# RCTC TRUCK STUDY AND REGIONAL LOGISTICS MITIGATION FEE

Final Technical Memorandum: Task 3 – Nexus Study

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## 1. INTRODUCTION, BACKGROUND AND PURPOSE

Despite the recent slow-down in the rate of development in the region due to the lasting effects of the economic recession, Western Riverside County remains one of the fastest growing regions in the country. The proximity to Los Angeles, Orange County and San Diego, the availability of comparatively affordable land, and the generally high quality of life in area communities each contribute to making Riverside County an attractive place to live and work. However, the continuing rapid rate of growth in the region exceeds the capacity of existing financial resources to meet demand for transportation infrastructure. Traditional transportation funding sources, Measure A and the respective Transportation Uniform Mitigation Fee (TUMF) programs, as well motor fuel tax revenues generated by the recent enactment of Senate Bill 1 (SB1), substantially contribute to building and maintaining transportation infrastructure, although these funding sources are considered insufficient to address all the area's transportation funding needs into the future. This is particularly the case for the freeway system in Western Riverside County where existing needs, anticipated future growth and the fluctuating increase in land and material costs exceed the capability of current local, state and federal programs to meet future funding needs.

The projected growth in Western Riverside County can be expected to significantly increase congestion and degrade mobility if substantial additional investments are not made in the transportation infrastructure. This challenge is especially critical for the freeway system which provides the foundation for the area's transportation system and is recognized as an essential element for sustaining the regional economy. Further increases in congestion and degradation in mobility on the freeway system will have a considerable impact on the economy and overall quality of life in Western Riverside County.

The impact of trucks and other traffic associated with warehousing and logistics uses has increasingly emerged as an issue of concern in Riverside County as more of these developments are located within the county. The issue of adequate mitigation of the impacts of these uses on regional freeways recently culminated with a multi-party lawsuit involving mitigation of the Highland Fairview development in Moreno Valley. As part of a settlement agreement between the respective parties to the lawsuit, it was agreed that the Riverside County Transportation Commission (RCTC) would undertake a regional truck study to verify the cumulative level of impact of warehousing and logistics uses on the freeway system in Riverside County as the basis for establishing a regional logistics mitigation fee. This Nexus Study represents a critical milestone in the RCTC Truck Study and Development and Implementation of Regional Logistics Mitigation Fee work effort.

The RCTC Truck Study and Development and Implementation of Regional Logistics Mitigation Fee is intended to verify the anticipated rate of growth in warehousing and logistics-related development in Riverside County, and to quantify the associated level of traffic impacts on the Riverside County highway system because of the expected growth in warehousing and logistics activities. In quantifying impacts, the study is also intended to determine the amount that each new warehousing or logistics development should pay in lieu of completing actual freeway improvements to mitigate the cumulative regional traffic impacts specifically associated with truck trips generated by new warehousing and logistics developments. The findings of this study are intended to provide the framework for implementing a program to collect impact fees that will contribute to mitigating the truck traffic impacts associated with new warehousing and logistics developments in Riverside County. Such a program can help to ensure that all new logistics-related development approved in Riverside County will bear a proportional fair share of the cost of building transportation infrastructure to address future transportation needs.

This technical memorandum represents the third in a series of documents that will verify the rate of new warehousing and logistics related developments in Riverside County, the associated truck trip generation rates and cumulative regional traffic impacts, the cost to mitigate these impacts, and the fair share basis for collecting a potential fee. This document summarizes the technical evaluation efforts and presents the analysis findings developed as part of the prior study tasks to calculate a fair share fee amount and document the rational nexus for a regional logistics mitigation fee.

#### 1.1. NEXUS STUDY PROCESS

The various steps of the fee calculation process that contribute to accomplishing this task are summarized in the following sections of this document. The study process starts by confirming the expected growth in population and employment in the region, and specifically growth in warehousing and logistics uses in Riverside County, applies the regional travel demand model to generate traffic data outputs to identify future capacity deficiencies in the highway network, and then determines the proportion of those deficiencies that are attributable to new warehousing and logistics related development. The resultant information is then cross-referenced with project cost information to determine the overall cost of mitigating logistics impacts as the basis for estimating a fee. This cost is then divided by the anticipated rate of growth in new warehousing and logistics developments in Riverside County to determine the fair share fee amount.

The subsequent chapters of this Nexus Study document describe the various assumptions, data inputs and analysis leading to the determination of a fee that represents the maximum "fair share" amount that can be charged to new warehouse and logistics uses to mitigate the indirect cumulative regional impacts of the development on the freeway network. The overall process for establishing the fee nexus is illustrated in the flow chart in **Figure 1.1** outlining the various technical steps in this fee calculation process. Each technical step that was followed to determine the fee and establish the program nexus is described in the subsequent sections, with reference to the numbers denoted on the flow chart correlating to the various steps. The flow chart also incorporates color coding of the steps to indicate those steps that involved the application of the SCAG regional travel demand model, steps that utilized other input data, steps that are computations of various inputs, and key outputs.



Figure 1-1: Flowchart of Key Steps in the Nexus Study Process

## 2. FORECASTING LOGISTICS GROWTH AND TRAFFIC IMPACTS

This initial phase of the study process is to inventory existing logistics facilities in Riverside County, confirm the forecast growth in logistics facilities through 2040, and determine the magnitude and location of logistics related truck traffic impacts. This effort encompasses the first nine steps illustrated in the study process flow chart.

#### 2.1. FORECASTING LOGISTICS GROWTH

The settlement agreement that prompted the study effort specifically cites warehouse and logistics uses as the subject of the analysis and potential fee. As a precursor to inventorying and forecasting logistics facilities and their impacts, specific types of logistics facilities were defined to be the subject of the analysis and resultant fee based on the functions they serve, the types of businesses that utilize them, and their design and trip generation characteristics. A range of data sources were reviewed including the South Coast Air Quality Management District (SCAQMD) *High-Cube Warehouse Vehicle Trip Generation Analysis*, the SCAG *Industrial Warehousing Study*, the Institute of Traffic Engineers (ITE) *Trip Generation Manual*, and the recently-released SCAQMD/NAIOP/ITE study of vehicle trip generation for high-cube warehouses, as well as available industry databases to identify an appropriate definition of the subject uses. The various datasets use different systems to classify industries; the North American Industry Classification System (NAICS) and the Standard Industrial Classification (SIC). The U.S. Census Bureau uses the NAICS structure. Similarly, SCAG uses the NAICS structure as the basis for developing regional employment forecasts as part of its long-range planning responsibilities.

The NAICS applies a 6-digit hierarchical coding system to classify all economic activity into 20 industry sectors. Five sectors are mainly goods-producing sectors and 15 are entirely services-producing sectors. Transportation and Warehousing (Industry Code 48 & 49) is defined in NAICS as "Industries providing transportation of passengers and cargo, warehousing and storage for goods, scenic and sightseeing transportation, and support activities related to modes of transportation. Establishments in these industries use transportation equipment or transportation related facilities as a productive asset. Modes of transportation include air, rail, water, road, and pipeline. (Example: Freight Trucking Companies, Warehousing and Storage, Couriers and Delivery Services.)"<sup>1</sup>. The Warehousing subcategory (NAICS subcategory code 493) is included within this category and was determined to be the most applicable subcategory for the purposes of this study.

The current SCAG Sustainable Community Strategy (SCS) was adopted on April 7, 2016 and constitutes the officially-adopted land use forecast for the region. The horizon year for the SCS is 2040. The primary SCS forecast for non-residential development incorporates units of jobs (as opposed to acres, square feet, etc.) for a full range of land uses, including Warehousing employment. As the adopted growth forecast for the SCAG region, the SCAG SCS provides the starting point for forecasting logistics growth in Riverside County.

The SCAG SCS base year (2012) jobs in the Warehousing subcategory was compared to other sources as a reasonableness check. The California Employment Development Department

<sup>&</sup>lt;sup>1</sup> North American Industry Classification System United States, Executive Office of the President Office of Management and Budget, 2017

(EDD) Metropolitan Statistical Area (MSA) employment data by detailed NAICS industries code were utilized for this purpose. The SCAG SCS base year (2012) employment in Warehousing in Riverside and San Bernardino Counties is 15,821 jobs, which is less than two-thirds of the 24,900 Warehousing jobs indicated for the same period in the EDD employment data for the Riverside-San Bernardino-Ontario MSA. For this reason, the SCAG SCS data were adjusted to support the travel demand forecasting completed as part of this study.

EDD collects data on employment by detailed NAICS industries, but only at the MSA geographic level. Moreover, EDD does not include long-term forecasts, only past observed data. Therefore, the EDD historical data for the Riverside-San Bernardino-Ontario MSA had to be extrapolated into the future and disaggregated by county. The adjustments were accomplished by first observing the historical trend for Warehousing jobs in the Riverside-San Bernardino-Ontario MSA and extrapolating for the years 2016 to 2040. As illustrated in **Figure 2-1**, 2003 marks a notable 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 as the basis for adjusting the employment data in the model.

#### Figure 2-1: EDD Warehouse and Other Transportation Employment Extrapolated Trends (Riverside-San Bernardino-Ontario MSA)



Caltrans' Transportation Economics Branch provides annual county-level projections of employment by 2-digit NAICS industry categories through 2050. A comparison of the Caltrans data for Riverside and San Bernardino Counties combined reveals the total jobs for

Transportation and Warehousing correlates very closely with the EDD historical trend extrapolation described previously, as illustrated in **Figure 2-2**. Considering the close correlation of totals between datasets, the proportion of total jobs in Transportation and Warehousing in Riverside County compared to San Bernardino County based on the Caltrans dataset was used to disaggregate the EDD extrapolated Warehouse jobs by MSA into county subtotals.



#### Figure 2-2: Transportation Employment - Caltrans Transportation Economics Branch Forecast vs. Extrapolated EDD Trend (Riverside-San Bernardino-Ontario MSA)

The preceding steps produced a control total for the growth in warehouse jobs in Riverside County accomplishing Step 1 in the study process as illustrated in **Figure 1-1**. However, accomplishing this first step provided no indication about where in the county these jobs would be located. Locational data is needed so that the anticipated growth in warehouse and logistics development will be properly represented in the travel demand forecast in terms of where resultant traffic impacts will affect the freeway system. The best available data for distributing warehousing growth across Riverside County can be derived from the SCAG *Industrial Warehousing Study*, some products of which are available for Heavy Duty Truck modeling purposes. For the purposes of the *Industrial Warehousing Study*, SCAG developed forecasts of the rate of warehouse growth in terms of the gross floor area of buildings as well as jobs. **Table 2-1** summarizes the forecasts developed as part of the SCAG study effort and incorporated into the SCAG Heavy Duty Truck Model that supported the 2016 RTP/SCS.

Year	High Cube Warehous	sing	Low Cube Warehousing			
	Warehouse Area (square feet)	Employment	Warehouse Area (square feet)	Employment		
2012*	41,281,541	1,793	8,833,418	1,804		
2016	48,837,363	2,810	14,472,627	2,533		
2020	56,393,177	3,819	20,111,826	3,256		
2030	64,664,947	6,120	26,810,782	5,070		
2040	69,410,192	7,427	31,231,977	6,185		

#### Table 2-1: Warehouse Trends in Riverside County, 2012-2040

\* The area shown in 2012 includes total available floor space. The area shown in 2016 and years after includes planned occupied floor space. Source: SCAG 2016 RTP/SCS Heavy Duty Truck Model

Although the SCAG warehouse employment forecast appeared to be low when compared to other data sources, as described previously, the warehouse area forecast appears to be more consistent with the amount of existing and planned warehouse development in Riverside County. Furthermore, as a check of the reasonableness of the EDD extrapolation of Warehouse sector employment in Riverside County, the jobs were multiplied by the square foot per employee ratio for warehousing uses as published by the National Association for Industrial and Office Parks (NAIOP) Logistics Trends and Specific Industries that Will Drive Warehouse and Distribution Growth and Demand for Space in March 2010. As indicated in Table 2-2, when the extrapolated EDD warehouse employment trend forecast is multiplied by the 2,241 square feet per employee ratio cited by NAIOP, the resultant interpolated growth in warehouse building area is similar, although slightly lower, than the rate forecast by SCAG in the Industrial Warehousing Study and utilized in the Heavy Duty Truck Model. For this reason, the rate of growth in the gross floor area of warehouses in Riverside County was accepted by the Study Review Team as the basis for calculating the fee accomplishing Step 4 in the study process, as illustrated in **Figure 1-1**. This finding also affirmed using the data to guide the disaggregation of EDD extrapolated warehouse jobs in Riverside County for travel demand modeling purposes.

Table 2-2:	Warehouse	Growth in	Riverside	County.	2016-2040

	G	rowth (2016 to 2040)
	Employees	Square Feet of Gross Floor Area
SCAG 2016 RTP/SCS Forecast	8,269	37,332,179
Extrapolated EDD Forecast*	14,582	32,678,262

\* Forecast based on EDD extrapolated employment trend and 2,241 square feet per employee ratio from NAIOP Logistics Trends and Specific Industries that Will Drive Warehouse and Distribution Growth and Demand for Space, March 2010 Source: SCAG 2016 RTP/SCS Forecast & Heavy Duty Truck Model; EDD **Table 2-3** arrays the forecast growth in the gross floor area of warehousing in Riverside County based on the SCAG 2016 RTP/SCS forecast presented in the *Industrial Warehouse Study* and utilized in the Heavy Duty Truck Model. The extrapolated growth in warehouse jobs in Riverside County was multiplied by the percentage of warehouse job growth for each Traffic Analysis Zone (TAZ) as derived from the SCAG Heavy Duty Truck Model to produce the adjusted forecast of the growth in warehouse employment by TAZ to support the travel demand forecasting conducted as part of this study, accomplishing Step 3 in the study process, as illustrated in **Figure 1-1**.

TAZ_ ID	High-cube 2016	Low-cube 2016	High-cube 2040	Low-cube 2040	Total Change 2016-2040	Percent change 2016 - 2040	Percent of total growth countywide	
43344	5,417	2,323	20,136	8,628	21,024	271.63%	56.31%	
43336	641	1,497	3,198	7,461	8,521	398.55%	22.82%	
43338	101	231	355	822	845	254.52%	2.26%	
43148	4,437	410	4,437	1,029	619	12.77%	1.66%	
43571	-	-	594	-	594	0.00%	1.59%	
43130	2,050	465	2,050	988	522	20.80%	1.40%	
43364	-	182	331	293	442	242.86%	1.18%	
43573	-	-	421	-	421	0.00%	1.13%	
43302	655	-	1,072	-	417	63.66%	1.12%	
43305	302	-	604	604 - 302 100.00%				
43264	-	-	300	-	300	0.00%	0.80%	
43187	-	119	-	340	221	185.71%	0.59%	
43575	156	37	311	75	193	100.00%	0.52%	
43260	2,031	820	2,031	1,002	180	6.38%	0.48%	
43452	172	-	343	-	172	99.42%	0.46%	
43345	-	-	-	163	163	0.00%	0.44%	
43448	-	60	-	209	150	248.33%	0.40%	
43286	-	-	-	149	149	0.00%	0.40%	
43332	101	44	202	88	145	100.00%	0.39%	
43249	3,197	1,716	3,197	1,860	144	2.93%	0.39%	
43395	131	-	262	-	131	100.00%	0.35%	
43415	2,992	244	2,992	369	124	3.86%	0.33%	
43134	474	454	474	574	120	12.93%	0.32%	
43454	119	-	237	-	119	99.16%	0.32%	
43168	491	-	491	116	116	23.63%	0.31%	

## Table 2-3: Warehouse Growth by TAZs in Riverside County (in thousand square feet gross floor area and percentage)

43409	-	-	-	108	108	0.00%	0.29%
43366	-	-	-	89	89	0.00%	0.24%
43236	-	83	-	165	83	98.80%	0.22%
43399	-	81	-	162	81	100.00%	0.22%
43265	-	-	-	80	80	0.00%	0.21%
43488	-	78	-	155	78	98.72%	0.21%
43563	308	162	308	232	70	14.89%	0.19%
43246	328	487	328	547	61	7.36%	0.16%
43276	-	59	-	117	59	98.31%	0.16%
43429	-	57	-	- 115 57 10		101.75%	0.15%
43162	-	-	-	56	56	0.00%	0.15%
43181	821	61	821	112	51	5.78%	0.14%
43420	286	48	286	96	48	14.37%	0.13%
43261	-	120	-	163	43	35.83%	0.12%
43136	289	193	289	233	40	8.30%	0.11%
43310	-	40	-	80	40	100.00%	0.11%
43125	5,048	692	5,048	727	36	0.61%	0.10%
43474	-	32	-	65	32	103.13%	0.09%
43397	-	31	-	62	31	100.00%	0.08%
43188	380	145	380	175	30	5.71%	0.08%
43214	-	285	-	311	27	9.12%	0.07%
TOTAL	30,927	11,256	51,498	28,016	37,334	88.50%	100.00%

Source: SCAG Industrial Warehouse Study/Heavy Duty Truck Model

#### 2.2. FORECASTING TRAFFIC IMPACTS

A key 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 travel demands and capacity deficiencies, and determining attribution of deficiencies to new logistics trucking<sup>2</sup>. While the SCAG regional model provides the primary tool for quantifying the traffic impacts of new warehousing and logistics development, additional information regarding the trip generation characteristics of warehousing and logistics land uses is used to validate and refine the SCAG model results for the purposes of the study evaluation. The process for quantifying the trips associated with new logistics centers is summarized in the following section.

<sup>&</sup>lt;sup>2</sup> 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 modeling 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.

#### 2.2.1. SCAG Model Adjustment and Re-Validation

The California Transportation Commission (CTC) 2010 California Regional Transportation Plan *Guidelines* states the following about adjusting and re-validating a regional travel model 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."

In accordance with the CTC guidelines and best industry practice, the SCAG model was reviewed, adjusted and revalidated to improve the accuracy of the results with respect to freeways in Riverside County. This process involved a series of diagnostic tests being performed on the SCAG model to test its validity for use in a freeway impact fee nexus study. The tests showed that the model reasonably represented truck traffic on Riverside County freeways. For example, **Figure 2-3** compares the volume of trucks at various freeway locations in the model versus the volumes provided in the Caltrans Performance Measurement System (PeMS) data. The results reflect a reasonable correlation between the model and actual values, and no systemic tendency towards over- or under-estimating the truck volumes and percentage of total traffic.



Figure 2-3: 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 2-4** 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 2-3** and **Figure 2-4** 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 overestimate or under-estimate total traffic volumes on freeways in Riverside County. **Figure 2-4** shows that the model did not satisfy this test; consistently 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 2-4: AM and PM Peak Hour Comparison of PEMS Total Traffic Volumes and SCAG Model Total Traffic Volumes



The model overestimation was corrected by factoring down model volumes in a post-model adjustment<sup>3</sup>. Only car volumes were factored down, not truck volumes, because truck volumes did not show the same trend of overestimation, as illustrated previously in **Figure 2-3**. **Figure 2-5** shows the results after applying factors of 0.74 and 0.80 in the AM peak hour and PM peak

<sup>&</sup>lt;sup>3</sup> Additional details regarding the model testing, adjustments and re-validation are presented in *Technical Memorandum 1: Existing and Future Conditions* (WSP, October 2017) and *Technical Memorandum: Task 2 – Funding and Cost Analysis* (WSP, June 2018).

hour, respectively. After adjustments, the R-squared<sup>4</sup> 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, satisfying the recommended guidelines for model validity.



#### Figure 2-5: AM and PM Peak Hour Comparison of PEMS Total Traffic Volumes and SCAG Model Adjusted Total Traffic Volumes

### 2.2.2. Forecasting Traffic Volumes and Identifying Traffic Impacts

The SCAG Model's 2016 scenario year network was used for all model runs with the extrapolated 2016 and 2040 socio-economic forecasts described previously in **Section 2.1** providing the basis for the demand inputs in Riverside County. These model files were from the version of the SCAG model used to develop the 2016 RTP/SCS. The SCAG model outputs were factored in accordance with the post-model adjustment described in **Section 2.2.1** to yield adjusted forecast total traffic volumes on the various freeways in Riverside County for analysis years 2016 and 2040. This process to forecast 2016 and 2040 traffic volumes effectively encompasses steps 10, 12 and 14 as illustrated previously in **Figure 1-1**.

Based on the post-model adjusted total traffic volumes, the volume to capacity (V/C) ratio was computed for each freeway link in Riverside County for the AM and PM peak hours using the capacities and passenger car equivalent (PCE) factors<sup>5</sup> embedded in the SCAG model (steps 13 and 15 in **Figure 1-1**). Per the RCTC *Congestion Management Program*, the adopted minimum Level of Service (LOS) threshold for freeways in Riverside County is LOS "E" meaning that freeway facilities with a V/C ratio of 1.0 or higher are considered deficient.

<sup>4</sup> 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.

<sup>5</sup> 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.

## vsp

**Figures 2-6** and **2-8** show the existing V/C ratios on Riverside County freeways for the AM peak hour and PM peak hour, respectively, with green and yellow indicating acceptable V/C ratios (<0.9), orange indicating marginal V/C ratios (0.9 – 1.0) and red indicating deficient V/C ratios (>1.0). Under existing conditions, three current deficiencies were identified on the freeway network 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, but may be perceived by drivers as problem sections beyond the actual deficient segment.

