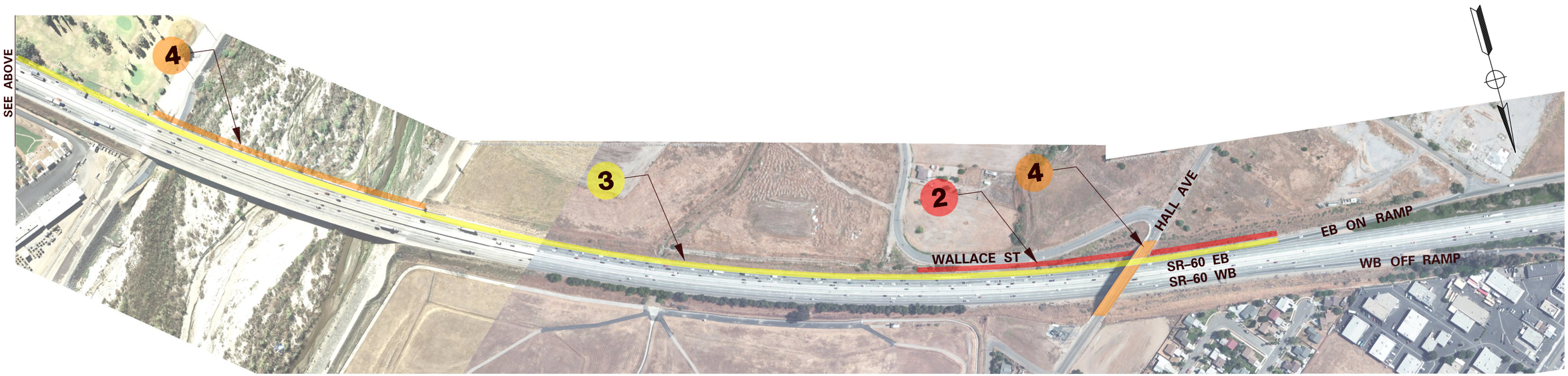

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7. STREET IMPROVEMENTS
8. SIGNALIZATION

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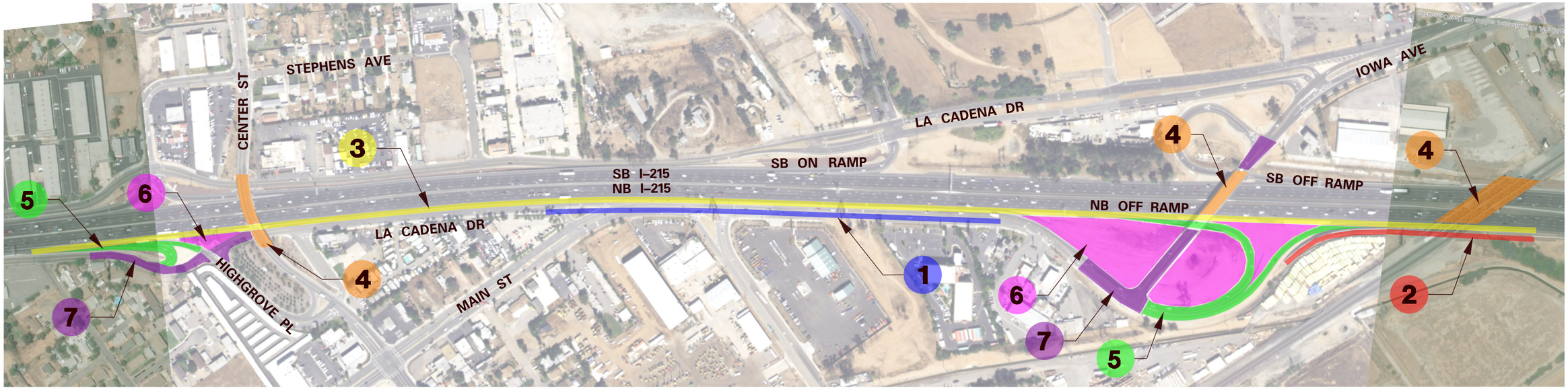

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7 STREET IMPROVEMENTS
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3 WIDENING	6 ROADWAY EXCAVATION	

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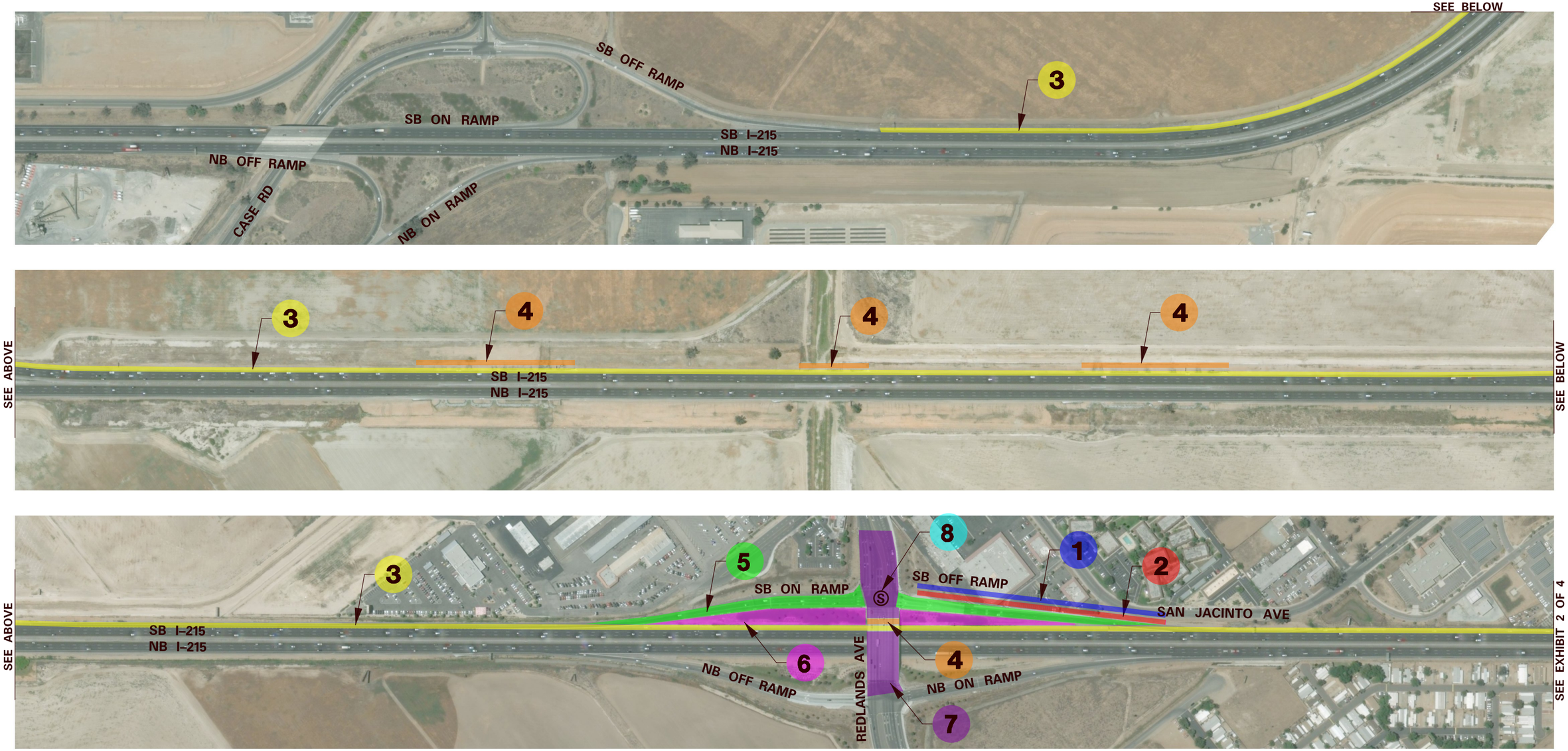

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7. STREET IMPROVEMENTS
8. SIGNALIZATION

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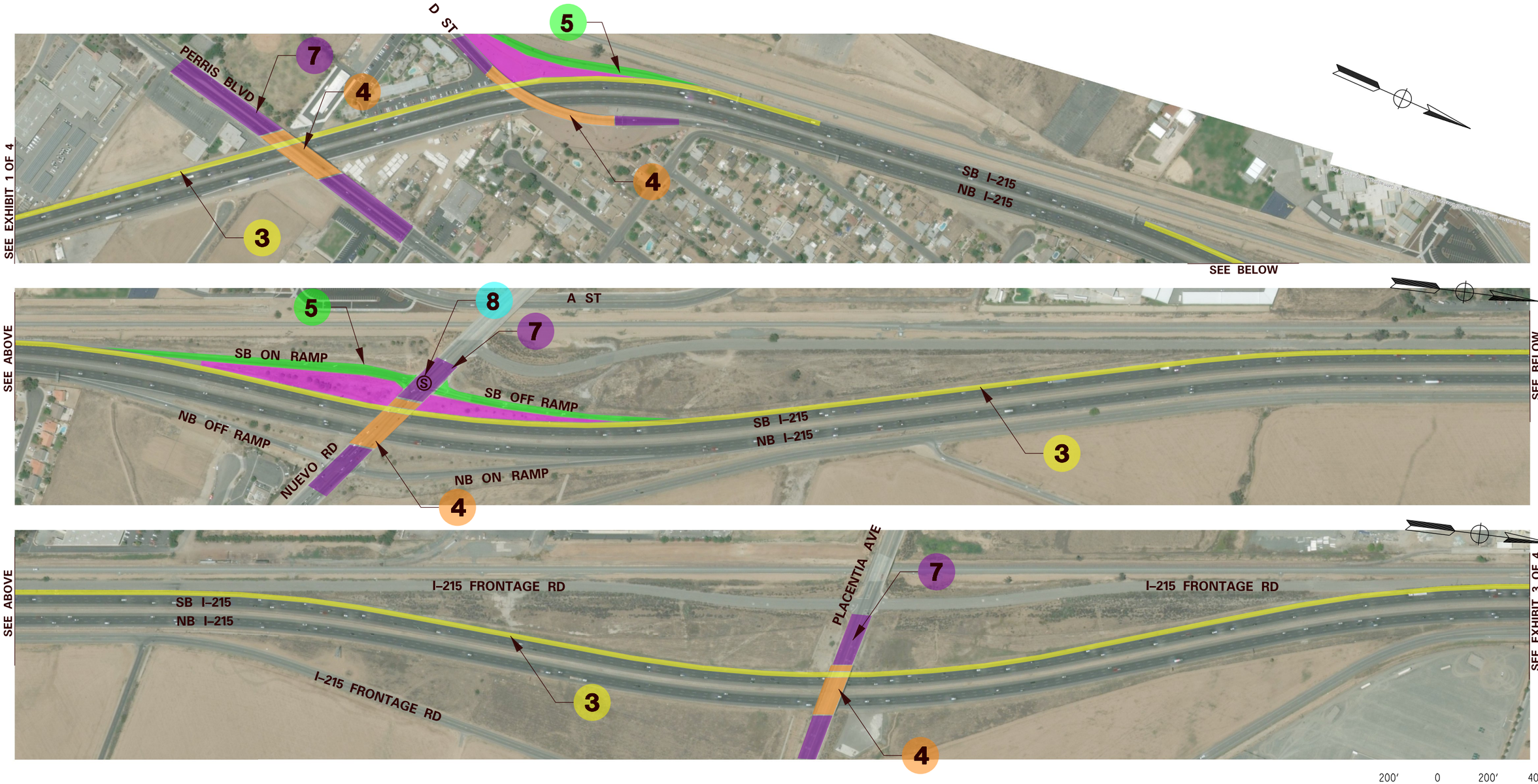

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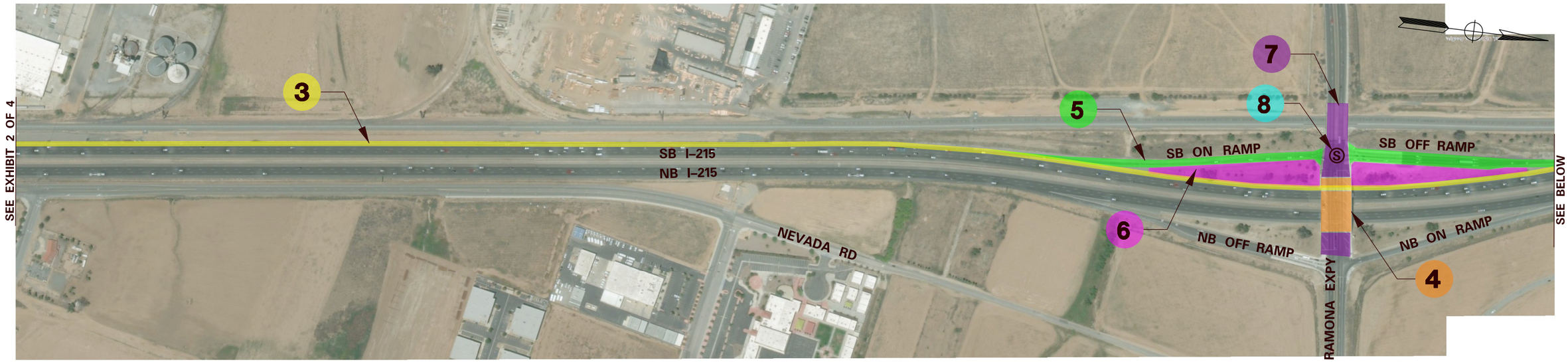

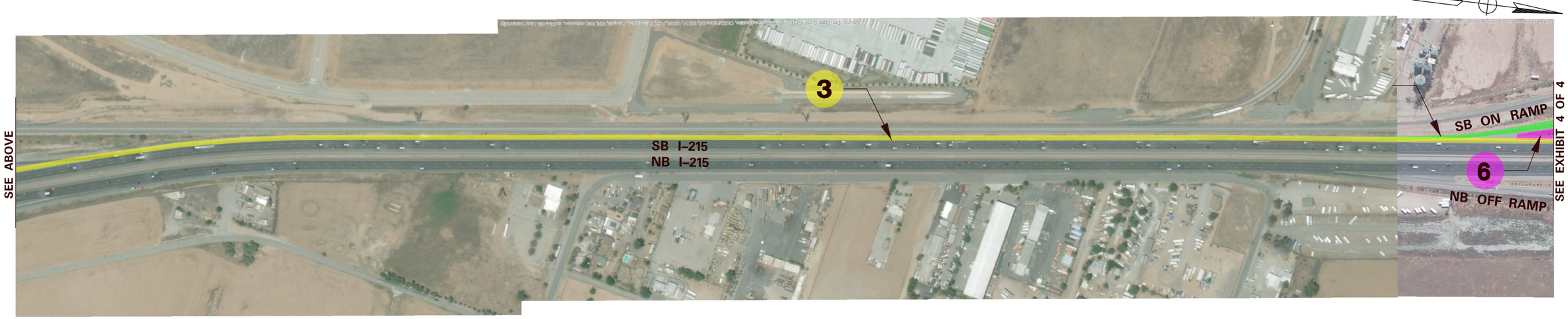

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- 7 STREET IMPROVEMENTS
- 8 SIGNALIZATION

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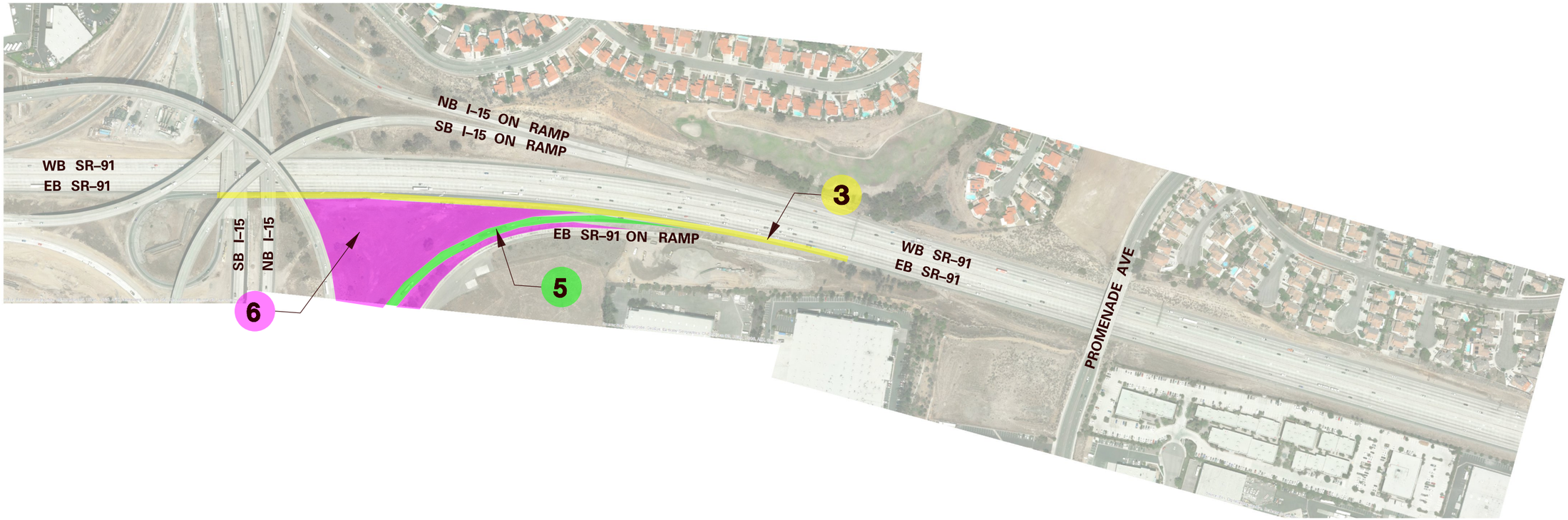

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7 STREET IMPROVEMENTS

8 SIGNALIZATION

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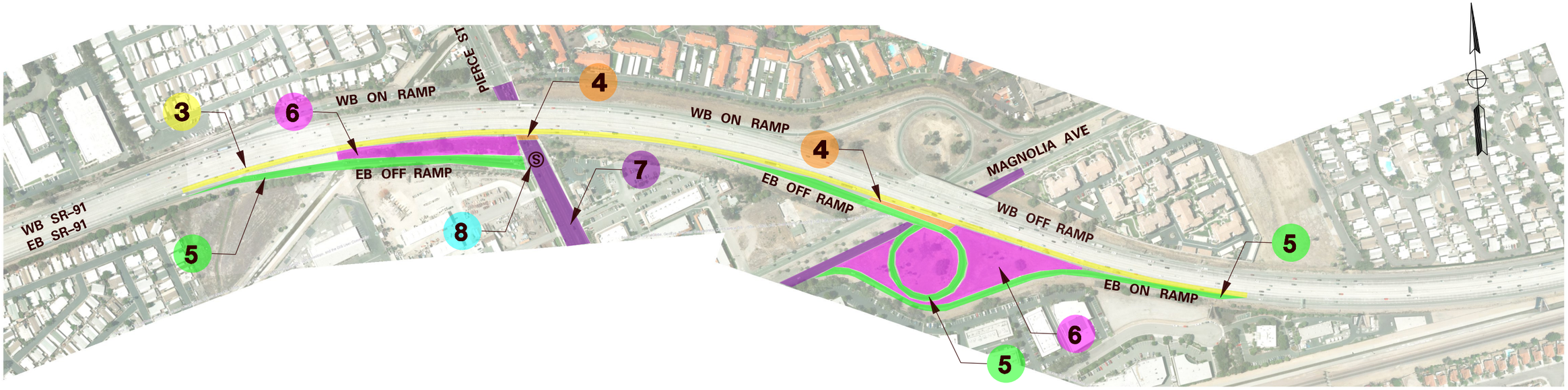

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8. SIGNALIZATION

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APPENDIX B – CONCEPTUAL PROJECT COST ESTIMATE TABLES

Project #1: I-15 NB, from SR-79 S On-Ramp to Winchester Rd Off-Ramp

ITEMS	*TOTAL COST*	*ENGINEERING ASSUMPTIONS*
I. Roadway Items Summary		
SECTION 1: EARTHWORK COST	***$665,000***	Roadway Cost are all based on a preliminary Google Earth review.
SECTION 2: PAVEMENT STRUCTRUAL SECTION	***$6,173,000***	
SECTION 3: DRAINAGE	***$1,205,850***	Drainage is taken at 15% of Roadway Items due to the lack of detail at this stage. During this review, we do not show that any pumps will be affected. Further analysis should look at all Retaining walls, sound walls, tie back walls and ramp reconfigurations are based on the widening needed. These are all based on a preliminary Google Earth review.
SECTION 4: Speciallty Items	***$96,000***	
SECTION 6: TRAFFIC ITEMS	***$1,105,000***	
SECTION 8: MINOR ITEMS 5% of Sections 1-6	***$462,243***	
SECTION 9: MOBILIZATION 10% of Sections 1-6	***$924,485***	
SECTION 10: ROADWAY ADDITIONS 5% of Sections 1-6	***$462,243***	
SECTION 13: CONTINGENCIES 40% of Sections 1-10	***$4,437,528***	
II. STRUCTURE ITEMS		
BRIDGES	***$20,207,000***	
TOTAL CAPITAL OUTLAY COSTS	***$35,738,348***	
SUPPORT COSTS	***$12,508,000***	Support costs are 35% of capital outlay costs
TOTAL PROJECT COSTS	***$48,246,000***	

Summary of Quantities

Project #1: I-15 NB, from SR-79 S On-Ramp to Winchester Rd Off-Ramp

	Item Description	Distance (ft)	Width (ft)	Quantity	Unit	Cost Assumptions	Total Cost	Engineering Assumptions
I. Roadway Items Summary								
	Earthwork							
	Roadway Excavation (NB Off Ramp Rancho California)	0.-560	20-235	7831.70	CY	$15.00	$117,475.56	
	Roadway Excavation (NB Loop On Ramp Rancho California)	0-202	0-200	13690.93	CY	$15.00	$205,363.89	
	Roadway Excavation (NB On Ramp Rancho California)	655	0-185	22810.22	CY	$15.00	$342,153.33	
	Pavment Structural Section							
	Remove Concrete Pavement (Mainline)	14605.00	10.00	16227.78	SQYD	$36.38	$590,366.56	Existing shoulders at 10'
	Class 2 Aggregate Subbase (Mainline)	14605.00	22.00	8330.26	CY	$72.10	$600,611.69	Lane plus shoulder at 22' with Class 2 Aggregate depth of 0.70'
	Hot Mix Asphalt (Type A) (Mainline)	14605.00	22.00	5823.74	TON	$85.00	$495,018.22	Lane plus shoulder at 22' with a HMA depth of 0.25'
	Continously Reinforced Concrete Pavement (Mainline)	14605.00	22.00	10710.33	CY	$270.00	$2,891,790.00	Lane plus shoulder at 22' with a CRCP depth of 0.90'
	Remove Concrete Pavement (NB Off Ramp Rancho California Rd)	1415.00	8.00	1257.78	SQYD	$36.38	$45,757.96	Existing shoulders at 8'
	Class 2 Aggregate Subbase (NB Off Ramp Rancho California Rd)	1415.00	38.00	1394.04	CY	$72.10	$100,510.07	Lane plus shoulder at 38' with Class 2 Aggregate depth of 0.70'
	Hot Mix Asphalt (Type A) (NB Off Ramp Rancho California Rd)	1415.00	38.00	974.58	TON	$85.00	$82,839.41	Lane plus shoulder at 38' with a HMA depth of 0.25'
	Continously Reinforced Concrete Pavement (NB Off Ramp Rancho California Rd)	1415.00	38.00	1792.33	CY	$270.00	$483,930.00	Lane plus shoulder at 38' with a CRCP depth of 0.90'
	Remove Concrete Pavement (NB Loop On Ramp Rancho California Rd)	800.00	8.00	711.11	SQYD	$36.38	$25,870.22	Existing shoulders at 8'
	Class 2 Aggregate Subbase (NB Loop On Ramp Rancho California Rd)	800.00	46.00	954.07	CY	$72.10	$68,788.74	Lane plus shoulder at 46' with Class 2 Aggregate depth of 0.70'
	Hot Mix Asphalt (Type A) (NB Loop On Ramp Rancho California Rd)	800.00	46.00	667.00	TON	$85.00	$56,695.00	Lane plus shoulder at 46' with a HMA depth of 0.25'
	Continously Reinforced Concrete Pavement (NB Loop On Ramp Rancho California Rd)	800.00	46.00	1226.67	CY	$270.00	$331,200.00	Lane plus shoulder at 46' with a CRCP depth of 0.90'
	Remove Concrete Pavement (NB On Ramp Rancho Califnornia)	835.00	8.00	742.22	SQYD	$36.38	$27,002.04	Existing shoulders at 8'
	Class 2 Aggregate Subbase (NB On Ramp Rancho Califnornia)	835.00	36.00	779.33	CY	$72.10	$56,189.93	Lane plus shoulder at 36' with Class 2 Aggregate depth of 0.70'
	Hot Mix Asphalt (Type A) (NB On Ramp Rancho Califnornia)	835.00	36.00	544.84	TON	$85.00	$46,311.19	Lane plus shoulder at 36' with a HMA depth of 0.25'
	Continously Reinforced Concrete Pavement (NB On Ramp Rancho Califnornia)	835.00	36.00	1002.00	CY	$270.00	$270,540.00	Lane plus shoulder at 36' with a CRCP depth of 0.90'
	Speciallty Items							
	Structural Concrete (Retaining Wall)	8625.00		1597.41	SQFT	$60.00	$95,844.44	Retaing wall height 5'
	Traffic Items							
	Traffic Electrical							
	Intersection Signalization			4.00	PER CORNER	$50,000.00	$200,000.00	
	Traffic Signing and Stripping							
	Removal of Existing Striping (Mainline)	14605.00		14605.00	LF	$0.65	$9,493.25	
	Thermoplastic Striping (Mainline)	29210.00		29210.00	LF	$2.41	$70,396.10	
	Removal of Existing Striping (NB Off Ramp Rancho California Rd)	4252.00		4252.00	LF	$0.65	$2,763.80	
	Thermoplastic Striping (NB Off Ramp Rancho California Rd)	4252.00		4252.00	LF	$2.41	$10,247.32	
	Removal of Existing Striping (NB Loop On Ramp Rancho California Rd)	2027.00		2027.00	LF	$0.65	$1,317.55	
	Thermoplastic Striping (NB Loop On Ramp Rancho California Rd)	2027.00		2027.00	LF	$2.41	$4,885.07	
	Removal of Existing Striping (NB On Ramp Rancho Califnornia)	1870.00		1870.00	LF	$0.65	$1,215.50	
	Thermoplastic Striping (NB On Ramp Rancho Califnornia)	1870.00		1870.00	LF	$2.41	$4,506.70	
	Reconstruct Sign Structure			4.00	EA	$200,000.00	$800,000.00	
II. Structure Items								
	Santiago Rd Bridge-Tie-back	70.00	22.00	1540.00	SQ FT	$375.00	$577,500.00	
	Rancho Califnoria Rd Bridge Replacement	122.00	262.00	31964.00	SQ FT	$250.00	$7,991,000.00	
	Drainge Underpass Widening	58.00	22.00	1276.00	SQ FT	$375.00	$478,500.00	
	Overland Rd Bridge Replacement	62.00	720.00	44640.00	SQ FT	$250.00	$11,160,000.00	
III. Right of Way								

