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Collecting Construction Equipment Activity Data from Caltrans Project Records

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Collecting Construction Equipment Activity Data from Caltrans Project Records

By

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do not necessarily reflect the views of the California Department of Transportation

## **List of Acronyms**

AC: Asphalt Concrete

CARB: California Air Resources Board

CEQA: California Environmental Quality Act

CO: Carbon Monoxide

D5: Caltrans District 5

DED: Draft Environmental Document

DOT: Department of Transportation

DPM: Diesel Particulate Matter

DPR: Draft Project Report

EA: Expenditure Authorization Number

EIR: Environmental Impact Report

EPA: Environmental Protection Agency

GVWR: Gross Vehicle Weight Rating

HAD: Health Assessment Document

NAAQS: National Ambient Air Quality Standards

NMHC: Non-methane Hydrocarbons

NONROAD: The EPA NONROAD emissions model

NO<sub>x</sub>: Nitrogen Oxides

PID: Program Initiation Document

PM: Particulate Matter

PR: Project Report

PSR: Power Systems Research

PSR: Project Study Report

ROG: Reactive Organic Gasses

RTP: Regional Transportation Plan

RTPA: Regional Transportation Planning Agency

SACTO: Jones and Stokes model

SCC: Source Category Codes (from NONROAD)

SHOPP: State Highway Operation and Protection Program

SIP: State Implementation Plan

SO<sub>2</sub>: Sulfur Dioxide

STIP: State Transportation Improvement Program

VBA: Visual Basic for Applications

VOC: Volatile Organic Compounds

# 1 Introduction

Very little is known about construction equipment activity on highway projects, which is of concern because nonroad diesel construction equipment is relatively unregulated and is a major contributor to NO<sub>x</sub> and diesel PM emissions. Estimates of equipment activity are important in order to accurately model the emissions effects of road construction, and construction's actual contribution to regional emissions inventories, as well as to better select and design appropriate mitigation strategies.

To help address this gap in knowledge, construction diaries were collected for thirty recently completed Caltrans projects, sampling six typical Caltrans project types. Equipment activity for every project in the sample is categorized with an equipment category, a project phase category and a percent of project completion category. The equipment categories are primarily the NONROAD construction equipment classes, and the phase categories are aligned with the phases in the UCD Emissions Estimation Model. Using this database, we can then estimate means of equipment use based on type of highway project.

There are three deliverables that result from this project. First, a database with analytic capabilities is created that is used to manage the projects in the sample and output the next two deliverables. Second, table output is created for each project that aggregates equipment activity by the above categorizations into easily comprehensible charts. Third, the same types of charts are used to create output tables for the average equipment activity for each project type. These data can be used as crude equipment activity estimation models, or can help quality check predictive models.

## **2 Background / Literature Review**

The background and literature review for this research will review the type, quantity, growth and pollutant problems of off-road diesel vehicles commonly used in construction. Then the health effects of these pollutants will be discussed along with present and future standards and regulations to control these pollutants. After a brief review of the air quality conformity process, which highway funding is dependent on, the models used to estimate emissions for conformity will be covered followed by the inputs and default assumptions used in these models. There are many shortcomings with these inputs and little research exists to refine them, so the discussion will conclude with the contributions this research strives to make towards quantifying and estimating the air quality implications of nonroad diesel equipment on highway construction projects.

### ***2.1 Off-road Equipment and Emissions***

Construction equipment represents a large segment of the off-road land-based vehicle population, and it will continue to grow in size in the near future. In the year 2000, construction equipment accounted for 33% of the approximately 500,000 off-road mobile sources in California (CARB 2000). Nonroad construction equipment is primarily diesel fueled, and is responsible for a sizable portion of the mobile emissions inventory for NO<sub>x</sub> and PM (CARB 2004).

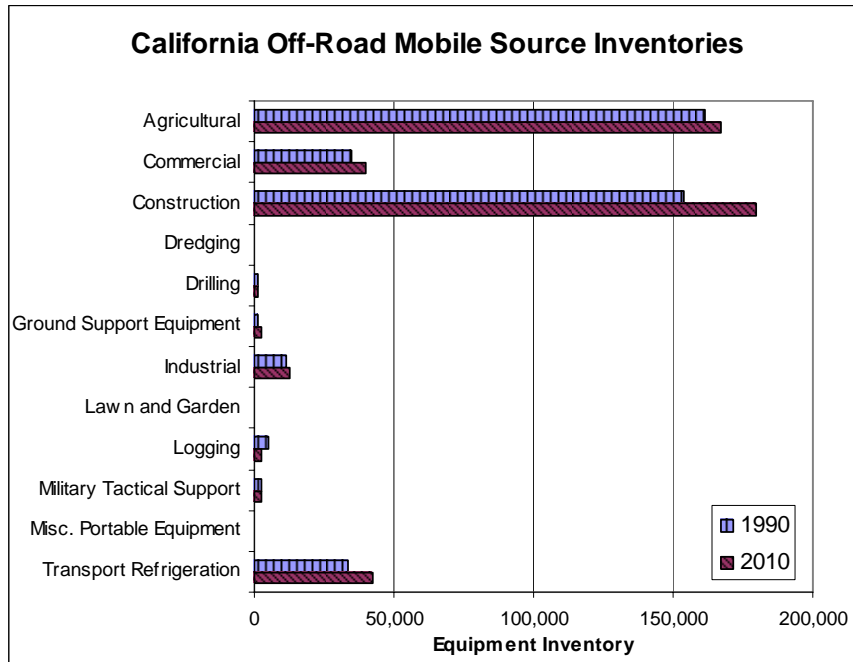
A wide array of sizes and types of equipment are used on construction sites, and are essential for the productivity required in modern construction. Loaders are used for moving soil, and backhoes are loaders mounted with an excavating shovel. Stand-alone excavators also are abundant. Each of these types of equipment can be mounted on



rubber tires or crawler tracks which allow for operation on a greater range of soil conditions. Pavement profilers are large pieces of equipment that strip, process and load existing pavement into a haul truck. Asphalt pavers are used to lay asphalt, and slip-form pavers are used to lay concrete pavement. Rollers and other compaction equipment are used to compact soil to the required density. Motor graders are used to move soil over long distances, and cranes move equipment and materials around a job site. Heavy-duty on-road trucks move materials around a job site and to and from a job site.

Heavy construction projects also make extensive use of portable air compressors, pumps and generators. Many types of equipment such as jackhammers, small compactors and hand tools are powered by compressed air. Generators power other handheld equipment, construction site lighting, and changeable message signs used for traffic control.

A California Air Resource Board (CARB) estimate shows the population of construction equipment as one of the highest out of all the categories of off-road vehicles, and it is expected to grow to the highest population by 2010 (CARB, 2000). A breakdown of the populations and growth of each off-road equipment category is shown in Figure 1. It is difficult to break the categories down further into intended use because construction equipment is frequently rented and used across many types of construction.



**Figure 1: CARB off-road equipment populations, 2000 and 2010 (CARB, 2000)**

Most heavy construction equipment runs on diesel fuel (EPA 2005d). Common types of equipment used for construction are shown in Table 1, along with a breakdown of fuel use. The equipment is classified and organized with the same system used in the EPA's NONROAD emissions model, which will be discussed in detail in Section 2.5. The vast majority of the equipment in the construction equipment category is diesel fueled, as is a portion of the equipment in the general and commercial categories. It is clear that the most common equipment types such as excavators, graders, loaders and backhoes are almost universally diesel fueled.

**Table 1: Fuel distribution breakdown for common equipment on construction sites (EPA 2005d)**

	<b>Diesel</b>	<b>Gasoline</b>	<b>LPG/CNG</b>
<b>Construction Equipment</b>	<b>64%</b>	<b>35%</b>	<b>1%</b>
Pavers	70%	28%	2%
Tampers/Rammers	2%	98%	0%
Plate Compactors	16%	84%	0%
Rollers	88%	11%	1%
Scrapers	100%	0%	0%
Paving Equipment	6%	94%	0%
Surfacing Equipment	15%	85%	1%
Signal Boards / Light Plants	98%	2%	0%
Trenchers	64%	34%	2%
Bore / Drill Rigs	28%	72%	1%
Excavators	100%	0%	0%
Concrete / Industrial Saws	6%	93%	1%
Cement and Mortar Mixers	6%	94%	0%
Cranes	95%	3%	2%
Graders	100%	0%	0%
Off-Highway Trucks	100%	0%	0%
Crushing / Processing Equipment	52%	47%	1%
Rough Terrain Forklifts	98%	1%	1%
Rubber Tire Loaders	98%	1%	1%
Tractors / Loaders / Backhoes	98%	2%	0%
Crawler Tractors	100%	0%	0%
Skid Steer Loaders	97%	2%	1%
Off-Highway Tractors	100%	0%	0%
Dumpers / Tenders	12%	88%	0%
Other Construction Equipment	91%	5%	5%
	<b>Diesel</b>	<b>Gasoline</b>	<b>LPG/CNG</b>
<b>Industrial Equipment</b>	<b>24%</b>	<b>21%</b>	<b>55%</b>
Aerial Lifts	53%	31%	16%
Forklifts	9%	5%	86%
Sweepers / Scrubbers	55%	35%	10%
Other General Industrial Equipment	33%	66%	1%
	<b>Diesel</b>	<b>Gasoline</b>	<b>LPG/CNG</b>
<b>Commercial Equipment</b>	<b>13%</b>	<b>85%</b>	<b>2%</b>
Generator Sets	14%	83%	3%
Pumps	10%	89%	2%
Air Compressors	41%	55%	4%
Welders	50%	47%	2%
Pressure Washers	2%	98%	0%

Nonroad diesel engines, such as those found in heavy construction equipment are heavy emitters of particulate matter (PM) and Nitrogen Oxides (NO<sub>x</sub>, a precursor to

ozone) (CARB 2004). Coarse and fine particulate emissions, as well as ozone are classified as criteria pollutants according to the National Ambient Air Quality Standards (NAAQS), which are pollutants that have the potential to cause human harm above designated minimum concentrations.

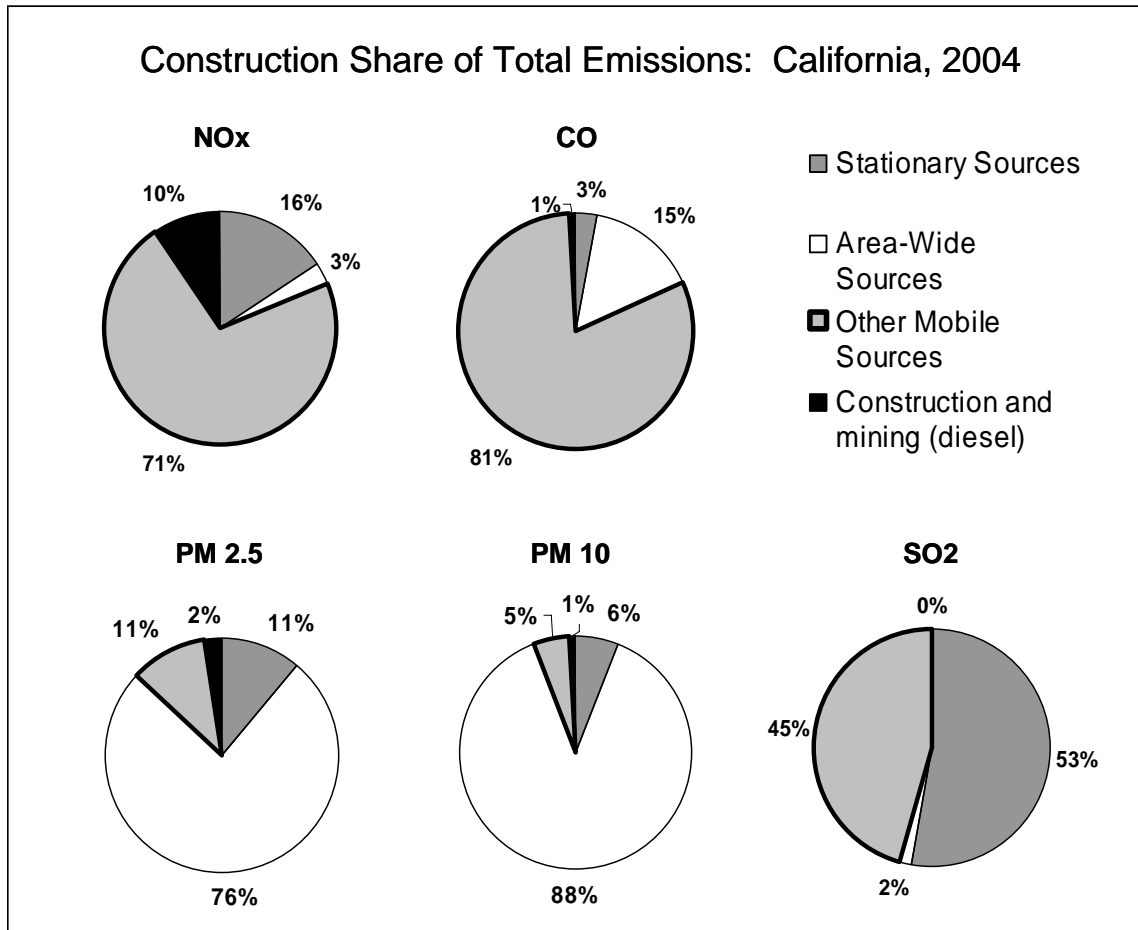
The Clean Air Act of 1970 and the 1990 amendments established seven NAAQS “criteria pollutants” and set the maximum ambient concentrations of each pollutant over certain time periods. Under conformity requirements, states are required to stay in attainment of the NAAQS or risk losing federal transportation funding (42 U.S.C §§7401 to 7671q and 40 CFR Parts 51 and 93). The state of California also enacted the 1988 California Clean Air Act which sets state limits for the NAAQS and others pollutants (California Health and Safety Code Section 39000 – 44384). The ambient air quality standards for California and the NAAQS are listed in Table 2.

**Table 2: Primary ambient air quality standards. Based on CARB (2005b)**

Pollutant	Averaging Time	California Standards	Federal (NAAQS)
Ozone	1 hr	0.09 ppm	0.12 ppm
	8 hr	0.070 ppm	0.08 ppm
PM10	24hr	50 ug/m <sup>3</sup>	150 ug/m <sup>3</sup>
	Annual arithmetic	20 ug/m <sup>3</sup>	50 ug/m <sup>3</sup>
PM2.5	24 hr	-	65 ug/m <sup>3</sup>
	Annual arithmetic	12 ug/m <sup>3</sup>	15 ug/m <sup>3</sup>
Carbon Monoxide	8 hour	9.0 ppm	9 ppm
	1 hour	20 ppm	35 ppm
	8 hour (Lake Tahoe)	6 ppm	-
Nitrogen Dioxide	Annual arithmetic	-	0.53 ppm
	1 hr	0.25 ppm	-
Sulfur Dioxide (SO <sub>2</sub> )	Annual arithmetic	-	0.030 ppm
	24 hr	0.04 ppm	0.14 ppm
	3 hr	-	-
	1 hr	0.25 ppm	-
Lead	30 day average	1.5 ug/m <sup>3</sup>	-
	Calendar Quarter	-	1.5 ug/m <sup>3</sup>

To help characterize the scale of diesel construction equipment emissions relative to the total inventory for each pollutant, a source comparison is shown in Figure 2 where stationary sources refer to industry and commercial based sources, area-wide sources refer to area-based pollutants such as chimney exhaust and road dust, and natural sources refer to emissions from the environment. The source data are from the California Almanac of Emissions and Air Quality and were calculated using databases of existing sources of emissions, and projections based on economic data, vehicle populations and other indicators (CARB 2004). CARB groups diesel construction and mining equipment into one category, so the construction percentages in Figure 2 serve more as an indication of scale.