**Figures 2-7** and **2-9** show 2040 traffic demand assigned to the existing network<sup>6</sup> with no added capacity improvements for the AM and PM peak hours, respectively (i.e. a 2040 "No Improvement" Scenario). Comparing the existing capacity deficiencies with the future deficiencies helps to show where new deficiencies would occur that are entirely attributable to new development. Furthermore, comparing the existing and future V/C ratio on the freeway segments that are currently deficient shows the proportion of the future deficiency that is attributable to new development. The 2040 No Improvement results clearly indicate the existing deficiencies worsen and two additional deficiencies in the AM peak hour and five additional deficiencies in the PM peak hour would manifest.

It should be noted that although the following exhibits illustrate the model results for the Western Riverside County, modeling and V/C ratios were done for all freeways in Riverside County. However, the results did not indicate any deficient segments of freeway outside of Western Riverside County, although some modest deterioration of V/C can be observed along I-10 in the Coachella Valley during the 2040 PM peak hour, as illustrated in **Figure 2-9**.

It should also be noted that the model results reflect V/C ratio as the basis for identifying freeway capacity deficiencies. Beyond the embedded capacity of each freeway segment in the SCAG model network, the analysis did not consider operational deficiencies in the freeway network that may contribute to traffic breakdown and congestion (e.g. lane drops, weaving and merging areas, horizontal and vertical alignment, and other design characteristics). These types of operational deficiencies can be considered existing design deficiencies and therefore usually cannot be attributed to the impacts of future new development, although future new development can exacerbate the magnitude of congestion associated with these operational deficiencies. For this reason, V/C is used to identify freeway segments with a capacity deficiency that can be attributable to the additional traffic from new development, while also factoring the extent that existing traffic demand contribute to the deficiency. Operational deficiencies to the extent that addressing the operational deficiencies represents necessary improvement elements to accomplish successful mitigation of the capacity deficiency.

<sup>&</sup>lt;sup>6</sup> 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 2-6: Existing Deficiencies on Riverside County Freeways during the AM Peak Hour

Figure 2-7: Future Deficiencies on Riverside County Freeways during the AM Peak Hour





Figure 2-8: Existing Deficiencies on Riverside County Freeways during the PM Peak Hour

Figure 2-9: Future Deficiencies on Riverside County Freeways during the PM Peak Hour



Based on the findings of the V/C analysis, freeway segments identified as being deficient in the 2040 No Improvement Scenario were tabulated. These locations represent the freeway segments where future traffic demands exceed the existing capacity, and therefore require mitigation. These locations are listed in **Table 2-4** and illustrated in **Figure 2-10**. Section 3 of this report describes the process that was used to determine the share of the deficiency in each of these segments that is specifically attributable to the impacts of new warehousing and logistics developments occurring in Riverside County.

ID	Route	Dir	Beginning	End		
1 a h			SR-79 S	Rancho California Rd		
1 a,0			Rancho California Rd	Winchester Rd		
2			Winchester Rd	Lane Add south of I-15/I-215 Split		
3		IND	Clinton Keith Rd	Baxter Rd		
4	T 15		El Cerrito Rd	Ontario Ave		
5	1-15		Norco Dr/6th St	Limonite Ave		
6 a h			Cantu Galeano Ranch Rd	Limonite Ave		
0 a,0		CD	Limonite Ave	Norco Dr/6th		
7		SD	Cajalco Rd	Indian Truck Trail		
8			El Cerrito Rd	Cajalco Rd		
0 a h			Rubidoux Blvd	Market St		
9 a,0	3K-00	LD	Market St	Main St		
10 a h			Box Springs Rd	Central Ave/Watkins Dr		
10 a,0		NIP	Central Ave/Watkins	Martin Luther King		
10c	- I-215		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		30	Van Buren Blvd	Case Rd		
			Riverside County Line	Green River Rd Off-Ramp		
14 a,b,c			Green River Rd Off-Ramp	SR-71		
			SR-71	Serfas Club Dr Off-Ramp		
15		EB	Serfas Club Dr Off-Ramp	Grand Blvd Rd Off-Ramp		
16	16 SR-91		On-Ramp from SB-I-15	On Ramp from NB- I-15		
17	McKinley St Off Ramp		McKinley St Off Ramp	Pierce St		
18		Pierce St		Magnolia St		
10 a h		WB	Serfas Club Dr Off-Ramp	Lane Add at SR-71		
19 a,b		VVD	Lane Add at SR-71	Riverside County Line		

#### Table 2.4: Capacity Deficient Segments on Riverside County Freeways (2040 No Improvement)



#### Figure 2-10: Capacity Deficient Segments on Riverside County Freeways (2040 No Improvement)

#### 2.3. ATTRIBUTING CAPACITY DEFICIENCIES TO NEW LOGISTICS DEVELOPMENT

In addition to generating the traffic volume forecasts used as the basis to determine V/C and identify the capacity deficiencies described previously, the SCAG model runs produce several outputs that can be used in the attribution of share to logistics uses. The following section summarizes the process for determining attribution to new logistics development using various outputs from the SCAG model runs.

#### 2.3.1. Percent Attributable to Future Development

Impact fees must be limited to only account for a new development's "fair share" of the cost of needed improvements to mitigate associated impacts. In particular, impacts fees cannot be assessed to directly cover the cost to mitigate existing deficiencies. Therefore, the first step in attributing impacts is to complete a comparison of existing and future freeway deficiencies 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.

The existing and future traffic for each of the deficient segments idenfied in **Table 2-4** was compared to detemine which of the three possible situations applied. The percent attributable to new development was determined based on this comparison, and the results were tabulated as the share of impact attributable to all new development.

#### 2.3.2. Percent Attributable to New Logistics Trucks in Riverside County

In order to compute the percent of each deficiency that is attributable specifically to warehousing and logistics truck trips, it was necessary to separate the truck trips generated by warehousing and logistics uses from the total traffic forecast during the model assignment process. This process is represented by steps 5 through 9 and 19 through 23 as illustrated in the flowchart in **Figure 1-1**.

This process was accomplished by first modifying the Truck Employment table in the SED input files to the SCAG model to reflect only the growth in warehousing and logistics employment in Riverside County. A select-zone query was then generated during the model

assignment step allowing logistics only truck trips generated by warehouse and logistics uses in Riverside County to be recorded for each link in the model. This specifically isolates the truck trips associated with warehousing and logistics uses in Riverside County from the trips associated with all other land use in the county, as well as the truck trips that are generated outside the county but still traverse freeways within Riverside County (i.e. pass-through trips). A comparison of the Riverside County logistics related truck trips in 2040 to the total traffic forecast in 2040 provides the share of Riverside County logistics related truck trips in 2040 for each deficient segment on Riverside County freeways.

#### 2.3.3. Percent of Freeway Capacity Deficiencies Attributable to New Logistics Development in Riverside County

As described in **Section 2.2.2**, the freeway segments in Riverside County with new or increased deficiencies in either peak hour in 2040 relative to the existing condition in 2016 were identified as deficient segments. For each deficient segment, the share of logistics related truck trips, as described in **Section 2.3.2**, was multiplied by the share of deficiencies attributable to all future growth, as described in **Section 2.3.1**, to determine the percent of each deficiency specifically attributable to new logistics related truck trips. Consistent with the identification of deficiencies based on AM and PM peak hour observations, 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.

Continuous sequences of model segments, as listed in **Table 2-4**, were grouped for the purposes of assigning the percent of freeway capacity deficiencies attributable to new logistics development in Riverside County. Where multiple deficient segments were grouped, a weighted percent attributable was calculated based on the respective segment percent attributable and the length of each segment.

**Table 2-5** arrays the critical V/C ratios, deficiencies, and percent attributable for each deficient segment of freeway in Riverside County. **Figure 2-11** visually represents the components of traffic (existing, non-logistics growth, and logistics growth) relative to the capacity for each deficient segment location.

			Critic	al Segment	2016 GP	Segment	Critical V/C ratio		Critical V/C ratio Percent Deficiency Attributable to Percent Deficiency Attributable to P		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	Weighted Average Highest		
Project ID	Route Name	Dir			Lanes on Critical	Length (mi)	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	Logistics Trucks	% Deficiency Attributable to
			Start	End	Segment	( )	(4	4)	(8	3)	(C) = 100%, for (A) (C) = [(B)-(A)]/[(B)	< 1.0 and (B) > 1.0 -1], for (A) > 1.0	(	D)	(E) = (	C) * (D)	(F) = Max (E)	New Logistics Trucks
1	1.15	ND	SR-79 S	Rancho California Rd	4	0.98	0.35	0.66	0.52	1.01	No Deficiency	100%	1.2%	0.7%	No Deficiency	0.7%	0.7%	0.7%
1	1-13	IND	Rancho California Rd	Winchester Rd	4	1.10	0.45	0.74	0.60	1.01	No Deficiency	100%	1.4%	0.7%	No Deficiency	0.7%	0.7%	0.776
2	I-15	NB	Winchester Rd	Lane Add south of I-15/I-215 Split	4	0.75	0.46	0.79	0.58	1.02	No Deficiency	100%	2.3%	0.9%	No Deficiency	0.9%	0.9%	0.9%
3	I-15	NB	Clinton Keith Rd	Baxter Rd	3	0.76	0.52	0.80	0.65	1.03	No Deficiency	100%	1.1%	0.3%	No Deficiency	0.3%	0.3%	0.3%
4	I-15	NB	El Cerrito Rd	Ontario Ave	3	0.19	0.86	0.90	1.03	0.88	100%	No Deficiency	1.1%	100.0%	1.1%	No Deficiency	1.1%	1.1%
5	I-15	NB	Norco Dr/6th Street	Limonite Ave	3	2.03	0.82	1.10	0.87	1.14	No Deficiency	29%	4.1%	2.5%	No Deficiency	0.7%	0.7%	0.7%
c	1.15	CD.	Cantu Galeano Ranch Rd	Limonite Ave	3	1.30	0.77	0.96	0.77	1.02	No Deficiency	100%	100.0%	4.3%	No Deficiency	4.3%	4.3%	4.90/
0	1-12	SD	Limonite Ave	Norco Dr/6th Street	3	2.00	0.87	1.01	0.90	1.04	No Deficiency	88%	4.7%	5.9%	No Deficiency	5.2%	5.2%	4.8%
7	I-15	SB	El Cerrito Rd	Dos Lagos Dr	3	2.14	0.65	0.92	0.61	1.03	No Deficiency	100%	100.0%	2.2%	No Deficiency	2.2%	2.2%	2.2%
8	I-15	SB	Temescal Canyon Rd	Indian Truck Trail	3	2.21	0.61	0.83	0.56	1.01	No Deficiency	100%	100.0%	1.4%	No Deficiency	1.4%	1.4%	1.4%
0	CD CO	ED.	Rubidoux Blvd	Market St	3	0.79	0.84	0.95	0.81	1.03	No Deficiency	100%	100.0%	30.9%	No Deficiency	30.9%	30.9%	21.00/
9	3K-00	ED	Market St	Main St	3	0.10	0.87	1.00	0.82	1.06	No Deficiency	100%	100.0%	39.0%	No Deficiency	39.0%	39.0%	51.6%
10	1.215	ND	Box Springs Rd	Central Ave	4	0.41	0.94	1.08	1.09	1.07	100%	0%	14.3%	100.0%	14.3%	0.0%	14.3%	20.0%
10	1-215	IND	Watkins Dr	Martin Luther King Jr	4	0.78	0.94	1.05	1.12	1.16	100%	66%	24.8%	57.9%	24.8%	38.4%	38.4%	50.0%
10c	I-215	NB	University Ave Off-Ramp	Upstream of Univ Ave On-ramp	3	0.36	0.90	1.04	0.98	1.04	No Deficiency	13%	26.9%	100.0%	No Deficiency	13.3%	13.3%	13.3%
11	I-215	NB	Center St Off-Ramp	Riverside County Line/Iowa Ave	3	0.53	0.79	1.00	0.79	1.03	No Deficiency	97%	91.5%	12.2%	No Deficiency	11.8%	11.8%	11.8%
12	I-215	SB	Martin Luther King Jr	Sycamore Canyon Rd	4	1.58	0.96	1.13	1.07	1.25	100%	50%	57.1%	55.2%	57.1%	27.7%	57.1%	57.1%
13	I-215	SB	Van Buren Blvd	Harley Knox Blvd	3	1.22	0.67	0.95	0.64	1.06	No Deficiency	100%	100.0%	4.4%	No Deficiency	4.4%	4.4%	4.4%
			Riverside County Line	Green River Rd Off-Ramp	5	0.76	0.89	1.18	0.76	1.23	No Deficiency	23%	100.0%	6.1%	No Deficiency	1.4%	1.4%	
14	SR-91	NB	Green River Rd Off-Ramp	SR-71	5	1.33	0.79	1.01	0.72	1.02	No Deficiency	69%	100.0%	14.1%	No Deficiency	9.8%	9.8%	4.7%
			SR-71	Serfas Club Dr Off-Ramp	4	1.35	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	2.33	0.85	1.00	0.80	1.03	No Deficiency	100%	100.0%	8.9%	No Deficiency	8.9%	8.9%	8.9%
16	SR-91	NB	On-Ramp from SB I-15	On-Ramp from NB I-15	3	0.32	0.81	1.03	0.76	1.07	No Deficiency	55%	100.0%	13.6%	No Deficiency	7.5%	7.5%	7.5%
17	SR-91	NB	McKinley St Off-Ramp	Pierce St	3	1.60	0.81	0.98	0.76	1.02	No Deficiency	100%	100.0%	10.1%	No Deficiency	10.1%	10.1%	10.1%
18	SR-91	NB	Magnolia Ave	La Sierra Ave	3	0.30	0.76	0.93	0.69	1.00	No Deficiency	100%	100.0%	8.3%	No Deficiency	8.3%	8.3%	8.3%
40	60.04	6.0	Serfas Club Dr Off-Ramp	Lane Add at SR-71	4	2.26	0.97	1.08	1.05	1.01	100%	0%	2.8%	100.0%	2.8%	0.0%	2.8%	2.201
19	SK-91	SB	Lane Add at SR-71	Riverside County Line	5	1.75	0.92	1.00	1.02	0.91	100%	No Deficiency	1.8%	100.0%	1.8%	No Deficiency	1.8%	2.3%

#### Table 2-5: Deficient Segment Locations and Percent Attributable to New Logistics Development in Riverside County



Figure 2-11: Components of 2040 Traffic Demand as a Percentage of Capacity

### 3. DETERMINING FREEWAY MITIGATION CONCEPTS AND COSTS

Having identified deficient freeway segments in **Section 2.2**, and determined the share of the deficiency in each segment that is attributable to new warehouse and logistics uses in Riverside County in **Section 2.3**, the next step in the study process involved the preparation of design concepts for the mitigation of freeway traffic impacts, and the estimation of the costs associated to implement the necessary mitigation. This section describes the process for developing mitigation concepts and determining associated costs. The resultant mitigation costs will be compared to the percent attributable to each deficient segment, as defined in **Table 2-5**, to determine the fair share of the cost to mitigate each deficient segment to is attributable to the impacts of new warehouse and logistics development in Riverside County.

#### 3.1. Assessing Project Limits

Future capacity deficiencies on the freeway network in Riverside County were summarized in **Table 2-4** 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 to 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 effectively mitigate the segment deficiency.

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 additional capacity to accommodate slower moving trucks 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 3-1**. The definition of this project list correlates to accomplishing step 18 in **Figure 1-1**.

Table 3-1: Practical Limits of Capacity	<b>Deficient Segment Improvement Projects</b>
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ID	Route Name	Dir	Beginning	End
1			SR-79 S	Rancho California Rd
			Rancho California Rd	Winchester Rd
2		NID	Winchester Rd	Lane Add south of I-15/I-215 Split
3		NB	Clinton Keith Rd	Baxter Rd
4			El Cerrito Rd	Ontario Ave
5	I-15		Norco Dr/6th St	Limonite Ave
6			Cantu Galeano Ranch Rd	Limonite Ave
0			Limonite Ave	Norco Dr/6th
7		SB	Cajalco Rd	Indian Truck Trail
8			El Cerrito Rd	Cajalco Rd
0	SD (O	гр	Rubidoux Blvd	Market St
9	SK-60	EB	Market St	Main St
10		NB	Box Springs Rd	Central Ave/Watkins Dr
10			Central Ave/Watkins	Martin Luther King
10c	I 215		Martin Luther King Blvd	SR-91
11	1-215		Center St Off-Ramp	Riverside County Line/Iowa
12		SB	Martin Luther King Jr	Sycamore Canyon Rd
13		50	Van Buren Blvd	Case Rd
			Riverside County Line	Green River Rd Off-Ramp
14			Green River Rd Off-Ramp	SR-71
			SR-71	Serfas Club Dr Off-Ramp
15		EB	Serfas Club Dr Off-Ramp	Grand Blvd Rd Off-Ramp
16	SR-91		On-Ramp from SB-I-15	On Ramp from NB- I-15
17			McKinley St Off Ramp	Pierce St
18			Pierce St	Magnolia St
10		WB	Serfas Club Dr Off-Ramp	Lane Add at SR-71
19			Lane Add at SR-71	<b>Riverside County Line</b>

#### 3.2. REVIEW OF CURRENTLY FUNDED/PROGRAMMED IMPROVEMENTS

Once the practical limits of the improvements were defined, each project was compared to known, 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 3-2** lists the remaining deficient segments and associated mitigation projects that would be included as the basis for the logistics fee program.

ID	Route Name	Dir	Beginning	End	
1			SR-79 S	Rancho California Rd	
1		NB	Rancho California Rd	Winchester Rd	
3	I-15		Clinton Keith Rd	Baxter Rd	
7		SB	Cajalco Rd	Indian Truck Trail	
8		00	El Cerrito Rd	Cajalco Rd	
0	SD 60	ED	Rubidoux Blvd	Market St	
9	SK-00	LD	Market St	Main St	
10		Box Springs Rd		Central Ave/Watkins Dr	
10		NB	Central Ave/Watkins	Martin Luther King	
10c	I 215		Martin Luther King Blvd	SR-91	
11	1-215		Center St Off-Ramp	Riverside County Line/Iowa	
12		CP	Martin Luther King Jr	Sycamore Canyon Rd	
13		30	Van Buren Blvd	Case Rd	
16	SP 01	01 EP	On-Ramp from SB-I-15	On Ramp from NB- I-15	
18	517-91		Pierce St	Magnolia St	

#### Table 3-2: Capacity Deficient Segment Improvement Projects to be Included in the Fee Program

#### 3.3. DEVELOPMENT OF PROJECT CONCEPTS

Using scalable, georeferenced aerial photography, project concept plans were developed consistent with Caltrans design standards for urban area freeways to 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

For the initial assessment and development of project concept plans, a combination of Google Earth and limited field reviews were 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. Although arterial highway improvement projects were not specifically examined as part of the study effort, any arterial highway improvements necessary to accommodate the proposed freeway capacity improvements (e.g. ramp realignment, bridge reconstruction, intersection signalization) were identified and included in the concept drawings. 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. The completion of the design concept drawings represents the accomplishment of step 24 in the study process flow chart **Figure 1-1**. It should be noted that the conceptual designs were based on a visual analysis and that no detailed engineering or surveying has been done to verify the assumptions.

#### 3.4. PROJECT COST ESTIMATING

To accomplish step 25 and 26 in the study process, the unit costs for the various construction components were taken from the Caltrans cost database and other recent project cost estimates for projects of similar scale and scope within the Inland Empire. Right-of-way cost per residential unit and per square foot are based on recent property valuations in Riverside County. Specific elements in the unit costs include:

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 unit costs were multiplied by the quantities determined from the conceptual design plans to yield a conceptual cost estimate for each proposed project.

The proposed improvement project conceptual cost estimates were compared to the Western Riverside Council of Governments (WRCOG) *Transportation Uniform Mitigation Fee (TUMF) 2016 Nexus Study Report,* 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 in **Table 3-3Error! Reference source not found.** A more detailed breakout of the conceptual project cost estimates to mitigate the deficient segments is included in **Appendix B** of this technical memorandum.

ID	Route Name	Dir	Beginning	End	Cost Estimate	
1		NB	SR-79 S	Rancho California Rd	\$36,237,000	
1			Rancho California Rd	Winchester Rd		
3	I-15		Clinton Keith Rd	Baxter Rd	\$7,406,000	
7		SB	Cajalco Rd	Indian Truck Trail	\$37,825,000	
8		50	El Cerrito Rd	Cajalco Rd	\$10,408,000	
0	SP 60	ED	Rubidoux Blvd	Market St	\$40,234,000	
9	31-00	ĽD	Market St	Main St		
10		NIR	Box Springs Rd	Central Ave/Watkins Dr	\$26 512 000	
10			Central Ave/Watkins	Martin Luther King	\$20,515,000	
10c	1 215	IND	Martin Luther King Blvd	SR-91	\$55,081,000	
11	1-215		Center St Off-Ramp	Riverside County Line/Iowa	\$42,212,000	
12		CP	Martin Luther King Jr	Sycamore Canyon Rd	\$13,403,000	
13		30	Van Buren Blvd	Case Rd	\$95,365,000	
16	SP 01	FB	On-Ramp from SB-I-15	On Ramp from NB- I-15	\$7,611,000	
18	311-91	LD	Pierce St	Magnolia St	\$13,040,000	
Total Project Cost Estimate			stimate	\$385,335,000		

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

#### 3.4.1. Project Costs Attributable to New Logistics Development

The conceptual cost estimate of \$385,335,000 presented in **Table 3-3** represents the unfunded amount of the total cost to implement the minimum improvements necessary to mitigate the impacts of new development on Riverside County Freeways. However, as described in **Section 2.3**, this cost cannot be entirely attributed to the impact of new logistics developments and must be adjusted as the basis for calculating a fair share fee to reflect only the share of the cost for each segment that can be attributed to the impact of new logistics developments. This key step in the study process, represented by step 28 in the study process flowchart in **Figure 1-1**, is accomplished by multiplying the unfunded project costs summarized in **Table 3-3** by the share of each segments impact attributable to new logistics development summarized in **Table 2-5**. **Table 3-4** presents the outcome of this step with a total of \$47,841,000 or 12.4% of the conceptual cost estimate being determined to be the maximum share of the cost attributable to mitigate the cumulative regional impacts of new warehousing and logistics developments in Riverside County.