I.	***Roadway Items***	$8,039,000.00
	Earthwork	$665,000.00
	Pavment Structural Section	$6,173,000.00
	Speciallty Items	$96,000.00
	Traffic Items	$1,105,000.00
II.	***Structural Items***	$20,207,000.00
III.	***Right of Way***	$0.00

Project #1: I-15 NB at Rancho California Subtotal		
ITEMS	**TOTAL COST**	**ENGINEERING ASSUMPTIONS**
I. Roadway Items Summary		
SECTION 1: EARTHWORK COST	***$665,000***	Roadway Cost are all based on a preliminary Google Earth review.
SECTION 2: PAVEMENT STRUCTRUAL SECTION	***$1,596,000***	
SECTION 3: DRAINAGE	***$375,300***	Drainage is taken at 15% of Roadway Items due to the lack of detail at this stage. During this review, we do not show that any pumps will be affected. Further analysis should look at all
SECTION 4: Speciallty Items	***$16,000***	Retaining walls, sound walls, tie back walls and ramp reconfigurations are based on the widening needed. These are all based on a preliminary Google Earth review.
SECTION 6: TRAFFIC ITEMS	***$225,000***	
SECTION 8: MINOR ITEMS 5% of Sections 1-6	***$143,865***	
SECTION 9: MOBILIZATION 10% of Sections 1-6	***$287,730***	
SECTION 10: ROADWAY ADDITIONS 5% of Sections 1-6	***$143,865***	
SECTION 13: CONTINGENCIES 40% of Sections 1-10	***$1,381,104***	
II. STRUCTURE ITEMS		
BRIDGES	***$7,991,000***	
TOTAL CAPITAL OUTLAY COSTS	***$12,824,864***	
SUPPORT COSTS	***$4,489,000***	Support costs are 35% of capital outlay costs
SUBTOTAL PROJECT COSTS	***$17,314,000***	
Amount included in 2016 TUMF Nexus Study	***$12,009,000.00***	
Amount to be reduced from Total Project Costs	***$12,009,000.00***	

Summary of Quantities

Project #1: I-15 NB at Rancho California Subtotal

Item Description	Distance (ft)	Width (ft)	Quantity	Unit	Cost Assumptions	Total Cost	Engineering Assumptions
I. Roadway Items Summary							
Earthwork							
Roadway Excavation (NB Off Ramp Rancho California)	0.-560	20-235	7831.70	CY	$15.00	$117,475.56	
Roadway Excavation (NB Loop On Ramp Rancho California)	0-202	0-200	13690.93	CY	$15.00	$205,363.89	
Roadway Excavation (NB On Ramp Rancho California)	655	0-185	22810.22	CY	$15.00	$342,153.33	
Pavment Structural Section							
Remove Concrete Pavement (Mainline)						$0.00	Existing shoulders at 10'
Class 2 Aggregate Subbase (Mainline)						$0.00	Lane plus shoulder at 22' with Class 2 Aggregate depth of 0.70'
Hot Mix Asphalt (Type A) (Mainline)						$0.00	Lane plus shoulder at 22' with a HMA depth of 0.25'
Continously Reinforced Concrete Pavement (Mainline)						$0.00	Lane plus shoulder at 22' with a CRCP depth of 0.90'
Remove Concrete Pavement (NB Off Ramp Rancho California Rd)	1415.00	8.00	1257.78	SQYD	$36.38	$45,757.96	Existing shoulders at 8'
Class 2 Aggregate Subbase (NB Off Ramp Rancho California Rd)	1415.00	38.00	1394.04	CY	$72.10	$100,510.07	Lane plus shoulder at 38' with Class 2 Aggregate depth of 0.70'
Hot Mix Asphalt (Type A) (NB Off Ramp Rancho California Rd)	1415.00	38.00	974.58	TON	$85.00	$82,839.41	Lane plus shoulder at 38' with a HMA depth of 0.25'
Continously Reinforced Concrete Pavement (NB Off Ramp Rancho California Rd)	1415.00	38.00	1792.33	CY	$270.00	$483,930.00	Lane plus shoulder at 38' with a CRCP depth of 0.90'
Remove Concrete Pavement (NB Loop On Ramp Rancho California Rd)	800.00	8.00	711.11	SQYD	$36.38	$25,870.22	Existing shoulders at 8'
Class 2 Aggregate Subbase (NB Loop On Ramp Rancho California Rd)	800.00	46.00	954.07	CY	$72.10	$68,788.74	Lane plus shoulder at 46' with Class 2 Aggregate depth of 0.70'
Hot Mix Asphalt (Type A) (NB Loop On Ramp Rancho California Rd)	800.00	46.00	667.00	TON	$85.00	$56,695.00	Lane plus shoulder at 46' with a HMA depth of 0.25'
Continously Reinforced Concrete Pavement (NB Loop On Ramp Rancho California Rd)	800.00	46.00	1226.67	CY	$270.00	$331,200.00	Lane plus shoulder at 46' with a CRCP depth of 0.90'
Remove Concrete Pavement (NB On Ramp Rancho Califnornia)	835.00	8.00	742.22	SQYD	$36.38	$27,002.04	Existing shoulders at 8'
Class 2 Aggregate Subbase (NB On Ramp Rancho Califnornia)	835.00	36.00	779.33	CY	$72.10	$56,189.93	Lane plus shoulder at 36' with Class 2 Aggregate depth of 0.70'
Hot Mix Asphalt (Type A) (NB On Ramp Rancho Califnornia)	835.00	36.00	544.84	TON	$85.00	$46,311.19	Lane plus shoulder at 36' with a HMA depth of 0.25'
Continously Reinforced Concrete Pavement (NB On Ramp Rancho Califnornia)	835.00	36.00	1002.00	CY	$270.00	$270,540.00	Lane plus shoulder at 36' with a CRCP depth of 0.90'
Speciallty Items							
Structural Concrete (Retaining Wall)	*1400.00*		259.26	SQFT	$60.00	$15,555.56	Retaing wall height 5'
Traffic Items							
Traffic Electrical							
Intersection Signalization			4.00	PER CORNER	$50,000.00	$200,000.00	
Traffic Signing and Stripping							
Removal of Existing Striping (Mainline)						$0.00	
Thermoplastic Striping (Mainline)						$0.00	
Removal of Existing Striping (NB Off Ramp Rancho California Rd)	4252.00		4252.00	LF	$0.65	$2,763.80	
Thermoplastic Striping (NB Off Ramp Rancho California Rd)	4252.00		4252.00	LF	$2.41	$10,247.32	
Removal of Existing Striping (NB Loop On Ramp Rancho California Rd)	2027.00		2027.00	LF	$0.65	$1,317.55	
Thermoplastic Striping (NB Loop On Ramp Rancho California Rd)	2027.00		2027.00	LF	$2.41	$4,885.07	
Removal of Existing Striping (NB On Ramp Rancho Califnornia)	1870.00		1870.00	LF	$0.65	$1,215.50	
Thermoplastic Striping (NB On Ramp Rancho Califnornia)	1870.00		1870.00	LF	$2.41	$4,506.70	
Reconstruct Sign Structure						$0.00	
II. Structure Items							
Santiago Rd Bridge-Tie-back						$0.00	
Rancho Califnoria Rd Bridge Replacement	122.00	262.00	31964.00	SQ FT	$250.00	$7,991,000.00	
Drainge Underpass Widening						$0.00	
Overland Rd Bridge Replacement						$0.00	
III. Right of Way							

I.	***Roadway Items***	$2,502,000.00
	Earthwork	$665,000.00
	Pavment Structural Section	$1,596,000.00
	Speciallty Items	$16,000.00
	Traffic Items	$225,000.00
II.	***Structural Items***	$7,991,000.00
III.	***Right of Way***	$0.00

Project #3: I-15 NB, from Clinton Keith Rd. On-ramp to Baxter Rd. Off-Ramp

ITEMS	*TOTAL COST*	*ENGINEERING ASSUMPTIONS*
I. Roadway Items Summary		
SECTION 1: EARTHWORK COST	***$2,239,000***	Roadway Cost are all based on a preliminary Google Earth review.
SECTION 2: PAVEMENT STRUCTRUAL SECTION	***$2,328,000***	
SECTION 3: DRAINAGE	***$809,700***	Drainage is taken at 15% of Roadway Items due to the lack of detail at this stage. During this review, we do not show that any pumps will be affected. Further analysis should look at all
SECTION 4: Specialty Items	***$35,000***	Retaining walls, sound walls, tie back walls and ramp reconfigurations are based on the widening needed. These are all based on a preliminary Google Earth review.
SECTION 6: TRAFFIC ITEMS	***$796,000***	
SECTION 8: MINOR ITEMS 5% of Sections 1-6	***$310,385***	
SECTION 9: MOBILIZATION 10% of Sections 1-6	***$620,770***	
SECTION 10: ROADWAY ADDITIONS 5% of Sections 1-6	***$310,385***	
SECTION 13: CONTINGENCIES 40% of Sections 1-10	***$2,979,696***	
II. STRUCTURE ITEMS		
BRIDGES	***$360,000***	
TOTAL CAPITAL OUTLAY COSTS	***$10,788,936***	
SUPPORT COSTS	***$3,776,000***	Support costs are 35% of capital outlay costs
TOTAL PROJECT COSTS	***$14,565,000***	

Summary of Quantities

Project #3: I-15 NB, from Clinton Keith Rd. On-ramp to Baxter Rd. Off-Ramp

	Item Description	Distance (ft)	Width (ft)	Depth (ft)	Quantity	Unit	Cost Assumptions	Total Cost	Engineering Assumptions
I. Roadway Items Summary									
	Earthwork								
	Roadway Excavation (NB Off Ramp Baxter Rd)	1175.00	0-185	14.00	50359.04	CY	$15.00	$755,385.56	
	Roadway Excavation (NB On Ramp Baxter Rd)	860.00	0-200	28.00	98907.41	CY	$15.00	$1,483,611.11	
	Pavement Structural Section						$0.00		
	Remove Concrete Pavement (Mainline)	4840.00	10.00		5377.78	SQYD	$36.38	$195,643.56	Existing shoulders at 10'
	Class 2 Aggregate Subbase (Mainline)	4840.00	22.00		2760.59	CY	$72.10	$199,038.73	Lane plus shoulder at 22' with Class 2 Aggregate depth of 0.70'
	Hot Mix Asphalt (Type A) (Mainline)	4840.00	22.00		1929.95	TON	$85.00	$164,045.75	Lane plus shoulder at 22' with a HMA depth of 0.25'
	Continuously Reinforced Concrete Pavement (Mainline)	4840.00	22.00		3549.33	CY	$270.00	$958,320.00	Lane plus shoulder at 22' with a CRCP depth of 0.90'
	Remove Concrete Pavement (NB Off Ramp Baxter)	1220.00	8.00		1084.44	SQYD	$36.38	$39,452.09	Existing shoulders at 8'
	Class 2 Aggregate Subbase(NB Off Ramp Baxter)	1220.00	24.00		759.11	CY	$72.10	$54,731.91	Lane plus shoulder at 24' with Class 2 Aggregate depth of 0.70'
	Hot Mix Asphalt (Type A) (NB Off Ramp Baxter)	1220.00	24.00		530.70	TON	$85.00	$45,109.50	Lane plus shoulder at 24' with a HMA depth of 0.25'
	Continuously Reinforced Concrete Pavement (NB Off Ramp Baxter)	1220.00	24.00		976.00	CY	$270.00	$263,520.00	Lane plus shoulder at 24' with a CRCP depth of 0.90'
	Remove Concrete Pavement (NB On Ramp Baxter)	1235.00	8.00		1097.78	SQYD	$36.38	$39,937.16	Existing shoulders at 8'
	Class 2 Aggregate Subbase (NB On Ramp Baxter)	1235.00	24.00		768.44	CY	$72.10	$55,404.84	Lane plus shoulder at 24' with Class 2 Aggregate depth of 0.70'
	Hot Mix Asphalt (Type A) (NB On Ramp Baxter)	1235.00	24.00		537.23	TON	$85.00	$45,664.13	Lane plus shoulder at 24' with a HMA depth of 0.25'
	Continuously Reinforced Concrete Pavement (NB On Ramp Baxter)	1235.00	24.00		988.00	CY	$270.00	$266,760.00	Lane plus shoulder at 24' with a CRCP depth of 0.90'
	Specialty Items						$0.00		
	Structural Concrete (Retaining Wall)	1055.00			586.11	SQFT	$60.00	$35,166.67	Retaining wall height 5'
	Traffic Items								
	Traffic Electrical								
	Intersection Signalization				7.00	PER CORNER	$50,000.00	$350,000.00	
	Traffic Signing and Stripping						$0.00		
	Removal of Existing Striping (Mainline)	4840.00			4840.00	LF	$0.65	$3,146.00	
	Thermoplastic Striping (Mainline)	9680.00			9680.00	LF	$2.41	$23,328.80	
	Removal of Existing Striping (NB Off Ramp Baxter)	1475.00			1475.00	LF	$0.65	$958.75	
	Thermoplastic Striping (NB Off Ramp Baxter)	1475.00			1475.00	LF	$2.41	$3,554.75	
	Removal of Existing Striping (NB On Ramp Baxter)	1235.00			1235.00	LF	$0.65	$802.75	
	Thermoplastic Striping (NB On Ramp Baxter)	1235.00			1235.00	LF	$2.41	$2,976.35	
	Reconstruct Sign Structure				2.00	EA	$200,000.00	$400,000.00	
II. Structure Items									
	Baxter Rd Bridge-Tie-back	60.00	16.00		960.00	SQFT	$375.00	$360,000.00	
III. Right of Way									

I.	***Roadway Items***	$5,398,000.00
	Earthwork	$2,239,000.00
	Pavement Structural Section	$2,328,000.00
	Specialty Items	$35,000.00
	Traffic Items	$796,000.00
II.	***Structural Items***	$360,000.00
III.	***Right of Way***	$0.00

Project #3: I-15 NB at Baxter Subtotal		
ITEMS	**TOTAL COST**	**ENGINEERING ASSUMPTIONS**
I. Roadway Items Summary		
SECTION 1: EARTHWORK COST	***$2,239,000***	Roadway Cost are all based on a preliminary Google Earth review.
SECTION 2: PAVEMENT STRUCTRUAL SECTION	***$811,000***	
SECTION 3: DRAINAGE	***$573,000***	Drainage is taken at 15% of Roadway Items due to the lack of detail at this stage. During this review, we do not show that any pumps will be affected. Further analysis should look at all
SECTION 4: Specialty Items	***$0***	Retaining walls, sound walls, tie back walls and ramp reconfigurations are based on the widening needed. These are all based on a preliminary Google Earth review.
SECTION 6: TRAFFIC ITEMS	***$770,000***	
SECTION 8: MINOR ITEMS 5% of Sections 1-6	***$219,650***	
SECTION 9: MOBILIZATION 10% of Sections 1-6	***$439,300***	
SECTION 10: ROADWAY ADDITIONS 5% of Sections 1-6	***$219,650***	
SECTION 13: CONTINGENCIES 40% of Sections 1-10	***$2,108,640***	
II. STRUCTURE ITEMS		
BRIDGES	***$360,000***	
TOTAL CAPITAL OUTLAY COSTS	***$7,740,240***	
SUPPORT COSTS	***$2,709,000***	Support costs are 35% of capital outlay costs
TOTAL PROJECT COSTS	***$10,449,000***	

Amount included in 2016 TUMF Nexus Study	***$7,159,000.00***
Amount to be reduced from Total Project Costs	***$7,159,000.00***

Summary of Quantities

Project #3: I-15 NB at Baxter Subtotal

	Item Description	Distance (ft)	Width (ft)	Depth (ft)	Quantity	Unit	Cost Assumptions	Total Cost	Engineering Assumptions
I. Roadway Items Summary									
	Earthwork								
	Roadway Excavation (NB Off Ramp Baxter Rd)	1175.00	0-185	14.00	50359.04	CY	$15.00	$755,385.56	
	Roadway Excavation (NB On Ramp Baxter Rd)	860.00	0-200	28.00	98907.41	CY	$15.00	$1,483,611.11	
	Pavement Structural Section						$0.00		
	Remove Concrete Pavement (Mainline)							$0.00	Existing shoulders at 10'
	Class 2 Aggregate Subbase (Mainline)							$0.00	Lane plus shoulder at 22' with Class 2 Aggregate depth of 0.70'
	Hot Mix Asphalt (Type A) (Mainline)							$0.00	Lane plus shoulder at 22' with a HMA depth of 0.25'
	Continuously Reinforced Concrete Pavement (Mainline)							$0.00	Lane plus shoulder at 22' with a CRCP depth of 0.90'
	Remove Concrete Pavement (NB Off Ramp Baxter)	1220.00	8.00		1084.44	SQYD	$36.38	$39,452.09	Existing shoulders at 8'
	Class 2 Aggregate Subbase(NB Off Ramp Baxter)	1220.00	24.00		759.11	CY	$72.10	$54,731.91	Lane plus shoulder at 24' with Class 2 Aggregate depth of 0.70'
	Hot Mix Asphalt (Type A) (NB Off Ramp Baxter)	1220.00	24.00		530.70	TON	$85.00	$45,109.50	Lane plus shoulder at 24' with a HMA depth of 0.25'
	Continuously Reinforced Concrete Pavement (NB Off Ramp Baxter)	1220.00	24.00		976.00	CY	$270.00	$263,520.00	Lane plus shoulder at 24' with a CRCP depth of 0.90'
	Remove Concrete Pavement (NB On Ramp Baxter)	1235.00	8.00		1097.78	SQYD	$36.38	$39,937.16	Existing shoulders at 8'
	Class 2 Aggregate Subbase (NB On Ramp Baxter)	1235.00	24.00		768.44	CY	$72.10	$55,404.84	Lane plus shoulder at 24' with Class 2 Aggregate depth of 0.70'
	Hot Mix Asphalt (Type A) (NB On Ramp Baxter)	1235.00	24.00		537.23	TON	$85.00	$45,664.13	Lane plus shoulder at 24' with a HMA depth of 0.25'
	Continuously Reinforced Concrete Pavement (NB On Ramp Baxter)	1235.00	24.00		988.00	CY	$270.00	$266,760.00	Lane plus shoulder at 24' with a CRCP depth of 0.90'
	Specialty Items						$0.00		
	Structural Concrete (Retaining Wall)							$0.00	Retaining wall height 5'
	Traffic Items								
	Traffic Electrical								
	Intersection Signalization				7.00	PER CORNER	$50,000.00	$350,000.00	
	Traffic Signing and Stripping						$0.00		
	Removal of Existing Striping (Mainline)							$0.00	
	Thermoplastic Striping (Mainline)							$0.00	
	Removal of Existing Striping (NB Off Ramp Baxter)	1475.00			1475.00	LF	$0.65	$958.75	
	Thermoplastic Striping (NB Off Ramp Baxter)	1475.00			1475.00	LF	$2.41	$3,554.75	
	Removal of Existing Striping (NB On Ramp Baxter)	1235.00			1235.00	LF	$0.65	$802.75	
	Thermoplastic Striping (NB On Ramp Baxter)	1235.00			1235.00	LF	$2.41	$2,976.35	
	Reconstruct Sign Structure				2.00	EA	$200,000.00	$400,000.00	
II. Structure Items									
	Baxter Rd Bridge-Tie-back	60.00	16.00		960.00	SQFT	$375.00	$360,000.00	
III. Right of Way									

I.	***Roadway Items***	$3,820,000.00
	Earthwork	$2,239,000.00
	Pavement Structural Section	$811,000.00
	Specialty Items	$0.00
	Traffic Items	$770,000.00
II.	***Structural Items***	$360,000.00
III.	***Right of Way***	$0.00

Project #7, I-15 SB, from Cajalco Rd On-Ramp to Indian Truck Trail On-Ramp

ITEMS	*TOTAL COST*	*ENGINEERING ASSUMPTIONS*
I. Roadway Items Summary		
SECTION 1: EARTHWORK COST	***$1,510,000***	Roadway Cost are all based on a preliminary Google Earth review.
SECTION 2: PAVEMENT STRUCTRUAL SECTION	***$11,919,000***	
SECTION 3: DRAINAGE	***$2,251,950***	Drainage is taken at 15% of Roadway Items due to the lack of detail at this stage. During this review, we do not show that any pumps will be affected. Further analysis should look at all
SECTION 4: Specialty Items	***$304,000***	Retaining walls, sound walls, tie back walls and ramp reconfigurations are based on the widening needed. These are all based on a preliminary Google Earth review.
SECTION 6: TRAFFIC ITEMS	***$1,280,000***	
SECTION 8: MINOR ITEMS 5% of Sections 1-6	***$863,248***	
SECTION 9: MOBILIZATION 10% of Sections 1-6	***$1,726,495***	
SECTION 10: ROADWAY ADDITIONS 5% of Sections 1-6	***$863,248***	
SECTION 13: CONTINGENCIES 40% of Sections 1-10	***$8,287,176***	
II. STRUCTURE ITEMS		
BRIDGES	***$4,310,000***	
II. STRUCTURE ITEMS		
Right of Way Acquisition	***$375,000***	
TOTAL CAPITAL OUTLAY COSTS	***$33,690,116***	
SUPPORT COSTS	***$11,792,000***	Support costs are 35% of capital outlay costs
TOTAL PROJECT COSTS	***$45,482,000***	