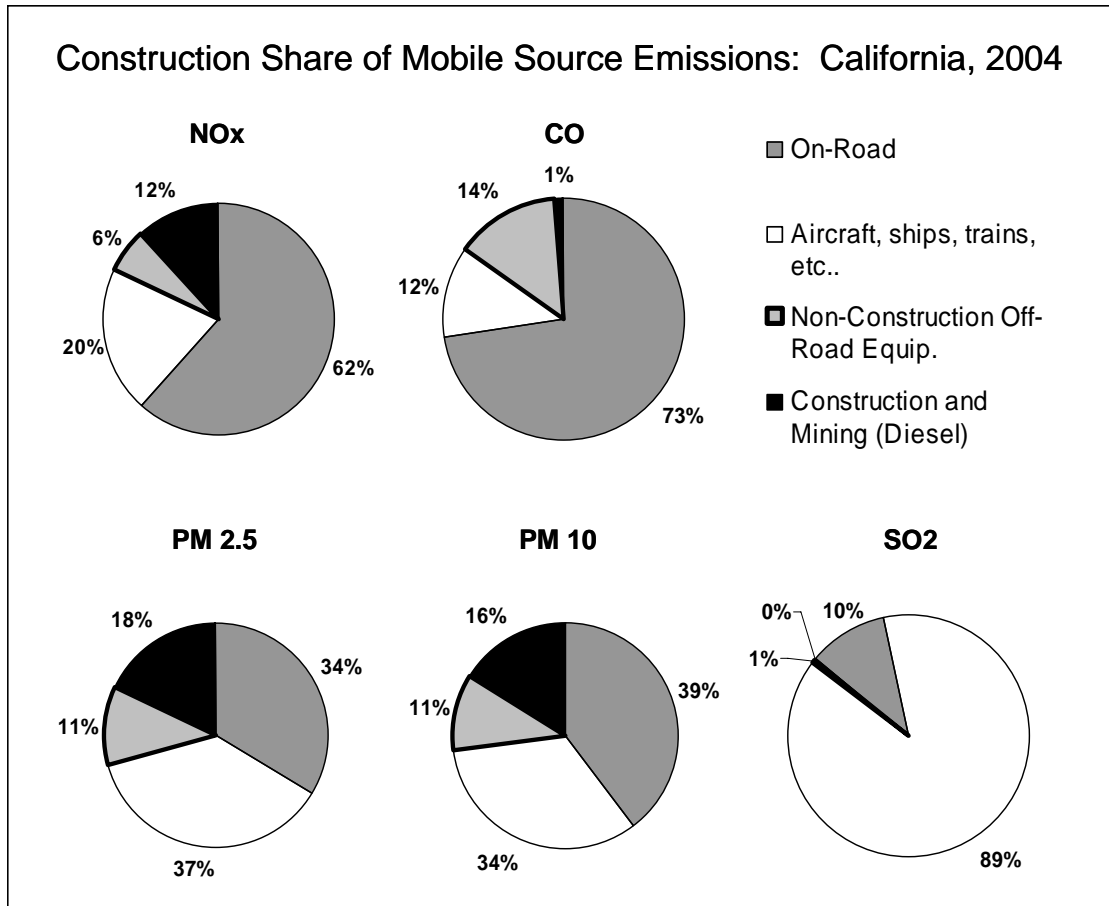
Figure 2 indicates that diesel construction equipment emissions are a significant source of NO<sub>x</sub> emissions, with PM<sub>2.5</sub> as a distant second, and contribute very little to PM<sub>10</sub>, CO and SO<sub>2</sub>. The contributions for particulate matter may not seem significant, so it is useful to compare construction emissions to mobile source emissions, which currently have stricter regulatory control (EPA 2000) (Figure 3).



**Figure 2: Construction share of total emissions inventory. Source data from CARB (2004)**

In Figure 3, on-road sources consist mainly of cars and on-road diesel trucks; “non-construction off-road,” and “construction and mining (diesel)” categories represent the CARB “off-road sources” category when they are combined. It is clear from Figure 4

that emissions from diesel construction equipment contribute large portions of the  $\text{NO}_x$ ,  $\text{PM}_{10}$  and  $\text{PM}_{2.5}$  inventories for mobile source emissions.



**Figure 3: Construction share of mobile source emissions. Source data from CARB (2004)**

## 2.2 Health Effects

With many areas in the country living in violation, or non-attainment of the PM and ozone standards (EPA, 2005a), it is important to study the effect of these emissions and strategies for reducing them.

### 2.2.1 Oxides of Nitrogen

$\text{NO}_x$  refers to nitrogen oxides, an gas formed from the reaction of burning fuel (EPA 2005a). Along with Volatile Organic Compounds (VOC), which are largely

emitted from natural sources,  $\text{NO}_x$  is an ozone precursor. Ozone is thought to be responsible for respiratory irritation and damage (EPA 2005b). High ozone concentrations can be damaging over either short term (1-3 hours) or long term (6-8 hour) exposures (EPA, 2004b). EPA has established maximum one-hour and eight-hour limits for ozone, which resulted in classifying a substantial portion of the population as living in non-attainment areas (EPA, 1996). Overall, 14 areas, 49 counties, 9,807,000 people are in one-hour ozone non-attainment areas, and 126 areas, 474 counties, 159,271,919 people are in eight-hour ozone non-attainment areas (EPA 2005a). Additionally, ozone is thought to contribute to environmental degradation, and pose harm to vegetation, crops and forests (EPA, 2005b).

In “ $\text{NO}_x$ -limited” regions, ozone can be very effectively reduced by reducing  $\text{NO}_x$  levels. In these situations, a much higher concentration of VOC is in the atmosphere compared to  $\text{NO}_x$  and the amount of ozone formed is extremely sensitive to changes in  $\text{NO}_x$ . Rural areas are the most likely to be  $\text{NO}_x$  -limited (EPA 2004b).

### **2.2.2 Particulate Matter ( $\text{PM}_{10}$ and $\text{PM}_{2.5}$ )**

Particulate matter (PM) is the term used to describe suspended particles with aerodynamic diameters in the micrometer range. Particulate matter consists of small solid and liquid particles from sources such as vehicle exhaust, construction dust, roadside dust and other combustion sources. High concentrations of PM cause cardiovascular disease, lung damage and increased mortality, especially in the young and elderly (EPA 2005a).

The NAAQS define two different sizes of particulate matter as criteria pollutants.  $\text{PM}_{10}$  is referred to as coarse particulate matter that has an aerodynamic diameter of less



than 10  $\mu\text{m}$ .  $\text{PM}_{2.5}$  is particulate matter that is less than 2.5 $\mu\text{m}$  in aerodynamic diameter and is referred to as fine particulate matter. Ultra-fine is a classification for  $\text{PM} < 0.1\mu\text{m}$ , but will not be discussed in this section because of its tendency to combine into larger diameter particles (Pope, 2000). Particulate matter has been regulated as a criteria pollutant since 1970, and the first ambient concentration standards for  $\text{PM}_{10}$  were enacted in 1987. In 1997, a primary and secondary standard for  $\text{PM}_{2.5}$  was also added to the NAAQS (EPA, 2004a).

The particles in diesel exhaust are primarily fine particles consisting of 80-95% of the total mass and are formed from combustion byproducts and from secondary atmospheric reactions of gaseous emissions. Incomplete combustion byproducts include unburned fuel and traces of lubricants, while secondary  $\text{PM}_{2.5}$  is formed in reactions between the  $\text{NO}_x$ ,  $\text{SO}_x$  and organics, which are criteria emissions in the gaseous part of diesel exhaust (Wilson and Suh, 1997) (EPA 2002a).

Fine particles are especially harmful to humans because they are small enough to penetrate the lower portion of the lungs when inhaled (EPA, 2002a). Compared to  $\text{PM}_{10}$ ,  $\text{PM}_{2.5}$  can travel distances up to 1000 kilometers versus 10 kilometers, and remain suspended in the atmosphere for weeks compared to hours (Wilson and Suh, 1997).

The fine particulate matter in diesel exhaust is of particular concern because it is known to consist of a variety of toxics. Any particle with an aerodynamic diameter less than 2.5 $\mu\text{m}$ , such as metals, liquids or organic compounds can be considered  $\text{PM}_{2.5}$ , but the fine particles in diesel exhaust consist of a very complex and toxic mixture that is thought to be a carcinogen and is known as Diesel PM (DPM). Equipment operators and

other employees that are exposed to a high concentration of diesel exhaust are especially vulnerable to this risk.

In an analysis of diesel exhaust studies, the EPA's Diesel Exhaust Health Assessment Document (HAD) concluded that 18 out of 22 cohort and case control studies of DPM exposed occupations showed an increased relative risk of lung cancer from 1.2 to 1.5 compared to non-exposed occupations EPA (2002a). The CARB assessment of diesel PM determined that over 300 additional people per million will have cancer related to DPM (CARB 2000). The MATES 2 study concluded that 70% of the carcinogenic risk from mobile sources is attributed to DPM (SCAQMD, 2000). With respect to sources, the CARB Almanac states that 71% of diesel PM comes from off-road engines, while only 21% comes from on-road engines (CARB, 2005).

The emissions from nonroad diesel engines have been sparsely regulated compared to gasoline engines and on-road diesel engines. Even though the EPA recently introduced strict nonroad control measures for PM and NO<sub>x</sub>, the measures are not retroactive and it will take over two decades before the existing fleet of heavily polluting diesel vehicles is out of service (EPA, 2004b). In the mean time the population of construction equipment is expected to grow while states struggle with reducing NO<sub>x</sub> and PM emissions (CARB 2000).

## **2.3 Standards and Controls**

The EPA has long regulated the emissions of on-road gasoline fueled vehicles, most notably with the introduction of catalytic converters. Regulations targeting emissions in highway and nonroad diesel vehicles were enacted in the 1990s, and for nonroad engines, started having effect for the 2000 model year (EPA 1998). The nonroad

regulations are referred to as Tier 1-3 rules (Table 3) and set maximum limits for PM and NO<sub>x</sub> concentrations in tailpipe exhaust depending on engine horsepower and the model year of the vehicle. The diesel regulations are not retroactive, and only affect future model year vehicles (EPA 1998).

**Table 3: Tier 1-3 nonroad diesel standards (EPA 1998)**

Emission Standards in g/kW-hr (g/hp-hr)					
Engine Power	Tier	Model Year	NMHC+ NO <sub>x</sub>	CO	PM
kW<8 (hp<11)	Tier 1	2000	10.5 (7.8)	8.0 (6.0)	1.0 (0.75)
	Tier 2	2005	7.5 (5.6)	8.0 (6.0)	0.80 (0.60)
8≤kW<19 (11≤hp<25)	Tier 1	2000	9.5 (7.1)	6.6 (4.9)	0.80 (0.60)
	Tier 2	2005	7.5 (5.6)	6.6 (4.9)	0.80 (0.60)
19≤kW<37 (25≤hp<50)	Tier 1	1999	9.5 (7.1)	5.5 (4.1)	0.80 (0.60)
	Tier 2	2004	7.5 (5.6)	5.5 (4.1)	0.60 (0.45)
37≤kW<75 (50≤hp<100)	Tier 2	2004	7.5 (5.6)	5.0 (3.7)	0.40 (0.30)
	Tier 3	2008	4.7 (3.5)	5.0 (3.7)	
75≤kW<130 (100≤hp<175)	Tier 2	2003	6.6 (4.9)	5.0 (3.7)	0.30 (0.22)
	Tier 3	2007	4.0 (3.0)	5.0 (3.7)	
130≤kW<225 (175≤hp<300)	Tier 2	2003	6.6 (4.9)	3.5 (2.6)	0.20 (0.15)
	Tier 3	2006	4.0 (3.0)	3.5 (2.6)	
225≤kW<450 (300≤hp<600)	Tier 2	2001	6.4 (4.8)	3.5 (2.6)	0.20 (0.15)
	Tier 3	2006	4.0 (3.0)	3.5 (2.6)	
450≤kW<560 (600≤hp<750)	Tier 2	2002	6.4 (4.8)	3.5 (2.6)	0.20 (0.15)
	Tier 3	2006	4.0 (3.0)	3.5 (2.6)	
kW>560 (hp>750)	Tier 2	2006	6.4 (4.8)	3.5 (2.6)	0.20 (0.15)

The recently enacted 2004 Clean Air Nonroad Diesel rule will lead to significant reductions in NO<sub>x</sub> and PM emissions in future equipment. By 2030, the new rule will lead to an estimated 738,000 tons/year reduction in NO<sub>x</sub> and 129,000 tons/year reduction in PM. This will be accomplished with fuel and engine regulations that will be phased in between 2007 and 2012 (EPA 2004b). The rule contains two parts: one regulates sulfur levels in diesel fuel, and one regulates pollutants in exhaust.

Sulfur in diesel fuel is a major impediment towards emissions reduction, because it renders exhaust after-treatment systems ineffective; after-treatment systems are very effective at removing NO<sub>x</sub> and PM from engine exhaust (Liang, Baumgard, et al., 2000). The nonroad diesel fuel used in most of the country contained over 3,300 parts per million (ppm) of sulfur in 1997 (EPA 2004f). The Nonroad Rule will reduce the level to 500ppm in 2007, and 15ppm in 2010 (EPA 2004b) (Table 4). The eventual reduction in sulfur levels will allow equipment manufacturers to develop exhaust treatment systems and comply with the second part of the rule, which is a set of engine emissions standards.

**Table 4: Fuel regulations in the 2004 nonroad diesel rule. NR refers to nonroad diesel, LM refers to locomotive and marine diesel (EPA 2004b)**

TABLE IV-4.-~~S~~ MALL REFINER NRLM DIESEL FUEL SULFUR STANDARDS, PPM <sup>A</sup>

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015+
Non-Small Refiners-NR fuel .....		500	500	500	15	15	15	15	15	15
Non-Small Refiners-LM fuel .....		500	500	500	500	500	15	15	15	15
Small Refiners-NR diesel fuel .....					500	500	500	500	15	15
Small Refiners-LM diesel fuel .....					500	500	500	500	15	15

Notes: <sup>a</sup> New standards will take effect on June 1 of the applicable year.

The engine emissions standards in the 2004 nonroad rule are known as the Tier 4 rules, and will take effect beginning from 2008 to 2015 model year engines depending on the horsepower rating of the engine (Table 5). The emissions standards cover PM and NO<sub>x</sub> plus non-methane hydrocarbons (NMHC) and will substantially reduce these emissions using engine technology and after-treatment systems. These engine limits are based on vehicle model years in order to give the equipment manufacturers lead time to develop new technology (EPA, 2004b). The rules are not retroactive, so the primary mechanism being used to reduce emissions from existing engines is to wait for the equipment to reach the end of its useful life.

**Table 5: Tier 4 model year emissions regulations in the 2004 Nonroad diesel rule (EPA 2004b)**

**Table 1—Tier 4 PM Standards (g/bhp-hr) and Schedule**

Engine Power	Model Year					
	2008	2009	2010	2011	2012	2013
hp < 25 (kW < 19)	0.30 <sup>a</sup>					
25 ≤ hp < 75 (19 ≤ kW < 56)	0.22 <sup>b</sup>					0.02
75 ≤ hp < 175 (56 ≤ kW < 130)					0.01	
175 ≤ hp ≤ 750 (130 ≤ kW ≤ 560)				0.01		
hp > 750 (kW > 560)	see Table 3					

**Notes:**

<sup>a</sup> For air-cooled, hand-startable, direct injection engines under 11 hp, a manufacturer may instead delay implementation until 2010 and demonstrate compliance with a less stringent PM standard of 0.45 g/bhp-hr, subject also to additional provisions discussed in section II.A.3.a of the preamble.

<sup>b</sup> A manufacturer has the option of skipping the 0.22 g/bhp-hr PM standard for all 50-75 hp engines. The 0.02 g/bhp-hr PM standard would then take effect one year earlier for all 50-75 hp engines, in 2012.

**Table 2—Tier 4 NOx and NMHC Standards and Schedule**

Engine Power	Standard (g/bhp-hr)		Phase-in Schedule <sup>a</sup> (model year)			
	NOx	NMHC	2011	2012	2013	2014
25 ≤ hp < 75 (19 ≤ kW < 56)	3.5 NMHC+NOx <sup>b</sup>				100%	
75 ≤ hp < 175 (56 ≤ kW < 130)	0.30	0.14		50% <sup>c</sup>	50% <sup>c</sup>	100% <sup>c</sup>
175 ≤ hp ≤ 750 (130 ≤ kW ≤ 560)	0.30	0.14	50%	50%	50%	100%
hp > 750 (kW > 560)	see Table 3					

**Notes:**

<sup>a</sup> Percentages indicate production required to comply with the Tier 4 standards in the indicated model year.

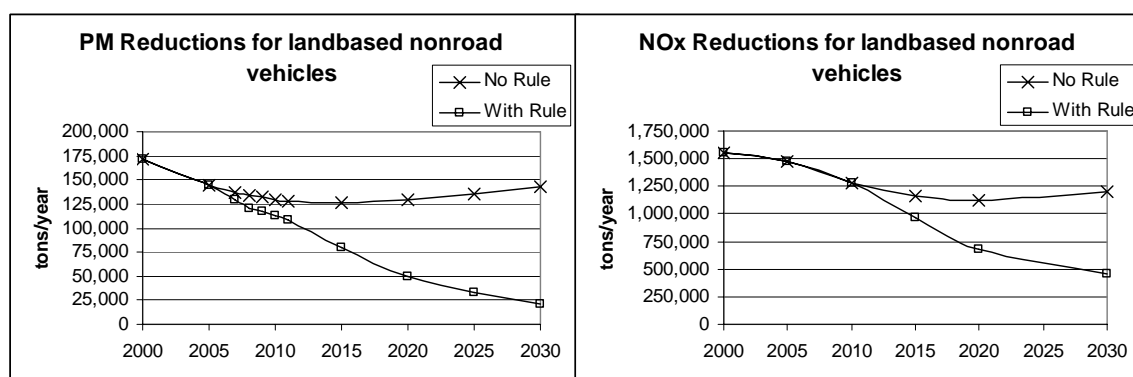
<sup>b</sup> This is the existing Tier 3 combined NMHC+NOx standard level for the 50-75 hp engines in this category. In 2013 it applies to the 25-50 hp engines as well.