ID	Route Name	Dir	Beginning	End	Conceptual Cost Estimate	Logistics Attributable Share	Logistics Cost Share		
1			SR-79 S	Rancho California Rd	\$26 227 000	0.7%	\$258,000		
1		NB	Rancho California Rd	Winchester Rd	\$30,237,000				
3	I-15		Clinton Keith Rd	Baxter Rd	\$7,406,000	0.3%	\$19,000		
7		SB	Cajalco Rd	Indian Truck Trail	\$37,825,000	2.2%	\$820,000		
8		50	El Cerrito Rd	Cajalco Rd	\$10,408,000	1.4%	\$142,000		
0	0 5D (0	EB	Rubidoux Blvd	Market St	¢40.224.000	31.8%	\$12,802,000		
9	3K-00		Market St	Main St	\$40,234,000				
10		NB	Box Springs Rd	Central Ave/Watkins Dr	\$26 512 000	30.0%	\$7,963,000		
10	10		Central Ave/Watkins	Martin Luther King	\$20,313,000				
10c	I 215	IND	Martin Luther King Blvd	SR-91	\$55,081,000	13.3%	\$7,317,000		
11	1-215		Center St Off-Ramp	Riverside County Line/Iowa	\$42,212,000	11.8%	\$4,978,000		
12		SB	Martin Luther King Jr	Sycamore Canyon Rd	\$13,403,000	57.1%	\$7,658,000		
13	5	31		50	Van Buren Blvd	Case Rd	\$95,365,000	4.4%	\$4,235,000
16		FB	On-Ramp from SB-I-15	On Ramp from NB- I-15	\$7,611,000	7.5%	\$571,000		
18	8 SK-91 EB		Pierce St	Magnolia St	\$13,040,000	8.3%	\$1,078,000		
Total Project Cost Estimate		Estimate		\$385,335,000	12.4%	\$47,841,000			

Table 3-4: Capacity Deficient Segment Improvement Project Logistics Cost Share

## 4. FUNDING GAP ANALYSIS

As described in **Section 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 and 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 and establish an implementable program. This section summarizes projections of alternative transportation funding sources that might be available to complete freeway capacity expansion projects identified as part of this study.

#### 4.1. 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. In early 2016, the RCTC approved the *Riverside County Strategic Assessment*<sup>7</sup>. The Strategic Assessment includes a detailed review of federal, state and local revenues through 2040.<sup>89</sup> 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.

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 anticipated revenues were \$5.326 billion, representing funding for 61% of the freeway needs, thus leaving an unfunded gap of \$3.326 billion through 2039. **Table 4-1** summarizes the breakdown of funding contained in the Strategic Assessment by program and risk.

<sup>&</sup>lt;sup>7</sup> HDR, January 2016, *Riverside County Strategic Assessment: Executive Summary*, RCTC.

<sup>&</sup>lt;sup>8</sup> Since the document was prepared in 2015, it did not include several recent funding sources, which are discussed later in this memo.

<sup>&</sup>lt;sup>9</sup> HDR, November 4, 2015, *RCTC Strategic Assessment Technical Memorandum: Task 4 Funding Gap Analysis*.

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.

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.

#### 4.2. FIXING AMERICA'S SURFACE TRANSPORTATION ACT

On December 4, 2015, President Obama signed Fixing America's Surface Transportation Act (FAST) Act<sup>10</sup> into law. Overall, the FAST Act largely maintains program structures and funding shares between highways and transit.

The FAST Act provided two new grant programs – the Nationally Significant Freight and Highway Projects (NSFHP) and the Advanced Technology and Congestion programs – that could reasonably be expected to provide funding for freeway and interchange projects in Riverside County. **Table 4-2** 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 a proportional allocation of total program funding:

<sup>&</sup>lt;sup>10</sup> Pub. L. No. 114-94

Funding Program	Category A	Category B	Category C
NSFHP (INFRA)		\$159.8	
Advanced Technology and Congestion Management Deployment Program		\$10.7	
Total		\$170.5	

 Table 4-1: Projected RCTC Funding from FAST (in millions), 2017 to 2040

#### 4.3. 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.<sup>11</sup> 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 study.

Most of the SB1 funds that could go to freeways and interchanges are via competitive grant programs. **Table 4-3** shows the projected allocation Riverside County could reasonably be expected to obtain based on a proportional share of the total funding proposed.

Funding Program	Category A	Category B	Category C
LPP (county allocation)	\$162.9		
TCEP		\$623.9	
SCCP		\$360	
LPP (competitive grant)		\$162.9	
	\$162.9	\$1,146.8	

Table 4-3: Projected RCTC Funding from SB1 (in millions), 2017 to 2040

#### 4.4. 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. **Table 4-4** combines funding sources to establish a total of anticipated freeway project funding through 2040 from all sources by risk category.

<sup>&</sup>lt;sup>11</sup> http://catc.ca.gov/
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 of All Sources	\$3111.5	\$1,378.3	\$2,465.8

# Table 4-4: RCTC Projected Freeway Project Funding 2017-2040 - All Sources (in millions)

As can be seen in **Table 4-4**, the infusion of SB1 funds, which are mostly allocated through competitive grants and therefore 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. It should be noted that although the SB1 program has been legislated, there is an on-going repeal effort that jeopardizes the future availability of SB1 funding programs.

The total estimated conceptual cost to complete the reasonable mitigation of deficient segments identified as part of this study is \$385,335,000. Although only 12.4% of this cost can be attributed to new warehousing and logistics developments, the estimates of alternative funding sources described in this section clearly indicate that the remaining costs to complete these improvement projects could reasonably be expected to be obtained from existing and proposed funding sources after the logistics impact fee contributes a fair share for mitigation of logistics related impacts. Furthermore, the projected availability of future funding for freeway and interchange improvement projects is over six 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.

# 5. LOGISTICS MITIGATION FEE AND NEXUS DETERMINATION

The foundation established by accomplishing the various steps in the prior tasks provides the basis for computing the amount and value of the in-lieu fee to mitigate the cumulative regional impact of new warehousing and logistics developments on the freeway network in Riverside County, as well as establishing the relationship between future growth of logistics related facilities within Riverside County, truck traffic growth, and the need for additional freeway improvements to mitigate the impacts of this growth. The maximum defensible fair-share fee that could be charged to new logistics uses for mitigating their impacts is presented in this section, along with a summary of the study findings that support the nexus determination.

# 5.1. LOGISTICS MITIGATION FEE CALCULATION

Utilizing the findings of the prior study tasks as presented in the previous sections of this report, the process for computing the fee requires dividing the project costs attributable to new logistics development as determined in Step 28 and summarized in **Table 3-4** by the forecast amount of new warehousing and logistics facilities in square feet as determined in Step 4 and presented in **Table 2-2** to produce a fee per square foot.

Logistics and Warehouse Impact Fee for Riverside County									
Logistics Cost Share of Freeway Mitigation	\$47,841,000								
Growth in Warehouse Gross Floor Area in Square Feet	37,332,179								
Fee per Square Foot of Gross Floor Area\$1.28									

# Table 5-1: Logistics and Warehouse Impact Fee Calculation

As derived from **Table 2-2** and summarized in **Table 5-1**, the growth in warehousing gross floor area is forecast to grow by 37,332,179 square feet of gross floor area from 2016 to 2040, according to the SCAG *Industrial Warehousing Study* and as utilized in the Heavy Duty Truck Model. The travel demand modeling and deficiency analysis completed for this study indicates the growth in warehousing will result in the need to contribute \$47,841,000 toward the cost of freeway capacity improvements throughout Riverside County to cover the logistics share of mitigating future freeway deficiencies, as presented in **Table 3-4**. This equates to a value of \$1.28 per square foot of gross floor area of new warehousing and logistics developments to fully satisfy the fair share contribution. As such, this amount represents the *maximum* fee permissible to be collected under California law and in accordance with legal precedents to address the cumulative regional impacts of new warehousing and logistics developments on the freeways network in Riverside County.

# wsp

# 5.2. NEXUS DETERMINATION

The Mitigation Fee Act, as set forth in the California Government Code Sections 66000 through 66008, establishes the framework for mitigation fees in the State of California. In establishing the basis for a fee to be implemented, the Act requires agencies to make five findings with respect to a proposed fee. These findings are described in the following sections.

# 5.2.1. Purpose of the Fee

# Identify the Purpose of the Fee

The purpose of the Regional Logistics Mitigation Fee is to establish a uniform, fair-share mitigation fee to be paid by new warehouse and logistics developments to mitigate the cumulative, indirect, regional impacts of the truck traffic generated by these future developments on overall traffic conditions on the freeway network in Riverside County. The fees, to be paid in-lieu of completing specific improvements associated with a particular development, will be utilized to help fund capacity improvements on freeways in Riverside County that are needed to maintain the target level of service in the face of the higher traffic volumes brought on by new growth in the county.

Specific to Regional Logistics Mitigation Fee for Riverside County, the completion of this study and the determination of a fair-share fee satisfies specific provisions of the July 29, 2016 Settlement Agreement between the County of Riverside, the Riverside County Transportation Commission, the City of Moreno Valley and Highland Fairview. This agreement established that each party would contribute toward the cost of "an RCTC-conducted regional transportation study to evaluate a logistics-related regional fee."

# 5.2.2. Use of Fee Revenues

Identify the use to which the fees will be put. If the use is financing facilities, the facilities shall be identified

The Mitigation Fee Act requires that the public facilities that are to be financed using the impact fee be identified. In the case of the Regional Logistics Mitigation Fee, the deficiency analysis described in **Section 2** identified those locations on the Riverside County freeway network that would be impacted by additional traffic growth associated with new development activity in Riverside County. This information was subsequently utilized in **Section 3** to define specific improvement projects and the associated costs to mitigate the deficiencies, as summarized in **Table 3-3**. Furthermore, the share of the cost of each individual improvement project to specifically address the mitigation of impacts associated with the growth of warehousing and logistics uses was determined and summarized in **Table 3-4** as the basis for calculating the logistics fee.

# 5.2.3. Use/Type-of-Development Relationship

Determine the reasonable relationship between the fees' use and the type of development project on which the fees are imposed

To determine the "use" relationship, the development being assessed an impact fee must be reasonably shown to derive some use or benefit from the facility being built using the fee. In the case of the Regional Logistics Mitigation Fee, the projects to be funded by the fee were identified by completing deficiency analysis to determine where the additional traffic generated by new development in Riverside County would impact the freeway network. Improvement project concepts were developed to mitigate these impacts, with at least part of the cost of these improvements being determined to be attributable to new logistics related development. The fact that the projects that will be funded in part by the Regional Logistics Mitigation Fee are to provide additional freeway capacity, and recognizing that freeways are the highest functional class of the roadway network and critically important on the regional roadway hierarchy, means that all residents and businesses in the county benefit in important ways from the maintenance of a reasonable level of service on these facilities. More specifically, most truck trips coming to or going from new warehouse and logistics uses can be expected to use area freeways for at least part of their trips, as demonstrated by the results of the deficiency analysis described in Section 2, and those that do not use freeways will nevertheless benefit because good traffic conditions on the area freeways will keep drivers from diverting to other roads and causing congestion in other parts of the county. Even residents or workers in the new developments who do not drive at all will benefit from access to goods and services made possible in part by the serviceability of the regional freeway network.

# 5.2.4. Need/Type-of-Development Relationship

Determine the reasonable relationship between the need for the public facilities and the types of development on which the fees are imposed

To determine the "need" relationship the facilities to be financed by the fee must be shown to be needed at least in part because of the new development. The primary intended purpose of the regional transportation study as required by the July 29, 2016 Settlement Agreement was to determine the extent to which additional truck trips associated with new warehouses and logistics uses would impact the freeways in Riverside County as the basis for determining the fair share amount of in-lieu fee payments to adequately mitigate the impacts. This was determined by analyzing the forecast traffic demand with the expected degree of new development and comparing that with the demand without new development. Projects were analyzed individually and the degree to which the need for the project was attributable to new warehouses and logistics developments varied widely from project to project. The findings of this analysis is summarized in **Table 3-4**, which indicates that new warehousing and logistics development activities are responsible for a share of the overall mitigation needed to address future freeway capacity deficiencies.

# 5.2.5. Proportionality Relationship

Determine how there is a reasonable relationship between the fees amount and the cost of the facilities or portion of the facilities attributable to the development on which the fee is imposed

The "proportionality" relationship requires that there be rough proportionality between the fee charged to each development and the cost of the facility being financed. In the case of the Regional Logistics Mitigation Fee, the share of truck traffic generated specifically by warehouses and logistics uses was estimated using the validated SCAG travel demand model as the basis to determine the rough proportion of the improvement cost to mitigate future deficiencies caused by these trucks on the Riverside County freeway network. Furthermore, the share of project costs was adjusted to account for those improvements already being completed by current funded capacity expansion projects, as well as the share of the cost of arterial interchange improvements necessary to accommodate freeway capacity expansion that are already being funded by the existing WRCOG TUMF program. The overall project cost share was also adjusted to account for existing capacity deficiencies that cannot be fully be attributed to new growth in Riverside County. Table 2-5 summarizes the attribution of various project cost factors resulting in the determination of the fair-share of improvement costs that are roughly proportional to the specific impacts of new warehouse and logistics uses. Additionally, the detailed cost breakdowns in Appendix B include the adjustments for project cost elements already covered as part of the WRCOG TUMF program.

# 5.3. CONCLUSIONS

The findings of the RCTC Truck Study and Regional Logistics Mitigation Fee Study indicate that there is reasonable relationship between the cumulative regional freeway traffic impacts of new land development projects in Riverside County, including truck traffic impacts associated with new warehouse and logistics developments, and the need to mitigate these freeway traffic impacts, including using funds levied through a Regional Logistics Fee. The study evaluation results have established the proportional fair share of the freeway improvement cost attributable to truck trips generated by new warehouse and logistics development having adjusted for existing deficiencies, the impacts of other development type and the effects of pass through trips, and having accounted for improvements already being completed as part of an ongoing freeway project or funded by another impact fee. As presented in **Table 5-1**, the fair share fee to mitigate the cumulative indirect regional freeway traffic impacts of truck trips associated with new warehouse and logistics growth in Riverside County is \$1.28 per square foot of gross floor area.

# 6. APPENDICES

Appendix A – Capacity Improvement Concept Plans

Appendix B – Conceptual Project Cost Estimate Tables

**APPENDIX A – CAPACITY IMPROVEMENT CONCEPT PLANS** 



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RETAINING WALL

3 WIDENING

ROADWAY EXCAVATION 6

RAMP REALIGNMENT



SIGNALIZATION

DATE PLOTTED => 20-FEB-2018 TIME PLOTTED => 13:14

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# PROJECT ID 07 Exhibit 1 of 3







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# PROJECT ID 08











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# PROJECT ID 09



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# PROJECT ID 10C





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# PROJECT ID 11



USERNAME =>casasr DGN FILE => 12-RCTC\_Exh.dgn









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# PROJECT ID 13 EXHIBIT 1 OF 4







# LEGEND:4 structure7 street improvements1 row impacts4 structure7 street improvements2 retaining wall5 ramp realignment8 signalization3 widening6 roadway excavation

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# PROJECT ID 13 Exhibit 4 of 4







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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 <u>SECTION 1: EARTHWORK COST</u>	\$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									
SECTION 4: Speciality Items	\$96,000	Retaining walls, sound walls, it 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	\$1,105,000										
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 <u>BRIDGES</u>	\$20,207,000										
TOTAL CAPITAL OUTLAY COSTS SUPPORT COSTS TOTAL PROJECT COSTS	\$35,738,348 \$12,508,000 <b>\$48,246,000</b>	Support costs are 35% of capital outlay costs									

		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		
I. Roadway Ite	ems Summary									
-	Earthwork									
	Roadway Excavation (NB Off Ramp Rancho California)		0560	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' w	
	Hot Mix Asphalt (Type A) (Mainline)		14605.00	22.00	5823.74	TON	\$85.00	\$495,018.22	Lane plus shoulder at 22' w	
	Continously Reinforced Concrete Pavement (Mainline)		14605.00	22.00	10710.33	CY	\$270.00	\$2,891,790.00	Lane plus shoulder at 22' w	
	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' w	
	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' w	
	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' w	
	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' w	
	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' w	
	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' w	
	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 Califrornia)		835.00	36.00	779.33	CY	\$72.10	\$56,189.93	Lane plus shoulder at 36' w	
	Hot Mix Asphalt (Type A) (NB On Ramp Rancho Califnornia)		835.00	36.00	544.84	ION	\$85.00	\$46,311.19	Lane plus shoulder at 36' w	
	Continously Reinforced Concrete Pavement (NB On Ramp Rancho Galifnornia)		835.00	36.00	1002.00	CY	\$270.00	\$270,540.00	Lane plus shoulder at 36' w	
	Speciality items		8005.00		1507 41	COLT	¢c0.00	<b>CE 044 44</b>	Detains well beight 5'	
			8625.00		1597.41	SQFI	\$60.00	<b>\$93,844.44</b>	Retaing wail neight 5	
	Traffic Floatwice									
	Interception Signalization				4.00		\$50,000,00	00 000 000		
	Traffic Signing and Stripping				4.00		\$50,000.00	φ200,000.00		
	Removal of Existing Stripping (Mainline)		14605.00		14605.00	IE	\$0.65	\$0 403 25		
	Thermonlactic Strining (Mainline)		29210.00		29210.00		\$2.41	\$70,306,10		
	Removal of Existing Striping (NB Off Ramp Bancho California Bd)		4252.00		4252 00	L	\$0.65	\$2 763 80		
	Thermoplastic Striping (NB Off Ramp Rancho California Rd)		4252.00		4252.00	L. I.F	\$2 41	\$10 247 32		
	Removal of Existing Striping (NB Loop On Ramp Bancho California Bd)		2027.00		2027.00	LE	\$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 It	ems									
	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 Wa	ay									
-										
			Desidence (from the	<b>\$0,000</b>						
		ι.	Earthwork	\$665,0	,000.00					
			Pavment Structural Section Speciallty Items	\$6,173 \$96,0	,000.00 00.00					
			Traffic Items	\$1,105	,000.00					
		II.	Structural Items	\$20,207	7,000.00					
		III.	Right of Way	\$0	.00					

### Engineering Assumptions

- with Class 2 Aggregate depth of 0.70' with a HMA depth of 0.25' with a CRCP depth of 0.90'
- with Class 2 Aggregate depth of 0.70' with a HMA depth of 0.25' with a CRCP depth of 0.90'
- with Class 2 Aggregate depth of 0.70' with a HMA depth of 0.25' with a CRCP depth of 0.90'
- with Class 2 Aggregate depth of 0.70' with a HMA depth of 0.25' with a CRCP depth of 0.90'

Project #1: I-15 NB at Rancho California Subtotal										
ITEMS	TOTAL COST	ENGINEERING ASSUMPTIONS								
I. Roadway Items Summary <u>SECTION 1: EARTHWORK COST</u>	\$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: Speciality 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									
IL 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 NI	B at Rand	cho Californ	nia Subtotal			
	Item Description		Distance (ft)	Width (ft)	Quantity	Unit	Cost Assumptions	Total Cost		
I. Roadway Iter	ns Summary									
	Earthwork									
	Roadway Excavation (NB Off Ramp Rancho California)		0560	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							<b>*</b> • ••		
	Remove Concrete Pavement (Mainline)							\$0.00	Existing shoulders at 10	
	Glass 2 Aggregate Subbase (Mainline)							\$0.00 \$0.00	Lane plus shoulder at 22' v	
	Continously Reinforced Concrete Pavement (Mainline)							\$0.00	Lane plus shoulder at 22 v	
	Bemove Concrete Pavement (NB Off Bamp Bancho California Bd)		1415.00	8 00	1257 78	SOYD	\$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' v	
	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' v	
	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' v	
	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' v	
	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' v	
	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' v	
	Remove Concrete Pavement (NB On Ramp Rancho Califnornia)		835.00	8.00	742.22	SQYD	\$36.38	\$27,002.04 \$56,180.02	Existing shoulders at 8"	
	Hot Mix Asphalt (Type A) (NB On Ramp Rancho Califnornia)		835.00	36.00	779.33 544.84	TON	\$85.00	\$30,109.93 \$46 311 19	Lane plus shoulder at 36' v	
	Continously Beinforced Concrete Pavement (NB On Bamp Bancho Califnornia)		835.00	36.00	1002 00	CY	\$270.00	\$270,540,00	Lane plus shoulder at 36' v	
	Speciality Items		000100	00.00	1002.00	0.	¢2.000	\$ <u>2</u> , 6,6 10100		
	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							<b>*</b> • ••		
	Removal of Existing Striping (Mainline)							\$0.00		
	l nermoplastic Striping (Mainline) Romoval of Existing Striping (NR Off Romo Ronobo California Pd)		4252.00		4252.00	15	¢0.65	\$0.00 \$2,762,80		
	Thermonlastic Strining (NB Off Ramp Rancho California Rd)		4252.00		4252.00	LI	\$2.65	\$2,703.00 \$10 247 32		
	Removal of Existing Striping (NB Loop On Ramp Rancho California Rd)		2027.00		2027.00	I F	\$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 Ite	ms									
	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		
III Right of Wa	Overland Rd Bridge Replacement							\$0.00		
in. right of wa										
1										
		,	Poodway Itama	¢0 500	000.00					
		1.	Earthwork	φ2,302 \$665 (	,000.00					
			Pavment Structural Section	\$1.596	,000.00					
			Speciality Items	\$16,0	00.00					
			Traffic Items	\$225,0	00.00					
		II.	Structural Items	\$7,991	,000.00					
		III.	Right of Way	\$0	.00					