Summary of Quantities

Project #7, I-15 SB, from Cajalco Rd On-Ramp to Indian Truck Trail On-Ramp

Item Description	Distance (ft)	Width (ft)	Depth (ft)	Quantity	Unit	Cost Assumptions	Total Cost	Engineering Assumptions
I. Roadway Items Summary								
Earthwork								
Roadway Excavation (SB On Ramp Indian Truck Trail)	840.00	0-186	0-12	36720.00	CY	$15.00	$550,800.00	
Roadway Excavation (SB Off Ramp Indian Truck Trail)	1100.00	11-167	0-11	36410.00	CY	$15.00	$546,150.00	
Roadway Excavation (West of SB Off Ramp Indian Truck Trail)	1735	0-162	0-7	10460.52	CY	$15.00	$156,907.78	
Roadway Excavation (West of SB on Ramp Temescal Canyon)	640.00	36-70	0-2	2587.11	CY	$15.00	$38,806.67	
Roadway Excavation (SB on Ramp Temescal Canyon)	830.00	14-102	0-3	5971.00	CY	$15.00	$89,565.00	
Roadway Excavation (SB off Ramp Temescal Canyon)	860.00	12-125	0-2	4170.44	CY	$15.00	$62,556.67	
Roadway Excavation (SB on Ramp Dos Lagos)	520.00	0-85	0-2	1586.07	CY	$15.00	$23,791.11	
Roadway Excavation (SB off Ramp Dos Lagos)	950.00	0-90	0-2	2776.52	CY	$15.00	$41,647.78	
Pavement Structural Section								
Remove Concrete Pavement (Mainline)	29203.00	10.00		32447.78	SQYD	$36.38	$1,180,450.16	Existing shoulders at 10'
Class 2 Aggregate Subbase (Mainline)	29203.00	22.00		16656.53	CY	$72.10	$1,200,935.52	Lane plus shoulder at 22' with Class 2 Aggregate depth of 0.70'
Hot Mix Asphalt (Type A) (Mainline)	29203.00	22.00		11644.70	TON	$85.00	$989,799.18	Lane plus shoulder at 22' with a HMA depth of 0.25'
Continuously Reinforced Concrete Pavement (Mainline)	29203.00	22.00		21415.53	CY	$270.00	$5,782,194.00	Lane plus shoulder at 22' with a CRCP depth of 0.90'
Remove Concrete Pavement (SB on Ramp Indian Truck Trail)	215.00	8.00		191.11	SQYD	$36.38	$6,952.62	Existing shoulders at 8'
Class 2 Aggregate Subbase (SB on Ramp Indian Truck Trail)	215.00	26.00		144.93	CY	$72.10	$10,449.16	Lane plus shoulder at 26' with Class 2 Aggregate depth of 0.70'
Hot Mix Asphalt (Type A) (SB on Ramp Indian Truck Trail)	215.00	26.00		101.32	TON	$85.00	$8,612.09	Lane plus shoulder at 26' with a HMA depth of 0.25'
Continuously Reinforced Concrete Pavement (SB on Ramp Indian Truck Trail)	215.00	26.00		186.33	CY	$270.00	$50,310.00	Lane plus shoulder at 26' with a CRCP depth of 0.90'
Remove Concrete Pavement (SB Off Ramp Indian Truck Trail)	1220.00	8.00		1084.44	SQYD	$36.38	$39,452.09	Existing shoulders at 8'
Class 2 Aggregate Subbase (SB Off Ramp Indian Truck Trail)	1220.00	52.00		1644.74	CY	$72.10	$118,585.81	Lane plus shoulder at 52' with Class 2 Aggregate depth of 0.70'
Hot Mix Asphalt (Type A) (SB Off Ramp Indian Truck Trail)	1220.00	52.00		1149.85	TON	$85.00	$97,737.25	Lane plus shoulder at 52' with a HMA depth of 0.25'
Continuously Reinforced Concrete Pavement (SB Off Ramp Indian Truck Trail)	1220.00	52.00		2114.67	CY	$270.00	$570,960.00	Lane plus shoulder at 52' with a CRCP depth of 0.90'
Remove Concrete Pavement (SB on Ramp Temescal Canyon)	955.00	8.00		848.89	SQYD	$36.38	$30,882.58	Existing shoulders at 8'
Class 2 Aggregate Subbase (SB on Ramp Temescal Canyon)	955.00	36.00		891.33	CY	$72.10	$64,265.13	Lane plus shoulder at 36' with Class 2 Aggregate depth of 0.70'
Hot Mix Asphalt (Type A) (SB on Ramp Temescal Canyon)	955.00	36.00		623.14	TON	$85.00	$52,966.69	Lane plus shoulder at 36' with a HMA depth of 0.25'
Continuously Reinforced Concrete Pavement (SB on Ramp Temescal Canyon)	955.00	36.00		1146.00	CY	$270.00	$309,420.00	Lane plus shoulder at 36' with a CRCP depth of 0.90'
Remove Concrete Pavement (SB off Ramp Temescal Canyon)	1165.00	8.00		1035.56	SQYD	$36.38	$37,673.51	Existing shoulders at 8'
Class 2 Aggregate Subbase (SB off Ramp Temescal Canyon)	1165.00	34.00		1026.93	CY	$72.10	$74,041.36	Lane plus shoulder at 34' with Class 2 Aggregate depth of 0.70'
Hot Mix Asphalt (Type A) (SB off Ramp Temescal Canyon)	1165.00	34.00		717.93	TON	$85.00	$61,024.16	Lane plus shoulder at 34' with a HMA depth of 0.25'
Continuously Reinforced Concrete Pavement (SB off Ramp Temescal Canyon)	1165.00	34.00		1320.33	CY	$270.00	$356,490.00	Lane plus shoulder at 34' with a CRCP depth of 0.90'
Remove Concrete Pavement (SB on Ramp Dos Lagos)	740.00	8.00		657.78	SQYD	$36.38	$23,929.96	Existing shoulders at 8'
Class 2 Aggregate Subbase (SB on Ramp Dos Lagos)	740.00	38.00		729.04	CY	$72.10	$52,563.57	Lane plus shoulder at 38 with Class 2 Aggregate depth of 0.70'
Hot Mix Asphalt (Type A) (SB on Ramp Dos Lagos)	740.00	38.00		509.68	TON	$85.00	$43,322.38	Lane plus shoulder at 38' with a HMA depth of 0.25'
Continuously Reinforced Concrete Pavement (SB on Ramp Dos Lagos)	740.00	38.00		937.33	CY	$270.00	$253,080.00	Lane plus shoulder at 38' with a CRCP depth of 0.90'
Remove Concrete Pavement (SB off Ramp Dos Lagos)	1050.00	8.00		933.33	SQYD	$36.38	$33,954.67	Existing shoulders at 8'
Class 2 Aggregate Subbase (SB off Ramp Dos Lagos)	1050.00	36.00		980.00	CY	$72.10	$70,658.00	Lane plus shoulder at 36' with Class 2 Aggregate depth of 0.70'
Hot Mix Asphalt (Type A) (SB off Ramp Dos Lagos)	1050.00	36.00		685.13	TON	$85.00	$58,235.63	Lane plus shoulder at 36' with a HMA depth of 0.25'
Continuously Reinforced Concrete Pavement (SB off Ramp Dos Lagos)	1050.00	36.00		1260.00	CY	$270.00	$340,200.00	Lane plus shoulder at 36' with a CRCP depth of 0.90'
Specialty Items								
Remove Retaining Wall	1095.00			1095.00	LF	$15.00	$16,425.00	
Structural Concrete (Retaining Wall)	14010.00			4792.22	SQFT	$60.00	$287,533.33	Retaining wall height 5'
Traffic Items								
Traffic Electrical								
Intersection Signalization				12.00	PER CORNER	$50,000.00	$600,000.00	
Traffic Signing and Stripping						$0.00		
Removal of Existing Striping (Mainline)	29203.00			29203.00	LF	$0.65	$18,981.95	
Thermoplastic Striping (Mainline)	58406.00			58406.00	LF	$2.41	$140,758.46	
Removal of Existing Striping (SB on Ramp Indian Truck Trail)	2386.00			2386.00	LF	$0.65	$1,550.90	
Thermoplastic Striping (SB on Ramp Indian Truck Trail)	2386.00			2386.00	LF	$2.41	$5,750.26	
Removal of Existing Striping (SB Off Ramp Indian Truck Trail)	3870.00			3870.00	LF	$0.65	$2,515.50	
Thermoplastic Striping (SB Off Ramp Indian Truck Trail)	3870.00			3870.00	LF	$2.41	$9,326.70	
Removal of Existing Striping (SB on Ramp Temescal Canyon)	2035.00			2035.00	LF	$0.65	$1,322.75	
Thermoplastic Striping (SB on Ramp Temescal Canyon)	2035.00			2035.00	LF	$2.41	$4,904.35	
Removal of Existing Striping (SB off Ramp Temescal Canyon)	26170.00			26170.00	LF	$0.65	$17,010.50	
Thermoplastic Striping (SB off Ramp Temescal Canyon)	26170.00			26170.00	LF	$2.41	$63,069.70	
Removal of Existing Striping (SB on Ramp Dos Lagos)	1491.00			1491.00	LF	$0.65	$969.15	
Thermoplastic Striping (SB on Ramp Dos Lagos)	1491.00			1491.00	LF	$2.41	$3,593.31	
Removal of Existing Striping (SB off Ramp Dos Lagos)	3290.00			3290.00	LF	$0.65	$2,138.50	
Thermoplastic Striping (SB off Ramp Dos Lagos)	3290.00			3290.00	LF	$2.41	$7,928.90	
Reconstruct Sign Structure				2.00	LF	$200,000.00	$400,000.00	
II. Structure Items								
Indian Truck Trail Bridge Widening	136.00	14.00		1904.00	SQFT	$375.00	$714,000.00	
Temescal Canyon OC Widening PM 31.90	160.00	14.00		2240.00	SQFT	$375.00	$840,000.00	
Mayhew Wash Bridge Widening PM 31.97	145.00	14.00		2030.00	SQFT	$375.00	$761,250.00	
Temescal Canyon Road UC Widening PM 33.25	62.00	14.00		868.00	SQFT	$375.00	$325,500.00	
Brown Canyon Wash Bridge Widening PM 34.72	78.00	14.00		1092.00	SQ FT	$375.00	$409,500.00	
Dos Lagos Bridge Widening	140.00	14.00		1960.00	SQ FT	$375.00	$735,000.00	
Bedford Wash Bridge Widening	100.00	14.00		1400.00	SQFT	$375.00	$525,000.00	
III. Right of Way								
Right of Way Acquisition	150.00	50.00		7500.00	SQFT	$50.00	$375,000.00	

I.	***Roadway Items***	$15,013,000.00
	Earthwork	$1,510,000.00
	Pavement Structural Section	$11,919,000.00
	Specialty Items	$304,000.00
	Traffic Items	$1,280,000.00
II.	***Structural Items***	$4,310,000.00
III.	***Right of Way***	$375,000.00

Project #7, I-15 SB at Temescal Canyon Subtotal		
ITEMS	**TOTAL COST**	**ENGINEERING ASSUMPTIONS**
I. Roadway Items Summary		
SECTION 1: EARTHWORK COST	***$191,000***	Roadway Cost are all based on a preliminary Google Earth review.
SECTION 2: PAVEMENT STRUCTRUAL SECTION	***$987,000***	
SECTION 3: DRAINAGE	***$375,150***	Drainage is taken at 15% of Roadway Items due to the lack of detail at this stage. During this review, we do not show that any pumps will be affected. Further analysis should look at all
SECTION 4: Specialty Items	***$43,000***	Retaining walls, sound walls, tie back walls and ramp reconfigurations are based on the widening needed. These are all based on a preliminary Google Earth review.
SECTION 6: TRAFFIC ITEMS	***$1,280,000***	
SECTION 8: MINOR ITEMS 5% of Sections 1-6	***$143,808***	
SECTION 9: MOBILIZATION 10% of Sections 1-6	***$287,615***	
SECTION 10: ROADWAY ADDITIONS 5% of Sections 1-6	***$143,808***	
SECTION 13: CONTINGENCIES 40% of Sections 1-10	***$1,380,552***	
II. STRUCTURE ITEMS		
BRIDGES	***$840,000***	
II. STRUCTURE ITEMS		
Right of Way Acquisition	***$0***	
TOTAL CAPITAL OUTLAY COSTS	***$5,671,932***	
SUPPORT COSTS	***$1,985,000***	Support costs are 35% of capital outlay costs
TOTAL PROJECT COSTS	***$7,657,000***	

Amount included in 2016 TUMF Nexus Study	***$17,897,000.00***
Amount to be reduced from Total Project Costs	***$7,657,000.00***

Summary of Quantities

Project #7, I-15 SB at Temescal Canyon Subtotal

Item Description	Distance (ft)	Width (ft)	Depth (ft)	Quantity	Unit	Cost Assumptions	Total Cost	Engineering Assumptions
I. Roadway Items Summary								
Earthwork								
Roadway Excavation (SB On Ramp Indian Truck Trail)							$0.00	
Roadway Excavation (SB Off Ramp Indian Truck Trail)							$0.00	
Roadway Excavation (West of SB Off Ramp Indian Truck Trail)							$0.00	
Roadway Excavation (West of SB on Ramp Temescal Canyon)	640.00	36-70	0-2	2587.11	CY	$15.00	$38,806.67	
Roadway Excavation (SB on Ramp Temescal Canyon)	830.00	14-102	0-3	5971.00	CY	$15.00	$89,565.00	
Roadway Excavation (SB off Ramp Temescal Canyon)	860.00	12-125	0-2	4170.44	CY	$15.00	$62,556.67	
Roadway Excavation (SB on Ramp Dos Lagos)							$0.00	
Roadway Excavation (SB off Ramp Dos Lagos)							$0.00	
Pavement Structural Section								
Remove Concrete Pavement (Mainline)							$0.00	Existing shoulders at 10'
Class 2 Aggregate Subbase (Mainline)							$0.00	Lane plus shoulder at 22' with Class 2 Aggregate depth of 0.70'
Hot Mix Asphalt (Type A) (Mainline)							$0.00	Lane plus shoulder at 22' with a HMA depth of 0.25'
Continuously Reinforced Concrete Pavement (Mainline)							$0.00	Lane plus shoulder at 22' with a CRCP depth of 0.90'
Remove Concrete Pavement (SB on Ramp Indian Truck Trail)							$0.00	Existing shoulders at 8'
Class 2 Aggregate Subbase (SB on Ramp Indian Truck Trail)							$0.00	Lane plus shoulder at 26' with Class 2 Aggregate depth of 0.70'
Hot Mix Asphalt (Type A) (SB on Ramp Indian Truck Trail)							$0.00	Lane plus shoulder at 26' with a HMA depth of 0.25'
Continuously Reinforced Concrete Pavement (SB on Ramp Indian Truck Trail)							$0.00	Lane plus shoulder at 26' with a CRCP depth of 0.90'
Remove Concrete Pavement (SB Off Ramp Indian Truck Trail)							$0.00	Existing shoulders at 8'
Class 2 Aggregate Subbase (SB Off Ramp Indian Truck Trail)							$0.00	Lane plus shoulder at 52' with Class 2 Aggregate depth of 0.70'
Hot Mix Asphalt (Type A) (SB Off Ramp Indian Truck Trail)							$0.00	Lane plus shoulder at 52' with a HMA depth of 0.25'
Continuously Reinforced Concrete Pavement (SB Off Ramp Indian Truck Trail)							$0.00	Lane plus shoulder at 52' with a CRCP depth of 0.90'
Remove Concrete Pavement (SB on Ramp Temescal Canyon)	955.00	8.00		848.89	SQYD	$36.38	$30,882.58	Existing shoulders at 8'
Class 2 Aggregate Subbase (SB on Ramp Temescal Canyon)	955.00	36.00		891.33	CY	$72.10	$64,265.13	Lane plus shoulder at 36' with Class 2 Aggregate depth of 0.70'
Hot Mix Asphalt (Type A) (SB on Ramp Temescal Canyon)	955.00	36.00		623.14	TON	$85.00	$52,966.69	Lane plus shoulder at 36' with a HMA depth of 0.25'
Continuously Reinforced Concrete Pavement (SB on Ramp Temescal Canyon)	955.00	36.00		1146.00	CY	$270.00	$309,420.00	Lane plus shoulder at 36' with a CRCP depth of 0.90'
Remove Concrete Pavement (SB off Ramp Temescal Canyon)	1165.00	8.00		1035.56	SQYD	$36.38	$37,673.51	Existing shoulders at 8'
Class 2 Aggregate Subbase (SB off Ramp Temescal Canyon)	1165.00	34.00		1026.93	CY	$72.10	$74,041.36	Lane plus shoulder at 34' with Class 2 Aggregate depth of 0.70'
Hot Mix Asphalt (Type A) (SB off Ramp Temescal Canyon)	1165.00	34.00		717.93	TON	$85.00	$61,024.16	Lane plus shoulder at 34' with a HMA depth of 0.25'
Continuously Reinforced Concrete Pavement (SB off Ramp Temescal Canyon)	1165.00	34.00		1320.33	CY	$270.00	$356,490.00	Lane plus shoulder at 34' with a CRCP depth of 0.90'
Remove Concrete Pavement (SB on Ramp Dos Lagos)							$0.00	Existing shoulders at 8'
Class 2 Aggregate Subbase (SB on Ramp Dos Lagos)							$0.00	Lane plus shoulder at 38 with Class 2 Aggregate depth of 0.70'
Hot Mix Asphalt (Type A) (SB on Ramp Dos Lagos)							$0.00	Lane plus shoulder at 38' with a HMA depth of 0.25'
Continuously Reinforced Concrete Pavement (SB on Ramp Dos Lagos)							$0.00	Lane plus shoulder at 38' with a CRCP depth of 0.90'
Remove Concrete Pavement (SB off Ramp Dos Lagos)							$0.00	Existing shoulders at 8'
Class 2 Aggregate Subbase (SB off Ramp Dos Lagos)							$0.00	Lane plus shoulder at 36' with Class 2 Aggregate depth of 0.70'
Hot Mix Asphalt (Type A) (SB off Ramp Dos Lagos)							$0.00	Lane plus shoulder at 36' with a HMA depth of 0.25'
Continuously Reinforced Concrete Pavement (SB off Ramp Dos Lagos)							$0.00	Lane plus shoulder at 36' with a CRCP depth of 0.90'
Specialty Items								
Remove Retaining Wall							$0.00	
Structural Concrete (Retaining Wall)	*1300.00*			722.22	SQFT	$60.00	$43,333.33	Retaining wall height 5'
Traffic Items								
Traffic Electrical								
Intersection Signalization				*4.00*	PER CORNER	$50,000.00	$200,000.00	
Traffic Signing and Stripping						$0.00		
Removal of Existing Striping (Mainline)							$0.00	
Thermoplastic Striping (Mainline)							$0.00	
Removal of Existing Striping (SB on Ramp Indian Truck Trail)							$0.00	
Thermoplastic Striping (SB on Ramp Indian Truck Trail)							$0.00	
Removal of Existing Striping (SB Off Ramp Indian Truck Trail)							$0.00	
Thermoplastic Striping (SB Off Ramp Indian Truck Trail)							$0.00	
Removal of Existing Striping (SB on Ramp Temescal Canyon)	2035.00			2035.00	LF	$0.65	$1,322.75	
Thermoplastic Striping (SB on Ramp Temescal Canyon)	2035.00			2035.00	LF	$2.41	$4,904.35	
Removal of Existing Striping (SB off Ramp Temescal Canyon)	26170.00			26170.00	LF	$0.65	$17,010.50	
Thermoplastic Striping (SB off Ramp Temescal Canyon)	26170.00			26170.00	LF	$2.41	$63,069.70	
Removal of Existing Striping (SB on Ramp Dos Lagos)							$0.00	
Thermoplastic Striping (SB on Ramp Dos Lagos)							$0.00	
Removal of Existing Striping (SB off Ramp Dos Lagos)							$0.00	
Thermoplastic Striping (SB off Ramp Dos Lagos)							$0.00	
Reconstruct Sign Structure							$0.00	
II. Structure Items								
Indian Truck Trail Bridge Widening							$0.00	
Temescal Canyon OC Widening PM 31.90	160.00	14.00		2240.00	SQFT	$375.00	$840,000.00	
Mayhew Wash Bridge Widening PM 31.97							$0.00	
Temescal Canyon Road UC Widening PM 33.25							$0.00	
Brown Canyon Wash Bridge Widening PM 34.72							$0.00	
Dos Lagos Bridge Widening							$0.00	
Bedford Wash Bridge Widening							$0.00	
III. Right of Way								
Right of Way Acquisition							$0.00	

I.	***Roadway Items***	$1,507,000.00
	Earthwork	$191,000.00
	Pavement Structural Section	$987,000.00
	Specialty Items	$43,000.00
	Traffic Items	$286,000.00
II.	***Structural Items***	$840,000.00
III.	***Right of Way***	$0.00

Project #8, I-15 SB, from El Cerrito Rd Off-Ramp to Cajalco Rd Off-Ramp

ITEMS	*TOTAL COST*	*ENGINEERING ASSUMPTIONS*
I. Roadway Items Summary		
SECTION 1: EARTHWORK COST	***$1,153,000***	Roadway Cost are all based on a preliminary Google Earth review.
SECTION 2: PAVEMENT STRUCTRUAL SECTION	***$3,814,000***	
SECTION 3: DRAINAGE	***$857,700***	Drainage is taken at 15% of Roadway Items due to the lack of detail at this stage. During this review, we do not show that any pumps will be affected. Further analysis should look at all
SECTION 4: Speciallty Items	***$288,000***	Retaining walls, sound walls, tie back walls and ramp reconfigurations are based on the widening needed. These are all based on a preliminary Google Earth review.
SECTION 6: TRAFFIC ITEMS	***$463,000***	
SECTION 8: MINOR ITEMS 5% of Sections 1-6	***$328,785***	
SECTION 9: MOBILIZATION 10% of Sections 1-6	***$657,570***	
SECTION 10: ROADWAY ADDITIONS 5% of Sections 1-6	***$328,785***	
SECTION 13: CONTINGENCIES 40% of Sections 1-10	***$3,156,336***	
II. STRUCTURE ITEMS		
BRIDGES	***$975,000***	
TOTAL CAPITAL OUTLAY COSTS	***$12,022,176***	
SUPPORT COSTS	***$4,208,000***	Support costs are 35% of capital outlay costs
TOTAL PROJECT COSTS	***$16,230,000***	

Summary of Quantities

Project #8, I-15 SB, from El Cerrito Rd Off-Ramp to Cajalco Rd Off-Ramp

Item Description	Distance (ft)	Width (ft)	Depth (ft)	Quantity	Unit	Cost Assumptions	Total Cost	Engineering Assumptions
I. Roadway Items Summary								
Earthwork								
Roadway Excavation (SB on Ramp Cajalco)	700.00	0-320	0-12	61799.11	CY	$15.00	$926,986.67	
Roadway Excavation (SB off Ramp Cajalco)	1000.00	0-175	0-5	10822.78	CY	$15.00	$162,341.67	
Roadway Excavation (SB on Ramp El Cerrito)	595.00	0-78	0-2	1750.96	CY	$15.00	$26,264.44	
Roadway Excavation (SB off Ramp El Cerrito)	780.00	8-84	0-2	2461.04	CY	$15.00	$36,915.56	
Pavment Structural Section								
Remove Concrete Pavement (Mainline)	6907.00	14.00		10744.22	SQYD	$36.38	$390,874.80	Existing shoulders at 14'
Class 2 Aggregate Subbase (Mainline)	6907.00	22.00		3939.55	CY	$72.10	$284,041.42	Lane plus shoulder at 22' with Class 2 Aggregate depth of 0.70'
Hot Mix Asphalt (Type A) (Mainline)	6907.00	22.00		2754.17	TON	$85.00	$234,104.13	Lane plus shoulder at 22' with a HMA depth of 0.25'
Continously Reinforced Concrete Pavement (Mainline)	6907.00	22.00		5065.13	CY	$270.00	$1,367,586.00	Lane plus shoulder at 22' with a CRCP depth of 0.90'
Remove Concrete Pavement (SB on Ramp Cajalco)	468.00	10.00		520.00	SQYD	$36.38	$18,917.60	Existing shoulders at 10'
Class 2 Aggregate Subbase (SB on Ramp Cajalco)	468.00	24.00		291.20	CY	$72.10	$20,995.52	Lane plus shoulder at 24' with Class 2 Aggregate depth of 0.70'
Hot Mix Asphalt (Type A) (SB on Ramp Cajalco)	468.00	24.00		203.58	TON	$85.00	$17,304.30	Lane plus shoulder at 24' with a HMA depth of 0.25'
Continously Reinforced Concrete Pavement (SB on Ramp Cajalco)	468.00	24.00		374.40	CY	$270.00	$101,088.00	Lane plus shoulder at 24' with a CRCP depth of 0.90'
Remove Concrete Pavement (SB off Ramp Cajalco)	1225.00	8.00		1088.89	SQYD	$36.38	$39,613.78	
Class 2 Aggregate Subbase (SB off Ramp Cajalco)	1225.00	40.00		1270.37	CY	$72.10	$91,593.70	
Hot Mix Asphalt (Type A) (SB off Ramp Cajalco)	1225.00	40.00		888.13	TON	$85.00	$75,490.63	
Continously Reinforced Concrete Pavement (SB off Ramp Cajalco)	1225.00	40.00		1633.33	CY	$270.00	$441,000.00	
Remove Concrete Pavement (SB on Ramp El Cerrito)	820.00	8.00		728.89	SQYD	$36.38	$26,516.98	Existing shoulders at 8'
Class 2 Aggregate Subbase (SB on Ramp El Cerrito)	820.00	34.00		722.81	CY	$72.10	$52,114.95	Lane plus shoulder at 34' with Class 2 Aggregate depth of 0.70'
Hot Mix Asphalt (Type A) (SB on Ramp El Cerrito)	820.00	34.00		505.33	TON	$85.00	$42,952.63	Lane plus shoulder at 34' with a HMA depth of 0.25'
Continously Reinforced Concrete Pavement (SB on Ramp El Cerrito)	820.00	34.00		929.33	CY	$270.00	$250,920.00	Lane plus shoulder at 34' with a CRCP depth of 0.90'
Remove Concrete Pavement (SB off Ramp El Cerrito)	1060.00	10.00		1177.78	CY	$36.38	$42,847.56	Existing shoulders at 10'
Class 2 Aggregate Subbase (SB off Ramp El Cerrito)	1060.00	24.00		659.56	TON	$72.10	$47,553.96	Lane plus shoulder at 24' with Class 2 Aggregate depth of 0.70'
Hot Mix Asphalt (Type A) (SB off Ramp El Cerrito)	1060.00	24.00		461.10	LF	$85.00	$39,193.50	Lane plus shoulder at 24' with a HMA depth of 0.25'
Continously Reinforced Concrete Pavement (SB off Ramp El Cerrito)	1060.00	24.00		848.00	LF	$270.00	$228,960.00	Lane plus shoulder at 24' with a CRCP depth of 0.90'
Speciallty Items								
Structural Concrete (Retaining Wall)	16665.00			4792.22	SQFT	$60.00	$287,533.33	Retaing wall height 5'
Traffic Items								
Traffic Electrical								
Intersection Signalization				8.00	PER CORNER	$50,000.00	$400,000.00	
Traffic Signing and Stripping						$0.00		
Removal of Existing Striping (Mainline)	6907.00			6907.00	LF	$0.65	$4,489.55	
Thermoplastic Striping (Mainline)	13814.00			13814.00	LF	$2.41	$33,291.74	
Removal of Existing Striping (SB on Ramp Cajalco)	936.00			936.00	LF	$0.65	$608.40	
Thermoplastic Striping (SB on Ramp Cajalco)	936.00			936.00	LF	$2.41	$2,255.76	
Removal of Existing Striping (SB off Ramp Cajalco)	3215.00			3215.00	LF	$0.65	$2,089.75	
Thermoplastic Striping (SB off Ramp Cajalco)	3215.00			3215.00	LF	$2.41	$7,748.15	
Removal of Existing Striping (SB on Ramp El Cerrito)	1440.00			1440.00	LF	$0.65	$936.00	
Thermoplastic Striping (SB on Ramp El Cerrito)	1440.00			1440.00	LF	$2.41	$3,470.40	
Removal of Existing Striping (SB off Ramp El Cerrito)	2640.00			2640.00	LF	$0.65	$1,716.00	
Thermoplastic Striping (SB off Ramp El Cerrito)	2640.00			2640.00	LF	$2.41	$6,362.40	
Reconstruct Sign Structure				0.00	LF	$200,000.00	$0.00	
II. Structure Items								
Cajalco Road OC Tie Back	40.00	16.00		640.00	SQFT	$375.00	$240,000.00	
El Cerrito UC Widening	140.00	14.00		1960.00	SQFT	$375.00	$735,000.00	
III. Right of Way								

I.	***Roadway Items***	$5,718,000.00
	Earthwork	$1,153,000.00
	Pavment Structural Section	$3,814,000.00
	Speciallty Items	$288,000.00
	Traffic Items	$463,000.00
II.	***Structural Items***	$975,000.00
III.	***Right of Way***	$0.00

Project #8, I-15 SB at Cajalco Subtotal		
ITEMS	**TOTAL COST**	**ENGINEERING ASSUMPTIONS**
I. Roadway Items Summary		
SECTION 1: EARTHWORK COST	***$1,089,000***	Roadway Cost are all based on a preliminary Google Earth review.
SECTION 2: PAVEMENT STRUCTRUAL SECTION	***$806,000***	
SECTION 3: DRAINAGE	***$316,200***	Drainage is taken at 15% of Roadway Items due to the lack of detail at this stage. During this review, we do not show that any pumps will be affected. Further analysis should look at all
SECTION 4: Speciallty Items	***$0***	Retaining walls, sound walls, tie back walls and ramp reconfigurations are based on the widening needed. These are all based on a preliminary Google Earth review.
SECTION 6: TRAFFIC ITEMS	***$213,000***	
SECTION 8: MINOR ITEMS 5% of Sections 1-6	***$121,210***	
SECTION 9: MOBILIZATION 10% of Sections 1-6	***$242,420***	
SECTION 10: ROADWAY ADDITIONS 5% of Sections 1-6	***$121,210***	
SECTION 13: CONTINGENCIES 40% of Sections 1-10	***$1,163,616***	
II. STRUCTURE ITEMS		
BRIDGES	***$240,000***	
TOTAL CAPITAL OUTLAY COSTS	***$4,312,656***	
SUPPORT COSTS	***$1,509,000***	Support costs are 35% of capital outlay costs
TOTAL PROJECT COSTS	***$5,822,000***	
Amount included in 2016 TUMF Nexus Study	***$44,257,000.00***	
Amount to be reduced from Total Project Costs	***$5,822,000.00***	