<sup>c</sup> Manufacturers may use banked Tier 2 NMHC+NOx credits to demonstrate compliance with the 75-175 hp engine NOx standard in this model year. Alternatively, manufacturers may forego this special banked credit option and instead meet an alternative phase-in requirement of 25/25/25% in 2012, 2013, and 2014 through December 30, with 100% compliance required beginning December 31, 2014. See sections III.A and II.A.2.b of the preamble.

**Table 4—Tier 4 Standards for Engines Over 750 hp (g/bhp-hr)**

engines used in:	2011			2015		
	PM	NOx	NMHC	PM	NOx	NMHC
generator sets ≤ 1200 hp	0.075	2.6	0.30	0.02	0.50	0.14
generator sets > 1200 hp	0.075	0.50	0.30	0.02	no new standard	0.14
all other equipment	0.075	2.6	0.30	0.03	no new standard	0.14

As the population of nonroad equipment retires from service and cleaner replacement equipment enters service, the EPA predicts a major decline in PM and NO<sub>x</sub> emissions from nonroad diesel engines, which is shown in Figure 4. The results are significant, but will take until 2030 to be realized (EPA 2004b). The lifetime of nonroad construction equipment is quite long; the results of a recent survey of in-service equipment population are shown in Table 6 (Sutton 2003). Many of the heavy equipment types in the survey have average useful lives close to 20 years, and only directional boring machines have an average lifespan less than 10 years. Additionally, engine emissions increase as they age, or deteriorate (EPA 2004f). This means that without intervention, older model construction equipment will continue to be a significant air pollutant contributor for many years to come.



**Figure 4: Projected reduction in PM and NO<sub>x</sub> emissions due to 2004 nonroad fuel and engine rule (EPA, 2004b)**

**Table 6: In-service construction equipment average age, and useful life (Sutton 2003)**

Category	Average Age (years)	Useful Life (years)
Backhoe + Loaders	6.3	18
Directional Boring Equipment	4	9.6
Hydraulic Excavator, Crawler	6.1	17
Motor Grader, Articulated	7.5	22
Off-highway haulers, Articulated	5.8	13
Skid-steer Loaders	5.2	13.2
Trenchers, Rubber-Tired	6.9	13
Wheel Loaders	8.7	21
Asphalt Pavers	7.8	17.5
Concrete Pavers, Slab	7.1	17.3
Rough Terrain Forklift, Telescopic	6.5	14
Rough Terrain Forklift, Vertical Mast	8.5	17.2

## 2.4 Conformity

Federal funding for regional transportation budgets is dependent on the successful outcome of an air quality regulation process known as conformity. Transportation conformity is a set of requirements legislated by the Clean Air Act Amendments of 1990 (42 U.S.C §§7401 to 7671q) and enforced by EPA regulations (40CFR Parts 51 and 93). The purpose of conformity is to ensure that new transportation projects do not interfere with air-quality improvement plans, known as State Implementation Plans (SIP). Any area that violates the National Ambient Air Quality Standards for a criteria pollutant is required to create a SIP for that pollutant and is labeled a non-attainment area. The SIP consists of a number of emissions control projections and plans that are filed by the state with the EPA; the plans specify how the region will be brought back into attainment. Once accepted by the EPA, the SIP becomes a federally enforceable regulation.

Any time a transportation plan is considered, or a new project is planned, a conformity determination must be made. The determination requires regional and project

wide emissions analysis to ensure that the project emissions do not interfere with the progress specified in the SIP. If an area fails an attainment demonstration plan, or is unable to create a plan, it risks falling into a conformity lapse which makes it ineligible for federal funds.

As part of the conformity process a regional emissions analysis is conducted where the contribution of stationary, mobile on-road, mobile off-road and other sources are modeled. Construction equipment is included as part of the mobile off-road category and thus, an estimate of the contribution of construction equipment to the regional emissions inventory is required. If construction emissions are significantly overestimated, then planned attainment measures may be more aggressive than necessary to meet the SIP. If construction emissions are significantly under-estimated, then other planned attainment measures may not be robust enough to be effective. Either way, the control strategies will not be as cost-effective as desired.

## **2.5 Models**

Modeling the emissions of nonroad diesel equipment can be done at a microscopic or macroscopic level. At the macroscopic level, emissions inventories are estimated over broad geographic area based on census style projections of the amount of equipment in the area and likely amount of time it will be in use. Microscopic models are more appropriate for project level analysis; they estimate emissions based on a prediction of the actual equipment types on the job site and how much time the equipment will be in use.

There are many sources of emissions from roadway construction projects. Heavy offroad equipment is used to move soil and lay asphalt, on-road diesel trucks haul soil



around the job site, on-road light duty trucks ferry workers around the job site, painting and AC paving emit VOC, and construction site dust is a major source of PM emissions. This discussion on models will focus on exhaust from vehicles, even though many of the models also estimate emissions from other sources

### 2.5.1 Macroscopic Models

The EPA's NONROAD model, and CARB's OFFROAD model are two major macroscopic models used in nonroad emissions inventory estimates. OFFROAD is not available to the public, so NONROAD will be the only macroscopic model discussed in this section. The basic emissions equation (Equation 1) used to determine the mass of each pollutant emitted over a time period in NONROAD sums the product of engine population, average power, load factor, activity and emissions factor.

$$Emissions = \sum (Pop)(Power)(LF)(A)(EF)$$

#### Equation 1: NONROAD equation

For this equation the vehicle population, *pop* is determined from default annual population estimates, which also include the average engine horsepower, *Power* (EPA 2005d). The model can also scale these estimates to state levels, or county levels (EPA 2005f). The defaults for load factors, *LF*, which represents the fraction of power available and the average annual hours of activity, *A*, are found in EPA (2004e). *EF* represents the emission-factors in g/hp-hr, which are the grams of a pollutant per hour of use, per unit of engine horsepower (EPA 2004f)

### **2.5.2 Microscopic Models**

There are a number of microscopic models for highway construction that attempt to help air quality analysts estimate emissions on a project-level basis. Microscopic models, as opposed to macroscopic models, attempt to estimate the equipment use over the lifetime of a particular construction project. These models rely on emission factors and an estimate of the duration of use and amount of equipment to be used to calculate totals for each criteria pollutant. There are three known California microscopic models that are used to estimate construction pollutant sources. The author is not aware of any non-California microscopic models.

The D5 model is a spreadsheet tool developed by the environmental staff of Caltrans Division 5 and estimates equipment emissions from heavy duty vehicles and offroad equipment. The Jones and Stokes model detailed in Niemeier (2001), and referred to as SACTO, estimates emissions for all categories of construction except for the VOC from paving and painting. The UCD Construction Emissions Estimation Model (UCD-CT-Construct) calculates emissions for all construction related pollutants. A comparison of the inputs and outputs of each of the models is shown in Table 7.

**Table 7: A comparison of the three California models (R = "Required", O = "Optional", X = "Included")**

Input	UCD- CT_Construct	SACTO	D5
Construction Phase Quantities			
Land Clearing and Grubbing	R	O	
Roadway excavation	R	O	R
Structure excavation	R		R
Base, subbase and imported borrow	R	O	R
Structure Concrete	R		R
AC Paving	R	O	R
Drainage / Utilities / Subgrade		O	
Construction Phase Lengths	R	O	
Vehicles / Phase	O	O	
Project Type (New / Freeway / Overpass)		R	
Road Type (Freeway / Highway / Local)	R		
Construction Start Year	R	R	
Project Construction Time	Calculated	R	
Project Length (miles)	R	R	
Soil Type		R	
On-road Emissions Factor Model	R	R	
Total Project Area		R	
Maximum Area Disturbed / Day	O	R	
Water Truck Used?		R	
Painting and Asphalt Application Qtys	O		
Age of Equipment	R		
Signal Board Solar Powered?	R		
Output	UCD- CT_Construct	SACTO	D5
CO	X	X	X
ROG	X	X	X
NOx	X	X	X
PM10	X	X	X
Emissions by phase	X	X	X
Fugitive Dust (PM10)	X	X	
Painting and asphalt application	X		
On-road / Nonroad emissions breakdown	X		
Summary by year of project	X		

#### **2.5.2.1 Caltrans D5 Model**

The D5 model calculates emissions by determining the hours of work needed for each of the five phases detailed in Figure 5. The quantity is determined based on a user-

input work quantity and a standard list of equipment and rate of production for that phase per hour. The total number of hours for equipment are calculated and multiplied by a set of emissions factors taken from the CARB OFFROAD model for each equipment type, and an emissions estimate for four criteria pollutants is calculated. This model is very simple and easy to use, and well suited for Caltrans because the quantities of production needed for each project are usually generated during the planning phase. Output for the D5 model is shown in Figure 6.

The model is very rigid when it comes to equipment activity assumptions. It is assumed that the workdays are eight hours long and that no more than five types of equipment are used for each phase. Thus, while the model is straightforward and takes advantage of synergy in its construction productivity calculations, it uses very static equipment productivity rates.

CONSTRUCTION ACTIVITIES AND EQUIPMENT WORKSHEET				
(Please enter estimated quantities ONLY)				
PROJECT (Co-Rte-PM):				
OPERATION	VEHICLE TYPE	HOURS PER	ESTIMATED QUANTITIES	TOTAL HOURS
AC Paving (tons)		2000	3968.0	
	Paver	8		15.9
	Roller	24		47.6
	Heavy duty truck	160		317.4
	Medium duty truck	8		15.9
Structure Concrete (cu yds)		50	928	
	Crane or pumper	1		19
	Heavy duty truck (Transit mix truck)	5		93
Structure excavation (cu yds)		20	5340	
	Backhoe	1		267
	Light duty truck	1		267
Roadway excavation (cu yds)		7000	15000	
	Scraper	48		103
	Water truck	8		17
	Roller/Compactor	8		17
	Dozer	8		17
	Motor Grader	8		17
Base, subbase and imported borrow (cu yds)		2000	8370	
	Motor grader	16		67
	Water truck	8		33
	Heavy duty truck	120		502
	Roller/Compactor	8		33

Figure 5: The D5 model input sheet

CONSTRUCTION EMISSIONS FOR DIESEL POWERED VEHICLES (1)													
(Emissions in Lb/hr are for a single vehicle)													
<b>PROJECT (Co-Rte-PM):</b>													
OPERATION	VEHICLE TYPE	# OF VEHICLES	RS. / DAY	TOTAL HOURS	TOTAL DAYS	CO Lb/hr	CO Lb/total	ROG Lb/hr	ROG Lb/total	NOx Lb/hr	NOx Lb/total	TSP Lb/hr	PM Lb/hr
<b>AC Paving (tons)</b>													
	Paver	1	8	16	2.0	0.65	10.3	0.16	2.5	1.95	31.0	0.09	1
	Roller	3	8	48	2.0	0.83	39.5	0.21	10.0	2.52	120.0	0.12	5
	Heavy duty truck	20	8	317	2.0	1.69	536.5	0.43	136.5	5.13	1628.5	0.24	7
	Medium duty truck	1	8	16	2.0	0.85	13.5	0.21	3.3	2.56	40.6	0.12	1
					<b>2.0</b>								
<b>Structure Concrete (cu yds)</b>													
	Crane or pumper	1	8	19	2.3	1.28	23.8	0.32	5.9	3.87	71.8	0.18	3
	Heavy duty truck	5	8	93	2.3	1.69	156.8	0.43	39.9	5.13	476.1	0.24	2
	(Transit mix truck)												
					<b>2.3</b>								
<b>Structure excavation (cu yds)</b>													
	Backhoe	1	8	267	33.4	0.57	152.2	0.14	37.4	1.73	461.9	0.08	2
	Light duty truck	1	8	267	33.4	0.59	157.5	0.15	40.1	1.8	480.6	0.08	2
					<b>33.4</b>								
<b>Roadway excavation (cu yds)</b>													
	Scraper	6	8	103	2.1	2.14	220.1	0.54	55.5	6.48	666.5	0.30	2
	Water truck	1	8	17	2.1	0.65	11.1	0.16	2.7	1.95	33.4	0.09	1
	Roller/Compactor	1	8	17	2.1	0.83	14.2	0.21	3.6	2.52	43.2	0.12	2
	Dozer	1	8	17	2.1	0.57	9.8	0.14	2.4	1.73	29.7	0.08	1
	Motor grader	1	8	17	2.1	0.91	15.6	0.23	3.9	2.74	47.0	0.13	1
					<b>2.7</b>								
<b>Base, subbase and imported borrow (cu yds)</b>													
	Motor grader	2	8	67	4.2	0.91	60.9	0.23	15.4	2.74	183.5	0.13	1
	Water truck	1	8	33	4.2	0.65	21.8	0.16	5.4	1.95	65.3	0.09	2
	Heavy duty truck	15	8	502	4.2	1.69	0.0	0.43	215.9	5.13	2576.3	0.24	11
	Roller/Compactor	1	8	33	4.2	0.83	0.0	0.21	7.0	2.52	84.4	0.12	1
					<b>4.2</b>								
	Total emissions						<b>1444</b>		<b>588</b>		<b>7040</b>		<b>3</b>
	Total days				<b>44</b>								
	Average daily emissions (lbs)						<b>33</b>		<b>13</b>		<b>160</b>		
	Quarterly emissions (tons)						<b>1.1</b>		<b>0.4</b>		<b>5.3</b>		
Indicate via										Revised 1/28/04			

Figure 6: The D5 model output sheet

### 2.5.2.2 SACTO Model

The Jones and Stokes model (SACTO) as described by Niemeier (2001), estimates emissions from a wider range of sources than D5, including area-wide dust and worker commute emissions. Input and output screen captures are shown in Figures 7 and 8 respectively. The worker commute calculation in this model is unique; it takes into account the trips generated by each employee to commute to the construction site. The model also calculates emissions from heavy on-road trucks hauling soil around the site,

with default values and user override values for round-trip distance and number of trips per day.

The SACTO model estimates off-road vehicle emissions using the following equation:

$$\text{Daily emissions from off-road} = N * f * l * t * h$$

Where f, l and h are the emissions factor, load factor and average hp, and are all related to vehicle characteristics; N represents the amount of equipment used, and t represents hours of activity per day. N is a default, or user input value for the number pieces of heavy equipment that is used for a particular construction phase. The model outputs ROG, NO<sub>x</sub>, PM and CO in pounds per day and kilograms per day, and breaks down the PM emissions into exhaust and fugitive dust components.

Road Construction Emissions Model		Version 5.1
<b>Data Entry Worksheet</b>		
Note: Required data input sections have a yellow background.		
Optional data input sections have a blue background. Only areas with a yellow or blue background can be modified. Program defaults have a white background.		
The user is required to enter information in cells C10 through C28.		
<b>Input Type</b>		
Project Name	But 99 Rio Bonito	
Construction Start Year	2008	Enter a Year between 2000 and 2010 inclusive
Project Type	2	1 New Road Construction 2 Road Widening 3 Bridge/Overpass Construction
Project Construction Time	11	months
Predominate Soil/Site Type: Enter 1, 2, or 3	2	1. Sand Gravel 2. Weathered Rock-Earth 3. Blasted Rock
On-Road Emission Factors: Enter 1, 2, or 3	4	1. Emfac7fv1.1 2. Emfac7G 3. Emfac2001 4. Emfac2002
Project Length	4.5	miles
Total Project Area	94	acres
Maximum Area Disturbed/Day	2	acres
Water Trucks Used?	1	1. Yes 2. No
Soil Imported	565	yd <sup>3</sup> /day
Soil Exported	571	yd <sup>3</sup> /day
Average Truck Capacity	20	yd <sup>3</sup> (assume 20 if unknown)
The remaining sections of this sheet contain areas that can be modified by the user, although those modifications are not shown here.		
<a href="#">Emission Estimates</a> / <a href="#">Data Entry</a> / <a href="#">Emfac7f</a> / <a href="#">Emfac7g</a> / <a href="#">Emfac2001</a> / <a href="#">Emfac2002</a> / <a href="#">Appendix D</a> / <a href="#">Appendix B</a>		

**Figure 7: SACTO input screen**

Road Construction Emissions Model, Version 5.1							
Emission Estimates for -> But 99 Rio Bonito				Exhaust		Fugitive Dust	
Project Phases (English Units)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	PM10 (lbs/day)	PM10 (lbs/day)	PM10 (lbs/day)	
Grubbing/Land Clearing	14	56	60	12	4	8	
Grading/Excavation	17	84	94	13	5	8	
Drainage/Utilities/Sub-Grade	14	60	64	12	4	8	
Paving	9	34	41	3	3	0	
Maximum (pounds/day)	17	84	94	13	5	8	
Total (tons/construction project)	2	6	9	1	1	1	<-tons
Notes: Project Start Year ->	2008						
Project Length (months) ->	11						
Total Project Area (acres) ->	94						
Maximum Area Disturbed/Day (acres) ->	2						
Total Soil Imported/Exported (yd <sup>3</sup> /day) ->	1136						
PM10 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.							
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I.							
Emission Estimates for -> But 99 Rio Bonito				Exhaust		Fugitive Dust	
Project Phases (Metric Units)	ROG (kgs/day)	CO (kgs/day)	NOx (kgs/day)	PM10 (kgs/day)	PM10 (kgs/day)	PM10 (kgs/day)	
Grubbing/Land Clearing	6	26	27	5	2	3	
Grading/Excavation	8	38	43	6	2	3	
Drainage/Utilities/Sub-Grade	6	27	29	5	2	3	
Paving	4	15	19	1	1	0	
Maximum (kilograms/day)	8	38	43	6	2	3	
Total (megagrams/construction project)	1	6	8	1	0	1	<-mega
Notes: Project Start Year ->	2008						
Project Length (months) ->	11						
Total Project Area (hectares) ->	38						
Maximum Area Disturbed/Day (hectares) ->	1						
<a href="#">Emission Estimates</a> / <a href="#">Data Entry</a> / <a href="#">Emfac7f</a> / <a href="#">Emfac7g</a> / <a href="#">Emfac2001</a> / <a href="#">Emfac2002</a> / <a href="#">Appendix D</a> / <a href="#">Appendix B</a> /							

**Figure 8: SACTO output screen**

### 2.5.2.3 UCD-CT-Construct

UCD-CT-Construct was developed to further improve construction site emissions estimates and is used as the skeleton for the data collection efforts in this research (Figure 9) (Figure 10). Emissions for each criteria pollutant are estimated similarly to the SACTO model. The model is unique in using gallons of paint as an input value, as well as considering if signal boards are solar powered, and the sulfur level of the diesel fuel.

