M2 Early Action Plan:

Market Conditions Analysis

Readiness and Absorption Capacity of Public Agencies

Orange County Business Council Analysis and Report

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Introduction

This document gives the results of research into the market conditions and the readiness and absorption capacities of agencies that are likely to influence the Orange County Transportation Authority's (OCTA's) ability to deliver the Measure M renewal Early Action Plan. In November of 2006, Orange County voters approved continuation of the half-cent sales tax increment devoted to local transportation projects. That program, which will commence in 2011 and extend for 30 years, is expected to encompass $11.8 billion in transportation spending. The OCTA has developed an early action plan which prioritizes the programs that will be pursued and delivered in the first five years of the renewed Measure M (or M2).

With OCTA at the cusp of moving forward with the M2 Early Action Plan (M2 EAP), now is a good time to inventory market conditions. Construction commodity markets have experienced substantial upward price pressure since 2000, while at the same time several other counties in Southern California are pursuing large infrastructure construction programs through combinations of self-help transportation sales tax increments and state funding that has been supplemented by the passage of a large infrastructure bond package in the November, 2006 election. How will those market pressures affect OCTA's ability to move forward with the M2 EAP in a timely and cost effective manner, and what steps might OCTA take now to support quick and successful delivery of M2 EAP projects? We address those questions in three steps, which relate to the three tasks specified in OCTA's call for research into market conditions. In Task 1 (reported in the next section), we developed market forecasts for construction cost indices, using both statewide data and data specific to Southern California. That task also includes detailed discussions of specific commodity markets and a description and inventory of the broader Southern California infrastructure construction program.

In Task 2, we apply the results and insights from Task 1 to get implications for the OCTA M2 EAP. This includes assessing the role of cost pressures in representative M2 EAP highway construction and bus transit operations projects. (Bus transit was chosen to be representative of transit operations more broadly.)

In Task 3, we report the results of interviews with Southern California transportation industry professionals, which yielded some important insights into how the vendor community views its business relationship with OCTA. Task 4 gives our key conclusions based on the analysis in the three preceding tasks.

Overall, we find that some market pressures which were due to the robust land development market in California from 2000 through 2006 have abated. Commodity cost pressures will persist, although we expect some stabilization in prices for items other than fuel. Neighboring counties will provide competition for vendor resources, and the vendor community generally has a favorable opinion of working with OCTA. Our summary conclusion, presented in more detail in Task 4, is that OCTA should maintain the already aggressive M2 EAP implementation timeline, with particular emphasis on front-loading environmental approval and right-of-way acquisition, during the current relatively favorable market context for that work.

Task 1: Market Forecasts

I. Commodity Price Trends

Recent years have seen a considerable upswing in costs in the infrastructure construction market. After roughly two decades of relatively stable prices or predictable price increases, prices for building commodities spiked in the 2004 – 2006 time period. The situation reached a crisis point in early 2004, when bids for some Caltrans projects exceeded engineering estimates by over fifty percent – well outside the desired range of the engineering estimate plus or minus ten percent.[1]

The Orange County Transportation Authority was similarly affected by the increase in commodity prices and construction costs. As OCTA prepares an ambitious work program associated with Measure M renewal (the M2 Early Action Plan, or M2 EAP), it is important to understand the nature of recent increases in infrastructure construction costs, as a means toward understanding likely future trends.

A. Background: Past Cost Trends and Likely Explanations

Data on commodity prices and construction costs were collected from two sources. Caltrans maintains cost information, available via the web at their Office Engineer's site (http://www.dot.ca.gov/hq/esc/oe/costinfo.html.) The data include a construction cost index derived from bids received in response to requests for proposals. That construction cost index, called the Caltrans Construction Cost Index or CCI in this document, is the best summary statistic available that can track transportation construction costs over time. The data include the index (normalized to

[1] California Department of Transportation, Office of Engineer, Division of Engineering Services, Executive Summary, Low Bid versus Engineer's Estimate, Number of Projects, and Average Number of Bidders, 93/94 State FY thru 5/08. http://www.dot.ca.gov/hq/esc/oe/contract_progress/cpr-chart.pdf, accessed June, 2008.

100 in 1987) for years 1972 through 2007 and average prices for specific components of highway costs, also from 1972 through 2007. The data are in Tables 1 and 2.

Graphs of those data, in Figures 1-8, show the time trend of construction costs, particularly highway construction costs, in California. Each graph shows a characteristic trend – relatively smooth increases with a spike around 2004. Several graphs show a downward trend in the past year, suggesting that some adjustment has begun, but 2007 price levels are uniformly higher than in 2003-2004, typically by a sizeable fraction.

The uniformity of the time trends suggests a common cause. One argument is that commodity prices, particularly construction aggregate, cement, and steel, all had sudden and dramatic price increases in the 2003-2004 time period, and those costs are driving the increase in the CCI. That may be true for some commodities, most notably steel, but note that the converse might also have occurred. Common demand pressures may have engendered price increases, because there was not a sufficient supply of construction firms or design and construction capacity at prevailing prices. That price pressure could have been manifest across all price items. At this point, we suggest that the common increase in prices reflects a combination of price pressures in some commodity markets and supply-demand imbalances in the construction market, possibly due to the robust land development market from roughly 2000 through 2006.

As an opening to understanding the price trends, we examined the time trend in four proxy indicators of construction demand: building permits, total income, employment, and population in California. Building permit data are available annually and quarterly from the US Department of Housing and Urban Development (HUD) building permit database. Income and employment data were acquired annually and quarterly from the Bureau of Economic Analysis (BEA) database on Annual Regional Economic Accounts. For 2007, employment data are from the California Employment

Development Department, adjusted to be comparable to the BEA data. Income data is total personal income for both California and the Los Angeles Consolidated Metropolitan Area. Intercensus population estimates are available from the U.S. Census data on historical county and state populations.

Income, employment, and population move relatively smoothly, with small departures from trend related to the business cycle, while the pattern of building permits is more dramatic and so has more potential to explain the dramatic increase in highway construction prices. As comparison, Figures 9 and 10 show, respectively, the time trend for new residential building permits in California and total employment in the state from 1983 (the earliest year for which building permit data are available) through 2007.

Figures 11-13 give a comparison of California residential building permits and the Caltrans construction cost index. Figure 11 shows that the increase in building activity since 2000 in California coincided with the increase in the Caltrans CCI, but during the earlier 1980s building boom there was not a similar relationship between the CCI and building permits. Figure 12 shows the year over year percent change in both the number of building permits in the state and the CCI, and Figure 13 shows the same thing with three year moving averages for both CCI and building permits. Two conclusions emerge: The drop in building permits since 2003 is, with possibly a lag of approximately a year, contemporaneous with the decline in the CCI, but building permit (and hence residential construction) activity seems not sufficient to explain the large increase in the CCI in the years from 2003 to 2005. Figure 12 shows that the increases and decreases in building permit activity in the 1980s and 1990s were larger in magnitude than what has occurred since 2000, while during the 1980s and 1990s the CCI was relatively stable. In short, the run up in the CCI from 2003 to 2005 was likely not caused by private residential building, and more likely an interaction of global price pressures and land

development pressures was at play. But the dramatic slowdown in private land and housing development in California since 2004 might have provided some slack that alleviated global price pressures, again with lags of approximately a year.

The data in Figures 11-13 show three periods of high residential building permitting in California – the mid to late 1980s, the late 1990s, and the early 2000s, roughly from 2000 to 2004. Of those three periods, only the last coincides with substantial increases in the Caltrans CCI. The most recent expansion of California's residential construction market differed from earlier time periods in two ways. In the earlier California residential construction booms in the data, global commodity prices were relatively stable and the expanding housing market was, in the 1980s and 1990s, confined to particular regions in the U.S. In the past several years, building booms have been nationwide and global, fueled by a period of historically low interest rates and high demand from the developing world, particularly China and, more recently, India. This suggests that global pressures interacted with the expanding California residential construction market to fuel increases in public construction costs. The recent contraction in the housing market appears to be offering some relief.

Our interviews with local experts suggest that some firms pursue private land development opportunities when the residential market expands, but during periods of contraction in the private construction market those firms will pursue public projects. Hence the link is not directly from commodity prices to bid prices. Instead, the cooling land development market has likely increased competition for public projects, possibly prompting firms to take lower margins or be more reticent to pass along commodity price increases to the customer. Such detailed conclusions go beyond the specificity of the data, and so must be considered informed speculations or interpretations. Still, the data do suggest that a competitive effect that is linked to slowing land development is at play in the recent leveling of the Caltrans CCI, and that interpretations strictly from

commodity prices might overlook the interaction of the public and private sector construction markets in California.

To examine this further, we regressed the percentage change in the Caltrans CCI on the three-year moving average of the percentage change in statewide building permits for the years 1985 – 2007 (Moving averages at the end-points of the sample, 1985 and 2007, only used two years.) The sample was split into years when the change in building permits was positive (12 years) and years when the change in building permits was negative (11 years). The regression showed no statistically significant association between the 3-year moving average percentage change in building permits and the CCI when building permits increase. The t-statistic on the building permit variable was -0.03, and the coefficient was –0.008, both of which imply no correlation between building permitting and the CCI when the residential building market is expanding. When the regression was estimated for the 11 years of declining permitting activity, the coefficient is significantly positive (t-statistic = 2.05) with a magnitude of 0.42. When building permits decline (measured by the 3-year moving average), for every 10 percent decline in the number of permits, the CCI declines by 4.2 percent. This suggests a relationship between permitting activity and the CCI in declining years, reinforcing our interpretation that slack residential development markets cool infrastructure cost pressures, including cost pressures that result from global shocks.

We also collected price data specific to the Los Angeles Metropolitan area from Engineering News Record (ENR), a trade publication that reports spot prices for construction commodities and building cost indices. These data include price per drum of asphalt, Portland cement per ton, large and small gravel per ton, sand per ton, price indices for construction costs and building costs, and prices of channel and I beams. While the Caltrans data are specific to Caltrans projects (coming from submitted bids), the ENR data apply to construction markets more generally and presumably reflect both private and public sector prices. Figures 14-22 show the ENR price data. Each year's

price is derived by averaging the price reported in ENR for July and December, or if those months are not available the next closest reporting month, as ENR does not report annual averages.

The trends in Figures 14-22 are not as abrupt as in the Caltrans data in Figures 1-8, which is a point worth noting. General construction prices, driven likely in large part by private sector activity, rose smoothly before 2004, and commodity prices from the ENR data show a spike mostly for steel. This also suggests a combination of global commodity prices interacting with market dynamics within the California construction industry. Possibly prompted by commodity price spikes, the tight construction market was not able to respond with increases in supply, leading to bid price increases that were more sudden in the public sector beginning in 2004-2005. This is consistent with the interpretation from the Caltrans data and from interviews, and is also consistent with our conclusion that the California private sector construction market acts more to cool global pressures (when land development activity declines in California) while a combination of California and more global pressures are at the root of recent cost increases.

B. Regression Analysis

To deepen the analysis, we constructed time series regression models of cost factors. The dependent variables are the cost factors from Caltrans and ENR that are graphed in Figures 1-8 and 14-22. The regressions predict prices or price indices based on lagged values of the dependent variables plus building permits, income, employment, and population. Models were fit on annual data from 1985 – 2007 and on quarterly data from 2002 – 2007. The annual data are more informative, and so are the only models discussed here. Two regression models were estimated, shown below:

Levels Model

$$Y_t = \beta_0 + \beta_1 Y_{t-1} + \beta_2 Y_{t-2} + \beta_3 BP_t + \beta_4 BP_{t-1} + \beta_5 BP_{t-2} + \beta_6 INC_t + \beta_7 INC_{t-1} + \beta_8 INC_{t-2} + \beta_9 EMP_t + \beta_{10} EMP_{t-1} + \beta_{11} EMP_{t-2} + \beta_{12} POP_t + \beta_{13} POP_{t-1} + \beta_{14} POP_{t-2} + u$$

where Y = cost or price index (the variables in Figures 1-8 and 14-22)

BP = building permits

INC = total income

EMP = total employment

POP = population

u = the regression error term

and the subscripts "t", "t-1" and "t-2" indicate years ("t" being the current year, "t-1" is a one year lag, and "t-2" is a two year lag)
β's are regression coefficients

Changes Model

$$Y_t = \beta_0 + \beta_1 Y_{t-1} + \beta_2 Y_{t-2} + \beta_3 BP\_CH_t + \beta_4 BP\_CH_{t-1} + \beta_5 BP\_CH_{t-2} + \beta_6 INC\_CH_t + \beta_7 INC\_CH_{t-1} + \beta_8 INC\_CH_{t-2} + \beta_9 EMP\_CH_t + \beta_{10} EMP\_CH_{t-1} + \beta_{11} EMP\_CH_{t-2} + \beta_{12} POP\_CH_t + \beta_{13} POP\_CH_{t-1} + \beta_{14} POP\_CH_{t-2} + u$$

where the term "CH" behind a variable indicates the year-to-year change

(e.g. $BP\_CH_t = BP_t - BP_{t-1}$)

The name "levels model" indicates that the model uses levels of the four structural characteristics (building permits, income, employment, and population) as explanatory variables, and the "changes model" is so named because year-to-year changes for those variables appear on the right hand side. All regression models correct

for first-order serial correlation, using a Cochrane-Orcutt regression routine provided as part of the Stata software package.

The regression models follow two geographies – California, for the Caltrans data shown in Figures 1-8 and Los Angeles, for the ENR data in Figures 14-22. For the California regressions, all the right-hand-side variables are for California. For the Los Angeles regressions, the right-hand-side variables are for the 5-county Los Angeles Consolidated Metropolitan Area. To reiterate, the basic model structure regresses a cost or price index on one and two year lags of that dependent variables plus four variables that measure economic conditions – building permits, total income, employment, and population – and those four variables are included contemporaneously and with one and two year lags. The data are available for all variables from 1983 through 2007, but the regression can only be fit for the years 1986 – 2007, because the two-year lag structure requires that the data set start two years earlier, and the Cochrane-Orcutt quasi-differencing routine eliminates another year. Overall, 15 coefficients are fit on 22 observations, which does not leave many degrees of freedom. The goal with forecasting models is typically to obtain good model fit rather than precise coefficient estimates, and toward that end the model results have R-squared values well above 0.9. Furthermore, even with the small degrees of freedom, coefficients are often statistically significant.

The full regression results are reported in Appendix Tables A1-A4. Table A1 shows the models for the California (Caltrans) data, for the levels regression. Table A2 shows California data for the changes model. Tables A3 and A4 are respectively the Los Angeles (ENR) regressions for the levels and changes model.

The results are summarized in Tables 3-6, which correspond, respectively to Tables A1-A4. Each cell in Tables 3-6 shows where a right-hand side variable was

statistically significantly positive (indicated by a "+" in the cell), significantly negative (a "-" in the cell) or insignificant (a blank cell). Statistical significance is measured using a five percent two-tailed test. Tables 3-6 also show cases where variables were significant at the ten percent level but not at the five percent level – in those cases, a "10" follows the sign in the cell. For all models, the building permit variables are significant more often than any other economic variable (i.e. the variables other than the lagged dependent variable), reinforcing the conclusion that building permits are a good summary indicator of the cost and price index values. This supports the conclusion from the more graphical and qualitative analysis that a softening private land development market can provide relief from global pressures that push prices higher in the public sector construction market.

C. Forecasts

Forecasts from Regression Analyses in Appendix Tables A-1 through A-4

The regression coefficients in Tables A-1 through A-4 can be used to forecast changes in key cost variables given projected levels and changes in building permits, income, employment, and population. Given that the analysis so far suggests that building permits are the best explanatory variable, here we focus only on building permits. We focus on the Caltrans CCI, a key summary indicator of the bid prices of Caltrans construction projects. With credible forecasts of permitting activity into the future, changes in the CCI can be forecast.

The building permit data, for California and metropolitan Los Angeles, are shown in Table 7. Those data reveal that the current permitting cycle (year 2008) bears some resemblance to 1991 – both years are approximately 3 years after the permitting peak. For lack of better long-term forecasts, we assume that the percentage change in

permitting levels going forward from 2008 will be the same as the percentage change in permitting levels from 1991 forward. Given that, Table 8 shows forecast levels for the construction cost indices for California and Los Angeles, going forward five years from 2008.

The forecast levels of the cost indices, from Table 8, show that out to the year 2012 the Caltrans CCI and the Los Angeles Construction Cost Index are projected to be somewhat stable. Table 8 shows high and low forecasts. The range of forecast change in the Caltrans CCI is somewhat larger than the range of change in the Los Angeles construction cost index. For the Caltrans CCI, in 2008, the model forecasts declines between 5.56 percent and 16.75 percent. Going forward to 2012, the low percent change shows declines in all years, while the high forecast implies modest declines or increases, with only one year, 2010, showing a forecast CCI increase above five percent. For the Los Angeles construction cost index, the forecasts are smaller, with annual forecast changes ranging from less than a one percent increase to a two percent decrease out to the year 2012.

Those forecasts should not be treated as precise. The "low" forecast for the Caltrans CCI shows dramatic declines in 2008 and 2009, dropping by 16.75 percent and 14.86 percent in those two years. Note that those are one end of a range, and the "high" forecasts suggest a much more modest CCI decline of 5.56 percent in 2008 and a CCI increase of 3.38 percent in 2009. Also note that the Los Angeles forecast, based on the somewhat less volatile ENR construction cost index, shows more modest price declines and increases. More generally, the large price drops in the Caltrans CCI in 2008 and 2009 ought not be interpreted literally. If prices are sticky downward or of markets outside of California remain robust, declines of that magnitude will not be realized.

Rather than focusing on precise estimates of future price movements, which is not the goal of the forecasting model, the forecasts are intended to illustrate the qualitative conclusions from the earlier analysis in this report. If the private development market contracts or stabilizes at a low level of activity, that should provide relief from global commodity price pressures and could lead to relatively stable prices for public construction projects. The further into the future one projects, the less reliable the forecast will be. Importantly, the forecast hinges on the assumption that the path and duration of the current housing slump will be similar to the 1990s housing slump. At this stage, a projection for five years into the future should be considered unreliable. A more near-term focus would be more useful. We present another forecast below, not as a more reliable alternative, but as another perspective. Overall, the forecast models should be combined with the qualitative analyses presented in this report to inform OCTA decisions.

Forecasts from Regression of Percent Change in Caltrans CCI on 3-Year Moving Average Percent Change in California Building Permits

Earlier, we noted that a regression of the percent change in the Caltrans CCI on the 3-year moving average of the percent change in California building permits, when restricted to years when building permits declined, gave a regression coefficient of 0.42, implying that a reduction of 10 percent in the 3-year moving average for building permits leads to a 4.2 percent reduction in the Caltrans CCI. Forecasts of future California building permit activity can be used to forecast changes in the Caltrans CCI.

Two projections of California building permitting activity were found. The California Building Industry Association forecast, in January of 2008, that the number of building permits in California in 2008 would be 10.45 percent higher than in 2007 (California Building Industry Association, 2008). The California Department of Finance did not issue a forecast, but in February of 2008 the Department of Finance reported

that building permits in the state were down by 32 percent from the prior year, on an annualized, seasonally adjusted basis (California Department of Finance, 2008). Those two figures are used as starting points for estimates of changes in California building permits through 2010. The different assumed changes, and resulting predicted changes in the Caltrans CCI, are shown in Table 9.

The most credible assumption for building permit changes likely starts with the 32 percent reduction reported by the California Department of Finance in February of 2008. The right-most column in Table 9 begins with that and then assumes increases in building permits beginning in 2009, which would be a faster recovery than was experienced in the early 1990s housing slump. Even with the assumed 10 percent increase in building permits in 2009 and 2010, the right-most column in Table 9 forecasts reductions in the Caltrans CCI through 2009.

Note that the forecasts in Table 9 use the relation between building permits and the CCI, valid for years when building permits decrease, continued through to hypothesized forecasts of modest building permitting increases. The key variable for the forecasts in Table 9 is a three-year moving average of building permits in California, which can be negative when the most recent annual change is positive. Also, in an environment of modest increases in building permits, the forecasts in Table 9 will overstate increases in the CCI relative to a model that assumes no relation between the CCI and building permits when permitting activity increases.

Overall, both forecasts presented here lead to a similar conclusion. The slowing private development market will likely provide relief from public sector infrastructure cost increases. That relief can be expected to last through 2008 and 2009, suggesting that the next two years is an opportune time to move forward with OCTA's M2 EAP projects.

II. Factor Markets

We now turn our attention from quantitative forecasting of construction cost indices to more qualitative analyses of specific commodity markets. The market and the outlook for cost pressures for aggregate, steel, skilled labor, and fuel are discussed below.

A. Construction Aggregate

Construction aggregate, sand and gravel or crushed stone, is a key component of infrastructure projects, as base, fill, or as a component of asphalt and concrete. Aggregate is also used in a wide range of construction materials. Infrastructure projects are heavy users of aggregate, and nationally 43 percent of aggregate consumed is used for public works projects (Kohler, 2002).

Aggregate is predominantly produced and consumed in local markets. Aggregate is a high weight, low value material, and transportation costs (from mine to an end use) are a significant cost of the product. The California Geological Survey estimates that the delivered price of aggregate doubles when the material is hauled from 25 to 35 miles from a mine site (Kohler, 2002). For that reason, aggregate has been most often mined near urban areas that consume the material. The California Geological Survey, and their predecessor agency the California Division of Mines and Geology, tracks the production and consumption of aggregate within local market areas. The market areas are called production-consumption (P-C) regions, and typically are approximately the size of metropolitan areas except in greater Los Angeles and the Bay Area, where P-C regions approximate sub-regions such as Orange or Ventura County. Recently, the California Geological Survey has begun to update their assessments on a county basis. The most recent state report (Kohler, 2006) provides assessments for geographies that are a mix of P-C regions and counties.

Of the 32 market areas tracked in Kohler (2006) and in the associated California Geological Survey Map Sheet 52, four have less than a ten-year supply of permitted aggregate reserves. (Permitted reserves are those mineral resources for which valid land use and mining permits allow extraction, and so differ from the more general concept of aggregate resources, which may or may not be permitted for mining.) The following study areas have less than a five-year supply of permitted aggregate reserves: Northern San Francisco Bay Area, Sacramento County, Fresno, and Northern Tulare. Orange County, while not formally grouped in the same category as those four regions, is at risk of supply constraints. Orange County was previously its own P-C region, but as local supplies of aggregate have been depleted Orange County has increasingly imported aggregate from neighboring regions, primarily the pits in the Temescal Valley of Riverside County. To reflect that pattern of growing reliance on aggregate outside of the county, the 2006 California Geological Survey's statewide market study combined Orange County and the Temescal Valley into one study area (Kohler, 2006). Before that combination, in 2002, Kohler estimated that Orange County's permitted aggregate resources were 12 percent of projected 50-year demand. In 2006, the combined Temescal Valley – Orange County P-C Region had permitted reserves that totaled 32 percent of projected 50-year demand. Even before the two P-C regions were merged, Orange County imported 70% of its aggregate needs from outside of the County (California Division of Mines and Geology, 1994), and that figure might be higher now.

As a general rule, the price of aggregate is related to the availability of sufficient local supplies. The costliest aggregate in California is in San Diego and the San Francisco Bay Area, where prices are in the range of $22 and $18-$19 per ton, respectively (Kohler, 2006). Both San Diego and the Bay Area have local supplies that do not meet demand, and both have experienced increases in imports from points as distant as Mexico and Canada (Kohler, 2007). While imports from outside of the state are only a

small fraction of the total aggregate consumed in California, the fact that over-ocean importing of aggregate is viable illustrates the growing shortages of locally available material in some of the state's urban markets. Those over-ocean imports, virtually unheard of in California before 2000, can both reflect and contribute to price pressures in the supply-constrained markets in San Diego and the San Francisco Bay Area. In markets with larger local supplies, the price of aggregate is as low as $7 to $8 per ton (Kohler, 2006). Local supply is not the only factor that influences price, as the cost of mining the aggregate and the quality for use in concrete and construction vary depending on whether the source is alluvial wash (in or near stream beds) or crushed stone. Still, price is noticeably higher in markets where local supplies are not sufficient to meet local demand (Kohler, 2006).

While Orange County relies on aggregate sources outside of the county, the near-term (e.g. 5-10 year) situation in the County's aggregate market is not likely to change. The Temescal Valley production area has large amounts of permitted reserves, and the production area includes mines that, collectively, are among the largest producers in Southern California. The California Geological Survey's Map Sheet 52 shows that production in the Temescal Valley exceeds 10 million tons per year. The concern, going forward, is that as smaller mines throughout Southern California deplete, major production areas such as the Temescal Valley will increasingly ship their material farther away, and so market pressures on that source, which now are likely mostly due to construction in Orange, Riverside, and possibly northern San Diego County, may come from places more distant.

The California Department of Transportation (Caltrans) estimates that, on average, aggregate accounts for 8 – 10 percent of the cost of local capital projects each year. That is an average, and the cost fraction might be larger or smaller for specific projects. The price trend for aggregates is generally smoother than for other materials

which are subject to more global price pressures, but aggregate prices have increased in the past several years, following a period of relatively stable prices during much of the 1990s. A Caltrans market analysis from 2006 argued that rising steel and cement prices were larger contributors to increasing highway project costs than were rising aggregate prices (California Department of Transportation, 2005). Aggregate, though, is a component of asphalt and steel, and the risk might not be so much the price of aggregate itself as the combined cost of aggregate and other materials, including fuel to produce and ship the final product.

Because aggregate is produced and consumed in local markets, public policy can have an important impact on the availability of aggregate. Two factors influence the availability of aggregate – geological resources and land use and mining permitting decisions. The permitting process for aggregate mines is growing longer and increasingly uncertain. The U.S. Geological Survey (2007, p. 64.4) estimates that obtaining permits for new aggregate mines can take from 5 to 10 years. Industry experts in California believe that the permitting process in major urban areas in this state can take longer, and those same experts argue that in some localities, such as Western Ventura County, permitting new aggregate mines essentially has ceased. Aggregate production is increasingly a regional issue, and long-range planning to allow for increased aggregate, while reducing long-haul truck transportation and addressing environmental concerns, would help ensure continued local supplies.

Overall, the M2 EAP project is unlikely to noticeably strain supplies of aggregate within the next five years. Looking more long term, supplies of aggregate will likely continue to deplete throughout Southern California, and without additional sources that depletion will eventually lead to price pressure. Yet our advice regarding aggregate is that supply and price pressures in Orange County are more long-term (e.g. beyond the next 5 years) than short-term issues at this point in time. Note though that the long

permitting periods for new aggregate mines make it prudent to pursue permitting of new resources well before price pressures arise.

B. Steel

Steel is purchased on a global market. Unlike aggregate, the price of steel can be affected by global supply and demand factors, and those global factors can dominate local effects. From 2002 to 2004, Engineering News Record's spot prices for steel in the Los Angeles market increased roughly 60 percent. Caltrans bid data show an even more dramatic increase, with steel for Caltrans projects roughly doubling from 2002 to 2004.

Industry experts typically agree that the key factor in the run-up in steel prices circa 2004 was exceptionally strong global demand, led by the building boom in developing nations, especially China. That building boom, while experiencing normal cycles, is not likely to abate, as the developing world has entered an era of substantial infrastructure construction (The Economist, 2008a).

After a rapid run-up in steel prices that peaked in 2004, prices began to stabilize around 2006, as reflected primarily in Caltrans bid data. Yet recent reports suggest that steel prices are again on the rise (Steel, Fuel Prices Send Construction Costs Soaring. 2008). The Wall Street Journal reports that steel prices paid by automakers have doubled since the beginning of 2008 (Boudette, 2008). The Associated General Contractors (AGC), in a recent analysis, stated that U.S. steel producers have increased prices several times since the beginning of the year (Simonson, 2008). The AGC cites two factors causing higher steel prices in the past few months. The weak dollar has increased demand for U.S. steel from overseas purchasers, and rising fuel costs increase the cost of producing steel, which is energy intensive to make and ship (Simonson, 2008).

The most recent (year 2008) increases in steel prices are too recent to be reflected in the Caltrans or ENR data collected for this report. Furthermore, higher steel prices might not yet have worked their way into OCTA bids. It is not possible to quantitatively analyze the effect of the most recent run-up in steel prices on public sector construction costs – the trend is simply too recent. On a positive note, the AGC states that world steel production capacity is, in their opinion, sufficient to meet demand, and they expect some stabilization of steel prices in the future (Simonson, 2008).

The bulk of the factors that influence steel prices is global – world demand, exchange rates, and fuel costs – and so are outside of OCTA's policy reach. Furthermore, it is not clear that future price trends can be easily predicted, especially in light of the AGC's conclusion that there is sufficient worldwide steel production capacity to meet demand. OCTA should remain aware of the continued volatility and upward trend of this cost factor.

C. Skilled Labor (Engineering and Environmental)

We conducted interviews with several engineering and environmental firms. Full results are provided elsewhere in this report. These firms broadly believe that there is sufficient professional capacity in the Southern California community to handle the workload from OCTA's M2 EAP, even in light of other infrastructure projects being pursued by neighboring counties. The exception is experienced, mid-career project managers, who may be in relatively short supply. Overall, the availability of skilled labor is not so much a supply issue as, in the case of mid-career project managers, an experience issue. There may be competition among firms and hence among agencies for the best project managers. Yet overall, there was not much concern about the ability of the professional workforce to respond to OCTA's needs.

D. Fuel

Oil prices have risen steadily for the past ten years, with an especially rapid increase in the past few months. The U.S. Energy Information Administration (2008) reports that world crude oil prices were $92 per barrel in the first week of January, and $121 per barrel (weekly average) in June. Daily prices have risen higher – to levels above $135 per barrel. Approximately two-thirds of the increase in crude oil prices in 2008 has occurred in April and May (U.S. Energy Information Administration, 2008).

Petroleum products, including fuel used in production, shipping, and asphalt, constitute 38 percent of the highway producer price index (Simonson, 2008). The implication is that higher fuel prices, if sustained, could be a substantial source of upward price pressure for OCTA construction projects. Different projects would face different risks, but the impact of high fuel prices may be felt throughout the M2 EAP program.

The question, then, is whether high crude oil prices, and hence high fuel and diesel prices, are likely to be sustained. The U.S. Energy Information Administration (2008), abbreviated EIA, predicts some price stabilization, forecasting crude oil prices at $126 per barrel in 2009. Yet the recent increase in oil prices has caused the EIA to revise their price forecasts upward, and one might wonder whether the current price situation allows a firm basis for forecasting.

More generally, commentators have argued that the current increase in oil prices is primarily driven by high demand, including high demand from growing developing economies such as China and India (Krugman, 2008, Vandore, 2008). New York Times commentator Paul Krugman argues that growth in the world economy is largely responsible for the recent increases in oil prices (Krugman, 2008). The Economist (2008b) argues that high prices will provide a corrective, as high demand encourages

increased exploration and drilling and a combination of conservation and alternative energy sources that will reduce demand. The key is which influence – a growing world economy or the natural market corrective – dominates. Analysts note that, at the current time, the increase in oil prices differs from the 1970s oil shocks in not being driven as much by geopolitical events as by increases in world demand (Vandore, 2008).

Overall, it seems unlikely that oil and fuel prices will drop in the near future. So long as world demand remains strong, increased prices are possible. Fuel costs are likely a substantial source of price risk for OCTA projects going forward.

III. Southern California Transportation Market

A. Background

The following section provides an analysis of the market conditions for the entire Southern California region in regard to major transportation projects. First, we compiled a list of all of the major transportation projects for the region that have been projected over the next 4 to 5 years. Then, we classified projects according to a typology based on the dominant type of impacted resources consumed. Lastly, we analyzed the results to determine potential ramifications on resource demands on the market, based on geography and time considerations.

B. Definitions of Key Parameters

The key parameters employed in this analysis are the following:

<u>Geography</u>

Southern California as a region was defined to include the following counties: Imperial, Kern, Los Angeles, Orange, Riverside, Santa Barbara, San Bernardino, San Diego, and Ventura.

Timeframe and Uncertainty of the Data

This data was culled from the Regional Transportation Improvement Plans (RTIPs) put forth by the COGs which govern the various counties under consideration. The RTIP is a document which only includes funded and approved transportation projects, generally over a 4 to 6 year period. According to at least one COG (Southern California Association of Governments), the process by which federal money is allocated means that the first four years of the RTIP are more definitive than the last two years. The last two years of the RTIP plan, according to key SCAG staff, are "for informational purposes only".[2] Therefore, the first four years of the RTIP provide the most reliable information regarding programmed projects. Beyond that timeframe, if a project requires funding, the COG must amend the RTIP to secure that funding.

Major Projects

The size of the projects was determined by the amount of funding allocated toward their completion. In order to have a certain cut-off point in distinguishing major from minor projects, the projects were evaluated on a case-by-case basis. Projects that cost less than 1.2 to 1.5 million dollars were generally not included in the data set. Also, in order to capture spikes in project load, if a project was scheduled for a single funding year, then it was included. However, if a project's funding was low and dispersed through several fiscal years, then it was not included, as its impact on an annual basis would be minimal.

Impacted Resources

[2] Per conversation with Rosemary Ayala, SCAG RTIP Manager, May 31, 2008.

As stated above, the underlying consideration when conducting this research and analysis was to determine how impacted resources would be affected by demands on the construction market, and how OCTA would fare in the midst of these constraints. To that end, there are two broad categories under which these resources fall: human resources and material resources. The human resources are people such as transportation engineers, planners, and laborers, whereas the material resources include things such as concrete and steel, the market analysis of which is included in a previous section. The reason this distinction is important is that each project which is included on this report represents a combination of both types of resources, and it was difficult if not impossible to separate out the two types of resources in our analysis. Additionally, projects which only involved operational or right-of-way procurement costs were not included for analysis.

Typology

Related to the above discussion of impacted resources, and as stated previously, the projects were classified in terms of these impacted resources. To that end, the following six categories of projects were generated:

1. Road Construction (RC): construction of new lanes and new freeways; the widening of roads; the reconstruction of roads; concrete overlays; the addition of truck lanes; grade separation; and gap closure. Impacted resources: highway engineers, asphalt, concrete.

2. Specialized Engineering (SE): bridge program and bridge safety; bridge widening; tunnel construction; ramp meter installation, ITS systems; light rail construction; rail track realignment; bridge preservation; traffic signal improvements; ATSAC/ATCS systems; and seismic retrofitting. Impacted resources: bridge, traffic, tunnel, and rail engineers; concrete, steel.