Summary of Quantities

Project #8, I-15 SB at Cajalco Subtotal

Item Description	Distance (ft)	Width (ft)	Depth (ft)	Quantity	Unit	Cost Assumptions	Total Cost	Engineering Assumptions
I. Roadway Items Summary								
Earthwork								
Roadway Excavation (SB on Ramp Cajalco)	700.00	0-320	0-12	61799.11	CY	$15.00	$926,986.67	
Roadway Excavation (SB off Ramp Cajalco)	1000.00	0-175	0-5	10822.78	CY	$15.00	$162,341.67	
Roadway Excavation (SB on Ramp El Cerrito)							$0.00	
Roadway Excavation (SB off Ramp El Cerrito)							$0.00	
Pavment Structural Section								
Remove Concrete Pavement (Mainline)							$0.00	Existing shoulders at 14'
Class 2 Aggregate Subbase (Mainline)							$0.00	Lane plus shoulder at 22' with Class 2 Aggregate depth of 0.70'
Hot Mix Asphalt (Type A) (Mainline)							$0.00	Lane plus shoulder at 22' with a HMA depth of 0.25'
Continously Reinforced Concrete Pavement (Mainline)							$0.00	Lane plus shoulder at 22' with a CRCP depth of 0.90'
Remove Concrete Pavement (SB on Ramp Cajalco)	468.00	10.00		520.00	SQYD	$36.38	$18,917.60	Existing shoulders at 10'
Class 2 Aggregate Subbase (SB on Ramp Cajalco)	468.00	24.00		291.20	CY	$72.10	$20,995.52	Lane plus shoulder at 24' with Class 2 Aggregate depth of 0.70'
Hot Mix Asphalt (Type A) (SB on Ramp Cajalco)	468.00	24.00		203.58	TON	$85.00	$17,304.30	Lane plus shoulder at 24' with a HMA depth of 0.25'
Continously Reinforced Concrete Pavement (SB on Ramp Cajalco)	468.00	24.00		374.40	CY	$270.00	$101,088.00	Lane plus shoulder at 24' with a CRCP depth of 0.90'
Remove Concrete Pavement (SB off Ramp Cajalco)	1225.00	8.00		1088.89	SQYD	$36.38	$39,613.78	
Class 2 Aggregate Subbase (SB off Ramp Cajalco)	1225.00	40.00		1270.37	CY	$72.10	$91,593.70	
Hot Mix Asphalt (Type A) (SB off Ramp Cajalco)	1225.00	40.00		888.13	TON	$85.00	$75,490.63	
Continously Reinforced Concrete Pavement (SB off Ramp Cajalco)	1225.00	40.00		1633.33	CY	$270.00	$441,000.00	
Remove Concrete Pavement (SB on Ramp El Cerrito)							$0.00	Existing shoulders at 8'
Class 2 Aggregate Subbase (SB on Ramp El Cerrito)							$0.00	Lane plus shoulder at 34' with Class 2 Aggregate depth of 0.70'
Hot Mix Asphalt (Type A) (SB on Ramp El Cerrito)							$0.00	Lane plus shoulder at 34' with a HMA depth of 0.25'
Continously Reinforced Concrete Pavement (SB on Ramp El Cerrito)							$0.00	Lane plus shoulder at 34' with a CRCP depth of 0.90'
Remove Concrete Pavement (SB off Ramp El Cerrito)							$0.00	Existing shoulders at 10'
Class 2 Aggregate Subbase (SB off Ramp El Cerrito)							$0.00	Lane plus shoulder at 24' with Class 2 Aggregate depth of 0.70'
Hot Mix Asphalt (Type A) (SB off Ramp El Cerrito)							$0.00	Lane plus shoulder at 24' with a HMA depth of 0.25'
Continously Reinforced Concrete Pavement (SB off Ramp El Cerrito)							$0.00	Lane plus shoulder at 24' with a CRCP depth of 0.90'
Speciallty Items								
Structural Concrete (Retaining Wall)							$0.00	Retaing wall height 5'
Traffic Items								
Traffic Electrical								
Intersection Signalization				*4.00*	PER CORNER	$50,000.00	$200,000.00	
Traffic Signing and Stripping						$0.00		
Removal of Existing Striping (Mainline)							$0.00	
Thermoplastic Striping (Mainline)							$0.00	
Removal of Existing Striping (SB on Ramp Cajalco)	936.00			936.00	LF	$0.65	$608.40	
Thermoplastic Striping (SB on Ramp Cajalco)	936.00			936.00	LF	$2.41	$2,255.76	
Removal of Existing Striping (SB off Ramp Cajalco)	3215.00			3215.00	LF	$0.65	$2,089.75	
Thermoplastic Striping (SB off Ramp Cajalco)	3215.00			3215.00	LF	$2.41	$7,748.15	
Removal of Existing Striping (SB on Ramp El Cerrito)							$0.00	
Thermoplastic Striping (SB on Ramp El Cerrito)							$0.00	
Removal of Existing Striping (SB off Ramp El Cerrito)							$0.00	
Thermoplastic Striping (SB off Ramp El Cerrito)							$0.00	
Reconstruct Sign Structure				0.00	LF	$200,000.00	$0.00	
II. Structure Items								
Cajalco Road OC Tie Back	40.00	16.00		640.00	SQFT	$375.00	$240,000.00	
El Cerrito UC Widening							$0.00	
III. Right of Way								

I.	***Roadway Items***	$2,108,000.00
	Earthwork	$1,089,000.00
	Pavment Structural Section	$806,000.00
	Speciallty Items	$0.00
	Traffic Items	$213,000.00
II.	***Structural Items***	$240,000.00
III.	***Right of Way***	$0.00

Project #9, SR-60 EB, from Rubidoux Blvd. On-Ramp to Main St Off-Ramp

ITEMS	*TOTAL COST*	*ENGINEERING ASSUMPTIONS*
I. Roadway Items Summary		
SECTION 1: EARTHWORK COST	***$311,000***	Roadway Cost are all based on a preliminary Google Earth review.
SECTION 2: PAVEMENT STRUCTRUAL SECTION	***$4,621,000***	
SECTION 3: DRAINAGE	***$935,550***	Drainage is taken at 15% of Roadway Items due to the lack of detail at this stage. During this review, we do not show that any pumps will be affected. Further analysis should look at all
SECTION 4: Speciallty Items	***$227,000***	Retaining walls, sound walls, tie back walls and ramp reconfigurations are based on the widening needed. These are all based on a preliminary Google Earth review.
SECTION 6: TRAFFIC ITEMS	***$1,078,000***	
SECTION 8: MINOR ITEMS 5% of Sections 1-6	***$358,628***	
SECTION 9: MOBILIZATION 10% of Sections 1-6	***$717,255***	
SECTION 10: ROADWAY ADDITIONS 5% of Sections 1-6	***$358,628***	
SECTION 13: CONTINGENCIES 40% of Sections 1-10	***$3,442,824***	
II. STRUCTURE ITEMS		
BRIDGES	***$17,753,000***	
TOTAL CAPITAL OUTLAY COSTS	***$29,802,884***	
SUPPORT COSTS	***$10,431,000***	Support costs are 35% of capital outlay costs
TOTAL PROJECT COSTS	***$40,234,000***	

Summary of Quantities

Project #9, SR-60 EB, from Rubidoux Blvd. On-Ramp to Main St Off-Ramp

	Item Description	Distance (ft)	Width (ft)	Depth (ft)	Quantity	Unit	Cost Assumptions	Total Cost	Engineering Assumptions
I. Roadway Items Summary									
	Earthwork								
	Roadway Excavation (EB on Ramp Market St)	955.00	17-48	0-10	10247.78	CY	$15.00	$153,716.67	
	Roadway Excavation (EB off Ramp Market St)	620.00	7-65	0-15	10493.89	CY	$15.00	$157,408.33	
	Pavment Structural Section						$0.00		
	Remove Concrete Pavement (Mainline)	11025.00	10.00		12250.00	SQYD	$36.38	$445,655.00	Existing shoulders at 10'
	Class 2 Aggregate Subbase (Mainline)	11025.00	22.00		6288.33	CY	$72.10	$453,388.83	Lane plus shoulder at 22' with Class 2 Aggregate depth of 0.70'
	Hot Mix Asphalt (Type A) (Mainline)	11025.00	22.00		4396.22	TON	$85.00	$373,678.59	Lane plus shoulder at 22' with a HMA depth of 0.25'
	Continously Reinforced Concrete Pavement (Mainline)	11025.00	22.00		8085.00	CY	$270.00	$2,182,950.00	Lane plus shoulder at 22' with a CRCP depth of 0.90'
	Remove Concrete Pavement (EB On Ramp Main St)	535.00	8.00		475.56	SQYD	$36.38	$17,300.71	Existing shoulders at 8'
	Class 2 Aggregate Subbase (EB On Ramp Main St)	535.00	32.00		443.85	CY	$72.10	$32,001.72	Lane plus shoulder at 32' with Class 2 Aggregate depth of 0.70'
	Hot Mix Asphalt (Type A) (EB On Ramp Main St)	535.00	32.00		310.30	TON	$85.00	$26,375.50	Lane plus shoulder at 32' with a HMA depth of 0.25'
	Continously Reinforced Concrete Pavement (EB On Ramp Main St)	535.00	32.00		570.67	CY	$270.00	$154,080.00	Lane plus shoulder at 32' with a CRCP depth of 0.90'
	Remove Concrete Pavement (EB Off Ramp Main St)	700.00	8.00		622.22	SQYD	$36.38	$22,636.44	Existing shoulders at 8'
	Class 2 Aggregate Subbase (EB Off Ramp Main St)	700.00	20.00		362.96	CY	$72.10	$26,169.63	Lane plus shoulder at 20' with Class 2 Aggregate depth of 0.70'
	Hot Mix Asphalt (Type A) (EB Off Ramp Main St)	700.00	20.00		253.75	TON	$85.00	$21,568.75	Lane plus shoulder at 20' with a HMA depth of 0.25'
	Continously Reinforced Concrete Pavement t (EB Off Ramp Main St)	700.00	20.00		466.67	CY	$270.00	$126,000.00	Lane plus shoulder at 20' with a CRCP depth of 0.90'
	Remove Concrete Pavement (EB on Ramp Market St)	900.00	8.00		800.00	SQYD	$36.38	$29,104.00	Existing shoulders at 8'
	Class 2 Aggregate Subbase (EB on Ramp Market St)	900.00	24.00		560.00	CY	$72.10	$40,376.00	Lane plus shoulder at 24' with Class 2 Aggregate depth of 0.70'
	Hot Mix Asphalt (Type A) (EB on Ramp Market St)	900.00	24.00		391.50	TON	$85.00	$33,277.50	Lane plus shoulder at 24' with a HMA depth of 0.25'
	Continously Reinforced Concrete Pavement (EB on Ramp Market St)	900.00	24.00		720.00	CY	$270.00	$194,400.00	Lane plus shoulder at 24' with a CRCP depth of 0.90'
	Remove Concrete Pavement (EB off Ramp Market St)	1340.00	8.00		1191.11	SQYD	$36.38	$43,332.62	Existing shoulders at 8'
	Class 2 Aggregate Subbase (EB off Ramp Market St)	1340.00	24.00		833.78	CY	$72.10	$60,115.38	Lane plus shoulder at 24' with Class 2 Aggregate depth of 0.70'
	Hot Mix Asphalt (Type A) (EB off Ramp Market St)	1340.00	24.00		582.90	TON	$85.00	$49,546.50	Lane plus shoulder at 24' with a HMA depth of 0.25'
	Continously Reinforced Concrete Pavement (EB off Ramp Market St)	1340.00	24.00		1072.00	CY	$270.00	$289,440.00	Lane plus shoulder at 24' with a CRCP depth of 0.90'
	Speciallty Items						$0.00		
	Remove Sound Wall	1920.00			1920.00	LF	$27.00	$51,840.00	
	Sound Wall	1920.00			1920.00	SQFT	$23.98	$46,041.60	6' High sound wall
	Structural Concrete (Retaining Wall)	3885.00			2158.33	SQFT	$60.00	$129,500.00	Retaining wall height 5'
	Traffic Items								
	Traffic Electrical								
	Intersection Signalization				8.00	PER CORNER	$50,000.00	$400,000.00	
	Traffic Signing and Stripping						$0.00		
	Removal of Existing Striping (Mainline)	11025.00			11025.00	LF	$0.65	$7,166.25	
	Thermoplastic Striping (Mainline)	22050.00			22050.00	LF	$2.41	$53,140.50	
	Removal of Existing Striping (EB On Ramp Main St)	865.00			865.00	LF	$0.65	$562.25	
	Thermoplastic Striping (EB On Ramp Main St)	865.00			865.00	LF	$2.41	$2,084.65	
	Removal of Existing Striping (EB Off Ramp Main St)	1400.00			1400.00	LF	$0.65	$910.00	
	Thermoplastic Striping (EB Off Ramp Main St)	1400.00			1400.00	LF	$2.41	$3,374.00	
	Removal of Existing Striping (EB on Ramp Market St)	1640.00			1640.00	LF	$0.65	$1,066.00	
	Thermoplastic Striping (EB on Ramp Market St)	1640.00			1640.00	LF	$2.41	$3,952.40	
	Removal of Existing Striping (EB off Ramp Market St)	1850.00			1850.00	LF	$0.65	$1,202.50	
	Thermoplastic Striping (EB off Ramp Market St)	1850.00			1850.00	LF	$2.41	$4,458.50	
	Reconstruct Sign Structure				3.00	EA	$200,000.00	$600,000.00	
II. Structure Items									
	Orange St Bridge Replacement	56.00	220.00		12320.00	SQFT	$250.00	$3,080,000.00	
	Main St Bridfge Replacement	72.00	210.00		15120.00	SQFT	$250.00	$3,780,000.00	
	Fairmount Blvd Bridge Widening	115.00	14.00		1610.00	SQFT	$375.00	$603,750.00	
	Market St Bridge Widening	278.00	14.00		3892.00	SQFT	$375.00	$1,459,500.00	
	Santa Ana River Bridge Widening	1120.00	14.00		15680.00	SQ FT	$375.00	$5,880,000.00	
	Hall Ave Bridge Replacement	40.00	295.00		11800.00	SQ FT	$250.00	$2,950,000.00	
III. Right of Way									

I.	***Roadway Items***	$6,237,000.00
	Earthwork	$311,000.00
	Pavment Structural Section	$4,621,000.00
	Speciallty Items	$227,000.00
	Traffic Items	$1,078,000.00
II.	***Structural Items***	$17,753,000.00
III.	***Right of Way***	$0.00

Project #10, I-215 NB, from Box Springs Rd. On-Ramp to Martin Luther King Jr. On-Ramp

ITEMS	TOTAL COST	ENGINEERING ASSUMPTIONS
I. Roadway Items Summary		
SECTION 1: EARTHWORK COST	***$1,077,000***	Roadway Cost are all based on a preliminary Google Earth review.
SECTION 2: PAVEMENT STRUCTRUAL SECTION	***$4,546,000***	
SECTION 3: DRAINAGE	***$1,244,400***	Drainage is taken at 15% of Roadway Items due to the lack of detail at this stage. During this review, we do not show that any pumps will be affected. Further analysis should look at all
SECTION 4: Specialty Items	***$1,369,000***	Retaining walls, sound walls, tie back walls and ramp reconfigurations are based on the widening needed. These are all based on a preliminary Google Earth review.
SECTION 6: TRAFFIC ITEMS	***$1,304,000***	
SECTION 8: MINOR ITEMS 5% of Sections 1-6	***$477,020***	
SECTION 9: MOBILIZATION 10% of Sections 1-6	***$954,040***	
SECTION 10: ROADWAY ADDITIONS 5% of Sections 1-6	***$477,020***	
SECTION 13: CONTINGENCIES 40% of Sections 1-10	***$4,579,392***	
II. STRUCTURE ITEMS		
BRIDGES	***$2,546,000***	
III. RIGHT OF WAY		
Right of Way Acquisition	***$1,065,000***	
TOTAL CAPITAL OUTLAY COSTS	***$19,638,872***	
SUPPORT COSTS	***$6,874,000***	Support costs are 35% of capital outlay costs
TOTAL PROJECT COSTS	***$26,513,000***	

Summary of Quantities

Project #10, I-215 NB, from Box Springs Rd. On-Ramp to Martin Luther King Jr. On-Ramp

	Item Description	Distance (ft)	Width (ft)	Depth (ft)	Quantity	Unit	Cost Assumptions	Total Cost	Engineering Assumptions
I. Roadway Items Summary									
	Earthwork								
	Roadway Excavation (New Road)	1891.00	20.00	0-5	7016.11	CY	$15.00	$105,241.67	
	Roadway Excavation (NB off Ramp Central)	790.00	0-85	0-19	30291.63	CY	$15.00	$454,374.44	
	Roadway Excavation (NB on Ramp Central)	647	0-100	0-20	34520.00	CY	$15.00	$517,800.00	
	Pavement Structural Section						$0.00		
	Remove Concrete Pavement (Mainline)	7570.00	10.00		8411.11	SQYD	$36.38	$305,996.22	Existing shoulders at 10'
	Class 2 Aggregate Subbase (Mainline)	7570.00	22.00		4317.70	CY	$72.10	$311,306.44	Lane plus shoulder at 22' with Class 2 Aggregate depth of 0.70'
	Hot Mix Asphalt (Type A) (Mainline)	7570.00	22.00		3018.54	TON	$85.00	$256,575.69	Lane plus shoulder at 22' with a HMA depth of 0.25'
	Continuously Reinforced Concrete Pavement (Mainline)	7570.00	22.00		5551.33	CY	$270.00	$1,498,860.00	Lane plus shoulder at 22' with a CRCP depth of 0.90'
	Remove Concrete Pavement (NB off Ramp Central)	1350.00	8.00		1200.00	SQYD	$36.38	$43,656.00	Existing shoulders at 8'
	Class 2 Aggregate Subbase (NB off Ramp Central)	1350.00	38.00		1330.00	CY	$72.10	$95,893.00	Lane plus shoulder at 38' with Class 2 Aggregate depth of 0.70'
	Hot Mix Asphalt (Type A) (NB off Ramp Central)	1350.00	38.00		929.81	TON	$85.00	$79,034.06	Lane plus shoulder at 38' with a HMA depth of 0.25'
	Continuously Reinforced Concrete Pavement (NB off Ramp Central)	1350.00	38.00		1710.00	CY	$270.00	$461,700.00	Lane plus shoulder at 38' with a CRCP depth of 0.90'
	Remove Concrete Pavement (NB on Ramp Central)	755.00	8.00		671.11	SQYD	$36.38	$24,415.02	Existing shoulders at 8'
	Class 2 Aggregate Subbase (NB on Ramp Central)	755.00	30.00		587.22	CY	$72.10	$42,338.72	Lane plus shoulder at 30' with Class 2 Aggregate depth of 0.70'
	Hot Mix Asphalt (Type A) (NB on Ramp Central)	755.00	30.00		410.53	TON	$85.00	$34,895.16	Lane plus shoulder at 30' with a HMA depth of 0.25'
	Continuously Reinforced Concrete Pavement (NB on Ramp Central)	755.00	30.00		755.00	CY	$270.00	$203,850.00	Lane plus shoulder at 30' with a CRCP depth of 0.90'
	Remove Concrete Pavement (NB off Ramp Martin Luther King)	1335.00	8.00		1186.67	SQYD	$36.38	$43,170.93	Existing shoulders at 8'
	Class 2 Aggregate Subbase (NB off Ramp Martin Luther King)	1335.00	38.00		1315.22	CY	$72.10	$94,827.52	Lane plus shoulder at 38' with Class 2 Aggregate depth of 0.70'
	Hot Mix Asphalt (Type A) (NB off Ramp Martin Luther King)	1335.00	38.00		919.48	TON	$85.00	$78,155.91	Lane plus shoulder at 38' with a HMA depth of 0.25'
	Continuously Reinforced Concrete Pavement (NB off Ramp Martin Luther King)	1335.00	38.00		1691.00	CY	$270.00	$456,570.00	Lane plus shoulder at 38"with a CRCP depth of 0.90'
	Remove Concrete Pavement (NB on Ramp Martin Luther King)	930.00	8.00		826.67	SQYD	$36.38	$30,074.13	Existing shoulders at 8'
	Class 2 Aggregate Subbase (NB on Ramp Martin Luther King)	930.00	42.00		1012.67	CY	$72.10	$73,013.27	Lane plus shoulder at 42' with Class 2 Aggregate depth of 0.70'
	Hot Mix Asphalt (Type A) (NB on Ramp Martin Luther King)	930.00	42.00		707.96	TON	$85.00	$60,176.81	Lane plus shoulder at 42' with a HMA depth of 0.25'
	Continuously Reinforced Concrete Pavement (NB on Ramp Martin Luther King)	930.00	42.00		1302.00	CY	$270.00	$351,540.00	Lane plus shoulder at 42' with a CRCP depth of 0.90'
	Specialty Items						$0.00		
	Remove Sound Wall	1000.00			1000.00	LF	$27.00	$27,000.00	
	Sound Wall	1000.00			1000.00	SQFT	$23.98	$23,980.00	6' High sound wall
	Remove Retaining Wall	7430.00			7430.00	LF	$15.00	$111,450.00	
	Structural Concrete (Retaining Wall)	410.00			501.11	SQFT	$80.00	$40,088.89	Retaining wall height 11'
	Structural Concrete (Retaining Wall)	4100.00			6833.33	SQFT	$90.00	$615,000.00	Retaining wall height 15'
	Structural Concrete (Retaining Wall)	2920.00			5515.56	SQFT	$100.00	$551,555.56	Retaining wall height 17'
	Traffic Items								
	Traffic Electrical								
	Intersection Signalization				4.00	PER CORNER	$50,000.00	$200,000.00	
	Traffic Signing and Stripping						$0.00		
	Removal of Existing Striping (Mainline)	13560.00			13560.00	LF	$0.65	$8,814.00	
	Thermoplastic Striping (Mainline)	27120.00			27120.00	LF	$2.41	$65,359.20	
	Removal of Existing Striping (NB off Ramp Central)	2438.00			2438.00	LF	$0.65	$1,584.70	
	Thermoplastic Striping (NB off Ramp Central)	2438.00			2438.00	LF	$2.41	$5,875.58	
	Removal of Existing Striping (NB on Ramp Central)	1345.00			1345.00	LF	$0.65	$874.25	
	Thermoplastic Striping (NB on Ramp Central)	1345.00			1345.00	LF	$2.41	$3,241.45	
	Removal of Existing Striping (NB off Ramp Martin Luther King)	3425.00			3425.00	LF	$0.65	$2,226.25	
	Thermoplastic Striping (NB off Ramp Martin Luther King)	3425.00			3425.00	LF	$2.41	$8,254.25	
	Removal of Existing Striping (NB on Ramp Martin Luther King)	2461.00			2461.00	LF	$0.65	$1,599.65	
	Thermoplastic Striping (NB on Ramp Martin Luther King)	2461.00			2461.00	LF	$2.41	$5,931.01	
	Reconstruct Sign Structure				5.00	EA	$200,000.00	$1,000,000.00	
II. Structure Items									
	Central Bridge Widening	150.00	14.00		2100.00	SQFT	$375.00	$787,500.00	
	Martin Luther King Widening	175.00	14.00		2450.00	SQFT	$375.00	$918,750.00	
	Canyon Crest Widening	160.00	14.00		2240.00	SQFT	$375.00	$840,000.00	
III. Right of Way									
	Right of Way Acquisition #1	1950.00	10.00		19500.00	SQFT	$50.00	$975,000.00	
	Right of Way Acquisition #2	360.00	5.00		1800.00	SQFT	$50.00	$90,000.00	

I.	***Roadway Items***	$8,296,000.00
	Earthwork	$1,077,000.00
	Pavement Structural Section	$4,546,000.00
	Specialty Items	$1,369,000.00
	Traffic Items	$1,304,000.00
II.	***Structural Items***	$2,546,000.00
III.	***Right of Way***	$1,065,000.00

Project #10C, I-215 NB, Martin Luther King Off Ramp to SR-91

ITEMS	*TOTAL COST*	*ENGINEERING ASSUMPTIONS*
I. Roadway Items Summary		
SECTION 1: EARTHWORK COST	***$1,434,000***	Roadway Cost are all based on a preliminary Google Earth review.
SECTION 2: PAVEMENT STRUCTRUAL SECTION	***$3,172,000***	
SECTION 3: DRAINAGE	***$1,193,850***	Drainage is taken at 15% of Roadway Items due to the lack of detail at this stage. During this review, we do not show that any pumps will be affected. Further analysis should look at all
SECTION 4: Specialty Items	***$1,888,000***	Retaining walls, sound walls, tie back walls and ramp reconfigurations are based on the widening needed. These are all based on a preliminary Google Earth review.
SECTION 6: TRAFFIC ITEMS	***$1,465,000***	
SECTION 8: MINOR ITEMS 5% of Sections 1-6	***$457,643***	
SECTION 9: MOBILIZATION 10% of Sections 1-6	***$915,285***	
SECTION 10: ROADWAY ADDITIONS 5% of Sections 1-6	***$457,643***	
SECTION 13: CONTINGENCIES 40% of Sections 1-10	***$4,393,368***	
II. STRUCTURE ITEMS		
BRIDGES	***$21,655,000***	
III. RIGHT OF WAY		
Right of Way Acquisition	***$3,768,750***	
TOTAL CAPITAL OUTLAY COSTS	***$40,800,538***	
SUPPORT COSTS	***$14,280,000***	Support costs are 35% of capital outlay costs
TOTAL PROJECT COSTS	***$55,081,000***	