Most of the data describing the equipment activity is user input, such as the number of days for each phase and the amount of equipment that is used for each phase with hours of daily use (default values do exist). The equipment activity is then multiplied by emissions factors from NONROAD, and emissions totals are estimated. Additionally, estimates are produced for AC paving and painting ROG emissions, and



area dust PM emissions. The emissions from the AC paving are generated from the EPA AP-42 emissions factors.

	A	B	C	D	E	F	G	H	I	J	K	L
1	PROJECT											
2	DATE:											
3	(Users who wish to add a project description to the file may do so in the "Project Description" worksheet.)											
4	PROJECT INFORMATION											
5	Road Type	Highway										
6	Project Length	miles										
7												
8	OPERATION	Start Date	Length of Operation	Total Work	Average Daily Work	Daily Disturbed Area (acres)	Mitigati					
9		MM/DD/YY	(working days)	Quantities	Quantities							
10	Land clearing/grubbing (cu yds)						0.00	0.50				
11	Roadway excavation (cu yds)						0.00	0.50				
12	Structural excavation (cu yds)						0.00	0.50				
13	Base/subbase/imported borrow (cu yds)						0.00	0.50				
14	Structure concrete (cu yds)											
15	AC paving (tons)											
16	Please input start dates between year 2000 and 2020											
17	Project Duration	0 Days or 0 years 0 months										
18												
19	Painting and Asphalt Application											
20	Painting	Water-based Coating	gallons									
21		Solvent-based Coating	gallons									
22	Cutback Asphalt	Total weight	tons									
23		Diluent Content	35.0 %									
24												
25												
26	FLEET INFORMATION											
27												
28	On-Road Emission Factors Model	EMFAC2002										
29	Off-Road Engine Emission Standards	Tier 0 pre-1988										
30	Off-Road Equipment level of age	Mid-life										
31	Are signal boards solar powered?	Yes										
32	Diesel sulfur content (ppmv)	141										
33												
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Figure 9: UCD-CT-Construct input

	A	B	C	D	E	F	G	H	I
1	<b>UC Davis Construction Emissions Estimation Model</b>								
2	<b>Version 3.4</b>								
3	<b>December 3, 2004</b>								
4									
5	<b>PROJECT</b>							<b>DATE:</b>	
6									
7	<b>Summary by Year</b>	<b>Total Emissions by Year (tons)</b>				<b>Average Daily Emissions by Year (lbs/day)</b>			
8	<b>Year</b>	<b>ROG</b>	<b>CO</b>	<b>NOx</b>	<b>PM10</b>	<b>ROG</b>	<b>CO</b>	<b>NOx</b>	<b>PM10</b>
9	2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	2001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	2002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	2003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	2004	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	2006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	2007	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	2008	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	2009	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	2010	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	2011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	2012	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	2013	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23	2014	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	2015	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	2016	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	2017	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27	2018	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28	2019	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29	2020	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	<b>Project Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>				
31		<b>Average Emissions per Year (tons/year)</b>				<b>Average Emissions per Day (lbs/day)</b>			
32	<b>Project Summary</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
33									
34	<b>Summary by Operation</b>	<b>Total Emissions by Operation (tons)</b>				<b>Daily Emissions by Operation (lbs/day)</b>			
35	<b>Project Phases</b>	<b>ROG</b>	<b>CO</b>	<b>NOx</b>	<b>PM10</b>	<b>ROG</b>	<b>CO</b>	<b>NOx</b>	<b>PM10</b>
36	<b>Land clearing and grubbing</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
37	<b>Roadway excavation</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
38	<b>Structural excavation</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
39	<b>Base, subbase and imported borrows</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	<b>Structure concrete</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
41	<b>Painting and AC Paving</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
42	<b>Project Total</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>				

Figure 10: UCD-CT-Construct output

## 2.6 Input to Models

Both macroscopic and microscopic models need realistic inputs to generate accurate emissions estimates. The different kinds of inputs include equipment characteristics, amount of equipment used and how long the equipment is used for. The sources of the input for both models will be discussed in the section as well limitations of the input.

### 2.6.1 Macroscopic Model Inputs

Recall from Section 2.5.1 that NONROAD uses engine population, average power, load factor, hours of activity and emission factors to estimate emissions on a county, state or national level. The equation is re-presented in Figure 11.

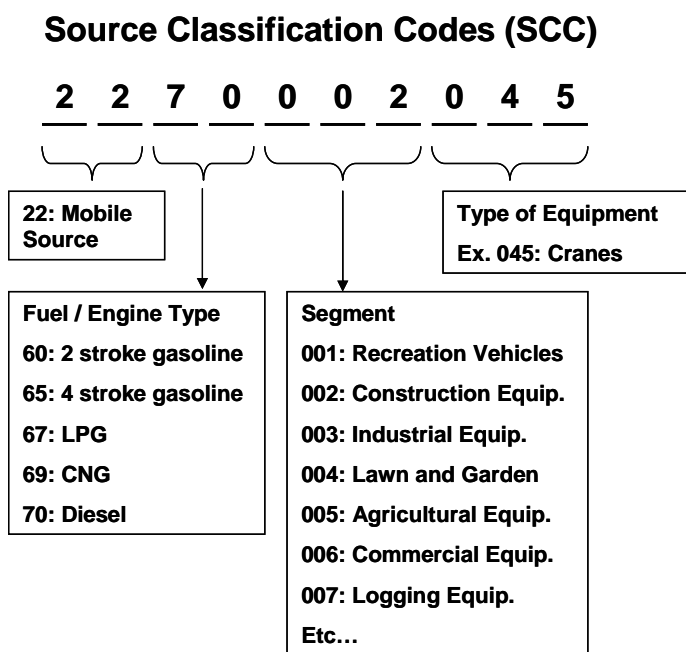
$$M_i = N \times HRS \times HP \times LF \times EF_i \quad (\text{Eq. 1})$$

Where:

$M_i$	=	mass of emissions of $i^{\text{th}}$ pollutant during inventory period
$N$	=	source population
$HRS$	=	annual hours of use
$HP$	=	average rated horsepower
$LF$	=	typical load factor
$EF_i$	=	average emissions of $i^{\text{th}}$ pollutant per unit of use (e.g., grams per horsepower-hour)

**Figure 11: NONROAD emissions estimation equation (Pechan 1997)**

The nonroad model was designed for all types of non-road equipment ranging from lawnmowers to marine craft. Construction equipment is only one segment of the equipment that is tracked, and the equipment is sub-specified in categories identified by Source Category Codes, or SCCs (Figure 12). A list of construction equipment categories is shown in Figure 13.



**Figure 12: Source Classification Code template**

	(EPA now also includes for Utility Vehicle sales category)		
22xx002003	Construction Equipment Asphalt Pavers	41	Pavers
22xx002006	Construction Equipment Tampers/Rammers	95	Tampers/Rammer
22xx002009	Construction Equipment Plate Compactors	61	Plate Compactors
22xx002012	Construction Equipment Concrete Pavers		Unused (included in 22xx002003)
22xx002015	Construction Equipment Rollers	39	Rollers
22xx002018	Construction Equipment Scrapers	29	Scrapers
22xx002021	Construction Equipment Paving Equipment	35	Paving Equipment
22xx002024	Construction Equipment Surfacing Equipment	23	Surfacing Equipment
22xx002027	Construction Equipment Signal Boards	73	Light Plants
22xx002030	Construction Equipment Trenchers	42	Trenchers
22xx002033	Construction Equipment Bore/Drill Rigs	37	Bore/Drill Rigs
22xx002036	Construction Equipment Excavators	28	Excavators
22xx002039	Construction Equipment Concrete/Industrial Saws	77	Concrete/Ind Saws
22xx002042	Construction Equipment Cement & Mortar Mixers	57	Cem/Mtr Mixers
22xx002045	Construction Equipment Cranes	27	Cranes
22xx002048	Construction Equipment Graders	30	Graders
22xx002051	Construction Equipment Off-highway Trucks	40	Off-Highway Truck
22xx002054	Construction Equipment Crushing/Proc. Equipment	34	Crush/Proc Equipment
22xx002057	Construction Equipment Rough Terrain Forklifts	84	Rough Terrain Forklifts
22xx002060	Construction Equipment Rubber Tire Loaders	33	R/T Loader
22xx001060	[was Rubber Tire Dozers 22xx002063. EPA now combines #32 with #62 Specialty Vehicle Carts above]	32	Utility Vehicles
22xx002066	Construction Equipment Tractors/Loaders/Backhoes	43	Tractor/Loader/ Backhoe
22xx002069	Construction Equipment Crawler Dozer	31	Crawler Dozers
22xx002072	Construction Equipment Skid Steer Loaders	38	S/S Loader
22xx002075	Construction Equipment Off-Highway Tractors	68	Off-Hwy Tractors
22xx002078	Construction Equipment Dumpers/Tenders	60	Dumpers/Tenders
22xx002081	Construction Equipment Other Construction Equipment	36	Other Construction
22xx003010	Industrial Equipment Aerial Lifts	64	Aerial Lifts

**Figure 13: Construction Equipment Categories in the NONROAD model (EPA 2005d)**

The source population and average rated horsepower inputs for construction equipment in the NONROAD model come from Power Systems Research (PSR) data. PSR is a firm that tracks heavy equipment engine sales and equipment population trends, and is the company that the EPA uses for much of the NONROAD input data. PSR links engine use to equipment categories; the national equipment population for NONROAD 2005 was estimated with the aid of a PSR manufacturer survey of engine sales up to year 2000. The year 2000 data contains population estimates of operational equipment from model year 1950 to 2000. The data are broken down into 19 levels of horsepower ranging from 0 to 3,000hp. PSR checks their population estimates intermittently using owner

surveys, and also modifies estimates based on average engine life calculations (Figure 14) (EPA 2005d).

Base Year U.S. Population Estimates in Final NONROAD2005\*

Year	SCC	Equipment Description	HPmin	HPmax	HPavg	Population
2000	2270002069	Dsl - Crawler Tractor/Dozers	175	300	235.5	27,323
2000	2270002069	Dsl - Crawler Tractor/Dozers	300	600	425.3	13,835
2000	2270002069	Dsl - Crawler Tractor/Dozers	600	750	707	5,458
2000	2270002069	Dsl - Crawler Tractor/Dozers	750	1000	923	1,129
2000	2270002069	Dsl - Crawler Tractor/Dozers	1000	1200	1065	1,964
2000	2270002069	Dsl - Crawler Tractor/Dozers	1200	2000	1473	9
2000	2270002072	Dsl - Skid Steer Loaders	6	11	9.5	125
2000	2270002072	Dsl - Skid Steer Loaders	11	16	15.47	20,644
2000	2270002072	Dsl - Skid Steer Loaders	16	25	20.3	45,772
2000	2270002072	Dsl - Skid Steer Loaders	25	40	34.97	89,565
2000	2270002072	Dsl - Skid Steer Loaders	40	50	44.94	35,417

**Figure 14: Example PSR engine population data by hp (EPA 2005d)**

Default load factor and annual hours of use estimates also originate from PSR data. Although engines are rated for a maximum power, they are rarely operated at that level for extended periods of time. The load factor scales the engine power output to a lower proportion of the maximum power. Earlier versions of NONROAD used PSR calculations for each equipment category based on fuel consumption and hours of activity for load factors. The calculations were based solely on survey data so in newer versions the EPA replaced the PSR calculations with actual transient cycle tests performed on diesel equipment by the Southwest Research Institute (SWRI). SWRI generated load factors for seven pieces of construction equipment and corralled the results down to three generic load factor values: high, low and steady state (Figure 15). Each piece of construction equipment is classified with one of these load factor bins. The default activity inputs are estimates of the number of hours per year that each piece of equipment is in operation, and come from annual nonroad equipment owner's surveys collected by PSR (EPA 2004e).

Table 9. Compression-Ignition Load Factors			
Cycle	Cycle Load Factors	Assignment	Average
Agricultural Tractor	0.78	High	0.59
Crawler Dozer	0.58		
Rubber-tired Loader	0.48		
Excavator	0.53		
Backhoe Loader	0.21	Low	0.21
Skid-steer Loader	0.23		
Arc Welder	0.19		
7-cycle average	---	Steady-state	0.43

**Figure 15: Diesel Load Factors**

Emissions factors for each pollutant are the final multiplier in the NONROAD emissions function. The emissions factors are a measure of the grams of pollutant per horsepower per hour of operation. Factors for existing engines are based on test data, and future projections use the Tier standards for the engine model year. NONROAD modifies the emissions factors based on the projected sulfur in the diesel fuel and by engine deterioration which affects emissions with age (EPA 2004f).

The PSR approach to determining equipment population and characteristics on a local level is to disaggregate national level survey results down to county level using a variety of economic and industry indicators. Statewide data are calculated by summing county results. The indicators that PSR uses are considered proprietary information and are not publicly known, so the EPA devised its own methods for determining county level equipment populations. A database of total value of construction by county was

acquired from McGraw-Hill construction and adjusted for geographic cost differences using Area Modification Factors from Craftsman. Different values of construction utilize equipment at different levels; road construction uses much more equipment than building construction of equivalent value. The EPA used multiple studies to create an equation to generate equipment allocation factors for counties adjusted by construction valuation data. The resulting county allocation factors were generated based the county level values of four different types of construction from the McGraw-Hill data. Road construction value has over six times the influence on country allocation factors as building construction value. The resulting allocation equation is shown in Figure 16 (EPA 2005f).

$$\text{Allocation Factor}_j = (\text{SFH}_j + 3*\text{OBLDG}_j + 18.4*\text{R\&B}_j + 8.5*\text{PW}_j) / (\text{SFH} + 3*\text{OBLDG} + 18.4*\text{R\&B} + 8.5*\text{PW})$$

Where the variables are the dollar valuation for either the county (j) or national total

SFH = single/double-family housing construction  
 OBLDG = other building construction  
 R&B = road and bridge construction  
 PW = public works (sewer, water, and drainage) construction

**Figure 16: Allocation factors by County (EPA 2005f)**

There are a number of concerns about the default inputs used in the NONROAD model when projecting construction equipment activity on a regional level. The emissions calculations made in NONROAD are based on input values taken from base years and modified with growth factors. This means that national, annual construction activity is scaled down to the county level with a scalar based on county economic characteristics. Road construction, which as evidenced by the equation in Figure 18, is a very equipment intense endeavor based on construction value. Road construction also

has very inconsistent construction intensity from year to year depending on funding and need. The allocation factor used in NONROAD assigns the same value of annual construction to a county regardless if there are no major roadway projects happening for the year, or if there is a major new freeway being built through the middle of the county. In scaling annual equipment activity down to the county level, the geographic significance of major roadway projects is lost. This method does not account for the project-based nature and the lack of annual consistency of road construction.

## 2.6.2 Microscopic Model Inputs

Microscopic construction emissions models take the uncertainty out of scaling national activity data down to the local level, and predict equipment use on the characteristics of the individual project. Various default and user defined input values are necessary to define the scope and purpose of the project in order to estimate emissions.

The D5 model described in section 2.5.2.1 uses a predefined set of equipment and productivity rates to estimate the equipment activity and then emissions (Table 8).

**Table 8: D5 model phases and production quantities**

Phase	Quantity	Units
AC Paving	2000	tons/hr
Structure Concrete	50	cu yds/hr
Structure excavation	20	cu yds/hr
Roadway excavation	7000	cu yds/hr
Base, subbase and imported borrow	2000	cu yds/hr

The SACTO model likewise uses pre-defined sets of equipment for each phase of construction, but does not rely on user-input quantities of production to determine the amount of equipment used. Instead the model uses user-input such as roadway length and total project time and area of land disturbed to derive the amount of time and the quantities for each phase. This model assumes that land clearing and grubbing represents



10% of the total project time, grading and excavation represents 45%, drainage and subgrade represents 30% and paving 15%. The equipment used for each phase is calculated by multiplying a pre-defined set of equipment for each phase by a multiplier based on the total disturbed area. The user can override any of these defaults and enter their own values.