### Engineering Assumptions

- 2' with Class 2 Aggregate depth of 0.70' 2' with a HMA depth of 0.25' 2' with a CRCP depth of 0.90'
- 3' with Class 2 Aggregate depth of 0.70' 3' with a HMA depth of 0.25' 3' with a CRCP depth of 0.90'
- s' with Class 2 Aggregate depth of 0.70' s' with a HMA depth of 0.25' s' with a CRCP depth of 0.90'
- ' with Class 2 Aggregate depth of 0.70' ' with a HMA depth of 0.25' ' with a CRCP depth of 0.90'

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 <u>SECTION 1: EARTHWORK COST</u>	\$2,239,000	Roadway Cost are all based on a preliminary Google Earth review.									
SECTION 2: PAVEMENT STRUCTRUAL SECTION	\$2,328,000										
<u>SECTION 3:</u> 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 <u>BRIDGES</u>	\$360,000										
total capital outlay costs support costs TOTAL PROJECT COSTS	\$10,788,936 \$3,776,000 <b>\$14,565,000</b>	Support costs are 35% of capital outlay costs									

					Summary	of Quantit	ies			
			Project #3: I-15 N	B, from	Clinton Kei	th Rd. O	n-ramp to E	Baxter Rd. Off-Ra	тр	
	Item Description		Distance (ft)	Width (ft)	Depth (ft)	Quantity	Unit	Cost Assumptions	Total Cost	
I. Roadway Ite	ms 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
	Class 2 Aggregate Subbase (Mainline)		4840.00	22.00		2760.59	CY	\$72.10	\$199,038.73	Lane plus shoulder
	Hot Mix Asphalt (Type A) (Mainline)		4840.00	22.00		1929.95	TON	\$85.00	\$164,045.75	Lane plus shoulder
	Continuously Reinforced Concrete Pavement (Mainline)		4840.00	22.00		3549.33	CY	\$270.00	\$958,320.00	Lane plus shoulder
	Remove Concrete Pavement (NB Off Ramp Baxter)		1220.00	8.00		1084.44	SQYD	\$36.38	\$39,452.09	Existing shoulders
	Class 2 Aggregate Subbase(NB Off Ramp Baxter)		1220.00	24.00		759.11	CY	\$72.10	\$54,731.91	Lane plus shoulder
	Hot Mix Asphalt (Type A) (NB Off Ramp Baxter)		1220.00	24.00		530.70	TON	\$85.00	\$45,109.50	Lane plus shoulder
	Continuously Reinforced Concrete Pavement (NB Off Ramp Baxter)		1220.00	24.00		976.00	CY	\$270.00	\$263,520.00	Lane plus shoulder
	Remove Concrete Pavement (NB On Ramp Baxter)		1235.00	8.00		1097.78	SQYD	\$36.38	\$39,937.16	Existing shoulders
	Class 2 Aggregate Subbase (NB On Ramp Baxter)		1235.00	24.00		768.44	CY	\$72.10	\$55,404,84	Lane plus shoulder
	Hot Mix Asphalt (Type A) (NB On Ramp Baxter)		1235.00	24.00		537.23	TON	\$85.00	\$45,664,13	Lane plus shoulder
	Continuously Reinforced Concrete Pavement (NB On Ramp Baxter)		1235.00	24.00		988.00	CY	\$270.00	\$266,760.00	Lane plus shoulder
	Specialty Items						-	\$0.00	•,	
	Structural Concrete (Retaining Wall)		1055.00			586.11	SQFT	\$60.00	\$35,166,67	Retaining wall heig
	Traffic Items							•	····	
	Traffic Electrical									
	Intersection Signalization					7.00	PER CORNER	\$50,000,00	\$350.000.00	
	Traffic Signing and Stripping							\$0.00	<b></b> ,	
	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	
	Thermonlastic Striping (NB Off Bamp Baxter)		1475.00			1475.00	LF	\$2.00	\$3 554 75	
	Removal of Existing Strining (NB On Ramp Baxter)		1235.00			1235.00	LF	\$0.65	\$802.75	
	Thermonalistic Strining (NB On Ramp Baxter)		1235.00			1235.00	IF	\$2.41	\$2 976 35	
	Reconstruct Sign Structure		1203.00			2 00	ΕΔ	\$200,000,00	\$400.000.00	
II Structure Ite						2.00	LA	φ200,000.00	φ+00,000.00	
n. Structure ne	Revter Dd Bridge Tie beek		60.00	16.00		060.00	SOFT	¢275.00	¢260,000,00	
III Diabt of We	Baxter Ro Bridge-Tie-back		60.00	16.00		960.00	SQFI	\$375.00	\$360,000.00	
III. RIGILLOI WA	19									
		Ι.	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					
		<i>II.</i>	Structural Items		\$360,000.00					
		III.	Right of Way		\$0.00					
I										

## Engineering Assumptions

- rs at 10' ler at 22' with Class 2 Aggregate depth of 0.70' ler at 22' with a HMA depth of 0.25' ler at 22' with a CRCP depth of 0.90' rs at 8'

- er at 24' with Class 2 Aggregate depth of 0.70' er at 24' with a HMA depth of 0.25' er at 24' with a CRCP depth of 0.90'

- s at 8'
- er at 24' with Class 2 Aggregate depth of 0.70' er at 24' with a HMA depth of 0.25' er at 24' with a CRCP depth of 0.90'

ght 5'

Project #3: I-15 NB at Baxter Subtotal										
ITEMS	TOTAL COST	ENGINEERING ASSUMPTIONS								
I. Roadway Items Summary <u>SECTION 1: EARTHWORK COST</u>	\$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 numps 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 SUPPORT COSTS	\$7,740,240 \$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 \$7,159,000.00

					Summary	of Quantit	ies			
				Projec	t #3: I-15 N	IB at Bax	ter Subtota	1		
	Item Description		Distance (ft)	Width (ft)	Depth (ft)	Quantity	Unit	Cost Assumptions	Total Cost	
I. Roadway Ite	ems 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
	Class 2 Aggregate Subbase (Mainline)								\$0.00	Lane plus shoulde
	Hot Mix Asphalt (Type A) (Mainline)								\$0.00	Lane plus shoulde
	Continuously Reinforced Concrete Pavement (Mainline)								\$0.00	Lane plus shoulde
	Remove Concrete Pavement (NB Off Ramp Baxter)		1220.00	8.00		1084.44	SQYD	\$36.38	\$39,452.09	Existing shoulders
	Class 2 Aggregate Subbase(NB Off Ramp Baxter)		1220.00	24.00		759.11	CY	\$72.10	\$54,731.91	Lane plus shoulde
	Hot Mix Asphalt (Type A) (NB Off Ramp Baxter)		1220.00	24.00		530.70	TON	\$85.00	\$45,109.50	Lane plus shoulde
	Continuously Reinforced Concrete Pavement (NB Off Ramp Baxter)		1220.00	24.00		976.00	CY	\$270.00	\$263,520.00	Lane plus shoulde
	Remove Concrete Pavement (NB On Ramp Baxter)		1235.00	8.00		1097.78	SQYD	\$36.38	\$39,937.16	Existing shoulders
	Class 2 Aggregate Subbase (NB On Ramp Baxter)		1235.00	24.00		768.44	CY	\$72.10	\$55,404.84	Lane plus shoulde
	Hot Mix Asphalt (Type A) (NB On Ramp Baxter)		1235.00	24.00		537.23	TON	\$85.00	\$45,664.13	Lane plus shoulde
	Continuously Reinforced Concrete Pavement (NB On Ramp Baxter)		1235.00	24.00		988.00	CY	\$270.00	\$266,760.00	Lane plus shoulde
	Specialty Items							\$0.00		
	Structural Concrete (Retaining Wall)								\$0.00	Retaining wall heig
	Traffic Items									0 0
	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 It	ems							+	<i>•••••</i> ,••••••	
	Baxter Bd Bridge-Tie-back		60.00	16.00		960.00	SOFT	\$375.00	\$360,000,00	
III Bight of W	av		00.00	10.00		500.00	OGIT	407 5.00	φ000,000.00	
	uy									
			Desidence House		<b>#0.000.000.00</b>					
		ι.	Roadway Items		\$3,820,000.00					
			Earthwork		\$2,239,000.00					
			Pavement Structural Section		\$811,000.00					
			Speciality items		\$0.00					
			i rattic items		\$770,000.00					
		<i>II.</i>	Structural Items		\$360,000.00					
		<i>III.</i>	Right of Way		\$0.00					

## Engineering Assumptions

- rs at 10' ler at 22' with Class 2 Aggregate depth of 0.70' der at 22' with a HMA depth of 0.25' ler at 22' with a CRCP depth of 0.90' rs at 8'

- ler at 24' with Class 2 Aggregate depth of 0.70' ler at 24' with a HMA depth of 0.25' ler at 24' with a CRCP depth of 0.90'

- s at 8'
- ler at 24' with Class 2 Aggregate depth of 0.70' ler at 24' with a HMA depth of 0.25' ler at 24' with a CRCP depth of 0.90'

ght 5'

Project #7, I-15 SI	B, from Cajalco Rd O	n-Ramp to Indian Truck Trail On-Ramp
ITEMS	TOTAL COST	ENGINEERING ASSUMPTIONS
I. Roadway Items Summary <u>SECTION 1: EARTHWORK COST</u>	\$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 numps 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	
Right of Way Acquisition	\$375,000	
TOTAL CAPITAL OUTLAY COSTS SUPPORT COSTS TOTAL PROJECT COSTS	\$33,690,116 \$11,792,000 <b>\$45,482,000</b>	Support costs are 35% of capital outlay costs

				Summary	of Quantit	ies			
	Project #7, I-15 SB, from Cajalco Rd On-Ramp to Indian Truck Trail On-Ramp								
Hum Deserviction		Distance (#)		Danith (ff)	0	11-14		Track Or et	<b>F</b> amily and
nem Description		Distance (ft)	wiath (π)	Depth (π)	Quantity	Unit	Cost Assumptions	Total Cost	Engineer
I. Roadway Items Summary									
Earthwork		040.00	0.100	0.10	00700.00	01/	¢15.00	¢550,000,00	
Roadway Excavation (SB On Ramp Indian Truck Trail)		840.00	0-186	0-12	36/20.00	CY	\$15.00	\$550,800.00 \$546,150,00	
Roduway Excavation (Se On Rainp Indian Truck Trail)		1735	0-162	0-7	10/60 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
Continuously Beinforced Concrete Pavement (Mainline)		29203.00	22.00		21/15 53	CY	\$03.00	\$909,799.10 \$5 782 194 00	Lane plus shoulder at 22 with a CBCP depth of u
Bemove Concrete Pavement (SB on Bamp 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
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.
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
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
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.
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
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		\$72.10	\$64,265.13	Lane plus shoulder at 36 with class 2 Aggregate
Hot Mix Asphali (Type A) (SB on Ramp Temescal Canyon)		955.00	36.00		11/6 00	CV	\$85.00 \$270.00	\$32,900.09 \$300.420.00	Lane plus shoulder at 36 with a CRCP depth of 0
Bemove Concrete Pavement (SB off Bamp Temescal Canyon)		1165.00	8.00		1035 56	SOVD	\$36.38	\$37,673,51	Existing shoulder 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
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.
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
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
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.
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
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
Hot Mix Asphalt (Type A) (SB off Ramp Dos Lagos)		1050.00	36.00		685.13	ION	\$85.00	\$58,235.63	Lane plus shoulder at 36' with a HMA depth of 0.
Continuousiy Reinforced Concrete Pavement (SB off Ramp Dos Lagos)		1050.00	36.00		1260.00	CΥ	\$270.00	\$340,200.00	Lane plus shoulder at 36° with a CRCP depth of
Specially nems		1095.00			1095.00	15	\$15.00	\$16 425 00	
Structural Concrete (Retaining Wall)		14010 00			1095.00	SOFT	\$13.00	\$287 533 33	Betaining wall beight 5'
Traffic Items		14010.00			4752.22	OQLI	ψ00.00	φ207,000.00	Hetalining wai height 5
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		\$U.65	\$2,515.50	
Pomoval of Evisting Striping (SB on Pamp Tomoscal Canvon)		2025.00			2025.00		\$2.41 \$0.65	\$9,320.70 \$1,322.75	
Thermonlastic Striping (SB on Ramp Temescal Canyon)		2035.00			2035.00	LI	\$2.41	\$4 904 35	
Removal of Existing Striping (SB off Bamp 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./2		78.00	14.00		1092.00	SQFT	\$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. II. III.	Roadway Items Earthwork Pavement Structural Section Specialty Items Traffic Items Structural Items Right of Way		\$15,013,000.00 \$1,510,000.00 \$11,919,000.00 \$304,000.00 \$1,280,000.00 \$4,310,000.00 \$375,000.00					
		<b>.</b>							

ring Assumptions

ate depth of 0.70' 0.25' if 0.90'

ate depth of 0.70' 0.25' of 0.90'

ate depth of 0.70' 0.25' if 0.90'

ate depth of 0.70' 0.25' of 0.90'

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	
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Amount to be reduced from Total Project Costs

\$7,657,000.00
					Summary	∕ of Quantiti	ies			
			Pro	ject #7, I·	-15 SB at 1	「emescal	Canyon Su	btotal		
	Item Description		Distance (ft)	Width (ft)	Depth (ft)	Quantity	Unit	Cost Assumptions	Total Cost	Engineer
I. Roadway Items Su	Immary									
Earth Ro: Ro: Ro: Ro: Ro: Ro: Ro: Ro: Ro: Ro:	work adway Excavation (SB On Ramp Indian Truck Trail) adway Excavation (SB Off Ramp Indian Truck Trail) adway Excavation (West of SB Off Ramp Indian Truck Trail) adway Excavation (West of SB on Ramp Temescal Canyon) adway Excavation (SB on Ramp Temescal Canyon) adway Excavation (SB off Ramp Temescal Canyon) adway Excavation (SB off Ramp Dos Lagos) adway Excavation (SB off Ramp Dos Lagos)		640.00 830.00 860.00	36-70 14-102 12-125	0-2 0-3 0-2	2587.11 5971.00 4170.44	CY CY CY	\$15.00 \$15.00 \$15.00	\$0.00 \$0.00 \$38,806.67 \$89,565.00 \$62,556.67 \$0.00 \$0.00	
Rei Cla Hoi Coi Coi Rei Cla Hoi Coi Rei Cla Hoi Coi Rei Cla Hoi Coi Rei Cla Hoi Coi Coi Rei Cla Hoi Coi Rei Cla Hoi Coi Coi Rei Cla Hoi Coi Coi Coi Coi Coi Coi Coi Coi Coi C	With Structural Section With Structural Section With Structural Section It Mix Asphalt (Type A) (Mainline) It Mix Asphalt (Type A) (Mainline) It Mix Asphalt (Type A) (Mainline) Intinuously Reinforced Concrete Pavement (Mainline) Imove Concrete Pavement (SB on Ramp Indian Truck Trail) ass 2 Aggregate Subbase (SB on Ramp Indian Truck Trail) It Mix Asphalt (Type A) (SB on Ramp Indian Truck Trail) It Mix Asphalt (Type A) (SB on Ramp Indian Truck Trail) It Mix Asphalt (Type A) (SB on Ramp Indian Truck Trail) Intinuously Reinforced Concrete Pavement (SB on Ramp Indian Truck Trail) Imove Concrete Pavement (SB Off Ramp Indian Truck Trail) It Mix Asphalt (Type A) (SB Off Ramp Indian Truck Trail) It Mix Asphalt (Type A) (SB Off Ramp Indian Truck Trail) It Mix Asphalt (Type A) (SB Off Ramp Indian Truck Trail) Intinuously Reinforced Concrete Pavement (SB Off Ramp Indian Truck Trail) Intinuously Reinforced Concrete Pavement (SB Off Ramp Indian Truck Trail) Intinuously Reinforced Concrete Pavement (SB on Ramp Temescal Canyon) It Mix Asphalt (Type A) (SB on Ramp Temescal Canyon) It Mix Asphalt (Type A) (SB off Ramp Temescal Canyon) It Mix Asphalt (Type A) (SB off Ramp Temescal Canyon) It Mix Asphalt (Type A) (SB off Ramp Temescal Canyon) It Mix Asphalt (Type A) (SB off Ramp Temescal Canyon) It Mix Asphalt (Type A) (SB off Ramp Temescal Canyon) It Mix Asphalt (Type A) (SB on Ramp Dos Lagos) It Mix Asphalt (Type A) (SB on Ramp Dos Lagos) It Mix Asphalt (Type A) (SB off Ramp Dos Lagos) It Mix Asphalt (Type A) (SB off Ramp Dos Lagos) It Mix Asphalt (Type A) (SB off Ramp Dos Lagos) It Mix Asphalt (Type A) (SB off Ramp Dos Lagos) It Mix Asphalt (Type A) (SB off Ramp Dos Lagos) It Mix Asphalt (Type A) (SB off Ramp Dos Lagos) It Mix Asphalt (Type A) (SB off Ramp Dos Lagos) It Mix Asphalt (T		955.00 955.00 955.00 955.00 1165.00 1165.00 1165.00	8.00 36.00 36.00 8.00 34.00 34.00 34.00		848.89 891.33 623.14 1146.00 1035.56 1026.93 717.93 1320.33	SQYD CY TON CY SQYD CY TON CY	\$36.38 \$72.10 \$85.00 \$270.00 \$36.38 \$72.10 \$85.00 \$270.00	0.00 0.00	Existing shoulders at 10' Lane plus shoulder at 22' with Class 2 Aggregate Lane plus shoulder at 22' with a HMA depth of 0. Lane plus shoulder at 22' with a CRCP depth of 0 Existing shoulder at 26' with a CRCP depth of 0. Lane plus shoulder at 26' with Class 2 Aggregate Lane plus shoulder at 26' with a HMA depth of 0. Lane plus shoulder at 26' with a CRCP depth of 0 Existing shoulder at 26' with a CRCP depth of 0. Lane plus shoulder at 52' with Class 2 Aggregate Lane plus shoulder at 52' with Class 2 Aggregate Lane plus shoulder at 52' with a HMA depth of 0. Lane plus shoulder at 52' with a CRCP depth of Existing shoulder at 36' with a CRCP depth of 0. Lane plus shoulder at 36' with Class 2 Aggregate Lane plus shoulder at 36' with a LRCP depth of 0. Lane plus shoulder at 36' with a CRCP depth of 0. Lane plus shoulder at 34' with Class 2 Aggregate Lane plus shoulder at 34' with Class 2 Aggregate Lane plus shoulder at 34' with a CRCP depth of Existing shoulders at 8' Lane plus shoulder at 34' with a CRCP depth of Existing shoulders at 38' with a CRCP depth of Existing shoulder at 38' with a CRCP depth of Existing shoulder at 38' with a CRCP depth of Existing shoulders at 8' Lane plus shoulder at 38' with a CRCP depth of Existing shoulders at 8' Lane plus shoulder at 36' with Class 2 Aggregate Lane plus shoulder at 36' with Class 2 Aggregate Lane plus shoulder at 36' with a CRCP depth of Existing shoulders at 8' Lane plus shoulder at 36' with Class 2 Aggregate Lane plus shoulder at 36'
Rei Stri <b>Traffi</b>	move Retaining Wall ucctural Concrete (Retaining Wall) <i>ic Items</i>		1300.00			722.22	SQFT	\$60.00	\$0.00 \$43,333.33	Retaining wall height 5'
Tra In Tra Re Th Re Th Re Re	affic Electrical tersection Signalization <i>iffic Signing and Stripping</i> emoval of Existing Striping (Mainline) emoval of Existing Striping (SB on Ramp Indian Truck Trail) emoval of Existing Striping (SB on Ramp Indian Truck Trail) termoplastic Striping (SB on Ramp Indian Truck Trail)					4.00	PER CORNER	\$50,000.00 \$0.00	\$200,000.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00	
Th Re Th Re Th Re Th Re Th Re Re	rermoplastic Striping (SB Off Ramp Indian Truck Trail) emoval of Existing Striping (SB on Ramp Temescal Canyon) ermoplastic Striping (SB on Ramp Temescal Canyon) emoval of Existing Striping (SB off Ramp Temescal Canyon) ermoplastic Striping (SB off Ramp Temescal Canyon) emoval of Existing Striping (SB on Ramp Dos Lagos) ermoplastic Striping (SB on Ramp Dos Lagos) emoval of Existing Striping (SB off Ramp Dos Lagos) econstruct Striping (SB off Ramp Dos Lagos) econstruct Sign Structure		2035.00 2035.00 26170.00 26170.00			2035.00 2035.00 26170.00 26170.00	LF LF LF	\$0.65 \$2.41 \$0.65 \$2.41	\$0.00 \$1,322.75 \$4,904.35 \$17,010.50 \$63,069.70 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00	
II. Structure Items Indiar Teme Mayh Teme Brown Dos L Bedfo III. Right of Way Bioht	n Truck Trail Bridge Widening escal Canyon OC Widening PM 31.90 ew Wash Bridge Widening PM 31.97 escal Canyon Road UC Widening PM 33.25 n Canyon Wash Bridge Widening PM 34.72 Lagos Bridge Widening ord Wash Bridge Widening		160.00	14.00		2240.00	SQFT	\$375.00	\$0.00 \$840,000.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00	
night		I. II. III.	Roadway Items Earthwork Pavement Structural Section Specialty Items Traffic Items Structural Items Right of Way		\$1,507,000.00 \$191,000.00 \$43,000.00 \$43,000.00 \$840,000.00 \$840,000.00 \$0.00				φυ.υυ	

ring Assumptions

ate depth of 0.70' 0.25' if 0.90'

ate depth of 0.70' 0.25' of 0.90'

ate depth of 0.70' 0.25' if 0.90'

ate depth of 0.70' 0.25' of 0.90'