Summary of Quantities

Project #10C, I-215 NB, Martin Luther King Off Ramp to SR-91

Item Description	Distance (ft)	Width (ft)	Depth (ft)	Quantity	Unit	Cost Assumptions	Total Cost	Engineering Assumptions
I. Roadway Items Summary								
Earthwork								
Roadway Excavation (NB off Ramp University)	276.00	168	0-18	28446.67	CY	$15.00	$426,700.00	
Roadway Excavation (NB on Ramp University)	0-410	6-170	0-5	4946.67	CY	$15.00	$74,200.00	
Roadway Excavation (NB Off Ramp 3rd St)	600	6-34	0-6	5928.89	CY	$15.00	$88,933.33	
Roadway Excavation (NB On Ramp 3rd St)	436.00	6-38	0-15	4478.89	CY	$15.00	$67,183.33	
Pavement Structural Section						$0.00		
Remove Concrete Pavement (Mainline)	5867.00	10.00		6518.89	SQYD	$36.38	$237,157.18	Existing shoulders at 10'
Class 2 Aggregate Subbase (Mainline)	5867.00	22.00		3346.36	CY	$72.10	$241,272.77	Lane plus shoulder at 22' with Class 2 Aggregate depth of 0.70'
Hot Mix Asphalt (Type A) (Mainline)	5867.00	22.00		2339.47	TON	$85.00	$198,854.63	Lane plus shoulder at 22' with a HMA depth of 0.25'
Continuously Reinforced Concrete Pavement (Mainline)	5867.00	22.00		4302.47	CY	$270.00	$1,161,666.00	Lane plus shoulder at 22' with a CRCP depth of 0.90'
Remove Concrete Pavement (NB off Ramp University)	610.00	8.00		542.22	SQYD	$36.38	$19,726.04	Existing shoulders at 8'
Class 2 Aggregate Subbase (NB off Ramp University)	610.00	42.00		664.22	CY	$72.10	$47,890.42	Lane plus shoulder at 42' with Class 2 Aggregate depth of 0.70'
Hot Mix Asphalt (Type A) (NB off Ramp University)	610.00	42.00		464.36	TON	$85.00	$39,470.81	Lane plus shoulder at 42' with a HMA depth of 0.25'
Continuously Reinforced Concrete Pavement (NB off Ramp University)	610.00	42.00		854.00	CY	$270.00	$230,580.00	Lane plus shoulder at 42' with a CRCP depth of 0.90'
Remove Concrete Pavement (NB on Ramp University)	936.00	8.00		832.00	SQYD	$36.38	$30,268.16	Existing shoulders at 8'
Class 2 Aggregate Subbase (NB on Ramp University)	936.00	26.00		630.93	CY	$72.10	$45,490.29	Lane plus shoulder at 26' with Class 2 Aggregate depth of 0.70'
Hot Mix Asphalt (Type A) (NB on Ramp University)	936.00	26.00		441.09	TON	$85.00	$37,492.65	Lane plus shoulder at 26' with a HMA depth of 0.25'
Continuously Reinforced Concrete Pavement (NB on Ramp Central)	936.00	26.00		811.20	CY	$270.00	$219,024.00	Lane plus shoulder at 26' with a CRCP depth of 0.90'
Remove Concrete Pavement (NB Off Ramp 3rd St)	850.00	8.00		755.56	SQYD	$36.38	$27,487.11	Existing shoulders at 8'
Class 2 Aggregate Subbase (NB Off Ramp 3rd St)	850.00	34.00		749.26	CY	$72.10	$54,021.59	Lane plus shoulder at 34' with Class 2 Aggregate depth of 0.70'
Hot Mix Asphalt (Type A) (NB Off Ramp 3rd St)	850.00	34.00		523.81	TON	$85.00	$44,524.06	Lane plus shoulder at 34' with a HMA depth of 0.25'
Continuously Reinforced Concrete Pavement (NB Off Ramp 3rd St)	850.00	34.00		963.33	CY	$270.00	$260,100.00	Lane plus shoulder at 34' with a CRCP depth of 0.90'
Remove Concrete Pavement (NB On Ramp 3rd St)	610.00	8.00		542.22	SQYD	$36.38	$19,726.04	Existing shoulders at 8'
Class 2 Aggregate Subbase (NB On Ramp 3rd St)	610.00	34.00		537.70	CY	$72.10	$38,768.44	Lane plus shoulder at 34' with Class 2 Aggregate depth of 0.70'
Hot Mix Asphalt (Type A) (NB On Ramp 3rd St)	610.00	34.00		375.91	TON	$85.00	$31,952.56	Lane plus shoulder at 34' with a HMA depth of 0.25'
Continuously Reinforced Concrete Pavement (NB On Ramp 3rd St)	610.00	34.00		691.33	CY	$270.00	$186,660.00	Lane plus shoulder at 34' with a CRCP depth of 0.90'
Specialty Items						$0.00		
Remove Sound Wall	2633.00			2633.00	LF	$27.00	$71,091.00	
Sound Wall	2633.00			2633.00	SQFT	$23.98	$63,139.34	6' High sound wall
Remove Retaining Wall	3444.00			3444.00	LF	$27.00	$92,988.00	
Structural Concrete (Retaining Wall)	34336.00			19075.56	SQFT	$60.00	$1,144,533.33	Retaining wall height 5'
Structural Concrete (Retaining Wall)	3444.00			5740.00	SQFT	$90.00	$516,600.00	Retaining wall height 15'
Traffic Items								
Traffic Electrical								
Intersection Signalization				8.00	PER CORNER	$50,000.00	$400,000.00	
Traffic Signing and Stripping						$0.00		
Removal of Existing Striping (Mainline)	11735.00			11735.00	LF	$0.65	$7,627.75	
Thermoplastic Striping (Mainline)	11735.00			11735.00	LF	$2.41	$28,281.35	
Removal of Existing Striping (NB off Ramp University)	2110.00			2110.00	LF	$0.65	$1,371.50	
Thermoplastic Striping (NB off Ramp University)	2110.00			2110.00	LF	$2.41	$5,085.10	
Removal of Existing Striping (NB on Ramp University)	2810.00			2810.00	LF	$0.65	$1,826.50	
Thermoplastic Striping (NB on Ramp University)	2810.00			2810.00	LF	$2.41	$6,772.10	
Removal of Existing Striping (NB Off Ramp 3rd St)	2660.00			2660.00	LF	$0.65	$1,729.00	
Thermoplastic Striping (NB Off Ramp 3rd St)	2660.00			2660.00	LF	$2.41	$6,410.60	
Removal of Existing Striping (NB On Ramp 3rd St)	1830.00			1830.00	LF	$0.65	$1,189.50	
Thermoplastic Striping (NB On Ramp 3rd St)	1830.00			1830.00	LF	$2.41	$4,410.30	
Reconstruct Sign Structure				5.00	EA	$200,000.00	$1,000,000.00	
II. Structure Items								
University Ave Bridge Widening	108.00	14.00		1512.00	SQFT	$375.00	$567,000.00	
Iowa Ave Bridge Replacement	400.00	120.00		48000.00	SQFT	$250.00	$12,000,000.00	
3rd St Bridge Replacement	256.00	142.00		36352.00	SQFT	$250.00	$9,088,000.00	
III. Right of Way								
Right of Way Acquisition #1	1075.00	5.00		5375.00	SQFT	$50.00	$268,750.00	
Right of Way Acquisition #2	500.00			10.00	PER HOUSE	$350,000.00	$3,500,000.00	$350,000 per property

I.	***Roadway Items***	$7,959,000.00
	Earthwork	$1,434,000.00
	Pavement Structural Section	$3,172,000.00
	Specialty Items	$1,888,000.00
	Traffic Items	$1,465,000.00
II.	***Structural Items***	$21,655,000.00
III.	***Right of Way***	$3,768,750.00

Project #11, I-215 NB, from Center St. off-Ramp to County Line/Iowa Ave.

ITEMS	TOTAL COST	ENGINEERING ASSUMPTIONS
I. Roadway Items Summary		
SECTION 1: EARTHWORK COST	***$1,388,000***	Roadway Cost are all based on a preliminary Google Earth review.
SECTION 2: PAVEMENT STRUCTRUAL SECTION	***$2,919,000***	
SECTION 3: DRAINAGE	***$836,700***	Drainage is taken at 15% of Roadway Items due to the lack of detail at this stage. During this review, we do not show that any pumps will be affected. Further analysis should look at all
SECTION 4: Specialty Items	***$422,000***	Retaining walls, sound walls, tie back walls and ramp reconfigurations are based on the widening needed. These are all based on a preliminary Google Earth review.
SECTION 6: TRAFFIC ITEMS	***$849,000***	
SECTION 8: MINOR ITEMS 5% of Sections 1-6	***$320,735***	
SECTION 9: MOBILIZATION 10% of Sections 1-6	***$641,470***	
SECTION 10: ROADWAY ADDITIONS 5% of Sections 1-6	***$320,735***	
SECTION 13: CONTINGENCIES 40% of Sections 1-10	***$3,079,056***	
II. STRUCTURE ITEMS		
BRIDGES	***$25,566,000***	
III. RIGHT OF WAY		
Right of Way Acquisition	***$400,000***	
TOTAL CAPITAL OUTLAY COSTS	***$36,742,696***	
SUPPORT COSTS	***$12,860,000***	Support costs are 35% of capital outlay costs
TOTAL PROJECT COSTS	***$49,603,000***	

Summary of Quantities

Project #11, I-215 NB, from Center St. off-Ramp to County Line/Iowa Ave.

Item Description	Distance (ft)	Width (ft)	Depth (ft)	Quantity	Unit	Cost Assumptions	Total Cost	Engineering Assumptions
I. Roadway Items Summary								
Earthwork								
Roadway Excavation (NB off Ramp Highgrove)	0-236	0+56	0-6	1596.67	CY	$15.00	$23,950.00	
Roadway Excavation (NB off Ramp La Cadena)	646.00	0-260	0-12	37572.44	CY	$15.00	$563,586.67	
Roadway Excavation (NB loop off Ramp La Cadena)	260	285.00	0-18	48333.33	CY	$15.00	$725,000.00	
Roadway Excavation (NB on Ramp La Cadena)	0-430'	0-240	0-5	5037.41	CY	$15.00	$75,561.11	
Pavement Structural Section						$0.00		
Remove Concrete Pavement (Mainline)	5915.00	10.00		6572.22	SQYD	$36.38	$239,097.44	Existing shoulders at 10'
Class 2 Aggregate Subbase (Mainline)	5915.00	22.00		3373.74	CY	$72.10	$243,246.71	Lane plus shoulder at 22' with Class 2 Aggregate depth of 0.70'
Hot Mix Asphalt (Type A) (Mainline)	5915.00	22.00		2358.61	TON	$85.00	$200,481.53	Lane plus shoulder at 22' with a HMA depth of 0.25'
Continuously Reinforced Concrete Pavement (Mainline)	5915.00	22.00		4337.67	CY	$270.00	$1,171,170.00	Lane plus shoulder at 22' with a CRCP depth of 0.90'
Remove Concrete Pavement (NB off Ramp Highgrove)	477.00	8.00		424.00	SQYD	$36.38	$15,425.12	Existing shoulders at 8'
Class 2 Aggregate Subbase (NB off Ramp Highgrove)	477.00	48.00		593.60	CY	$72.10	$42,798.56	Lane plus shoulder at 48' with Class 2 Aggregate depth of 0.70'
Hot Mix Asphalt (Type A) (NB off Ramp Highgrove)	477.00	48.00		414.99	TON	$85.00	$35,274.15	Lane plus shoulder at 48' with a HMA depth of 0.25'
Continuously Reinforced Concrete Pavement (NB off Ramp Highgrove)	477.00	48.00		763.20	CY	$270.00	$206,064.00	Lane plus shoulder at 48' with a CRCP depth of 0.90'
Remove Concrete Pavement (NB off Ramp La Cadena)	1170.00	8.00		1040.00	SQYD	$36.38	$37,835.20	Existing shoulders at 8'
Class 2 Aggregate Subbase (NB off Ramp La Cadena)	1170.00	30.00		910.00	CY	$72.10	$65,611.00	Lane plus shoulder at 30' with Class 2 Aggregate depth of 0.70'
Hot Mix Asphalt (Type A) (NB off Ramp La Cadena)	1170.00	30.00		636.19	TON	$85.00	$54,075.94	Lane plus shoulder at 30' with a HMA depth of 0.25'
Continuously Reinforced Concrete Pavement (NB off Ramp La Cadena)	1170.00	30.00		1170.00	CY	$270.00	$315,900.00	Lane plus shoulder at 30' with a CRCP depth of 0.90'
Remove Concrete Pavement (NB on Ramp La Cadena)	885.00	8.00		786.67	SQYD	$36.38	$28,618.93	Existing shoulders at 8'
Class 2 Aggregate Subbase (NB on Ramp La Cadena)	885.00	24.00		550.67	CY	$72.10	$39,703.07	Lane plus shoulder at 24' with Class 2 Aggregate depth of 0.70'
Hot Mix Asphalt (Type A) (NB on Ramp La Cadena)	885.00	24.00		384.98	TON	$85.00	$32,722.88	Lane plus shoulder at 24' with a HMA depth of 0.25'
Continuously Reinforced Concrete Pavement (NB on Ramp La Cadena)	885.00	24.00		708.00	CY	$270.00	$191,160.00	Lane plus shoulder at 24' with a CRCP depth of 0.90'
Specialty Items								
Remove Retaining Wall	1020.00			1020.00	LF	$15.00	$15,300.00	
Structural Concrete (Retaining Wall)	1020.00			1133.33	SQFT	$80.00	$90,666.67	Retaining wall height 10'
Concrete Barrier (Type 60)	3545.00			3545.00	LF	$82.40	$292,108.00	
Traffic Items								
Traffic Electrical								
Intersection Signalization				8.00	PER CORNER	$50,000.00	$400,000.00	
Traffic Signing and Stripping						$0.00		
Removal of Existing Striping (Mainline)	5915.00			5915.00	LF	$0.65	$3,844.75	
Thermoplastic Striping (Mainline)	11830.00			11830.00	LF	$2.41	$28,510.30	
Removal of Existing Striping (NB off Ramp Highgrove)	1170.00			1170.00	LF	$0.65	$760.50	
Thermoplastic Striping (NB off Ramp Highgrove)	1170.00			1170.00	LF	$2.41	$2,819.70	
Removal of Existing Striping (NB off Ramp La Cadena)	2340.00			2340.00	LF	$0.65	$1,521.00	
Thermoplastic Striping (NB off Ramp La Cadena)	2340.00			2340.00	LF	$2.41	$5,639.40	
Removal of Existing Striping (NB on Ramp La Cadena)	1770.00			1770.00	LF	$0.65	$1,150.50	
Thermoplastic Striping (NB on Ramp La Cadena)	1770.00			1770.00	LF	$2.41	$4,265.70	
Reconstruct Sign Structure				2.00	EA	$200,000.00	$400,000.00	
II. Structure Items								
Center St Bridge Replacement	303.00	48.00		14544.00	SQFT	$250.00	$3,636,000.00	
Iowa St Bridge Replacement	232.00	60.00		13920.00	SQFT	$250.00	$3,480,000.00	
Railroad Bridge Replacement	410.00	120.00		49200.00	SQFT	$375.00	$18,450,000.00	Steel Truss Bridge- 4 track railroad
III. Right of Way								
Right of Way Acquisition #1	1600.00	5.00		8000.00	SQFT	$50.00	$400,000.00	

I.	***Roadway Items***	$5,578,000.00
	Earthwork	$1,388,000.00
	Pavement Structural Section	$2,919,000.00
	Specialty Items	$422,000.00
	Traffic Items	$849,000.00
II.	***Structural Items***	$25,566,000.00
III.	***Right of Way***	$400,000.00

Project #11, I-215 NB at Highgrove/Center Subtotal		
ITEMS	**TOTAL COST**	**ENGINEERING ASSUMPTIONS**
I. Roadway Items Summary		
SECTION 1: EARTHWORK COST	***$24,000***	Roadway Cost are all based on a preliminary Google Earth review.
SECTION 2: PAVEMENT STRUCTRUAL SECTION	***$300,000***	
SECTION 3: DRAINAGE	***$142,800***	Drainage is taken at 15% of Roadway Items due to the lack of detail at this stage. During this review, we do not show that any pumps will be affected. Further analysis should look at all
SECTION 4: Specialty Items	***$24,000***	Retaining walls, sound walls, tie back walls and ramp reconfigurations are based on the widening needed. These are all based on a preliminary Google Earth review.
SECTION 6: TRAFFIC ITEMS	***$604,000***	
SECTION 8: MINOR ITEMS 5% of Sections 1-6	***$54,740***	
SECTION 9: MOBILIZATION 10% of Sections 1-6	***$109,480***	
SECTION 10: ROADWAY ADDITIONS 5% of Sections 1-6	***$54,740***	
SECTION 13: CONTINGENCIES 40% of Sections 1-10	***$525,504***	
II. STRUCTURE ITEMS		
BRIDGES	***$3,636,000***	
III. RIGHT OF WAY		
Right of Way Acquisition	***$0***	
TOTAL CAPITAL OUTLAY COSTS	***$5,475,264***	
SUPPORT COSTS	***$1,916,000***	Support costs are 35% of capital outlay costs
TOTAL PROJECT COSTS	***$7,391,000***	

Amount included in 2016 TUMF Nexus Study	***$17,897,000.00***
Amount to be reduced from Total Project Costs	***$7,391,000.00***

Summary of Quantities

Project #11, I-215 NB at Highgrove/Center St Subtotal.

Item Description	Distance (ft)	Width (ft)	Depth (ft)	Quantity	Unit	Cost Assumptions	Total Cost	Engineering Assumptions
I. Roadway Items Summary								
Earthwork								
Roadway Excavation (NB off Ramp Highgrove)	0-236	0+56	0-6	1596.67	CY	$15.00	$23,950.00	
Roadway Excavation (NB off Ramp La Cadena)							$0.00	
Roadway Excavation (NB loop off Ramp La Cadena)							$0.00	
Roadway Excavation (NB on Ramp La Cadena)							$0.00	
Pavement Structural Section						$0.00		
Remove Concrete Pavement (Mainline)							$0.00	Existing shoulders at 10'
Class 2 Aggregate Subbase (Mainline)							$0.00	Lane plus shoulder at 22' with Class 2 Aggregate depth of 0.70'
Hot Mix Asphalt (Type A) (Mainline)							$0.00	Lane plus shoulder at 22' with a HMA depth of 0.25'
Continuously Reinforced Concrete Pavement (Mainline)							$0.00	Lane plus shoulder at 22' with a CRCP depth of 0.90'
Remove Concrete Pavement (NB off Ramp Highgrove)	477.00	8.00		424.00	SQYD	$36.38	$15,425.12	Existing shoulders at 8'
Class 2 Aggregate Subbase (NB off Ramp Highgrove)	477.00	48.00		593.60	CY	$72.10	$42,798.56	Lane plus shoulder at 48' with Class 2 Aggregate depth of 0.70'
Hot Mix Asphalt (Type A) (NB off Ramp Highgrove)	477.00	48.00		414.99	TON	$85.00	$35,274.15	Lane plus shoulder at 48' with a HMA depth of 0.25'
Continuously Reinforced Concrete Pavement (NB off Ramp Highgrove)	477.00	48.00		763.20	CY	$270.00	$206,064.00	Lane plus shoulder at 48' with a CRCP depth of 0.90'
Remove Concrete Pavement (NB off Ramp La Cadena)							$0.00	Existing shoulders at 8'
Class 2 Aggregate Subbase (NB off Ramp La Cadena)							$0.00	Lane plus shoulder at 30' with Class 2 Aggregate depth of 0.70'
Hot Mix Asphalt (Type A) (NB off Ramp La Cadena)							$0.00	Lane plus shoulder at 30' with a HMA depth of 0.25'
Continuously Reinforced Concrete Pavement (NB off Ramp La Cadena)							$0.00	Lane plus shoulder at 30' with a CRCP depth of 0.90'
Remove Concrete Pavement (NB on Ramp La Cadena)							$0.00	Existing shoulders at 8'
Class 2 Aggregate Subbase (NB on Ramp La Cadena)							$0.00	Lane plus shoulder at 24' with Class 2 Aggregate depth of 0.70'
Hot Mix Asphalt (Type A) (NB on Ramp La Cadena)							$0.00	Lane plus shoulder at 24' with a HMA depth of 0.25'
Continuously Reinforced Concrete Pavement (NB on Ramp La Cadena)							$0.00	Lane plus shoulder at 24' with a CRCP depth of 0.90'
Specialty Items								
Remove Retaining Wall							$0.00	
Structural Concrete (Retaining Wall)							$0.00	Retaining wall height 10'
Concrete Barrier (Type 60)							$0.00	
Traffic Items								
Traffic Electrical								
Intersection Signalization				*4.00*	PER CORNER	$50,000.00	$200,000.00	
Traffic Signing and Stripping						$0.00		
Removal of Existing Striping (Mainline)							$0.00	
Thermoplastic Striping (Mainline)							$0.00	
Removal of Existing Striping (NB off Ramp Highgrove)	1170.00			1170.00	LF	$0.65	$760.50	
Thermoplastic Striping (NB off Ramp Highgrove)	1170.00			1170.00	LF	$2.41	$2,819.70	
Removal of Existing Striping (NB off Ramp La Cadena)							$0.00	
Thermoplastic Striping (NB off Ramp La Cadena)							$0.00	
Removal of Existing Striping (NB on Ramp La Cadena)							$0.00	
Thermoplastic Striping (NB on Ramp La Cadena)							$0.00	
Reconstruct Sign Structure				2.00	EA	$200,000.00	$400,000.00	
II. Structure Items								
Center St Bridge Replacement	303.00	48.00		14544.00	SQFT	$250.00	$3,636,000.00	
Iowa St Bridge Replacement							$0.00	
Railroad Bridge Replacement							$0.00	Steel Truss Bridge- 4 track railroad
III. Right of Way								
Right of Way Acquisition #1							$0.00	

I.	**Roadway Items**	$952,000.00
	Earthwork	$24,000.00
	Pavement Structural Section	$300,000.00
	Specialty Items	$24,000.00
	Traffic Items	$604,000.00
II.	**Structural Items**	$3,636,000.00
III.	**Right of Way**	$0.00

Project #12, I-215 SB, from Martin Luther King Blvd On-Ramp to Sycamore Canyon Rd Off-Ramp

ITEMS	*TOTAL COST*	*ENGINEERING ASSUMPTIONS*
I. Roadway Items Summary		
SECTION 1: EARTHWORK COST	***$119,000***	Roadway Cost are all based on a preliminary Google Earth review.
SECTION 2: PAVEMENT STRUCTRUAL SECTION	***$2,740,000***	
SECTION 3: DRAINAGE	***$674,400***	Drainage is taken at 15% of Roadway Items due to the lack of detail at this stage. During this review, we do not show that any pumps will be affected. Further analysis should look at all
SECTION 4: Specialty Items	***$193,000***	Retaining walls, sound walls, tie back walls and ramp reconfigurations are based on the widening needed. These are all based on a preliminary Google Earth review.
SECTION 6: TRAFFIC ITEMS	***$1,444,000***	
SECTION 8: MINOR ITEMS 5% of Sections 1-6	***$258,520***	
SECTION 9: MOBILIZATION 10% of Sections 1-6	***$517,040***	
SECTION 10: ROADWAY ADDITIONS 5% of Sections 1-6	***$258,520***	
SECTION 13: CONTINGENCIES 40% of Sections 1-10	***$2,481,792***	
II. STRUCTURE ITEMS		
BRIDGES	***$814,000***	
III. RIGHT OF WAY		
Right of Way Acquisition	***$427,500***	
TOTAL CAPITAL OUTLAY COSTS	***$9,927,772***	
SUPPORT COSTS	***$3,475,000***	Support costs are 35% of capital outlay costs
TOTAL PROJECT COSTS	***$13,403,000***	

Summary of Quantities

Project #12, I-215 SB, from Martin Luther King Blvd Jr. On-Ramp to Sycamore Canyon Rd Off-Ramp

	Item Description	Distance (ft)	Width (ft)	Depth (ft)	Quantity	Unit	Cost Assumptions	Total Cost	Engineering Assumptions
I. Roadway Items Summary									
	Earthwork								
	Roadway Excavation (SB on Ramp Watkins)	400.00	22.00	0-13	3955.85	CY	$15.00	$59,337.78	
	Roadway Excavation (SB off Ramp Watkins)	450.00	0-32	0-13	3952.96	CY	$15.00	$59,294.44	
	Pavement Structural Section						$0.00		
	Remove Concrete Pavement (Mainline)	6370.00	10.00		7077.78	SQYD	$36.38	$257,489.56	Existing shoulders at 10'
	Class 2 Aggregate Subbase (Mainline)	6370.00	22.00		3633.26	CY	$72.10	$261,957.99	Lane plus shoulder at 22' with Class 2 Aggregate depth of 0.70'
	Hot Mix Asphalt (Type A) (Mainline)	6370.00	22.00		2540.04	TON	$85.00	$215,903.19	Lane plus shoulder at 22' with a HMA depth of 0.25'
	Continuously Reinforced Concrete Pavement (Mainline)	6370.00	22.00		4671.33	CY	$270.00	$1,261,260.00	Lane plus shoulder at 22' with a CRCP depth of 0.90'
	Remove Concrete Pavement (SB on Ramp Watkins)	530.00	8.00		471.11	SQYD	$36.38	$17,139.02	Existing shoulders at 8'
	Class 2 Aggregate Subbase (SB on Ramp Watkins)	530.00	40.00		549.63	CY	$72.10	$39,628.30	Lane plus shoulder at 48' with Class 2 Aggregate depth of 0.70'
	Hot Mix Asphalt (Type A) (SB on Ramp Watkins)	530.00	40.00		384.25	TON	$85.00	$32,661.25	Lane plus shoulder at 48' with a HMA depth of 0.25'
	Continuously Reinforced Concrete Pavement (SB on Ramp Watkins)	530.00	40.00		706.67	CY	$270.00	$190,800.00	Lane plus shoulder at 48' with a CRCP depth of 0.90'
	Remove Concrete Pavement (SB off Ramp Watkins)	710.00	8.00		631.11	SQYD	$36.38	$22,959.82	Existing shoulders at 8'
	Class 2 Aggregate Subbase (SB off Ramp Watkins)	710.00	50.00		920.37	CY	$72.10	$66,358.70	Lane plus shoulder at 30' with Class 2 Aggregate depth of 0.70'
	Hot Mix Asphalt (Type A) (SB off Ramp Watkins)	710.00	50.00		643.44	TON	$85.00	$54,692.19	Lane plus shoulder at 30' with a HMA depth of 0.25'
	Continuously Reinforced Concrete Pavement (SB off Ramp Watkins)	710.00	50.00		1183.33	CY	$270.00	$319,500.00	Lane plus shoulder at 30' with a CRCP depth of 0.90'
	Sec 3. Drainage								
	Specialty Items						$0.00		
	Remove Retaining Wall	2065.00			2065.00	LF	$15.00	$30,975.00	
	Structural Concrete (Retaining Wall)	2065.00			1835.56	SQFT	$75.00	$137,666.67	Retaining wall height 8'
	Sec 5. Environmental								
	Traffic Items								
	Traffic Electrical								
	Intersection Signalization				4.00	PER CORNER	$50,000.00	$200,000.00	
	Traffic Signing and Stripping						$0.00		
	Removal of Existing Striping (Mainline)	6370.00			6370.00	LF	$0.65	$4,140.50	
	Thermoplastic Striping (Mainline)	12740.00			12740.00	LF	$2.41	$30,703.40	
	Removal of Existing Striping (SB on Ramp Watkins)	1319.00			1319.00	LF	$0.65	$857.35	
	Thermoplastic Striping (SB on Ramp Watkins)	1319.00			1319.00	LF	$2.41	$3,178.79	
	Removal of Existing Striping (SB off Ramp Watkins)	1705.00			1705.00	LF	$0.65	$1,108.25	
	Thermoplastic Striping (SB off Ramp Watkins)	1705.00			1705.00	LF	$2.41	$4,109.05	
	Reconstruct Sign Structure				6.00	EA	$200,000.00	$1,200,000.00	
II. Structure Items									
	Watkins Dr Bridge Widening	155.00	14.00		2170.00	SQFT	$375.00	$813,750.00	
III. Right of Way									
	Right of Way Acquisition #1	570.00	15.00		8550.00	SQFT	$50.00	$427,500.00	

I.	***Roadway Items***	$4,496,000.00
	Earthwork	$119,000.00
	Pavement Structural Section	$2,740,000.00
	Specialty Items	$193,000.00
	Traffic Items	$1,444,000.00
II.	***Structural Items***	$814,000.00
III.	***Right of Way***	$427,500.00