The UCD model relies less on assumptions and more on user input to calculate the equipment activity hours. The total quantities and length of each phase must be entered by the user. The amount of equipment used for each phase is then calculated from a list of equipment productivities per unit per phase, much like the list in the D5 model (Figure 5)

All of these models break down the construction process into phases with different sets of equipment needs and find the total amount of equipment used by multiplying equipment productivity by the quantities of production needed per phase. The lengths of each phase are either set in each model, or are user defined. The equipment used for each phase is also set in each model. The accuracy of the results therefore relies on the subjective engineering judgment of the user or the programmer. There may be details of a project which do not fit the standard equipment assumptions for a certain phase, and expertise is needed to modify the equipment list. Construction equipment use is also typically decided by the contractor and therefore the equipment decisions could be very different depending on economics and contractor preferences.

Many of the assumptions used in the models also apply to the entire project. For example: UCD-CT-Construct has an entry where the user can specify if signal boards are solar powered. In most highway projects there will be a mix of solar powered and

generator powered signal boards. In SACTO, a number of different types of soil and rock may be encountered on a large highway widening project, which would affect any results that rely on the soil type input. D5 and UCD-CT-Construction also assume that equipment is used eight hours per day, when it is not uncommon to see 12 hour days and overnight shifts on actual construction.

Highway construction projects are complex and sometimes extremely long in duration. These models take a wise approach by using directly or indirectly using production quantities as the basis for equipment use, but there is no indication that they are based on real-world equipment activity data, but strictly on engineering judgments. There is no data to test the assumptions made by the programmers or the users.

## ***2.7 Prior Research on Inputs***

Very little research exists that measures or estimates construction activity use. Crawford (1998) measured activity use at a number of construction projects around the Dallas/Fort Worth area and determined that construction's contribution to the total on-road emissions were insignificant at less than 1% for HC and CO and less than 3% for NO<sub>x</sub>. The project did not intend to create any kind of activity data for estimation purposes, but instead determined the proportion that construction may represent to a total inventory on a given day. Five construction sites were monitored for one day each, therefore the extent of data needed to provide detailed project length and phase information was not generated.

The EPA is currently embarking on a research program to equip 360 pieces of nonroad mobile equipment with emissions and usage monitors (EPA 2004d). Of the sample, 150 pieces of equipment will be equipped with emissions monitors, and 210 will

be equipped with devices that measure activity by recording engine start time, engine stop time and engine speeds. The sample will be split equally over four industry segments: mining, equipment, manufacturing and agriculture. Therefore approximately 53 pieces of construction equipment will be picked by random sampling and instrumented for activity use (J. Warila, Personal communication, 3/22/2006). The data generated from the research may be very useful, because it will instrument actual equipment and gain detailed information on operating characteristics, especially engine activity, during real-world construction use. The results may not be particularly useful for microscopic activity modeling because every piece of construction equipment for a project will not be monitored for the entire project duration. The results will be much more useful for refining load factors and long-term activity estimates. Much like the Crawford study, there will only be a detailed snapshot of part of a construction project.

## **2.8 Contribution**

The current states of emissions estimates from construction activity are derived very simplistically because activity use of actual construction equipment has not been rigorously studied. Very little is currently known about the type, quantity and duration of equipment used on highway construction sites. The microscopic models discussed use rule-of-thumb or idealized estimates of equipment activity and require extensive input and construction expertise to generate realistic results. For areas struggling with reducing air pollution, more realistic data would allow for better design of cost effective mitigation strategies. This research provides an extensive review of real-world construction activity to provide a resource for activity use estimation and for the further development of construction emissions models.

Every instance of equipment use from 30 completed Caltrans projects will be collected and categorized by phase and equipment types that are compatible with the models. The projects vary in size, duration and type, and the resulting dataset can be used to calibrate the microscopic construction models. A set of average equipment use by phase and point in project duration will be generated.

Unlike other sources, e.g., on-road mobile or stationary whose emissions tend to be consistent over time, there can be quite a bit of variability in terms of geography, location, intensity and duration of construction equipment. The results of this research can also be compared to the estimates from macroscopic models, to help regions deal with the variability in highway construction over time, and possibly create a realistic distribution of values based on the county-wide equipment activity allocations from NONROAD.

### 3 Caltrans Project Development

Highway construction is a very complex process from planning to construction. An overview is provided in this section in order to aid understanding project development. This discussion is simplified, particularly for the project planning and programming processes.

The California Department of Transportation, or Caltrans, is the state agency entrusted with building and maintaining the state and federal highway system in California. Like many state DOT's, Caltrans plans and designs most of the new highway projects and then contracts out the construction while monitoring construction progress with their own engineers. The lifecycle process of a typical highway project includes a planning, design and construction phase (Figure 17), each of which is described in this chapter.

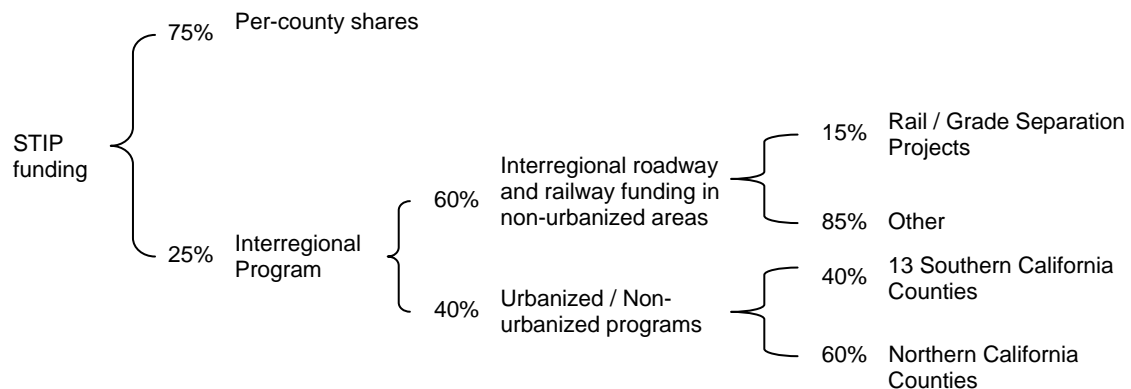


**Figure 17: Caltrans project workflow process (Caltrans, 1999)**

#### 3.1 Planning

Many steps are necessary to take a project from an idea based on a need to the point where a detailed design is assembled. The projects costs and schedule must be estimated and environmental impacts must be studied and mitigated. The California Transportation Commission eventually decides which projects to fund (Caltrans 2003).

Regional Transportation Planning Agencies (RTPAs) and Caltrans suggest potential projects in a competitive process to be included in state and federal programming documents. Programming refers to the mechanism used to fund Caltrans projects. The potential projects are included in Regional Transportation Plans (RTPs) at the local level and a variety of interregional concept reports at the state level (Caltrans 2003). Highway projects from these reports are funded through a combination of state programs such as the State Transportation Improvement Program (STIP), State Highway Operation and Protection Program (SHOPP) and the toll bridge program which in turn are funded by fuel taxes and vehicle weight fees. The amount of funding available in each program and the potential use of the funds are allocated to counties based on geographic and size based formulas and additional funds are set aside for interregional programs (Figure 18). The programming documents are created on a less-than-yearly cyclical basis covering a span of years (Caltrans 1999)



**Figure 18: Example: STIP funding formula, 2006 (Caltrans 2006).**

Drafting a Project Initiation Document (PID) is the first development step for each potential project. The PID, also referred to as a Project Study Report (PSR) in Caltrans terminology, is created for major projects and identifies the concept and scope of a potential project. Concept refers to the type of facility, such as a freeway or

expressway and scope refers to the size, such as number of lanes. The PSR also includes cost and schedule estimates as well as possible alternatives (Caltrans 1999). The estimates are made by engineers during an initial engineering study following a field visit (Caltrans 2003). The PSR is used as a mechanism to find funding through the programming process. District directors have the authority to pick which Caltrans interregional projects to study from route concept or district management plans (Caltrans, 1999). If any environmental impacts are anticipated they will typically be mention in the PID along with stating that an EIR will be prepared according to the California Environmental Quality Act (CEQA). At the regional level, the local air quality districts are invited to participate in meetings and consulted about conformity consistency for the PID. A selection of PIDs is approved by the district director and inserted into the STIP and SHOPP plans for approval by the California Transportation Commission (Caltrans 1999)(Caltrans 2003).

After a PID is approved, the process moves toward completing a more in-depth series of engineering and environmental studies. These early engineering studies are aimed at better establishing the scope, costs and timelines of the proposed alternatives. The corresponding environmental document is used to determine the potential environmental impacts of the project and potential mitigation strategies. The results of these two studies are a Draft Environmental Document (DED), which is equivalent the draft EIR under CEQA, and a Draft Project Report (DPR). The reports are subsequently reviewed by staff and presented at public hearings. At this phase a conformity analysis is performed and any air quality analysis are included in the DED (Caltrans 1999) (Caltrans 2003).

Simultaneously with internal approval process, Caltrans begins to seek approvals and permits from state and federal agencies. Permits are needed in many different circumstances based on geography, resources and activity. Some examples of permits needed are from the Coastal Commission if any construction occurs near the coast or a permit from the Public Utility Commission if the project includes power transmission (Caltrans, 1999).

After comments on the DED and DPR are considered, the team developing the project selects a preferred alternative which is approved by the District Director. The documents are then referred to as the Project Report (PR) and Environmental Document (ED), which is the equivalent of an EIR under CEQA, and are considered approved by Caltrans (Caltrans, 1999). Cost estimates for environmental mitigation are developed in the final project report.

### **3.2 Construction Design**

The design phase of project development consists of creating plans, specifications and estimates (PS&E) used for construction as well as acquiring the right-of-way for the project. The PS&E Package is developed through a preliminary and final phase where different functional units design specific aspects of the proposed project, merge and share their work, and then refine the plans (Caltrans, 1999). Specifics of project design are guided by the Highway Design Manual which is a standard reference that covers topics such as geometric design, pavement, drainage and landscaping (Caltrans, 2001).

Work quantities are developed for the contract items that describe all of the materials and tasks involved in the project and the engineers develop estimates based on the unit cost of each quantity. For example, a highway project could require 6,000 cubic



meters of excavation and if each unit of excavation is estimated to cost \$45/m<sup>3</sup>, the total estimate for the excavation item would be \$270,000. The unit cost estimates come from either unit costs from previous projects or by performing an analysis of construction costs, productivity and cycles. The final cost estimate for the project is determined by summing the estimate for each contract item (Caltrans 1999).

Once the estimates and plans are finalized the final PS&E package is turned over to the District Office Engineer, where all relevant documents are checked and put in standard biddable form. Once the right-of-way is acquired and the environmental document is re-confirmed, the project can be put out to bid (Caltrans 1999)

### **3.3 Construction**

The Caltrans Office Engineer is the entity responsible for advertising bids and awarding contracts. Each bidding contractor submits a bid for each of the contract items and calculates a corresponding total bid. The contract to construct the project is awarded to the “lowest qualified bidder” (Caltrans 1999). The contractor is typically expected to start work on the project within 15 days of the approval of the contract (Caltrans 2001b) and is responsible for building the project according to the plans and specifications.

As the contractor works on the project, they perform work on a contract item basis and are paid based on the quantities of the contract items completed. The contractor manages the workforce and either uses their own or rents equipment. Unless otherwise dictated by a project schedule, the contractor is free to choose their own work schedule. The Caltrans Construction Manual (Caltrans, 2001b) and Standard Specifications lay out the procedures and rules to be followed in constructing the project. The resident engineer on the project represents Caltrans and is responsible for calculating contractor pay based

on the contract item work completed and ensuring that specifications are followed. A team of inspectors may work under the RE and help the RE track contractor equipment to aid in calculating pay based on unit quantities.

The inspectors, also known as Assistant Resident Engineers, keep track of contractor activity using daily construction diaries. Each ARE keeps a diary for each workday and records work completed, equipment used, hours worked and any other details about the day. Each time equipment or labor is used; it is linked to one of the contract pay items and is eventually used for payment and dispute resolution.

After the work is complete, the RE performs a final inspection to ensure that the project was completed according to project specification. After the project is accepted, ownership of the new work transfers from the contractor to the state. As-built plans are then filed with headquarters to aid in future construction and maintenance. The RE then assembles a project archive file of important documents that may be needed for future legal issues, and a complete set of the ARE construction diaries. The project files are kept at their office until all disputes are resolved, and then transferred to archives at the district headquarters.

## 4 Methodology

The main goal of this research is to build a framework for collecting and analyzing construction equipment activity data from various construction projects that will enable and facilitate rigorous analysis.

The methods that were developed for this research include developing a sample specification for data collection based on project type, developing a categorization method to describe activity data, collecting the project data and developing custom designed software to store and categorize the data digitally. The software is also capable of producing various output summaries of activity use, and an activity use database of construction activity among the entire sample of projects.

Construction diaries kept for each day of construction activity will be the primary data source for this research. The diaries link hours of equipment use to project phase.

### 4.1 *Description of Data*

Caltrans keeps completed project records in oversize binders or other document storage mediums located at field offices and district archives across California. An entire set of project records for an individual project can take up a large set of binders (Figure 19). Each project record is split into 63 universal categories where each category contains types of records designated by the Caltrans Construction Manual (Caltrans 2001b) (Table 9). For this research, the documents in the categories in boldface in Table 9 were collected. The construction diaries, otherwise known as “Assistant Engineer’s Daily Reports” are the primary data for this research and are filed in category 46. The documents collected from each category will be described below.

Example Project Files on a Shelf

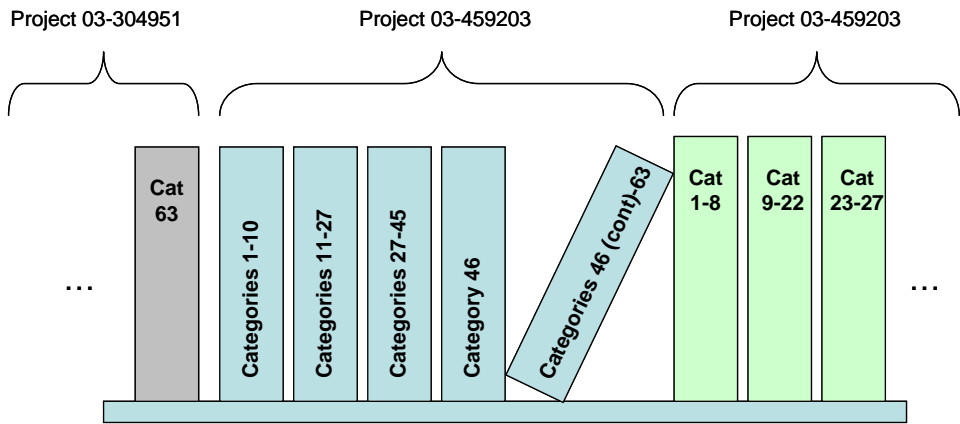


Figure 19: Projects, binders, and categories illustrated

**Table 9: List of Caltrans project record categories (Caltrans 2001b)**

Category Number / Heading	Category Number / Heading
1 Project Personnel	33 Notice of Materials to be Furnished
2 Project Office Equipment and Supplies	34 Treated Base
3 Equipment and Personnel Cost Reports	35 Asphalt Concrete
4 Service Contracts	36 Portland Cement Concrete
5 General Correspondence	37 Initial Tests and Acceptance Tests
6 Safety	38 Quality Control Quality Assurance
7 Public Relations	39 Materials Testing Certification of Employees
8 Construction Surveys	40 Field Laboratory Assistant Reports to Resident Engineer
9 Welding	41 Report of Inspection of Material
10 (Extra category number)	42 Material Plants
<b>11 Information Furnished at Start of Project</b>	43 Concrete and Reinforcing Steel
<b>12 Contractor</b>	44 (Extra category number)
13 Signs and Striping	<b>45 Resident Engineer's Daily Reports</b>
14 Photograph Records	<b>46 Assistant Resident Engineer's Daily Reports</b>
15 Accidents	47 Drainage Systems
16 Utility Agreements	48 Contract Item Quantity Documents
17 Utility Work Performed	49 Contract Change Orders
18 Agreements	50 Adjustment in Compensation Calculations
19 Hazardous Waste and Hazardous Materials	51 Materials on Hand
20 Water Pollution Control Plan or Storm Water Pollution Prevention Plan	52 Charges to Total Contract Allotment
21 Construction Zone Enhanced Enforcement Program	53 Credit to Contract
22 Traffic Management Information	54 Deductions from Payment to Contractor
23 (Extra Category Number)	55-58 (Extra category numbers)
24 Disadvantaged Business Enterprises and Disabled Veteran Business Enterprises	59 Bridge Estimate Data
25 Labor Compliance and Equal Employment Opportunity	60 Project Status Sheets
26 Progress Schedule	61 Project Record-Estimate and Project Status
<b>27 Weekly Statement of Working Days</b>	62 Disputes
28 Weekly Newsletter	63 Project Completion Documents
29 Materials Information and Preliminary Tests	
30 Basement Soil Test Results	
31 Notice of Materials to Be Used (CEM-3101)	
32 Notice of Materials to be Inspected (TL-0028)	

#### **4.1.1 Category 11: Information Furnished at Start of Project**

The only item from this category we used was the “Engineer’s Estimate” located in the “Notice of Award of Contract and Special Provisions” packet. This notice is distributed to contractors at the beginning of every project and contains the Caltrans provisions and practices that contractually dictate the construction. The engineers estimate is a table with the project contract items and corresponding contractor’s bids for each item (Figure 20). The contract items were integral to determining what construction phase to associate each equipment activity event.