3. Engineering and Environmental Studies and Services (EE): engineering studies; slope restoration; bluff stabilization; landscaping; and roadside preservation. Impacted Resources: engineers and environmental professionals.

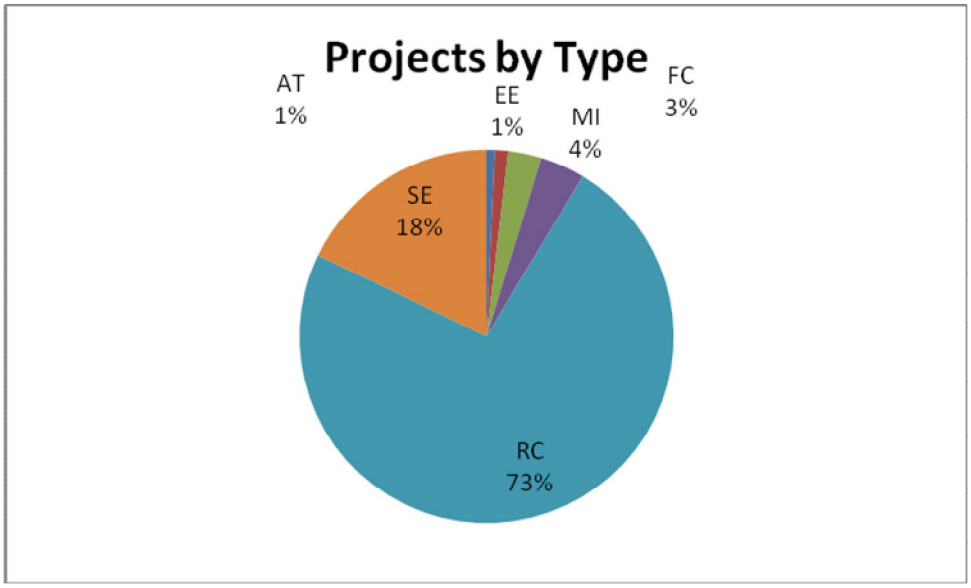
4. Maintenance and Improvements (MI): pavement management programs; pavement rehabilitation; street resurfacing; street and road major rehabilitation; sidewalk and median improvements; general improvements; interchange improvements and modification; intersection realignment; port of entry modification; and roadway preservation. Impacted Resources: asphalt, concrete.

5. Facilities Construction (FC): bus facility construction and expansion; BRT station construction; sound wall construction; parking structure construction and expansion; pedestrian bridge construction; rail station construction; and new port of entry construction. Impacted resources: civil engineers, concrete.

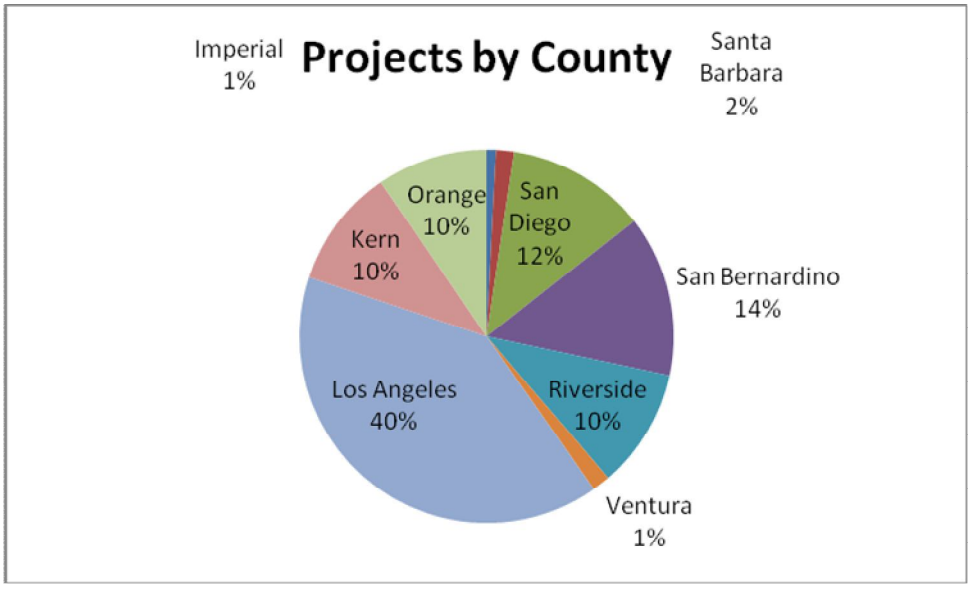
6. Alternative Transportation (AT): pedestrian path construction; bike lane construction. Impacted Resources: professional services.

C. Trends in the Data

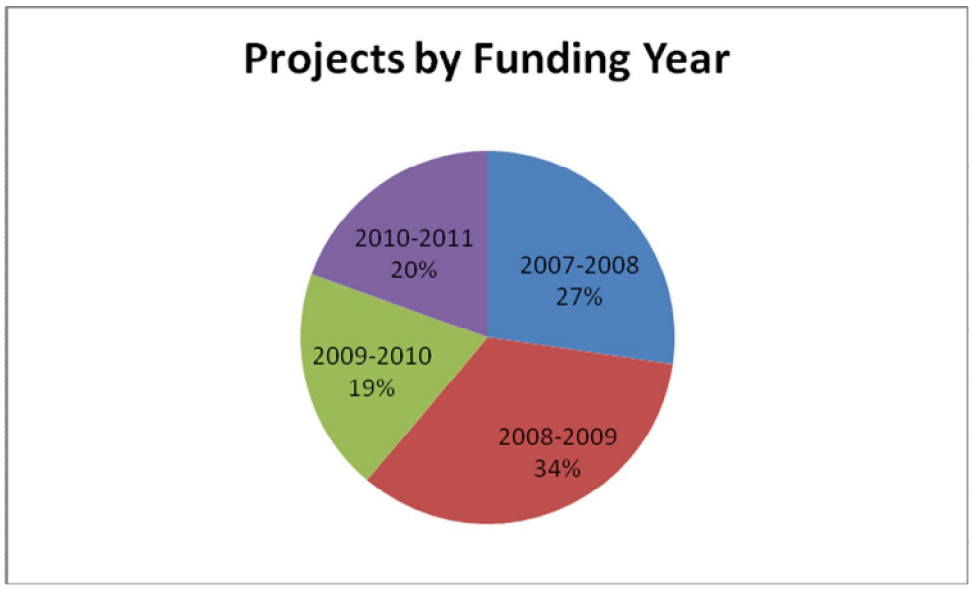
The data was analyzed in a variety of ways, and yielded the following results:



Clearly, the overwhelming majority of projects involves basic roadway construction, and will consume the services of transportation engineers and construction workers; as well as concrete, steel, and other raw materials.



Not surprisingly, the bulk of projects will be based in Los Angeles County. The geographic proximity of this competitive factor could increase pressure on limited resources for OCTA.



The upcoming fiscal year is the most critical in terms of impact on the region as a whole. OCTA would do well to frontload its project planning to the extent possible in order to compete for resources.[3]

Projects by County by Year (in 1,000s)[4]

Fiscal Year County	2007-2008	2008-2009	2010-2011	2011-2012	TOTAL

[3] Since different agencies provided different funding years' data, only the first four years of the timeframe were included here, so as to provide a similar basis for comparison across counties.
[4] Kern and Santa Barbara counties were excluded from this table, as the data available for these counties either did not specify funding years, or did not include the entire four year timeframe.

Imperial	138,474	16,461	30,046	2,695	237,751
Los Angeles	2,194,664	3,415,375	928,675	1,763,680	8,302,394
Orange	384,615	517,649	855,253	322,917	2,080,434
Riverside	660,165	641,719	599,977	478,757	2,380,618
San Bernardino	627,870	1,051,054	727,340	589,735	2,995,999
San Diego	739,487	367,126	260,242	227,145	3,596,158
Ventura	140,411	58,972	50,792	117,644	463,087
TOTAL:	4,885,686	6,068,356	3,452,325	3,502,573	20,056,441

Again, Los Angeles County will dominate the region's transportation market demands for the foreseeable future, particularly during the upcoming fiscal year.

Task 2: Orange County Forecast

This section describes how the overall market conditions depicted in the previous sections will impact the OCTA's capacity to implement M2 EAP projects. The clearest way of conveying the impact is by examining two representative M2 EAP projects, and looking at the potential issues arising from the competition for limited resources.

IV. Project Typology and Price Vulnerabilities

A. M2 EAP Project types

M2 EAP investments can be grouped into two broad categories – infrastructure construction and operations. OCTA refers to major infrastructure construction as projects, and what we call operations, OCTA calls programs. The distinction between construction and operations is meaningful for cost vulnerability analysis. Construction brings a heavy emphasis on materials while day-to-day operations, though also materials intensive, involve different costs that are ongoing. We include environmental mitigation and smaller, less well specified construction programs under the operations category, not because those are day-to-day operations but because they are smaller in magnitude than major freeway construction.

Construction Projects

The construction projects in the M2 EAP work plan are four major freeway projects, summarized below.

- SR-57 – improvements to State Route 57 in northern Orange County, including lane additions
- SR-91 – lane additions and improved connections from I-5 to SR-57 and from SR-55 to the Riverside County line. This work will include improved connections from SR-91 to the SR-241 toll road.
- I-405 – improvements, including lane additions, from I-605 to SR-55.
- I-5 – improvements south of El Toro Y

OCTA divides the work on these construction projects into four broad categories: (1) environmental, (2) design/engineering, (3) right-of-way and utilities, and (4) construction. The first two categories, environmental and design/engineering, are relatively labor intensive professional services. Right-of-way costs can vary dramatically depending on the context and specifics of the project. Construction costs are the key route through which materials prices will create cost vulnerabilities. To assess cost vulnerabilities, we use the example of early work on the SR-57 in the next section, and we include additional detail on projected SR-57 costs which have been made available by OCTA.

Operations

The "operations" category includes essentially all M2 EAP projects that are not major infrastructure construction. Those projects are listed below grouped by sub-categories. The first category, streets and roads, is investment and construction, but is separated from the heavy infrastructure investment associated with the highway projects that are listed above. Other projects below, including transit service expansion, can have substantial capital investments for rolling stock or new busses.

Streets and Roads

- Regional Capacity Program – 1,000 miles of new lanes on streets and major arterials

- Regional Traffic Synchronization Program – 2,000 coordinated signals
- Local Fair Share Program – street maintenance and improvement

Rail Transit

- High frequency Metrolink service
- Transit extensions to Metrolink
- Convert Metrolink Stations to Regional Gateways

Bus Transit

- Expand Mobility Choices for Seniors and Persons with Disabilities (fare stabilization)
- Community Based Transit / Circulators
- Safe Transit Stops

Environmental

- Freeway Master Mitigation Agreement
- Environmental Cleanup, including Water Quality

The details of many of these projects have yet to be determined. Some of the above require proposals from Orange County city governments or future analysis and planning, and hence specific project proposals for, e.g., some of the street and road, bus transit, and even elements of the rail transit programs, have yet to be determined.

The Measure M2 funding will extend from 2011 until 2041. With such a long time frame, only the earliest projects have been specified to the point where we can analyze cost elements. We chose two representative projects, one highway construction project and current bus transit operations, to provide some insight into representative cost structures and hence possible cost vulnerabilities for M2 EAP investments.

B. Cost Vulnerabilities

In this section, we focus on examples of two representative project types – highway construction and bus transit operation – to get insight into cost vulnerabilities in the context of the commodity price factors discussed earlier. We start with an example of highway construction. Table 10, below, shows cost estimates, in broad categories, for adding an additional northbound lane and new shoulder median on State Route 57 (SR-57), extending 2.4 miles from Orangethorpe Avenue to Yorba Linda Boulevard. The cost factors below are grouped into high level categories to focus on commodity intensive elements. Cost factors are rounded to the nearest million, are in 2008 dollars as of January of that year, and do not reflect escalation factors.

Table 10, SR-57 Cost Elements by Category

SR 57, additional NB lane and median shoulder, 2.4 miles from Orangethorpe to Yorba Linda Blvd Cost Estimates in Broad Categories, rounded to nearest million, Jan. 2008 dollars	
Roadway Items	**$39,000,000**
Pavement Structural Sections	$9,000,000
Retaining Walls and Soundwalls	$8,000,000
Other Roadway Items (including barriers, environmental compliance, lighting, traffic, signage, landscape, erosion and water pollution control)	$22,000,000
Structures Items	**$13,000,000**
Bridge Structures	$10,000,000
Other Structures Items (including specialty walls, mobilization)	$3,000,000

Right-of-Way / Utilities	**$1,000,000**
Project Support Costs	**$15,000,000**
(including engineering, environmental, public awareness)	
Total Project Cost	**$68,000,000**

Note: Total differs from OCTA estimate due to reporting categories rounded to nearest million. Source: Data provided by OCTA.

Of the costs shown in Table 10, $30 million are for pavement structural sections, retaining walls and soundwalls, and structures – all commodity intensive items. Aggregate and steel are key cost elements for those items. As mentioned earlier, we do not anticipate that OCTA will realize cost pressures related to aggregate in the near term (e.g. the next five years), although during the thirty-year life of the M2 program Southern California will experience aggregate shortages unless significant new resources are permitted. Steel prices have increased substantially since the beginning of the year, but we expect some price stabilization going forward.

The biggest cost risk is fuel costs. Crude oil prices have increased by approximately 50 percent since the beginning of 2008. Oil is an intermediate input to many of the cost factors for highway construction, both as a material and as an energy input for fabrication and transportation. Taking petroleum products as 38 percent of the producer price index for highways (Simonson, 2008), a 50 percent crude oil price increase, if that is fully passed along in to OCTA (which is an upper bound or worst case assumption), translates into a 19 percent increase in project costs. We caution that this is an upper bound, and a key factor in determining how fuel costs will be passed on to OCTA will be the competitive structure of project bids. Rising fuel costs can be incident on the customer (OCTA) or on the contractor (in the form of lower profit margins), and the current slack private sector development market suggests increased competitiveness in the market for public works construction. The extent to which fuel

cost increases are passed along as increases in bids for OCTA work will depend on the competitive context of the public sector construction environment in Orange County and Southern California, and our earlier analysis suggests that the competitive environment will be favorable for OCTA over the next few years.

Other cost elements for highway construction include right-of-way and project support. The soft land market in Orange County, with falling home and land prices, suggests little scope for upward price pressure in right-of-way acquisition in the near term. Support costs, including engineering and environmental analysis, can be important components of overall project costs. In Table 10, support costs are 22 percent of total project costs. Our interviews suggest that the engineering and environmental support firms have sufficient capacity to meet M2 EAP needs, and we do not foresee substantial risk of upward price pressure for those elements in the near term. We note, though, that experienced project managers tend to be in short supply, and so that specific cost element might be subject to supply and hence price pressures.

Next we turn our attention to bus operating costs, as a representative operations program. Table 11 shows bus operating expenses, grouped by major category, for OCTA in fiscal year 2006-2007. One should note that, while these expenses are indicative of bus operations, they may not apply as well to rail transit operations. Because the data in Table 11 are retrospective actual expenses, rather than cost estimates as in Table 10, we show exact figures in Table 11 rather than rounding to the nearest million.

Table 11: Bus Operating Expenses, fiscal year 2006-2007

Cost Item or Group	FY 06-07 Cost
Operations	$90,473,321.64

Maintenance	$24,212,154.51
Diesel	$15,405,422.70
Parts	$18,247,339.75
Contract	$5,251,660.30
Other	$1,680.88
Indirect Costs	$57,431,861.65
Total	$211,023,441.43

Source: Data provided by OCTA.

Diesel fuel costs are approximately 7 percent of bus operation costs in Table 11, above. Diesel fuel costs have increased from $2.40 per gallon to $4.00 per gallon from late February to May of 2008.[5] The increase in fuel costs, approximately 58 percent, can translate into an approximate 4 percent increase in total bus operating expenses, based on Table 11. The larger difficulty is that fuel costs might not drop and, instead, might continue to rise. Hence increased fuel costs are a key cost factor for bus transit (and also for rail transit) operations. Currently, over half of OCTA's bus fleet burns natural gas. Looking forward, OCTA has plans to phase out diesel buses, which will provide relief from diesel fuel cost increases.[6]

V. Summary

The slack land market should provide increased competitive pressure that should lead to lower bid prices. OCTA M2 EAP projects will not be competing against a robust private development market. Note that the impact here is not direct substitution. Firms that specialize in land development work have skills that can transfer to public

[5] Telephone interview with Andrew Oftelie, Department Manager, Financial Planning and Analysis, OCTA, June 6. 2008.

[6] Telephone interview with Andrew Oftelie, Department Manager, Financial Planning and Analysis, OCTA, June 6, 2008.

infrastructure construction, but that transfer is not seamless. Rather, as land development slows, the pool of bidders for public works projects increases, increasing competition throughout the bidding process. This is consistent with Caltrans data on the number of bidders for highway projects. Caltrans reports that in fiscal year 2005-2006, the average number of bidders on Caltrans projects (statewide) was four. That rose to an average of seven bidders per project in the most recent six-month period for which data are available, July 1 – December 31, 2007.[7]

Our quantitative analysis of cost factors suggests that a slowing private land development market is a key safety valve which can provide some relief from global factors that tend toward higher costs. When building permitting activity slows, the Caltrans Construction Cost Index tends to increase less rapidly. Overall, this macro view of the link between land development and the competitive environment for public sector bidding suggests that, given the slack land development market in California, prices for public infrastructure construction should be stable. Our forecasts show stable prices, with increases generally below five percent per year, out as far as 2012 for some forecasting models, although we caution that forecasts beyond the next two to three years are less reliable than more near-term forecasting.

The picture for specific commodity markets is mixed. Aggregate supplies in the Temescal Valley are sufficient for near-term (e.g. next five year) needs, although during the life of the M2 program local supplies of aggregate will be depleted unless additional resources are permitted. Steel prices have increased rapidly in the past several months, although analysts believe that price spike is temporary, and while falling steel prices are not expected, prices are expected to stabilize. Fuel costs are, at the present, the key risk factor. Based on representative analyses of cost structures for highway construction and for bus transit operations, fuel costs can be more important in highway construction

[7] Data on bidders are from Caltrans, Division of Design.

than in bus operations. Also, OCTA is moving the bus fleet to natural gas, which will shield bus operations from the rising cost of diesel fuel.

In the near-term, highway construction will face two countervailing tensions. Rising fuel costs will be felt throughout a broad range of commodities that are inputs into highway construction. The extent to which those are passed on to OCTA in the form of higher bid prices will depend on the competitive environment. The competition for OCTA projects appears likely to be robust in the near future. One possibility is that competitive firms will absorb some of the cost of higher fuel costs in the form of lower margins or increased efficiencies. Overall, it is not reasonable to expect that fuel cost increases will be fully passed on to OCTA. On the contrary, in the current environment one should expect that increased competition for OCTA business will lead firms to absorb some, but not all, of those higher costs.

VI. Key Forecasting Conclusions for Orange County

- Lower bid prices
- Generally stable construction prices through 2009
- Rising fuel costs will impact OCTA to a moderate extent
- Sufficient engineering and environmental professionals to meet demand
- Dearth of experienced project managers
- No significant price pressure on Right-of-Way acquisition

Task 3: Perceptions of Doing Business with OCTA

Perceptions of Doing Business with OCTA Interview Process

In order to assess the perceptions of doing business with OCTA and Caltrans District 12, OCBC interviewed 35 professional services and construction contractor executives. We interviewed firms that had done business previously with OCTA, as well as firms that had bid but never received an OCTA contract. Interview topics focused on:

- Perceived fairness and efficiency of the procurement process
- Availability and completeness of information about prospective work, including outreach activities
- Communication in the pre-proposal/bid and evaluation processes
- Cost of submitting proposals/bids
- Requirements and conditions
- Working with agency procurement and project management personnel
- Contract documents and provisions

OCBC ensured strict confidentiality in the interview process so that executives were not inhibited from expressing their true opinions and perceptions. This confidentiality was followed diligently throughout our interview, analysis, and report processes. The following summarizes our results and findings from the interviews and resulting analysis.

Capacity Considerations -- Human Resources Pipeline

General consensus among the vendor community is that their ability to attract and retain key talent had been an issue from 2004-mid 2007, but the subsequent decline in the real estate development market has freed up talent in 2008. Most firms report no major issues in attracting and retaining talent currently, especially at the entry level. This led to a general conclusion among interviewees that this is the time to push projects out to take advantage of the opportunities created by the slowing economy

and real estate development market. However, larger national/international firms report that there is a significant amount of work nationally in the pipeline for years to come after the economy recovers and current domestic civil engineer supply trends do not bode well for the future.

Most interview subjects recognize a popular conception that there is currently a lack of engineers entering the field. Some subjects more familiar with the numbers on graduates are deeply concerned; however, many subjects have not experienced any significant problems in recruiting staff. A few different trends seem to be mitigating the engineering shortage:

1) Downturn in residential development has freed up engineers

2) It is still relatively easy to fill junior positions by recruiting outside of the state (i.e. there are still young engineers wanting to move to California)

3) Larger firms have the ability to outsource work to offices in other parts of the country where work may be light.

Most subjects acknowledge that a number of different initiatives have been instituted to increase enrollment in engineering programs, and these programs are bearing fruit. Nonetheless the impact of these programs geared at high school and college aged students will not be felt for five to ten years.

Most subjects did however identify a problem in the mid and upper experience bands. While junior staff are attracted to California, some drain is occurring as mid-level engineers move out of state to enjoy a higher quality of living. In addition, at the mid level of experience there was a talent drain that occurred from the late eighties through the nineties (the dotcom boom years) as engineering graduates were drawn into computer sciences, electrical engineering and other high tech fields. These are positions

that now cannot be filled. As one subject put it, "Civil engineering is not something you can get into in a mid-career switch, even from another engineering specialty."

This situation is apparent as the most senior level of engineers retires. As one subject commented about a local city traffic engineering department, "With the traffic engineer set to retire, the next most experienced person has less than two years of experience. That is good but it is nowhere near as experienced, and that is a lot of knowledge that is lost."

One of the subjects referred to the situation as a "perfect storm" – a lack of homegrown engineers, a retiring senior band, diminished capacity of mid-level managers, and a large number of projects all hitting at the same time.

From OCTA's perspective, rates for quality engineering work can be expected to rise. Due to the mitigating factors mentioned above the rise should be gradual rather than sudden. However OCTA should be vigilant, as the influx of less experienced engineers and engineering firms could be problematic in terms of the quality of work.

Additional Key Points

- Even now, some shortfalls are reported for experienced senior project managers, because not enough talent went into civil engineering 10-20 years ago. OCTA, Caltrans, and the vendor community need to partner in order to keep the existing talent pool of experienced senior project managers in the region.
- For those engineers and firms migrating to public works from the real estate development sector, their skills are not always immediately transferable to public works, especially in the extent of their existing experience and relationships with agencies such as Caltrans. One way to bridge this gap may be to develop linkages between real estate

development firms and firms that do primarily transportation and public works.

Conclusions and Action Strategies

OCTA can consider working with the following education and workforce development programs aimed at developing more engineers and transportation construction workforce:

- Caltrans GoCalifornia Industry Capacity Expansion program
- Caltrans CalMentor program that pairs large firms with smaller firms. It was created from a partnership between Caltrans and the private consulting industry to promote and increase the participation of Small Businesses in Caltrans professional architectural and engineering (A&E) contracts.
- Partner on outreach and community events with local education institutions such as UC Irvine – how to build the Institute for Transportation Studies (ITS) program as a feeder on specific technical roles
- Orange County Workforce Investment Board (OCWIB) and Anaheim and Santa Ana Workforce Investment Boards to access state and federal workforce training funds for training/retraining of incumbent workers and jobseekers from the real estate development side of the business
- Participate in Governor Schwarzenegger's Engineering Education Council to bring more private funds into "pipeline" programs at UC, CSU, CCC, and other engineering programs in the state
- Explore partnership with High School Inc (partnership between Santa Ana Unified School District and Greater Santa Ana Business Alliance) for Transportation Academy and ACE programs.

OCTA Consultant Selection Process

Most vendors reported that they realize the transportation pipeline is fairly full in the Southern California region for the foreseeable future and appreciated that OCTA is thinking about methods, policies, and procedures OCTA can implement to be the "Agency of Choice". Fortunately, most subjects reported very good experiences with the consultant selection process at OCTA -- they found the process fair and the execution competent. Indeed, the vast majority of interviewees reported that OCTA's bid process is fair and that OCTA is one of the best agencies to work for:

- "Still the best agency to work for"
- "OCTA is a good model for others to follow"
- "Others could learn from OCTA"
- "Keep doing what you're doing"
- "OCTA moving in the right direction"

Most firms' main recommendation to improve the consultant selection process is that OCTA reconsider how to manage the selection process during the time period between proposal evaluation/interview and ultimate OCTA Board approval. Some believe the process has become "too political" and should be more transparent. Many firms stated that if there is a problem at all, it's with the OCTA Board of Directors becoming less mindful of OCTA's process and becoming more involved in the selection process. This is perceived to be a result of firms that do not get work or have done work poorly complaining directly to Board members.

- "Board is getting less mindful of the process"
- "Board members are moving off of the selection criteria"
- "They should discuss managing the political process in consultant selection"
- "The board is over involved. May be a perception, but see a lack of trust in staff. Hasn't seen a board as involved as OCTA. They go through a lot

of different approvals. Rather than need to approve every RFP, they should just approve the budget and let the professionals do their jobs"

- "Board members are all friends, but they are second guessing their own people"

One related item that did recur was a dislike of the amount of time that passed in between the decision and the notification. One method suggested by some interviewees to improve this perception is for OCTA to speed up its post-selection notification process, before it goes to Committees and Board. The subjects who raised this as an issue felt that as soon as the staff decision is made, the vendors should be notified. This would allow personnel to be assigned and allocated. They believed that more rapid announcement of award would lead to more transparency in the process and less lobbying of the Board. Many stated that other transportation agencies notify within 2 days. An additional benefit is that winning bidders could commit their team to OCTA projects more quickly, while losing bidders could free up human resources for other projects more quickly.

There is a very small but vocal minority of firms that claim that the OCTA selection process is closed except for a certain group of consultants. Typically, these were found to be: a) smaller, more specialized firms, b) firms that had not received any OCTA work, c) firms that were primarily involved in the real estate development sector, or d) a combination of the above. There was some perception that a lack of OCTA experience was a negative, and these firms even suggested an incentive for trying new firms, especially those trying to make the switch from the real estate development side of the business to public works.

Firms believe that OCTA is a tough negotiator once it comes to cost negotiations. This typically came up when firms cited QBS (Qualifications Based Selection) as the basis for proposal evaluation criteria and firm selection, but then when it came time to

negotiate, OCTA hammered them on price. One large firm stated that they have not bid on projects because other transportation agencies are "more profitable." Firms reported:

- "OCTA is a good but tough client"
- "OCTA drives a hard bargain"

Additional Key Points

- More consistency or lead time in scheduling short-listed interviews would be helpful – firms thought 1 week would be appropriate
- While OCTA evaluation criteria are generally well specified, the relative weights of importance between the proposal and interview needs to be spelled out more clearly in the RFP criteria – firms are not sure how the interview gets folded into the evaluation score. Other agencies, such as SANBAG, use the proposal evaluation process for short-listing, then firms start with a clean slate and answer questions on an equal footing
- Debrief process is not that helpful for some
- OCTA Audits and Overhead rates are a topic on the minds of the consultant community – would like to see if there could be an accepted standardized audited overhead rate rather than audit each case. Similarly, are audits needed for each phase or could they somehow be combined?

Bidding-Contracting

In general, consultants stated that OCTA has done a much better job of planning for the regional pipeline and is much more capable of getting the work out than other adjacent transportation agencies. All of the interview subjects remarked that any issues they had with OCTA's consultant selection process in the past have improved greatly in the past few years. Specifically they've seen the incumbency issue fade as a problem.

They see more work being awarded to different firms. One example given is that the Highway 57 work has been awarded to different firms.

The concept of a "Slate of Projects" or bundling of projects (for example, a series of grade separations) into one master RFP process such as RCTC has done, where 3-5 firms are selected and then the work is "divvied up" holds some appeal to the consultant community. Primary motivations are that it would reduce the cost of proposing for the firm, which was seen as onerous (ranging from $25,000 -- $100,000 typically), provided some certainty in the amount of work that would be undertaken over a multi-year period, and would reduce OCTA staff time and cost for the proposal review and evaluation process.

In general, regarding aggregation of projects, opinions fell along the lines of firm size – smaller firms wanted OCTA to break up RFP's into smaller projects, while larger firms wanted larger aggregations.

Additionally, we asked vendors and consultants about "contingency contracts" in which there is an incentive to deliver early on time or under budget, along with penalties for delivering late or over budget. While this initially had some appeal to most interviewees, most ultimately thought this was unrealistic -- believing that the practice would likely be risky and the devil would be in the details. For example, if time was the basis of the incentive or penalty, many were concerned with 3rd party delays, such as resource agency approvals.

Firms are generally favorable towards their experience with OCTA "on-call" contracts. Some vendors had positive experiences of on-call contracts, but would prefer to see a structure that assured them of regular work.

However, some concerns revolved around a few issues:

- there is no guarantee of work

- o make work more proportionate – some firms would prefer a "rotation" of work rather than a "competition" after selected for on-call
- o some firms were not used during period of on-call
- o once qualified, OCTA asked for rates and fees and chose on price

A number of small firms suggested that there should be a special category/size of projects geared towards small business, and they mentioned the new CELSOC Small Business Committee.

Declined to Respond to an OCTA RFP

Most of the vendors said that the OCTA processes were not particularly burdensome in any way. In fact they almost all rated OCTA as the top in the region in terms of ease of the bid process. Many firms said they always bid on appropriate OCTA RFP's as a matter of course. The primary reason cited by firms that chose not to respond was because of an incumbent firm that had done good work on the previous phase of the project.

Most firms who stated this believe that OCTA should allow incumbent firms to continue on to the next phase without bidding, as long as good work has been done. On a related matter, some firms suggest that a rating of OCTA's previous experience with a vendor should be considered in the selection process – "Why do a good job if it doesn't translate into recognition as an excellent consultant?" Other agencies do consider previous work – Contra Costa, SANBAG, and SANDAG.

Most vendor firms believe that OCTA should include the "not to exceed" budgeted amount in the RFP. When it comes to planning proposals it is important for firms to know, because the scope usually can be performed to different levels, especially front-end planning work. Some firms have not bid because of the practice of not disclosing the budgeted amount.

Other primary reasons stated:

- Strictly because of lack of expertise.
- Made an informed "go/no-go" decision if they thought they had a realistic chance of winning
- Need to pick and choose because of firm-specific capacity/resource constraints, specifically availability of key project manager.
- More favorable, profitable clients that do not hammer on price
- Cost of proposal process. The firms we interviewed ranged widely in terms of the size of contracts that they typically bid for. Nonetheless while estimates varied between vendors, many firms spend high five figure to low six figures for proposal preparation. There was little agreement regarding any ideas for reducing the cost of the bidding process.

CAMM and OCTA's Procurement Process

The vast majority of interviewees believe that OCTA's CAMM process works well, except most would like the process to be shortened between contract award and contract signing. Once again, audits are too costly and time consuming. Some wondered whether there would be a way to pre-qualify vendors so that they didn't have to re-submit all of the materials every time they bid. Specifically some vendors wondered why they had to be audited separately for every contract won, though most understood that this was a legal obligation.

Most firms felt that CAMM staff was responsive and worked very well in bidding out professional services work. Nonetheless, a few subjects interviewed were concerned about the staff's level of experience in innovative contracting, and the length of time certain projects took to bid. In one case an interview subject cited a one year time frame for developing an RFP.

For construction firms, getting change orders approved quickly is essential. Firms reported that the reality on the ground does not always match plans and engineering. Turn-around time causes costs to increase, and often can have a knock on effect on the project schedule. Change orders are particularly important as they cause delays which then have to be negotiated as to who is responsible.

Conclusions and Action Strategies

- More engineering staff able to review engineering changes and approve
- Empower Project managers to make higher level changes, minimize Board involvement in specification decisions

Communication of M2 Early Action Plan

Most interviewees have had very positive experience with OCTA's communication of M2 and EAP. Most firms reported having been at an event where senior OCTA management had spoken. However EAP outreach has not been as robust with the construction firms, especially those who haven't been doing extensive business with OCTA.

Key additional points

- "Look aheads" are a great tool. One suggestion is to provide more info and detail in the "description of service"
- Recent OCTA executive staff additions have been key in terms of building a high level of positive communication with the consultant community
- Outreach events such as vendor fares are a good networking tool, especially with smaller consultant firms looking to partner with larger firms

- Larger firms vary in appreciation of networking opportunities, and they do caution the agency to avoid "constantly hitting them up to sponsor the fair."
- Some interest in outreach targeted to residential development firms.
- More outreach to the public about the process – does well during the construction phase, but needs to start in the planning, design, and environmental phase.

OCTA – Caltrans Relationship

Most firms we interviewed believe that OCTA and Caltrans have a good working relationship and work well together, at least OCTA is no better or worse than others, and has improved with the recent hiring of OCTA executive staff members. Most stated that it is primarily a Caltrans culture issue arising from PECG, and that most problems OCTA has encountered were the result of the 22 design-build effort. Some in the vendor community are concerned about Caltrans ability to retain key management and project management talent.

Many vendor firms that have not previously worked directly for Caltrans appreciate OCTA's role as "interpreter" or "guide" through the Caltrans process, addressing issues and problems as they come up. When considering the arrangement on most projects as an OCTA-Vendor/Consultant Community-Caltrans triangle, our work shows that the Caltrans-OCTA side of the triangle works well, as does the OCTA-Vendor/Consultant side. If there is a weak point in the triangle it appears to be between Caltrans-Vendor/Consultants side. OCTA has assumed the role of "boundary spanner" between these two groups, but perhaps a more formalized process for aligning and supporting this role may be in order.

Some "team building" or ongoing "trust development" between the three organizations might be useful, but there were very few specific ideas about how that would best be accomplished. Co-location on joint projects can be valuable. Most think that OCTA and Caltrans coordinate just fine right now. From the construction vendor's perspective, the most important aspect of OCTA Caltrans communication is having clearly defined final responsibility in approving changes and making on the spot decisions. Processes, roles, and responsibilities need to be clearly defined at project kick off and adhered to, with subsequent frequent regular meetings between all parties to keep schedules and deliverables on track.