Project #13 I-215 SB, from Van Buren On Ramp to Case Rd Off Ramp

ITEMS	*TOTAL COST*	*ENGINEERING ASSUMPTIONS*
I. Roadway Items Summary		
SECTION 1: EARTHWORK COST	***$2,578,000***	Roadway Cost are all based on a preliminary Google Earth review.
SECTION 2: PAVEMENT STRUCTRUAL SECTION	***$20,307,000***	
SECTION 3: DRAINAGE	***$4,037,100***	Drainage is taken at 15% of Roadway Items due to the lack of detail at this stage. During this review, we do not show that any pumps will be affected. Further analysis should look at all
SECTION 4: Specialty Items	***$446,000***	Retaining walls, sound walls, tie back walls and ramp reconfigurations are based on the widening needed. These are all based on a preliminary Google Earth review.
SECTION 6: TRAFFIC ITEMS	***$3,583,000***	
SECTION 8: MINOR ITEMS 5% of Sections 1-6	***$1,547,555***	
SECTION 9: MOBILIZATION 10% of Sections 1-6	***$3,095,110***	
SECTION 10: ROADWAY ADDITIONS 5% of Sections 1-6	***$1,547,555***	
SECTION 13: CONTINGENCIES 40% of Sections 1-10	***$14,856,528***	
II. STRUCTURE ITEMS		
BRIDGES	***$42,690,000***	
III. RIGHT OF WAY		
Right of Way Acquisition	***$360,000***	
TOTAL CAPITAL OUTLAY COSTS	***$95,047,848***	
SUPPORT COSTS	***$33,267,000***	Support costs are 35% of capital outlay costs
TOTAL PROJECT COSTS	***$128,315,000***	

Summary of Quantities

Project #13, I-215 SB, from Van Buren On Ramp to Case Rd Off Ramp

	Item Description	Distance (ft)	Width (ft)	Depth (ft)	Quantity	Unit	Cost Assumptions	Total Cost	Engineering Assumptions
I. Roadway Items Summary									
	Earthwork								
	Roadway Excavation (SB off Ramp Harley Knox)	845.00	26-85	0-15	24160.00	CY	$15.00	$362,400.00	
	Roadway Excavation (SB on Ramp Harley Knox)	480.00	21-76	0-15	14576.11	CY	$15.00	$218,641.67	
	Roadway Excavation (SB off Ramp Ramona)	700.00	18-100	0-11	14719.22	CY	$15.00	$220,788.33	
	Roadway Excavation (SB off Ramp Nuevo)	588.00	26-95	0-15	16787.22	CY	$15.00	$251,808.33	
	Roadway Excavation (SB on Ramp Nuevo)	790.00	25-102	0-15	32457.22	CY	$15.00	$486,858.33	
	Roadway Excavation (SB off Ramp D st)	775.00	0-21	0-18	29114.00	CY	$15.00	$436,710.00	
	Roadway Excavation (SB off Ramp Redlands)	695.00	19-80	0-15	22228.33	CY	$15.00	$333,425.00	
	Roadway Excavation (SB on Ramp Redlands)	778.00	20-80	0-15	17835.56	CY	$15.00	$267,533.33	
	Pavement Structural Section						$0.00		
	Remove Concrete Pavement (Mainline)	52230.00	10.00		58033.33	SQYD	$36.38	$2,111,252.67	Existing shoulders at 10'
	Class 2 Aggregate Subbase (Mainline)	52230.00	22.00		29790.44	CY	$72.10	$2,147,891.04	Lane plus shoulder at 22' with Class 2 Aggregate depth of 0.70'
	Hot Mix Asphalt (Type A) (Mainline)	52230.00	22.00		20826.71	TON	$85.00	$1,770,270.56	Lane plus shoulder at 22' with a HMA depth of 0.25'
	Continuously Reinforced Concrete Pavement (Mainline)	52230.00	22.00		38302.00	CY	$270.00	$10,341,540.00	Lane plus shoulder at 22' with a CRCP depth of 0.90'
	Remove Concrete Pavement (SB off Ramp Harley Knox)	1450.00	8.00		1288.89	SQYD	$36.38	$46,889.78	Existing shoulders at 8'
	Class 2 Aggregate Subbase (SB off Ramp Harley Knox)	1450.00	34.00		1278.15	CY	$72.10	$92,154.48	Lane plus shoulder at 34' with Class 2 Aggregate depth of 0.70'
	Hot Mix Asphalt (Type A) (SB off Ramp Harley Knox)	1450.00	34.00		893.56	TON	$85.00	$75,952.81	Lane plus shoulder at 34' with a HMA depth of 0.25'
	Continuously Reinforced Concrete Pavement (SB off Ramp Harley Knox)	1450.00	34.00		1643.33	CY	$270.00	$443,700.00	Lane plus shoulder at 34' with a CRCP depth of 0.90'
	Remove Concrete Pavement (SB on Ramp Harley Knox)	860.00	8.00		764.44	SQYD	$36.38	$27,810.49	Existing shoulders at 8'
	Class 2 Aggregate Subbase (SB on Ramp Harley Knox)	860.00	32.00		713.48	CY	$72.10	$51,442.01	Lane plus shoulder at 32' with Class 2 Aggregate depth of 0.70'
	Hot Mix Asphalt (Type A) (SB on Ramp Harley Knox)	860.00	32.00		498.80	TON	$85.00	$42,398.00	Lane plus shoulder at 32' with a HMA depth of 0.25'
	Continuously Reinforced Concrete Pavement (SB on Ramp Harley Knox)	860.00	32.00		917.33	CY	$270.00	$247,680.00	Lane plus shoulder at 32' with a CRCP depth of 0.90'
	Remove Concrete Pavement (SB off Ramp Ramona)	720.00	8.00		640.00	SQYD	$36.38	$23,283.20	Existing shoulders at 8'
	Class 2 Aggregate Subbase (SB off Ramp Ramona)	720.00	48.00		896.00	CY	$72.10	$64,601.60	Lane plus shoulder at 48' with Class 2 Aggregate depth of 0.70'
	Hot Mix Asphalt (Type A) (SB off Ramp Ramona)	720.00	48.00		626.40	TON	$85.00	$53,244.00	Lane plus shoulder at 48' with a HMA depth of 0.25'
	Continuously Reinforced Concrete Pavement (SB off Ramp Ramona)	720.00	48.00		1152.00	CY	$270.00	$311,040.00	Lane plus shoulder at 48' with a CRCP depth of 0.90'
	Remove Concrete Pavement (SB off Ramp Nuevo)	1040.00	8.00		924.44	SQYD	$36.38	$33,631.29	Existing shoulders at 8'
	Class 2 Aggregate Subbase (SB off Ramp Nuevo)	1040.00	26.00		701.04	CY	$72.10	$50,544.77	Lane plus shoulder at 26' with Class 2 Aggregate depth of 0.70'
	Hot Mix Asphalt (Type A) (SB off Ramp Nuevo)	1040.00	26.00		490.10	TON	$85.00	$41,658.50	Lane plus shoulder at 26' with a HMA depth of 0.25'
	Continuously Reinforced Concrete Pavement (SB off Ramp Nuevo)	1040.00	26.00		901.33	CY	$270.00	$243,360.00	Lane plus shoulder at 26' with a CRCP depth of 0.90'
	Remove Concrete Pavement (SB on Ramp Nuevo)	1420.00	8.00		1262.22	SQYD	$36.38	$45,919.64	Existing shoulders at 8'
	Class 2 Aggregate Subbase (SB on Ramp Nuevo)	1420.00	24.00		883.56	CY	$72.10	$63,704.36	Lane plus shoulder at 24' with Class 2 Aggregate depth of 0.70'
	Hot Mix Asphalt (Type A) (SB on Ramp Nuevo)	1420.00	24.00		617.70	TON	$85.00	$52,504.50	Lane plus shoulder at 24' with a HMA depth of 0.25'
	Continuously Reinforced Concrete Pavement (SB on Ramp Nuevo)	1420.00	24.00		1136.00	CY	$270.00	$306,720.00	Lane plus shoulder at 24' with a CRCP depth of 0.90'
	Remove Concrete Pavement (SB off Ramp D st)	1280.00	8.00		1137.78	SQYD	$36.38	$41,392.36	Existing shoulders at 8'
	Class 2 Aggregate Subbase (SB off Ramp D st)	1280.00	38.00		1261.04	CY	$72.10	$90,920.77	Lane plus shoulder at 38' with Class 2 Aggregate depth of 0.70'
	Hot Mix Asphalt (Type A) (SB off Ramp D st)	1280.00	38.00		881.60	TON	$85.00	$74,936.00	Lane plus shoulder at 38' with a HMA depth of 0.25'
	Continuously Reinforced Concrete Pavement (SB off Ramp D st)	1280.00	38.00		1621.33	CY	$270.00	$437,760.00	Lane plus shoulder at 38' with a CRCP depth of 0.90'
	Remove Concrete Pavement (SB off Ramp Redlands)	1075.00	8.00		955.56	SQYD	$36.38	$34,763.11	Existing shoulders at 8'
	Class 2 Aggregate Subbase (SB off Ramp Redlands)	1075.00	34.00		34.00	CY	$72.10	$2,451.40	Lane plus shoulder at 34' with Class 2 Aggregate depth of 0.70'
	Hot Mix Asphalt (Type A) (SB off Ramp Redlands)	1075.00	34.00		662.47	TON	$85.00	$56,309.84	Lane plus shoulder at 34' with a HMA depth of 0.25'
	Continuously Reinforced Concrete Pavement (SB off Ramp Redlands)	1075.00	34.00		1218.33	CY	$270.00	$328,950.00	Lane plus shoulder at 34' with a CRCP depth of 0.90'
	Remove Concrete Pavement (SB on Ramp Redlands)	1040.00	8.00		924.44	SQYD	$36.38	$33,631.29	Existing shoulders at 8'
	Class 2 Aggregate Subbase (SB on Ramp Redlands)	1040.00	40.00		1078.52	CY	$72.10	$77,761.19	Lane plus shoulder at 40' with Class 2 Aggregate depth of 0.70'
	Hot Mix Asphalt (Type A) (SB on Ramp Redlands)	1040.00	40.00		754.00	TON	$85.00	$64,090.00	Lane plus shoulder at 40' with a HMA depth of 0.25'
	Continuously Reinforced Concrete Pavement (SB on Ramp Redlands)	1040.00	40.00		1386.67	CY	$270.00	$374,400.00	Lane plus shoulder at 40' with a CRCP depth of 0.90'
	Sec 3. Drainage								
	Specialty Items						$0.00		
	Remove Sound Wall	1020.00			1020.00	LF	$27.00	$27,540.00	
	Sound Wall	1020.00			1020.00	SQFT	$23.98	$24,459.60	
	Remove Retaining Wall	1020.00			1020.00	LF	$15.00	$15,300.00	
	Structural Concrete (Retaining Wall)	1020.00			1020.00	SQFT	$75.00	$76,500.00	Retaining wall height 9'
	Concrete Barrier (Type 60)	3665.00			3665.00	LF	$82.40	$301,996.00	
	Traffic Items								
	Traffic Electrical								
	Intersection Signalization				16.00	PER CORNER	$50,000.00	$800,000.00	
	Traffic Signing and Stripping						$0.00		
	Removal of Existing Striping (Mainline)	60115.00			60115.00	LF	$0.65	$39,074.75	
	Thermoplastic Striping (Mainline)	120230.00			120230.00	LF	$2.41	$289,754.30	
	Removal of Existing Striping (SB off Ramp Harley Knox)	2900.00			2900.00	LF	$0.65	$1,885.00	
	Thermoplastic Striping (SB off Ramp Harley Knox)	2900.00			2900.00	LF	$2.41	$6,989.00	
	Removal of Existing Striping (SB on Ramp Harley Knox)	1720.00			1720.00	LF	$0.65	$1,118.00	
	Thermoplastic Striping (SB on Ramp Harley Knox)	1720.00			1720.00	LF	$2.41	$4,145.20	
	Removal of Existing Striping (SB off Ramp Ramona)	2320.00			2320.00	LF	$0.65	$1,508.00	
	Thermoplastic Striping (SB off Ramp Ramona)	2320.00			2320.00	LF	$2.41	$5,591.20	
	Removal of Existing Striping (SB off Ramp Nuevo)	2080.00			2080.00	LF	$0.65	$1,352.00	
	Thermoplastic Striping (SB off Ramp Nuevo)	2080.00			2080.00	LF	$2.41	$5,012.80	
	Removal of Existing Striping (SB on Ramp Nuevo)	2840.00			2840.00	LF	$0.65	$1,846.00	
	Thermoplastic Striping (SB on Ramp Nuevo)	2840.00			2840.00	LF	$2.41	$6,844.40	
	Removal of Existing Striping (SB off Ramp Redlands)	2150.00			2150.00	LF	$0.65	$1,397.50	
	Thermoplastic Striping (SB off Ramp Redlands)	2560.00			2560.00	LF	$2.41	$6,169.60	
	Removal of Existing Striping (SB on Ramp Redlands)	3380.00			3380.00	LF	$0.65	$2,197.00	
	Thermoplastic Striping (SB on Ramp Redlands)	3380.00			3380.00	LF	$2.41	$8,145.80	
	Reconstruct Sign Structure				12.00	EA	$200,000.00	$2,400,000.00	
II. Structure Items									
	Ramona Bridge Replacement	220.00	125.00		27500.00	0.00	$250.00	$6,875,000.00	
	Harley Knox Bridge Replacement	220.00	82.00		18040.00	SQFT	$250.00	$4,510,000.00	
	Placentia Bridge Replacement	215.00	72.00		15480.00	SQFT	$250.00	$3,870,000.00	
	Nuevo Rd Bridge Replacement	260.00	106.00		27560.00	SQFT	$250.00	$6,890,000.00	
	D St Bridge Tieback	260.00	16.00		4160.00	SQFT	$250.00	$1,040,000.00	
	Perris Blvd Bridge Replacement	560.00	90.00		50400.00	SQ FT	$250.00	$12,600,000.00	
	Redlands Bridge Tieback	125.00	16.00		2000.00	SQ FT	$250.00	$500,000.00	
	Bridge Structure 1	490.00	14.00		6860.00	SQFT	$375.00	$2,572,500.00	
	Bridge Structure 2	230.00	14.00		3220.00	SQFT	$375.00	$1,207,500.00	
	Bridge Structure 3	500.00	14.00		7000.00	SQFT	$375.00	$2,625,000.00	
III. Right of Way									
	Right of Way Acquisition #1	480.00	15.00		7200.00	SQFT	$50.00	$360,000.00	

I.	***Roadway Items***	$26,914,000.00
	Earthwork	$2,578,000.00
	Pavement Structural Section	$20,307,000.00
	Specialty Items	$446,000.00
	Traffic Items	$3,583,000.00
II.	***Structural Items***	$42,690,000.00
III.	***Right of Way***	$360,000.00

Project #13 I-215 SB at Perris Overcrossing Subtotal

ITEMS	*TOTAL COST*	*ENGINEERING ASSUMPTIONS*
I. Roadway Items Summary		
SECTION 1: EARTHWORK COST	***$0***	Roadway Cost are all based on a preliminary Google Earth review.
SECTION 2: PAVEMENT STRUCTRUAL SECTION	***$0***	
SECTION 3: DRAINAGE	***$0***	Drainage is taken at 15% of Roadway Items due to the lack of detail at this stage. During this review, we do not show that any pumps will be affected. Further analysis should look at all
SECTION 4: Specialty Items	***$0***	Retaining walls, sound walls, tie back walls and ramp reconfigurations are based on the widening needed. These are all based on a preliminary Google Earth review.
SECTION 6: TRAFFIC ITEMS	***$0***	
SECTION 8: MINOR ITEMS 5% of Sections 1-6	***$0***	
SECTION 9: MOBILIZATION 10% of Sections 1-6	***$0***	
SECTION 10: ROADWAY ADDITIONS 5% of Sections 1-6	***$0***	
SECTION 13: CONTINGENCIES 40% of Sections 1-10	***$0***	
II. STRUCTURE ITEMS		
BRIDGES	***$500,000***	
III. RIGHT OF WAY		
Right of Way Acquisition	***$0***	
TOTAL CAPITAL OUTLAY COSTS	***$500,000***	
SUPPORT COSTS	***$175,000***	Support costs are 35% of capital outlay costs
TOTAL PROJECT COSTS	***$675,000***	

Amount included in 2016 TUMF Nexus Study	***$1,356,000.00***
Amount to be reduced from Total Project Costs	***$675,000.00***

Summary of Quantities

Project #13, I-215 SB at Perris Overcrossing Subtotal

	Item Description	Distance (ft)	Width (ft)	Depth (ft)	Quantity	Unit	Cost Assumptions	Total Cost	Engineering Assumptions
I. Roadway Items Summary									
	Earthwork								
	Roadway Excavation (SB off Ramp Harley Knox)							$0.00	
	Roadway Excavation (SB on Ramp Harley Knox)							$0.00	
	Roadway Excavation (SB off Ramp Ramona)							$0.00	
	Roadway Excavation (SB off Ramp Nuevo)							$0.00	
	Roadway Excavation (SB on Ramp Nuevo)							$0.00	
	Roadway Excavation (SB off Ramp D st)							$0.00	
	Roadway Excavation (SB off Ramp Redlands)							$0.00	
	Roadway Excavation (SB on Ramp Redlands)							$0.00	
	Pavement Structural Section						$0.00		
	Remove Concrete Pavement (Mainline)							$0.00	Existing shoulders at 10'
	Class 2 Aggregate Subbase (Mainline)							$0.00	Lane plus shoulder at 22' with Class 2 Aggregate depth of 0.70'
	Hot Mix Asphalt (Type A) (Mainline)							$0.00	Lane plus shoulder at 22' with a HMA depth of 0.25'
	Continuously Reinforced Concrete Pavement (Mainline)							$0.00	Lane plus shoulder at 22' with a CRCP depth of 0.90'
	Remove Concrete Pavement (SB off Ramp Harley Knox)							$0.00	Existing shoulders at 8'
	Class 2 Aggregate Subbase (SB off Ramp Harley Knox)							$0.00	Lane plus shoulder at 34' with Class 2 Aggregate depth of 0.70'
	Hot Mix Asphalt (Type A) (SB off Ramp Harley Knox)							$0.00	Lane plus shoulder at 34' with a HMA depth of 0.25'
	Continuously Reinforced Concrete Pavement (SB off Ramp Harley Knox)							$0.00	Lane plus shoulder at 34' with a CRCP depth of 0.90'
	Remove Concrete Pavement (SB on Ramp Harley Knox)							$0.00	Existing shoulders at 8'
	Class 2 Aggregate Subbase (SB on Ramp Harley Knox)							$0.00	Lane plus shoulder at 32' with Class 2 Aggregate depth of 0.70'
	Hot Mix Asphalt (Type A) (SB on Ramp Harley Knox)							$0.00	Lane plus shoulder at 32' with a HMA depth of 0.25'
	Continuously Reinforced Concrete Pavement (SB on Ramp Harley Knox)							$0.00	Lane plus shoulder at 32' with a CRCP depth of 0.90'
	Remove Concrete Pavement (SB off Ramp Ramona)							$0.00	Existing shoulders at 8'
	Class 2 Aggregate Subbase (SB off Ramp Ramona)							$0.00	Lane plus shoulder at 48' with Class 2 Aggregate depth of 0.70'
	Hot Mix Asphalt (Type A) (SB off Ramp Ramona)							$0.00	Lane plus shoulder at 48' with a HMA depth of 0.25'
	Continuously Reinforced Concrete Pavement (SB off Ramp Ramona)							$0.00	Lane plus shoulder at 48' with a CRCP depth of 0.90'
	Remove Concrete Pavement (SB off Ramp Nuevo)							$0.00	Existing shoulders at 8'
	Class 2 Aggregate Subbase (SB off Ramp Nuevo)							$0.00	Lane plus shoulder at 26' with Class 2 Aggregate depth of 0.70'
	Hot Mix Asphalt (Type A) (SB off Ramp Nuevo)							$0.00	Lane plus shoulder at 26' with a HMA depth of 0.25'
	Continuously Reinforced Concrete Pavement (SB off Ramp Nuevo)							$0.00	Lane plus shoulder at 26' with a CRCP depth of 0.90'
	Remove Concrete Pavement (SB on Ramp Nuevo)							$0.00	Existing shoulders at 8'
	Class 2 Aggregate Subbase (SB on Ramp Nuevo)							$0.00	Lane plus shoulder at 24' with Class 2 Aggregate depth of 0.70'
	Hot Mix Asphalt (Type A) (SB on Ramp Nuevo)							$0.00	Lane plus shoulder at 24' with a HMA depth of 0.25'
	Continuously Reinforced Concrete Pavement (SB on Ramp Nuevo)							$0.00	Lane plus shoulder at 24' with a CRCP depth of 0.90'
	Remove Concrete Pavement (SB off Ramp D st)							$0.00	Existing shoulders at 8'
	Class 2 Aggregate Subbase (SB off Ramp D st)							$0.00	Lane plus shoulder at 38' with Class 2 Aggregate depth of 0.70'
	Hot Mix Asphalt (Type A) (SB off Ramp D st)							$0.00	Lane plus shoulder at 38' with a HMA depth of 0.25'
	Continuously Reinforced Concrete Pavement (SB off Ramp D st)							$0.00	Lane plus shoulder at 38' with a CRCP depth of 0.90'
	Remove Concrete Pavement (SB off Ramp Redlands)							$0.00	Existing shoulders at 8'
	Class 2 Aggregate Subbase (SB off Ramp Redlands)							$0.00	Lane plus shoulder at 34' with Class 2 Aggregate depth of 0.70'
	Hot Mix Asphalt (Type A) (SB off Ramp Redlands)							$0.00	Lane plus shoulder at 34' with a HMA depth of 0.25'
	Continuously Reinforced Concrete Pavement (SB off Ramp Redlands)							$0.00	Lane plus shoulder at 34' with a CRCP depth of 0.90'
	Remove Concrete Pavement (SB on Ramp Redlands)							$0.00	Existing shoulders at 8'
	Class 2 Aggregate Subbase (SB on Ramp Redlands)							$0.00	Lane plus shoulder at 40' with Class 2 Aggregate depth of 0.70'
	Hot Mix Asphalt (Type A) (SB on Ramp Redlands)							$0.00	Lane plus shoulder at 40' with a HMA depth of 0.25'
	Continuously Reinforced Concrete Pavement (SB on Ramp Redlands)							$0.00	Lane plus shoulder at 40' with a CRCP depth of 0.90'
	Sec 3. Drainage								
	Specialty Items						$0.00		
	Remove Sound Wall							$0.00	
	Sound Wall							$0.00	
	Remove Retaining Wall							$0.00	
	Structural Concrete (Retaining Wall)							$0.00	Retaining wall height 9'
	Concrete Barrier (Type 60)							$0.00	
	Traffic Items								
	Traffic Electrical								
	Intersection Signalization							$0.00	
	Traffic Signing and Stripping						$0.00		
	Removal of Existing Striping (Mainline)							$0.00	
	Thermoplastic Striping (Mainline)							$0.00	
	Removal of Existing Striping (SB off Ramp Harley Knox)							$0.00	
	Thermoplastic Striping (SB off Ramp Harley Knox)							$0.00	
	Removal of Existing Striping (SB on Ramp Harley Knox)							$0.00	
	Thermoplastic Striping (SB on Ramp Harley Knox)							$0.00	
	Removal of Existing Striping (SB off Ramp Ramona)							$0.00	
	Thermoplastic Striping (SB off Ramp Ramona)							$0.00	
	Removal of Existing Striping (SB off Ramp Nuevo)							$0.00	
	Thermoplastic Striping (SB off Ramp Nuevo)							$0.00	
	Removal of Existing Striping (SB on Ramp Nuevo)							$0.00	
	Thermoplastic Striping (SB on Ramp Nuevo)							$0.00	
	Removal of Existing Striping (SB off Ramp Redlands)							$0.00	
	Thermoplastic Striping (SB off Ramp Redlands)							$0.00	
	Removal of Existing Striping (SB on Ramp Redlands)							$0.00	
	Thermoplastic Striping (SB on Ramp Redlands)							$0.00	
	Reconstruct Sign Structure							$0.00	
II. Structure Items									
	Ramona Bridge Replacement							$0.00	
	Harley Knox Bridge Replacement							$0.00	
	Placentia Bridge Replacement							$0.00	
	Nuevo Rd Bridge Replacement							$0.00	
	D St Bridge Tieback							$0.00	
	Perris Blvd Bridge Replacement							$0.00	
	Redlands Bridge Tieback	125.00	16.00		2000.00	SQ FT	$250.00	$500,000.00	
	Bridge Structure 1							$0.00	
	Bridge Structure 2							$0.00	
	Bridge Structure 3							$0.00	
III. Right of Way									
	Right of Way Acquisition #1							$0.00	

I.	***Roadway Items***	$0.00
	Earthwork	$0.00
	Pavement Structural Section	$0.00
	Specialty Items	$0.00
	Traffic Items	$0.00
II.	***Structural Items***	$500,000.00
III.	***Right of Way***	$0.00

Project #13 I-215 SB at Nuevo Subtotal

ITEMS	*TOTAL COST*	*ENGINEERING ASSUMPTIONS*
I. Roadway Items Summary		
SECTION 1: EARTHWORK COST	***$739,000***	Roadway Cost are all based on a preliminary Google Earth review.
SECTION 2: PAVEMENT STRUCTRUAL SECTION	***$838,000***	
SECTION 3: DRAINAGE	***$268,800***	Drainage is taken at 15% of Roadway Items due to the lack of detail at this stage. During this review, we do not show that any pumps will be affected. Further analysis should look at all
SECTION 4: Specialty Items	***$0***	Retaining walls, sound walls, tie back walls and ramp reconfigurations are based on the widening needed. These are all based on a preliminary Google Earth review.
SECTION 6: TRAFFIC ITEMS	***$215,000***	
SECTION 8: MINOR ITEMS 5% of Sections 1-6	***$103,040***	
SECTION 9: MOBILIZATION 10% of Sections 1-6	***$206,080***	
SECTION 10: ROADWAY ADDITIONS 5% of Sections 1-6	***$103,040***	
SECTION 13: CONTINGENCIES 40% of Sections 1-10	***$989,184***	
II. STRUCTURE ITEMS		
BRIDGES	***$6,890,000***	
III. RIGHT OF WAY		
Right of Way Acquisition	***$0***	
TOTAL CAPITAL OUTLAY COSTS	***$10,352,144***	
SUPPORT COSTS	***$3,623,000***	Support costs are 35% of capital outlay costs
TOTAL PROJECT COSTS	***$13,975,000***	