The contract items, also referred to as bid items, pay items or line items, are used to describe a quantity of materials or work that is bid on by the contractor. The list encompasses, in some form, every quantity of work or materials projected for project completion.

**COPY OF ENGINEER'S ESTIMATE**  
**(NOT TO BE USED FOR BIDDING PURPOSES)**  
**03-0C0304**

Item	Item Code	Item	Unit of Measure	Estimated Quantity
1	071322	TEMPORARY FENCE (TYPE CL-1.8)	M	240
2	074017	PREPARE WATER POLLUTION CONTROL PROGRAM	LS	LUMP SUM
3	074020	WATER POLLUTION CONTROL	LS	LUMP SUM
4 (S)	120100	TRAFFIC CONTROL SYSTEM	LS	LUMP SUM
5	151534	RECONSTRUCT WOOD FENCE	M	130
6	030786	REMOVE MASONRY BLOCK WALL	M2	70
7	151540	RECONSTRUCT CHAIN LINK FENCE	M	70
8	160101	CLEARING AND GRUBBING	LS	LUMP SUM
9 (S)	202011	MULCH	M3	285
10	204036	PLANT (GROUP B)	EA	56

**Figure 20: A partial list of contract items from an Engineer's Estimate**

When bidding for a project, each contractor establishes a bid for each of the contract items and the contractor with the lowest total bid awarded the contract (Caltrans, 2001b). The contract items are useful for this study because they can be used to help assign project phases to each piece of activity use. Almost every time a piece of equipment is used, its activity is logged and associated with a contract item.

Additionally each contract item (leftmost column on Figure 20) is associated with a six digit item code (second from left, also will be referred to as a “standard item code”), which links to a master list of 2,280 item descriptions (third from left). The contract item numbers are arbitrary for each project, but each six digit code and work description is uniform across all projects. For example, during planning an engineer could assign contact item 34 to “Roadway excavation”, which has item code #190101, while an

engineer planning a project in another district could assign the same item code to contract item 17.

#### **4.1.2 Category 27: Weekly Statement of Working Days**

Each week during construction a form is filled out that lists the number of working days in the week, the number of days elapsed in the project, and the number of days remaining. When possible, this form was acquired for each project to help ensure data quality and determine if there were missing daily diary forms.

#### **4.1.3 Category 45: Resident Engineer's Daily Reports**

The resident engineer, who is the top administrator on the job site, is instructed to file a daily report (Caltrans 2001b). The reports contain information on conversations that the RE has with contractors and an overview of the weather and work progress. The report is a very freeform document and does not go into detail about specific quantities of work performed. The data for work quantities is located in the Assistant Resident Engineer's Daily Reports (discussed next in category 46).

The resident engineer reports were copied for this project when possible to help quality check and clarify the data in the Assistant Engineer's Daily Reports. The RE daily report section of the project file tends to be much smaller than the assistant RE section. It is possible to use the RE reports to confirm gaps and nonworking days in the assistant RE reports and ensure that the set of daily diaries is complete.

#### **4.1.4 Category 46: Assistant Resident Engineer's Daily Reports**

The Assistant Resident Engineer's Daily Reports (that are also referred to as "daily diaries") are the most important document used in calculating equipment activity use. The files are also the most voluminous and can easily span over eight binders and



2,000 pages for a large project. Each on-site inspector or Assistant Resident Engineer fills out a diary form each day while observing work progress, so it is not unusual to have multiple daily diaries for each work day.

An example of the Assistant Resident Engineer Daily Diary is shown in Figure 21. The Caltrans Construction Manual (Caltrans 2001b) describes the form as having two different parts, the narrative portion and the tabular portion. The narrative portion, at the top, is used to describe progress on the project in terms of production quantities as well as other incidental notes about the day and the contractor. The tabular portion is a matrix that links equipment activity use and contract items in the form of hours of work.

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
Form HC-10A4 (Rev. 4/98)

03-445104  
03-PLA-80-5.5/23.5  
ACIM-080-3(220)109E

Report No. 46.1.  
46.3.

Date 5/6/99  
M T W T F S S Circle Day

Shift Hours Start 0000 Stop 0930

Assistant Resident Engineer's Daily Item # 22, Paving AC (375mm) Report

Location & Description of Operation Granite construction company worked @ the Newcastle OC placing AC (375-mm max - Item #22) with a Cat 140G Grader. There are several areas where the subgrade was pumped up through the 2nd lift of AC. Some equipment and personnel were idle

Weather Cool Clear 60°F +

EQUIPMENT AND/OR LABOR			HOURS - ITEM NO.												Weather		Remarks	
EQUIP. NO.	NO. MEN	DESCRIPTION of Equipment and Labor	Item #22	Item #3													Reason for idleness or other remarks	
	1	Foreman	9 1/2														Tim Bunch -	
	1	Screed	7 1/2														Steve Muntero - Screed	
	1	Operator	9 1/2														John Jarbo - paver	
	1	Laborer	9 1/2														Toby Duran - Dump Man	
	1	Laborer	8 1/2														Dave Wolf - Screed	
	1	Laborer	9 1/2														Rodney Rosmercy	
	1	Laborer	8 1/2														Brett Creason	
	1	Laborer	9 1/2														Monique Hawn (water)	
	1	Screed	7 1/2														Jasen Porco (screed)	
	1	Operator	9 1/2														Ellsworth (roller)	
	2	Laborers		4													Wilson / Cruthers	
23615			9 1/2														Water Trailer	
12-186	1	GRAD CAT 3280	2														Cat 140G Grader	
23-930	1	Bit & TLM 0-300															Bit & Pot Trailer	
16-284	2	IT & IT 00-06	9 1/2														Utility Truck - 3/4 ton Ford	
45	1	DEER 2485	5 1/2														John Deere 210c	
16-265	1	ROVBYST	7 1/2														Hypac C766C Roller	
16-020	1	ASPAYBK 2250	7 1/2														Blw Kny 200B Paver	
45-594	1	ASPWP CLAR 5305	7														Lincoln pickup machine	
23-329	1	SFPR All	2														Bruce Broom	
			9 1/2														Light Plant	

because the paver couldn't be used due to soft subgrade. Granite used the John Deere 210c loader to grade areas which the cat blade couldn't reach. Compaction was achieved with the roller, blade, & rubber tired loader. Paver began 3rd lift @ 0200 hrs. Soft spots look better after 2nd lift. @ 0300 moved the paver to pave the median shoulder & part of #1 lane. 3rd lift completed @ 0400. The truck traffic (HC trucks) have caused the soft spots near the gap area to crack through the 2nd lift. It doesn't look good in these areas. We took a sample @ 0515 in the #2/#1 lane, 3 in (75 mm) from finished grade. @ 0550 started paving median shoulder & #1 @ 0650 began paving final lift (5th). Finished paving @ 0910.

Total Tons = 2331.47  
99 loads

Signature Ante Fuchs T.E.  
Title

Ante's hrs 11 30T

Figure 21: An example of an Assistant Resident Engineer's Daily Report

Figure 22 shows how contract items, equipment descriptions, and hours of work are linked in the tabular portion of the diary.

was dumped up through the end list of AI, some equipment

Contract Items

Equipment Identification

Activity Hours

EQUIPMENT AND/OR LABOR			HOURS - ITEM NO.		IDLE OR DOWN		Weather	Remarks
EQUIP. NO.	NO. MEN	DESCRIPTION of Equipment and labor						Reason for idleness or other remarks
	1	Foreman	9 1/2				Cool Clear 60°F	
	1	Screed	7 1/2			2		Tim Bunch -
	1	Operator	9 1/2					Steve Muntero - Screed
	1	Laborer	9 1/2					John Jarbo - paver
	1	Laborer						by Duran - Dump Man
	1	Laborer						the Wolf - Screed
	1	Laborer						by Rosworn
	1	Laborer	9 1/2					by Creason
	1	Screed	7 1/2			2		Monique Hawn (water)
	1	Operator	9 1/2					Jason Pichay (screed)
	2	Laborers		4				Ellsworth (roller)
23615			9 1/2					Wilson / Crathens
12-086	1	GRADICAT 3260	2			7 1/2		Water Trailer
23-930	1	Bitum TMD 0-300				9 1/2		Cat 1486 Grader
16-236	2	T & IT 00-06	9 1/2					Bit Pot Trailer
08-284	1	DEER 2485	5 1/2			3		Utility Truck - 3/4 ton Ford
45	1	ROVBYST	7 1/2					John Deere 210c
16-265	1	ASPAV BK 2250	7 1/2					Hypac C766C Roller
16-020	1	ASPWP CLAR 5305	7			2		Blew Kny 200B Paver
45-594	1	SFPR All	2			2		Lincoln pickup machine
23-329	1		9 1/2			5		Bruce Broom
								Light Plant

before the road could be used due to soft subgrade. infinite road

**Figure 22: Example of the activity matrix**

The matrix links equipment use, contract items and hours of work. In the example in Figure 22, the first entries in the “DESCRIPTION” column describe laborers on site and the boxed data below that describes equipment. Descriptions of each piece of equipment are organized on either side of the matrix based on the personal preference of the Assistant RE. In some cases there is no data in the right hand “Remarks” column, in other cases the operators name is listed, and in still others the fields contain more information about the equipment. Similarly, the “EQUIP NO.” column is intermittently used: in some cases containing a standard Caltrans equipment identification code and in others containing an identification number that may be physically written on the piece of equipment.

The diagonal top row of the matrix contains the contract items that were billed during the day and the rightmost column contains entries for idle time. In the center of the matrix is where the hours of equipment use link equipment descriptions and contract items. It is possible to classify each piece of equipment into one of 29 different equipment categories based on the EPA NONROAD equipment types and each contract item into one of 9 different phases as will be described in a later section. Caltrans also has a specification for equipment classification, under which the equipment will also be classified.

The original daily diaries are stored with the project records at Caltrans field offices and eventually archived with each district. In some cases the daily diaries are recorded in a spreadsheet, or electronic form, but there is no standard across the state, and the hardcopies are considered the definitive records of activity use.

#### **4.1.5 Category 46 Subcategories**

On many projects, the resident engineer chooses to group the bid items and work tasks into subcategories. The arrangement and naming of the subcategories is up the RE, but all use the designation “46.X” where “X” is the subcategory index number (Figure 23). The subcategory system can help with organizing records or by splitting up subcategories among assistant REs in order to monitor related groups of contract item work each day.

Category and Subcategory Number	Operations	Contract items Involved in the Operation
46.2	Clearing and Grubbing	5
46.3	Rdwy. Exc., Ditch Exc.	8,13,11,15,22
	Aggregate Subbase	
46.4	Salvage Fence, New Fence	2,78,79,80
	Gates	
46.5	Guard Railing, Markers, Barricades	1,4,82,83,87
46.6	AB, CTB	23,24
46.7	AC Slurry Seals, Dikes	28,29,30,31,32
46.8	Concrete Paving	35,36,37
46.9	Curbs and Sidewalks, Slope Paving,	73,74,76,77
	Curb Drains, Spec. Gutter Drains	
46.10	Minor Str., Precast MH and DI,	42,69,70,46,75
	Reinf. Steel, Misc. Iron and Steel	
46.11	RCP, CMP, SSP Arch, Drainage Gates,	9,11,58
	Under/Down Drain, Str Exc., Str. Backfill	
46.2	Preparing Slopes, Straw	16,17,18,19,20
46.13	Permanent Signing	52,53,54,55
46.14	Hwy. lighting and sign illumination	88
46.15	Finishing Roadway	21
46.16	Structure #1	89,90,91
46.17	Structure #2	89,90,91

**Figure 23: An example of Category 46 subcategories (Caltrans, 2001b, 5-1.26)**

#### **4.1.6 Change orders**

After a project has been bid, and is being constructed it is common for change orders to be issued which could change the nature of the contract items. The Caltrans Construction Manual defines a change order as “a legally binding document used to make changes to the contract” (Caltrans 2001b, p5-3.1). Anytime the project plans or specifications change, a change order is initiated. When a piece of equipment is used to support a change order, the change order number is used in the contract items row of the daily diary with the identifier “CCOX”, where the “X” represents the CCO number, and hours are assigned in the same manner as before. Change orders can even be issued to replace bid items if the nature of the item changes, so the work quantities, value and work performed of the final project may look very different than initially.

## 4.2 Sample Projects

The first step in the research was to establish different types of projects that Caltrans completes and determine the proportion of the population that each type comprises in order to create a sample specification, with the goal of matching the sample data collection to the population distributions.

### 4.2.1 Establishing Common Project Types

For the eventual data set of projects to be usable and understandable, it was important to assign each project as a member of a discrete set of project types. Caltrans records do not provide this kind of classification, instead labeling each project with a text field that includes a somewhat free-form description of each project (See the left hand column of Figure 24 for examples). As a result, thousands of different descriptions exist.

Caltrans environmental staff was consulted to develop an initial list of the most commonly completed types of projects (A. Jenkins, personal communication, 12/4/2003) (Table 10). Each project type and the criteria that define them are explained below.

**Table 10: Seven most commonly completed types of Caltrans projects**

Resurface Existing Highway
Construct Freeway / Extra Lane
Pavement Rehabilitation / Widening
Construct, Reconstruct Bridge
Construct median, their beam barrier
Landscaping
Other

“Resurface Existing Highway” projects are typically jobs where an asphalt concrete overlay is installed on top of an existing roadway to preserve the functionality of the pavement. Resurfacing work is not considered permanent and is usually done to

extend the time until reconstructing or rehabilitating a roadway is necessary. Methods used to resurface a roadway include chip sealing and fog sealing.

The “Construct Freeway / Roadway” category accounts for any type of new roadway construction, reconstruction or large and complex project. New facilities can include complete highways and roads as well as lane and ramp additions. Many times freeway construction projects are extremely large jobs that encompass many of the other project types listed in this specification. For example, a large freeway project can also involve constructing overpasses, bridges, landscaping and installing median barriers. This category also functions as a super-category; large projects that are not new roadways but encompass a number of different project types, such as interchanges, are included.

“Pavement Rehabilitation / Widening” encompasses a variety of projects that modify the structure of the roadway. In general, pavement rehabilitation is a more complex procedure than resurfacing and involves removing and rebuilding structural layers of the pavement. This category includes widening the roadway for shoulders, lane clearances or right hand lanes as well as removing and replacing layers along with an overlay. Pavement rehabilitation can also include changing the elevation of a road and replacing slabs or structural components of a roadway leading up to a bridge.

The “Construct, Reconstruct Bridge” category encompasses any construction, reconstruction, widening, seismic renovation, or major work on a bridge, viaduct, overpass or underpass. To qualify for this category, a project must consist primarily of bridge work, or else it is categorized elsewhere. Many projects involve resurfacing or rehabilitating a bridge deck and would be classified instead under the resurfacing or rehabilitation categories. Minor bridge work is classified as “Other”.

“Construct Median, thrie beam barrier” refers to the construction or replacement of any thrie beam barrier, K-beam, concrete barrier or any other kind barrier along a roadway.

“Landscaping” refers to the construction and maintenance of highway-side planting and irrigation projects. This category also includes habitat restoration.

The “Other” project category accounts for any type of projects that are not included in the above six categories. It can include electrical work, building construction, repair work, drainage, earthwork and any other non-roadway related undertaking. No sample projects were collected in this category because the activity use was predicted to be too variable, too minor or too unrelated to heavy highway construction.

#### **4.2.2 Assigning Project Types to Each Project**

To ensure that the sample approximately matched the proportion of project types, a large database of completed projects was acquired from the Caltrans Headquarters (A. Boutros, personal communication, 2/16/2005). The database contains financial, timeline and descriptive data for each Caltrans project completed (also referred to as “accepted” in Caltrans terminology) between February 1995 and February 2005.

The database included 6,083 projects with 2,279 different descriptions of project type – obviously far too many to be of analytical use. Each project in the database was assigned one of the established project types using a number of tools in Microsoft Excel, and the proportion of each type to the population was classified. Figure 24 shows a number of examples of assigning project types to project descriptions.