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 <u>SECTION 1: EARTHWORK COST</u>	\$1,153,000	Roadway Cost are all based on a preliminary Google Earth review.							
SECTION 2: PAVEMENT STRUCTRUAL SECTION	\$3,814,000								
<u>SECTION 3:</u> 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: Speciality 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								
<u>SECTION 8: MINOR ITEMS</u> 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 <u>BRIDGES</u>	\$975,000								
total capital outlay costs support costs TOTAL PROJECT COSTS	\$12,022,176 \$4,208,000 \$ <b>16,230,000</b>	Support costs are 35% of capital outlay costs							

		Summary of Quantities								
			Project #8, I-15	SB, from	El Cerrito	Rd Off-I	Ramp to Caj	alco Rd Off-Ram	D	
	Item Description		Distance (ft)	Width (ft)	Depth (ft)	Quantity	Unit	Cost Assumptions	Total Cost	
I. Roadway Iter	ns 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
	Class 2 Aggregate Subbase (Mainline)		6907.00	22.00		3939.55	CY	\$72.10	\$284,041.42	Lane plus shoulde
	Hot Mix Asphalt (Type A) (Mainline)		6907.00	22.00		2754.17	TON	\$85.00	\$234,104.13	Lane plus shoulde
	Continously Reinforced Concrete Pavement (Mainline)		6907.00	22.00		5065.13	CY	\$270.00	\$1,367,586.00	Lane plus shoulde
	Remove Concrete Pavement (SB on Ramp Cajalco)		468.00	10.00		520.00	SQYD	\$36.38	\$18,917.60	Existing shoulders
	Class 2 Aggregate Subbase (SB on Ramp Cajalco)		468.00	24.00		291.20	CY	\$72.10	\$20,995.52	Lane plus shoulde
	Hot Mix Asphalt (Type A) (SB on Ramp Cajalco)		468.00	24.00		203.58	TON	\$85.00	\$17,304.30	Lane plus shoulde
	Continously Reinforced Concrete Pavement (SB on Ramp Cajalco)		468.00	24.00		374.40	CY	\$270.00	\$101,088.00	Lane plus shoulde
	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
	Class 2 Aggregate Subbase (SB on Ramp El Cerrito)		820.00	34.00		722.81	CY	\$72.10	\$52,114.95	Lane plus shoulde
	Hot Mix Asphalt (Type A) (SB on Ramp El Cerrito)		820.00	34.00		505.33	TON	\$85.00	\$42,952.63	Lane plus shoulde
	Continously Reinforced Concrete Pavement (SB on Ramp El Cerrito)		820.00	34.00		929.33	CY	\$270.00	\$250,920.00	Lane plus shoulde
	Remove Concrete Pavement (SB off Ramp El Cerrito)		1060.00	10.00		1177.78	CY	\$36.38	\$42,847.56	Existing shoulders
	Class 2 Aggregate Subbase (SB off Ramp El Cerrito)		1060.00	24.00		659.56	TON	\$72.10	\$47,553.96	Lane plus shoulde
	Hot Mix Asphalt (Type A) (SB off Ramp El Cerrito)		1060.00	24.00		461.10	LF	\$85.00	\$39,193.50	Lane plus shoulde
	Continously Reinforced Concrete Pavement (SB off Ramp El Cerrito)		1060.00	24.00		848.00	LF	\$270.00	\$228,960.00	Lane plus shoulde
	Speciality Items									
	Structural Concrete (Retaining Wall)		16665.00			4792.22	SQFT	\$60.00	\$287,533.33	Retaing wall heigh
	Traffic Items									
	Traffic Electrical									
	Intersection Signalization					8.00	PER CORNER	\$50,000.00	\$400,000.00	
	I rattic Signing and Stripping							\$0.00		
	Removal of Existing Striping (Mainline)		6907.00			6907.00	LF	\$0.65	\$4,489.55	
	I nermoplastic 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		\$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		\$0.65	\$1,716.00	
	Thermoplastic Striping (SB off Ramp El Cerrito)		2640.00			2640.00		\$2.41	\$6,362.40	
II. Churchtone lte	Reconstruct Sign Structure					0.00	LF	\$200,000.00	\$0.00	
II. Structure ite	ms									
	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 Wa	Y -									
		I.	Roadway Items Earthwork Pavment Structural Section		\$5,718,000.00 \$1,153,000.00 \$3,814,000.00					
		11. 111.	Speciality Items Traffic Items Structural Items Right of Way		\$288,000.00 \$463,000.00 \$975,000.00 \$0.00					

rs at 14' der at 22' with Class 2 Aggregate depth of 0.70' der at 22' with a HMA depth of 0.25' der at 22' with a CRCP depth of 0.90' rs at 10' der at 24' with Class 2 Aggregate depth of 0.70' der at 24' with a HMA depth of 0.25' der at 24' with a CRCP depth of 0.90'

ers at 8' der at 34' with Class 2 Aggregate depth of 0.70' der at 34' with a HMA depth of 0.25' der at 34' with a CRCP depth of 0.90' ers at 10' der at 24' with Class 2 Aggregate depth of 0.70' der at 24' with a HMA depth of 0.25' der at 24' with a CRCP depth of 0.90'

ht 5'

Project #8, I-15 SB at Cajalco Subtotal									
ITEMS	TOTAL COST	ENGINEERING ASSUMPTIONS							
I. Roadway Items Summary	¢1 000 000								
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							
SECTION 4: Speciality 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								

\$44,257,000.00 \$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	
I. Roadway Item	s 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								<b>*</b> 2.22	
	Remove Concrete Pavement (Mainline)								\$0.00	Existing shoulders
	Class 2 Aggregate Subbase (Mainline)								\$0.00 \$0.00	Lane plus shoulde
	Contineusly Reinforced Concrete Revement (Mainline)								\$0.00 \$0.00	Lane plus shoulde
	Remove Concrete Pavement (SB on Ramp Cajalco)		468.00	10.00		520.00	SOVD	\$36.38	\$0.00 \$18.017.60	Existing shoulders
	Class 2 Aggregate Subbase (SB on Ramp Cajalco)		468.00	24.00		291 20	CY	\$72.10	\$20,995,52	Lane plus shoulder
	Hot Mix Asphalt (Type A) (SB on Bamp Cajalco)		468.00	24.00		203 58	TON	\$85.00	\$17,304,30	Lane plus shoulde
	Continously Beinforced Concrete Pavement (SB on Bamp Caialco)		468.00	24.00		374 40	CY	\$270.00	\$101 088 00	Lane plus shoulde
	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
	Class 2 Aggregate Subbase (SB on Ramp El Cerrito)								\$0.00	Lane plus shoulde
	Hot Mix Asphalt (Type A) (SB on Ramp El Cerrito)								\$0.00	Lane plus shoulde
	Continously Reinforced Concrete Pavement (SB on Ramp El Cerrito)								\$0.00	Lane plus shoulde
	Remove Concrete Pavement (SB off Ramp El Cerrito)								\$0.00	Existing shoulders
	Hot Mix Asphalt (Type A) (SB off Ramp El Cerrito)								\$0.00	Lane plus shoulde
	Continues Reinforced Concrete Pavement (SB off Ramp El Cerrito)								\$0.00	Lane plus shoulde
	Speciality Items								•	
	Structural Concrete (Retaining Wall)								\$0.00	Retaing wall heigh
	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	
	I nermoplastic Striping (Mainline)		000.00			000.00		<b>#0.05</b>	\$0.00	
	Removal of Existing Striping (SB of Ramp Cajalco)		936.00			936.00		\$U.00 \$0.41	\$508.40 \$2.255.76	
	Removal of Existing Striping (SB off Ramp Cajalco)		3215.00			3215.00		\$2.41 \$0.65	\$2,233.70 \$2,089.75	
	Thermonlastic Strining (SB off Bamp Cajalco)		3215.00			3215.00	IF	\$2.41	\$7 748 15	
	Removal of Existing Striping (SB on Ramp Cajaco)		0210.00			0210.00	<b>L</b> 1	ψ2.+1	\$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 Iten	15									
(	Cajalco Road OC Tie Back		40.00	16.00		640.00	SQFT	\$375.00	\$240,000.00	
E	El Cerrito UC Widening								\$0.00	
III. Right of Way										
1										
l										
		Ι.	Roadway Items		\$2,108,000.00					
			Earthwork		\$1,089,000.00					
			Payment Structural Section		\$806,000.00					
			Speciality items		ψυ.UU Φαια ροο οο					
			Structural Itoma		φ∠13,000.00 ¢240.000.00					
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rs at 14' der at 22' with Class 2 Aggregate depth of 0.70' der at 22' with a HMA depth of 0.25' der at 22' with a CRCP depth of 0.90' rs at 10' der at 24' with Class 2 Aggregate depth of 0.70' der at 24' with a HMA depth of 0.25' der at 24' with a CRCP depth of 0.90'

ers at 8' der at 34' with Class 2 Aggregate depth of 0.70' der at 34' with a HMA depth of 0.25' der at 34' with a CRCP depth of 0.90' ers at 10' der at 24' with Class 2 Aggregate depth of 0.70' der at 24' with a HMA depth of 0.25' der at 24' with a CRCP depth of 0.90'

ht 5'

Project #9, SR-60	EB, from Rubidoux	x Blvd. On-Ramp to Main St Off-Ramp
ITEMS	TOTAL COST	ENGINEERING ASSUMPTIONS
I. Roadway Items Summary <u>SECTION 1: EARTHWORK COST</u>	\$311,000	Roadway Cost are all based on a preliminary Google Earth review.
SECTION 2: PAVEMENT STRUCTRUAL SECTION	\$4,621,000	
<u>SECTION 3:</u> 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: Speciality Items	\$227,000	Retaining walls, sound walls, lie 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	
<u>SECTION 8: MINOR ITEMS</u> 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 <u>BRIDGES</u>	\$17,753,000	
TOTAL CAPITAL OUTLAY COSTS SUPPORT COSTS TOTAL PROJECT COSTS	\$29,802,884 \$10,431,000 <b>\$40,234,000</b>	Support costs are 35% of capital outlay costs

		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	
I. Roadway Iten	ns 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
	Class 2 Aggregate Subbase (Mainline)		11025.00	22.00		6288.33	CY	\$72.10	\$453,388.83	Lane plus shoulder
	Hot Mix Asphalt (Type A) (Mainline)		11025.00	22.00		4396.22	ION	\$85.00	\$3/3,6/8.59	Lane plus shoulder
	Continously Reinforced Concrete Pavement (Mainline)		11025.00	22.00		8085.00	CY	\$270.00	\$2,182,950.00	Lane plus shoulder
	Remove Concrete Pavement (EB On Ramp Main St)		535.00	8.00		4/5.56	SQYD	\$36.38	\$17,300.71	Existing shoulders
	Class 2 Aggregate Subbase (EB On Ramp Main St)		535.00	32.00		443.85		\$72.10	\$32,001.72	Lane plus shoulder
	Contineucly Deinforced Concrete Revenuent (ER On Remo Main St)		535.00	32.00		570.67	CV	\$05.00 \$270.00	\$20,375.50 \$154.090.00	Lane plus shoulder
	Remove Concrete Pavement (EB Off Ramp Main St)		700.00	8.00		622.22	SOVD	\$270.00	\$22 636 44	Existing shoulders
	Class 2 Aggregate Subbase (EB Off Bamp Main St)		700.00	20.00		362.06	CV	\$72.10	\$26,160,63	
	Hot Mix Asphalt (Type A) (EB Off Bamp Main St)		700.00	20.00		253 75	TON	\$85.00	\$21,568,75	Lane plus shoulder
	Continously Beinforced Concrete Pavement t (EB Off Bamo Main St)		700.00	20.00		466 67	CY	\$270.00	\$126,000,00	Lane plus shoulder
	Bemove Concrete Pavement (EB on Bamp Market St)		900.00	8.00		800.00	SOYD	\$36.38	\$29 104 00	Existing shoulders
	Class 2 Aggregate Subbase (EB on Bamp Market St)		900.00	24 00		560.00	CY	\$72.10	\$40,376,00	Lane plus shoulder
	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
	Continously Reinforced Concrete Pavement (EB on Ramp Market St)		900.00	24.00		720.00	CY	\$270.00	\$194,400.00	Lane plus shoulder
	Remove Concrete Pavement (EB off Ramp Market St)		1340.00	8.00		1191.11	SQYD	\$36.38	\$43,332.62	Existing shoulders
	Class 2 Aggregate Subbase (EB off Ramp Market St)		1340.00	24.00		833.78	CY	\$72.10	\$60,115.38	Lane plus shoulder
	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
	Continously Reinforced Concrete Pavement (EB off Ramp Market St)		1340.00	24.00		1072.00	CY	\$270.00	\$289,440.00	Lane plus shoulder
	Speciality 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 heig
	Traffic Items									
	Traffic Electrical									
	Intersection Signalization					8.00	PER CORNER	\$50,000.00	\$400,000.00	
	Traffic Signing and Stripping		11005 00			11005 00		\$0.00	AT 100.05	
	Removal of Existing Striping (Mainline)		11025.00			11025.00		\$0.65	\$7,166.25	
	I nermoplastic Striping (Mainline)		22050.00			22050.00		\$2.41	\$53,140.50	
	Removal of Existing Scriping (EB On Ramp Main St)		865.00			865.00		\$0.05 \$0.41	\$002.20 \$0.004.6E	
	Pomoval of Existing Striping (EB Off Ramp Main St)		1400.00			1400.00		\$2.41 \$0.65	φ2,004.00 ¢010.00	
	Thermonlactic Striping (EB Off Ramp Main St)		1400.00			1400.00		\$0.00 \$2.41	\$310.00	
	Removal of Existing Striping (EB on Ramp Market St)		1640.00			1640.00		Ψ2.41 \$0.65	\$1,066,00	
	Thermonlactic Strining (EB on Ramo Market St)		1640.00			1640.00		\$0.00 \$2.41	\$1,000.00	
	Bemoval of Existing Striping (EB off Bamp Market St)		1850.00			1850.00	IF	φ2.41 \$0.65	\$1,352.40 \$1,202.50	
	Thermonlastic Strining (EB off Bamp Market St)		1850.00			1850.00	IF	\$2.41	\$4 458 50	
	Reconstruct Sign Structure		1000.00			3.00	EA	\$200.000.00	\$600.000.00	
II. Structure Iter	ns							+	+,	
	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					
					\$311,000.00					
			Pavment Structural Section		\$4,621,000.00					
			Speciality items		\$227,000.00 \$1,078,000,00					
			Structural Itama		¢17752000.00					
		н. Ш	Suuciural nems Right of Way		φ17,703,000.00 \$0.00					
			ingit of way		φυ.υυ					

's at 10' er at 22' with Class 2 Aggregate depth of 0.70' ler at 22' with a HMA depth of 0.25' ler at 22' with a CRCP depth of 0.90' 's at 8' ler at 32' with Class 2 Aggregate depth of 0.70' ler at 32' with a HMA depth of 0.25' ler at 32' with a CRCP depth of 0.90' rs at 8' ler at 20' with Class 2 Aggregate depth of 0.70' ler at 20' with a CRCP depth of 0.90' rs at 8' ler at 20' with a CRCP depth of 0.90' rs at 8' ler at 24' with Class 2 Aggregate depth of 0.70' der at 24' with Class 2 Aggregate depth of 0.70' der at 24' with a CRCP depth of 0.90' rs at 8' ler at 24' with a CRCP depth of 0.90' rs at 8' ler at 24' with Class 2 Aggregate depth of 0.70' der at 24' with Class 2 Aggregate depth of 0.70' der at 24' with Class 2 Aggregate depth of 0.70' der at 24' with a CRCP depth of 0.25' ler at 24' with a CRCP depth of 0.90'

l ght 5'

Project #10, I-215 NB, f	rom Box Springs Rd. O	n-Ramp to Martin Luther King Jr. On-Ramp
ITEMS	TOTAL COST	ENGINEERING ASSUMPTIONS
I. Roadway Items Summary <u>SECTION 1: EARTHWORK COST</u>	\$1,077,000	Roadway Cost are all based on a preliminary Google Earth review.
SECTION 2: PAVEMENT STRUCTRUAL SECTION	\$4,546,000	
<u>SECTION 3:</u> 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	
<u>SECTION 8: MINOR ITEMS</u> 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 <u>BRIDGES</u>	\$2,546,000	
III. RIGHT OF WAY <u>Right of Way Acquisition</u>	\$1,065,000	
TOTAL CAPITAL OUTLAY COSTS SUPPORT COSTS TOTAL PROJECT COSTS	\$19,638,872 \$6,874,000 <b>\$26,513,000</b>	Support costs are 35% of capital outlay costs

		Summary of Quantities								
	P	Project	t #10, I-215 NB, fr	om Box S	Springs Rd.	. On-Ran	np to Martin	Luther King Jr.	On-Ramp	
	Item Description		Distance (ft)	Width (ft)	Depth (ft)	Quantity	Unit	Cost Assumptions	Total Cost	
I. Roadway Iter	ns Summary									
	Earthwork		1901.00	20.00	0.5	7016 11	CV	¢15.00	¢105 041 67	
	Roadway Excavation (NB off Bamp Central )		790.00	20.00	0-5	30291 63	CY	\$15.00	\$105,241.67 \$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	<b>*</b> • • • <b>,</b> • • • • • • • • • • • • • • • • • • •	
	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'
	Hot Mix Asphalt (Type A) (Mainline)		7570.00	22.00		3018.54	TON	\$85.00	\$256,575.69	Lane plus shoulder at 22'
	Continuousiy Reinforced Concrete Pavement (Mainline)		/5/0.00	22.00		5551.33	SOVD	\$270.00	\$1,498,860.00	Lane plus shoulder at 22'
	Class 2 Aggregate Subbase (NB off Ramp Central)		1350.00	38.00		1200.00	CY	\$30.30 \$72.10	\$45,656.00	Lane plus shoulder at 38'
	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'
	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'
	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'
	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'
	Continuously Reinforced Concrete Pavement (NB on Ramp Central)		/55.00	30.00		/55.00	SOVD	\$270.00	\$203,850.00	Lane plus shoulder at 30'
	Class 2 Aggregate Subbase (NB off Ramp Martin Luther King)		1335.00	38.00		1315 22	CY	φ30.30 \$72.10	\$94 827 52	Lane plus shoulder at 38'
	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'
	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"
	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'
	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'
	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'
	Specially liens Bemove Sound Wall		1000.00			1000.00	IE	\$0.00 \$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									
	Intersection Signalization					4 00	PER CORNER	\$50,000,00	\$200,000,00	
	Traffic Signing and Stripping							\$0.00	\$200,000,000	
	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		\$0.65	\$8/4.25	
	Removal of Existing Striping (NB off Ramp Martin Luther King)		3425.00			3425.00	LF	\$0.65	\$2,241.45	
	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 Ite	ns		150.00			0100.00	0057	A075 00	*707 500 00	
	Gentral Bridge Widening		150.00	14.00		2100.00	SQFT	\$375.00	\$787,500.00	
	Canvon Creet Widening		175.00	14.00		2450.00	SQFT	\$375.00 \$375.00	\$918,750.00	
III. Right of Wa			100.00	14.00		2240.00	OGIT	φ0/ 3.00	φ040,000.00	
	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	
		l. Ro Ea Pa Sp Tra	adway Items nrthwork vement Structural Section ecialty Items affic Items		\$8,296,000.00 \$1,077,000.00 \$4,546,000.00 \$1,369,000.00 \$1,304,000.00					
	l	II. Sti	ructural Items		\$2,546,000.00					
	11	II. Rig	ght of Way		\$1,065,000.00					

er at 22' with Class 2 Aggregate depth of 0.70' er at 22' with a HMA depth of 0.25' er at 22' with a CRCP depth of 0.90' s at 8' er at 38' with Class 2 Aggregate depth of 0.70' er at 38' with a HMA depth of 0.25' er at 38' with a CRCP depth of 0.90' s at 8' er at 30' with Class 2 Aggregate depth of 0.70' er at 30' with a HMA depth of 0.25' er at 30' with a CRCP depth of 0.90' s at 8' er at 38' with Class 2 Aggregate depth of 0.70' er at 38' with a HMA depth of 0.25' er at 38' with a CRCP depth of 0.90' s at 8' er at 42' with Class 2 Aggregate depth of 0.70' er at 42' with a HMA depth of 0.25' er at 42' with a CRCP depth of 0.90'