In fact, a couple of large firms stated:

- "SANDAG relationship with Caltrans is not everything it's cracked up to be"
- "Everything in Transnet is taking way longer and costing more – OCTA has actually done better in getting the projects out"
- "The problem occurs when you have different people thinking they are in charge, and each one wanting to review the changes."

Miscellaneous

- OCTA was positively acknowledged being more flexible to cover travel expenses to bring talent from outside the region into OC (large firms) to help project delivery.
- Closeness of final evaluation spreads on many recent bids was viewed as a sign that OCTA's current bid process is working well

Readiness and Absorption Capacity of Public Agencies

Task One: Inventory of Participating Entities and Schedules

As a baseline to identify which entities to consider engaging in this assessment, and as outlined in the Scope of Work, the Orange County Business Council (OCBC) developed an inventory of the public entities with permitting, regulatory, oversight, partnering and/or cooperative roles in the delivery of the Orange County Transportation Authority (OCTA) Renewed Measure M Early Action Plan. Figure 1 below shows those entities identified in the Early Action Plan (EAP) as being a part of more than one Renewed Measure M (M2) project:

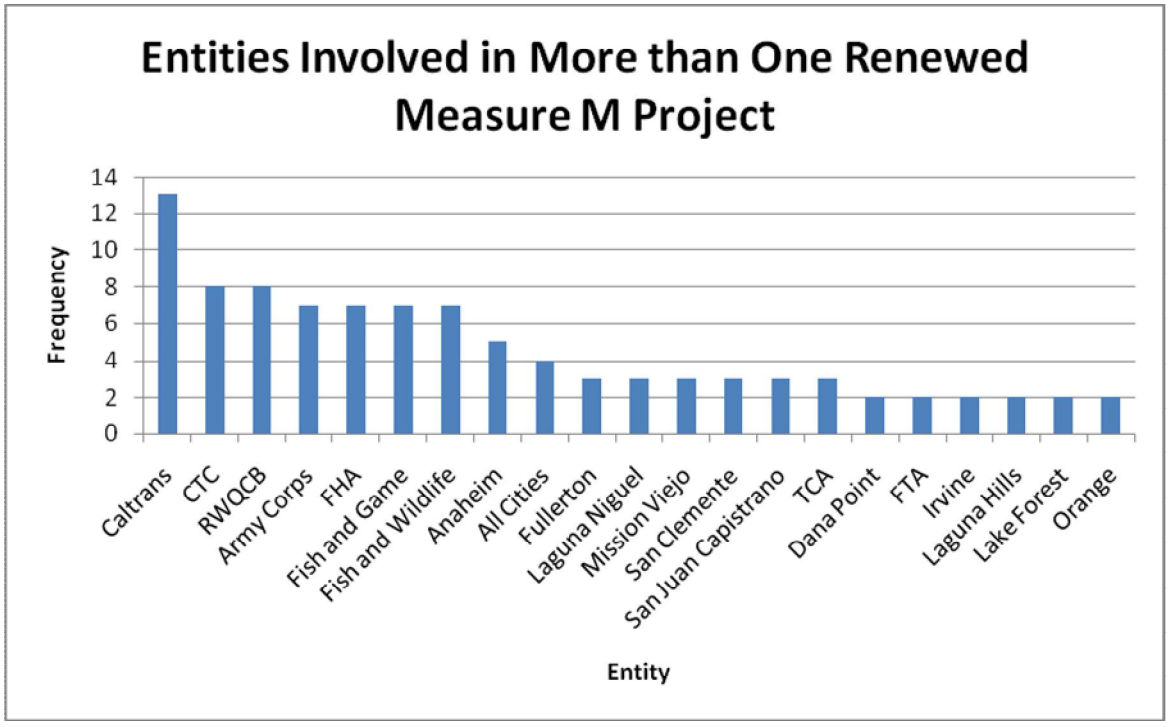


Figure 1: Entities involved in more than one Renewed Measure M project.

The extent and type of entity involvement is largely related to the kinds of projects identified in the EAP. Project types include freeway projects, a streets and

roads program, transit programs, and projects related to environmental cleanup and water quality. However, all of the projects are related to transportation infrastructure and therefore tend to involve similar entities despite the differences in project types. Because of their oversight and governance role in many aspects of transportation, a relatively small number of entities are indicated to be involved in a large number of the M2 EAP projects. Figure 1 shows only those agencies involved in two or more projects, totaling 22 agencies. The EAP identifies a total of 46 agencies that will be involved in at least one project, meaning that more than 50% of entities are only involved in one M2 EAP project (Figure 2).

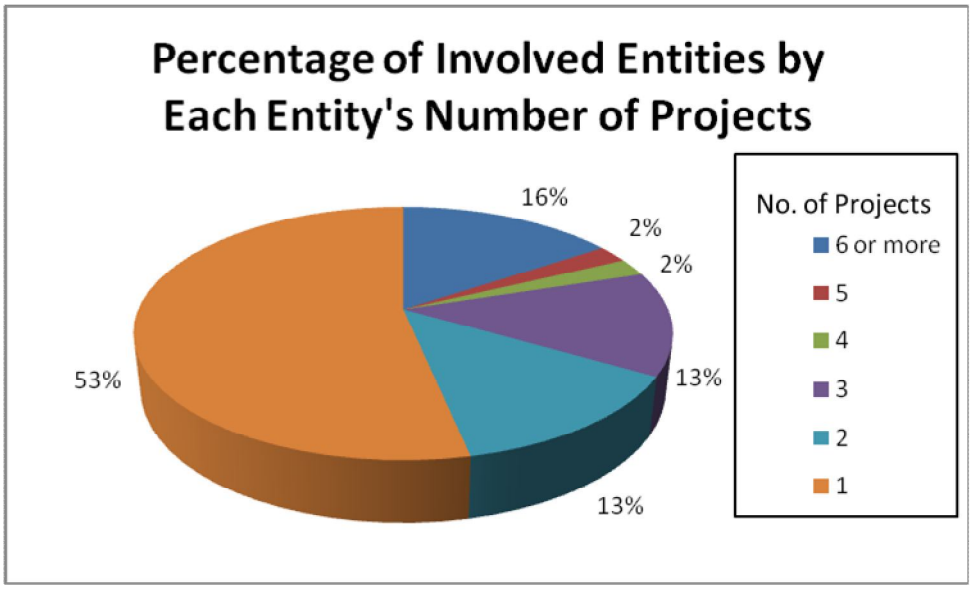


Figure 2: More than 50% of entities are identified with only one project.

Many of those entities identified as involved in only one project are cities located in Orange County. The various transportation projects, especially those tied to single roads, streets, or freeways, will involve cities only if the project target passes through a city's jurisdiction. The network of transportation infrastructure proposed in the M2 EAP may therefore be thought of as a web stretching across Orange County -- connecting many cities together. The EAP rightly reflects the increasing recognition of the interconnectivity of Orange County transportation infrastructure projects, but also

recognition of the increasing complexity of coordinating and managing partner entities as it relates to delivering projects on time and on budget. OCTA's task is one in which many different agencies, jurisdictions, and organizations need to coordinate their work and schedules on M2 EAP projects if these projects are to be successfully implemented. However, one of the great hurdles to making this interconnectivity work is the difficulty of coordinating such a large number of individual entities around single projects or related groups of projects.

Based upon our key interviews and subsequent analysis, OCTA has developed a comprehensive set of policies and procedures that have made the difficult task of thorough integration around M2 EAP projects go smoothly. Our research shows that OCTA staff interactions with these partner agencies are highly rated and well regarded by all entities and agencies we talked with. In short, OCTA is a trusted partner with each agency we spoke with. As coordination and cooperation have increased, and the resulting trust has developed, OCTA opportunities for greater assistance and closer partnerships have increased as well. Any misalignments that still exist are primarily due to:

- The different ways in which projects that transcend organizational boundaries are conceived of by the organizations involved
- Budgetary and workforce resource pressures at some specific agencies that will be addressed throughout the report

For example, as OCTA organized around transportation infrastructure projects, so the usual way that it conceives of projects is by roadway or transportation corridor. The whole of the 405 freeway is a project around which work is done by the OCTA. In comparison, city jurisdictions may have completely different conceptions of projects, usually conceiving of initiatives and projects simply from the perspective of that city's respective boundaries. From this point of view, the 405 freeway is only a project that passes through the city's own boundaries. Once the freeway exits the city boundary, for the most part it is no longer the concern of the city in question. Similarly, a regional

water quality control board may be primarily concerned with the impact of the project solely on water quality. This difference in how projects are thought of can cause coordination problems. This increasingly complicated web of multi-jurisdictional, multi-agency environment is difficult to coordinate and maneuver through successfully and efficiently anywhere in California, much less a dense and growing region such as Orange County.

Yet, our outreach, review, and analysis demonstrate that OCTA gets this job done, and done well. Much of the credit goes to the advanced planning that went into the conception of M2 and specifically the Early Action Plan. OCTA's hard work of upfront planning, coordination, and communication of exactly what is in M2 and the EAP, and most importantly what each agencies/entities role will be in the successful delivery of M2 EAP projects, has been extremely effective and should be extremely encouraging and promising for project delivery. Our finding is that OCTA has gone above and beyond the call in terms of proactive outreach to partner entities. The M2 EAP plan has been well thought through, and explicitly has recognized the existence of the potential detrimental effects of poorly-coordinated project implementation. The strength of the M2 EAP is in the nature of the document's far-reaching comprehensive review and long time lines considered. With that knowledge and perspective, the document thoroughly programs out the roles, responsibilities, and actions necessary to successfully implement the plan. The M2 EAP documents a vision, framework, and timetable that are a heartening step toward greater cooperation and integration of all entities involved in and benefiting from a well-functioning Orange County transportation infrastructure.

Because the EAP focuses on transportation, state, federal, and regional entities with comprehensive transportation authority are projected to have much greater frequency of involvement than other entities. Caltrans, the California Transportation Commission (CTC), the Regional Water Quality Control Boards (RWQCB), the Army Corps of Engineers, and the Federal Highway Administration hold permitting, regulatory,

oversight, and partnering and cooperative roles that crosses over the boundaries between project types and are therefore involved in a larger number of projects than most other entities. These entities are identified in Figure 1 as among those with the highest number of project frequency and were chosen as interview subjects for the purpose of this assessment.

The entities with the highest frequency of multi-project involvement with OCTA form the backbone of the delivery process for EAP projects, and the majority of our time was spent in engaging, gathering input through confidential interviews, and analyzing any gaps, misalignments, or opportunities for greater coordination and certainty. The information gleaned from these interviews is used in this assessment to better understand the possible pitfalls and roadblocks to on-time EAP project delivery. Interviews provide a critical "insider's perspective" that cannot be gained with any certainty or amount of analysis by researchers who do not work for the entity in question. The insider's perspective offered by the interviews is invaluable to understanding the problems faced in delivering on the project timelines identified in the EAP.

We asked entities about a comprehensive set of subjects and questions, all important concerns related to their role in on-time M2 EAP project delivery, including:

- delays caused by communication and coordination problems
- the availability of qualified staff to handle increased project volume for M2
- the availability of funding
- the availability of consultant and contracted resources
- delays due to procedural and legal mandates
- competing and/or conflicting priorities, either internally or externally driven
- ideas and suggestions to improve readiness

Information emerging from the interview process provided rich information about the likely themes and problems that may be encountered in delivering the M2 projects, but will most likely be avoided with a concrete set of very specific actions. Drawing on the expertise of executive-level management, the interviews provide a snapshot of much more than just the insider's perspective: the interviews offer a view of insider *concerns*, insider *insight*, and insider *expertise*. In short, the interviews reflect the expert knowledge possessed and utilized by each entity when considering the projects identified in the EAP. The interviews also reveal much about the state of the infrastructure project design, approval, and construction in Orange County.

See *Section II: Assessment* for a detailed discussion of the interviews and for elaboration of the above themes. See *Appendix A* for a complete inventory of the participating agencies/entities involved in the M2 Early Action Plan. See *Appendix B* for an M2 Early Action Plan project timeline out to 2022. This timeline illustrates the periods and extent of entity involvement relative to the M2 Early Action Plan project and program schedules in order to maintain the M2 EAP schedules.

Task Two: Assessment

OCBC conducted confidential key informant interviews (either in-person meetings or teleconferences) with executive-level representatives of each of the identified entities/agencies. At some agencies, and where appropriate, interviews of multiple contacts were performed and their views reconciled and incorporated into this analysis. A structured interview outline and questionnaire was followed for each key interview as appropriate, focusing on the following topics:

- Staffing and budget
- Availability of consultant or contracted resources
- Process and procedures
- Competing and/or conflicting priorities, either internally or externally driven
- Ideas and suggestions to improve readiness

Any potential areas of concern or delays were highlighted to try and elicit any expected complications that entities and agencies expected in connection with their role in delivering M2 EAP projects.

Communication and coordination

Each entity interviewed reported an extremely high level of awareness of OCTA and of its own specific role in contributing to the process of delivering the EAP. Most entities praised OCTA for its communication habits, which were frequently reported as clear and highly effective. For example, Caltrans praised the level of OCTA involvement in the Caltrans Professional Liaison Committee and Quarterly Update meetings with

Caltrans. OCTA and Caltrans have more than a decade's worth of history with the original Measure M in terms of joint development and collaboration.

However, OCTA's high level of communication was also seen as a concern by some. Several interviewees stated that they wished they had sufficient staff time and resources to take advantage of the multiple opportunities OCTA gives them for input and counsel, especially regarding advanced planning early in the process. For example, the Army Corps of Engineers reported that, while OCTA is going above and beyond the call in communicating and has shown a great deal of willingness to meet frequently, the level of commitment devoted by OCTA may be creating unrealizable expectations about what the Army Corps can actually deliver given its own staffing constraints.

Other concerns about communication and coordination emerged in the interviews. OCTA's relationship with Caltrans—the entity identified as involved in the most M2 projects of any included in the EAP—is paramount to OCTA's ability to coordinate on the complex projects outlined in the EAP. Caltrans and OCTA need to continue to improve coordination on the master M2 EAP schedule, especially regarding changes and amendments. However, Caltrans also reported that communications and coordination with OCTA seem to be improving with time, partially helped by recent OCTA hires of former Caltrans employees.

It is obvious from our interviews that high levels of communication have become a high priority for the EAP to be successful. The coordination of projects in M2 is a major task, and one that will require constant management of agency and professional relationships. As some interviewees noted, OCTA is already doing a good job with its dedicated efforts to establish communication early on in the process of each project. Again, OCTA is doing this so well that some entities are becoming concerned with the degree to which they can reciprocate the level of communication being offered to them by OCTA. Strategies to increase the capacity of partner entities should be explored by OCTA in order to anticipate breakdowns in the ability of partners to dedicate staff and

resources to the level of communication that will be required for the EAP goals to be delivered on schedule and on budget.

One suggestion from the interviews was for OCTA to develop a "Look Ahead" communication tool similar to that developed for vendors and consultants, but specifically geared toward entities and agencies that could be distributed quarterly or semi-annually. Such a look ahead tool would allow the dedicated communication staff of OCTA to inform involved entities of expected problems of coordination without necessarily overwhelming those entities with expectations for dedicated communication at the same level practiced by OCTA. Additionally, because OCTA is so effective in its communication strategies as reported in the interviews, we believe OCTA likely has the expertise and resources to accurately foresee communications challenges and strategize ways to mitigate their negative impacts. See *Task III: Conclusions* for a discussion of communications and coordination strategies suggested in the interviews.

Entity Readiness

Generally, entities value and support OCTA's current working practices and relationships. According to the interview subjects, OCTA staff is knowledgeable and responsive to questions and concerns raised about the EAP projects. The most important procedure that OCTA staff currently performs is the engagement of all relevant stakeholder agencies early in the process for projects. Equally important is OCTA's maintenance of frequent contact with entities throughout the course of a project. Early contact is essential to project planning, and maintained contact is essential to identifying and resolving issues that arise as the process goes on.

Almost uniformly amongst interview subjects, early involvement was described as essential to maintaining good relationships with OCTA and their ability to deliver and move the process along in a timely manner. The most often cited benefit of early engagement was that it allows stakeholders to suggest changes and mitigation efforts up front that will make eventual approval easier. As one interviewee put it, "If our first

look at something is the Environmental Impact Review, then it's too late to really incorporate the changes that we need, and instead we will have to slow the process down."

The second most important aspect of collaboration is being responsive to requests for information. Again, OCTA has a positive reputation for collaboration and responsiveness with all respective agencies. One example is OCTA's involvement and regular participation in the M2 Environmental Mitigation Roundtable. OCTA's effort in developing this forum has been particularly important because it addresses the difficult, non-trivial task of linking and coordinating the agency, environmental review entities, and a large number of non-governmental environmental groups.

Coordination of the large number of entities involved in the transportation infrastructure improvement and maintenance projects identified in the M2 is a major undertaking. So far, OCTA is performing well on this front. A suggestion stemming from this positive view of OCTA's environmental coordination work with the EAP was to create a permanent position tasked with coordinating communications and resources specific to environmental planning for all OCTA projects, not just those of the M2.

The importance of communication and established expectations for coordination and its attendant dispute resolution cannot be overemphasized. Regular communication and having an established relationship with an individual or individuals is important to the smooth working of the often difficult, complex permitting and implementation processes inherent to large-scale transportation infrastructure projects crossing many jurisdictional and geographical boundaries. Much delay can be avoided if long-term relationships are developed between entities and jurisdictions in order to prevent the need for constant and redundant reeducation of objectives and project details as occurs in an environment of weak working relationships and/or high staff turnover. As one interviewee stated, "When I'm working with a new person at any agency everything slows down because I need to spend a lot of time educating that

person on the process. But when we have a relationship with someone we already know, who knows the process, then things go much more smoothly."

Finally, entities suggested the OCTA must be proactive in reviewing and managing the quality of the consultant work that it commissions. Today's reality of the sheer volume public sector work requires that much work be contracted out to consultants. The quality of consultant work therefore directly impacts the quality of the final products of public agencies and must be considered a primary concern for public sector managers.

Consultant work that does not meet the standards of reviewing agencies or that does not present information in an appropriate manner for utilization by stakeholders was cited as the most common cause for delays in review processes. This assessment found that because of labor shortages of experienced members of consultant teams in the last few years, the overall quality of consultant work product has declined. Specifically, agencies mentioned seeing lower product quality recently in terms of outsourced environmental because of an industry-wide lack of experienced consultants. Both agencies and vendors are concerned that the recent downturn in the development industry will not free up enough experienced consultant talent for public works, and staffing will continue to be a problem. Even more concerning is the prospect of the eventual rebound in the real estate development sector that almost certainly will occur within the timeframe of the M2 EAP and could siphon away some of the expert consultant talent that has transferred temporarily to the public sector. If this should occur, OCTA and stakeholders may find in the future a worse staffing shortage than currently exists.

The renewal of Measure M in 2006 was by no means a certainty. Regional private sector staffing shortages could very well have become staffing surpluses had the initiative failed to pass public vote. Because of this risk, there may not have been a major push near the end of Measure M to promote workforce training and education to fill the next generation of openings in civil engineering, transportation planning,

transportation finance, and other related fields. However, with the passage of M2 and its attendant financing, an incredible number of large infrastructure projects went from possible to certain. For agencies, this sudden increase in need for qualified expertise, caused by a full regional pipeline of transportation projects, will be very difficult to satisfy in the short term due to the number of years of education and training needed to produce a qualified employee. Therefore, OCTA and stakeholders must—and do, as shown by the interviews—recognize the possible negative impacts of staffing shortages on EAP delivery and act to mitigate these impacts as soon as possible.

In addition to staffing considerations, the sheer complexity of the procedural environment surrounding transportation infrastructure projects could prove to be a source of delay. As one interviewee recounted, the transportation projects in Southern California must confront the largest amount of species covered by the Endangered Species Act, the largest concentrations of congressional representatives, and the presence of other public works projects that compete for priority with transportation, such as water infrastructure. Additionally, special aquatic conditions exist in Southern California that must be considered in the impact statements prepared for projects. In a word, the regulatory and procedural environment faced by the EAP is "challenging".

One possible strategy to anticipate and prevent possible delays could be OCTA coordination with agencies such as Caltrans and the vendor community on Quality Control and Quality Assurance. Coordination with these agencies may even serve to speed up the process, as dealing with regulation imposed by these agencies was reported to be the cause of delays as well as of documents having to go through several iterations.

Staffing and Budget

Staffing is a major concern at every agency we spoke to. Due to the recent economic downturn, government budgets at the state and federal level are likely to be constrained for the foreseeable future. However, the economic downturn also impacts taxable sales and projects funded by sales tax measures, so sequencing of the full

regional pipeline of competitive projects (such as those in the Inland Empire) may end up being delivered more slowly than originally proposed and the downturn may actually assist in smoothing the delivery of projects on a regional basis.

On average agencies have one or two people assigned full time to review documents and permit activities for large regions. However, other than a few specific instances outlined below, most agencies reported they believe they have enough staff resources to handle the regional projected local, regional, and state pipeline, including the OCTA M2 Early Action Plan. For example, the federal transportation agencies reported that while their workload is increasing and staffing is relatively static, they nonetheless reported that they believe they are capable of attending to and carrying out their roles and responsibilities in processing OCTA M2 EAP projects.

However, on the other hand, some federal and regional environmental review agencies and the Army Corp of Engineers expressed some clear concern over a growing pipeline and static to declining budgets. The slowdown in the residential construction and development markets has helped to alleviate some of their work load, but that space has simply been filled with backlog and more attention to established monitoring programs.

All the agencies highlighted that collaborative processes initiated by OCTA are always positive experiences – and certainly beneficial to on-time delivery of projects -- but in some cases they do require a dedicated budget. Time and travel distance are a concern. For example, the Regional Water Quality Boards are not located conveniently to the OCTA offices. In order to send a representative to OCTA meetings, they reported having to give up almost half a day in travel time alone. For example, the Army Corps of Engineers stated they do not currently have enough staff resources to handle the current pipeline due to budget constraints, to the point of perhaps not being able to attend subsequent OCTA meetings without additional funding. These agencies recommended funding assistance to attend OCTA meetings and/or reimbursement for mileage.

For agencies that reported a significant level of understaffing to the point of affecting their ability to review projects in a timely manner, some suggested they already have processes in place for OCTA to consider funding positions within their entities. The advantage to OCTA is staff dedication and prioritization of OCTA projects, rather than having to take a place in line and be attended to on a first come, first served basis.

Some examples include:

- Army Corp of Engineers – Water Resources Development Act 214 (WRDA 214) program mechanism allows for funding of a full time employee dedicated to OCTA projects, as has already been used in San Diego and San Bernardino. This would allow for greater participation at the advanced planning stage before review of permit applications and also for prioritization and dedication to OCTA projects
- U.S. Fish & Wildlife – follows the same procedure as Army Corp of Engineers
- San Diego Regional Water Quality Control Board – currently SANDAG funds a full time person through a work contract
- California Fish & Game has started asking agencies to reimburse positions and has a suggested process/agreement for staff augmentation

Of course, Caltrans has a separate and much closer relationship with OCTA. Caltrans has separate staffing issues which need to be examined closely. Caltrans District 12 reported they are not interested in growing staff. The agency is tired of workload fluctuations up and down and plans on a "zero growth" workforce policy going forward. Their plan is to rationalize Caltrans District 12 staff to a "steady state" staffing level that is just below their average workload levels, whereby the District office will not scale up/scale down capacity like an accordion depending on expanding/contracting workload levels, but rather adopt a staffing pattern that aims to always be just below actual service demand, with the delta contracted out in order to maintain the "steady state" staffing level. Therefore, we did not find a current need for OCTA to consider

retaining Caltrans District 12 project staff as has been attempted in San Diego between SANDAG and Caltrans District 11.

Rather, the impact of this Caltrans stable, level staffing policy is that anything above the preferred workload level should be cooperatively planned to be contracted out by either Caltrans or OCTA. Caltrans District 12 and OCTA need to do advance planning to decide what to outsource, especially for the M2 Early Action Plan – with either OCTA or Caltrans splitting up the work by what makes sense in terms of leadership, quickest, cheapest, and most efficient.

Caltrans also currently faces many of the same difficulties in attracting and retaining engineers and experienced project managers that are described more fully in the vendor capacity assessment. Caltrans faces issues with staff facing retirement age and pay disparity with private sector engineering firms. Nonetheless, Caltrans has good retention practices, and is still an attractive employer. A number of different initiatives have been instituted by Caltrans, such as the Industry Capacity Expansion (ICE) initiative of the Governor's *GoCalifornia* Strategic Growth Plan, to increase enrollment in engineering programs, and these initiatives are bearing fruit. Nonetheless the impact of these programs geared at high school and college aged students will not likely be fully felt for another five to ten years.

Availability of consultant or contracted resources

As described above, some agencies have programs in place in which OCTA may consider directly funding agency staff positions. However, other agencies are not prepared to, or able to, contract directly with consultants on review work. While Caltrans reported that OCTA has done a good job in contract management, the pressures of accountability and in the case of Caltrans, liability, are often deemed high. All the agency subjects conveyed a deep sense of responsibility to their constituents in describing their commitment to work processes and standards. Indeed, they often

stressed repeatedly the complex role that OCTA-contracted consultants play in independently quality reviewing the work that is prepared on behalf of OCTA.

In terms of contracting out functions, Caltrans reported that it is currently finding difficulty in contracting out Environmental and Right-of-Way, two key disciplines that seem to be most stretched in terms of capacity at both the agency and consultant workplaces. Caltrans stated they would welcome OCTA consultant support in both Environmental and Right of Way, as acquisition schedules are being compressed because of design delays.

Process and Procedures

In terms of speeding up the review process, there seems to be an issue when the outsourced work is contracted directly through OCTA and Caltrans has no direct relationship with the consultant. If OCTA could work out a process for building a sufficient level of trust between Caltrans and the contracted consultant community, that would certainly pay dividends. Caltrans does like being involved with the selection process, but finds that consultant teams often end up different than what is proposed.

Additionally, Caltrans cited Right of Way as the biggest risk to implementation of M2 EAP, and specifically the issue of court schedules and not being able to get timely hearing dates. Locking up Right of Way outsourced talent as soon as possible and focusing on securing court dates will likely pay dividends.

The trend towards delegation of authority processes has so far been a net positive, but with NEPA delegation some agencies report that it's still to be seen if it saves time in the long run, as the level of documentation necessary is still not completely known.

Competing and/or conflicting priorities

Competing or conflicting priorities primarily fell into two interrelated categories already discussed:

- The projected statewide and regional pipeline of infrastructure projects is large and growing
- Budgets for most agencies are not growing in line with the projected workload

However, as mentioned previously, this likely brings some positive opportunities for OCTA:

- Funding dedicated positions as allowed by current legislation (for example, Army Corps of Engineers and WRDA 214)
- Partnering on collaboratively outsourcing excess workload, such as with Caltrans

Improved Readiness

Although OCTA was rated highly across the board in terms of their efforts to improve readiness, there are a few chokepoints on the agency side where some increased coordination and/or upfront resources may be applicable and appropriate. Most agencies reported that it is at the early planning stages where problems arise, and where increased agency input would be helpful in terms of a joint understanding of schedule, timelines, definition of terms, and milestones. OCTA's funding of certain positions at key agencies outlined above would be a significant benefit.

We conclude our assessment with a general discussion about the M2 EAP and related working relationships, trust, and accountability between OCTA and its agency/entity partners. A major component in many of our discussions revolved around the simple questions of:

- Who is in charge?
- Who is responsible?

While the general public likely does not understand or care, other than as it affects or delays on-time and efficient project delivery, our conversations and analysis show that OCTA is clearly on the right path to overcoming any past misalignments in this

realm. Our conversations with stakeholders do demonstrate that there are still clear opportunities for OCTA to break down barriers and develop even more joint trust and accountability with other agencies and entities. Most seem to revolve around the central notion that the entity in charge most likely is the project itself – or series of projects such as that outlined so well in the M2 EAP plan. There is no real magic about maintaining and constantly improving these relationships. The relationships have to be worked on through regular communication, team-building, joint accountability to the successful and on-time delivery of projects, and an eye toward low-risk opportunities that can be built upon. Finally, successes should be celebrated jointly, and problems resolved together as well.

For example, increased co-location of OCTA and agency staff at the project site should be considered. Caltrans spoke highly of the "Corridor Manager" concept – a joint single point of contact, single focus on corridor. Despite other issues with SR-22 Design-Build project, Caltrans rated the combined team co-location within proximity to the job site as a very positive experience for Caltrans in terms of communication and team building with OCTA. Caltrans also cited the I-5 Gateway project as a good model for OCTA-Caltrans partnerships – integrating project manager as part of the construction management team, with the project manager right there at the construction site in a trailer.

These joint OCTA – Caltrans member teams will likely build mutual trust and start to break down any remaining silos or barriers that exist between the two organizations. Joint OCTA and Caltrans members of that team can then be transferred to subsequent projects. OCTA may find that the process of building upon this by combining similar efforts with a team-building facilitation process at the start of projects to agree on a pre-determined process to resolve issues will ensure successful delivery of M2 Early Action Plan projects.

Task 3: Conclusions and Action Strategies

The following conclusions outline actions that OCTA can undertake to manage, reduce, or mitigate the challenges we identified regarding the ability of public entities to contribute to timeline implementation of the M2 Early Action Plan. Broadly, these conclusions fall into three categories:

- Conclusions about how to change or manage the phasing and staging of projects and programs
    - Based upon our work with entities and agencies, we do not conclude that any changes to the M2 EAP plan in terms of phasing and staging of projects and programs. Please also refer to the ***M2 Market Conditions*** report for related phasing and staging conclusions from that perspective
- Development of contracts, cooperative agreements, or formal partnerships
    - Consider funding WRDA 214 positions or other contracted positions (FTE or part FTE), to be dedicated to OCTA M2 EAP projects, at agencies that express a need due to constrained budgets
    - Consider funding entity travel and related attendance expenses at OCTA meetings
- The addition of resources and funding such as incentives and bonuses; contract or consultant resources; or temporary and/or project-related staffing

- In collaboration with Caltrans District 12, aggressively engage Right of Way and Environmental consultants as early as possible to conduct M2 EAP work as outlined previously in this assessment
- Consider funding a permanent OCTA position dedicated to coordinating entity relationships, especially environmental planning, for all M2 EAP included agencies
- Address contracted consultant Quality Assurance and Quality Control issues with Caltrans
- Consider expansion of joint location efforts of "Corridor" project teams with Caltrans
- Partner with Caltrans and other entities on education and training programs geared towards developing more transportation engineering and related talent, such as Caltrans ICE program

Task 4: Conclusions about Managing Market-Driven Cost Pressures

1. Changes to OCTA procurement and/or contract management procedures

Our key informant interviews found that OCTA's existing consultant selection, procurement, and contract management procedures are rated as transparent, consistent, and fair.

Vendors and consultants shared some very specific areas to consider in order to make a well-regarded process even better. Chief among these specific suggestions was to guard against the process "becoming too politicized". One way to accomplish this is to speed up the post-selection notification process – i.e., shorten the time that currently passes between the evaluation decision and notification of the successful and unsuccessful bidders/teams.

In terms of procedural improvements, suggestions feel into several categories:

- Clarify procedures and role of interview process in final evaluation decision-making process
- Debrief process for unsuccessful bidders could be improved with more specifics
- Audit and overhead rates should be streamlined and standardized where feasible
- In general, shorten proposal, evaluation, and award timelines

2. Changes in contracting strategies and phasing/timing

A. Number and Size of Contracts, and Segmenting Projects

Our interviews revealed that larger firms often prefer larger contracts, and smaller firms prefer smaller contracts. This is not surprising, and reflects the different

scale economies and business models of firms of different size. There was some preference across a broad range of firms for efforts such as vendor fairs or outreach that would assist different firms in making links that could allow them to pair as teams, and such activities fit well with OCTA's efforts to communicate with the vendor community. Vendors generally spoke highly of OCTA's communication with the vendor community and the agency's outreach, and those efforts, including face-to-face meeting opportunities, should be continued.

For vendors, the cost of preparing proposals is a key factor. Preparing a response to an RFP for a large project can extend well over $100,000. Cost is a key factor in firm decisions to respond to RFP's, and for that reason even the larger firms indicated that they must be strategic, pursing projects where they believe they can compete well rather than responding to a broad range of calls. For that reason, efforts by OCTA to bundle projects, if that bundling reduced the cost of proposal writing (e.g. by developing a rotation or on-call work plan) might increase the pool of bidders. Having said that, market pressures are likely to increase the pool of bidders irrespective of OCTA's actions during the current slack period in land development, and vendors report that after a contractor is chosen OCTA is a tough negotiator on price. Hence increasing the number of bidders beyond currently expected levels might not be necessary to reap cost savings, as OCTA is adept at negotiating cost savings after the contract is awarded.[8]

From OCTA's perspective, the primary advantage to fewer, larger contracts would be a reduction in staff effort spent preparing and reviewing proposals. Given OCTA's strong reputation and ability at negotiating favorable post-award financial

[8] To be clear, the relatively lower number of vendors for public works projects in California around 2004 and 2005 likely contributed to higher prices and so was a concern. We believe that market conditions will tend toward more bidders, and Caltrans data reflect that. Hence further increasing the number of bidders might not be as high a priority as maintaining the current competitiveness level. OCTA is skilled at obtaining cost savings at contract negotiation, and so the agency should be aware that the number of bidders is the first step of a two-step process that leads to favorable pricing.

agreements, the benefit of reducing the number of proposals that OCTA issues is something the agency should consider.

B. Phasing and Timing of the M2 EAP work plan

There are two factors to consider in developing a broad strategic approach to the phasing and timing of the M2 EAP work plan – global market conditions and the impact of the work plans in neighboring counties. We discuss both in turn.

Global market conditions suggest that now is an opportune time to pursue the already aggressive timeline of the M2 EAP work plan. The downturn in land development provides a favorable environment for OCTA, especially so for professional services such as engineering and environmental analysis. Commodities markets show a varied pattern, but we detect no advantage in waiting in hopes that commodity prices will decline. The biggest current commodity cost price pressure is fuel costs, and while fuel costs have risen rapidly, there is no clear sign that the trend will reverse in the future. On net, there is likely no identifiable cost advantage in delaying the M2 EAP work plan, and there are advantages in maintaining the accelerated M2 EAP program to take advantage of the current housing market downturn, particularly in terms of advantages from falling right of way acquisition costs and increased vendor competition for work.