Database Description Examples N = 2,279	Project Type Assignments
ADD AUXILLIARY LANE	Construct Freeway / Extra Lane
ASPHALT CONCRETE PAVEMENT	Resurface Existing Highway
ASPHALT CONCRETE PAVING	Resurface Existing Highway
ASPHALT RUBBER SEAL COAT & MARKERS	Resurface Existing Highway
CLOSED CIRCUIT TELEVISION SYSTEMS	Other
CONSTRUCT 4-LANE FREEWAY	Construct, Reconstruct Bridge
CONSTUCT INTERCHANGE/AUXILIARY LANE	Construct Freeway / Extra Lane
ESTABLISH EXISTING PLANTING	Landscaping
HIGHWAY PLANTING AND IRRIGATION	Landscaping
IRRIGATION AND PLANTING	Landscaping
REPLACE CONCRETE PAVEMENT	Pavement Rehabilitation / Widening
REPLACE EXISTING BRIDGES	Construct, Reconstruct Bridge
REPLACE EXISTING HIGHWAY	Pavement Rehabilitation / Widening
WIDEN 4-LANE HIGHWAY	Construct Freeway / Extra Lane
WIDEN FREEWAY/REPLACE STRUCTURES	Construct Freeway / Extra Lane
...	

**Figure 24: Assigning project type identifiers to Caltrans project descriptions**

The free-form nature of the project descriptions in the left hand column of Figure 24 should be observed. These examples are taken directly from the project descriptions of the database. Three slightly different versions of “HIGHWAY PLANTING AND IRRIGATION” exist. “ASPHALT CONCRETE PAVEMENT” and “ASPHALT CONCRETE PAVING” mean the same thing and “CONSTUCT INTERCHANGE / AUXILIARY LANE” is misspelled. Many descriptions are nearly identical to others and some contain multiple tasks. Highway construction projects are extremely multifaceted; a large project can involve elements from multiple project types, and some projects descriptions can be very vague. For the scope of this project, every effort was made to make assignments to each project using consistent criteria for type developed over time with Caltrans staff (A. Jenkins, personal communication, 12/4/2003, 04/2005, 11/30/2005).

After each project was assigned a type, a sampling of the assignments was re-checked with Caltrans staff for quality assurance purposes (A. Jenkins, personal

communication, 11/30/2005) and refinements to the assignments were made based on the feedback.

### 4.2.3 Determining the Population Distribution

Caltrans staff knowledgeable with the physical records archives conveyed that projects accepted over three years prior were disposed of. (L. Merrill, personal conversation, 06/2005). Upon physical examination of the archives in 2005 however, many projects were found dating back to the final months of 1999. Using a cutoff point of the year 2000, the project population distribution was derived from the 10 year database (Table 11).

**Table 11: Initial population distribution since year 2000**

Project Type	Post-2000	N
Resurface Existing Highway	25%	716
Construct Freeway / Extra Lane	8%	215
Pavement Rehabilitation / Widening	16%	453
Construct, Reconstruct Bridge	4%	118
Construct median, thrie beam barrier	6%	170
Landscaping	8%	215
Other	33%	944

The “Other” project type accounts for the highest percentage of projects, but it is the least relevant to this study. The “Other” projects tended to be small maintenance projects, building construction and electronics installation; all of which do not involve the procedures and quantity of equipment used in routine roadway construction. The “Other” projects are also relatively small in size (Table 12).

**Table 12: Average cost of each project type**

Project Category	Total
Resurface Existing Highway	\$1,193,151
Construct Freeway / Extra Lane	\$11,157,616
Pavement Rehabilitation / Widening	\$2,675,508
Construct, Reconstruct Bridge	\$4,500,917
Construct median, thrie beam barrier	\$1,018,999
Landscaping	\$621,706
Other	\$786,155

Table 13 shows the final population distribution and number of projects in each bin. This distribution has been adjusted for removal of the “Other” Category.

**Table 13: Final population distribution**

Project Type		N
Resurface Existing Highway	38%	716
Construct Freeway / Extra Lane	11%	215
Pavement Rehabilitation / Widening	24%	453
Construct, Reconstruct Bridge	6%	118
Construct median, thrie beam barrier	9%	170
Landscaping	11%	215

### **4.3 Data Collection**

The handwritten diaries for 30 projects were collected from various Caltrans offices with the goal of matching the sample project type distribution with the population distribution.

#### **4.3.1 Data Collection Strategy**

There is no central location where completed project records for Caltrans projects are stored. The project records are kept with the resident engineer at a field office until the project is completed and all claims are settled, and then they are shipped for storage to the district headquarters. There the records are kept for three years and then discarded (Caltrans 2001b).

Our initial data collection strategy was to collect as many Caltrans projects as possible in terms of the physical records for complete projects. Then, as more projects were collected, narrow the scope to filling in gaps in the project type sample specification so that the project sample would match the project population distribution (Table 13, above). The diaries were copied or obtained from Caltrans offices between March 2004 and August 2005. Most of the records were copied from Caltrans field offices or district archives, but in a few cases electronic records were available. Projects records were copied from construction field offices in Fresno, Placerville, Rocklin and Visalia, all of which are in Districts 3 and 6. The District 3 archives in Yuba City were heavily used and the District 11 headquarters in San Diego provided copies of one project. District 4 provided two projects that were created using their EPEG electronic diary program. The program had been in testing for a number of projects, and equipment use activity was exportable from a customized 3<sup>rd</sup> party database.

Project records for a total of thirty six complete projects were collected. Three projects were suspected of having incomplete or unusable data, and subsequently removed from the sample. One project was found to be still in construction and also removed. Two other projects had the project type “Other” and were removed. The EPEG data turned out to be incomplete and was not used in the sample (and overlapped with the “Other” category). The origin of the project file copies is displayed in Table 14.

**Table 14: Data collection locations**

Project record origin	District	# Collected	Collection Timeframe
District 3 Archives	3	19	June – August 2005
Fresno Field Office	6	7	March 2004
Rocklin Field Office	3	4	February – April 2005
District 4 EPEG	4	2	May 2005
Visalia Field Office	6	2	May 2005
Placerville Field Office	3	1	December 2004
San Diego District HQ	11	1	April 2005
Total		36	

After removing incomplete and incompatible projects from the data set, the sample shown in Table 15 comprised the thirty remaining projects. Each project has an Expenditure Authorization number (EA) that is a unique identifier within Caltrans. The first two digits of the EA number represent the district, and the last six are identifier codes within the district. The figure lists each project in the sample, as well as its project type classification, original bid amount (the bid value from the project database when the project was awarded) and original working days estimate.

There are drastic differences between the original estimated work days and the final duration of the project. The original estimate only includes working days, and therefore skips non-working days. Many project experience significant weather delays, CCO delays, and other delays. The duration is the difference between the first date equipment was used, and the last date it was used.

**Table 15: List of projects included in the sample**

Project Number	Project Type	Original Working Days	Duration	Award Amount
03-0A7004	Resurface Existing Highway	45	52	\$1,933,640
03-0A7904	Resurface Existing Highway	80	173	\$4,911,901
03-0A9904	Construct, Reconstruct Bridge	125	186	\$2,623,568
03-0C59U4	Resurface Existing Highway	25	55	\$470,534
03-0C5304	Construct Freeway / Extra Lane	20	42	\$273,503
03-1C3504	Resurface Existing Highway	30	91	\$292,690
03-1M5404	Pavement Rehabilitation / Widening	30	56	\$847,526
03-1M9204	Resurface Existing Highway	45	59	\$775,317
03-2A6004	Pavement Rehabilitation / Widening	80	72	\$979,272
03-2C5704	Resurface Existing Highway	120	364	\$5,099,929
03-3A6004	Pavement Rehabilitation / Widening	60	360	\$571,114
03-3C1604	Pavement Rehabilitation / Widening	30	64	\$275,573
03-3C2804	Pavement Rehabilitation / Widening	60	183	\$720,490
03-4A88U4	Construct, Reconstruct Bridge	240	353	\$13,343,151
03-4A1804	Resurface Existing Highway	30	20	\$1,183,330
03-4C4004	Construct median, thrie beam barrier	45	45	\$625,418
03-4C7204	Pavement Rehabilitation / Widening	60	51	\$226,831
03-366404	Construct Freeway / Extra Lane	200	528	\$15,667,513
03-367714	Construct Freeway / Extra Lane	220	710	\$6,782,895
03-374214	Construct Freeway / Extra Lane	60	281	\$788,761
03-436304	Construct, Reconstruct Bridge	250	448	\$1,490,735
03-445104	Pavement Rehabilitation / Widening	200	683	\$10,559,000
06-3831U4	Resurface Existing Highway	35	302	\$854,410
06-4036U4	Landscaping	885	270	\$797,237
06-336604	Construct Freeway / Extra Lane	180	429	\$2,325,229
06-339404	Resurface Existing Highway	165	436	\$6,343,620
06-339504	Resurface Existing Highway	120	265	\$3,294,261
06-342154	Construct Freeway / Extra Lane	200	373	\$9,674,380
06-467804	Construct median, thrie beam barrier	70	317	\$507,330
11-1734U4	Pavement Rehabilitation / Widening	300	311	\$9,271,418

### 4.3.2 Sample vs. Population

A comparison between the sample and the population distribution is shown in Table 16. As described earlier, the population encompasses all projects within the six project types and completed after the year 2000. The Construct Freeway, Construct/Reconstruct bridge project types were over sampled while the Resurfacing, Construct median and Landscaping types were under-sampled. In all of the other cases except for Landscaping, the difference between the sample and population is minimal,

but there will be a small disproportionate amount of representation for the project types in the data. It is difficult to match proportions with such a relatively small sample size compared to the population. Also the categories that are over-sampled such as freeway construction tend to use more heavy equipment than the other categories, so it is better for the purposes of this project to have more data on the equipment activity for these projects.

**Table 16: Proportion of projects in the population of and sample**

<b>Project Type</b>	<b>Population</b>	<b>Sample</b>
Resurface Existing Highway	38%	33%
Construct Freeway / Extra Lane	11%	20%
Pavement Rehabilitation / Widening	24%	27%
Construct, Reconstruct Bridge	6%	10%
Construct median, thrie beam barrier	9%	7%
Landscaping	11%	3%
N	6083	30

The landscaping type was under-sampled because it was difficult to find complete project records for this category. Landscaping projects are unique because they tend to last for a very long period of time, even longer than some freeway construction jobs, and use a relatively small amount of money. The nature of the work is different because heavy equipment activity only occurs at the beginning of the project when the landscaping is being performed, and the remaining duration of the project is related to periodic maintenance of the plants. Because so little equipment is used during most of the project, many landscaping records tended lack many descriptive diaries and were difficult to locate. Under-sampling landscaping projects should not be a problem for this research because we are primarily interested in quantifying heavy equipment use in large, complex and lengthy projects.

## 4.4 Data Entry

Data entry of the construction diaries was accomplished with the help of undergraduate students at UC Davis using a custom spreadsheet tool as the input mechanism. Three students at any given time were inputting data during the time period from March 2005 through October 2005.

The data entry mechanism is a custom spreadsheet created to take advantage of certain spreadsheet features that help increase input productivity for this application. The spreadsheet tool that will be described later includes a proofing function that outputs reports that match the diaries, and is useful for quality control. A screenshot of the input spreadsheet is shown in Figure 25.

	A	B	C	D	E	L	M	N	O	P	Q	R	S	T	U
	Day	Contractor	Equipnum	# Men	Description	14	21	22	23	24	26	27	28	29	31
1077	5/4/2001														
1078		Foster			Fore + PU					4	4				
1079					Oper Cat 14H Blade						8				
1080					CAT 623 Scraper						8				
1081					Gradesetter					6	2				
1082					Oper Case 570 Skippy					8					
1083		PJ			Owner/Oper Water Truck					4	4				
1084	5/3/2001	Foster													
1085			570XLT	1	Grader Setter/Loader/Case					8					
1086	5/3/2001														
1087		Foster			Fore + PU					4	4				
1088					Oper Cat 14H Blade						8				
1089					CAT 623 Scraper						8				
1090					Gradesetter					6	2				
1091					Oper Case 570 Skippy					8					
1092		PJ			Owner/Oper Water Truck					4	4				
1093	5/2/2001														
1094		Ford	F550	1	Labor Foreman w/WT										
1095			950F	1	Loader/CAT										
1096			F150	1	Laborer w/Truck										
1097		Foster	570XLT	1	Loader w/Gannon/Case					8					
1098	5/2/2001														
1099		Foster			Fore + PU					4	4				
1100					Gradesetter					6	2				
1101					Oper Case 570 Skippy					8					
1102					CAT 623 Scraper					2	6				
1103					Oper Cat 14H Blade						8				
1104		PJ			Owner/Oper Water Truck					4	4				
1105	5/1/2001														
1106		Foster			Fore + PU					4	4				

Figure 25: Screenshot of the data entry tool



Data were entered from each diary into the spreadsheet tool verbatim, and with minimal interpretation. If there were any confusing, unknown or unreadable diaries, the students were directed to take note of the problem and their actions in a data entry notes column. The students were also instructed to enter the engineers estimate contract items and subcategory items on separate spreadsheets that would later be used to help classify the data.

Each project can consist of hundreds of daily ARE diaries so the spreadsheet can grow to extremely large sizes. The data are entered into the spreadsheet row-by-row with two different row formats. A diary row is entered for each unique diary and equipment rows are entered under that for each instance of equipment use in that diary. Each new contract item encountered has a column inserted and equipment activity hours are entered in the resulting matrix.

A new spreadsheet is created for each project and is named after the project's EA number (ex. 03-366404), and each spreadsheet contains a copy of the VBA code used for the categorization tools described in the next section. A total of 30 projects were entered by the students consisting of over 63,000 lines of activity data between all the spreadsheets.

After the data input is complete, it is necessary to classify each piece of equipment activity by project phase and equipment type so that the data can be organized into an analyzable format.

#### ***4.5 Data Categorization***

A major endeavor of this project is to assign each activity event to a standard equipment type, project phase, and percent of project completion category. A

spreadsheet tool is used to assign these categories and organize the data into meaningful results. The tool consists of a number of spreadsheets enhanced with VBA code. The categories and the spreadsheet tool are described in this chapter.

#### **4.5.1 Categories**

In order to perform any kind of meaningful analysis on the activity diary data, the data need to be classified into discrete categories that are constant across all projects. Each time a piece of equipment is used for an activity, the resulting number of hours is classified according to equipment type, project phase, and percent of completion (Figure 26). We defined equipment categories based primarily on the construction, industrial and commercial sections of NONROAD, with the addition of on-road vehicles. Equipment types were additionally classified by Caltrans equipment codes. Phase categories were defined based on precedent set by various California microscopic construction emissions models. Percent completion intervals were defined to try and give adequate resolution to activity data. Each of these categories is explained further in the next sections.

Equipment Phases		Project Phases	Percent Complete
Heavy Duty Truck	Skid Steer Loaders	Land Clearing and Grubbing	0%
Light Duty Truck	Surfacing Equipment	Roadway Excavation	5%
Water Truck	Trenchers	Structural Excavation	10%
Bore/Drill Rigs	Tampers/Rammers	Base and Subbase	15%
Cement & Mortar Mixers	Tractors / Loaders / Backhoes	Structural Concrete	20%
Dumpers / Tenders	Other Construction Equipment	Paving	25%
Concrete/Industrial Saws	Aerial Lifts	Drainage / Environmental / Landscaping	30%
Cranes	Forklifts	Striping / Painting	35%
Crushing/Proc. Equipment	Sweepers / Scrubbers	Traffic Control / Signage / Barriers	40%
Crawler Tractors / Dozers	Other General Industrial Equipment	CCO	45%
Excavators	Other Material Handling Equipment	Other	50%
Graders	Chain Saws < 6 HP (commercial)	Idle	55%
Off-Highway Tractors	Chippers/Stump Grinders		60%
Off-Highway Trucks	Commercial Turf Equipment		65%
Pavers	Generator Set		70%
Paving Equipment	Pumps		75%
Plate Compactors	Air Compressors		80%
Rollers	Welders		85%
Rough Terrain Forklifts	Pressure Washers		90%
Rubber Tire Loaders	Non / Externally powered Equipment		95%
Scrapers	Unknown / Not Equipment		
Signal Boards			

**Figure 26: The equipment, phase and time interval categories assigned to activity data**

#### **4.5.1.1 Equipment Categories**

The majority of the equipment classifications are taken from the classifications used in the EPA's NONROAD model (EPA 2005c). The NONROAD model was created by the Environmental Protection Agency to assist air quality districts and planning agencies in estimating regional emissions from nonroad engines. NONROAD estimates emissions from nearly 80 types of equipment categorized into 10 industry segments such as "Construction", "Marine" and "Logging"

The category specification was developed to include NONROAD equipment frequently encountered in highway construction. After studying the diaries, 38 NONROAD categories in four industry segments were chosen as categories for this research. The four segments are "Construction Equipment", "Industrial Equipment", "Lawn and Garden" and "Commercial Equipment". The equipment categories are listed

and described in Table 17 along with the SCC code for each equipment category (SCC codes are described further in section 2.6.1). Five categories have been added to the NONROAD categories and represent on-road vehicles, unknown equipment, non-powered equipment and externally powered equipment.