Project #10C, I-215 NB, Martin Luther King Off Ramp to SR-91									
ITEMS	TOTAL COST	ENGINEERING ASSUMPTIONS							
I. Roadway Items Summary <u>SECTION 1: EARTHWORK COST</u>	\$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								
<u>SECTION 8: MINOR ITEMS</u> 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 <u>BRIDGES</u>	\$21,655,000								
III. RIGHT OF WAY <u>Right of Way Acquisition</u>	\$3,768,750								
TOTAL CAPITAL OUTLAY COSTS SUPPORT COSTS TOTAL PROJECT COSTS	\$40,800,538 \$14,280,000 \$55,081,000	Support costs are 35% of capital outlay costs							

		Summary of Quantities									
		Project #10C, I-215 NB, Martin Luther King Off Ramp to SR-91									
	Item Description		Distance (ft)	Width (ft)	Denth (ft)	Quantity	Unit	Cost Assumptions	Total Cost		
/ B / //	- <b>O</b>		Diotanoo (ity	maan (ny	Doptin (ity	duality	Unit	eeet needinpliene	10101 0001		
I. коадway item	s Summary Farthwork										
	Boadway 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'	
	Hot Mix Asphalt (Type A) (Mainline)		5867.00	22.00		2339.47	ION	\$85.00	\$198,854.63	Lane plus shoulder at 22'	
	Continuousiy Reinforced Concrete Pavement (Marnine)		5867.00	22.00		4302.47	SOVD	\$270.00 ¢26.29	\$1,101,000.00 \$10,726.04	Existing shoulder at 22	
	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'	
	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	
	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'	
	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	
	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'	
	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'	
	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'	
	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"	
	Continuousiy Reinforced Concrete Pavement (NB On Ramp 3rd St) Remove Concrete Pavement (NB On Ramp 3rd St)		610.00	34.00		903.33		\$270.00	\$260,100.00 \$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'	
	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'	
	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'	
	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 neight 15	
	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		\$2.41	\$6,772.10		
	Thermonlastic Striping (NB Off Ramp 2rd St)		2660.00			2660.00		ቅU.00 ድጋ 41	\$1,729.00 \$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		1000100			5.00	EA	\$200.000.00	\$1,000,000.00		
II. Structure Iter	ns										
	University Ave Bridge Widening		108.00	14.00		1512.00	SQFT	\$375.00	\$567,000.00		
	lowa 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 Bight of Way Acquisition #2		1075.00 500.00	5.00		5375.00 10.00	SQFT PEB HOUSE	\$50.00 \$350.000.00	\$268,750.00 \$3,500,000,00	\$350,000 per property	
			<b>B</b> a a duran (6.00		#7 0F0 000 00			<i><i><i>wwwwwwwwwwwww</i></i></i>	40,000,000.00	traciona boi bioboiry	
		1. 11. 111.	Roadway Items Earthwork Pavement Structural Section Specialty Items Traffic Items Structural Items Right of Way		\$7,959,000.00 \$1,434,000.00 \$3,172,000.00 \$1,888,000.00 \$1,465,000.00 \$21,655,000.00 \$3,768,750.00						

er at 22' with Class 2 Aggregate depth of 0.70' er at 22' with a HMA depth of 0.25' er at 22' with a CRCP depth of 0.90' s at 8' er at 42' with Class 2 Aggregate depth of 0.70' er at 42' with a HMA depth of 0.25' er at 42' with a CRCP depth of 0.90' er at 26' with a CRCP depth of 0.50 er at 26' with Class 2 Aggregate depth of 0.70' er at 26' with a HMA depth of 0.25' er at 26' with a CRCP depth of 0.90' s at 8' er at 34' with Class 2 Aggregate depth of 0.70' er at 34' with a HMA depth of 0.25' er at 34' with a CRCP depth of 0.90' s at 8' er at 34' with Class 2 Aggregate depth of 0.70' er at 34' with a HMA depth of 0.25' er at 34' with a CRCP depth of 0.90'

Project #11, I	-215 NB, from Center St.	off-Ramp to County Line/Iowa Ave.
ITEMS	TOTAL COST	ENGINEERING ASSUMPTIONS
I. Roadway Items Summary <u>SECTION 1: EARTHWORK COST</u>	\$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 <u>BRIDGES</u>	\$25,566,000	
III. RIGHT OF WAY <u>Right of Way Acquisition</u>	\$400,000	
TOTAL CAPITAL OUTLAY COSTS SUPPORT COSTS TOTAL PROJECT COSTS	\$36,742,696 \$12,860,000 <b>\$49,603,000</b>	Support costs are 35% of capital outlay costs

					Summary	/ of Quantiti	es			
			Project #11, I-2	15 NB, fro	om Center	St. off-Ra	amp to Coul	nty Line/Iowa Av	е.	
	Item Description		Distance (ft)	Width (ft)	Depth (ft)	Quantity	Unit	Cost Assumptions	Total Cost	
I. Roadway Iten	ns 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'
	Hot Mix Asphalt (Type A) (Mainline)		5915.00	22.00		2358.61	TON	\$85.00	\$200,481.53	Lane plus shoulder at 22'
	Continuously Reinforced Concrete Pavement (Mainline)		5915.00	22.00		4337.67	CY	\$270.00	\$1,171,170.00	Lane plus shoulder at 22'
	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'
	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'
	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'
	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'
	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'
	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'
	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'
	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'
	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'
	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 Iter	ns									
	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
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					
			Pavement Structural Section Specialty Items Traffic Items		\$2,919,000.00 \$422,000.00 \$849,000.00					
		11. 111.	Structural Items Right of Way		\$25,566,000.00 \$400,000.00					

er at 22' with Class 2 Aggregate depth of 0.70' er at 22' with a HMA depth of 0.25' er at 22' with a CRCP depth of 0.90'

- s at 8'
- er at 48' with Class 2 Aggregate depth of 0.70' er at 48' with a HMA depth of 0.25' er at 48' with a CRCP depth of 0.90'

- er at 30' with a CRCP depth of 0.50 er at 30' with Class 2 Aggregate depth of 0.70' er at 30' with a HMA depth of 0.25' er at 30' with a CRCP depth of 0.90'

- s at 8'
- er at 24' with Class 2 Aggregate depth of 0.70' er at 24' with a HMA depth of 0.25' er at 24' with a CRCP depth of 0.90'

e- 4 track railroad

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 numps 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	\$54,740								
5% OF Sections 1-6									
<u>SECTION 9: MOBILIZATION</u> 10% of Sections 1-6	\$109,480								
SECTION 10: ROADWAY ADDITIONS	\$54,740								
5% of Sections 1-6									
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								

\$7,391,000.00

					Summary	∕ of Quantit	ies			
			Projec	t #11, I-2	15 NB at H	lighgrov	e/Center St \$	Subtotal.		
	Item Description		Distance (ft)	Width (ft)	Depth (ft)	Quantity	Unit	Cost Assumptions	Total Cost	
I. Roadway Iten	ns 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	<b>*•</b> • • •	
	Remove Concrete Pavement (Mainline)								\$0.00	Existing shoulders
	Class 2 Aggregate Subbase (Mainline)								\$0.00 \$0.00	Lane plus shoulde
	Continuously Reinforced Concrete Pavement (Mainline)								\$0.00	Lane plus shoulde
	Bemove Concrete Pavement (NB off Bamp Highgrove)		477 00	8 00		424 00	SOYD	\$36.38	\$15 425 12	Existing shoulders
	Class 2 Aggregate Subbase (NB off Ramp Highgrove)		477.00	48.00		593.60	CY	\$72.10	\$42,798.56	Lane plus shoulde
	Hot Mix Asphalt (Type A) (NB off Ramp Highgrove)		477.00	48.00		414.99	TON	\$85.00	\$35,274.15	Lane plus shoulde
	Continuously Reinforced Concrete Pavement (NB off Ramp Highgrove)		477.00	48.00		763.20	CY	\$270.00	\$206,064.00	Lane plus shoulde
	Remove Concrete Pavement (NB off Ramp La Cadena)								\$0.00	Existing shoulders
	Class 2 Aggregate Subbase (NB off Ramp La Cadena)								\$0.00	Lane plus shoulde
	Hot Mix Asphalt (Type A) (NB off Ramp La Cadena)								\$0.00	Lane plus shoulde
	Continuously Reinforced Concrete Pavement (NB off Ramp La Cadena)								\$0.00	Lane plus shoulde
	Remove Concrete Pavement (NB on Ramp La Cadena)								\$0.00	Existing shoulders
	Class 2 Aggregate Subbase (NB on Ramp La Cadena)								\$0.00	Lane plus shoulde
	Hot Mix Asphalt (Type A) (NB on Ramp La Gadena)								\$0.00 ¢0.00	Lane plus shoulde
	Specialty Items								φ0.00	Larie plus shoulde
	Bemove Betaining Wall								\$0.00	
	Structural Concrete (Retaining Wall)								\$0.00	Retaining wall heig
	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	
	I hermoplastic Striping (Mainline)		1170.00			1170.00		¢0.05	\$0.00	
	Removal of Existing Striping (NB off Ramp Highgrove)		1170.00			1170.00		\$U.65	\$/60.50 \$2,810,70	
	Removal of Evisting Striping (NB off Ramp La Cadena)		1170.00			1170.00	LI	φ2.41	\$0.00	
	Thermonlastic Strining (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 Iter	ns									
	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
III. Right of Way	/ Direkt of Mary Assuminition #1								¢0.00	
	Right of way Acquisition #1								\$0.00	
		Ι.	Roadway Items		\$952,000.00					
			EarthWork		\$24,000.00					
			Favement Structural Section		\$24 000 00					
			Traffic Items		\$604 000 00					
		11	Structural Items		\$3,636,000,00					
		 III.	Right of Way		\$0.00					
			<b>U</b> · · · <b>/</b>							

s at 10' er at 22' with Class 2 Aggregate depth of 0.70' er at 22' with a HMA depth of 0.25' er at 22' with a CRCP depth of 0.90'

- s at 8'
- ler at 48' with Class 2 Aggregate depth of 0.70' ler at 48' with a HMA depth of 0.25' ler at 48' with a CRCP depth of 0.90'

- ler at 30' with a CRCP depth of 0.50 ler at 30' with Class 2 Aggregate depth of 0.70' ler at 30' with a HMA depth of 0.25' ler at 30' with a CRCP depth of 0.90'

- ler at 24' with a HMA depth of 0.25' ler at 24' with a HMA depth of 0.25' ler at 24' with a CRCP depth of 0.90'

ght 10'

e- 4 track railroad

Project #12, I-215 SB, from I	Martin Luther King B	Blvd On-Ramp to Sycamore Canyon Rd Off-Ramp
ITEMS	TOTAL COST	ENGINEERING ASSUMPTIONS
I. Roadway Items Summary <u>SECTION 1: EARTHWORK COST</u>	\$119,000	Roadway Cost are all based on a preliminary Google Earth review.
SECTION 2: PAVEMENT STRUCTRUAL SECTION	\$2,740,000	
<u>SECTION 3:</u> 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 numps 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 Goodle 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 <u>BRIDGES</u>	\$814,000	
III. RIGHT OF WAY		
Right of Way Acquisition	\$427,500	
TOTAL CAPITAL OUTLAY COSTS	\$9,927,772	
	\$3,475,000	Support costs are 35% of capital outlay costs
IUTAL PROJECT COSTS	\$13,403,000	

			Summary	of Quantit	ies			
Project #	12, I-215 SB, from M	artin Lutl	her King B	Blvd Jr. O	n-Ramp to S	Sycamore Canyo	n Rd Off-Ra	тр
Item Description	Distance (ft)	Width (ft)	Depth (ft)	Quantity	Unit	Cost Assumptions	Total Cost	
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
Class 2 Aggregate Subbase (Mainline)	6370.00	22.00		3633.26	CY	\$72.10	\$261,957.99	Lane plus shoulde
Hot Mix Asphalt (Type A) (Mainline)	6370.00	22.00		2540.04	TON	\$85.00	\$215,903.19	Lane plus shoulde
Continuously Reinforced Concrete Pavement (Mainline)	6370.00	22.00		4671.33	CY	\$270.00	\$1,261,260.00	Lane plus shoulde
Remove Concrete Pavement (SB on Ramp Watkins)	530.00	8.00		471.11	SQYD	\$36.38	\$17,139.02	Existing shoulders
Class 2 Aggregate Subbase (SB on Ramp Watkins)	530.00	40.00		549.63	CY	\$72.10	\$39,628.30	Lane plus shoulde
Hot Mix Asphalt (Type A) (SB on Ramp Watkins)	530.00	40.00		384.25	TON	\$85.00	\$32,661.25	Lane plus shoulde
Continuously Reinforced Concrete Pavement (SB on Ramp Watkins)	530.00	40.00		706.67	CY	\$270.00	\$190,800.00	Lane plus shoulde
Remove Concrete Pavement (SB off Ramp Watkins)	710.00	8.00		631.11	SQYD	\$36.38	\$22,959.82	Existing shoulders
Class 2 Aggregate Subbase (SB off Ramp Watkins)	710.00	50.00		920.37	CY	\$72.10	\$66,358.70	Lane plus shoulde
Hot Mix Asphalt (Type A) (SB off Ramp Watkins)	710.00	50.00		643.44	TON	\$85.00	\$54,692.19	Lane plus shoulde
Continuously Reinforced Concrete Pavement (SB off Ramp Watkins)	710.00	50.00		1183.33	CY	\$270.00	\$319,500.00	Lane plus shoulde
Sec 3. Drainage								
Specialty Items						\$0.00		
Remove Retaining Wall	2065.00			2065.00		\$15.00	\$30,975.00	
Structural Concrete (Retaining Wall)	2065.00			1835.56	SQFT	\$75.00	\$137,666.67	Retaining wall heig
Sec 5. Environmental								
				1.00		<b>#FO 000 00</b>	¢000 000 00	
Intersection Signification				4.00	PER CORNER	\$50,000.00 \$0.00	\$200,000.00	
Paramic Signing and Stripping	6270.00			6270.00	15	\$0.00 \$0.65	¢4 140 E0	
	12740.00			12740.00		0.00 \$2.41	\$4,140.50 \$20,702,40	
Primophastic Striping (Mainine)	12140.00			1210.00		φ2.41 ¢0.65	¢30,703.40	
Thermonlastic Striping (SB on Dome Watkins)	1210.00			1210.00		\$0.05 \$2.41	\$007.00 \$2 170 70	
Removal of Evicting (Sb of Pamp Watkins)	1705.00			1705.00		φ2.41 \$0.65	\$3,178.79 \$1 108 25	
Thermonlastic Striping (SB of Pamp Watkins)	1705.00			1705.00		\$0.05	\$4 109.05	
Beconstruct Sign Structure	1703.00			6.00	FA	\$200,000,00	\$1 200 000 00	
				0.00	LA	\$200,000.00	ψ1,200,000.00	
Watking Dr. Bridge Widening	155.00	14.00		2170.00	SOFT	\$375.00	\$813 750 00	
III Bight of Way	135.00	14.00		2170.00	JOGI I	4575.00	ψ010,7 50.00	
Right of Way Acquisition #1	570.00	15.00		8550.00	SOFT	\$50.00	\$427 500 00	
right of way Acquisition #1	570.00	10.00		0000.00	OQIT	ψ50.00	φ+27,300.00	
L.	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					
И.	Structural Items		\$814,000.00					
Ш.	Right of Way		\$427,500.00					

- 's at 10' ler at 22' with Class 2 Aggregate depth of 0.70' ler at 22' with a HMA depth of 0.25' der at 22' with a CRCP depth of 0.90'
- s at 8'
- ler at 48' with Class 2 Aggregate depth of 0.70' ler at 48' with a HMA depth of 0.25' ler at 48' with a CRCP depth of 0.90'

- s at 8'
- ler at 30' with Class 2 Aggregate depth of 0.70' ler at 30' with a HMA depth of 0.25' ler at 30' with a CRCP depth of 0.90'

ght 8'

Project #13 I-215 SB, from Van Buren On Ramp to Case Rd Off Ramp									
ITEMS	TOTAL COST	ENGINEERING ASSUMPTIONS							
I. Roadway Items Summary <u>SECTION 1: EARTHWORK COST</u>	\$2,578,000	Roadway Cost are all based on a preliminary Google Earth review.							
SECTION 2: PAVEMENT STRUCTRUAL SECTION	\$20,307,000								
<u>SECTION 3:</u> 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 <u>Right of Way Acquisition</u>	\$360,000								
TOTAL CAPITAL OUTLAY COSTS SUPPORT COSTS	\$95,047,848 \$33,267,000	Support costs are 35% of capital outlay costs							
TOTAL PROJECT COSTS	\$128,315,000								

				Summar	y of Quantit	ties			
		Project #13, I-	215 SB,	from Van E	Buren On	n Ramp to C	ase Rd Off Ramp		
Item Description		Distance (ft)	Width (ft)	Depth (ft)	Quantity	Unit	Cost Assumptions	Total Cost	Engineering Assumptions
Ken Description		Distance (II)	wiatii (it)	Deptil (It)	Quantity	Unit	Cost Assumptions	Total Cost	Engineering Assumptions
I. Roadway Items Summary									
Earthwork Readway Exceptation (SR off Rame Harloy Knov)		845.00	26.95	0.15	24160.00	CV	¢15.00	\$262,400,00	
Boadway 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 on Ramp Rediands) Boadway Excavation (SB on Ramp Rediands)		778.00	20-80	0-15	17835 56	CY	\$15.00	\$333,425.00 \$267,533,33	
Pavement Structural Section		110.00	20 00	0 10	17000.00	01	\$0.00	φ207,000.00	
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'
Class 2 Aggregate Subbase (SB off Bamp Harley Knox)		1450.00	34.00		1200.09	CY	\$30.30 \$72.10	\$40,009.70 \$92 154 48	Existing shoulders at 6 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 Aspnalt (Type A) (SB on Ramp Harley Knox) Continuously Reinforced Concrete Payament (SB on Ramp Harley Knox)		860.00	32.00		498.80	CY	\$85.00 \$270.00	\$42,398.00	Lane plus shoulder at 32' with a CBCP 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'
nemove concrete Pavement (SB off Ramp Nuevo)		1040.00	8.00 26.00		924.44 701.04	SUID	\$30.38 \$72.10	933,031.29 \$50 544 77	Existing Shoulders at 6 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'
Bemove Concrete Pavement (SB off Ramp D st)		1280.00	24.00		1137.78	SOVD	\$270.00	\$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 Rediands) Hot Mix Asphalt (Type A) (SB off Ramp Rediands)		1075.00	34.00		34.00	TON	\$72.10	\$2,451.40 \$56 309 84	Lane plus shoulder at 34 with Class 2 Aggregate depth of 0.70
Continuously Beinforced Concrete Payement (SB off Bamp Bedlands)		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 Rediands)		1040.00	40.00		1386.67	GY	\$270.00	\$374,400.00	Lane plus shoulder at 40° with a CHCP depth of 0.90°
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 (Hetaining Wall)		1020.00			1020.00	SQFI	\$75.00	\$75,500.00	Retaining wall height 9
Traffic Items		3003.00			3003.00	-	φ02. <del>4</del> 0	φ301,330.00	
Traffic Electrical									
Intersection Signalization					16.00	PER CORNER	\$50,000.00	\$800,000.00	
Traffic Signing and Stripping							\$0.00	*** ***	
Hemoval of Existing Striping (Mainline)		60115.00			60115.00		\$0.65	\$39,074.75	
Removal of Existing Striping (SB off Bamp 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	
Hemoval of Existing Striping (SB off Ramp Ramona)		2320.00			2320.00		\$0.65	\$1,508.00	
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)		2150.00			2150.00	LF	\$0.65	\$1,397.50	
Removal of Existing Striping (SB on Ramp Rediands)		3380.00			3380.00	LF	\$2.41 \$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		a					A05	AA 075	
Ramona Bridge Replacement		220.00	125.00		27500.00	0.00	\$250.00	\$6,875,000.00	
Placentia Bridge Replacement		≥20.00 215.00	82.00 72.00		15480.00	SOFT	ą∠ο0.00 \$250.00	\$4,510,000.00 \$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	
neularius briuge TiebaCK Bridge Structure 1		125.00	14.00		∠000.00 6860.00	SUFI	\$250.00 \$375.00	\$2,572,500,00	
Bridae Structure 2		230.00	14.00		3220.00	SOFT	\$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	
	ı	Roadway Items		\$26,914,000.00	)				
		Earthwork		\$2,578,000.00					
		Pavement Structural Section		\$20,307,000.00	)				
		Specialty Items		\$446,000.00					
		ramic nems		\$3,583,000.00					
	11. 111	Structural items Right of Way		\$42,590,000.00 \$360,000,00	1				
				<i>4000,000.00</i>					



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							
SECTION 4: Specialty Items	\$0	Retaining walls, sound walls, tie back walls and ramp configurations 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 <u>BRIDGES</u> III. RIGHT OF WAY	\$500,000								
Right of Way Acquisition	\$0								
TOTAL CAPITAL OUTLAY COSTS SUPPORT COSTS	\$500,000 \$175,000	Support costs are 35% of capital outlay costs							
TOTAL PROJECT COSTS	\$675,000								
Amount included in 2016 TUMF Nexus Study Amount to be reduced from Total Project Costs	\$1,356,000.00 \$675,000.00								