The work plans of neighboring counties show that OCTA will be in competition with other agencies for vendor resources, and that competition might be most intense during the current 2008-2009 fiscal year. That conclusion is qualified by two caveats. First, the vendor community did not express much concern about the overall ability of engineering and construction firms to respond to the heavy infrastructure construction needs of the Southern California community. It is unclear whether that vendor assessment was overly optimistic or whether vendors do not appreciate the magnitude

of the work plans currently being planned by the counties in Southern California. Alternatively, the vendor community might be more adept at assessing the capacity of their industry, and our simple assessment of programmed projects in neighboring counties might be one-dimensional and the deeper knowledge of vendors might better reflect the industry's capacity. Second, the programmed timelines for some projects might slip, so while current plans reflect the most competition for vendor resources in fiscal year 2008-2009, it is possible that delayed work plans could defer that competition to future years.

Regardless, OCTA should expect some competition for vendor and contractor services, especially so during the next one to two years. We believe that competition is another reason to maintain the accelerated M2 EAP work program, rather than wait. In an environment where several public agencies are competing for talent, there are advantages to issuing RFP's early and locking up the best teams from the most competitive firms at an early stage. We believe the ensuing competition for talent argues in favor of OCTA competing early and well for that talent. Our interviews revealed that OCTA is a preferred client, and the agency should be able to leverage that position to obtain bids from a broad range of highly capable firms.

Broadening the discussion, some interviewees also emphasized the importance of having "shelf- ready" projects that have cleared environmental review and right-of-way acquisition when seeking state and federal funding. Caltrans reports that their internal ability to move environmental review and right-of-way acquisition is constrained, to some extent, but current staffing and budget levels. In that environment, an early start to environmental analysis and right-of-way acquisition could provide advantages. We suggest that OCTA move forward to accelerate environmental and right-of-way work on the M2 EAP projects, with the goal of creating "shelf-ready" projects that will be better able to compete for and obtain matching state or federal

funding. The current market provides favorable conditions for both right-of-way acquisition and environmental analysis, with land prices falling and professional services firms showing increased interest in public sector work. In terms of right-of-way work, a common bottleneck is obtaining court dates for review of right-of-way acquisitions, and OCTA might do what they can to obtain early places on court calendars. We recommend that OCTA give particular attention to accelerating the environmental review and right-of-way elements of all M2 EAP construction projects.

3. Pre-Qualified Vendor Lists

The vendor community seemed receptive to the idea of pre-qualified lists of vendors, who would rotate through a work plan, with some reservations. The vendor community sees advantages in avoiding the cost of preparing multiple proposals. Yet the vendor community is concerned that awards of work should continue to reflect merit, and so rotations should match the amount of work with the relative standing of firms in the proposal evaluation process. As an example, some vendors expressed concern that the top-ranked firm in a rotation or slate might be awarded the first job, which may be small, and then lower ranked firms would get larger jobs. If OCTA moves to a slate or rotation, they should give attention to methods that allocate work in proportion to the relative rankings of firms, or that at least avoid dramatic differences in the sizes of jobs. The slate should contain jobs not only of similar types, but also bundled into packages of similar sizes so that vendors do not perceive elements of randomness in their work load. With that caveat, a rotation or slate of projects might be an advantageous way for OCTA to avoid the expense of multiple project reviews while providing more long-term stability for the vendor community.

4. Legislative or Regulatory Action to Develop New Materials Sites

Should OCTA pursue, either alone or in partnership with other agencies, efforts to develop new materials sites? For a variety of reasons, we do not recommend this as a near-term (e.g. next five years) priority, but longer term OCTA should be aware of the need of regional solutions in the market for construction aggregate. Many materials, most notable steel and fuel, trade in global markets, and there is little that OCTA can do to affect the global dynamics of those markets. Aggregate, due to its high-weight, low-value character, is much more local. The aggregate resources in the Temescal Valley are sufficient to meet demand within the timeframe of the M2 EAP (e.g. the next five years.) Over longer time horizons, permitted aggregate resources will be constrained relative to demand both in the Temescal Valley and likely in other areas of Southern California. OCTA will continue to be a heavy user of construction aggregate, and as such the agency might consider partnering with other public agencies to draw attention to the need for better long-term, regional solutions to maintain sufficient supplies of locally available construction aggregate.

5. Workforce Training

A skilled workforce is essential, especially so for engineering and environmental services, both within OCTA and in partnering agencies and the private sector. As an example, we note that project support costs are 22 percent of the cost of the first phase of the SR-57 improvement, which extends from Orangethorpe to Yorba Linda Boulevard. Those project support costs are primarily engineering, environmental, and (to a lesser extent) public outreach, all of which require skilled professionals who have experience in the industry and, preferably, who have a background in California's regulatory and public infrastructure context. Hence it is in OCTA's interest to do what it can to ensure a steady stream of skilled labor in transportation-related professions in Orange County.

Along those lines, we recommend building links to local universities. UC Irvine is an especially ripe partner. UC Irvine's Institute of Transportation Studies (ITS) provides a ready umbrella and an effective "single point of contact" for multiple degree programs. The university has long- established and highly regarded Masters programs in Civil and Environmental Engineering (an MSCE degree) and Urban and Regional Planning (the MURP degree.) Both degrees turn out graduates with interests and backgrounds in transportation. UC Irvine has also recently established a concurrent Masters degree that combines the Civil and Environmental Engineering and Urban and Regional Planning curriculum. Admissions standards for that degree are high, as students have to satisfy the admissions criteria of both the Civil Engineering and the Planning programs. Students in the concurrent MSCE-MURP pursue a program that combines the technical elements of transportation engineering with the policy focus of an urban planning degree. We anticipate that, going forward, all of these three UC Irvine masters degrees will be good sources of talent for transportation related jobs. Those degree programs are run by two departments – the Civil and Environmental Engineering Department (for the MSCE and also for undergraduate civil engineering degrees) and the Planning, Policy, and Design Department (for the MURP degree), but the transportation faculty in those departments and in other units at UC Irvine (e.g. the Economics Department, which has a strong tradition in Transportation Economics) affiliate with the Institute of Transportation Studies, making that Institute a good contact for the many transportation resources at the university.

We suggest that OCTA pursue formal links with UC Irvine's ITS, in terms of internship programs, student support, regular communication at events such as job fairs, and regular interaction with faculty members and students. Those links should be maintained on a year-to-year basis, to provide a stable environment that can encourage students to pursue transportation careers and to allow OCTA ready access to the best talent at the university.

Beyond that, similar outreach to Cal State Fullerton and local community colleges is also advisable. Looking beyond the County's borders, Cal State Long Beach, USC, and UCLA have strong programs in varying specializations within transportation. Umbrella professional organizations, including the Women's Transportation Seminar (WTS), provide links to all these programs. The Los Angeles Chapter of the WTS compiles an annual resume book for transportation students from a large number of Southern California programs, including UC Irvine, UCLA, USC, and Cal State Long Beach. OCTA should reach out to the WTS and similar organizations to encourage the continuation of those efforts and to take advantage of that resource.

Additionally, OCTA should avail itself of Orange County Workforce Investment Board (OCWIB) and Anaheim and Santa Ana Workforce Investment Boards to access state and federal workforce training funds, as well as statewide initiatives to grow a larger pipeline of engineering workforce talent. Finally, partnership opportunities with K-12 education programs such as the High School Inc Transportation Academy and ACE programs should be considered.

6. Relationship between OCTA and Caltrans

According to officials from both agencies, OCTA and Caltrans have a good working relationship. The two organizations have differences which can influence their approach to project management. Caltrans acts as owner of the state highway system, and so is legally liable for design elements and safety issues extending throughout the life of the infrastructure. According to observers, this might explain a perceived lower willingness on the part of Caltrans to speed the design process by pursuing innovative methods. In short, Caltrans faces an element of legal liability that may inject some caution and some preference for following past procedures in that agency. OCTA, being a county transportation agency, has more autonomy than does Caltrans District 12.

Lastly, Caltrans' internal staffing may be more vulnerable to current state budget crisis, while OCTA, being a multi-purpose agency, has multiple funding streams and a varied mission. Yet those differences across OCTA and Caltrans do not seem to present fundamental obstacles to cooperation. Both agencies have a good record of communication and cooperation with each other. We recommend that OCTA continue regular communication with Caltrans.

We do not suggest major changes in OCTA's working relationship with Caltrans. Some observers have suggested that other local transportation agencies have forged closer relationships with their counterpart Caltrans district office. Our interviewees suggested that, when judged by speed of project delivery and success of outcomes, Orange County has as good of a working relationship with Caltrans as do other local transportation agencies. We suggest that OCTA continue to communicate regularly and fully with Caltrans, and to pursue a partnering stance with the local district office. Having said that, we believe that differences in approach across the two agencies will arise from time to time, and it would be unreasonable to expect otherwise.

7. Overall Conclusions

Our key conclusions to manage market pressures are as follows:

- Maintain the accelerated M2 EAP infrastructure construction program. Global market factors suggest little benefit in deferring or waiting, and the local downturn in the private development market allows an opportunity to pursue projects in an environment that will encourage more competition among vendors.

- In particular, work to move quickly on environmental review and right of way acquisition, with a goal of creating "shelf-ready" approved projects. This will enhance opportunities to obtain state and federal funding. Neighboring counties are pursuing a work plan that, in the next year, will provide some competition for resources. In response, OCTA should move quickly to maintain and enhance

their position as a preferred client, especially among the professional services (engineering and environmental) vendors.

- OCTA should work to maintain and enhance the local talent pool. Part of that involves continued outreach to the vendor community. (The vendor community gives OCTA high marks for their communication and outreach efforts.) OCTA should also be alert to opportunities to partner long-term with universities to support undergraduate and graduate education in engineering, planning, and related fields and to keep transportation careers visible to students. UC Irvine's Institute of Transportation Studies provides a particularly attractive partnering opportunity, and OCTA should make links to umbrella organizations that work to enhance both the size and the skills of the transportation workforce throughout Southern California.

- OCTA should take steps to shield itself from higher fuel prices. The planned conversion of the bus fleet to natural gas is a key step. Shielding construction projects from the effects of higher fuel prices will be more difficult, and OCTA's ability to get relief from high petroleum prices in the construction market might be limited.

- OCTA might consider bundling projects into larger packages or into slates of projects, with vendors who submit successful proposals rotating through the projects in those slates. This would allow vendors to prepare fewer proposals and would allow OCTA to free some time and staff resources currently devoted to proposal evaluation. Yet OCTA should proceed with caution in considering slates or rotations of projects. OCTA should work to maintain a clear link between proposal evaluation and the amount of work that firms receive. If bundling projects into a slate or rotation can give vendors more long term assurances about work flow, while allowing OCTA to devote less time to proposal evaluation, the change might be worthwhile. Rather than recommend that this course of action be pursued, we suggest that OCTA further consider this option.

- OCTA should maintain their current post-award negotiation practices. Vendors report that OCTA is a tough negotiator on price after contracts have been awarded. This has allowed the agency to develop a reputation for selecting vendors based on the quality of the proposal and team, and then obtain good pricing and terms in contract negotiation.

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Appendix A

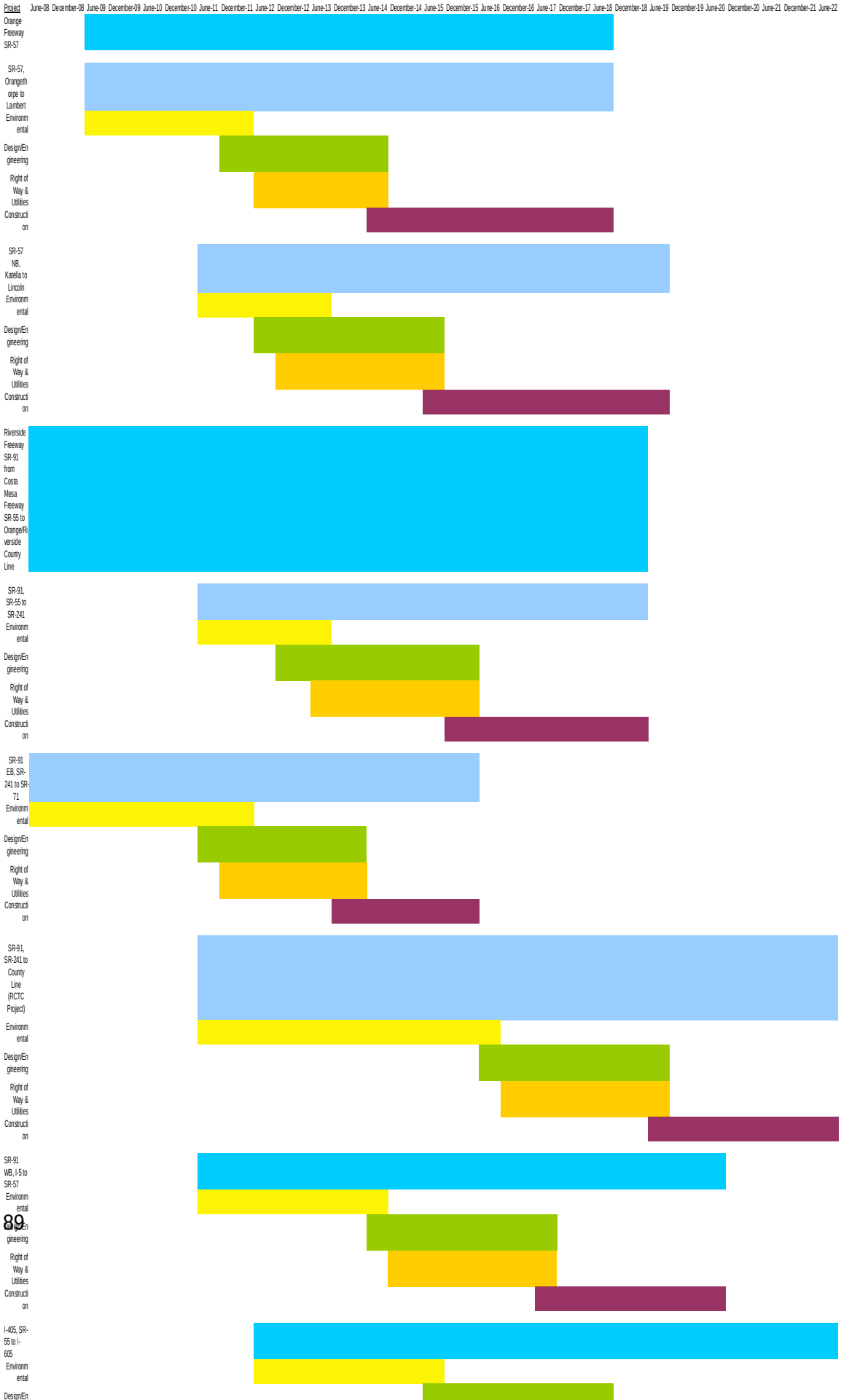
Readiness and Absorption Capacity of Public Agencies

Inventory

Agency	Frequency
Caltrans	13
California Transportation Commission	8
Regional Water Quality Control Boards	8
Army Corps of Engineers	7
Federal Highway Administration	7
Fish and Game	7
Fish and Wildlife	7
Anaheim	5
All Orange County Cities	4
All local jurisdictions (Cities and County)	3
Fullerton	3
Laguna Niguel	3
Mission Viejo	3
San Clemente	3
San Juan Capistrano	3
TCA	3
Dana Point	2
Federal Transit Administration	2
Irvine	2
Laguna Hills	2
Lake Forest	2
Orange	2
BNSF	1
Brea	1

Buena Park	1
California High Speed Rail Authority	1
Cities	1
Costa Mesa	1
County	1
Department of the Navy	1
Fountain Valley	1
Garden Grove	1
Huntington Beach	1
Local Agencies	1
Los Alamitos	1
Metrolink	1
County of Orange Health Care Agency	1
Placentia	1
Private/Non-profit Agencies	1
RCTC	1
Santa Ana	1
Science/Academia	1
Seal Beach	1
Tustin	1
Westminster	1
Yorba Linda	1

Appendix B: Timeline of EAP Projects


Project
June-08
December-08
June-09
December-09
June-10
December-10
June-11
December-11
June-12
December-12
June-13
December-13
June-14
December-14
June-15
December-15
June-16
December-16
June-17
December-17
June-18
December-18
June-19
December-19
June-20
December-20
June-21
December-21
June-22
Orange Freeway SR-57
SR-57, Orangethorpe to Lambert
Environmental
Design/Engineering
Right of Way & Utilities
Construction
SR-57 NB, Katella to Lincoln
Environmental
Design/Engineering
Right of Way & Utilities
Construction
Riverside Freeway SR-91 from Costa Mesa Freeway SR-55 to Orange/Riverside County Line
SR-91, SR-55 to SR-241
Environmental
Design/Engineering
Right of Way & Utilities
Construction
SR-91 EB, SR-241 to SR-71
Environmental
Design/Engineering
Right of Way & Utilities
Construction
SR-91, SR-241 to County Line (RCTC Project)
Environmental
Design/Engineering
Right of Way & Utilities
Construction
SR-91 WB, I-5 to SR-57
Environmental
Design/Engineering
Right of Way & Utilities
Construction
I-405, SR-55 to I-605
Environmental
Design/Engineering

Appendix C

Tables 1-9

Table 1: Caltrans Construction Cost Index, 1972-2007

Year	Annual Index
1972	30
1973	31.2
1974	45.6
1975	46.7
1976	47.7
1977	53.7
1978	62.1
1979	80.1
1980	82.1
1981	90.6
1982	81.3
1983	81.9
1984	93.3
1985	92.7
1986	95
1987	100
1988	104.4
1989	111.3
1990	113.5
1991	108.2
1992	106.8
1993	113.1
1994	119
1995	115
1996	119.2
1997	124.8

1998	128.6
1999	139.2
2000	146.2
2001	154.1
2002	142.2
2003	148.6
2004	216.2
2005	268.3
2006	280.6
2007	261.1

Table 2: Caltrans Average Highway Contract Prices, 1972-2007

Year	Roadway Excavation (1) per cu yd	Aggregate Base per ton	Asphalt Concrete Pavement per ton	PCC Pavement per cu yd	Class "A" PCC Structure per cu yd	Bar Reinforcing Steel per lb	Structural Steel (2) per lb
1972	$0.95	3.21	8.22	19.23	82.08	0.159	0.446
1973	$0.75	3.14	9.02	19.24	93.6	0.169	0.635
1974	$1.26	4.23	13.01	28.59	115.19	0.329	0.987
1975	$1.19	4.7	14.24	30.63	132.1	0.239	0.838
1976	$1.32	4.7	13.67	29.64	143.05	0.223	0.504
1977	$1.76	5.44	15.15	35.17	150.03	0.239	1.228
1978	$1.85	6.18	17.7	41.77	180.77	0.276	0.814
1979	$2.36	7.49	22.4	52.39	234.24	0.383	1.96
1980	$2.10	8.38	25.51	55.18	235.45	0.378	1.942
1981	$3.14	8.63	28.53	59.45	226.84	0.386	2.091
1982	$2.58	7.56	24.69	57.1	224.72	0.32	2.155
1983	$2.10	9.2	27.57	52.04	225.84	0.335	2.155
1984	$3.19	13.67	28.38	55.79	238.48	0.375	2.155
1985	$2.77	11.55	30.15	64.13	232.39	0.413	2.288
1986	$3.01	12.76	28.82	60.49	249.74	0.412	2.388
1987	$2.97	17.57	27.54	70.62	280.4	0.418	2.546
1988	$4.16	10.13	27.46	58.66	284.55	0.44	3.956
1989	$4.19	10.62	29.43	73.78	303.49	0.483	3.103
1990	$4.73	12.05	30.77	68.93	295.24	0.469	2.209
1991	$3.08	10.07	33.43	62.64	295.21	0.431	2.284
1992	$3.62	9.76	32.46	66.78	265.31	0.419	3.073
1993	$4.53	9.89	35.41	66.76	243.79	0.464	2.706
1994	$4.68	10.39	37.15	66.45	277.92	0.547	2.334

1995	$4.10	10.18	35.29	63.85	298.8	0.499	2.266
1996	$3.80	9.74	37.66	65.93	321.88	0.512	2.172
1997	$5.25	10.29	36.07	78.48	308.54	0.496	2.337
1998	$4.95	11.55	38.78	75.91	319.95	0.553	2.595
1999	$6.55	12.86	40.14	77.95	321.22	0.521	3.215
2000	$6.21	11.14	45.12	78.14	363.59	0.507	2.754
2001	$5.83	14.58	43.89	75.74	425.17	0.612	3.906
2002	$4.84	12.42	49	74.15	363.5	0.508	3.248
2003	$5.05	15.05	48.35	109.96	362.75	0.6	1.71
2004	$13.11	16.97	53.55	135.94	399.64	0.947	5.39
2005	$14.13	20.61	75.72	171.22	567.31	0.968	2.666
2006	$12.80	20.26	86.04	179.67	630.16	1.039	3.734
2007	$10.84	20.54	85.48	204.69	566.25	0.935	6.966

Table 3: Summary, California Annual Price Models, Levels

	CCI	ROAD	Aggregate	Asphalt	PCC	CLA Pcc	BarSteel	StrucSteel	Number times Ind Var is Significant	Number Significant 5% or better level	Number Significant, > 5% and correct sign
t-1 Dependent	+				+				2	2	2
t-2 Dependent					-				1	1	1
Lag Dep Var									3	3	3
cabp	+	+, 10			+				3	2	2
cabpt1	+		+, 10			+, 10	+		4	2	2
cabpt2	+	+,10		+,10			+	+	5	3	3
Bldg Permit									12	7	7
caincome	+				+				2	2	2
caincomet1			+,10		-				2	1	0

caincomet2	-	-				-,10	-,10	-,10	5	2	0
Income									9	5	2
catotemp	-	-		-,10	-	-,10	-		6	4	0
catotempt1	-,10				+				2	1	1
catotempt2								+,10	1	0	0
Employment									9	5	1
capop	+	+		+,10	+				4	3	3
capopt1			+,10		-	+,10			3	1	0
capopt2	+				+				2	2	2
Population									9	6	5

Note: Correct sign is positive or negative for lagged dependent variable, and positive for other variables.

Table 4: Summary, California Annual Price Models, Changes

	CCI	ROAD	Aggregate	Asphalt	PCC	CLA Pcc	BarSteel	StrucSteel	Number times Ind Var is Significant	Number Significant 5% or better level	Number Significant, > 5% and correct sign
t-1 Dependent	+	+,10	+,10		+	+		-,10	6	3	3
t-2 Dependent	-								1	1	1
Lag Dep Var									7	4	4
cabpch	+		-						2	2	1
cabpcht1	+	+	+		+,10				4	3	3
cabpcht2	+	+,10							2	1	1
Bldg Permit									8	6	5
caincomech	+								1	1	1
caincomecht1			+						1	1	1
caincomecht2	-								1	1	0
Income									3	3	2
catotempch	-		-,10						2	1	0
catotempcht1									0	0	0
catotempcht2									0	0	0
Employment									2	1	0
capopch	+								1	1	1
capopcht1			+	+,10	+	+,10			4	2	2
capopcht2		+	-		-,10			+	3	2	1
Population									8	5	4

Note: Correct sign is positive or negative for lagged dependent variable, and positive for other variables.

Table 5: Summary, Los Angeles Metropolitan Annual Price Models, Levels

	Asphalt	Cement	Gravel, > ¾"	Gravel, < ¾"	Sand	Const Costs	Building Costs	Steel Beams	Steel I Beams	Number Significant	Number Significant 5% or better level	Number Significant, > 5% and correct sign
t-1 Dependent		+,10							+	+	3	2	2
t-2 Dependent	-		-	-	-				-	-	6	6	6
Lag Dep Var											9	8	8
cabp						+					1	1	1
cabpt1				+,10	+				+	+	4	3	3
cabpt2					+	+			-		3	3	2
Bldg Permit											8	7	6
caincome	+		+		+			+	+	+	6	6	6
caincomet1											0	0	0
caincomet2										-	1	1	0
Income											7	7	6
catotemp					-			-	-	-	4	4	0
catotempt1					+						1	1	1
catotempt2			-,10			+			-,10		3	1	1
Employment											8	6	2
capop			+		+					-	2	2	2
capopt1	-,10								-		2	1	0
capopt2				+	-	+					3	3	2
Population											7	6	4

Note: Correct sign is positive or negative for lagged dependent variable, and positive for other variables.

Table 6: Summary, Los Angeles Metropolitan Annual Price Models, Levels

	Asphalt	Cement	Gravel, > ¾"	Gravel, < ¾"	Sand	Const. Costs	Building Costs	Steel Beams	Steel I Beams	Number Significant	Number Significant 5% or better level	Number Significant, > 5% and correct sign
t-1 Dependent	+	+,10		+		+	+,10	+	+	7	5	5
t-2 Dependent				-				-		2	2	2
Lag Dep Var										9	7	7
cabpch	-				-,10	+				3	2	1
cabpcht1	+			+,10				+,10	+	4	2	2
cabpcht2	+				+,10				+,10	3	1	1
Bldg Permit										10	5	4
caincomech	+				+,10		+,10			3	1	1
caincomet1				+,10						1	0	0
caincomecht2										0	0	0
Income										4	1	1
catotempch	-		-,10							2	1	0
catotempcht1				-		-				2	2	0
catotempcht2				+		+,10				2	1	1
Employment										6	4	1
capopch				-,10	+,10	+,10				3	0	0
capopcht1										0	0	0
capopcht2			-,10			+				2	1	1
Population										5	1	1

Note: Correct sign is positive or negative for lagged dependent variable, and positive for other variables.

Table 7: Building Permits in California and Metropolitan Los Angeles, 1983-2007

Year	California, New Residential Building Permits	Metropolitan Los Angeles, New Residential Building Permits
1983	172,467	69,789
1984	224,601	98,984
1985	271,347	120,869
1986	314,626	160,308
1987	251,776	124,640
1988	253,312	132,013
1989	237,688	115,822
1990	163,175	68,340
1991	105,956	40,755
1992	97,781	34,977
1993	84,341	28,200
1994	96,982	35,674
1995	83,864	28,796
1996	92,060	32,587
1997	109,589	39,614
1998	124,035	42,882
1999	138,039	51,638
2000	145,575	54,944
2001	146,739	57,775
2002	159,573	63,249
2003	191,948	75,970
2004	207,390	89,865
2005	205,020	86,160
2006	160,502	73,838
2007	103,180	47,509

Table 8: Predicted Change in California CCI and L.A. Const Cost Index

	Caltrans CCI				L.A. Construction Cost Index			
	High	Low	% change, high	% change, low	High	Low	% change, high	% change, low
2008	246.5878343	217.3594743	-5.56%	-16.75%	9037.855	8874.702	0.07%	-1.73%
2009	254.9211875	185.0680544	3.38%	-14.86%	9064.858	8682.019	0.30%	-2.17%
2010	270.8075153	168.712184	6.23%	-8.84%	9070.402	8534.747	0.06%	-1.70%
2011	283.2144239	166.637938	4.58%	-1.23%	9113.679	8527.684	0.48%	-0.08%
2012	284.0331766	163.8446	0.29%	-1.68%	9085.465	8477.542	-0.31%	-0.59%

Note: Actual 2007 levels are 261.1 for the Caltrans CCI and 9031.15 for the L.A. CCI. Predicted levels are based on coefficients from regression models in Tables A-1 through A-4 and percentage changes in California and Los Angeles permitting levels that correspond to the percentage changes from 1991 forward.

Table 9:

	Percent Change in Bldg Permits, CBIA	Predicted Percent Change in CCI	Percent Change in Bldg Permits, 7% growth assumption	Predicted Percent Change in CCI	Percent Change in Bldg Permits, zero growth in 2008	Predicted Percent Change in CCI	Percent Change in Bldg Permits, Cal Dept Finance with CBIA deferred to 2009	Predicted Percent Change in CCI
2007	-35.71%	-15.66%	-35.71%	-16.81%	-35.71%	-19.14%	-35.71%	-29.81%
2008	10.45%	-4.94%	7%	-7.24%	0%	-10.57%	-32%	-19.24%
2009	10.45%		7%	7.00%	4%	2.67%	10%	-4%
2010			7%		4%		10%	8.33%
2011							5%	

Note: 2007 percent change in California building permits (-35.71%) is actual. Other years are forecast or assumed percentage change. Resulting predicted percentage change in Caltrans CCI is shown in table.

Appendix D

Figures 1-21

Figure 1

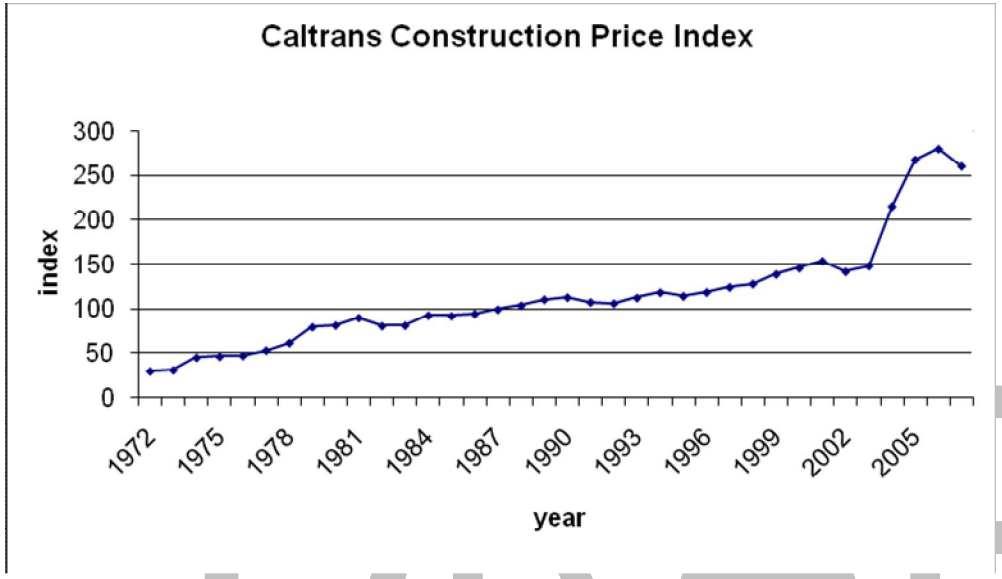


Figure 2

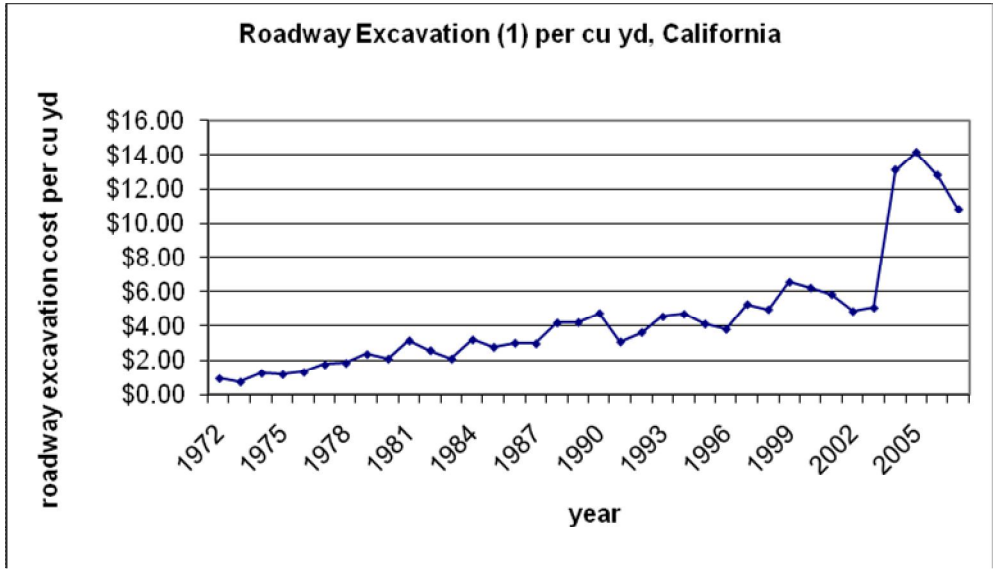

Roadway Excavation (1) per cu yd, California
roadway excavation cost per cu yd
$16.00
$14.00
$12.00
$10.00
$8.00
$6.00
$4.00
$2.00
$0.00
1972
1975
1978
1981
1984
1987
1990
1993
1996
1999
2002
2005
year