Amount included in 2016 TUMF Nexus Study	***$17,897,000.00***
Amount to be reduced from Total Project Costs	***$13,975,000.00***

Summary of Quantities

Project #13, I-215 SB at Nuevo Subtotal

Item Description	Distance (ft)	Width (ft)	Depth (ft)	Quantity	Unit	Cost Assumptions	Total Cost	Engineering Assumptions
I. Roadway Items Summary								
Earthwork								
Roadway Excavation (SB off Ramp Harley Knox)							$0.00	
Roadway Excavation (SB on Ramp Harley Knox)							$0.00	
Roadway Excavation (SB off Ramp Ramona)							$0.00	
Roadway Excavation (SB off Ramp Nuevo)	588.00	26-95	0-15	16787.22	CY	$15.00	$251,808.33	
Roadway Excavation (SB on Ramp Nuevo)	790.00	25-102	0-15	32457.22	CY	$15.00	$486,858.33	
Roadway Excavation (SB off Ramp D st)							$0.00	
Roadway Excavation (SB off Ramp Redlands)							$0.00	
Roadway Excavation (SB on Ramp Redlands)							$0.00	
Pavement Structural Section						$0.00		
Remove Concrete Pavement (Mainline)							$0.00	Existing shoulders at 10'
Class 2 Aggregate Subbase (Mainline)							$0.00	Lane plus shoulder at 22' with Class 2 Aggregate depth of 0.70'
Hot Mix Asphalt (Type A) (Mainline)							$0.00	Lane plus shoulder at 22' with a HMA depth of 0.25'
Continuously Reinforced Concrete Pavement (Mainline)							$0.00	Lane plus shoulder at 22' with a CRCP depth of 0.90'
Remove Concrete Pavement (SB off Ramp Harley Knox)							$0.00	Existing shoulders at 8'
Class 2 Aggregate Subbase (SB off Ramp Harley Knox)							$0.00	Lane plus shoulder at 34' with Class 2 Aggregate depth of 0.70'
Hot Mix Asphalt (Type A) (SB off Ramp Harley Knox)							$0.00	Lane plus shoulder at 34' with a HMA depth of 0.25'
Continuously Reinforced Concrete Pavement (SB off Ramp Harley Knox)							$0.00	Lane plus shoulder at 34' with a CRCP depth of 0.90'
Remove Concrete Pavement (SB on Ramp Harley Knox)							$0.00	Existing shoulders at 8'
Class 2 Aggregate Subbase (SB on Ramp Harley Knox)							$0.00	Lane plus shoulder at 32' with Class 2 Aggregate depth of 0.70'
Hot Mix Asphalt (Type A) (SB on Ramp Harley Knox)							$0.00	Lane plus shoulder at 32' with a HMA depth of 0.25'
Continuously Reinforced Concrete Pavement (SB on Ramp Harley Knox)							$0.00	Lane plus shoulder at 32' with a CRCP depth of 0.90'
Remove Concrete Pavement (SB off Ramp Ramona)							$0.00	Existing shoulders at 8'
Class 2 Aggregate Subbase (SB off Ramp Ramona)							$0.00	Lane plus shoulder at 48' with Class 2 Aggregate depth of 0.70'
Hot Mix Asphalt (Type A) (SB off Ramp Ramona)							$0.00	Lane plus shoulder at 48' with a HMA depth of 0.25'
Continuously Reinforced Concrete Pavement (SB off Ramp Ramona)							$0.00	Lane plus shoulder at 48' with a CRCP depth of 0.90'
Remove Concrete Pavement (SB off Ramp Nuevo)	1040.00	8.00		924.44	SQYD	$36.38	$33,631.29	Existing shoulders at 8'
Class 2 Aggregate Subbase (SB off Ramp Nuevo)	1040.00	26.00		701.04	CY	$72.10	$50,544.77	Lane plus shoulder at 26' with Class 2 Aggregate depth of 0.70'
Hot Mix Asphalt (Type A) (SB off Ramp Nuevo)	1040.00	26.00		490.10	TON	$85.00	$41,658.50	Lane plus shoulder at 26' with a HMA depth of 0.25'
Continuously Reinforced Concrete Pavement (SB off Ramp Nuevo)	1040.00	26.00		901.33	CY	$270.00	$243,360.00	Lane plus shoulder at 26' with a CRCP depth of 0.90'
Remove Concrete Pavement (SB on Ramp Nuevo)	1420.00	8.00		1262.22	SQYD	$36.38	$45,919.64	Existing shoulders at 8'
Class 2 Aggregate Subbase (SB on Ramp Nuevo)	1420.00	24.00		883.56	CY	$72.10	$63,704.36	Lane plus shoulder at 24' with Class 2 Aggregate depth of 0.70'
Hot Mix Asphalt (Type A) (SB on Ramp Nuevo)	1420.00	24.00		617.70	TON	$85.00	$52,504.50	Lane plus shoulder at 24' with a HMA depth of 0.25'
Continuously Reinforced Concrete Pavement (SB on Ramp Nuevo)	1420.00	24.00		1136.00	CY	$270.00	$306,720.00	Lane plus shoulder at 24' with a CRCP depth of 0.90'
Remove Concrete Pavement (SB off Ramp D st)							$0.00	Existing shoulders at 8'
Class 2 Aggregate Subbase (SB off Ramp D st)							$0.00	Lane plus shoulder at 38' with Class 2 Aggregate depth of 0.70'
Hot Mix Asphalt (Type A) (SB off Ramp D st)							$0.00	Lane plus shoulder at 38' with a HMA depth of 0.25'
Continuously Reinforced Concrete Pavement (SB off Ramp D st)							$0.00	Lane plus shoulder at 38' with a CRCP depth of 0.90'
Remove Concrete Pavement (SB off Ramp Redlands)							$0.00	Existing shoulders at 8'
Class 2 Aggregate Subbase (SB off Ramp Redlands)							$0.00	Lane plus shoulder at 34' with Class 2 Aggregate depth of 0.70'
Hot Mix Asphalt (Type A) (SB off Ramp Redlands)							$0.00	Lane plus shoulder at 34' with a HMA depth of 0.25'
Continuously Reinforced Concrete Pavement (SB off Ramp Redlands)							$0.00	Lane plus shoulder at 34' with a CRCP depth of 0.90'
Remove Concrete Pavement (SB on Ramp Redlands)							$0.00	Existing shoulders at 8'
Class 2 Aggregate Subbase (SB on Ramp Redlands)							$0.00	Lane plus shoulder at 40' with Class 2 Aggregate depth of 0.70'
Hot Mix Asphalt (Type A) (SB on Ramp Redlands)							$0.00	Lane plus shoulder at 40' with a HMA depth of 0.25'
Continuously Reinforced Concrete Pavement (SB on Ramp Redlands)							$0.00	Lane plus shoulder at 40' with a CRCP depth of 0.90'
Sec 3. Drainage								
Specialty Items						$0.00		
Remove Sound Wall							$0.00	
Sound Wall							$0.00	
Remove Retaining Wall							$0.00	
Structural Concrete (Retaining Wall)							$0.00	Retaining wall height 9'
Concrete Barrier (Type 60)							$0.00	
Traffic Items								
Traffic Electrical								
Intersection Signalization				*4.00*	PER CORNER	$50,000.00	$200,000.00	
Traffic Signing and Stripping						$0.00		
Removal of Existing Striping (Mainline)							$0.00	
Thermoplastic Striping (Mainline)							$0.00	
Removal of Existing Striping (SB off Ramp Harley Knox)							$0.00	
Thermoplastic Striping (SB off Ramp Harley Knox)							$0.00	
Removal of Existing Striping (SB on Ramp Harley Knox)							$0.00	
Thermoplastic Striping (SB on Ramp Harley Knox)							$0.00	
Removal of Existing Striping (SB off Ramp Ramona)							$0.00	
Thermoplastic Striping (SB off Ramp Ramona)							$0.00	
Removal of Existing Striping (SB off Ramp Nuevo)	2080.00			2080.00	LF	$0.65	$1,352.00	
Thermoplastic Striping (SB off Ramp Nuevo)	2080.00			2080.00	LF	$2.41	$5,012.80	
Removal of Existing Striping (SB on Ramp Nuevo)	2840.00			2840.00	LF	$0.65	$1,846.00	
Thermoplastic Striping (SB on Ramp Nuevo)	2840.00			2840.00	LF	$2.41	$6,844.40	
Removal of Existing Striping (SB off Ramp Redlands)							$0.00	
Thermoplastic Striping (SB off Ramp Redlands)							$0.00	
Removal of Existing Striping (SB on Ramp Redlands)							$0.00	
Thermoplastic Striping (SB on Ramp Redlands)							$0.00	
Reconstruct Sign Structure							$0.00	
II. Structure Items								
Ramona Bridge Replacement							$0.00	
Harley Knox Bridge Replacement							$0.00	
Placentia Bridge Replacement							$0.00	
Nuevo Rd Bridge Replacement	260.00	106.00		27560.00	SQFT	$250.00	$6,890,000.00	
D St Bridge Tieback							$0.00	
Perris Blvd Bridge Replacement							$0.00	
Redlands Bridge Tieback							$0.00	
Bridge Structure 1							$0.00	
Bridge Structure 2							$0.00	
Bridge Structure 3							$0.00	
III. Right of Way								
Right of Way Acquisition #1							$0.00	

I.	***Roadway Items***	$1,792,000.00
	Earthwork	$739,000.00
	Pavement Structural Section	$838,000.00
	Specialty Items	$0.00
	Traffic Items	$215,000.00
II.	***Structural Items***	$6,890,000.00
III.	***Right of Way***	$0.00

Project #13 I-215 SB at Placentia Overcrossing Subtotal

ITEMS	*TOTAL COST*	*ENGINEERING ASSUMPTIONS*
I. Roadway Items Summary		
SECTION 1: EARTHWORK COST	***$0***	Roadway Cost are all based on a preliminary Google Earth review.
SECTION 2: PAVEMENT STRUCTRUAL SECTION	***$0***	
SECTION 3: DRAINAGE	***$0***	Drainage is taken at 15% of Roadway Items due to the lack of detail at this stage. During this review, we do not show that any pumps will be affected. Further analysis should look at all
SECTION 4: Specialty Items	***$0***	Retaining walls, sound walls, tie back walls and ramp reconfigurations are based on the widening needed. These are all based on a preliminary Google Earth review.
SECTION 6: TRAFFIC ITEMS	***$0***	
SECTION 8: MINOR ITEMS 5% of Sections 1-6	***$0***	
SECTION 9: MOBILIZATION 10% of Sections 1-6	***$0***	
SECTION 10: ROADWAY ADDITIONS 5% of Sections 1-6	***$0***	
SECTION 13: CONTINGENCIES 40% of Sections 1-10	***$0***	
II. STRUCTURE ITEMS		
BRIDGES	***$3,870,000***	
III. RIGHT OF WAY		
Right of Way Acquisition	***$0***	
TOTAL CAPITAL OUTLAY COSTS	***$3,870,000***	
SUPPORT COSTS	***$1,355,000***	Support costs are 35% of capital outlay costs
TOTAL PROJECT COSTS	***$5,225,000***	

Amount included in 2016 TUMF Nexus Study	***$12,354,000.00***	as Mid-County Parkway Interchange
Amount to be reduced from Total Project Costs	***$5,225,000.00***	

Summary of Quantities

Project #13, I-215 SB at Placentia Overcrossing Subtotal

	Item Description	Distance (ft)	Width (ft)	Depth (ft)	Quantity	Unit	Cost Assumptions	Total Cost	Engineering Assumptions
I. Roadway Items Summary									
	Earthwork								
	Roadway Excavation (SB off Ramp Harley Knox)							$0.00	
	Roadway Excavation (SB on Ramp Harley Knox)							$0.00	
	Roadway Excavation (SB off Ramp Ramona)							$0.00	
	Roadway Excavation (SB off Ramp Nuevo)							$0.00	
	Roadway Excavation (SB on Ramp Nuevo)							$0.00	
	Roadway Excavation (SB off Ramp D st)							$0.00	
	Roadway Excavation (SB off Ramp Redlands)							$0.00	
	Roadway Excavation (SB on Ramp Redlands)							$0.00	
	Pavement Structural Section						$0.00		
	Remove Concrete Pavement (Mainline)							$0.00	Existing shoulders at 10'
	Class 2 Aggregate Subbase (Mainline)							$0.00	Lane plus shoulder at 22' with Class 2 Aggregate depth of 0.70'
	Hot Mix Asphalt (Type A) (Mainline)							$0.00	Lane plus shoulder at 22' with a HMA depth of 0.25'
	Continuously Reinforced Concrete Pavement (Mainline)							$0.00	Lane plus shoulder at 22' with a CRCP depth of 0.90'
	Remove Concrete Pavement (SB off Ramp Harley Knox)							$0.00	Existing shoulders at 8'
	Class 2 Aggregate Subbase (SB off Ramp Harley Knox)							$0.00	Lane plus shoulder at 34' with Class 2 Aggregate depth of 0.70'
	Hot Mix Asphalt (Type A) (SB off Ramp Harley Knox)							$0.00	Lane plus shoulder at 34' with a HMA depth of 0.25'
	Continuously Reinforced Concrete Pavement (SB off Ramp Harley Knox)							$0.00	Lane plus shoulder at 34' with a CRCP depth of 0.90'
	Remove Concrete Pavement (SB on Ramp Harley Knox)							$0.00	Existing shoulders at 8'
	Class 2 Aggregate Subbase (SB on Ramp Harley Knox)							$0.00	Lane plus shoulder at 32' with Class 2 Aggregate depth of 0.70'
	Hot Mix Asphalt (Type A) (SB on Ramp Harley Knox)							$0.00	Lane plus shoulder at 32' with a HMA depth of 0.25'
	Continuously Reinforced Concrete Pavement (SB on Ramp Harley Knox)							$0.00	Lane plus shoulder at 32' with a CRCP depth of 0.90'
	Remove Concrete Pavement (SB off Ramp Ramona)							$0.00	Existing shoulders at 8'
	Class 2 Aggregate Subbase (SB off Ramp Ramona)							$0.00	Lane plus shoulder at 48' with Class 2 Aggregate depth of 0.70'
	Hot Mix Asphalt (Type A) (SB off Ramp Ramona)							$0.00	Lane plus shoulder at 48' with a HMA depth of 0.25'
	Continuously Reinforced Concrete Pavement (SB off Ramp Ramona)							$0.00	Lane plus shoulder at 48' with a CRCP depth of 0.90'
	Remove Concrete Pavement (SB off Ramp Nuevo)							$0.00	Existing shoulders at 8'
	Class 2 Aggregate Subbase (SB off Ramp Nuevo)							$0.00	Lane plus shoulder at 26' with Class 2 Aggregate depth of 0.70'
	Hot Mix Asphalt (Type A) (SB off Ramp Nuevo)							$0.00	Lane plus shoulder at 26' with a HMA depth of 0.25'
	Continuously Reinforced Concrete Pavement (SB off Ramp Nuevo)							$0.00	Lane plus shoulder at 26' with a CRCP depth of 0.90'
	Remove Concrete Pavement (SB on Ramp Nuevo)							$0.00	Existing shoulders at 8'
	Class 2 Aggregate Subbase (SB on Ramp Nuevo)							$0.00	Lane plus shoulder at 24' with Class 2 Aggregate depth of 0.70'
	Hot Mix Asphalt (Type A) (SB on Ramp Nuevo)							$0.00	Lane plus shoulder at 24' with a HMA depth of 0.25'
	Continuously Reinforced Concrete Pavement (SB on Ramp Nuevo)							$0.00	Lane plus shoulder at 24' with a CRCP depth of 0.90'
	Remove Concrete Pavement (SB off Ramp D st)							$0.00	Existing shoulders at 8'
	Class 2 Aggregate Subbase (SB off Ramp D st)							$0.00	Lane plus shoulder at 38' with Class 2 Aggregate depth of 0.70'
	Hot Mix Asphalt (Type A) (SB off Ramp D st)							$0.00	Lane plus shoulder at 38' with a HMA depth of 0.25'
	Continuously Reinforced Concrete Pavement (SB off Ramp D st)							$0.00	Lane plus shoulder at 38' with a CRCP depth of 0.90'
	Remove Concrete Pavement (SB off Ramp Redlands)							$0.00	Existing shoulders at 8'
	Class 2 Aggregate Subbase (SB off Ramp Redlands)							$0.00	Lane plus shoulder at 34' with Class 2 Aggregate depth of 0.70'
	Hot Mix Asphalt (Type A) (SB off Ramp Redlands)							$0.00	Lane plus shoulder at 34' with a HMA depth of 0.25'
	Continuously Reinforced Concrete Pavement (SB off Ramp Redlands)							$0.00	Lane plus shoulder at 34' with a CRCP depth of 0.90'
	Remove Concrete Pavement (SB on Ramp Redlands)							$0.00	Existing shoulders at 8'
	Class 2 Aggregate Subbase (SB on Ramp Redlands)							$0.00	Lane plus shoulder at 40' with Class 2 Aggregate depth of 0.70'
	Hot Mix Asphalt (Type A) (SB on Ramp Redlands)							$0.00	Lane plus shoulder at 40' with a HMA depth of 0.25'
	Continuously Reinforced Concrete Pavement (SB on Ramp Redlands)							$0.00	Lane plus shoulder at 40' with a CRCP depth of 0.90'
	Sec 3. Drainage								
	Specialty Items						$0.00		
	Remove Sound Wall							$0.00	
	Sound Wall							$0.00	
	Remove Retaining Wall							$0.00	
	Structural Concrete (Retaining Wall)							$0.00	Retaining wall height 9'
	Concrete Barrier (Type 60)							$0.00	
	Traffic Items								
	Traffic Electrical								
	Intersection Signalization							$0.00	
	Traffic Signing and Stripping						$0.00		
	Removal of Existing Striping (Mainline)							$0.00	
	Thermoplastic Striping (Mainline)							$0.00	
	Removal of Existing Striping (SB off Ramp Harley Knox)							$0.00	
	Thermoplastic Striping (SB off Ramp Harley Knox)							$0.00	
	Removal of Existing Striping (SB on Ramp Harley Knox)							$0.00	
	Thermoplastic Striping (SB on Ramp Harley Knox)							$0.00	
	Removal of Existing Striping (SB off Ramp Ramona)							$0.00	
	Thermoplastic Striping (SB off Ramp Ramona)							$0.00	
	Removal of Existing Striping (SB off Ramp Nuevo)							$0.00	
	Thermoplastic Striping (SB off Ramp Nuevo)							$0.00	
	Removal of Existing Striping (SB on Ramp Nuevo)							$0.00	
	Thermoplastic Striping (SB on Ramp Nuevo)							$0.00	
	Removal of Existing Striping (SB off Ramp Redlands)							$0.00	
	Thermoplastic Striping (SB off Ramp Redlands)							$0.00	
	Removal of Existing Striping (SB on Ramp Redlands)							$0.00	
	Thermoplastic Striping (SB on Ramp Redlands)							$0.00	
	Reconstruct Sign Structure							$0.00	
II. Structure Items									
	Ramona Bridge Replacement							$0.00	
	Harley Knox Bridge Replacement							$0.00	
	Placentia Bridge Replacement	215.00	72.00		15480.00	SQFT	$250.00	$3,870,000.00	
	Nuevo Rd Bridge Replacement							$0.00	
	D St Bridge Tieback							$0.00	
	Perris Blvd Bridge Replacement							$0.00	
	Redlands Bridge Tieback							$0.00	
	Bridge Structure 1							$0.00	
	Bridge Structure 2							$0.00	
	Bridge Structure 3							$0.00	
III. Right of Way									
	Right of Way Acquisition #1							$0.00	

I.	***Roadway Items***	$0.00
	Earthwork	$0.00
	Pavement Structural Section	$0.00
	Specialty Items	$0.00
	Traffic Items	$0.00
II.	***Structural Items***	$3,870,000.00
III.	***Right of Way***	$0.00

Project #13 I-215 SB at Ramona Subtotal

ITEMS	*TOTAL COST*	*ENGINEERING ASSUMPTIONS*
I. Roadway Items Summary		
SECTION 1: EARTHWORK COST	***$221,000***	Roadway Cost are all based on a preliminary Google Earth review.
SECTION 2: PAVEMENT STRUCTRUAL SECTION	***$452,000***	
SECTION 3: DRAINAGE	***$132,000***	Drainage is taken at 15% of Roadway Items due to the lack of detail at this stage. During this review, we do not show that any pumps will be affected. Further analysis should look at all Retaining walls, sound walls, tie back walls and ramp reconfigurations are based on the widening needed. These are all based on a preliminary Google Earth review.
SECTION 4: Specialty Items	***$0***	
SECTION 6: TRAFFIC ITEMS	***$207,000***	
SECTION 8: MINOR ITEMS 5% of Sections 1-6	***$50,600***	
SECTION 9: MOBILIZATION 10% of Sections 1-6	***$101,200***	
SECTION 10: ROADWAY ADDITIONS 5% of Sections 1-6	***$50,600***	
SECTION 13: CONTINGENCIES 40% of Sections 1-10	***$485,760***	
II. STRUCTURE ITEMS		
BRIDGES	***$6,875,000***	
III. RIGHT OF WAY		
Right of Way Acquisition	***$0***	
TOTAL CAPITAL OUTLAY COSTS	***$8,575,160***	
SUPPORT COSTS	***$3,001,000***	Support costs are 35% of capital outlay costs
TOTAL PROJECT COSTS	***$11,576,000***	

Amount included in 2016 TUMF Nexus Study	***$5,965,000.00***
Amount to be reduced from Total Project Costs	***$5,965,000.00***

Summary of Quantities

Project #13, I-215 SB at Ramona Subtotal

	Item Description	Distance (ft)	Width (ft)	Depth (ft)	Quantity	Unit	Cost Assumptions	Total Cost	Engineering Assumptions
I. Roadway Items Summary									
	Earthwork								
	Roadway Excavation (SB off Ramp Harley Knox)							$0.00	
	Roadway Excavation (SB on Ramp Harley Knox)							$0.00	
	Roadway Excavation (SB off Ramp Ramona)	700.00	18-100	0-11	14719.22	CY	$15.00	$220,788.33	
	Roadway Excavation (SB off Ramp Nuevo)							$0.00	
	Roadway Excavation (SB on Ramp Nuevo)							$0.00	
	Roadway Excavation (SB off Ramp D st)							$0.00	
	Roadway Excavation (SB off Ramp Redlands)							$0.00	
	Roadway Excavation (SB on Ramp Redlands)							$0.00	
	Pavement Structural Section						$0.00		
	Remove Concrete Pavement (Mainline)							$0.00	Existing shoulders at 10'
	Class 2 Aggregate Subbase (Mainline)							$0.00	Lane plus shoulder at 22' with Class 2 Aggregate depth of 0.70'
	Hot Mix Asphalt (Type A) (Mainline)							$0.00	Lane plus shoulder at 22' with a HMA depth of 0.25'
	Continuously Reinforced Concrete Pavement (Mainline)							$0.00	Lane plus shoulder at 22' with a CRCP depth of 0.90'
	Remove Concrete Pavement (SB off Ramp Harley Knox)							$0.00	Existing shoulders at 8'
	Class 2 Aggregate Subbase (SB off Ramp Harley Knox)							$0.00	Lane plus shoulder at 34' with Class 2 Aggregate depth of 0.70'
	Hot Mix Asphalt (Type A) (SB off Ramp Harley Knox)							$0.00	Lane plus shoulder at 34' with a HMA depth of 0.25'
	Continuously Reinforced Concrete Pavement (SB off Ramp Harley Knox)							$0.00	Lane plus shoulder at 34' with a CRCP depth of 0.90'
	Remove Concrete Pavement (SB on Ramp Harley Knox)							$0.00	Existing shoulders at 8'
	Class 2 Aggregate Subbase (SB on Ramp Harley Knox)							$0.00	Lane plus shoulder at 32' with Class 2 Aggregate depth of 0.70'
	Hot Mix Asphalt (Type A) (SB on Ramp Harley Knox)							$0.00	Lane plus shoulder at 32' with a HMA depth of 0.25'
	Continuously Reinforced Concrete Pavement (SB on Ramp Harley Knox)							$0.00	Lane plus shoulder at 32' with a CRCP depth of 0.90'
	Remove Concrete Pavement (SB off Ramp Ramona)	720.00	8.00		640.00	SQYD	$36.38	$23,283.20	Existing shoulders at 8'
	Class 2 Aggregate Subbase (SB off Ramp Ramona)	720.00	48.00		896.00	CY	$72.10	$64,601.60	Lane plus shoulder at 48' with Class 2 Aggregate depth of 0.70'
	Hot Mix Asphalt (Type A) (SB off Ramp Ramona)	720.00	48.00		626.40	TON	$85.00	$53,244.00	Lane plus shoulder at 48' with a HMA depth of 0.25'
	Continuously Reinforced Concrete Pavement (SB off Ramp Ramona)	720.00	48.00		1152.00	CY	$270.00	$311,040.00	Lane plus shoulder at 48' with a CRCP depth of 0.90'
	Remove Concrete Pavement (SB off Ramp Nuevo)							$0.00	Existing shoulders at 8'
	Class 2 Aggregate Subbase (SB off Ramp Nuevo)							$0.00	Lane plus shoulder at 26' with Class 2 Aggregate depth of 0.70'
	Hot Mix Asphalt (Type A) (SB off Ramp Nuevo)							$0.00	Lane plus shoulder at 26' with a HMA depth of 0.25'
	Continuously Reinforced Concrete Pavement (SB off Ramp Nuevo)							$0.00	Lane plus shoulder at 26' with a CRCP depth of 0.90'
	Remove Concrete Pavement (SB on Ramp Nuevo)							$0.00	Existing shoulders at 8'
	Class 2 Aggregate Subbase (SB on Ramp Nuevo)							$0.00	Lane plus shoulder at 24' with Class 2 Aggregate depth of 0.70'
	Hot Mix Asphalt (Type A) (SB on Ramp Nuevo)							$0.00	Lane plus shoulder at 24' with a HMA depth of 0.25'
	Continuously Reinforced Concrete Pavement (SB on Ramp Nuevo)							$0.00	Lane plus shoulder at 24' with a CRCP depth of 0.90'
	Remove Concrete Pavement (SB off Ramp D st)							$0.00	Existing shoulders at 8'
	Class 2 Aggregate Subbase (SB off Ramp D st)							$0.00	Lane plus shoulder at 38' with Class 2 Aggregate depth of 0.70'
	Hot Mix Asphalt (Type A) (SB off Ramp D st)							$0.00	Lane plus shoulder at 38' with a HMA depth of 0.25'
	Continuously Reinforced Concrete Pavement (SB off Ramp D st)							$0.00	Lane plus shoulder at 38' with a CRCP depth of 0.90'
	Remove Concrete Pavement (SB off Ramp Redlands)							$0.00	Existing shoulders at 8'
	Class 2 Aggregate Subbase (SB off Ramp Redlands)							$0.00	Lane plus shoulder at 34' with Class 2 Aggregate depth of 0.70'
	Hot Mix Asphalt (Type A) (SB off Ramp Redlands)							$0.00	Lane plus shoulder at 34' with a HMA depth of 0.25'
	Continuously Reinforced Concrete Pavement (SB off Ramp Redlands)							$0.00	Lane plus shoulder at 34' with a CRCP depth of 0.90'
	Remove Concrete Pavement (SB on Ramp Redlands)							$0.00	Existing shoulders at 8'
	Class 2 Aggregate Subbase (SB on Ramp Redlands)							$0.00	Lane plus shoulder at 40' with Class 2 Aggregate depth of 0.70'
	Hot Mix Asphalt (Type A) (SB on Ramp Redlands)							$0.00	Lane plus shoulder at 40' with a HMA depth of 0.25'
	Continuously Reinforced Concrete Pavement (SB on Ramp Redlands)							$0.00	Lane plus shoulder at 40' with a CRCP depth of 0.90'
	Sec 3. Drainage								
	Specialty Items						$0.00		
	Remove Sound Wall							$0.00	
	Sound Wall							$0.00	
	Remove Retaining Wall							$0.00	
	Structural Concrete (Retaining Wall)							$0.00	Retaining wall height 9'
	Concrete Barrier (Type 60)							$0.00	
	Traffic Items								
	Traffic Electrical								
	Intersection Signalization				*4.00*	PER CORNER	$50,000.00	$200,000.00	
	Traffic Signing and Stripping						$0.00		
	Removal of Existing Striping (Mainline)							$0.00	
	Thermoplastic Striping (Mainline)							$0.00	
	Removal of Existing Striping (SB off Ramp Harley Knox)							$0.00	
	Thermoplastic Striping (SB off Ramp Harley Knox)							$0.00	
	Removal of Existing Striping (SB on Ramp Harley Knox)							$0.00	
	Thermoplastic Striping (SB on Ramp Harley Knox)							$0.00	
	Removal of Existing Striping (SB off Ramp Ramona)	2320.00			2320.00	LF	$0.65	$1,508.00	
	Thermoplastic Striping (SB off Ramp Ramona)	2320.00			2320.00	LF	$2.41	$5,591.20	
	Removal of Existing Striping (SB off Ramp Nuevo)							$0.00	
	Thermoplastic Striping (SB off Ramp Nuevo)							$0.00	
	Removal of Existing Striping (SB on Ramp Nuevo)							$0.00	
	Thermoplastic Striping (SB on Ramp Nuevo)							$0.00	
	Removal of Existing Striping (SB off Ramp Redlands)							$0.00	
	Thermoplastic Striping (SB off Ramp Redlands)							$0.00	
	Removal of Existing Striping (SB on Ramp Redlands)							$0.00	
	Thermoplastic Striping (SB on Ramp Redlands)							$0.00	
	Reconstruct Sign Structure							$0.00	
II. Structure Items									
	Ramona Bridge Replacement	220.00	125.00		27500.00	SQFT	$250.00	$6,875,000.00	
	Harley Knox Bridge Replacement							$0.00	
	Placentia Bridge Replacement							$0.00	
	Nuevo Rd Bridge Replacement							$0.00	
	D St Bridge Tieback							$0.00	
	Perris Blvd Bridge Replacement							$0.00	
	Redlands Bridge Tieback							$0.00	
	Bridge Structure 1							$0.00	
	Bridge Structure 2							$0.00	
	Bridge Structure 3							$0.00	
III. Right of Way									
	Right of Way Acquisition #1							$0.00	