				Summar	y of Quantitie	s			
		Proje	ect #13, I-2	215 SB at I	Perris Ove	rcrossing	Subtotal		
Item Description		Distance (ft)	Width (ft)	Depth (ft)	Quantity	Unit	Cost Assumptions	Total Cost	Engineering Assumptions
I Boadway Items Summary		. ,	. ,	,					
Earthwork									
Roadway Excavation (SB off Ramp Harley Knox)								\$0.00	
Roadway Excavation (SB on Ramp Harley Knox)								\$0.00 \$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 on Ramp Rediands) Roadway Excavation (SB on Ramp Rediands)								\$0.00	
Pavement Structural Section							\$0.00		
Remove Concrete Pavement (Mainline)								\$0.00	Existing shoulders at 10'
Class 2 Aggregate Subbase (Mainline) Hot Mix Asphalt (Type A) (Mainline)								\$0.00	Lane plus shoulder at 22' with Class 2 Aggregate depth of 0.70'
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'
Continuously Reinforced Concrete Pavement (SB off Ramp Harley Knox)								\$0.00	Lane plus shoulder at 34' with a CRCP depth of 0.20'
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'
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'
Continuousiy Reinforced Concrete Pavement (SB off Ramp Ramona) Remove Concrete Pavement (SB off Ramp Nuevo)								\$0.00	Lane plus shoulder at 48 with a CRCP depth of 0.90'
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'
Class 2 Aggregate Subbase (SB on Ramp Nuevo)								φ0.00 \$0.00	Existing shoulders at o 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 \$0.00	Existing shoulders at 8'
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) Hot Mix Asphalt (Type A) (SB off Ramp Redlands)								\$0.00 \$0.00	Lane plus shoulder at 34' with Class 2 Aggregate depth of 0.70'
Continuously Reinforced Concrete Pavement (SB off Ramp Redlands)								\$0.00	Lane plus shoulder at 34' with a CRCP depth of 0.20'
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 Hamp Hedlands)								\$0.00	Lane plus shoulder at 40' with a HMA depth of 0.25'
Sec 3. Drainage								φ0.00	
Specialty Items							\$0.00		
Remove Sound Wall								\$0.00	
Bemove Retaining Wall								\$0.00	
Structural Concrete (Retaining Wall)								\$0.00	Retaining wall height 9'
Concrete Barrier (Type 60)								\$0.00	
Traffic Items									
Intersection Signalization								\$0.00	
Traffic Signing and Stripping							\$0.00		
Removal of Existing Striping (Mainline)								\$0.00 \$0.00	
Removal of Existing Striping (Manine)								\$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 Hamp Harley Knox) 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 \$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	
Reconstruct Sign Structure								\$0.00	
II. Structure Items									
Ramona Bridge Replacement								\$0.00	
Placentia Bridge Replacement								ູ່ \$0.00	
Nuevo Rd Bridge Replacement								\$0.00	
D St Bridge Tieback								\$0.00	
Redlands Bridge Tieback		125.00	16.00		2000.00	SQ FT	\$250.00	ຈບ.ບປ \$500,000.00	
Bridge Structure 1		.20.00					<i><i><i>v</i><sub>2</sub>00.00</i></i>	\$0.00	
Bridge Structure 2								\$0.00	
Bridge Structure 3								\$0.00	
Right of Way Acquisition #1								\$0.00	
	I.	Roadway Items		\$0.00					
		Earthwork		\$0.00					
		Pavement Structural Section		\$0.00					
		Speciality Items		\$0.00 \$0.00					
	<i>II</i> .	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							
SECTION 4: Specialty Items	\$0	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 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								
IL STRUCTURE ITEMS									
BRIDGES	\$6,890,000								
III. RIGHT OF WAY Bight of Way Acquisition	¢0								
ingit of they Acquisition	φU								
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	t #13, I-215	SB at Nu	evo Subtot	tal		
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) Roadway Excavation (SB on Ramp Harley Knox) Roadway Excavation (SB off Ramp Ramona) Roadway Excavation (SB off Ramp Nuevo) Roadway Excavation (SB off Ramp D vet) Roadway Excavation (SB off Ramp D et) Roadway Excavation (SB off Ramp Redlands) Roadway Excavation (SB on Ramp Redlands)		588.00 790.00	26-95 25-102	0-15 0-15	16787.22 32457.22	CY CY	\$15.00 \$15.00	\$0.00 \$0.00 \$251,808.33 \$486,858.33 \$0.00 \$0.00 \$0.00	
Pavement Structural Section							\$0.00		
Remove Concrete Pavement (Mainline) Class 2 Aggregate Subbase (Mainline) Hot Mix Asphalt (Type A) (Mainline) Continuously Reinforced Concrete Pavement (Mainline) Remove Concrete Pavement (SB off Ramp Harley Knox) Class 2 Aggregate Subbase (SB off Ramp Harley Knox) Hot Mix Asphalt (Type A) (SB off Ramp Harley Knox) Continuously Reinforced Concrete Pavement (SB off Ramp Harley Knox) Continuously Reinforced Concrete Pavement (SB off Ramp Harley Knox) Class 2 Aggregate Subbase (SB on Ramp Harley Knox) Class 2 Aggregate Subbase (SB on Ramp Harley Knox) Hot Mix Asphalt (Type A) (SB on Ramp Harley Knox) Hot Mix Asphalt (Type A) (SB on Ramp Harley Knox) Continuously Reinforced Concrete Pavement (SB off Ramp Harley Knox) Remove Concrete Pavement (SB off Ramp Ramona) Class 2 Aggregate Subbase (SB off Ramp Ramona) Continuously Reinforced Concrete Pavement (SB off Ramp Ramona) Continuously Reinforced Concrete Pavement (SB off Ramp Ramona) Continuously Reinforced Concrete Pavement (SB off Ramp Nuevo) Class 2 Aggregate Subbase (SB off Ramp Nuevo) Class 2 Aggregate Subbase (SB off Ramp Nuevo) Hot Mix Asphalt (Type A) (SB off Ramp Nuevo) Hot Mix Asphalt (Type A) (SB off Ramp Nuevo) Continuously Reinforced Concrete Pavement (SB off Ramp Nuevo) Class 2 Aggregate Subbase (SB on Ramp Nuevo) Class 2 Aggregate Subbase (SB on Ramp Nuevo) Hot Mix Asphalt (Type A) (SB off Ramp Nuevo) Continuously Reinforced Concrete Pavement (SB off Ramp Nuevo) Remove Concrete Pavement (SB off Ramp Duevo) Hot Mix Asphalt (Type A) (SB off Ramp Duevo) Hot Mix Asphalt (Type A) (SB off Ramp Duevo) Hot Mix Asphalt (Type A) (SB off Ramp Duevo) Remove Concrete Pavement (SB off Ramp D st) Hot Mix Asphalt (Type A) (SB off Ramp D st) Hot Mix Asphalt (Type A) (SB off Ramp D st) Hot Mix Asphalt (Type A) (SB off Ramp D st) Hot Mix Asphalt (Type A) (SB off Ramp D st) Hot Mix Asphalt (Type A) (SB off Ramp D st) Hot Mix Asphalt (Type A) (SB off Ramp D st) Hot Mix Asphalt (Type A) (SB off Ramp D st) Hot Mix Asphalt (Type A) (SB o		1040.00 1040.00 1040.00 1040.00 1420.00 1420.00 1420.00 1420.00	8.00 26.00 26.00 26.00 8.00 24.00 24.00 24.00		924.44 701.04 490.10 901.33 1262.22 883.56 617.70 1136.00	SQYD CY TON CY SQYD CY TON CY	\$36.38 \$72.10 \$85.00 \$270.00 \$36.38 \$72.10 \$85.00 \$270.00	\$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$3.631.29 \$50,544.77 \$41,658.50 \$243,360.00 \$45,919.64 \$63,704.36 \$52,504.50 \$306,720.00 \$0.00	Existing shoulder at 22' with Class 2 Aggregate depth of 0.70' Lane plus shoulder at 22' with a CRCP depth of 0.90' Existing shoulder at 34' with a CRCP depth of 0.90' Existing shoulder at 34' with a HMA depth of 0.25' Lane plus shoulder at 34' with a CRCP depth of 0.90' Existing shoulder at 34' with a CRCP depth of 0.90' Existing shoulder at 32' with a CRCP depth of 0.90' Existing shoulder at 32' with a CRCP depth of 0.90' Existing shoulder at 32' with a CRCP depth of 0.70' Lane plus shoulder at 32' with a CRCP depth of 0.90' Existing shoulder at 32' with a CRCP depth of 0.90' Existing shoulder at 32' with a CRCP depth of 0.90' Existing shoulder at 32' with a CRCP depth of 0.90' Existing shoulder at 48' with a CRCP depth of 0.90' Existing shoulder at 48' with a CRCP depth of 0.90' Existing shoulder at 48' with a CRCP depth of 0.90' Existing shoulder at 48' with a CRCP depth of 0.90' Existing shoulder at 48' with a CRCP depth of 0.90' Existing shoulder at 48' with a CRCP depth of 0.90' Existing shoulder at 48' with a CRCP depth of 0.90' Existing shoulder at 26' with Class 2 Aggregate depth of 0.70' Lane plus shoulder at 26' with Class 2 Aggregate depth of 0.70' Lane plus shoulder at 26' with a MA depth of 0.25' Lane plus shoulder at 24' with Class 2 Aggregate depth of 0.70' Lane plus shoulder at 24' with Class 2 Aggregate depth of 0.70' Lane plus shoulder at 24' with Class 2 Aggregate depth of 0.70' Lane plus shoulder at 24' with Class 2 Aggregate depth of 0.70' Lane plus shoulder at 24' with Class 2 Aggregate depth of 0.70' Lane plus shoulder at 38' with Class 2 Aggregate depth of 0.70' Lane plus shoulder at 38' with Class 2 Aggregate depth of 0.70' Lane plus shoulder at 38' with Class 2 Aggregate depth of 0.70' Lane plus shoulder at 38' with Class 2 Aggregate depth of 0.70' Lane plus shoulder at 38' with Class 2 Aggregate depth of 0.70' Lane plus shoulder at 38' with Class 2 Aggregate depth of 0.70' Lane plus shoulder at 38' with Class 2 Aggregate depth of 0.70' Lane plus shoulder at 38' with Class 2 Aggregat
Class 2 Aggregate Subbase (SB off Ramp Redlands) Hot Mix Asphalt (Type A) (SB off Ramp Redlands) Continuously Reinforced Concrete Pavement (SB off Ramp Redlands) Remove Concrete Pavement (SB on Ramp Redlands) Class 2 Aggregate Subbase (SB on Ramp Redlands) Hot Mix Asphalt (Type A) (SB on Ramp Redlands) Continuously Reinforced Concrete Pavement (SB on Ramp Redlands) <b>Sec 3. Drainage</b>								\$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00	Lane plus shoulder at 34' with Class 2 Aggregate depth of 0.70' Lane plus shoulder at 34' with a HMA depth of 0.25' Lane plus shoulder at 34' with a CRCP depth of 0.90' Existing shoulders at 8' Lane plus shoulder at 40' with Class 2 Aggregate depth of 0.70' Lane plus shoulder at 40' with a HMA depth of 0.25' Lane plus shoulder at 40' with a CRCP depth of 0.90'
Specialty Items							\$0.00	** **	
Sound Wall Remove Retaining Wall Structural Concrete (Retaining Wall) Concrete Barrier (Type 60)								\$0.00 \$0.00 \$0.00 \$0.00 \$0.00	Retaining wall height 9'
Traffic Electrical									
Intersection Signalization <b>Traffic Signing and Stripping</b> Removal of Existing Striping (Mainline) Thermoplastic Striping (SB off Ramp Harley Knox) Thermoplastic Striping (SB off Ramp Harley Knox) Removal of Existing Striping (SB on Ramp Harley Knox) Thermoplastic Striping (SB on Ramp Harley Knox) Thermoplastic Striping (SB off Ramp Ramona) Removal of Existing Striping (SB off Ramp Ramona)					4.00	PER CORNER	\$50,000.00 \$0.00	\$200,000.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00	
Thermoplastic Striping (SB off Ramp Ramona) Removal of Existing Striping (SB off Ramp Nuevo)		2080.00			2080.00	LF	\$0.65	\$0.00 \$1,352.00	
Thermoplastic Striping (SB off Ramp Nuevo) Removal of Existing Striping (SB on Ramp Nuevo) Thermoplastic Striping (SB on Ramp Nuevo) Removal of Existing Striping (SB off Ramp Redlands) Thermoplastic Striping (SB off Ramp Redlands) Removal of Existing Striping (SB on Ramp Redlands) Thermoplastic Striping (SB on Ramp Redlands)		2080.00 2840.00 2840.00			2080.00 2840.00 2840.00	LF LF LF	\$2.41 \$0.65 \$2.41	\$5,012.80 \$1,846.00 \$6,844.40 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00	
II. Structure Items								φ0.00	
Ramona Bridge Replacement Harley Knox Bridge Replacement Placentia Bridge Replacement Nuevo Rd Bridge Replacement D St Bridge Tieback Perris Bivd Bridge Replacement		260.00	106.00		27560.00	SQFT	\$250.00	\$0.00 \$0.00 \$6,890,000.00 \$0.00 \$0.00	
Redlands Bridge Tieback Bridge Structure 1 Bridge Structure 2 Bridge Structure 3 Ill. Right of Way								\$0.00 \$0.00 \$0.00 \$0.00	
Right of Way Acquisition #1								\$0.00	
	L 11. 11.	Roadway Items Earthwork Pavement Structural Section Specialty Items Traffic Items Structural Items Right of Way		\$1,792,000.00 \$739,000.00 \$838,000.00 \$0.00 \$215,000.00 \$6,890,000.00 \$0.00					



Project #13 I-215 SB at Placentia Overcrossing Subtotal									
ITEMS	TOTAL COST	ENGINEERING ASSUMPTIONS							
I. Roadway Items Summary <u>SECTION 1: EARTHWORK COST</u>	\$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 numps 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							

\$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			
L Des dures lleme Original		2.012.000 (1.0)		2000()	culantity		everneeunphene		_nginoring recamptione			
I. Roadway Items Summary												
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 of Ramp Nuevo)								\$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) Hot Mix Asphalt (Type A) (Mainline)								\$0.00	Lane plus shoulder at 22' with class 2 Aggregate depth of 0.70'			
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'			
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'			
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'			
Continuously Reinforced Concrete Pavement (SB off Ramp Nuevo)								\$0.00	Lane plus shoulder at 26 with a CBCP denth 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 CHCP depth of 0.90'			
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 Rediands) Hot Mix Asphalt (Type A) (SB off Ramp Rediands)								\$0.00	Lane plus shoulder at 34' with class 2 Aggregate depth of 0.70'			
Continuously Reinforced Concrete Pavement (SB off Ramp Redlands)								\$0.00	Lane plus shoulder at 34 with a CRCP depth of 0.20			
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 Rediands)								\$0.00	Lane plus shoulder at 40' with a CRCP depth of 0.90'			
Specialty Items							\$0.00					
Remove Sound Wall								\$0.00				
Sound Wall								\$0.00				
Remove Retaining Wall								\$0.00	Bataining wall baight 0'			
Concrete Barrier (Type 60)								\$0.00	Hetalining wan height 9			
Traffic Items								+				
Traffic Electrical												
Intersection Signalization							<b>*</b> * **	\$0.00				
Removal of Existing Stripping							\$0.00	\$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				
Removal of Existing Striping (SB of Ramp Ramoval)								\$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				
Removal of Existing Striping (SB of 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 Bamona Bridge Benlacement								\$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 Perris Blud Bridge Replacement								\$0.00				
Bedlands Bridge Tieback								\$0.00				
Bridge Structure 1								\$0.00				
Bridge Structure 2								\$0.00				
Bridge Structure 3								\$0.00				
III. riigni of Way Bight of Way Acquisition #1								\$0.00				
riight or way noquisition #1								φυ.υυ				
	I.	Roadway Items		\$0.00								
		Earthwork		\$0.00								
		Pavement Structural Section		\$0.00								
		Traffic Items		\$0.00								
	<i>II.</i>	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 <u>SECTION 1: EARTHWORK COST</u>	\$221,000	Roadway Cost are all based on a preliminary Google Earth review.							
SECTION 2: PAVEMENT STRUCTRUAL SECTION	\$452,000								
<u>SECTION 3:</u> 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 numps 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	\$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	<b>2</b> 2								
Kignt 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 TUME Nexus Study	\$5.965.000.00								

\$5,965,000.00 \$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. Roadwav Items Su	Immary												
Earth Roa Roa Roa Roa Roa Roa Roa Roa Roa Roa	wwork adway Excavation (SB off Ramp Harley Knox) adway Excavation (SB on Ramp Harley Knox) adway Excavation (SB off Ramp Ramona) adway Excavation (SB off Ramp Nuevo) adway Excavation (SB off Ramp D st) adway Excavation (SB off Ramp D st) adway Excavation (SB off Ramp Redlands) adway Excavation (SB on Ramp Redlands)	700.00	18-100	0-11	14719.22	СҮ	\$15.00	\$0.00 \$0.00 \$220,788.33 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00					
Paver Rer	ment Structural Section move Concrete Pavement (Mainline)						\$0.00	\$0.00	Existing shoulders at 10'				
Cla Hot Cor Cla Hot Cor Rer Cla Hot Cor Rer Cla	Iss 2 Aggregate Subbase (Mainline) t Mix Asphalt (Type A) (Mainline) thinuously Reinforced Concrete Pavement (Mainline) move Concrete Pavement (SB off Ramp Harley Knox) iss 2 Aggregate Subbase (SB off Ramp Harley Knox) Mix Asphalt (Type A) (SB off Ramp Harley Knox) ntinuously Reinforced Concrete Pavement (SB off Ramp Harley Knox) move Concrete Pavement (SB on Ramp Harley Knox) is 2 Aggregate Subbase (SB on Ramp Harley Knox) t Mix Asphalt (Type A) (SB on Ramp Harley Knox) t Mix Asphalt (Type A) (SB on Ramp Harley Knox) t Mix Asphalt (Type A) (SB on Ramp Harley Knox) t Mix Asphalt (Type A) (SB on Ramp Harley Knox)	720.00	8.00		640.00	SQYD	\$36.38	\$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$23,283,20	Lane plus shoulder at 22' with Class 2 Aggregate depth of 0.70' Lane plus shoulder at 22' with a HMA depth of 0.25' Lane plus shoulder at 22' with a CRCP depth of 0.90' Existing shoulders at 34' with Class 2 Aggregate depth of 0.70' Lane plus shoulder at 34' with a HMA depth of 0.25' Lane plus shoulder at 34' with a CRCP depth of 0.90' Existing shoulder at 32' with a CRCP depth of 0.90' Existing shoulder at 32' with a LAS 2 Aggregate depth of 0.70' Lane plus shoulder at 32' with a CRCP depth of 0.25' Lane plus shoulder at 32' with a CRCP depth of 0.25' Lane plus shoulder at 32' with a LAS 2 Aggregate depth of 0.70' Lane plus shoulder at 32' with a CRCP depth of 0.90' Existing shoulder at 32' with a CRCP depth of 0.90'				
Cla Hot Cor Cla Hot Cor Cla Cor Cla Cla Cor Cla Cor Cla Cor Cla Cor Cla Cor Cla Cor Cla Cor Cla Cor Cor Cla Cor Cor Cla Cor Cor Cor Cor Cor Cor Cor Cor Cor Cor	iss 2 Aggregate Subbase (SB off Ramp Ramona) (Mix Asphalt (Type A) (SB off Ramp Ramona) move Concrete Pavement (SB off Ramp Nuevo) iss 2 Aggregate Subbase (SB off Ramp Nuevo) Mix Asphalt (Type A) (SB off Ramp Nuevo) move Concrete Pavement (SB off Ramp Nuevo) move Concrete Pavement (SB off Ramp Nuevo) iss 2 Aggregate Subbase (SB on Ramp Nuevo) iss 2 Aggregate Subbase (SB on Ramp Nuevo) Mix Asphalt (Type A) (SB on Ramp Nuevo) intinuously Reinforced Concrete Pavement (SB off Ramp Duevo) move Concrete Pavement (SB off Ramp Duevo) Mix Asphalt (Type A) (SB on Ramp Nuevo) intinuously Reinforced Concrete Pavement (SB on Ramp Nuevo) move Concrete Pavement (SB off Ramp D st) Mix Asphalt (Type A) (SB off Ramp D st) ntinuously Reinforced Concrete Pavement (SB off Ramp D st) ntinuously Reinforced Concrete Pavement (SB off Ramp D st) move Concrete Pavement (SB off Ramp Redlands) iss 2 Aggregate Subbase (SB on Ramp Redlands) it Mix Asphalt (Type A) (SB on Ramp Redlands) it Mix Asphalt (	720.00 720.00 720.00	48.00 48.00 48.00		896.00 626.40 1152.00	CY TON CY	\$72.10 \$85.00 \$270.00	\$64,601.60 \$53,244.00 \$311,040.00 \$0.000 \$0.00	Lane plus shoulder at 48' with Class 2 Aggregate depth of 0.70' Lane plus shoulder at 48' with A IMA depth of 0.25' Lane plus shoulder at 26' with Class 2 Aggregate depth of 0.70' Existing shoulder at 26' with Class 2 Aggregate depth of 0.70' Lane plus shoulder at 26' with a IMA depth of 0.25' Lane plus shoulder at 26' with a CRCP depth of 0.90' Existing shoulder at 24' with a CRCP depth of 0.70' Lane plus shoulder at 24' with a CRCP depth of 0.70' Lane plus shoulder at 24' with a CRCP depth of 0.70' Lane plus shoulder at 24' with a CRCP depth of 0.25' Lane plus shoulder at 24' with a CRCP depth of 0.70' Lane plus shoulder at 24' with a CRCP depth of 0.70' Lane plus shoulder at 34' with a CRCP depth of 0.70' Lane plus shoulder at 38' with Class 2 Aggregate depth of 0.70' Lane plus shoulder at 38' with Class 2 Aggregate depth of 0.70' Lane plus shoulder at 38' with a CRCP depth of 0.90' Existing shoulder at 34' with a CRCP depth of 0.90' Existing shoulder at 34' with a CRCP depth of 0.70' Lane plus shoulder at 34' with a CRCP depth of 0.70' Lane plus shoulder at 34' with a CRCP depth of 0.70' Lane plus shoulder at 34' with a CRCP depth of 0.70' Lane plus shoulder at 34' with a CRCP depth of 0.70' Lane plus shoulder at 34' with a CRCP depth of 0.70' Lane plus shoulder at 40' with Class 2 Aggregate depth of 0.70' Lane plus shoulder at 40' with Class 2 Aggregate depth of 0.70' Lane plus shoulder at 40' with Class 2 Aggregate depth of 0.70' Lane plus shoulder at 40' with A CRCP depth of 0.90'				
Sec 3. Drain Speci	lage jalty tems						\$0.00						
Rer Sou Rer Stru Cor <b>Trafi</b>	move Sound Wall und Wall und Wall uctural Concrete (Retaining Wall) norete Barrier (Type 60) <i>ic Items</i>						0.00	\$0.00 \$0.00 \$0.00 \$0.00 \$0.00	Retaining wall height 9'				
Tra Int	Iffic Electrical tersection Signalization				4.00	PER CORNER	\$50,000.00	\$200,000.00					
Trai Re Th Re Th Re Th	ffic Signing and Stripping moval of Existing Striping (Mainline) ermoplastic Striping (Mainline) moval of Existing Striping (SB off Ramp Harley Knox) ermoplastic Striping (SB off Ramp Harley Knox) ermoplastic Striping (SB on Ramp Harley Knox)						\$0.00	\$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00					
Re Th Re Th Re Th Re Th Re Th Re Re	imoval of Existing Striping (SB off Ramp Ramona) ermoplastic Striping (SB off Ramp Ramona) ermoplastic Striping (SB off Ramp Nuevo) ermoplastic Striping (SB off Ramp Nuevo) ermoplastic Striping (SB on Ramp Nuevo) ermoplastic Striping (SB on Ramp Nuevo) ermoplastic Striping (SB off Ramp Redlands) ermoplastic Striping (SB off Ramp Redlands) ermoval of Existing Striping (SB on Ramp Redlands) ermoplastic Striping (SB on Ramp Redlands) ermoplastic Striping (SB on Ramp Redlands) ermoplastic Striping (SB on Ramp Redlands)	2320.00 2320.00			2320.00 2320.00	LF LF	\$0.65 \$2.41	\$1,508.00 \$5,591.20 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00					
II. Structure Items								φ0.00					
Hamo Harley Place Nuevc D St E Perris Redla Bridge Bridge Bridge Bridge III. Right of Wav	ona Bridge Replacement Nia Bridge Replacement ntia Bridge Replacement or Rd Bridge Replacement Bivd Bridge Replacement Inds Bridge Tieback e Structure 1 e Structure 2 e Structure 3	220.00	125.00		27500.00	SQFT	\$250.00	\$6,875,000.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00					
Right	of Way Acquisition #1							\$0.00					
	L I. II. II. II.	Roadway Items Earthwork Pavement Structural Section Specialty Items Traffic Items Structural Items Right of Way		\$880,000.00 \$221,000.00 \$452,000.00 \$0.00 \$207,000.00 \$6,875,000.00 \$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							
SECTION 4: Specialty Items	\$0	Retaining walls, sound walls, the 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	\$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								
· · · · · · · · · · · · · · · · · · ·									