Figure 3

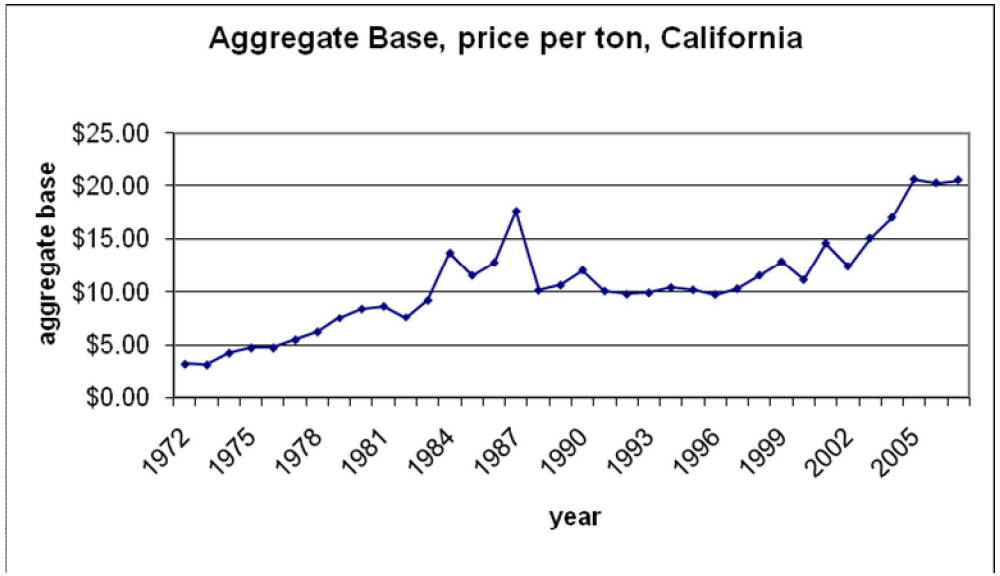


Figure 4

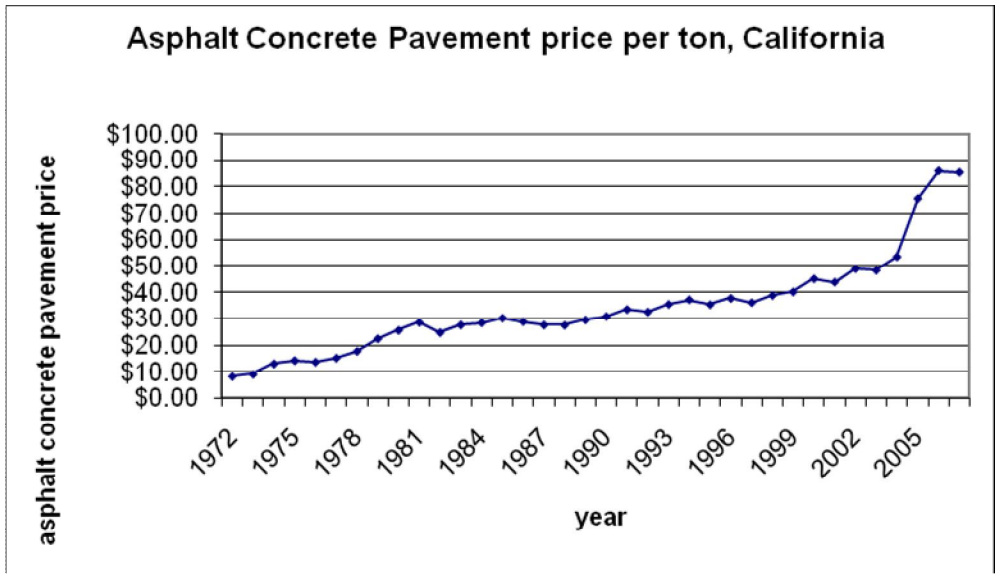

Asphalt Concrete Pavement price per ton, California
asphalt concrete pavement price
$100.00
$90.00
$80.00
$70.00
$60.00
$50.00
$40.00
$30.00
$20.00
$10.00
$0.00
1972
1975
1978
1981
1984
1987
1990
1993
1996
1999
2002
2005
year

Figure 5

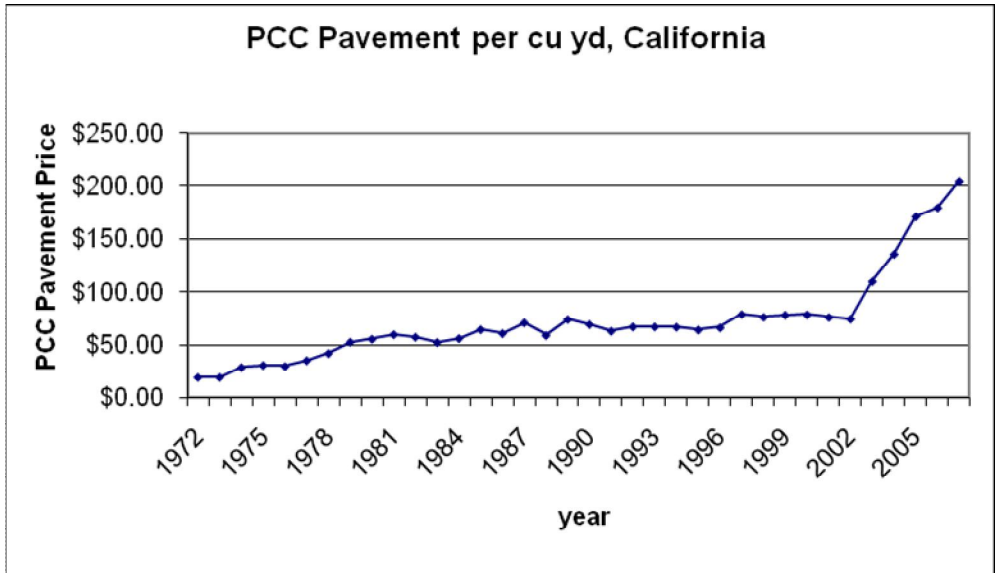


Figure 6

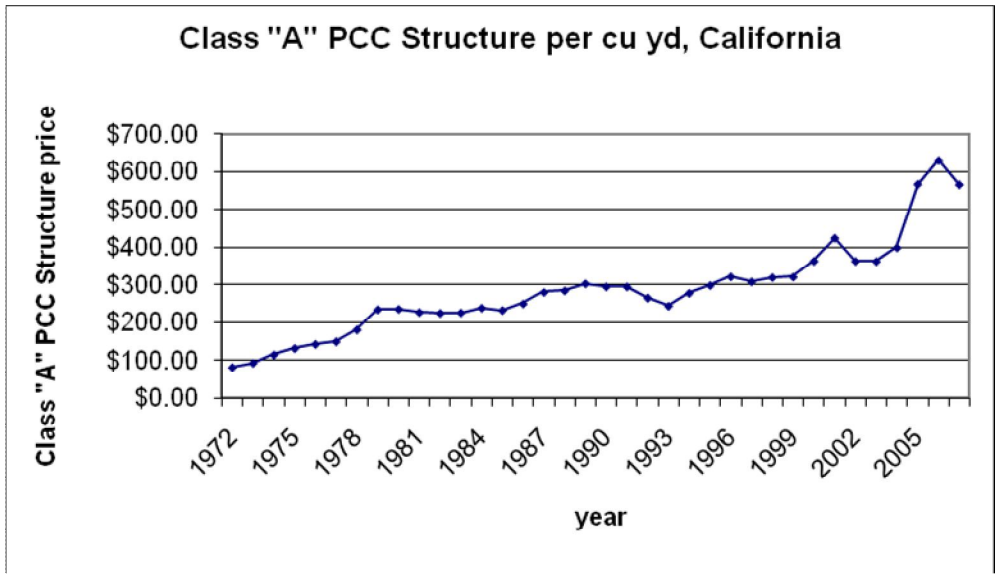

Class "A" PCC Structure per cu yd, California
Class "A" PCC Structure price
$700.00
$600.00
$500.00
$400.00
$300.00
$200.00
$100.00
$0.00
1972
1975
1978
1981
1984
1987
1990
1993
1996
1999
2002
2005
year

Figure 7

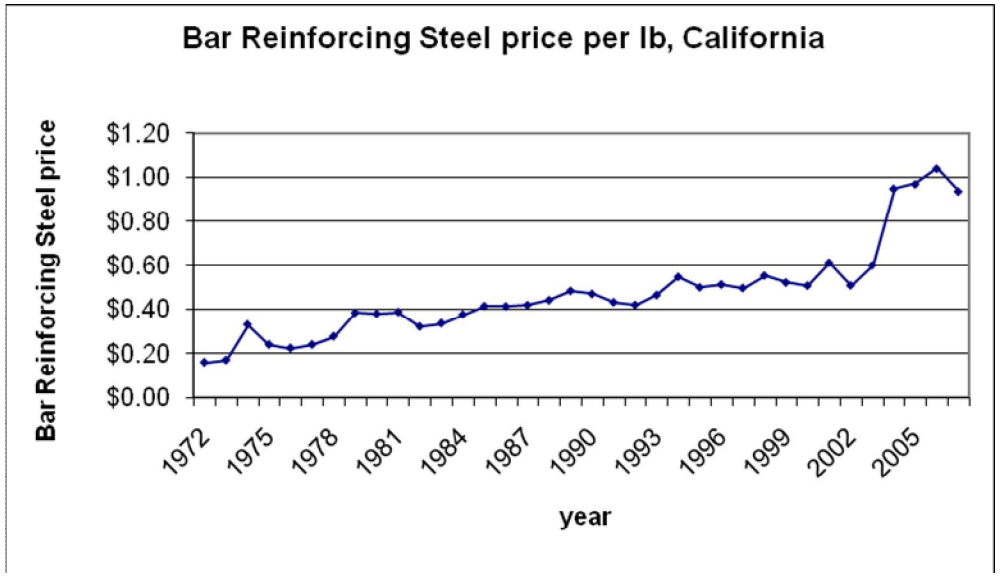


Figure 8

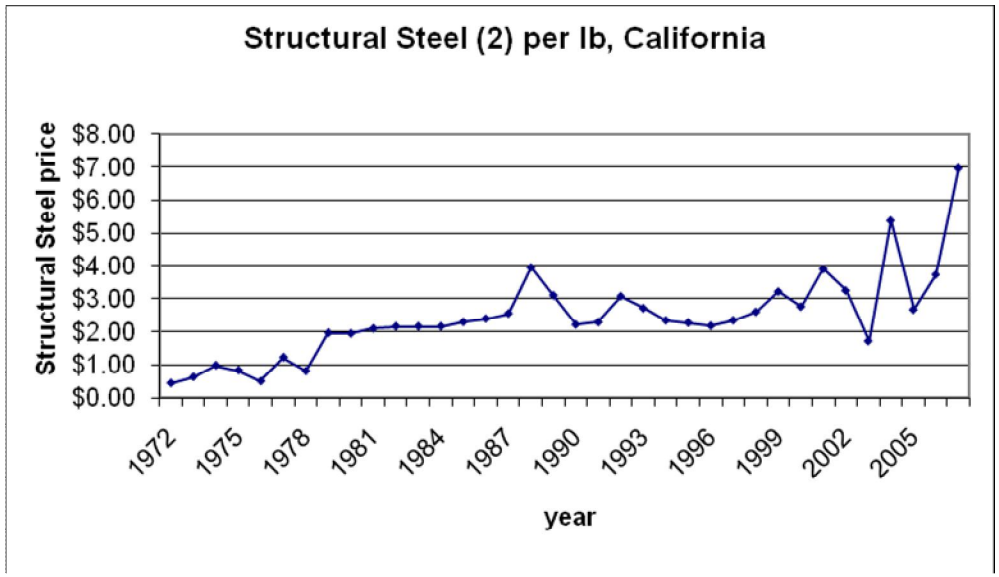

Structural Steel (2) per lb, California
Structural Steel price
$8.00
$7.00
$6.00
$5.00
$4.00
$3.00
$2.00
$1.00
$0.00
1972
1975
1978
1981
1984
1987
1990
1993
1996
1999
2002
2005
year

Figure 9

Figure 10

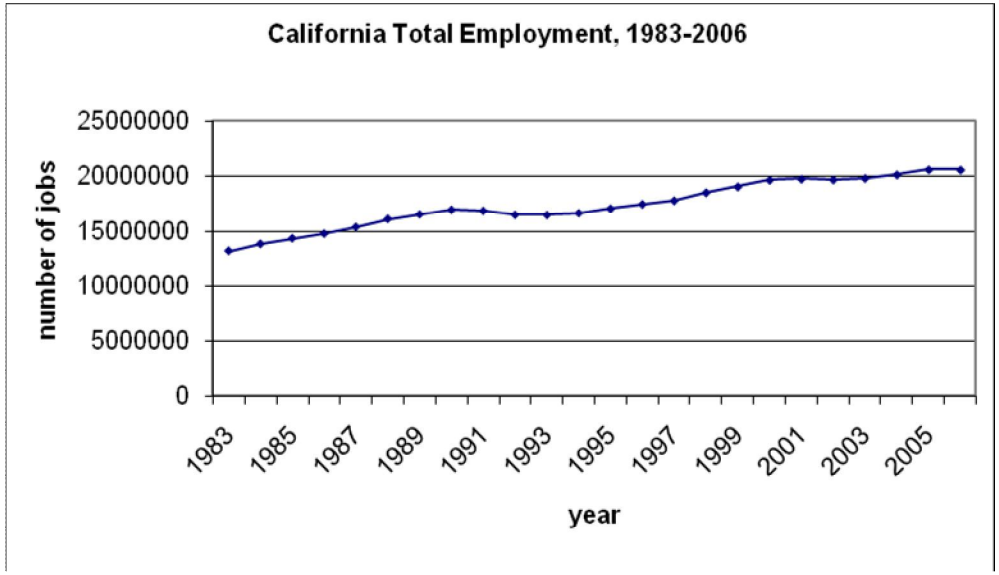

California Total Employment, 1983-2006
number of jobs
25000000
20000000
15000000
10000000
5000000
0
1983
1985
1987
1989
1991
1993
1995
1997
1999
2001
2003
2005
year

Figure 11

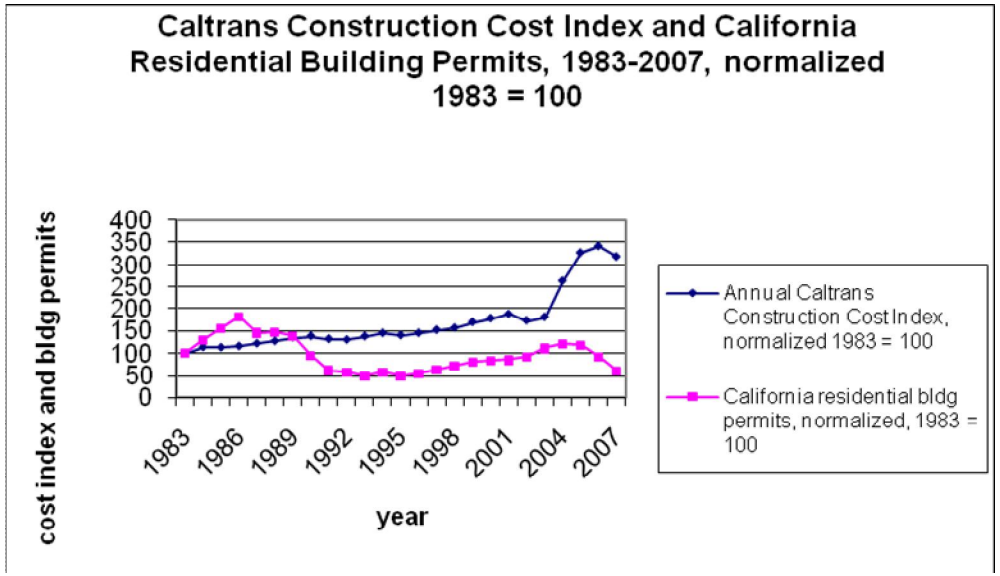


Figure 12

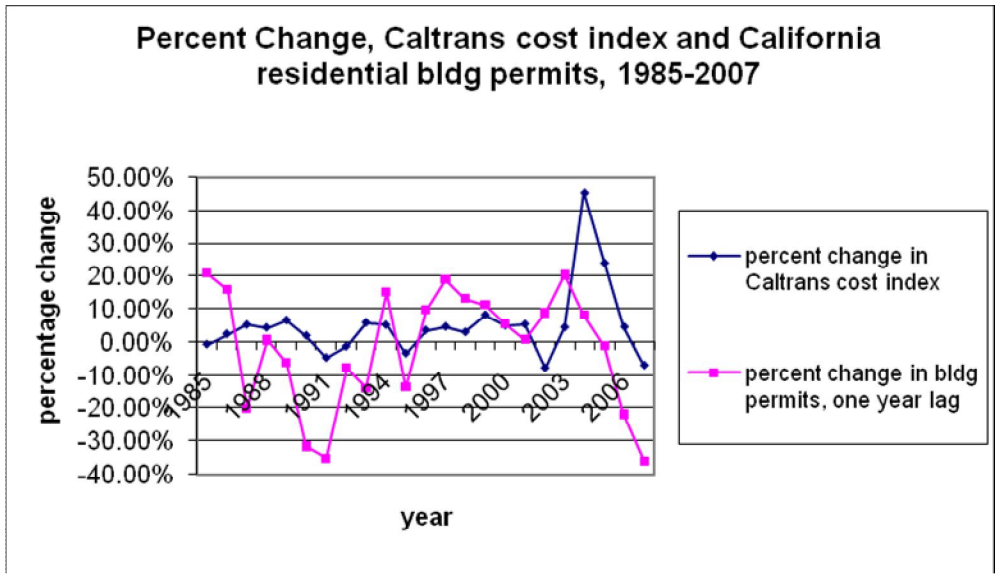

Percent Change, Caltrans cost index and California residential bldg permits, 1985-2007
percentage change
50.00%
40.00%
30.00%
20.00%
10.00%
0.00%
-10.00%
-20.00%
-30.00%
-40.00%
1985
1988
1991
1994
1997
2000
2003
2006
year
percent change in Caltrans cost index
percent change in bldg permits, one year lag

Figure 13

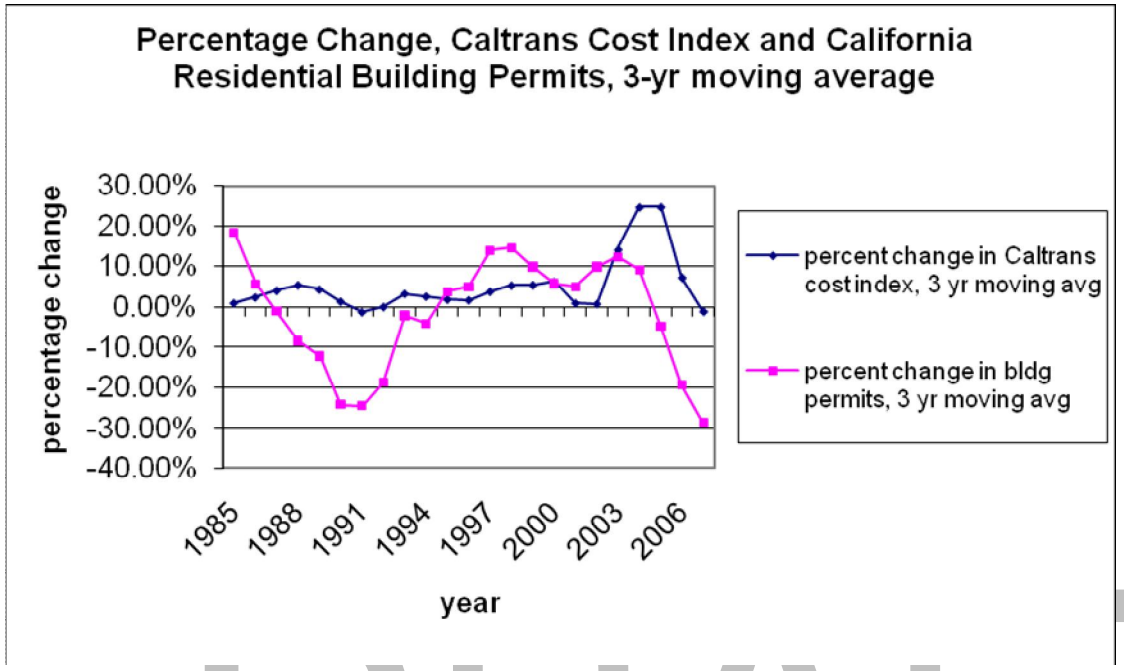


Figure 14

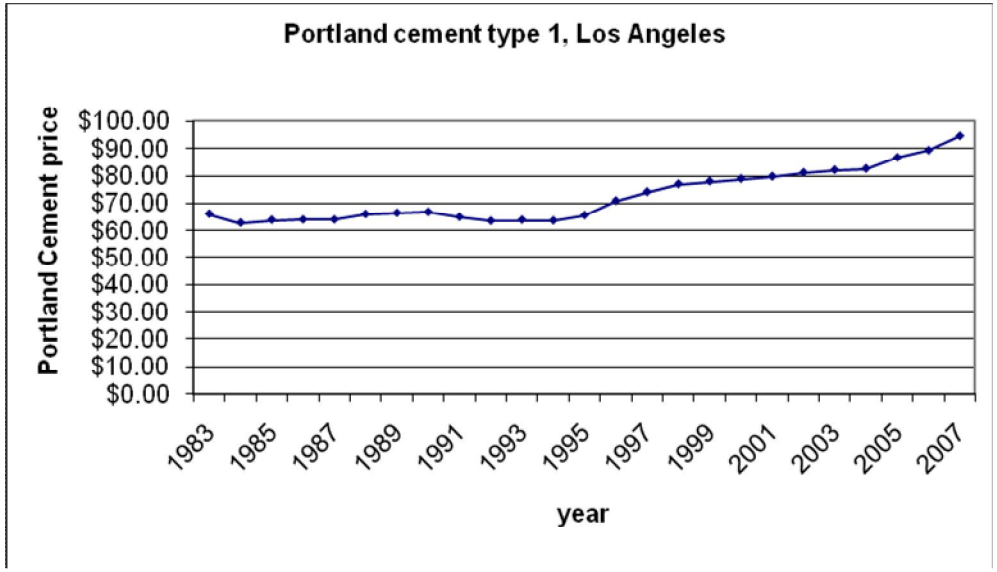

Portland cement type 1, Los Angeles
Portland Cement price
$100.00
$90.00
$80.00
$70.00
$60.00
$50.00
$40.00
$30.00
$20.00
$10.00
$0.00
1983
1985
1987
1989
1991
1993
1995
1997
1999
2001
2003
2005
2007
year

Figure 15

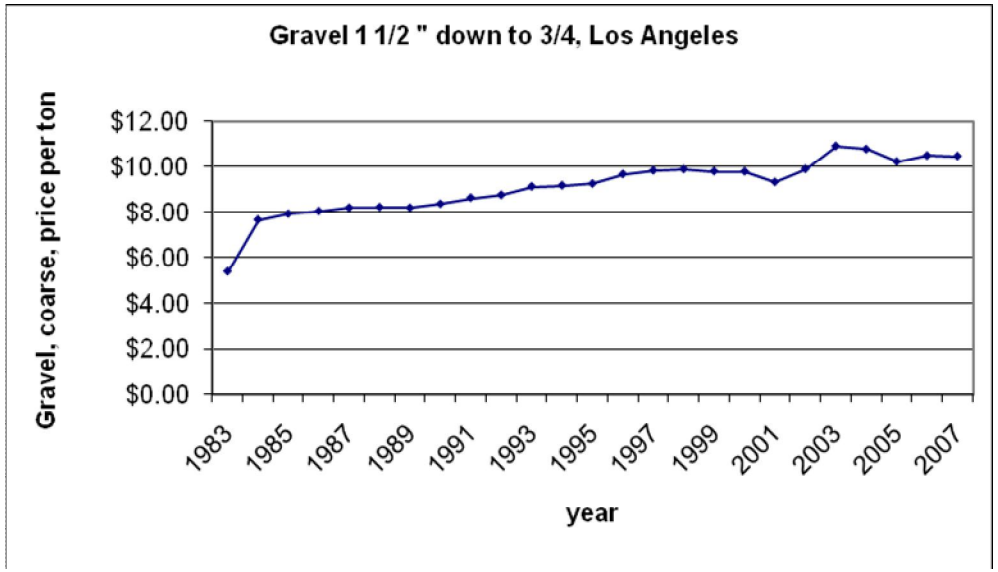


Figure 16

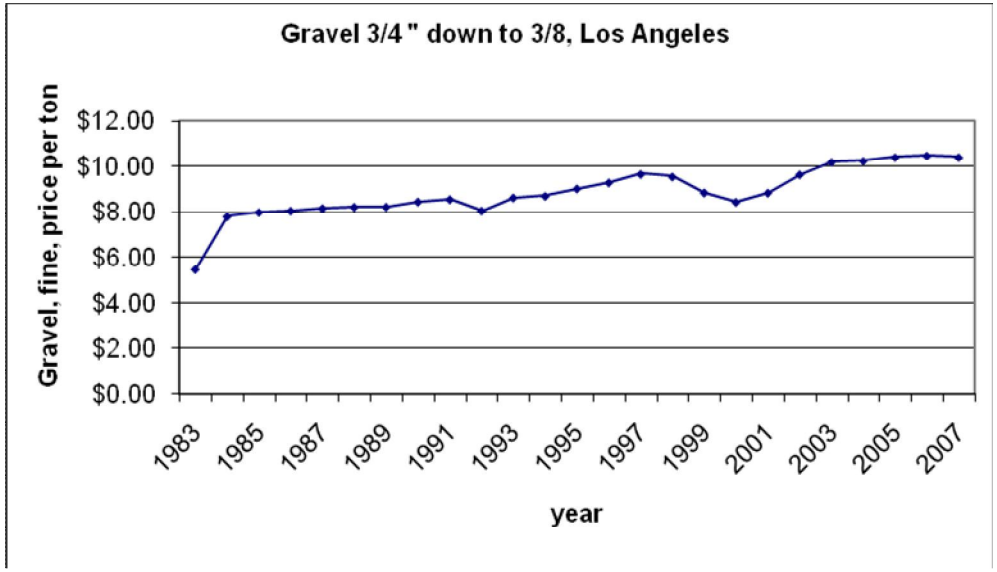

Gravel 3/4 " down to 3/8, Los Angeles
Gravel, fine, price per ton
$12.00
$10.00
$8.00
$6.00
$4.00
$2.00
$0.00
1983
1985
1987
1989
1991
1993
1995
1997
1999
2001
2003
2005
2007
year

Figure 17

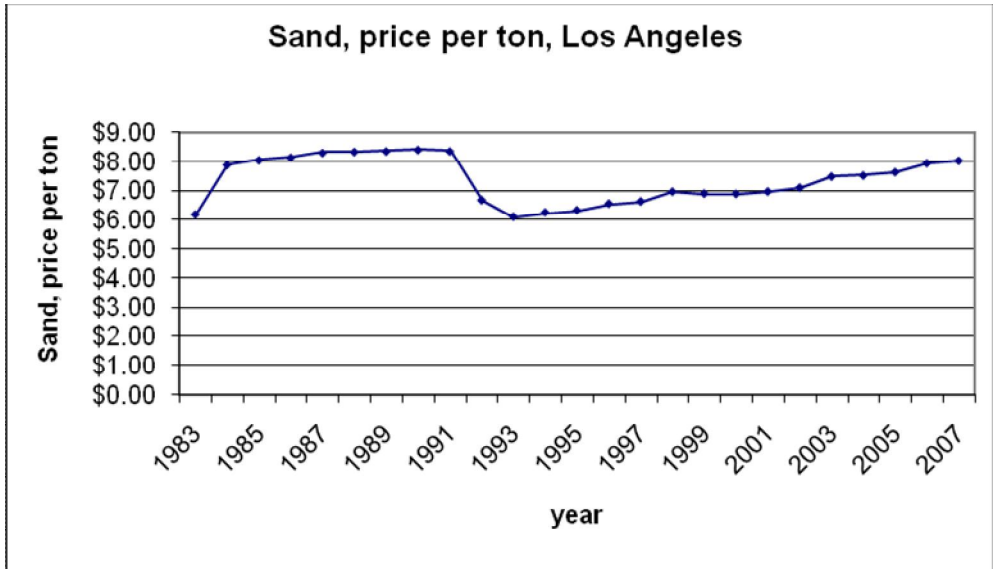


Figure 18


Construction cost index, Los Angeles
Const Cost Index
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
1983
1985
1987
1989
1991
1993
1995
1997
1999
2001
2003
2005
2007
year

Figure 19

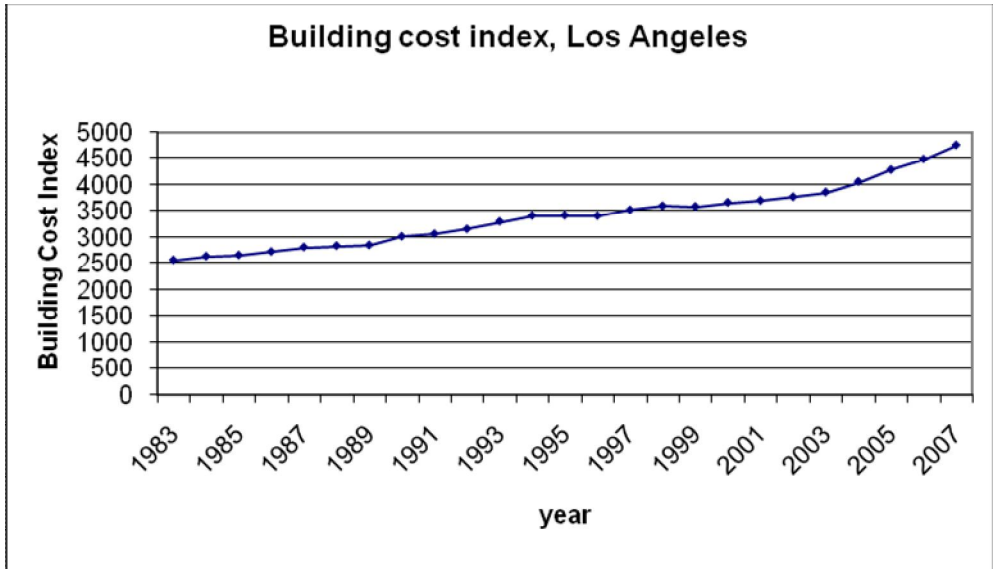


Figure 20

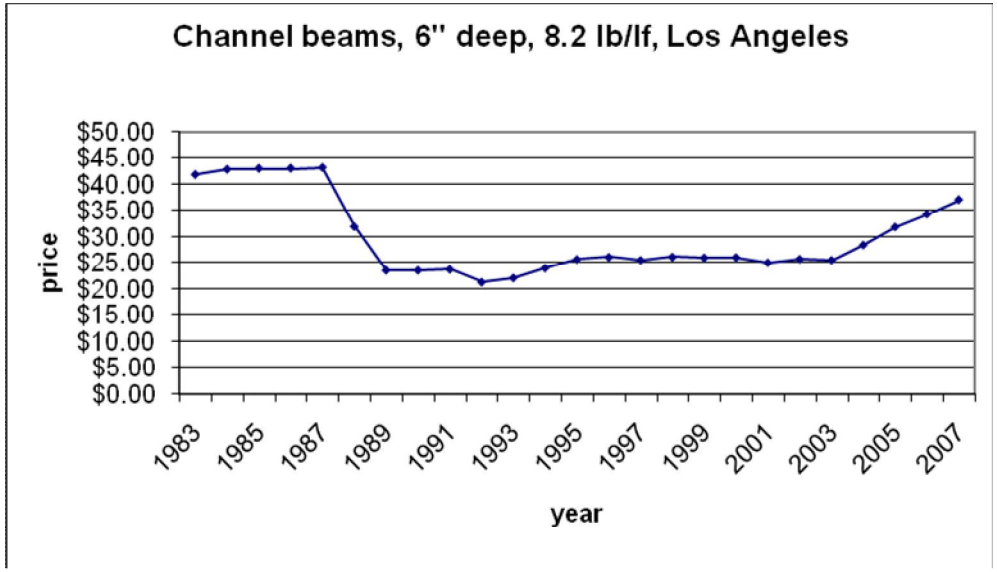

Channel beams, 6" deep, 8.2 lb/lf, Los Angeles
price
$50.00
$45.00
$40.00
$35.00
$30.00
$25.00
$20.00
$15.00
$10.00
$5.00
$0.00
1983
1985
1987
1989
1991
1993
1995
1997
1999
2001
2003
2005
2007
year

Figure 21

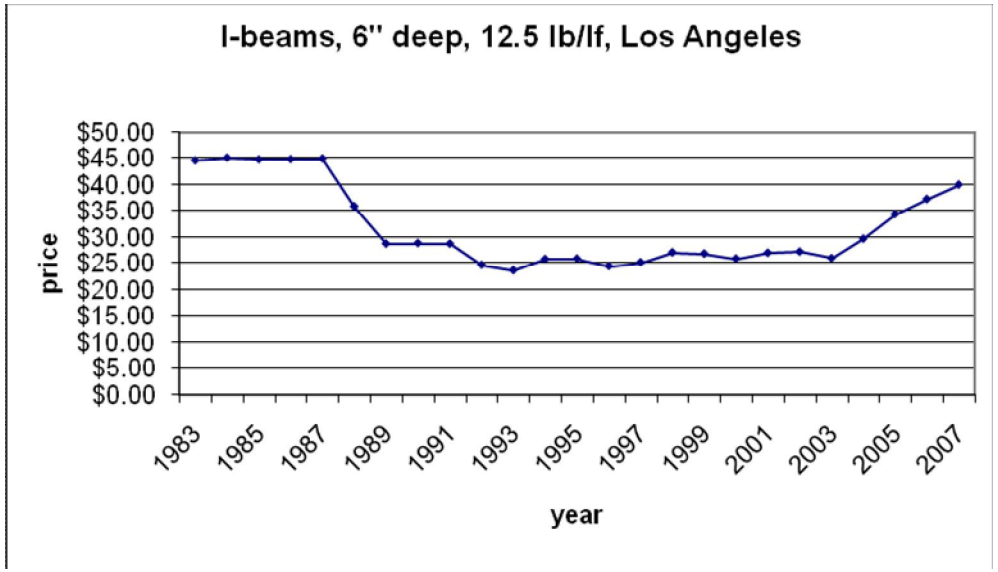
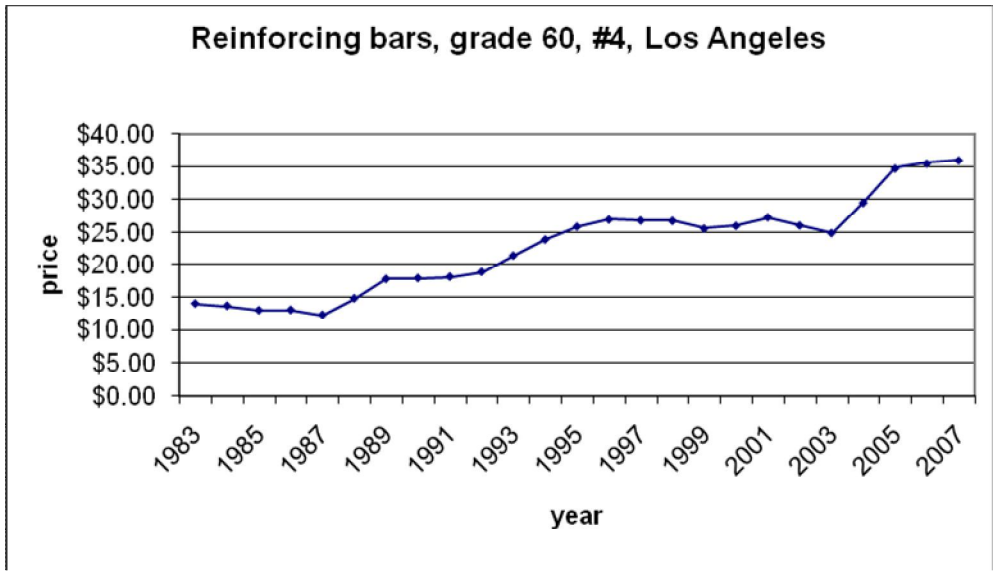


Figure 22


Reinforcing bars, grade 60, #4, Los Angeles
price
$40.00
$35.00
$30.00
$25.00
$20.00
$15.00
$10.00
$5.00
$0.00
1983
1985
1987
1989
1991
1993
1995
1997
1999
2001
2003
2005
2007
year

Appendix E

Regression Tables and Results

Table A-1: California (Caltrans data) Annual Regression Models, Levels, dependent variables are top of columns

	CCI	ROAD	Aggregate	Asphalt	PCC	CLA Pcc	BarSteel	StrucSteel
t-1 Dependent	0.5711669***	0.2517363	-0.4352737	0.9801881	1.238974***	0.4556347	-0.1403586	-0.3431048
	0.099096	0.2013711	0.3536988	0.6049559	0.1793922	0.3407749	0.2476862	0.295058
t-2 Dependent	-0.2216165	0.136828	-0.221711	-2.621972*	-0.3015734	0.0822568	-0.0047803	0.1832671
	0.1673799	0.496557	0.1889734	1.19388	0.2126642	0.4735048	0.3816877	0.395533
cabp	0.0002946***	0.0000483*	-0.0000263	0.0000136	0.0002569***	0.0000381	1.34E-06	0.0000263
	0.0000745	0.0000239	0.0000153	0.0000778	0.0000673	0.0002524	0.00000105	0.0000144
cabpt1	0.0003159***	0.0000244	0.000046*	0.0000263	0.0000869	0.0006886*	0.000002*	-2.23E-05
	0.0000611	0.000015	0.0000218	0.0000552	0.0000729	0.0003034	0.000000919	0.0000136
cabpt2	0.0003381***	0.0000213*	0.0000129	0.0001352*	0.0000334	0.0003785	0.00000213**	0.0000252**
	0.0000553	0.0000104	0.0000273	0.0000637	0.0000565	0.0002387	0.000000753	0.0000086
caincome	0.000000277**	2.18E-08	7.43E-09	1.13E-07	0.000000287**	-2.09E-07	1.47E-09	8.67E-09
	7.96E-08	2.22E-08	1.74E-08	1.59E-07	8.95E-08	0.000000439	1.08E-09	1.25E-08
caincomet1	-1.07E-07	-7.07E-11	0.0000000476*	1.21E-07	-0.000000602***	9.22E-07	-7.46E-10	2.39E-08
	7.96E-08	2.74E-08	2.10E-08	0.00000012	0.000000125	0.000000642	1.27E-09	2.28E-08
caincomet2	-0.000000697***	-0.0000000846**	1.09E-09	-1.33E-07	6.65E-08	-0.000000984*	-0.00000000345*	-0.0000000498*
	0.000000111	2.98E-08	2.25E-08	9.09E-08	9.62E-08	0.000000424	1.61E-09	2.24E-08
catotemp	-0.0000604***	-0.00000586**	-1.91E-06	-0.0000227*	-0.0000424***	-0.0000859*	-0.000000364**	1.83E-07
	0.00000816	0.00000204	0.00000205	0.0000113	0.00000973	0.0000412	0.000000116	0.00000151
catotempt1	0.0000203*	1.51E-06	-2.15E-06	1.19E-06	0.0000418***	0.00009	1.30E-07	-3.48E-06
	0.00000997	0.00000295	0.00000287	0.00000969	0.0000114	0.0000592	0.000000146	0.00000213

catotempt2	0.0000148	2.17E-06	-2.85E-06	-5.71E-06	-0.00000026	-0.0000818	3.11E-08	0.00000389*
	0.00000988	0.00000256	0.00000209	0.00000742	0.00000884	0.0000438	0.000000144	0.00000171
capop	0.0000259***	0.00000413**	6.91E-07	0.0000193*	0.0000222**	-0.0000441	1.23E-07	6.01E-07
	0.00000546	0.00000163	0.00000157	0.00000866	0.00000767	0.0000442	8.78E-08	0.00000123
capopt1	-1.75E-06	2.90E-08	0.00000452*	-0.0000262	-0.0000356***	0.0001381*	-3.02E-08	-3.21E-06
	0.00000934	0.00000234	0.00000233	0.0000226	0.00000919	0.000063	0.000000133	0.00000169
capopt2	0.0000482**	3.31E-06	-4.87E-06	0.0000216	0.000038**	-0.00000604	3.29E-07	3.77E-06
	0.0000137	2.79E-06	0.00000319	0.0000177	0.000011	0.0000607	0.000000203	0.0000022
N	22	22	22	22	22	22	22	22
R Sq.	0.9979	0.9874	0.9836	0.9957	0.9988	0.9968	0.9697	0.9014

Note: Standard errors are below coefficients. P-values indicated by: *<.10, **<.05, ***<.01. All models correct for first-order serially correlated error using Cochrane-Orcutt.