I.	***Roadway Items***	$880,000.00
	Earthwork	$221,000.00
	Pavement Structural Section	$452,000.00
	Specialty Items	$0.00
	Traffic Items	$207,000.00
II.	***Structural Items***	$6,875,000.00
III.	***Right of Way***	$0.00

Project #13 I-215 SB at Harley Knox Subtotal		
ITEMS	**TOTAL COST**	**ENGINEERING ASSUMPTIONS**
I. Roadway Items Summary		
SECTION 1: EARTHWORK COST	***$581,000***	Roadway Cost are all based on a preliminary Google Earth review.
SECTION 2: PAVEMENT STRUCTRUAL SECTION	***$1,028,000***	
SECTION 3: DRAINAGE	***$273,450***	Drainage is taken at 15% of Roadway Items due to the lack of detail at this stage. During this review, we do not show that any pumps will be affected. Further analysis should look at all Retaining walls, sound walls, tie back walls and ramp reconfigurations are based on the widening needed. These are all based on a preliminary Google Earth review.
SECTION 4: Specialty Items	***$0***	
SECTION 6: TRAFFIC ITEMS	***$214,000***	
SECTION 8: MINOR ITEMS 5% of Sections 1-6	***$104,823***	
SECTION 9: MOBILIZATION 10% of Sections 1-6	***$209,645***	
SECTION 10: ROADWAY ADDITIONS 5% of Sections 1-6	***$104,823***	
SECTION 13: CONTINGENCIES 40% of Sections 1-10	***$1,006,296***	
II. STRUCTURE ITEMS		
BRIDGES	***$4,510,000***	
III. RIGHT OF WAY		
Right of Way Acquisition	***$0***	
TOTAL CAPITAL OUTLAY COSTS	***$8,032,036***	
SUPPORT COSTS	***$2,811,000***	Support costs are 35% of capital outlay costs
TOTAL PROJECT COSTS	***$10,843,000***	
Amount included in 2016 TUMF Nexus Study	***$7,110,000.00***	
Amount to be reduced from Total Project Costs	***$7,110,000.00***	

Summary of Quantities

Project #13, I-215 SB at Harley Knox Subtotal

Item Description	Distance (ft)	Width (ft)	Depth (ft)	Quantity	Unit	Cost Assumptions	Total Cost	Engineering Assumptions
I. Roadway Items Summary								
Earthwork								
Roadway Excavation (SB off Ramp Harley Knox)	845.00	26-85	0-15	24160.00	CY	$15.00	$362,400.00	
Roadway Excavation (SB on Ramp Harley Knox)	480.00	21-76	0-15	14576.11	CY	$15.00	$218,641.67	
Roadway Excavation (SB off Ramp Ramona)							$0.00	
Roadway Excavation (SB off Ramp Nuevo)							$0.00	
Roadway Excavation (SB on Ramp Nuevo)							$0.00	
Roadway Excavation (SB off Ramp D st)							$0.00	
Roadway Excavation (SB off Ramp Redlands)							$0.00	
Roadway Excavation (SB on Ramp Redlands)							$0.00	
Pavement Structural Section						$0.00		
Remove Concrete Pavement (Mainline)							$0.00	Existing shoulders at 10'
Class 2 Aggregate Subbase (Mainline)							$0.00	Lane plus shoulder at 22' with Class 2 Aggregate depth of 0.70'
Hot Mix Asphalt (Type A) (Mainline)							$0.00	Lane plus shoulder at 22' with a HMA depth of 0.25'
Continuously Reinforced Concrete Pavement (Mainline)							$0.00	Lane plus shoulder at 22' with a CRCP depth of 0.90'
Remove Concrete Pavement (SB off Ramp Harley Knox)	1450.00	8.00		1288.89	SQYD	$36.38	$46,889.78	Existing shoulders at 8'
Class 2 Aggregate Subbase (SB off Ramp Harley Knox)	1450.00	34.00		1278.15	CY	$72.10	$92,154.48	Lane plus shoulder at 34' with Class 2 Aggregate depth of 0.70'
Hot Mix Asphalt (Type A) (SB off Ramp Harley Knox)	1450.00	34.00		893.56	TON	$85.00	$75,952.81	Lane plus shoulder at 34' with a HMA depth of 0.25'
Continuously Reinforced Concrete Pavement (SB off Ramp Harley Knox)	1450.00	34.00		1643.33	CY	$270.00	$443,700.00	Lane plus shoulder at 34' with a CRCP depth of 0.90'
Remove Concrete Pavement (SB on Ramp Harley Knox)	860.00	8.00		764.44	SQYD	$36.38	$27,810.49	Existing shoulders at 8'
Class 2 Aggregate Subbase (SB on Ramp Harley Knox)	860.00	32.00		713.48	CY	$72.10	$51,442.01	Lane plus shoulder at 32' with Class 2 Aggregate depth of 0.70'
Hot Mix Asphalt (Type A) (SB on Ramp Harley Knox)	860.00	32.00		498.80	TON	$85.00	$42,398.00	Lane plus shoulder at 32' with a HMA depth of 0.25'
Continuously Reinforced Concrete Pavement (SB on Ramp Harley Knox)	860.00	32.00		917.33	CY	$270.00	$247,680.00	Lane plus shoulder at 32' with a CRCP depth of 0.90'
Remove Concrete Pavement (SB off Ramp Ramona)							$0.00	Existing shoulders at 8'
Class 2 Aggregate Subbase (SB off Ramp Ramona)							$0.00	Lane plus shoulder at 48' with Class 2 Aggregate depth of 0.70'
Hot Mix Asphalt (Type A) (SB off Ramp Ramona)							$0.00	Lane plus shoulder at 48' with a HMA depth of 0.25'
Continuously Reinforced Concrete Pavement (SB off Ramp Ramona)							$0.00	Lane plus shoulder at 48' with a CRCP depth of 0.90'
Remove Concrete Pavement (SB off Ramp Nuevo)							$0.00	Existing shoulders at 8'
Class 2 Aggregate Subbase (SB off Ramp Nuevo)							$0.00	Lane plus shoulder at 26' with Class 2 Aggregate depth of 0.70'
Hot Mix Asphalt (Type A) (SB off Ramp Nuevo)							$0.00	Lane plus shoulder at 26' with a HMA depth of 0.25'
Continuously Reinforced Concrete Pavement (SB off Ramp Nuevo)							$0.00	Lane plus shoulder at 26' with a CRCP depth of 0.90'
Remove Concrete Pavement (SB on Ramp Nuevo)							$0.00	Existing shoulders at 8'
Class 2 Aggregate Subbase (SB on Ramp Nuevo)							$0.00	Lane plus shoulder at 24' with Class 2 Aggregate depth of 0.70'
Hot Mix Asphalt (Type A) (SB on Ramp Nuevo)							$0.00	Lane plus shoulder at 24' with a HMA depth of 0.25'
Continuously Reinforced Concrete Pavement (SB on Ramp Nuevo)							$0.00	Lane plus shoulder at 24' with a CRCP depth of 0.90'
Remove Concrete Pavement (SB off Ramp D st)							$0.00	Existing shoulders at 8'
Class 2 Aggregate Subbase (SB off Ramp D st)							$0.00	Lane plus shoulder at 38' with Class 2 Aggregate depth of 0.70'
Hot Mix Asphalt (Type A) (SB off Ramp D st)							$0.00	Lane plus shoulder at 38' with a HMA depth of 0.25'
Continuously Reinforced Concrete Pavement (SB off Ramp D st)							$0.00	Lane plus shoulder at 38' with a CRCP depth of 0.90'
Remove Concrete Pavement (SB off Ramp Redlands)							$0.00	Existing shoulders at 8'
Class 2 Aggregate Subbase (SB off Ramp Redlands)							$0.00	Lane plus shoulder at 34' with Class 2 Aggregate depth of 0.70'
Hot Mix Asphalt (Type A) (SB off Ramp Redlands)							$0.00	Lane plus shoulder at 34' with a HMA depth of 0.25'
Continuously Reinforced Concrete Pavement (SB off Ramp Redlands)							$0.00	Lane plus shoulder at 34' with a CRCP depth of 0.90'
Remove Concrete Pavement (SB on Ramp Redlands)							$0.00	Existing shoulders at 8'
Class 2 Aggregate Subbase (SB on Ramp Redlands)							$0.00	Lane plus shoulder at 40' with Class 2 Aggregate depth of 0.70'
Hot Mix Asphalt (Type A) (SB on Ramp Redlands)							$0.00	Lane plus shoulder at 40' with a HMA depth of 0.25'
Continuously Reinforced Concrete Pavement (SB on Ramp Redlands)							$0.00	Lane plus shoulder at 40' with a CRCP depth of 0.90'
Sec 3. Drainage								
Specialty Items						$0.00		
Remove Sound Wall							$0.00	
Sound Wall							$0.00	
Remove Retaining Wall							$0.00	
Structural Concrete (Retaining Wall)							$0.00	Retaining wall height 9'
Concrete Barrier (Type 60)							$0.00	
Traffic Items								
Traffic Electrical								
Intersection Signalization				*4.00*	PER CORNER	$50,000.00	$200,000.00	
Traffic Signing and Stripping						$0.00		
Removal of Existing Striping (Mainline)							$0.00	
Thermoplastic Striping (Mainline)							$0.00	
Removal of Existing Striping (SB off Ramp Harley Knox)	2900.00			2900.00	LF	$0.65	$1,885.00	
Thermoplastic Striping (SB off Ramp Harley Knox)	2900.00			2900.00	LF	$2.41	$6,989.00	
Removal of Existing Striping (SB on Ramp Harley Knox)	1720.00			1720.00	LF	$0.65	$1,118.00	
Thermoplastic Striping (SB on Ramp Harley Knox)	1720.00			1720.00	LF	$2.41	$4,145.20	
Removal of Existing Striping (SB off Ramp Ramona)							$0.00	
Thermoplastic Striping (SB off Ramp Ramona)							$0.00	
Removal of Existing Striping (SB off Ramp Nuevo)							$0.00	
Thermoplastic Striping (SB off Ramp Nuevo)							$0.00	
Removal of Existing Striping (SB on Ramp Nuevo)							$0.00	
Thermoplastic Striping (SB on Ramp Nuevo)							$0.00	
Removal of Existing Striping (SB off Ramp Redlands)							$0.00	
Thermoplastic Striping (SB off Ramp Redlands)							$0.00	
Removal of Existing Striping (SB on Ramp Redlands)							$0.00	
Thermoplastic Striping (SB on Ramp Redlands)							$0.00	
Reconstruct Sign Structure							$0.00	
II. Structure Items								
Ramona Bridge Replacement						$250.00	$0.00	
Harley Knox Bridge Replacement	220.00	82.00		18040.00	SQFT	$250.00	$4,510,000.00	
Placentia Bridge Replacement							$0.00	
Nuevo Rd Bridge Replacement							$0.00	
D St Bridge Tieback							$0.00	
Perris Blvd Bridge Replacement							$0.00	
Redlands Bridge Tieback							$0.00	
Bridge Structure 1							$0.00	
Bridge Structure 2							$0.00	
Bridge Structure 3							$0.00	
III. Right of Way								
Right of Way Acquisition #1							$0.00	

I.	***Roadway Items***	$1,823,000.00
	Earthwork	$581,000.00
	Pavement Structural Section	$1,028,000.00
	Specialty Items	$0.00
	Traffic Items	$214,000.00
II.	***Structural Items***	$4,510,000.00
III.	***Right of Way***	$0.00

Project #16, EB SR-91, I-15 SB On Ramp to I-15 NB On Ramp

ITEMS	*TOTAL COST*	*ENGINEERING ASSUMPTIONS*
I. Roadway Items Summary		
SECTION 1: EARTHWORK COST	***$1,454,000***	Roadway Cost are all based on a preliminary Google Earth review.
SECTION 2: PAVEMENT STRUCTRUAL SECTION	***$1,439,000***	
SECTION 3: DRAINAGE	***$437,700***	Drainage is taken at 15% of Roadway Items due to the lack of detail at this stage. During this review, we do not show that any pumps will be affected. Further analysis should look at all Retaining walls, sound walls, tie back walls and ramp reconfigurations are based on the widening needed. These are all based on a preliminary Google Earth review.
SECTION 4: Specialty Items	***$0***	
SECTION 6: TRAFFIC ITEMS	***$25,000***	
SECTION 8: MINOR ITEMS 5% of Sections 1-6	***$167,785***	
SECTION 9: MOBILIZATION 10% of Sections 1-6	***$335,570***	
SECTION 10: ROADWAY ADDITIONS 5% of Sections 1-6	***$167,785***	
SECTION 13: CONTINGENCIES 40% of Sections 1-10	***$1,610,736***	
II. STRUCTURE ITEMS		
BRIDGES	***$0***	
TOTAL CAPITAL OUTLAY COSTS	***$5,637,576***	
SUPPORT COSTS	***$1,973,000***	Support costs are 35% of capital outlay costs
TOTAL PROJECT COSTS	***$7,611,000***	

Summary of Quantities

Project #16, EB SR-91, I-15 SB On Ramp to I-15 NB On Ramp

	Item Description	Distance (ft)	Width (ft)	Depth (ft)	Quantity	Unit	Cost Assumptions	Total Cost	Engineering Assumptions
I. Roadway Items Summary									
	Earthwork								
	Roadway Excavation (North of 15 ramp to EB 91)	1250.00	0-60	0-5	12215.36	CY	$15.00	$183,230.42	
	Roadway Excavation (South of 15 ramp to EB 91)	870.00	0-105	0-7	31370.93	CY	$15.00	$470,563.89	
	Pavement Structural Section						$0.00		
	Remove Concrete Pavement (Mainline)	2366.00	10.00		2628.89	SQYD	$36.38	$95,638.98	Existing shoulders at 10'
	Class 2 Aggregate Subbase (Mainline)	2366.00	22.00		1349.50	CY	$72.10	$97,298.68	Lane plus shoulder at 22' with Class 2 Aggregate depth of 0.70'
	Hot Mix Asphalt (Type A) (Mainline)	2366.00	22.00		943.44	TON	$85.00	$80,192.61	Lane plus shoulder at 22' with a HMA depth of 0.25'
	Continuously Reinforced Concrete Pavement (Mainline)	2366.00	22.00		1735.07	CY	$270.00	$468,468.00	Lane plus shoulder at 22' with a CRCP depth of 0.90'
	Remove Concrete Pavement (NB 15 ramp to EB 91)	1965.00	8.00		1746.67	SQYD	$36.38	$63,543.73	Existing shoulders at 8'
	Class 2 Aggregate Subbase (NB 15 ramp to EB 91)	1965.00	26.00		1324.56	CY	$72.10	$95,500.46	Lane plus shoulder at 26' with Class 2 Aggregate depth of 0.70'
	Hot Mix Asphalt (Type A) (NB 15 ramp to EB 91)	1965.00	26.00		926.01	TON	$85.00	$78,710.53	Lane plus shoulder at 26' with a HMA depth of 0.25'
	Continuously Reinforced Concrete Pavement (NB 15 ramp to EB 91)	1965.00	26.00		1703.00	CY	$270.00	$459,810.00	Lane plus shoulder at 26' with a CRCP depth of 0.90'
	Traffic Signing and Stripping						$0.00		
	Removal of Existing Striping (Mainline)	2366.00			2366.00	LF	$0.65	$1,537.90	
	Thermoplastic Striping (Mainline)	4732.00			4732.00	LF	$2.41	$11,404.12	
	Removal of Existing Striping (NB 15 ramp to EB 91)	3930.00			3930.00	LF	$0.65	$2,554.50	
	Thermoplastic Striping (NB 15 ramp to EB 91)	3930.00			3930.00	LF	$2.41	$9,471.30	
II. Structure Items									
III. Right of Way									

I.	***Roadway Items***	$2,918,000.00
	Earthwork	$1,454,000.00
	Pavement Structural Section	$1,439,000.00
	Specialty Items	$0.00
	Traffic Items	$25,000.00
II.	***Structural Items***	$0.00
III.	***Right of Way***	$0.00

Project #18, SR-91 EB, Pierce St Off Ramp to Magnolia On Ramp

ITEMS	TOTAL COST	ENGINEERING ASSUMPTIONS
I. Roadway Items Summary		
SECTION 1: EARTHWORK COST	***$939,000***	Roadway Cost are all based on a preliminary Google Earth review.
SECTION 2: PAVEMENT STRUCTRUAL SECTION	***$2,094,000***	
SECTION 3: DRAINAGE	***$573,000***	Drainage is taken at 15% of Roadway Items due to the lack of detail at this stage. During this review, we do not show that any pumps will be affected. Further analysis should look at all
SECTION 4: Specialty Items	***$0***	Retaining walls, sound walls, tie back walls and ramp reconfigurations are based on the widening needed. These are all based on a preliminary Google Earth review.
SECTION 6: TRAFFIC ITEMS	***$787,000***	
SECTION 8: MINOR ITEMS 5% of Sections 1-6	***$219,650***	
SECTION 9: MOBILIZATION 10% of Sections 1-6	***$439,300***	
SECTION 10: ROADWAY ADDITIONS 5% of Sections 1-6	***$219,650***	
SECTION 13: CONTINGENCIES 40% of Sections 1-10	***$2,108,640***	
II. STRUCTURE ITEMS		
BRIDGES	***$2,279,000***	
TOTAL CAPITAL OUTLAY COSTS	***$9,659,240***	
SUPPORT COSTS	***$3,381,000***	Support costs are 35% of capital outlay costs
TOTAL PROJECT COSTS	***$13,040,000***	

Summary of Quantities

Project #18, SR-91 EB, Pierce St Off Ramp to Magnolia On Ramp

	Item Description	Distance (ft)	Width (ft)	Depth (ft)	Quantity	Unit	Cost Assumptions	Total Cost	Engineering Assumptions
I. Roadway Items Summary									
	Earthwork								
	Roadway Excavation (EB Magnolia off Ramp)	260.00	260.00	0-15	26576.11	CY	$15.00	$398,641.67	
	Roadway Excavation (EB Magnolia on Ramp)	330.00	220	0-8	13303.70	CY	$15.00	$199,555.56	
	Roadway Excavation (EB Pierce off Ramp)	715	32-78	0-15	22695.00	CY	$15.00	$340,425.00	
	Pavement Structural Section						$0.00		
	Remove Concrete Pavement (Mainline)	4115.00	10.00		4572.22	SQYD	$36.38	$166,337.44	Existing shoulders at 10'
	Class 2 Aggregate Subbase (Mainline)	4115.00	22.00		2347.07	CY	$72.10	$169,224.04	Lane plus shoulder at 22' with Class 2 Aggregate depth of 0.70'
	Hot Mix Asphalt (Type A) (Mainline)	4115.00	22.00		1640.86	TON	$85.00	$139,472.78	Lane plus shoulder at 22' with a HMA depth of 0.25'
	Continuously Reinforced Concrete Pavement (Mainline)	4115.00	22.00		3017.67	CY	$270.00	$814,770.00	Lane plus shoulder at 22' with a CRCP depth of 0.90'
	Remove Concrete Pavement (EB Magnolia off Ramp)	1345.00	8.00		1195.56	SQYD	$36.38	$43,494.31	Existing shoulders at 8'
	Class 2 Aggregate Subbase (EB Magnolia off Ramp)	1345.00	26.00		906.63	CY	$72.10	$65,368.00	Lane plus shoulder at 26' with Class 2 Aggregate depth of 0.70'
	Hot Mix Asphalt (Type A) (EB Magnolia off Ramp)	1345.00	26.00		633.83	TON	$85.00	$53,875.66	Lane plus shoulder at 26' with a HMA depth of 0.25'
	Continuously Reinforced Concrete Pavement (EB Magnolia off Ramp)	1345.00	26.00		1165.67	CY	$270.00	$314,730.00	Lane plus shoulder at 26' with a CRCP depth of 0.90'
	Remove Concrete Pavement (EB Magnolia on Ramp)	745.00	8.00		662.22	SQYD	$36.38	$24,091.64	Existing shoulders at 8'
	Class 2 Aggregate Subbase (EB Magnolia on Ramp)	745.00	22.00		424.93	CY	$72.10	$30,637.16	Lane plus shoulder at 22' with Class 2 Aggregate depth of 0.70'
	Hot Mix Asphalt (Type A) (EB Magnolia on Ramp)	745.00	22.00		297.07	TON	$85.00	$25,250.84	Lane plus shoulder at 22' with a HMA depth of 0.25'
	Continuously Reinforced Concrete Pavement (EB Magnolia on Ramp)	745.00	22.00		546.33	CY	$270.00	$147,510.00	Lane plus shoulder at 22' with a CRCP depth of 0.90'
	Remove Concrete Pavement (EB Pierce off Ramp)	300.00	8.00		266.67	SQYD	$36.38	$9,701.33	Existing shoulders at 8'
	Class 2 Aggregate Subbase (EB Pierce off Ramp)	300.00	24.00		186.67	CY	$72.10	$13,458.67	Lane plus shoulder at 24' with Class 2 Aggregate depth of 0.70'
	Hot Mix Asphalt (Type A) (EB Pierce off Ramp)	300.00	24.00		130.50	TON	$85.00	$11,092.50	Lane plus shoulder at 24' with a HMA depth of 0.25'
	Continuously Reinforced Concrete Pavement (EB Pierce off Ramp)	300.00	24.00		240.00	CY	$270.00	$64,800.00	Lane plus shoulder at 24' with a CRCP depth of 0.90'
	Traffic Items								
	Traffic Electrical								
	Intersection Signalization				3.00	PER CORNER	$50,000.00	$150,000.00	
	Traffic Signing and Stripping						$0.00		
	Removal of Existing Striping (Mainline)	4112.00			4112.00	LF	$0.65	$2,672.80	
	Thermoplastic Striping (Mainline)	8224.00			8224.00	LF	$2.41	$19,819.84	
	Removal of Existing Striping (EB Magnolia off Ramp)	2690.00			2690.00	LF	$0.65	$1,748.50	
	Thermoplastic Striping (EB Magnolia off Ramp)	2690.00			2690.00	LF	$2.41	$6,482.90	
	Removal of Existing Striping (EB Magnolia on Ramp)	1490.00			1490.00	LF	$0.65	$968.50	
	Thermoplastic Striping (EB Magnolia on Ramp)	1490.00			1490.00	LF	$2.41	$3,590.90	
	Removal of Existing Striping (EB Pierce off Ramp)	600.00			600.00	LF	$0.65	$390.00	
	Thermoplastic Striping (EB Pierce off Ramp)	600.00			600.00	LF	$2.41	$1,446.00	
	Reconstruct Sign Structure				3.00	EA	$200,000.00	$600,000.00	
II. Structure Items									
	Magnolia Bridge Widening	340.00	14.00		4760.00	SQFT	$375.00	$1,785,000.00	
	Pierce Bridge Widening	94.00	14.00		1316.00	SQFT	$375.00	$493,500.00	
III. Right of Way									

I.	**Roadway Items**	$3,820,000.00
	Earthwork	$939,000.00
	Pavement Structural Section	$2,094,000.00
	Specialty Items	$0.00
	Traffic Items	$787,000.00
II.	**Structural Items**	$2,279,000.00
III.	**Right of Way**	$0.00