\$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) Roadway Excavation (SB on Ramp Harley Knox) Roadway Excavation (SB off Ramp Ramona) Roadway Excavation (SB off Ramp Nuevo) Roadway Excavation (SB off Ramp D st) Roadway Excavation (SB off Ramp D st) Roadway Excavation (SB off Ramp P st) Roadway Excavation (SB off Ramp P st)		845.00 480.00	26-85 21-76	0-15 0-15	24160.00 14576.11	CY CY	\$15.00 \$15.00	\$362,400.00 \$218,641.67 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00			
Pavement Structural Section							\$0.00	\$0.00			
Remove Concrete Pavement (Mainline) Class 2 Aggregate Subbase (Mainline) Hot Mix Asphalt (Type A) (Mainline) Continuously Reinforced Concrete Pavement (Mainline) Remove Concrete Pavement (SB off Ramp Harley Knox) Class 2 Aggregate Subbase (SB off Ramp Harley Knox) Hot Mix Asphalt (Type A) (SB off Ramp Harley Knox) Continuously Reinforced Concrete Pavement (SB off Ramp Harley Knox) Class 2 Aggregate Subbase (SB on Ramp Harley Knox) Continuously Reinforced Concrete Pavement (SB off Ramp Harley Knox) Remove Concrete Pavement (SB off Ramp Ramona) Class 2 Aggregate Subbase (SB off Ramp Ramona) Hot Mix Asphalt (Type A) (SB off Ramp Ramona) Hot Mix Asphalt (Type A) (SB off Ramp Ramona) Continuously Reinforced Concrete Pavement (SB off Ramp Ramona) Remove Concrete Pavement (SB off Ramp Nuevo) Class 2 Aggregate Subbase (SB off Ramp Nuevo) Continuously Reinforced Concrete Pavement (SB off Ramp Nuevo) Continuously Reinforced Pavement (SB off Ramp Nuevo) Continuously Reinforced Pavement (SB off Ramp Nuevo) Continuously Reinforced Pavement (SB off Ramp Nuevo) Hot Mix Asphalt (Type A) (SB on Ramp Nuevo) Hot Mix Asphalt (Type A) (SB off Ramp Daty) Continuously Reinforced Pavement (SB off Ramp Nuevo) Remove Concrete Pavement (SB off Ramp Daty) Continuously Reinforced Pavement (SB off Ramp Duevo) Remove Concrete Pavement (SB off Ramp D st) Class 2 Aggregate Subbase (SB off Ramp D st) Class 2 Aggregate Subbase (SB off Ramp D st) Hot Mix Asphalt (Type A) (SB off Ramp D st)		1450.00 1450.00 1450.00 860.00 860.00 860.00 860.00	8.00 34.00 34.00 8.00 32.00 32.00 32.00		1288.89 1278.15 893.56 1643.33 764.44 713.48 498.80 917.33	Sayd Cy Ton Cy Sayd Cy Ton Cy	\$36.38 \$72.10 \$85.00 \$270.00 \$36.38 \$72.10 \$85.00 \$270.00	\$0.00 \$0.00 \$0.00 \$46,889.78 \$92,154.48 \$75,952.81 \$443,700.00 \$27,810.49 \$51,442.01 \$42,398.00 \$0.00	Existing shoulders at 10' Lane plus shoulder at 22' with Class 2 Aggregate depth of 0.70' Lane plus shoulder at 22' with a CRCP depth of 0.90' Existing shoulders at 22' with a CRCP depth of 0.90' Existing shoulders at 34' with Class 2 Aggregate depth of 0.70' Lane plus shoulder at 34' with a LRCP depth of 0.90' Existing shoulders at 34' with a CRCP depth of 0.90' Existing shoulders at 34' with a CRCP depth of 0.90' Existing shoulder at 32' with a CRCP depth of 0.90' Existing shoulder at 32' with a CRCP depth of 0.90' Existing shoulder at 32' with Class 2 Aggregate depth of 0.70' Lane plus shoulder at 32' with Class 2 Aggregate depth of 0.70' Lane plus shoulder at 32' with Class 2 Aggregate depth of 0.70' Lane plus shoulder at 48' with a HMA depth of 0.25' Lane plus shoulder at 48' with a CRCP depth of 0.90' Existing shoulder at 48' with a CRCP depth of 0.90' Existing shoulder at 26' with Class 2 Aggregate depth of 0.70' Lane plus shoulder at 26' with Class 2 Aggregate depth of 0.70' Lane plus shoulder at 26' with Class 2 Aggregate depth of 0.70' Lane plus shoulder at 26' with Class 2 Aggregate depth of 0.70' Lane plus shoulder at 26' with Class 2 Aggregate depth of 0.70' Lane plus shoulder at 26' with Class 2 Aggregate depth of 0.70' Lane plus shoulder at 26' with Class 2 Aggregate depth of 0.70' Lane plus shoulder at 24' with Class 2 Aggregate depth of 0.70' Lane plus shoulder at 24' with Class 2 Aggregate depth of 0.70' Lane plus shoulder at 24' with Class 2 Aggregate depth of 0.70' Lane plus shoulder at 24' with Class 2 Aggregate depth of 0.70' Lane plus shoulder at 24' with Class 2 Aggregate depth of 0.70' Lane plus shoulder at 24' with Class 2 Aggregate depth of 0.70' Lane plus shoulder at 38' with Class 2 Aggregate depth of 0.70' Lane plus shoulder at 38' with Class 2 Aggregate depth of 0.70' Lane plus shoulder at 38' with Class 2 Aggregate depth of 0.70' Lane plus shoulder at 38' with Class 2 Aggregate depth of 0.70' Lane plus shoulder at 38' with Class 2 Aggregate depth		
Continuously Reinforced Concrete Pavement (SB off Ramp D st) Remove Concrete Pavement (SB off Ramp Redlands) Class 2 Aggregate Subbase (SB off Ramp Redlands) Hot Mix Asphalt (Type A) (SB off Ramp Redlands) Continuously Reinforced Concrete Pavement (SB off Ramp Redlands) Remove Concrete Pavement (SB on Ramp Redlands) Class 2 Aggregate Subbase (SB on Ramp Redlands) Hot Mix Asphalt (Type A) (SB on Ramp Redlands) Hot Mix Asphalt (Type A) (SB on Ramp Redlands) Continuously Reinforced Concrete Pavement (SB on Ramp Redlands)								\$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00	Lane plus shoulder at 36' with a CRCP depth of 0.90' Existing shoulder at 34' with Class 2 Aggregate depth of 0.70' Lane plus shoulder at 34' with Class 2 Aggregate depth of 0.70' Lane plus shoulder at 34' with a CRCP depth of 0.90' Existing shoulder at 40' with a CRCP depth of 0.90' Lane plus shoulder at 40' with Class 2 Aggregate depth of 0.70' Lane plus shoulder at 40' with Class 2 Aggregate depth of 0.70' Lane plus shoulder at 40' with Class 2 Aggregate depth of 0.90'		
Sec 3. Drainage							00.03				
Remove Sound Wall Sound Wall Remove Retaining Wall Structural Concrete (Retaining Wall) Concrete Barrier (Type 60) <b>Traffic Items</b>							<i>9</i> 0.00	\$0.00 \$0.00 \$0.00 \$0.00 \$0.00	Retaining wall height 9'		
Traffic Electrical Intersection Signalization					4.00	PER CORNER	\$50,000.00	\$200,000.00			
Traffic Signing and Stripping							\$0.00				
Thermoplastic Striping (Mainline) Thermoplastic Striping (Mainline) Removal of Existing Striping (SB off Ramp Harley Knox) Thermoplastic Striping (SB off Ramp Harley Knox) Removal of Existing Striping (SB on Ramp Harley Knox) Removal of Existing Striping (SB off Ramp Ramona) Thermoplastic Striping (SB off Ramp Ramona)		2900.00 2900.00 1720.00 1720.00			2900.00 2900.00 1720.00 1720.00	LF LF LF LF	\$0.65 \$2.41 \$0.65 \$2.41	\$0.00 \$1,885.00 \$6,989.00 \$1,118.00 \$4,145.20 \$0.00 \$0.00			
Thermoplastic Striping (SB off Ram Ramp Nuevo) Thermoplastic Striping (SB off Ram Ramp Nuevo) Removal of Existing Striping (SB on Ramp Nuevo) Thermoplastic Striping (SB on Ramp Nedlands) Thermoplastic Striping (SB off Ramp Redlands) Thermoplastic Striping (SB off Ramp Redlands) Removal of Existing Striping (SB on Ramp Redlands) Thermoplastic Striping (SB on Ramp Redlands) Reconstruct Sign Structure								\$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00			
II. Structure Items Bamona Bridge Benlacement							\$250.00	\$0.00			
Harley Knox Bridge Replacement Placentia Bridge Replacement Placentia Bridge Replacement Nuevo Rd Bridge Replacement D St Bridge Tieback Perris Bivd Bridge Tieback Bridge Structure 1 Bridge Structure 1 Bridge Structure 2 Bridge Structure 3 III. Right of Way		220.00	82.00		18040.00	SQFT	\$250.00 \$250.00	\$0.00 \$4,510,000.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00			
Right of Way Acquisition #1								\$0.00			
	I. 11. 11.	Roadway Items Earthwork Pavement Structural Sectio Specialty Items Traffic Items Structural Items Right of Way	'n	\$1,823,000.0 \$581,000.00 \$1,028,000.0 \$0.00 \$214,000.00 \$4,510,000.0 \$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 <u>SECTION 1: EARTHWORK COST</u>	\$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 numps will be affected. Further analysis should look at all							
SECTION 4: Specialty Items	\$0	Retaining walls, sound walls, the 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	\$25,000								
<u>SECTION 8: MINOR ITEMS</u> 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 <u>BRIDGES</u>	\$0								
TOTAL CAPITAL OUTLAY COSTS SUPPORT COSTS TOTAL PROJECT COSTS	\$5,637,576 \$1,973,000 <b>\$7,611,000</b>	Support costs are 35% of capital outlay costs							

	Summary of Quantities										
			Project #1	16, EB SF	R-91, I-15 S	B On Ra	mp to I-15 I	NB On Ramp			
	Item Description		Distance (ft)	Width (ft)	Depth (ft)	Quantity	Unit	Cost Assumptions	Total Cost		
I. Roadway Ite	ems 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	
	Class 2 Aggregate Subbase (Mainline)		2366.00	22.00		1349.50	CY	\$72.10	\$97,298.68	Lane plus shoulder	
	Hot Mix Asphalt (Type A) (Mainline)		2366.00	22.00		943.44	TON	\$85.00	\$80,192.61	Lane plus shoulder	
	Continuously Reinforced Concrete Pavement (Mainline)		2366.00	22.00		1735.07	CY	\$270.00	\$468,468.00	Lane plus shoulder	
	Remove Concrete Pavement (NB 15 ramp to EB 91)		1965.00	8.00		1746.67	SQYD	\$36.38	\$63,543.73	Existing shoulders	
	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	
	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	
	Continuously Reinforced Concrete Pavement (NB 15 ramp to EB 91)		1965.00	26.00		1703.00	CY	\$270.00	\$459,810.00	Lane plus shoulde	
	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 It	ems										
III. Right of Wa	ay										
			<b>D</b> = - down - House		<b>#0.010.000.00</b>						
		I.	Hoadway items Earthwork Pavement Structural Section Specialty Items Traffic Items		\$2,918,000.00 \$1,454,000.00 \$1,439,000.00 \$0.00 \$25,000.00						
		11. 111.	Structural Items Right of Way		\$0.00 \$0.00						

- 's at 10' ler at 22' with Class 2 Aggregate depth of 0.70' ler at 22' with a HMA depth of 0.25' der at 22' with a CRCP depth of 0.90'

- s at 8'
- er at 26' with Class 2 Aggregate depth of 0.70' er at 26' with a HMA depth of 0.25' er at 26' with a CRCP depth of 0.90'

Project #18, SR-91 EB, Pierce St Off Ramp to Magnolia On Ramp										
ITEMS	TOTAL COST	ENGINEERING ASSUMPTIONS								
I. Roadway Items Summary <u>SECTION 1: EARTHWORK COST</u>	\$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 <u>BRIDGES</u>	\$2,279,000									
TOTAL CAPITAL OUTLAY COSTS SUPPORT COSTS TOTAL PROJECT COSTS	\$9,659,240 \$3,381,000 <b>\$13,040,000</b>	Support costs are 35% of capital outlay costs								

	Summary of Quantities											
			Project #18,	SR-91 E	B, Pierce	St Off Ra	amp to Magr	nolia On Ramp				
	Item Description		Distance (ft)	Width (ft)	Depth (ft)	Quantity	Unit	Cost Assumptions	Total Cost			
I. Roadway Ite	ms 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		
	Class 2 Aggregate Subbase (Mainline)		4115.00	22.00		2347.07	CY	\$72.10	\$169,224.04	Lane plus shoulder		
	Hot Mix Asphalt (Type A) (Mainline)		4115.00	22.00		1640.86	TON	\$85.00	\$139,472.78	Lane plus shoulder		
	Continuously Reinforced Concrete Pavement (Mainline)		4115.00	22.00		3017.67	CY	\$270.00	\$814,770.00	Lane plus shoulder		
	Remove Concrete Pavement (EB Magnolia off Ramp)		1345.00	8.00		1195.56	SQYD	\$36.38	\$43,494.31	Existing shoulders		
	Class 2 Aggregate Subbase (EB Magnolia off Ramp)		1345.00	26.00		906.63	CY	\$72.10	\$65,368.00	Lane plus shoulder		
	Hot Mix Asphalt (Type A) (EB Magnolia off Ramp)		1345.00	26.00		633.83	TON	\$85.00	\$53,875.66	Lane plus shoulder		
	Continuously Reinforced Concrete Pavement (EB Magnolia off Ramp)		1345.00	26.00		1165.67	CY	\$270.00	\$314,730.00	Lane plus shoulder		
	Remove Concrete Pavement (EB Magnolia on Ramp)		745.00	8.00		662.22	SQYD	\$36.38	\$24,091.64	Existing shoulders		
	Class 2 Aggregate Subbase (EB Magnolia on Ramp)		745.00	22.00		424.93	CY	\$72.10	\$30,637.16	Lane plus shoulder		
	Hot Mix Asphalt (Type A) (EB Magnolia on Ramp)		745.00	22.00		297.07	TON	\$85.00	\$25,250.84	Lane plus shoulder		
	Continuously Reinforced Concrete Pavement (EB Magnolia on Ramp)		745.00	22.00		546.33	CY	\$270.00	\$147,510.00	Lane plus shoulder		
	Remove Concrete Pavement (EB Pierce off Ramp)		300.00	8.00		266.67	SQYD	\$36.38	\$9,701.33	Existing shoulders		
	Class 2 Aggregate Subbase (EB Pierce off Ramp)		300.00	24.00		186.67	CY	\$72.10	\$13,458.67	Lane plus shoulder		
	Hot Mix Asphalt (Type A) (EB Pierce off Ramp)		300.00	24.00		130.50	ION	\$85.00	\$11,092.50	Lane plus shoulder		
	Continuously Reinforced Concrete Pavement (EB Pierce off Ramp)		300.00	24.00		240.00	CY	\$270.00	\$64,800.00	Lane plus shoulde		
	Traffic Items											
	Iraffic Electrical					0.00		<b>*</b> 50,000,00	\$150 000 00			
	Intersection Signalization					3.00	PER CORNER	\$50,000.00	\$150,000.00			
	Pamoval of Eviating Stripping		4110.00			4112.00	15	\$0.00 \$0.65	¢0,670,90			
	Thermonlastic Strining (Mainline)		4112.00			4112.00		Φ0.03 Φ0.41	\$2,072.00 \$10,910,97			
	Pomoval of Existing Striping (EB Magnolia off Pamp)		2600.00			2600.00		φ2.41 ¢0.65	¢15,015.04 ¢1 749 50			
	Thermonlastic Strining (EB Magnolia off Ramp)		2690.00			2090.00		φ0.00 ¢2.41	\$6 /82 90			
	Removal of Existing Striping (EB Magnolia on Ramp)		1490.00			1/00 00		φ2.41 \$0.65	\$968 50			
	Thermonlastic Strining (EB Magnolia on Ramp)		1490.00			1490.00	LI	\$2.41	\$3 590 90			
	Removal of Existing Striping (EB Pierce off Ramp)		600.00			600.00	LF	\$0.65	\$390.00			
	Thermonlastic Strining (EB Pierce off Bamp)		600.00			600.00	LF	\$2 41	\$1 446 00			
	Beconstruct Sign Structure		000.00			3 00	E. FA	\$200,000,00	\$600,000,00			
II. Structure Ite	ems					0.00		<i>q</i> 200,000100	4000,000,000			
	Magnolia Bridge Widening		340.00	14.00		4760.00	SOFT	\$375.00	\$1,785,000,00			
	Pierce Bridge Widening		94.00	14.00		1316.00	SQFT	\$375.00	\$493,500.00			
III. Right of Wa	iy Ü								. ,			
5	·											
		Ι.	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							
		<i>II.</i>	Structural Items		\$2,279,000.00							
		III.	Right of Way		\$0.00							

s at 10'

- er at 22' with Class 2 Aggregate depth of 0.70' er at 22' with a HMA depth of 0.25' er at 22' with a CRCP depth of 0.90'
- s at 8'
- er at 26' with Class 2 Aggregate depth of 0.70' er at 26' with a HMA depth of 0.25' er at 26' with a CRCP depth of 0.90'

- s at 8'
- er at 22' with Class 2 Aggregate depth of 0.70' er at 22' with a HMA depth of 0.25' er at 22' with a CRCP depth of 0.90'

- er at 24' with a HMA depth of 0.25' er at 24' with a HMA depth of 0.25' er at 24' with a CRCP depth of 0.90'