Table A-2: California (Caltrans data) Annual Regression Models, Changes, dependent variables are top of columns

	CCI	ROAD	Aggregate	Asphalt	PCC	CLA Pcc	BarSteel	StrucSteel
t-1 Dependent	1.362824***	0.5646593*	0.7322777*	0.6234569	1.208272***	1.328835**	0.411899	-0.7901623**
	0.1686558	0.2573037	0.304771	0.4832289	0.2928558	0.4761318	0.2558231	0.2498901
t-2 Dependent	-0.6059442**	-0.0745179	0.2008198	1.06381	0.3784597	-0.1039486	0.2765486	-0.0497278
	0.2503668	0.3759565	0.2655266	0.7688665	0.3858327	0.7603299	0.4783119	0.2540172
cabpch	0.0001946**	2.40E-05	-0.0000467***	0.00000135	0.0000881	-0.0001469	7.64E-07	0.00000491
	0.0000736	0.000014	0.0000085	0.0000518	0.0000961	0.0003258	8.57E-07	0.00000535
cabpcht1	0.0003084***	0.000037**	0.000062**	-1.04E-05	0.0001773*	0.0004204	1.50E-06	-2.46E-06
	0.0000761	0.0000143	0.0000181	0.0000518	0.0000912	0.0003333	9.29E-07	0.00000533
cabpcht2	0.0003297**	0.0000433*	0.00000723	-0.0000503	-9.70E-05	0.0001353	1.38E-06	-1.22E-05
	0.0000936	0.0000185	0.0000223	0.0000686	0.0001038	0.0003012	0.00000095	0.00000764
caincomech	0.000000366**	4.14E-08	-5.65E-10	-1.02E-07	-7.83E-08	-4.28E-07	1.97E-09	-4.34E-09
	0.000000154	2.57E-08	1.57E-08	1.17E-07	1.75E-07	5.85E-07	1.67E-09	1.11E-08
caincomecht1	-3.82E-08	-1.01E-08	0.0000000582**	1.95E-08	-5.52E-08	8.54E-07	4.00E-10	9.58E-09
	0.000000139	2.68E-08	1.94E-08	9.37E-08	1.37E-07	6.44E-07	1.27E-09	1.06E-08
caincomecht2	-0.000000478**	-4.77E-08	-1.89E-08	1.86E-07	-2.08E-07	-6.49E-07	-1.30E-09	2.72E-09
	0.000000173	3.43E-08	1.86E-08	1.03E-07	1.73E-07	6.19E-07	1.59E-09	1.40E-08
catotempch	-0.0000526**	-5.60E-06	-0.00000305*	1.73E-05	-0.00000761	0.0000242	-1.98E-07	1.25E-06
	0.0000177	3.39E-06	0.00000159	0.0000125	0.0000174	0.0000618	1.55E-07	0.00000133
catotempcht1	1.81E-05	2.27E-06	-2.77E-06	-1.46E-06	2.64E-08	0.00003	7.90E-08	4.40E-07
	0.0000112	2.09E-06	0.00000237	0.00000858	0.0000173	0.0000679	1.13E-07	0.000000863
catotempcht2	-0.00000846	-7.08E-07	-1.29E-06	-5.62E-06	4.83E-06	-0.0000575	-1.68E-07	-6.47E-07
	0.0000128	2.41E-06	0.0000017	0.00000941	0.0000172	0.0000625	1.26E-07	0.000000978
capopch	0.000026**	2.75E-06	9.63E-07	-0.00000864	0.0000116	-0.0000857	5.78E-08	1.34E-06
	0.00000884	1.62E-06	0.00000135	0.00000835	0.0000125	0.0000828	9.66E-08	0.000000726

capopcht1	-0.00000228	-1.94E-06	0.00000393**	0.0000241*	0.0000406**	0.0001395*	-2.86E-08	-2.71E-06
	0.0000159	3.06E-06	1.65E-06	0.0000125	0.0000168	0.0000692	1.37E-07	1.11E-06
capopcht2	0.0000546	0.00001**	-0.00000668**	0.00000708	-0.0000436*	0.00000438	0.00000033	0.00000453**
	0.0000207	3.51E-06	0.00000218	0.0000135	0.0000193	0.0000998	2.54E-07	0.00000153
N	22	22	22	22	22	22	22	22
R Squared	0.9809	8.55E-01	9.91E-01	0.9361	0.99	0.9893	8.64E-01	9.26E-01

Note: Standard errors are below coefficients. P-values indicated by: *<.10, **<.05, ***<.01. All models correct for first-order serially correlated error using Cochrane-Orcutt.

Table A-3: Los Angeles (ENR data) Annual Regression Models, Levels, dependent variables are top of columns

	Asphalt	Cement	Gravel, > 3/4"	Gravel, < 3/4"	Sand	Construction Costs	Building Costs	Labor Costs	Steel Beams	Steel I Beams
t-1 Dep Var	0.3628524	0.6834288*	-0.7290475	0.6973652	-0.4590609	0.4539211	0.1699127	0.5106836	0.8168448***	0.4503261***
	0.225293	0.3192397	0.3866857	0.5892391	0.2645626	0.2346666	0.3143057	0.4228344	0.0677601	0.1030649
t-2 Dep Var	-0.7313674**	-0.6810054	-1.004111**	-0.5622656**	-0.7043543**	-0.1791448	-0.4687894	-0.3954477	-0.8445031***	-1.060252***
	0.2421095	0.4516636	0.2879795	0.178082	0.2397906	0.3706798	0.2895469	0.5235399	0.1367971	0.2001338
cabp	-9.65E-05	0.0000233	-3.79E-07	-1.20E-06	-7.84E-06	0.00383**	-0.0014128	0.0194331	-0.0000453	0.0000678
	0.0003684	0.000035	0.00000597	0.00000794	0.00000545	0.0014982	0.0011774	0.1055374	0.0000369	0.0000506
cabpt1	0.0004826	-0.0000489	-3.65E-06	0.0000146*	0.0000143**	0.0020403	0.0017573	-0.0377899	0.0001791***	0.0001314***
	0.0002637	0.0000401	0.00000395	0.00000688	0.00000482	0.0015116	0.0010461	0.1035981	0.0000212	0.0000259
cabpt2	0.0003188	-0.00000165	-1.75E-06	7.31E-06	0.0000157***	0.0067362***	0.0011801	-0.0295499	-0.0000863***	-8.26E-06
	0.0002609	0.0000348	0.00000335	0.00000896	0.00000369	0.0017787	0.0010109	0.074316	0.0000163	0.0000211
caincome	0.00000166**	1.22E-07	0.0000000369**	2.59E-08	0.0000000446***	0.00000436	0.00000703**	0.0001521	0.000000119**	0.000000155**
	0.00000052	7.99E-08	1.15E-08	3.45E-08	1.14E-08	0.00000336	0.00000188	0.0002029	3.75E-08	4.25E-08
caincomet1	-6.06E-07	5.67E-08	-5.11E-09	-2.14E-08	-1.08E-08	-7.78E-06	-3.09E-07	-0.0000863	8.45E-08	1.27E-07
	0.000000669	1.20E-07	1.09E-08	3.08E-08	1.50E-08	0.00000405	0.00000312	0.0002634	5.47E-08	6.90E-08
caincomet2	1.40E-07	-7.72E-08	-1.97E-08	-1.35E-08	-2.69E-08	-7.10E-06	-2.79E-06	-0.0000165	-5.98E-08	-0.000000161**
	0.000000558	0.00000007	1.70E-08	1.64E-08	1.86E-08	0.00000441	0.00000242	0.0002204	4.66E-08	5.75E-08
catotemp	-0.0000445	0.00000567	-8.46E-07	-1.95E-06	-0.00000417**	-0.0004869	-0.0004006**	-0.0014999	-0.00000798**	-0.0000112**
	0.0000358	0.00000811	0.000000769	0.00000212	0.00000119	0.0002911	0.0001506	0.0212445	0.00000293	0.00000362
catotempt1	-0.0000442	-4.35E-06	-3.75E-07	-2.78E-09	0.00000411**	-0.0003029	-0.0001408	0.0121047	1.23E-06	-4.03E-06
	0.0000506	0.00000804	0.000000854	0.0000018	0.00000146	0.0002252	0.000249	0.0252337	0.00000443	0.0000053
catotempt2	-0.0000152	7.72E-07	-0.00000161*	4.96E-07	-4.96E-07	0.0008385**	-0.0000873	-0.010986	-0.000007*	1.73E-06
	0.0000334	0.0000047	0.000000703	0.00000166	0.00000124	0.0002821	0.000185	0.0142375	0.00000341	0.00000432
capop	2.59E-05	2.92E-06	0.00000321**	2.51E-06	0.00000283**	0.0002845	0.0000679	0.014573	3.23E-06	-0.00000786*

	0.0000291	0.00000534	0.000000934	0.00000295	0.000000786	0.000246	0.0001212	0.0135264	0.00000241	0.00000372
capopt1	-0.0000947*	-0.0000129	-4.26E-07	-4.16E-06	-3.05E-07	0.0002683	0.000178	-0.0293639	-0.0000087**	5.44E-06
	0.0000456	0.00000869	0.00000113	0.00000239	0.00000132	0.0003533	0.0002004	0.0229143	0.0000035	0.00000464
capopt2	3.42E-05	4.95E-06	-8.93E-07	0.00000363***	-0.00000307**	0.0008728**	0.0001513	0.0143127	-7.84E-07	-3.86E-06
	0.0000317	0.0000086	0.00000087	0.000000792	0.000000935	0.000329	0.0001736	0.0173084	0.00000371	0.00000363
N	21	21	21	21	21	21	21	21	21	21
R Sq.	0.9937	0.9981	0.9851	0.993	0.9965	0.9948	0.9994	0.9797	0.9988	0.998

Note: Standard errors are below coefficients. P-values indicated by: *<.10, **<.05, ***<.01. All models correct for first-order serially correlated error using Cochrane-Orcutt.

Table A-4: Los Angeles (ENR data) Annual Regression Models, Changes, dependent variables are top of columns

	Asphalt	Cement	Gravel, > ¾"	Gravel, < ¾"	Sand	Construction Costs	Building Costs	Labor Costs	Steel Beams	Steel I Beams
t-1 Dep Var	0.7491827***	1.453903*	0.4052642	2.040591**	0.4859213	0.9908246***	0.8274071*	1.259537**	0.8303213***	0.9010433**
	0.1181046	0.6701096	0.4014094	0.5614095	0.4525886	0.1540393	0.4108946	0.5049279	0.2153538	0.2699098
t-2 Dep Var	-0.0816609	-0.3406909	0.3867897	-1.379038**	0.1897753	0.101052	0.0946862	0.2449026	-0.5686711**	-0.3408755
	0.1382257	0.532532	0.3738057	0.5580015	0.3317072	0.1515935	0.3615185	0.3518204	0.2438492	0.2803784
cabpch	-0.0002589**	0.00000609	2.34E-06	0.00000713	-0.0000105*	0.0027516***	-0.0012785	-0.0386802	-0.00000715	-0.0000197
	0.0001004	0.0000295	0.00000701	0.00000575	0.00000538	0.0006236	0.0009374	0.0544944	0.000027	0.0000349
cabpcht1	0.0005739***	-0.0000134	9.06E-07	0.000013*	3.67E-06	-0.0015551	0.0011742	0.0418595	0.0001382*	0.0001246**
	0.0001213	0.0000315	0.00000467	0.00000635	0.00000632	0.0008064	0.0010257	0.0684111	0.0000376	0.000041
cabpcht2	0.0010606***	0.0000215	0.00000723	0.00000576	0.0000155*	0.0010526	0.0016529	0.024098	0.0000851	0.0001183*
	0.0001395	0.00003	0.00000472	0.00000561	0.0000071	0.0006523	0.0010927	0.0516643	0.0000451	0.0000525
caincomech	0.00000123**	3.00E-08	2.51E-08	-3.85E-08	0.0000000393*	0.00000468	0.00000953*	-0.000159	5.56E-08	5.41E-08
	0.000000341	1.77E-07	1.77E-08	2.61E-08	1.95E-08	0.00000262	0.00000437	0.0002987	9.02E-08	1.02E-07
caincomet1	-6.40E-08	-2.98E-08	-1.49E-08	0.0000000467*	-3.44E-08	1.44E-06	2.39E-06	-0.0001644	6.92E-08	-2.85E-08
	0.000000366	1.15E-07	1.62E-08	1.81E-08	2.01E-08	0.00000222	0.00000317	0.0002373	1.01E-07	1.13E-07
caincomecht2	-4.50E-07	-1.69E-07	-5.80E-09	-2.21E-08	1.03E-08	-2.69E-06	-4.53E-07	-0.0005907*	6.46E-08	-6.02E-08
	0.000000311	1.22E-07	1.92E-08	1.44E-08	1.83E-08	0.00000224	0.00000351	0.0002749	8.62E-08	1.22E-07
catotempch	-0.0001406***	5.44E-07	-0.00000263*	1.17E-06	-2.46E-06	0.0001049	-0.0003798	-0.0240129*	-6.13E-06	-1.38E-05
	0.0000222	0.00000717	0.00000115	0.00000139	0.00000188	0.0001713	0.0002233	0.0110014	0.0000069	0.00000892
catotempcht1	-0.00000742	-2.63E-07	6.01E-07	-0.00000347**	3.73E-06	-0.000519**	-0.0002699	0.0255655	-1.66E-06	2.25E-06
	0.000025	0.00000728	0.00000104	0.00000123	0.00000192	0.0001472	0.0002131	0.0162748	0.00000533	0.00000788
catotempcht2	-1.88E-05	3.65E-06	-9.65E-07	0.00000358*	-2.00E-06	0.000425*	-0.0002729	0.0093298	7.04E-07	1.35E-06
	0.0000195	0.00000818	0.00000111	0.00000174	0.00000136	0.0001913	0.0003513	0.0126111	0.00000539	0.00000795
capopch	0.0000254	-3.60E-06	1.60E-06	-0.00000394*	0.00000406*	0.000343*	0.0002815	-0.015797	5.03E-06	6.83E-06

	0.0000286	0.00000876	0.00000114	0.00000201	0.00000173	0.0001606	0.0002254	0.015609	0.00000649	0.0000086
capopcht1	0.0000034	-4.86E-06	1.34E-06	0.0000013	-3.00E-06	-0.0000744	-0.000164	0.0196705	-0.00000317	1.19E-06
	0.0000399	0.0000115	0.00000176	0.00000148	0.0000023	0.0002337	0.0003622	0.0253374	0.00000749	0.000011
capopcht2	-0.0000193	0.00000229	-0.00000352*	1.29E-06	9.91E-07	0.0010034***	0.0002912	-0.0178072	5.24E-06	1.38E-05
	0.0000374	0.000011	0.00000134	0.00000163	0.0000021	0.0001995	0.0002771	0.0170516	0.00000783	0.0000107
N	21	21	21	21	21	21	21	21	21	21
R Sq.	0.9959	0.9947	0.9885	0.9198	0.9832	0.9997	0.9986	0.9848	0.8698	0.9439

Note: Standard errors are below coefficients. P-values indicated by: *<.10, **<.05, ***<.01. All models correct for first-order serially correlated error using Cochrane-Orcutt.

Appendix F: Southern California Major Transportation Projects, 2007-2011

Agency and Project	Year of Funding and Amount (in 1,000's of dollars)					Type
	2007-2008	2008-2009	2009-2010	2010-2011	TOTAL (includes prior funding)	
Caltrans						
I-15 Managed Lanes (Middle) - frm SR 56 to Centre City Pkwy - construct managed lanes	6,303				426,847	RC
I-15 Managed Lanes - North Segment - frm Clarence Lane to SR 78 - construct managed lanes	159,134	6,995	7,247	3,626	191,519	RC
I-15 Managed Lanes - South Segment - frm SR 163 to Rte 15/56 Separation - construct managed lanes	16,000				62,000	RC
State Route 52 Freeway (E&F) - frm SR 125 to Cuyamaca St to SR 67 - construct 4 lane freeway	180,368	4,732			447,190	RC
SR 52 HOV/Managed Lanes - frm I-805 to SR 125 - construct HOV/Managed lanes	12,000				28,000	RC
SR 52 Auxiliary Lanes - frm SR 52/I-15 separation to Mast Blvd - construct aux lanes	8,900				43,200	RC
SR 76 Middle - frm Melrose Dr to Mission Rd (South) - widen	4,800	200			29,095	RC
SR 76 East - frm Mission Rd to I-15 - widen	2,700				8,400	RC
SR 905 New Freeway - frm I-805 to Otay Mesa Port of Entry - construct 6 lane freeway		54,126			338,450	RC
Highway Bridge Program - various areas of the county - lump sum	60	18,568	10,015	23,357	78,684	SE
SHOPP Mobility Projects - lump sum		10,763	18,848		43,519	MI
SHOPP Roadside Preservation Projects - lump sum	9,874	7,905	4,244		56,485	EE
SHOPP Bridge Preservation Projects - lump sum		8,599			15,009	SE
SHOPP Roadway Preservation Projects - lump sum	11,188	3,523	20,251		71,837	MI
SHOPP Mandates Projects	4,642		51,651		56,293	MI
Chula Vista Ramp Meters and HOV Lane	9,167				9,808	RC
I-5/805 Port of Entry Modification		5,000	4,400		12,273	MI
SR 94 from I-5 to SR 125 Widening Study	3,000	2,000	1,000	6,000	16,000	EE
SR 94/125 Widening Freeway Connector Study		1,850	1,850		6,700	EE
Balboa Park Historic Preservation - landscape, lighting, fencing	3,131				3,517	EE
I-5 Sorrento Valley Auxiliary Lane		5,679			6,461	RC
I-805 from SR 905 to I-5 - Study of HOV/Managed Lanes	7,400				26,000	EE
I-8 Auxiliary Lane Construction		25,924			25,924	RC
SR 15 Citricado to Valley Parkway		24,641			24,641	RC
City of Carlsbad						
El Camino Real Improvements between SR 78 and Olivenhain Rd	1,800	4,850		800	21,070	MI
Pavement Management Program	2,600				13,600	MI
Cannon Road Reach 4 - construct 4-lane arterial				14,546	15,682	RC

College Boulevard Reach A - construct 4-lane arterial	8,221				11,952	RC
Poinsettia Lane Reach E		9,450			9,450	RC
City of Chula Vista						
Pavement Rehabilitation Program	700	800	900	1,000	11,900	MI
Willow Street Bridge Project	337	5,346			6,423	SE
North Broadway Reconstruction	4,300				6,624	MI
Advance Planning Studies - pavement and street improvements	410	258	267	274	1,754	EE
Third Ave, Orange to Main St - pavement rehabilitation	933	867			1,900	MI
H Street and I-5 Interchange Improvements - study		2,700			2,700	EE
City of Coronado						
SR 75 Tunnel	1,530	1,530			17,796	SE
Street and Road Major Rehabilitation - various projects	915	1,516	821	822	4,820	MI
City of El Cajon						
Overlay/Reconstruction Projects - various	1,915	2,136	2,191	2,415	13,604	RC
City of Encinitas						
Hall Property - I-5 and Santa Fe Drive reconstruction	750	750			2,200	RC
City of Escondido						
East Valley/Valley Center - widening	1,536		1,649		12,185	RC
Citracado Parkway II - widening & bridge construction	13,000				14,489	RC
Felicita Ave/Juniper Street - widening		1,569	2,000	3,397	8,322	RC
Ninth Avenue - widening	2,491	1,475			5,866	RC
Street Rehabilitation & Resurface - various projects	950	1,630	2,450	2,500	11,880	MI
Nordahl Rd Bridge Widening at SR-78	2,000				5,152	SE
City of La Mesa						
Street Construction - pavement resurfacing/rehabilitation	550	900	1,000	1,100	4,100	MI
City of Lemon Grove						
Major Street Improvements - pavement resurfacing/rehabilitation	690	400	440	470	2,650	MI
North County Transit District						
Oceanside-Escondido Rail Project - design & construct 22 mile light rail (incl 15 stations & maint facility	10,452				365,624	SE
Bridge & Infrastructure Program - safety at railroad/highway crossing	4,960	6,100	3,600		29,506	SE

Orange County Transportation Corridor Agency						
Foothill Transportation Corridor South - construct toll lanes on SR 241	82,740	106,000	100,000		386,100	RC
San Diego Association of Governments						
I-15 BRT Transit Stations - construction	26,969	1,491			48,543	FC
I-15 BRT Downtown Transit Stations - construction	459	331	8,548		9,528	FC
I-15 BRT Mid-City Transit Stations - construction	1,446	1,728	5,609	10,015	19,227	FC
Del Mar Bluff Stabilization	1,200		3,397		13,832	EE
Sorrento to Miramar Double Track/Realign		3,900			8,928	SE
Rail Electrification & Power Distribution	1,000	890			7,848	SE
Replace Santa Margarita Bridge	16,206				19,693	SE
Mid-Coast Super Loop - construction of jumper lanes/arterial improvements, transit stations (but also includes some operations stuff...)	21,949	12,315	3,724	3,858	45,073	RC
South Bay BRT - construction of transit facilities, transitways, etc	3,558				5,899	FC
East County Bus Maintenance Facility - construction	2,000	1,000	1,000		18,190	FC
South Bay Bus Maintenance Facility - expansion	723	500	400	100	4,223	FC
San Diego County						
South Santa Fe Avenue - reconstruct and widen	106	4,086			26,335	RC
Valley Center North & South - widen and reconstruct	15,790	4,215	11		72,102	RC
Street Improvements Lump Sum - sidewalks and medians improvement	1,218				9,483	MI
City of San Diego						
Division Street - street improvements and widening	5,336				5,614	MI
Aldine Drive and Fairmont Avenue Slope Restoration	1,375				1,885	EE
Otay Truck Route Widening (Ph. 4)		4,660			5,350	RC
I-5/Genesee Ave Interchange - construct bridge and aux lanes	15,823				27,363	RC
Regents Road - bridge construction and widening studies	24,470	994			31,585	EE
43rd/Logan/National Avenues - intersection realignments	2,448				5,904	MI
El Camino Real - reconstruct and widen				75,004	79,788	RC
Georgia St Bridge/University Ave - bridge replacement, retaining walls, guardrails	1,064				3,197	SE
W. Mission Bay Bridge - replace bridge with bike lane				75,001	78,191	AT
Street Resurfacing Citywide - various locations	1,000				4,000	MI
City of San Marcos						
Grand Avenue Bridge - construct arterials	6,300				11,250	RC
South Santa Fe from Bosstick to Smilax - widen and realign	1,000				2,280	RC
Barham Drive Widening	5,500				6,500	RC

City of Santee						
Major Rehabilitation and Reconstruction of City Streets - various		1,017	1,079	1,128	3,224	RC
City of Vista						
West Vista Way Widening - study	100	587	850	932	3,692	EE
Inland Rail Trail Bike Lane Facility		630	800	800	2,230	AT
San Diego County TOTALS:	**739,487**	**367,126**	**260,242**	**227,145**	**3,596,158**	

Southern California County of Governments Major Transportation Projects, 2007-2012

Agency	County and Project	Year of Funding and Amount (in 1,000's of dollars) 2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	TOTAL (includes prior funding)
	Imperial County - State Highway Projects						
Caltrans	Rte 8 at California/Arizona Border - construct new port of entry			1800			2,034
Caltrans	Rte 78 Brawley Bypass Corridor from Baughman Rd to Mead Rd - expressway	123,091	1,520				162,266
Caltrans	Rte 98 in Calexico from Nararro Ave to SR 111 - widening	1,920	480				7,200
Caltrans	Rte 98 in Calexico from SR 111 to Alamo River Bridge - widening			10,400			15,400
Caltrans	Lump Sum at various locations in Imperial County - bridge preservation projects			8,312			8,312
Caltrans	Lump Sum at various locations in Imperial County - roadway preservation projects	8,358		5,539			16,280
Caltrans	Lump Sum at various locations in Imperial County - roadside preservation projects		5,627				5,627
	Imperial County - Local Highway Projects						
Brawley	Malan Rd from SR 86 to Eastern Ave - road surface and safety improvements	1,400					1,400
Brawley	Construction of Bicycle/Pedestrian Path		1,000				1,000
Brawley	Paving and rehabilitation of 9th Street			139	1,109		1,248
Calexico	Cole Rd Corridor Improvements		741	1,290			2,031
Imperial City	Rehabilitation of Aten Rd from Valore Way to Cross Rd	815	1,087				1,902
Imperial County	Various locations; asphaltic concrete overlays			50	1,086		1,136
Imperial County	Keystone Rd near Imperial - truck lane from SR 111 to Austin Rd	100	2,400				2,500
Imperial County	Near El Centro - widen and improve Dogwood Corridor	1,200	1,824				3,024
Imperial County	Paving and rehabilitation of Various County Roads		67	801	500		1,368
	Imperial County - Transit Projects						
Imperial County	El Centro - regional public bus transfer terminal at 7th and State streets	254	1,715	1,715			3,687
Imperial County	Imperial Valley College - upgrade Bus Transfer Terminal	1,336					1,336
	Imperial County - TOTALS:	**138,474**	**16,461**	**30,046**	**2,695**	**0**	**237,751**
	Los Angeles County - State Highway Projects						
Caltrans	LA County Various Corridors - dev & implement various ITS elements	10,000	10,000	10,000	10,000		40,000
Manhattan Beach	Rte 1 bet 33rd St and Rosecrans Ave - add one through lane	925		12,115			13,464

Caltrans	Rte 5 in La Mirada, Norwalk and Santa Fe Springs - widen	47,000	226,393	88,245	675,230		1,155,285
Caltrans	Rte 5 frm Orange Co Line to Rte 605 - Carmenita interchange improvement	1,842	93,946				251,500
Caltrans	Rte 5 HOV Lanes frm Florence Ave to Rte 19 - add one lane in each direction					11,530	13,024
Caltrans	Rte 5 - study Norwalk, Santa Fe Springs, etc for widening	832	832				4,160
Caltrans	Rte 5 frm Rte 134 to Rte 170 - HOV Lanes	43,457	500,480	2,320			609,539
Caltrans	Rte 5 Western Ave I/C Phase I - realignment	3,000	12,000				31,087
Caltrans	Rte 5 frm Rte 170 to Rte 118 - HOV Lanes	206,254	43,730				310,780
Caltrans	Rte 5 in Los Angeles frm Chamberlain St to Larkspur St - soundwall	10,640	12,160				41,664
Caltrans	Rte 5/14 Interchange & HOV Lanes on Rte 14		8,956	104,544			156,600
Caltrans	Rte 5 in LA/Santa Clarita frm SR 14 to Parker Rd - HOV & Truck Lane Improvement	4,400	740				8,140
Caltrans	Rte 10 and I-605 I/C in LA County - construct one/two lane bridge structure	12,000			58,460		70,460
Caltrans	Rte 10 frm Rte 605 to Puente Ave - HOV Lanes	130,010					190,957
Caltrans	Rte 10 in Baldwin Park & West Covina - Puente Ave to Citrus St Soundwall Project			9,333			10,865
Caltrans	Rte 10 frm Puente to Citrus - expand HOV Lanes	34,500			139,000		173,500
Caltrans	Rte 10 frm Citrus to Rte 57/210 - HOV Lanes	24,000			167,500		191,500
Lancaster	SR-14 Freeway/Ave I Interchange Improvements	9,251					10,581
Port of Los Angeles	Vincent Thomas Bridge Study		1,200	200			1,400
ATCA	SR-47 Expressway - replace Commodore Heim bridge	27,000	520,000				557,000
Industry	Rte 60 at Lemon Ave - construct new partial diamond interchange	2,000	10,000				13,500
Caltrans	Rte 60 frm Rte 605 to Brea Canyon Rd - construct HOV Lanes	43,289					137,758
Caltrans	Rte 71 frm Rte 10 to Rte 60 - expressway to freeway conversion				7,600		13,992
Caltrans	Rte 105 in Los Angeles frm Sepulveda Blvd to Nash St - widen n/b off-ramp	12,120					28,160
City of Los Angeles	Projects w/in LAX to eliminate bottlenecks	5,067					5,067
Caltrans	Rte 110 in Los Angeles frm 8th St on ramp to I-110/I-10 connector - construct aux lane		30,565				30,565
Caltrans	Rte 110 in Los Angeles n/b Harbor Freeway - add aux lane & reconstruct ramp	13,887					16,149
Los Angeles County	SR 126 frm Los Angeles Co Line to Castaic Creek Bridge - improve 5 intersections	26,000	5,500	2,500			35,500
Los Angeles County	SR 126 at Commerce Ctr Dr - construct new interchange	2,600	31,000				37,600
Glendale	Rte 134 bet I-5 & Pacific Ave - modify interchange & grade separation	6,337	16,375				22,712
Caltrans	Rte 138 frm Ave T to Rte 18 - widen	8,681	9,317				52,819
Caltrans	Rte 138 frm 175th St East to Largo Vista Rd - widen		27,236				37,695
Caltrans	Rte 210 - frm Foothill Blvd to San Bernardino Co Line - construct freeway	1,690					5,643
Caltrans	Rte 405 in Inglewood at Arbor Vitae Ave - construct interchange		1,935	32,718			53,080
Caltrans	Rte 405 in Los Angeles frm La Tijera Blvd to Jefferson Blvd - add aux lane		31,073				31,073
Los Angeles County MTA	Rte 405 in Los Angeles frm Rte 10 to Rte 101 - widen for HOV lane & modify ramps	27,000	908,000				950,000
Los Angeles County MTA	Rte 710 - reconstruct interchanges at I-405, SR 91 & at I-105	10,000	25,500				40,500
Caltrans	Rte 710 frm Rte 10 to Del Mar Blvd - overcrossing	480	5,480				15,352
Caltrans	LA County ITIP Transportation Enhancement Project - Lump Sum	5,608	1,790	2,005			11,243
Caltrans	Various Highways, Lump Sum for Soundwall		16,700				16,700

Caltrans	LA County - Lump Sum Collision Reduction Project	63,769	18,899	56,573		157,560
Caltrans	LA County - Lump Sum Roadway Preservation Projects	195,086		78,434		439,604
Caltrans	LA County - Lump Sum Roadside Preservation Projects	5,168	2,633			19,199
Caltrans	LA County - Lump Sum Bridge Preservation Projects	30,697	17,139	10,653		85,375
Caltrans	LA County - Lump Sum Mobility Projects		5,277			64,729
Caltrans	LA County - Lump Sum Mandates	15,519	4,311	100,662		179,687
	Los Angeles County - Local Highway Projects					
Agoura Hills	US 101/Kanan Rd Interchange Improvements	800	800			24,460
Alhambra	Valley Blvd Capacity Improvements between 710 and Marguerita	2,162	832			3,724
Arcadia	Santa Anita Ave Corridor Improvements	2,016	684			3,000
Arcadia	Huntington Dr Improvements bet Colorado Pl and Santa Anita Ave	236	2,689			2,925
Beverly Hills	Santa Monica Blvd widening frm Doheny Dr to Wilshire Blvd			1,751		2,550
City of Carson	Broadway Improvements frm 168th St to North City Limit			1,070		1,070
City of Carson	Broadway Improvements frm Griffith to Albertoni		260	1,720		1,980
City of Carson	Broadway Improvements frm Albertoni to 168th St			1,540		1,540
City of Carson	Sepulveda Blvd, Alameda St to East City Limit - widen				1,375	1,875
City of Carson	Widen Wilmington Ave frm 223rd St including I-405 ramp modification	1,000	600	12,000	8,000	22,000
City of Carson	Avalon Blvd Interchange Modification at I-405	301	10,000	10,000		21,150
City of Carson	213th St Pedestrian Sidewalk Bridge over Dominguez Channel	200	2,000			2,200
Compton	TMOC & Retrofit of City Traffic Signal System	3,940				4,928
Compton	Compton Arterial Reconstruction and Improvement Program	768	768	768		3,840
Compton	Greenleaf Row Comm Enhancement Project and bikeway construction	1,200	1,200	1,200		3,840
Compton	Rosecrans Ave and Bridge Arterial Reconstruction Project	2,880	480			3,840
Compton	Compton Arterial Reconstruction and Improvement Program	600	650	550		3,000
Downey	I-5 Corridor Arteries - Lakewood Improvement	1,215				1,215
Downey	Firestone Blvd frm Ryerson Ave and Stewart & Gray Rd - widen	1,600	400			2,000
Downey	Lakewood Blvd bet Telegraph and 5th St - widen	1,200	400	400		2,000
El Monte	Construct Valley Blvd Drainage Improvements		1,927			2,710
El Monte	Santa Anita Ave & Valley Blvd Intersection widening	450	3,098	660		4,208
El Segundo	Nash St/Douglas St one-way to two-way conversion	3,143				5,000
El Segundo	SBCOG - Douglas St Gap Closure/RR Grade Separation	6,021	640			37,924
Glendale	Grandview Ave bet Air Way and Zook Dr - roadway and signal improvements	1,700	2,308	527		4,535
Hawthorne	Rosecrans/Aviation Intersection - widen	880	880			12,553
Hawthorne	Crenshaw Blvd Right & Left Turn Lanes	600	720			1,320
Industry	Grand Ave/SR 57/60 Interchange Reconstruction	17,500	14,000			33,000
Industry	Reconfiguration of Valley Blvd on and off ramps to the 605 freeway	12,500	7,500			28,000
Industry	Retrofit the existing two-lane wide Peck Road Bridge	2,800				6,900

Industry	Widening of South Bound Stoner Creek Rd Underpassing	2,500					6,000
Industry	Grand Ave/SR 57/60 Interchange Reconstruction		18,000	14,000			33,000
Inglewood	Century Blvd Pedestrian Safety and Transportation Improvements	1,080	720				3,600
Inglewood	Realign La Brea Ave to Reduce Congestion	1,334	634				3,168
Irwindale	Los Angeles St, over Big Dalton Wash. - widen bridge					1,090	1,200
La Mirada	Pavement and Intersection Improvement at La Mirada Blvd and Alondra Blvd	936	808				1,945
Lancaster	SR 14/Avenue K Interchange Improvements	1,700	6,500				8,600
Lancaster	10th St West Gap Closure frm Avenue L to Avenue M	265	2,600				2,865
Lancaster	Avenue K Gap Closure frm 60th St West to SR 14		250	400	6,740		7,390
Lancaster	Avenue L Gap Closure frm 60th St West to SR 14	480	5,960				6,690
Lancaster	Major Arterial Gap Closures - Avenue J, 36th St to 32nd West, etc.	225	2,557				2,902
Lancaster	Avenue G, frm Rt 14 to 25th St West - widen	4,700	4,700				9,900
Lawndale	Inglewood Ave/Marine Ave Intersection Improvement	1,397	1,005				3,250
Long Beach	Gerald Desmond Bridge Replacement	43,750	62,500	18,750	25,000		151,240
Long Beach	Pier B St Intermodal Railyard Expansion	276	10,814	100			11,988
Long Beach	Ports of Long Beach and Los Angeles ATMS/ATIS Project	10,961					11,499
Long Beach	Bikeway and Pedestrian Improvements at the Blue Line Station	1,035					3,451
Long Beach	Ocean Blvd over Entrance Channel - replace Gerald Desmond Bridge	31,204	49,999	100,000	50,000		242,499
Long Beach	Dwntwn Shoreline Dr Traffic Mgmt System - ITS	1,170	1,260				3,000
Long Beach	Develop and Implement Traffic Calming Measures at I-710	1,152	384				1,920
Long Beach	Long Beach Intelligent Transportation System	864	576				2,880
Los Angeles County	South Bay Forum Traffic Signal Corridors Project	5,467					8,235
Los Angeles County	San Gabriel Valley Forum Traffic Signal Corridors Project	7,012					10,369
Los Angeles County	Gateway Cities Forum Traffic Signal Corridors Phase IV	8,798					10,412
Los Angeles County	SR 90 Connector Rd to Admiralty Way - widen	3,500					6,000
Los Angeles County	Ave N - 45th St West to Antelope Valley Fwy Reconstruction		3,354				3,354
Los Angeles County	Ave O - 30th St West to 10th St West - reconstruct & widen		2,520				2,520
Los Angeles County	Reconstruct the Old Road frm Hillcrest Pkwy to Lake Hughes Rd		10,700				10,700
Los Angeles County	Goods Movement NHS Truck Impacted Intersections Phase II	2,435	5,116				13,164
Los Angeles County	Old Road, over Santa Clara River - replace bridge				4,117		4,617
Los Angeles County	Beverly Blvd Montebello Blvd to w/o Rea Dr - reconstruct and widen	3,650					3,650
Los Angeles County	Castaic Cutoff frm Lake Hughes to San Francisquito Canyon Rd - construct new road	400	5,500	1,700			7,600
Los Angeles County	South Bay Bike Trail - ped access ramps/sidewalks	144		1,890			2,034
Los Angeles County	Del Amo Blvd -from Normandie Ave and New Hampshire - reconstruct and widen	1,800	600				3,000
Los Angeles County	Construct and repair lining in 4 tunnels on Kanan, Kanan Dume and Malibu Rds	1,800	600				3,000
LA County MTA	Implement ITS Subregional Masterplan	720	4,080				4,800
LA Redevelopment Agency	Hollywood Intermodal Transportation and Public Parking Center	8,000	2,000				41,000
LA Redevelopment Agency	Streetscape Improvements along Central Ave frm Washington to Vernon		344	3,656			4,000

City of Los Angeles	Bikeway/Pedestrian Bridge over LA River at Taylor Yard Class I		351	3,756			5,000
City of Los Angeles	Eagle Rock ATSAC/ATCS Project along Hollywood W & Olive Ave	2,977					8,725
City of Los Angeles	North Hollywood ATSAC/ATCS Project - bounded by Roscoe Blvd & Tuxford St	8,574	2,802				12,289
City of Los Angeles	San Fernando Rd row bike path phase II - construction	3,524					7,282
City of Los Angeles	Valley Blvd/West Mission Rd I-710 Connector - construct frontage road	13,296					15,796
City of Los Angeles	Tampa Ave - widen bridge	5,025					8,295
City of Los Angeles	Hyperion Ave under Waverly Dr - replace bridge	2,446					14,422
City of Los Angeles	Soto St Bridge over Mission Rd & Huntington Dr - demolition project	5,146			6,405		19,640
City of Los Angeles	Burbank Blvd widening - Lankershim Blvd to Cleon Ave	7,757					15,417
City of Los Angeles	Cahuenga Blvd widening - Magnolia Blvd to Lankershim Blvd	463	1,000	3,610			7,956
City of Los Angeles	Anaheim St widening - Farragut Ave to Dominguez Channel			1,300			2,000
City of Los Angeles	Rehab 1st St bridge to maintain 4 traffic lanes	4,552	4,359				66,853
City of Los Angeles	La Tijera Bridge widening over I-405 freeway		3,250				14,515
City of Los Angeles	Riverside Dr viaduct replacement	6,142			6,308		16,023
City of Los Angeles	Cesar Chavez/Lorena/Indiana Intersection Improvement	2,642					5,143
City of Los Angeles	Winnetka Ave Bridge - widen and rehab	5,830	514				8,519
City of Los Angeles	North Spring St - widen bridge and rehab	7,660	8,098				20,473
City of Los Angeles	Vermont Ave - widen bridge	4,643	670	1,354	3,130		10,612
City of Los Angeles	Canoga Park ATSAC/ATCS Project	1,005	6,619	2,837			10,461
City of Los Angeles	San Pedro ATSAC/ATSC Project	196	5,586	544			6,326
City of Los Angeles	Wilmington ATSAC/ATSC Project	1,971	4,554	652			7,177
City of Los Angeles	Harbor-Gateway ATSAC/ATCS Project	3,129	8,013				11,142
City of Los Angeles	Reseda ATSAC/ATCS Project	4,234	8,970				13,204
City of Los Angeles	Exposition Blvd ROW bike path - westside extension		300	1,893			2,601
City of Los Angeles	LA River bike path Phase 1C - Class I bikeway		1,525				2,536
City of Los Angeles	Hyperion Ave over Glendale Blvd - seismic retrofit	2,446					15,354
City of Los Angeles	Glendale Blvd over LA River - rehab 2 lane bridge					6,937	11,141
City of Los Angeles	Glendale Blvd over LA River - rehab 2 lane bridge					7,088	9,467
City of Los Angeles	Alameda St and N Spring St - arterial redesign	4,955					8,555
City of Los Angeles	ATSAC Hyde Park East	7,452					8,952
City of Los Angeles	ATSAC Hyde Park West	3,680					10,564
City of Los Angeles	Sepulveda Blvd frm Centinela Ave to Lincoln Blvd - widen	3,687					11,621
City of Los Angeles	Widen north leg of Sepulveda Blvd/Burbank Blvd Intersection	1,572					2,459
City of Los Angeles	Valley Blvd grade separation	3,000	9,092				54,285
City of Los Angeles	Southwest San Fernando Valley Rd and Safety Improvements	800	800				2,300
City of Los Angeles	Construct bike path, lighting and safety improvements - Hansen Dam	2,600	2,600				6,500
City of Los Angeles	103rd St frm Central to Graham - streetscape, transit and ped amenities	100	3,400	300	200		4,000
City of Los Angeles	Reconfigure San Fernando Rd frm Fletcher Dr to I-5 Fwy	400	2,380	2,380			6,450

City of Los Angeles	Transportation Enhancement to Children's Museum of Los Angeles	144	1,008	48			1,200
City of Los Angeles	Enhance ped environment along Olympic Blvd bet Vermont Ave and Western Ave		200	900	900		2,000
City of Los Angeles	Widen Bundy Dr bet Wilshire and Santa Monica Blvd	1,000	1,200	1,200			4,250
City of Los Angeles	Northwest San Fernando Valley Rd - asphalt concrete resurfacing	1,000	1,056				3,056
City of Los Angeles	ITS & Intersection Improvement at LAX			625	625		1,250
City of Los Angeles	Provide upgrades to traffic signal equipment at highway-rail grade crossings	670	2,600	2,678	2,758		8,706
Palmdale	Sierra bikeway railroad overcrossing			1,405			2,226
Palmdale	Tierra Subida from Ave S to Palmdale Blvd - widen	1,500					7,200
Palmdale	Ave S Highway 14/Downing St - widen				4,300		4,300
Palmdale	Ave S Railroad Overpass west of Sirra Highway - widen		12,000				12,000
Palmdale	SR 14 and Ave S Interchange Improvements		2,500				2,500
Palmdale	Rancho Vista Blvd - frm 3rd St East to 8th St - widen	3,540	560				5,600
Pasadena	La Loma Bridge construction				7,676		11,500
Pasadena	Pasadena ITS	777	789				3,398
Pomona	Mission Blvd grade separation at SR 71	4,794	4,462	627			44,870
Port of Los Angeles	I-110/SR 47/Harbor Blvd Interchange Improvements Phase I	7,300	800				11,500
Port of Los Angeles	I-110 Freeway/'C' St Interchange Improvements				7,266	7,266	14,532
Port of Los Angeles	Harry S Bridges Blvd Relocation/consolidation of streets	1,685		13,701	15,133		51,050
Port of Los Angeles	Fries Ave Grade Separation (Railroadway)	19,250	19,250				41,800
San Gabriel	San Gabriel Blvd Rehab Phase II	1,728	272				2,000
San Gabriel	San Gabriel Blvd Rehab Phase I	1,692	308				2,000
San Gabriel	Broadway and Las Tunas Intersection Improvements		550	1,095	1,355		3,000
San Gabriel	San Gabriel Mission Intersection Improvement	278	222	800	350		1,650
San Gabriel	Walnut Grove at Broadway Intersection Improvement	225	450	700			1,375
San Gabriel Valley COG	Grade Sep Xings Safety Improvements	28,284	22,919				531,412
Santa Clarita	Construct Golden Valley Rd frm Soledad Canyon to Newhall Ranch Rd	33,500	1,800				35,300
Santa Clarita	Incident Management - Traveler Information System	2,559					2,559
Santa Clarita	Synchronization of traffic signals on regional arterials	221	98	3,036			3,355
Santa Monica	Palisades Bluff Stabilization Project	450	10,040				10,800
Santa Monica Mountain Authority	Ped/Bicycle facilities adjacent to the I-5/SR 10 and LA River	5,038					5,038
Signal Hill	Cherry Ave widening project bet 19th St and Pacific Coast Highway	800	2,105	2,016			6,721
South Gate	I-710/Firestone Blvd IC, Phase IV Project - widen bridge	13,035			4,134		18,943
South Gate	Widen Firestone Blvd bridge over the Rio Hondo Channel	5,215	6,848				15,686
South Gate	Reconstruct Atlantic Ave and Improve Drainage frm Ardmore St to Imperial Hwy	2,496	624				3,120
Torrance	Crenshaw Blvd Rehabilitation bet 182nd St & 190th	788	428	300			2,000
Torrance	Crenshaw Blvd Rehabilitation, Maricopa St to Sepulveda Blvd	1,280	560	560			2,500
Various Agencies	HBRR Local Bridge Lump Sum	37,692	35,792	8,181	437,204		596,329
Various Agencies	Lump Sum Transportation Enhancement Activities	3,375	6,363	10,522	13,314		49,929

Various Agencies	Lump Sum Project for Highway Safety, Rehab & Reconstruction	35,293	36,177				211,764
Vernon	Atlantic Blvd Bridge over the LA River - widen				6,000		7,100
Walnut	Amar Rd, Temple Ave, Grand Ave Intersection Widening	2,289					2,289
Whittier	Reconstruct Whittier Blvd and Improve Pkwy Drainage	1,075	442				1,632
	Los Angeles County - Transit Projects						
Antelope Valley Transit Authority	Centralized Maintenance and Operations Facility Upgrades	3,300	2,200	3,300			9,295
Antelope Valley Transit Authority	Phase II and III of Maintenance and Operations Facility Construction - Lancaster			5,000			6,000
Baldwin Park	Metrolink Transportation Center - construction	564	1,672	5,810			8,046
Burbank	Upgrade Existing Regional Transit & Layover Facility - Burbank Airport	1,146					1,146
Caltrans	LA-Fullerton Triple Track and Grade Sep	6,200					6,200
Compton	Compton MLK Transit Center Expansion and Multi-modal			3,299			4,934
Foothill Transit Zone	Park and Ride Facility - Transit Oriented Neighborhood Program	10,498	2,144				16,442
Glendale	CNG Fueling and Maintenance Facility - new	2,158					7,746
Long Beach	First St Parking Structure - Long Beach Redevelopment Agency	1,477	1,631				3,902
Long Beach Public Trans Co	Construct Transit Management and Information Center	1,250					2,255
LA County MTA	Mid-city/Exposition Corridor Light Rail Transit Project Phase I	314,653	35,100				640,053
LA County MTA	Metro Rapid Bus Stations - Phase II	18,049	32,692	8,320			110,000
LA County MTA	Crenshaw Transit Corridor - analysis	2,318	2,407				18,177
LA County MTA	Landscape, Streetscape & Passenger Amenity Improvements - LA City College	1,826	1,839				8,755
LA County MTA	Metro Gold Line Eastside Extension Enhancements	2,300	1,300				14,000
LA County MTA	Provide an Off-street Transit Center at East LA College	750	750				2,836
LA County MTA	Hardscape, Landscape and Streetscape Improvements - LA Valley College	1,343	700				3,429
LA County MTA	Exposition Light Rail Transit System Phase II - to Santa Monica	8,500	11,900	49,200	92,500	91,200	255,800
LA County MTA	San Fernando Valley E/W BRT - bus lanes	815	848				21,129
LA County MTA	San Fernando Valley N/S BRT Extension Phase II		9,000				18,046
LA County MTA	San Fernando Valley N/S BRT Extension Phase III		33,000				44,000
LA County MTA	San Fernando Valley N/S BRT Extension Phase IV		28,000	15,000			45,000
LA County MTA	Eastside Transit Corridor	150,500	126,300	82,500			898,700
LA County MTA	Mid-city Transit Corridor - expansion and bus-only lane			1,700	1,100		66,300
LA County MTA	Metro Rail Gold Line Extension - Pasadena to Montclair	7,826	7,983				35,530
City of Los Angeles	Mixed Transit Hub in San Pedro			2,349			6,455
City of Los Angeles	LAX Intermodal Transportation Center - rail & bus facilities	912	1,163				3,125
Monrovia	Transit Village for Sierra Madre Gold Line	2,232	777				3,009
Montebello	Montebello Transportation Facility Expansion		6,000				6,000
Monterey Park	Safety Improvements at Bus Stops	1,460	542				2,002
Redondo Beach	Heart of the City Bus Transfer Station Amenities	3,276	2,194				5,470

Redondo Beach	Redondo Beach Esplanade - Dedicated Off-Street Bike Path	1,251	1,699				3,500
Santa Fe Springs	Valley View Ave Grade Separation	49,957	144				79,084
So Cal Regional Rail Authority	Antelope Valley Line Changes at Santa Clarita			2,193			2,693
So Cal Regional Rail Authority	Rolling Stock Storage Facility in the Pacific Surfliner Corridor	4,650					5,000
	Los Angeles County TOTALS:	**2,194,664**	**3,415,375**	**928,675**	**1,763,680**	**125,111**	**11,827,051**
	Orange County - State Highway Projects						
Caltrans	Orange County - Lump Sum Collision Reduction Projects	1,379		11,939			32,431
Caltrans	Orange County - Lump Sum Roadway Preservation Projects	4,914		16,982			87,465
Caltrans	Orange County - Lump Sum Roadside Preservation Projects	7,736	6,724				14,460
Caltrans	Orange County - Lump Sum Mobility Projects		1,713	4,834			12,005
Dana Point	Rte 1 at Del Obispo - widen intersection	1,417					1,417
Caltrans	Rte 5 in San Clemente at s/b Camino de Estrella - widen off ramp			12,113			12,113
OCTA	Rte 5 s/b frm El Camino Real to Avenida Ramona - design & construct soundwall	736	3,762				4,498
OCTA	Rte 5 in San Clemente n/b at Avenida Vaquero - design & construct soundwall	650	2,546				3,196
San Juan Capistrano	Rte 5 - OCTA - at SR 74/Ortega Hwy - rebuild interchange		39,881		20,000		62,381
Caltrans	Rte 5 in Orange County from Calle Juanita to 4th St - pave and landscape	1,499					1,499
OCTA	Rte 5 at Camino Capistrano - improve intersection	2,547		15,547			18,279
Caltrans	Rte 5 in Mission Viejo s/b off ramp at Crown Valley Pkwy - widen	3,249					3,249
OCTA	Rte 5 s/b at Oso Pkwy exit lane & interchange - widen	3,201	24,157				29,478
OCTA	Rte 5 at Culver Dr s/b off ramp - widen	2,882					3,206
Caltrans	Rte 5 at Jamboree - construct aux lane	435	989		7,109		8,533
Anaheim	Rte 5 at Gene Autry Way West - add overcrossing	10,021	9,538	30,627			63,024
Caltrans	Rte 5 from SR 91 to LA County Line in Buena Park - add mixed flow and HOV lanes	9,140					323,805
Garden Grove	Rte 22 in Garden Grove - replace interchanges, construct HOV lanes	1,040	1,040				13,520
OCTA	Rte 55 from Dyer to MacArthur - add s/b aux lane	586		2,033			2,619
Caltrans	Rte 55 s/b bet E Edinger Ave off ramp & Dyer Rd on ramp - construct aux lane			28,883			28,883
Caltrans	Rte 57 frm Katella to Lincoln - widen	1,176		5,218	34,692		41,086
Caltrans	Rte 57 n/b from SR 91 to Lambert Rd - add mixed flow lane	13,790		124,548			140,000
Brea	Rte 57 in Brea at Lambert - fwy/arterial on ramp		1,970				2,290
Brea	Rte 57 at Lambert Rd - improve interchange				18,000		18,000
Orange County	Rte 74 in Orange County from Calle Entradero to Antonio Pkwy - widen	2,173	36,956				46,142
Caltrans	Rte 91 bet 91/55 connector & Weir Cnyn Rd interchange - add mixed flow lane	13,813	3,510		56,677	22,000	96,000
Caltrans	Rte 91 bet SR 241 & SR 71 - add eastbound lane	7,360	71,440				80,500
Caltrans	Rte 22 bet Seal Beach Blvd & Valley View - HOV connectors	28,500	25,131	225,541	94,828		400,000
TCA	Rte 241 frm I-5 to Oso Pkwy - add mixed flow, climbing & aux lanes	90,000	100,000	100,000			350,000

OCTA	Rte 405 frm SR 73 to LA County Line #317 - construct all purpose lanes	4,805	782				5,587
Costa Mesa	Rte 405 at Susan St at South Coast Dr - new off ramp	2,054					2,402
OCTA	Rte 405 n/b frm Magnolia to Beach Blvd - add aux lanes	8,709					11,179
Westminster	Rte 405 at Bolsa Ave frm Chestnut to Goldenwest - widen bridge				2,200		2,200
Caltrans	Orange County - Lump Sum Mandate Projects	19,683	5,418	19,880			44,981
	Orange County - Local Highway Projects						
Anaheim	Katella Ave Smart St - widen	4,400					11,607
Anaheim	Brookhurst St s/o Ball to n/o Katella - widen	114	6,722	6,189			13,025
Fullerton	State College Grade Separation		12,800				14,300
Fullerton	Gilbert St frm Castlewood to NCL - widen			1,940			1,940
Huntington Beach	Atlanta Ave frm First to Delaware - widen	1,506	2,117				3,623
Irvine	Irvine Guideway Demonstration Project Study	6,500	2,200				8,700
Irvine	Laguna Canyon/I-405 Overcrossing - widen		1,801		9,370		8,700
Irvine	Sand Canyon at I-5 - add lanes	2,110					7,364
Irvine	Barranca and Red Hill Intersection Improvement	6,200					15,475
Irvine	Jamboree Rd at I-5/Michelle - add lanes	200		9,900			10,100
Irvine	Trabuco Rd at I-133 - new on and off ramps		30,529	37,365			71,875
Laguna Hills	Construct new overpass on Ridge Route Dr at I-5			1,200			1,200
Laguna Niguel	Intersection Widening - Crown Valley Pkwy			3,500			3,500
Laguna Niguel	Crown Valley Pkwy -widen	300	309	9,500			10,109
Orange County	La Pata Ave - widen and gap closure			6,560			6,560
Orange County	Alton Pkwy Extension			26,920			26,920
OCCOG	Reduce Orange County Congestion Program		1,500				1,500
OCTA	HOV Drop Ramp Study				37,500		37,500
City of Orange	Main St - widen	2,388	1,655				4,043
City of Orange	Tustin Branch Rail Trail along the Santiago Creek				1,854		2,391
Placentia	BNSF Rwy Line - grade sep, corridor improvements, etc		41,850				83,228
Placentia	Orangethorpe Ave from Melrose Ave to ECL - widen		463	725			1,188
San Juan Capistrano	La Novia - widen bridge	9,969					9,969
San Juan Capistrano	Del Obispo -widen	17	5,455				5,472
Santa Ana	MacArthur Blvd n/b on ramp - widen	168		1,673			1,841
Santa Ana	MacArthur Blvd s/b on ramp - widen	142	1,357				1,499
Santa Ana	Grand Ave frm 1st to 4th - widen	113	5,443	6,881			12,437
Santa Ana	First St frm Susan to Fairview - widen	4,496					5,751
Santa Ana	Bristol St frm Warner to Memory Lane - widen	34,080	24,630	20,830	20,830	20,830	167,102
Seal Beach	Seal Beach Blvd - lengthen overpass bridge	2,000					2,000
Tustin	Red Hill at Edinger Ave/RR Tracks - grade separation	1,675					2,227

Tustin	Tustin Ranch Rd frm Walnut Ave to Edinger Ave - new arterial	5,606					6,334
Various Agencies	HBRR Local Bridge Lump Sum	494		482	19,256	975	24,797
Various Agencies	Countywide: Roadway Rehabilitation of Major and Primary Arterials	33,260	15,000				64,328
Various Agencies	Lump Sum for Bicycle and Ped Facility Projects Throughout OC	2,397	1,801	1,594			15,102
Various Agencies	Lump Sum for Landscaping and Other Scenic Improvements Throughout OC	1,965	1,500	1,500			14,505
Westminster	Goldenwest Bridge over I-405 - widen			1,450			1,450
	Orange County - Transit Projects						
Fullerton	Fullerton Train Station - Parking Structure, Phase I and II	11,750		29,219			41,969
OCTA	Alameda Corridor East Gateway to America Trade - highway/rail grade separation		12,400				12,400
OCTA	Alameda Corridor SR 47 Port Access Expressway Design		8,000				8,000
OCTA	Placentia Transit Station - new			16,600			23,250
OCTA	1% Transit Enhancements - bicycle and ped facilities countywide	540	560	580	601	622	2,903
OCTA	Metrolink Maintenance Facility Feasibility Study		4,000				4,000
OCTA	Tustin Rail Station Parking Expansion	1,100		9,500			10,600
OCTA	Laguna Niguel Rail Station Parking Expansion			63,000			63,000
OCTA	Capital Maintenance on Metrolink System - rehab of structures, etc	7,630					33,149
	Orange County TOTALS:	**384,615**	**517,649**	**855,253**	**322,917**	**44,427**	**2,845,361**
	Riverside County - State Highway Projects						
RCTC	Rte 10 frm San Bernardino County Line to I-10/SR 60 Jct - add truck climbing lane	3,150					3,150
Calimesa	Rte 10 at Singleton Rd Interchange - reconfigure/widen	25,000					28,000
Calimesa	Rte 10 at Cherry Valley Blvd interchange - reconstruct/widen	29,000					32,500
Beaumont	Rte 10 at Oak Valley Pkwy interchange - reconstruct/widen	600	10,400				12,169
Banning	Rte 10 at Sunset Ave undercrossing - modify ramp/grade	540	3,241	320			4,481
Caltrans	Rte 10 at e/o Apache Trail - construct new Morongo Pkwy interchange	3,800		24,300			30,000
Palm Springs	Rte 10 near Palm Springs at Indian Ave interchange - widen		30,762				35,098
Riverside County	Rte 10 near Palm Springs at Gene Autry Tr/Palm Dr interchange - widen	3,957	32,685				38,603
Riverside County	Rte 10 in Cathedral City at Date Palm Dr interchange - modify interchange & widen	4,411	24,888				31,149
Caltrans	Rte 10 near Rancho Mirage - Ramon Rd interchange - construct extension	5,771	46,527				67,844
Palm Desert	Rte 10 at Monterey Ave interchange - reconfigure	3,538					8,100
Palm Desert	Rte 10 at Portola Ave - construct new 6 lane interchange		10,000	18,000	19,000		49,519
Indio	Rte 10 near Indio at Jefferson St - reconstruct/realign & widen			62,200			65,850
Indio	Rte 10 in Indio at Madison St - construct new 4 lane interchange	75	6,975	6,975			15,000
Coachella	Rte 10 e/o Dillon Rd & w/o Cactus City SRRA - construct interchange	4,100	30,940				35,415
Caltrans	Rte 15 - install 75 vehicle detection stations	2,300					2,300

Temecula	Rte 15 at SR 79 interchange -remove s/b exit ramp	758	2,000	15,374			26,321
Temecula	Rte 15 at French Valley Pkwy interchange - construct 6 lane interchange	6,429	5,847	65,891	20,653		122,704
Temecula	Rte 15 at French Valley Pkwy Phase I - design & construct FVP	250	8,125	8,125			18,142
Murrieta	Rte 15 at California Oaks Rd/Kalmia St interchange - reconfigure ramps	3,409	21,990				26,247
Riverside County	Rte 15 at Clinton Keith Rd interchange - reconstruct/widen overcrossing	17,200					20,700
Lake Elsinore	Rte 15 at Railroad Cnyn Rd interchange - reconstruct/widen undercrossing	800	3,200	4,000	20,400		29,000
Lake Elsinore	Rte 15 at SR 74 interchange - modify/widen	1,200	4,550	11,450	2,000		20,000
Corona	Rte 15 near Corona at Cajalco Rd interchange - reconstruct/realign & widen	1,000	1,000	2,000	51,000		55,000
Corona	Rte 15 at El Cerrito Rd interchange - reconstruct/modify ramps	1,505					1,950
Corona	Rte 15 in Corona at Ontario Ave interchange - widen ramps	583	2,563				3,429
Riverside County	Rte 15 near Norco at New Schleisman Rd - construct new interchange	2,000					2,750
Riverside County	Rte 15 at Limonite Ave interchange - widen	550	5,350				7,709
RCTC	Rte 60 at Valley Way interchange - relocate off ramp	6,621					9,100
RCTC	Rte 60 in Riverside & Moreno Valley frm Rte 215 to Redlands Blvd - add HOV lanes	3,502					39,285
Moreno Valley	Rte 60 at Nason St interchange - widen	10,400	46,600				59,000
Beaumont	Rte 60 at PM 28.90 - construct new interchange & ramps	500	2,500	3,500			7,200
RCTC	Rte 74 in/near Hemet frm Calvert Ave to California Ave - pavement, widening	5,454					11,161
Riverside County	Rte 79 frm Thompson Rd to Domenigoni Pkwy - widen	14,312	10,000	7,895			36,407
Caltrans	Rte 86 S/Airport Blvd frm Desert Cactus Dr to 57th Ave -construct new interchange		31,573				31,573
RCTC	Rte 91/71 Jct - replace connector w/fly-over connector	5,273					5,273
Caltrans	Rte 91 frm Green River Dr to Rte 71/91 - reconstruct/replace interchange	4,116					23,983
Caltrans	Rte 91 frm SR91/71 to Serfas Club Dr - restripe to create aux lane						
Corona	Rte 91 at Lincoln Ave frm Parkridge Ave to Ontario Ave - widen ramps	2,525					2,800
City of Riverside	Rte 91/Van Buren Blvd interchange - reconstruct/widen ramps	8,000	33,882				44,582
RCTC	Rte 91 frm Adams to 60/215 interchange - add HOV lanes, aux lanes, etc	24,263			191,744		232,777
Blythe	Rte 95 in Blythe at Intake Blvd frm Hobson Way to 14th St - widen	1,875					1,978
Cathedral City	Rte 111 at East Palm Cyn Dr -widen	1,560					1,980
RCTC	Rte 215 frm I-15/215 Jct to Scott Rd - new mixed flow lane	3,623	3,598		55,100		62,321
Murrieta	Rte 215 at Clinton Keith Rd interchange - construct partial cloverleaf	32,448					34,996
Murrieta	Rte 215 at Linnel Lane frm McElwain Rd to Meadowlark Ln - new 4 lane	21,400					23,060
Riverside County	Rte 215 at Scott Rd near Murrieta - reconstruct/widen	1,000	17,100		53,400		72,200
RCTC	Rte 215 frm Scott Rd to Nuevo Rd - construct mixed flow lane	9,392					9,392
Riverside County	Rte 215 at Newport Rd interchange - reconstruct/widen	7,000		37,000			45,000
Perris	Rte 215 at Ethanac Rd interhange - reconstruct/modify			250	250		500
Riverside County	Rte 215 at Van Buren Blvd interchange - reconstruct/widen	3,500	4,500	80,000	5,000		93,550
Caltrans	Rte 215 Corridor Improvement Project frm 60/91/215 Jct to 60/215 split - widen	26,600	26,600	26,659	26,658	26,658	382,730
RCTC	Rte 215 & SR 60 - reconstruct jct to provide 2 HOV direct connector lanes	8,919		31,600			43,019
Caltrans	SHOPP: Collision Reduction Projects Lump Sum	30,042	2,519	7,134			49,173

Caltrans	SHOPP: Roadway Preservation Projects Lump Sum	78,839		76,299		155,138
Caltrans	SHOPP: Bridge Preservation Projects Lump Sum		2,872			2,872
Caltrans	Minors Projects Lump Sum at Various Locations	4,710				23,498
Caltrans	SHOPP: Mandates Project Lump Sum	5,300		2,216		13,216
Caltrans	SHOPP: Mobility Projects Lump Sum	6,760				6,760
	Riverside County - Local Highway Projects					
Banning	Construct 4 lane Ramsey St extension	2,000	2,000	4,000		9,500
Banning	Construct new 4 lane undercrossing grade separation - Sunset Ave	2,170	317	27,530		30,500
Calimesa	County Line Rd - widen	1,807	410			2,290
Cathedral City	Ramon Rd - Date Palm Dr to E City Limits - widen	1,591				1,847
Cathedral City	Date Palm Dr frm I-10 to Varner Rd - widen		1,400			2,500
Cities & County	Lump Sum for rehab and reconstruction projects	4,315	1,907			22,686
Cities & County	Highway Safety Improvement Program (HSIP) Projects Lump Sum	2,134				2,134
Corona	Construct Foothill Pkwy Westerly Extension	3,500	19,864			27,864
Corona	Auto Center Dr - construct 4 lane overcrossing	1,500	15,092	11,528		29,720
Desert Hot Springs	Essential Road Improvements - Phase II	3,911	320			4,631
Desert Hot Springs	Essential Road Improvements - Phase III	4,892				5,392
March Joint Powers Authority	Van Buren Blvd near March Air Reserve Base - widen	3,200	3,500			6,700
Moreno Valley	Realign Reche Vista Dr	380	2,383			3,033
Moreno Valley	Perris Blvd - widen	929	2,217	11,021		14,669
Moreno Valley	Perris Blvd frm Ironwood Ave to Manzanita Ave - widen	2,686		3,378		6,394
Moreno Valley	Heacock St over Perris Valley Storm Drain - replace bridge				2,520	2,970
Murrieta	Construct new 2 lane Guava St Bridge	240			6,641	7,636
Palm Springs	Construct Belardo Rd Bridge			500	4,500	5,500
Palm Springs	Indian Canyon Dr frm the UPRR Bridge to Tramview Rd - widen	2,933				3,331
Palm Springs	Ramon Rd frm El Cielo to Sunrise Way - widen	374	1,497			1,871
Palm Springs	S. Palm Canyon Dr - bridge construction			650	3,500	4,580
Palm Springs	Gene Autry Trail from Vista Chino to Via Escuela	3,959				4,374
Palm Springs	Widen Indian Canyon Dr from UPRR Bridge to Garnet Rd at I-10		165		4,359	5,038
Riverside County	Reconstruct and widen Scott Rd bet I-215 and SR 79		7,600			26,100
Riverside County	Extend/construct Clinton Keith Rd with 2 bridges	41,900				62,400
Riverside County	Clay St - construct undercrossing under the UPRR	3,125				3,125
Riverside County	High Risk Rural Roads Program Projects Lump Sum	1,819				1,819
Riverside County	River Road Bridge over Santa Ana River - replace	57,205				62,380
RCTC	Throughout Riverside Co - Lump Sum Transportation Enhancement (TE) Projects	10,998	4,471	3,931	1,396	21,690
City of Riverside	Iowa Ave - construct new 4 lane grade separation bet Spring St and Palmyrita Ave	4,850	19,720			24,720
City of Riverside	Jurupa Ave and UPRR - construct underpass	1,608				24,048

Temecula	Extend Overland Drive frm Commerce Center Dr to Avenida Alvarado			9,575			10,116
Temecula	Butterfield Stage Rd Extensions	19,075					39,900
Temecula	City of Temecula Pavement Rehab/Recon Projects Lump Sum	1,001	790				3,558
Temecula	Construct new 4 lane bridge over Murrieta Creek	168	7,187				7,803
Temecula	Design and Construct 4 lane Western Bypass Corridor (Phase I)				10,536		12,212
Various Agencies	HBRR Local Bridge Lump Sum Program	1,772		36,676	100	37,398	82,281
	Riverside County - Transit Projects						
RCTC	At N. Main St/E Grand Blvd - construct new 1000 space parking structure	12,710	9,500				41,035
RCTC	Rehab and Renovation of Track and Rolling Stock Signal Structure	1,453					1,453
RCTC	Reconstruct and Upgrade San Jacinto Branch Line	10,100	108,592				135,378
	Riverside County TOTALS:	**660,165**	**641,719**	**599,977**	**478,757**	**64,056**	**3,082,832**
	San Bernardino County - State Highway Projects						
Caltrans	Lump Sum at various locations - Mandates Projects	1,588					1,588
Ontario	Rte 10 at Grove Interchange - relocate to Grove Ave & widen	3,080	11,403	5,645	57,891		80,159
Ontario	Rte 10 at Archibald Ave - install irrigation system & landscape planting	7	2,671				2,686
Caltrans	Rte 10 in Fontana frm Etiwanda Ave to Riverside Ave - widen ramps	3,670	4,400	24,623			32,693
Various Agencies	Rte 10 at Cherry Ave interchange - reconstruct & widen	14,405	56,323				71,663
Fontana	Rte 10 at Beech Ave - construct 4 lane interchange		2,400	5,000	35,000		42,400
Fontana	Rte 10 at Citrus Ave - reconstruct interchange with 6 through lanes	7,257		43,196			50,453
Fontana	Rte 10 frm Valley Blvd to Slover Ave - construct new four lane bridge	12,260	4,933				25,993
Fontana	Rte 10 at Alder Ave - construct interchange			2,339	1,000	23,335	26,674
Various Agencies	Rte 10 at Cedar Ave bet Slover & Valley - reconstruct interchange	3,322	6,660		38,153		48,889
Rialto	Rte 10 at Riverside Ave frm Slover to Valley - modify interchange	2,000	26,305				30,127
Various Agencies	Rte 10 at Pepper Ave interchange - widen bridge & add aux lanes			5,250			8,250
Caltrans	Rte 10 in Colton frm Rancho Ave to La Cadena Dr - construct grade sep	1,500					3,689
Colton	Rte 10 at Sperry Interchange - add lane to off ramp		1,875				1,875
SANBAG	Rte 10 at Tippecanoe - reconfigure interchange	20,560		30,925			52,125
SANBAG	Rte 10 frm Ford to Live Oak Cnyn Rd - construct mixed flow lane	311		37,875			43,186
Yucaipa	Rte 10 at Live Oak Canyon Rd - reconfigure interchange			7,634			18,634
Rancho Cucamonga	Rte 15 frm Foothill Blvd to Arrow Rte - construct new interchange & aux lanes	8,300	8,500	1,500	14,000	7,000	46,000
Rancho Cucamonga	Rte 15 at Baseline interchange - widen ramps, add aux lanes	250	1,500	1,500	27,419		32,169
Fontana	Rte 15 at Duncan Canyon interchange - convert existing oc to diamond ic			6,500	11,500		18,000
Hesperia	Rte 15 at Ranchero Rd - construct 6 lane interchange	2,000	16,550		39,055		57,605
Hesperia	Rte 15 at Muscatel St - construct new overpass & new approach			1,000	1,000	15,000	17,000
Hesperia	Rte 15 at Eucalyptus - construct interchange		2,000	3,000	20,000		25,000

Victorville	Rte 15 at La Mesa Rd/Nisqualli Rd - construct interchange	20,530			47,740	77,120
Caltrans	Rte 15 frm Mojave Dr to Stoddard Wells Rd - add mixed flow and aux lanes			110,924		138,976
Caltrans	Rte 15 frm Mojave Dr to Stoddard Wells Rd - enhance retention wall			2,146		2,446
Hesperia	Rte 15 - Eucalyptus St to Peach Ave - reconstruct & widen		1,000	1,000	6,546	8,546
Barstow	Rte 15 at Old Rte SR 58 - construct new interchange	3,125				3,450
Caltrans	Rte 15 near Baker frm Afton Rd to Basin Rd - add truck climbing lane		2,280			13,380
Caltrans	Rte 15 at Valley Wells Rest Area - develop welcome center		1,311			1,671
Victorville	Rte 18 to US 395 - construct limited access facility	375	8,000			21,125
Caltrans	Rte 18 in Running Springs frm Nob Hill Dr to R.S. School Rd		1,779			2,265
Apple Valley	Rte 18 frm Apple Valley Rd to Corwin Rd - widen		6,900			6,900
Caltrans	Rte 58 frm Kern Co Line to jct Rte 395 - construct 4 lane expressway		13,393			28,437
Caltrans	Rte 58 near Hinkley frm Valley View Rd to Lenwood Rd - realign & widen		10,496			22,489
Ontario	Rte 60 at Grove Ave interchange - reconstruct and widen	1,700	225	15,000	17,325	35,000
Ontario	Rte 60 at Vineyard Ave - reconstruct interchange	1,700	500	15,000	17,050	35,000
Yucca Valley	Rte 62 frm Apache Trail East to Palm Ave - install median, curb , gutter, etc	175	401		1,845	2,421
Rancho Cucamonga	Rte 66 frm Grove to Vineyard - widen, build median island	6,500	3,250			13,765
Rancho Cucamonga	Rte 66 frm Etiwanda to East St - widen, median island, signal	2,600				3,050
Caltrans	Rte 71 frm Soquel Cnyn Pkwy to Riverside Co. Line - tree planting & aesthetics	40	120	1,345		1,505
Caltrans	Rte 138 near Wrightwood frm Phelan Rd to I-15 - widen		10,633		63,405	85,497
Various Agencies	Rte 210 Upland to San Bernardino frm LA Co Line to Rte 215 - construct 8 lane freeway		79,967			402,339
Caltrans	Rte 210 Construct new Inland Empire Transportation Management Center in Fontana	40,276				44,345
Caltrans	Rte 210 IETMC/So Regional Lab Site Work & Park & Ride Facility	8,382				9,382
SANBAG	Rte 215 in Grand Terrace at Barton Rd interchange - widen overcrossing	550	550	2,200	1,500	4,800
Various Agencies	Rte 215 Corridor North frm Rte 10 to Rte 210 - add 2 HOV & mf lanes	45,436	323,443	43,251	6,788	677,012
City of San Bernardino	Rte 215 at University Pkwy - interchange reconfiguration & aux lane	1,100	13,000			14,100
SANBAG	Rte 215 Bi-County Improvement Project - add HOV & mf lanes	500	500	500	500	5,300
Caltrans	Lump Sum at Various Locations - Collision Reduction Projects	12,433	40,283	66,015		194,766
Caltrans	Lump Sum at Various Locations - Roadway Preservation Projects	105,785	97,790	22,964		253,417
Caltrans	Lump Sum at Various Locations - Roadside Preservation Projects	731		14,130		25,856
Caltrans	Lump Sum at Various Locations - Mobility Projects		51,338	33,444		86,282
Caltrans	Lump Sum at Various Locations - Minor Projects	7,000				9,737
Caltrans	Lump Sum at Various Locations - Bridge Preservation Projects	74,409	34,759			109,168
Caltrans	Lump Sum at Various Locations - State Funded Facilities Projects	36,232				36,232
Caltrans	Lump Sum at various locations - Mandates Projects	1,588				1,588
	San Bernardino County - Local Highway Projects					
Adelanto	El Mirage Rd from Richardson Rd - pave and resurface		1,376			5,295
Apple Valley	Mojave River Bridge Crossing from Yucca Loma Rd to Green Tree Blvd	1,700				3,300

Apple Valley	Apple Valley Road Extension to Falchion Rd			1,200			1,200
Apple Valley	Yucca Loma Rd from Apple Valley Rd to Navajo Rd - widen		150	2,000			2,150
Chino	Pine Ave Extension from El Prado to SR 71 - widen bridge		7,300				7,300
Chino	Pine Ave Enhancement from El Prado to Euclid Ave - widen		3,400				3,650
Chino	Edison Ave from Ramona to Central - rehab & widen		2,000				2,000
Chino	Riverside Dr at San Antonio - widen bridge			1,120			1,120
Chino Hills	Fairfield Ranch Extension		663	3,313			3,976
Chino Hills	Woodview Ave/Pipeline to Peyton Dr - widen		160	120	1,440		1,720
Chino Hills	Peyton Dr/Woodview Rd to Soquel Canyon Pkwy - construct new road			3,000			3,000
Chino Hills	Peyton Dr from Grand Ave to Eucalyptus - widen	5,629					15,930
Colton	Reche Canyon Rd from Washington St to City Limits - widen	500		1,085			1,801
Colton	Mill St Bordwell to Rancho - widen			4,721			4,721
Fontana	Citrus Ave from Jurupa to Slover - widen		250	2,000	2,500		4,750
Fontana	Cherry Ave from Baseline Ave to Highland Ave - widen			4,180			4,180
Fontana	Sierra Ave at Santa Fe Railroad - construct 6 lane undercrossing			1,134	2,000	14,000	17,134
Fontana	Beech Ave from SR 30 to Foothill Blvd - widen		410	3,509			3,919
Fontana	Alder Ave from Baseline to Foothill Blvd - widen			1,500			1,500
Fontana	Santa Ana Ave from Mulberry to Live Oak Ave - widen			2,771			2,771
Fontana	Philadelphia St from Mulberry to Etiwanda Ave - construct 4 lane road			2,276			2,276
Fontana	Locust Ave from Riverside County Line to Jurupa Ave - widen			2,500			2,500
Fontana	Jurupa Ave from Etiwanda to Sierra Ave - construct 6 lane road			18,700			18,700
Fontana	Etiwanda Ave from Riverside County Line to I-10 - widen			984	3,685		4,669
Fontana	Banana Ave from Jurupa Ave to Slover Ave - widen			1,517			1,517
Fontana	Arrow Blvd frm Alder to Maple Ave - widen			1,880			1,880
Fontana	Arrow Highway frm Cherry to Citrus Ave - widen			5,703			5,703
Fontana	Alder Ave frm Valley to San Bernardino Ave - widen			1,460			1,460
Fontana	Beech Ave frm Valley to Arrow Blvd - widen		1,244	3,000	7,806		12,050
Fontana	Beech Ave frm Arrow Blvd to Foothill Blvd - widen			1,597			1,597
Fontana	Cherry Ave frm Merrill Ave to Foothill Blvd - grade separation & widen			10,557			10,557
Fontana	Foothill Blvd frm Citrus Ave to Maple Ave - widen			500	5,016		5,516
Fontana	Fontana Ave frm Valley Blvd to Merrill Ave - widen			6,500			6,500
Fontana	Merrill Ave frm Citrus Ave to Alder Ave - widen				2,388		2,388
Fontana	Randall Ave frm Alder Ave to Maple Ave - widen				2,586		2,586
Fontana	Santa Ana Ave frm Sierra to Tamarind Ave - widen			1,800			1,800
Fontana	San Bernardino Ave frm Fontana Ave to Alder Ave - spot widen			408	3,561		3,969
Fontana	San Bernardino Ave frm Alder to Locust Ave - widen				1,200		1,200
Fontana	Sierra Ave frm Foothill Blvd to Baseline Ave - widen		713	91	771	6,465	8,040
Fontana	Summit Ave frm Beech Ave to Sierra Ave - widen	1,000	3,000	4,000			8,000

Fontana	Foothill Blvd frm East Ave to Hemlock - widen	6,500					8,750
Hesperia	Maple Ave frm Mariposa TD to Main St - rehab road		90	2,220			2,310
Hesperia	Maple Ave frm Main St to Cromdale St - rehab			90	1,885		1,975
Hesperia	Pave Escondido Rd frm Ranchero to Cedar			200	1,700	4,000	5,900
Hesperia	I St frm Main St to Bear Valley Rd - widen			300	1,900	5,500	7,700
Hesperia	Ranchero Rd frm 7th Ave to Danbury - realign road and widen	8,315	19,000				27,755
Hesperia	"I" Ave frm Ranchero Rd to Main St - widen			270	1,500	5,100	6,870
Hesperia	Rancho Las Flores Pkwy - new road	7,000					7,000
Hesperia	Main St frm Escondido to 11th Ave - widen and reconstruct			850	9,150		10,000
Hesperia	Ranchero Rd frm Danbury to Arrowhead Lake Rd - widen			1,000	2,000	8,000	11,000
Hesperia	Ranchero Rd frm I-15 to 7th St - widen		1,000	2,000	8,000		11,000
Highland	Boulder Ave across City Creek s/o Baseline - reconstruct bridge	1,270	4,000	1,000	14,165		22,851
Highland	Baseline across City Creek - reconstruct bridge	619	2,574	1,119	18,210		22,522
Highland	At SR 30 and 5th St - modify ramp			1,400	1,600		3,000
Highland	On 3rd and 5th Streets frm Palm Ave to Tippecanoe Ave - widen	353	4,787	17,044	5,124		27,308
Highland	Greenspot Rd frm Santa Paula to Santa Ana River - widen					22,530	22,530
Highland	Greenspot Rd Bridge at Santa Ana River - construct new bridge	6,843	2,302				9,345
Loma Linda	Redlands Blvd at California St - widen intersection	3,048					3,048
Loma Linda	Redlands Blvd frm East City Limits to West City Limits - widen	6,850					6,850
Montclair	Ramona Ave at State St - Railroad crossing grade separation	3,070					22,408
Montclair	Monte Vista Ave at Union Pacific Railroad Crossing - grade separation	5,000	13,100				27,088
Ontario	Milliken at UPRR - grade separation		50,176				55,376
Ontario	Holt Blvd Corridor frm Benson Ave to Vineyard Ave - widen	13	417	25,050			25,506
Ontario	S. Milliken Ave frm UPRR to Mission Blvd - grade separation	13	15,965				16,001
Ontario	Mission Blvd frm Grove to Haven - widen	8,350	100	3,009			17,219
Ontario	Francis St frm Bon View Ave to Grove - widen			3,911		8,289	12,200
Ontario	Grove Ave frm State St to Holt Blvd - widen	4,000					4,613
Rancho Cucamonga	Haven Ave underpass at Metrolink Railroad from Jersey to Acacia - grade sep	7,940	1,400				16,460
Rancho Cucamonga	Wilson Ave frm Etiwanda Ave to Wardman Bullock Rd - new street	2,200					2,900
Rancho Cucamonga	Grove Ave frm 8th to San Bernardino Rd - widen	500	1,550				2,200
Redlands	Redlands Park Once Program - parking garage on Citrus bet 6th and 7th Sts		2,300				2,800
Redlands	Alabama St frm North City Limits to N Palmetto - widen		1,200	6,000			7,200
Redlands	Orange St frm North City Limits to Riverview Dr - widen		2,200	4,000			6,200
Redlands	Downtown Redland Core Area Parking Garage - new		5,500				6,000
Redlands	Church St frm Clark St to Colton Ave - widen	1,665					1,665
Rialto	Pepper Ave frm Foothill Blvd to Highland Ave - widen		5,340				5,340
Rialto	Riverside Ave bet I-10 and Slover Ave - modify RR bridge		3,683	2,483	2,483	2,483	11,132
Rialto	Riverside Ave frm Santa Ana to Agua Mansa - widen		255	1,245			1,500

San Bernardino County	Natl Trails Highway frm Morning Glory St to Marigold - widen	1,683				2,150
San Bernardino County	Flamingo Heights Landers Road - widen		800	700	7,000	8,500
San Bernardino County	Cumberland Dr Extension		700	1,500		2,200
San Bernardino County	Cherry Ave at SCRRA RR Crossing - widen bridge		1,000	2,000	5,829	8,829
San Bernardino County	Cherry Ave frm Whittram to Foothill Blvd - widen		291	1,500	1,000	2,791
San Bernardino County	Glen Helen Pkwy - replace bridge	2,168	660	16,700		20,700
San Bernardino County	Needles Highway frm N St to Nevada State Line - realign, rehab, etc	3,579				8,842
San Bernardino County	Ft Irwin Rd frm I-15 to Ft Irwin Boundary - rehab existing roadway		7,500			23,097
City of San Bernardino	Visions 20/20 Bridge Crossings on 9th, 2nd, 5th, and E Streets		400	800	2,800	4,000
City of San Bernardino	Lena Rd Extension Project	240	4,300	1,760		6,300
City of San Bernardino	Central Ave bet Waterman and Mt. View Ave - widen		440	1,010	4,150	5,600
City of San Bernardino	Mt View frm Riverview to Central Ave - widen and extend	759	1,750	6,525		9,034
City of San Bernardino	Tippecanoe bet Mill and Hardt St - widen	255		2,723		2,978
City of San Bernardino	Mt Vernon Ave Bridge at BNSF - replace grade separation, widen	26,755				51,519
City of San Bernardino	40th St frm Acre Lane to Electric Ave - ROW and widen			425	2,200	2,625
City of San Bernardino	State St frm 16th St to Foothill Blvd - extend and construct 2 lanes	1,955				2,889
City of San Bernardino	Campus Pkwy - Pepper/Linden Dr extension from Kendall to I-215 Pkwy			300	2,700	3,000
SANBAG	Hunts Ln at UPRR Crossing - grade separation	7,930	11,820			26,600
SANBAG	STIP TEA Reserves for bike/ped, landscape type project	2,509	3,433	4,150	3,311	14,688
Upland	Arrow Rte frm Los Angeles County Line to Benson Ave - widen	3,950				4,500
Upland	Euclid Ave frm D St to Foothill Blvd - storm drain extension		1,414			1,414
Various Agencies	Highway Safety Improvement Program (HSIP) - Lump Sum	1,662				1,662
Various Agencies	Lenwood n/o West Main St - grade separation	354		10,700	10,000	23,814
Various Agencies	HBBR Local Bridge Lump Sum	4,611	900	2,091	36,679	47,731
Victorville	Amethyst Rd frm Sycamore Rd to Eucalyptus Rd - construct new road	1,200				1,200
Victorville	Eucalyptus St frm US 395 to Amethyst - new 4 lane road	2,800				2,800
Victorville	Nisqualli Rd frm Balsam Rd to Hesperia Rd - widen	1,550				3,750
Victorville	El Evado Rd frm Palmdale Rd to Air Base Rd - widen	4,000				4,000
Victorville	National Trails Rd bet I-15 and Air Base Rd - widen	2,600				2,600
Victorville	Green Tree Blvd at AT&SF Railroad - construct 4 lane bridge		2,583	1,782	5,679	10,044
	San Bernardino County - Transit Projects					
Morongo Basin Transit Authority	Yucca Valley Transfer Point Facility - new	1,335				2,545
Needles	Interstate - Los Angeles/Chicago at El Garces Station - Multimodal Station	401	435	451		8,090
Omnitrans	Chaffey College Transcenter - construct transfer facility	915	2,085			3,000
Omnitrans	E Street Transit Corridor - frm San Bernardino to Loma Linda	14,566				17,566
SANBAG	Rancho Cucamonga Station Improvements - N Platform Ext & Ped Undercrossing	4,250				8,250
SANBAG	Metrolink - San Gabriel Sub - install conduit	1,788				1,788

Upland	Upland Metrolink Station - construct additional parking		5,500				5,500
	San Bernardino County TOTALS:	**627,870**	**1,051,054**	**727,340**	**589,735**	**121,702**	**4,126,668**
	Ventura County - State Highway Projects						
Moorpark	Rte 23 frm Third St to High St - widen		1,800				1,800
Oxnard	Rte 34 in Oxnard at Rice Ave - railroad grade separation		2,000	1,000	7,000		10,000
Thousand Oaks	Rte 101 at Wendy Dr - improve interchange			5,745			6,366
Camarillo	Rte 101 at Central Ave - reconfigure interchange				30,000		30,000
Oxnard	Rte 101 at Rice Ave (Santa Clara) - reconstruct interchange	42,305					60,424
San Buenaventura	Rte 101 at California St - reconfigure off ramp			14,620			15,000
Caltrans	Rte 101 frm Mobil Pier Rd to Santa Barbara County Lines - add HOV lanes	11,011			65,589		76,600
Simi Valley	Rte 118 at Alamos Cyn Rd - add ramps		2,560				2,560
Caltrans	Rte 118 in Simi Valley at Rocky Peak Rd - construct ramps	6,281					8,301
Caltrans	Lump Sum Collision Reduction Projects	12,706					19,860
Caltrans	Lump Sum Roadway Preservation Projects	9,397		20,140			29,537
Caltrans	Lump Sum Bridge Preservation Projects	9,709	13,816				26,199
Caltrans	Lump Sum Mobility Projects	2,623					2,623
	Ventura County - Local Highway Projects						
Camarillo	Santa Rosa Rd from Upland Rd to Woodcreek Rd - widen	200	1,226				1,501
Camarillo	Calleguas bike path - construct class I bike path	1,338					1,500
Camarillo	Las Posas Rd from Ventura Blvd to Pleasant Valley Rd - widen				3,500		3,500
Camarillo	Adolfo Rd Extension to Camarillo Springs Rd/US 101				9,000		9,000
Camarillo	Construct Ponderosa Extension from Earl Joseph to Ventura Blvd			7,000			7,000
Oxnard	Hueneme Rd from Saviers to Industrial - widen	1,748					1,948
Oxnard	Colonia Rd/Camino del Sol from Rt 1 to Entrada Dr - construct 4 lanes	9,500					9,500
San Buenaventura	Surfers' Point Bike path restoration	2,500	713	787			4,464
Santa Paula	Facility including bikeway/walkway frm Santa Paula Creek to Peck Rd	1,513					4,094
Simi Valley	Olson Rd frm Presidential Dr to Simi Valley City Limit - widen		1,600				2,100
Simi Valley	West Los Angeles Ave frm West City Limit to East St - class II bike lanes		1,500				1,500
Simi Valley	Erringer Rd frm Royal to Fitzgerald - realign road, add bike lanes	1,600					1,600
Various Agencies	HBRR Local Bridge Lump Sum	2,603			1,055		10,592
Ventura County	Hueneme Rd frm Oxnard City Limits to Rice Rd - widen	300	5,400				5,950
Ventura County	Reconstruct and Deep Lift Asphalt on Various Roads in Ventura County	1,200	1,200				6,000
Ventura County	Rte 126/Ctr St/Rancho Camulos - construct Class I bike path	1,100	668				6,026
VCTC	Camarillo Lewis Rd bet Rt 101 and Hueneme Rd - widen		19,428				50,255
VCTC	Historic Preservation of the Mill Building, Santa Paula depot, etc	2,455					2,500

VCTC	Lump Sum - rehab and reconstruction projects	6,087					11,068
	Ventura County - Transit Projects						
Camarillo	Camarillo Metrolink Station Improvements	4,424					4,424
Simi Valley	Expand Transit Maintenance Facility to Accommodate System Expansion	2,217					2,317
Thousand Oaks	Thousand Oaks Transportation Center Operations Building	1,211					1,982
VCTC	Systemwide Rehab & Renovation - track, signals, platforms facilities, etc	6,383	7,061	1,500	1,500		24,996
	Ventura County TOTALS:	**140,411**	**58,972**	**50,792**	**117,644**	**0**	**463,087**
	Various Agencies - Local Highway Projects						
Various Agencies	High Risk Rural Road (HR3) Program - Lump Sum	576	992				1,568
Various Agencies	Highway Safety Improvement Program - Lump Sum	9,416					9,416
Various Agencies	Safe Routes to School - Lump Sum in the SCAG Region	13,945	2569				21,041
Various Agencies	Various Locations - 130-Railroad Grade Crossing Protection Projects	4,100					15,217

Kern County Major Transportation Projects, 2007-2020

Metro Bakersfield Major Highway Improvements **2007-2010**

Project	Locale	Scope	Cost (in 1000's of dollars)	Type
24th Street	Bakersfield	Rt 178 Elm St to D St - widen to four/six lanes	3,750	RC
24th Street	Bakersfield	Rt 178 Elm St to D St - widen to four/six lanes	11,295	RC
7th Standard Rd	Bkfd Metro	Coffee Rd to Rt 99 - construct interchange; four/six lanes	13,000	RC
7th Standard Rd	Bkfd Metro	Rt 99 to Wings Way - widen to four/six lanes	2,500	RC
Allan Road	Bkfd	Brimhall Rd to Stockdale Hwy - widen to six lanes	7,000	RC
Centennial Corridor	Bakersfield Metro	(South) Oak St to Rt 178 - new six/eight lane freeway	90,000	RC
Centennial Corridor	Bkfd	SR 99 to SR 178 - construct six/eight lane local freeway	218,750	RC
Hageman Extension	Bakersfield	Knudsen Dr to Rt 204 - construct four lane extension	3,000	RC
Hageman Extension	Bakersfield	Knudsen Dr to Rt 204 - construct four lane extension	8,300	RC
Oak St Interchange	Bakersfield	Rt 178 (24th St) and Oak St - construct interchange	6,750	RC
Oak St Interchange	Bakersfield	Rt 178 (24th St) and Oak St - construct interchange	22,591	RC
Route 178	Bakersfield	Morning Drive - new interchange widen to four lanes	4,500	RC
Route 178	Bakersfield	Vineland Rd to Rancheria Rd - new four/six-lane freeway	28,500	RC
Route 178	Bakersfield	Mesa Marin to Rancheria Rd - widen to four/six lanes	4,500	RC
Route 178	Bakersfield	Fairfax Road - construct interchange and widen to four lanes	15,000	RC
Route 178	Bakersfield	Morning Drive - new interchange widen to four lanes	13,544	RC
Route 178	Bakersfield	Vineland Rd to Rancheria Rd - new four/six-lane freeway	85,846	RC
Route 178	Bakersfield	Mesa Marin to Rancheria Rd - widen to four lanes	13,544	RC
Route 178/204	Bkfd Metro	SR 99 to Centennial Corridor - new four/six lane freeway	26,250	RC
Route 58	Bkfd Metro	Rosedale Hwy - SR 43 to SR 99 - widen to four/six lanes	11,250	RC
Route 58	Bkfd Metro	Rosedale Hwy - SR 43 to SR 99 - widen to four/six lanes	34,000	RC
Route 99	Bkfd Metro	Snow Road - construct new interchange	40,000	RC
Route 99	Bkfd	Hosking Road - reconstruct interchange	40,000	RC

South Beltway	Metro Bkfd	I-5 to SR 58 - new six/eight lane freeway	15,000	RC
West Beltway	Metro Bkfd	SR 119 to 7th Std Rd - construct new four/six-lane freeway	30,000	RC
Westside Parkway	Metro Bkfd	SR 99 / Oak St to Heath Rd - construct local freeway	175,000	RC
		TOTAL	923,870	
Outlying Areas Major Highway Improvements		**2007-2010**		
Route 14	Inyokern	Redrock / Inyokern Rd to Rt 178 - widen to four lanes	14,000	RC
Route 14	Inyokern	Redrock / Inyokern Rd to Rt 178 - widen to four lanes (Phase I)	35,000	RC
I-5	Kern	Interchange improvements at Laval Rd	7,000	MI
Route 184	Lamont	Rt 223 to Panama Ln - widen to four lanes	7,000	RC
Route 14	Mojave	Rt 58 to Cal City Blvd - widen to four lanes/ interchange	45,284	RC
Route 395	Ridgecrest	China Lake Blvd to Rt 178 - widen to four lanes	10,000	RC
W Ridgecrest Blvd	Ridgecrest	Mahan St to China Lake Blvd - widen to four lanes	4,000	RC
7th Standard Rd	Shafter	Santa Fe Way to Coffee Rd - widen to four/six lanes	18,000	RC
7th Standard Rd	Shafter	SR 43 to Santa Fe Way - widen to four lanes	19,654	RC
Route 119	Taft	Cherry Ave to Tupman Rd - widen to four lanes	14,000	RC
Route 58	Tehachapi	Dennison Rd - connect interchange and bridge	10,000	RC
Route 46	Wasco	Jumper Ave (North) to Rt 43 - widen to four lanes	7,000	RC
Route 46	Wasco	SLO County Line to I-5 - widen to four lanes (Phases 1 & 2)	115,000	RC
Route 46	Wasco	Slo County Line to I-5 - widen to four lanes (Phase 3)	68,000	RC
Metro Bakersfield Major Highway Network Improvements		**2011 - 2015**		
Route 99	Metro Bkfd	Olive Drive - reconstruct interchange (All phases)	50,000	RC
West Beltway	Metro Bkfd	SR 119 to 7th Std Rd - new four/six lane freeway (12.5 miles)	189,000	RC
South Beltway	Metro Bkfd	I-5 to SR 58 - construct new six/eight lane freeway (28 miles)	62,000	RC
Metro Bakersfield Major Highway Network Improvements		**2016-2020**		
Route 178/204	Metro Bkfd	SR 99 to Centennial Corridor - six/eight lane freeway 2.8 miles	200,000	RC
South Beltway	Metro	I-5 to SR 58 - construct new six/eight lane freeway (Phase 1)	150,000	RC

	Bkfd			
Outlying Areas Major Highway Network Improvements		**2011 - 2015**		
Route 14	Inyokern	Redrock/Inyokern Rd to Rt 178 - widen to four lanes (Phase 2)	35,000	RC
Route 119	Taft	Cherry Ave to Tupman Rd - widen to four lanes	60,000	RC
W Ridgecrest Blvd	Ridgecrest	Mahan St to China Lake Blvd - widen to four lanes	10,000	RC
Interstate 5	Kern	From Fort Tejon to Rt 99 - widen to ten lanes	33,500	RC
Cal City Blvd	Cal City	Rt 14 east six miles - widen to four lanes	1,000	RC
Cecil Ave	Delano	Albany St to Browning Rd - widen to four lanes	4,000	RC
Outlying Areas Major Highway Network Improvements		**2016-2020**		
Cecil Ave	Delano	Albany St to Browning Rd - widen to four lanes; reconstruct	15,000	RC
Route 46	Wasco	SLO County Line to I-5 - interchange upgrade at I-5 (Phase 4)	35,000	MI

Santa Barbara County Major Transportation Projects, 2008-2011

Project and Agency	Years of Funding and Amount (in 1000's of dollars)				Cat
	2008-2009	2009-2010	2010-2011	TOTAL (including prior funding)	
Caltrans					
Route 101: Carpinteria Crk-Linden, IC/imps	10,000		18,294	29,224	MI
Route 246: East of Lompoc, Purisma-Domingos, widen	3,797			6,543	RC
US 101 Widening: Milpas Street to Ventura County	15,000		399,000	428,000	RC
Santa Barbara County TOTALS:	**28,797**	**0**	**417,294**	**463,767**	

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