Three of the five categories, “Water Truck”, “Heavy Duty Truck” and “Light Duty Truck”, account for on-road vehicles used on the job site. Many heavy duty trucks are used in construction and perform the essential task of moving fill to the site, from the site and around the site. Heavy duty trucks also deliver equipment and other materials. Light duty trucks are usually used to transport workers around the job site. Water trucks are heavy duty trucks that wet job sites for compaction purposes and to reduce fugitive dust. The threshold for the heavy duty truck definition is rather low because there is no category for medium duty trucks so during equipment classification it was assumed to be 10,000 lbs GVWR.

Non-powered equipment is equipment that is recorded as being used on the job site, but has no engine or powered functions. Equipment trailers, storage tanks and some traffic control devices count in this category. Externally powered devices are powered from compressed air or electricity from generators. Non-powered and Externally powered equipment are combined into one category because neither produce any emissions. The “Unknown / Not Equipment” is used to categorize unidentifiable entries in construction daily or in cases when labor is recorded in the daily diaries. For example, during data entry “Grade Setters” was frequently entered as equipment, when it actually refers to a job duty. Entries such as “10741” are also assigned this category because the number provides no recognizable equipment characteristics.

The NONROAD equipment categories are also used by the UC Davis Construction Emissions Estimation Model (Dai, 2004) described earlier, but with a few additions adopted specifically for this project. UCD-CT-Construct uses a smaller set of equipment types that contains most of the NONROAD construction segment along with heavy duty trucks, light duty trucks and water trucks.

**Table 17: List and description of equipment categories by NONROAD equipment category, type and SCC code. NONROAD definitions are direct quotes from EPA (2005e)**

NONROAD Categories	NONROAD Definitions
<b>Bore/Drill Rigs</b> Construction Equipment SCC: 22xx002033	Self-explanatory drills or boring rigs of all types that are skid mounted, trailer mounted, or self-propelled; not to be confused with highway trucks with drill attachments running off the highway engine, though truck mounted nonroad engines\equipment exist
<b>Cement &amp; Mortar Mixers</b> Construction Equipment SCC: 22xx002042	Small mixers used for small batch mixing
<b>Dumpers / Tenders</b> Construction Equipment SCC: 22xx002078	Small loaders and other trucks for confined space and light loads typically used for small building projects and are typically walk-behind equipment.
<b>Concrete/Industrial Saws</b> Construction Equipment SCC: 22xx002039	Handheld and large engine powered saws for stone cutting.
<b>Cranes</b> Construction Equipment SCC: 22xx002045	Self-propelled typically cable hoists; not to be confused with highway trucks with crane attachments running off the highway engine, though truck mounted nonroad engines\equipment exist
<b>Crushing/Proc. Equipment</b> Construction Equipment SCC: 22xx002054	Various crushing and screening equipment for bulk material
<b>Crawler Tractors / Dozers</b> Construction Equipment SCC: 22xx002069	Tracked (not wheeled) loaders and dozers
<b>Excavators</b> Construction Equipment SCC: 22xx002036	Single purpose wheeled or tracked excavators (backhoe) distinct of multipurpose tractor/backhoe/loaders
<b>Graders</b> Construction Equipment SCC: 22xx002048	Called road or motor graders often used to prepare a site, especially a road, for paving. A blade is mid-frame mounted with equipment having a long wheel base
<b>Off-Highway Tractors</b> Construction Equipment SCC: 22xx002075	Large tractors used to primarily drag large buckets or other equipment around a job or mine site, and agricultural tractors have been used for the same purpose
<b>Off-Highway Trucks</b> Construction Equipment SCC: 22xx002051	Large off-highway dump trucks not certified for highway use
<b>Pavers</b> Construction Equipment SCC: 22xx002003	Large and small (such as for curbs) primarily self-propelled pavers
<b>Paving Equipment</b> Construction Equipment SCC: 22xx002021	Various equipment types used to smooth and distributing paving material including vibrators and finishers to support the work of the pavers
<b>Plate Compactors</b> Construction Equipment SCC: 22xx002009	Similar to tamper/rammers with a larger vibrating plate instead of a ram

**Rollers**

Construction Equipment  
SCC: 22xx002015

Rollers include smooth and knobby (such as used in landfills and called “compactors” not to be confused with smaller Plate Compactors) self propelled rollers

**Rough Terrain Forklifts**

Construction Equipment  
SCC: 22xx002057

Rough terrain forklifts (RTF) can be confused with typical forklifts but have larger knobby off-road wheels and can be confused with rubber tire loaders but are specifically designed for handling palettes. RTFs include telescoping lift trucks called telescopic handlers often used in building construction.

**Rubber Tire Loaders**

Construction Equipment  
SCC: 22xx002060

Bucket loaders or front-end loaders with a front mounted bucket for scooping though other attachments can be used instead of a bucket

**Scrapers**

Construction Equipment  
SCC: 22xx002018

Special equipment type that is an off-highway tractor with a mid-frame bucket that lowers to scrape loose material (dirt) into the bucket to carry to another part of the job site to dump; sometimes converted to a water-wagon

**Signal Boards**

Construction Equipment  
SCC: 22xx002027

Includes both highway boards and light plants used for nighttime lighting

**Skid Steer Loaders**

Construction Equipment  
SCC: 22xx002072

Smaller (able to be ‘skid’ mounted to transport to job site) loaders which may have alternative attachments than a bucket for loading

**Surfacing Equipment**

Construction Equipment  
SCC: 22xx002024

Other various equipment used to supplement paving activity including paving material mixers, surface profilers (road reclaiming chippers), and seal coating equipment not used to distribute paving material as with paving equipment

**Trenchers**

Construction Equipment  
SCC: 22xx002030

Large and small trenchers typically using a rotating front mounted rotating ‘blade’ to pull material from trench and distribute it to the side.

**Tampers / Rammers**

Construction Equipment  
SCC: 22xx002006

Small ‘handheld,’ walk-behind, or single person sized equipment for compaction such as for sidewalk or other small area compaction

**Tractors/Loaders/Backhoes**

Construction Equipment  
SCC: 22xx002066

Common and ubiquitous multipurpose equipment type that is most often referred to as a “backhoe” but include the combined functions of loading and a backhoe in one unit. Agricultural tractors with alternative attachments may be used for similar purposes

**Other Construction Equipment**

Construction Equipment  
SCC: 22xx002081

Miscellaneous category for equipment not categorized above; only example of this type supplied by PSR are tensioners which are large winches used in construction

**Aerial Lifts**

Industrial Equipment  
SCC: 22xx003010

Various (telescoping, articulated, scissors, and other) lift equipment for personnel also called man lifts not to be confused with highway trucks with crane attachments running off the highway engine, though truck mounted nonroad engines/equipment exist to provide lifts for buckets

**Forklifts**

Industrial Equipment  
SCC: 22xx003020

Small wheeled forklifts used for warehouses and other general purposes

<b>Sweepers / Scrubbers</b> Industrial Equipment SCC: 22xx003030	Off-road primarily self-propelled sweeping and scrubbing vehicles
<b>Other General Industrial Equipment</b> Industrial Equipment SCC: 22xx003040	Miscellaneous category with examples such as sandblasters, large vacuum\spraying\other nonroad trucks, paint sprayers, general purpose spreaders, and winches.
<b>Other Material Handling Equipment</b> Industrial Equipment SCC: 22xx003050	Conveyers and other bulk material handling equipment
<b>Chain Saws &lt; 6 HP Commercial</b> Lawn and Garden Equipment SCC: 22xx004021	Self explanatory but smaller and owned by facility\parks\other maintenance departments or landscaping professionals
<b>Chippers / Stump Grinders</b> Lawn and Garden Equipment SCC: 22xx004066	Internal or external bladed equipment to grind and chip various, but primarily woody biomass, materials. Heavier duty than shredders. May include road chippers, stone grinders, and other non-lawn and garden equipment types
<b>Commercial Turf Equipment</b> Lawn and Garden Equipment SCC: 22xx004071	Various turf equipment designed for Equipment professional use and include applications, such as aerators, dethatchers, sod cutters, hydro-seeders, turf utility vehicles, and specific golf course equipment including greens mowers and sand trap groomers
<b>Generator Set</b> Commercial Equipment SCC: 22xx006005	Trailer or skid mounted self contained engine\electric generator designed to supply electrical power at a job site
<b>Pumps</b> Commercial Equipment SCC: 22xx006010	Trailer or skid mounted engine powered liquid pumps
<b>Air Compressors</b> Commercial Equipment SCC: 22xx006015	Trailer or skid mounted engine powered engine powered air compressors to generate high pressure air for pneumatic tools or other needs for pressurized air
<b>Welders</b> Commercial Equipment SCC: 22xx006025	Engine powered arc welding support equipment not unlike a generator
<b>Pressure Washers</b> Commercial Equipment SCC: 22xx006030	Engine powered pumps specifically for pressure washer
<b>Additional Categories</b>	<b>Description</b>
<b>Heavy Duty Truck</b>	Heavy duty on-road trucks
<b>Light Duty Truck</b>	Light duty on-road trucks (gas or diesel)
<b>Water Truck</b>	Trucks used to water site for dust



<b>Non / Externally powered Equipment</b>	Non-powered equipment is equipment such as trailers, or traffic cones that show up on construction diaries. Externally powered equipment produces no emissions, and runs from an external power source such as compressed air or electricity. Air tools, jackhammers and electric tools are examples.
<b>Unknown / Not Equipment</b>	Unable to determine what category to place equipment in, or labor that is mistakenly categorized as equipment

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Caltrans has its own equipment classification scheme which was also adopted for this research. Although it is not linked to any air quality uses, it has considerably more detail than NONROAD. Equipment can be classified into a three level scheme with 59 equipment categories, 251 subcategories and 2,073 model descriptions. The detail covers equipment manufacturer and model, and could be useful for extracting more equipment engine detail such as horsepower and model year if desired. The classification scheme is detailed in the Labor Surcharge and Equipment Rental Rates (Caltrans 2005) which primarily used for payment purposes and is updated every year. An example of the the category for crawler-mounted augers is shown in Figure 27. AUGCL is the category code, the subcategory TXMA stands for the equipment manufacturer Texoma, and 700CL lists the model.

Lincoln 660	5305	\$60.83	<u>Model</u>
C.M.I.	[ CMI ]		2510
<u>Model</u>	<u>Code</u>	<u>Rate</u>	<b>AUGERS,</b>
851	5405	\$54.57	
<b>AUGERS, CRAWLER MOUNTED</b>		[ AUGCL ]	<b>DELAY FACTOR =</b>
<b>DELAY FACTOR = 0.39</b>		<b>OVERTIME FACTOR = 0.64</b>	Includes truck/carrier, al
Includes carrier, attachments and accessories with up to 6.1 meters(20 feet) of			feet) of auger flight. Co
auger flights. Consumable bits or tips to be paid by separate invoice.			<b>ATLANTIC</b>
<b>BAYSHORE</b>	[ BYSH ]		<u>Model</u>
<u>Model</u>	<u>Code</u>	<u>Rate</u>	LDH-80
8400 TD limited access	1500	\$91.81	LDH-100
<b>TEXOMA</b>	[ TXMA ]		LLDH-80
<u>Model</u>	<u>Code</u>	<u>Rate</u>	LLDH-120
TAURUS	2010	\$193.56	<b>CALWELD</b>
700CL	2100	\$112.96	<u>Model</u>
<b>WATSON</b>	[ WATS ]		150-A
<u>Model</u>	<u>Code</u>	<u>Rate</u>	200
2000CM	2500	\$81.78	4500LH
			<b>HUGHES</b>
			<u>Model</u>

**Figure 27: Example of the Caltrans classification scheme**

#### **4.5.1.2 Phase Categories**

The project phases used in this research were selected to match the phases defined in the UCD-CT-Construct model. The phases in that model were defined using precedent set by other California models integrated with descriptions about construction phases from various state DOT manuals (Dai, 2004). Project phase refers to a certain number of broad categories of work performed for most highway construction projects. A few unique phases were added after reviewing the diaries. Activities such as traffic control, striping were not included in the UCD-CT-Construct model, yet used a significant amount of equipment. An idle phase has been added to account for equipment that is idle or broken on the job site, and equipment assigned this value are not included when grand totals of equipment activity hours are calculated for the project. The Contract Change Order or “CCO” phase is used for any contract-item activity that was created as a result of a contract change order, and the “Other” phase is used for activity that does not fit into

any of the other categories. The UC-CT-Construct and custom phases defined for this research are listed in Table 18.

**Table 18: Project phases used for this research**

Phase	Description
Land Clearing and Grubbing	"Preparing the working area by removing trees, vegetation, or other material that may interfere with the roadway construction." (Dai 2004)
Roadway Excavation	The "excavating, grading and disposing of soil and other material for the construction of the roadway elements of a project (e.g., through lanes, ramps, and shoulders)." (Dai 2004)
Structural Excavation	The "excavating and disposing of soil and other material for the construction of the structural elements of a project (e.g. bridges, retaining walls, undercrossing, etc)." (Dai 2004)
Base and Subbase	"Hauling soil and gravel mixture from other locations (e.g. quarry) to the construction site and using these materials to construct a road bed foundation. Imported borrow includes hauling material from other locations to the construction site and building up low areas (embankments) in accordance with the elevations defined by the project plans." (Dai 2004)
Structural Concrete	The "construction of the structural elements of a project, which may include bridge piles, retaining walls, abutments, curbs and gutters, or building foundations." (Dai 2004)
Paving	The "application of one or more courses of asphalt concrete on a prepared foundation or base in conformity with the lines, grades, thicknesses, and typical cross-sections shown in the project plans. Painting includes surface preparation: containing, testing, and disposing of surface preparation debris; furnishing and applying paint; shielding adjacent areas from unwanted paint; and clean-up after painting is completed." (Dai 2004)
Drainage, Environmental, Landscaping	Drainage work, water pollution control, erosion control, planting and irrigation.
Striping / Painting	Striping and painting the roadway and placing delineators
Traffic Control / Signage / Barriers	Any work related to traffic control such as flagging, placing cones, cushion trucks. Temporary and permanent signage and traffic signals. Work related to concrete, beam and temporary barriers.
CCO	Any work that is performed on a change order
Idle	Any time that a piece of equipment is idle or inactive on the job site.
Other	Activity that does not fit in any of the above categories.

It is important to assign each equipment activity to a phase since the patterns and types of equipment use will vary by phase. A completely different set of equipment may be used for the “Paving” versus “Structural Concrete” depending on the size and characteristics of the project. Phases do not necessarily have to be completed in order or even consecutively and multiple phases can occur at the same time.

#### ***4.5.1.3 Percent Completion Intervals***

Equipment use over the duration of the project is classified into 5% intervals of the total project duration. The intervals are calculated over the span from the date of the first construction diary to the date of the last. The size of the 5% intervals are a trade-off between adequate detail of equipment use with respect to time, and creating an unmanageable number of intervals. The database output is categorized into 5% intervals, but many output tables are in 10% intervals to keep the output from growing too voluminous. Each interval refers to the percent of project completion at the beginning of the interval. For example, the “5%” interval category refers to equipment activity use that occurred between 5% and 10% of the total project duration.

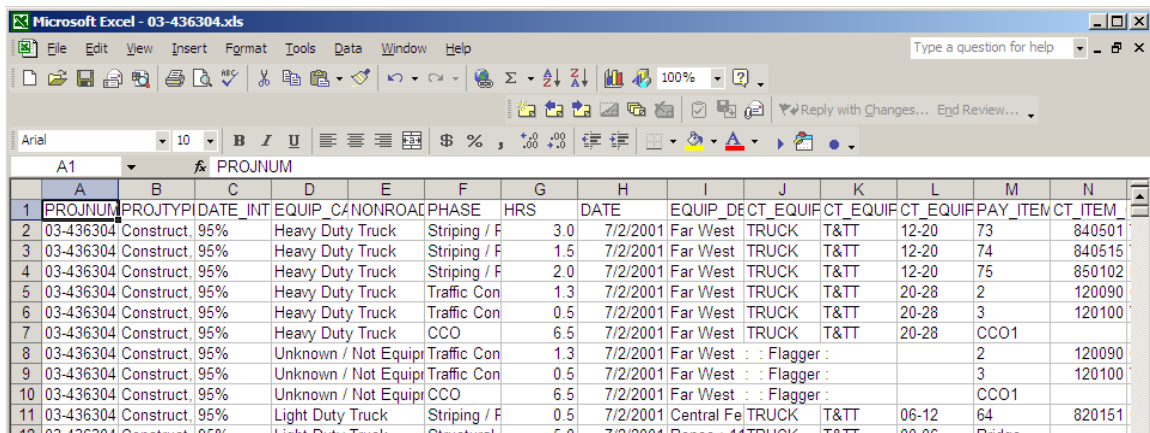
### **4.5.2 The Data Categorization Tool**

This section provides an overview of the spreadsheet tool used to categorize equipment activity data. The objective of the tool is to create database and table style output for the entire sample of projects sorted by project type, phase, equipment category and percent completion interval.

Two formats of output will be generated. Database style output will be created for each project where each line consists of an instance of activity use, and all of the details surrounding it. Table style output consists of a table for each project phase

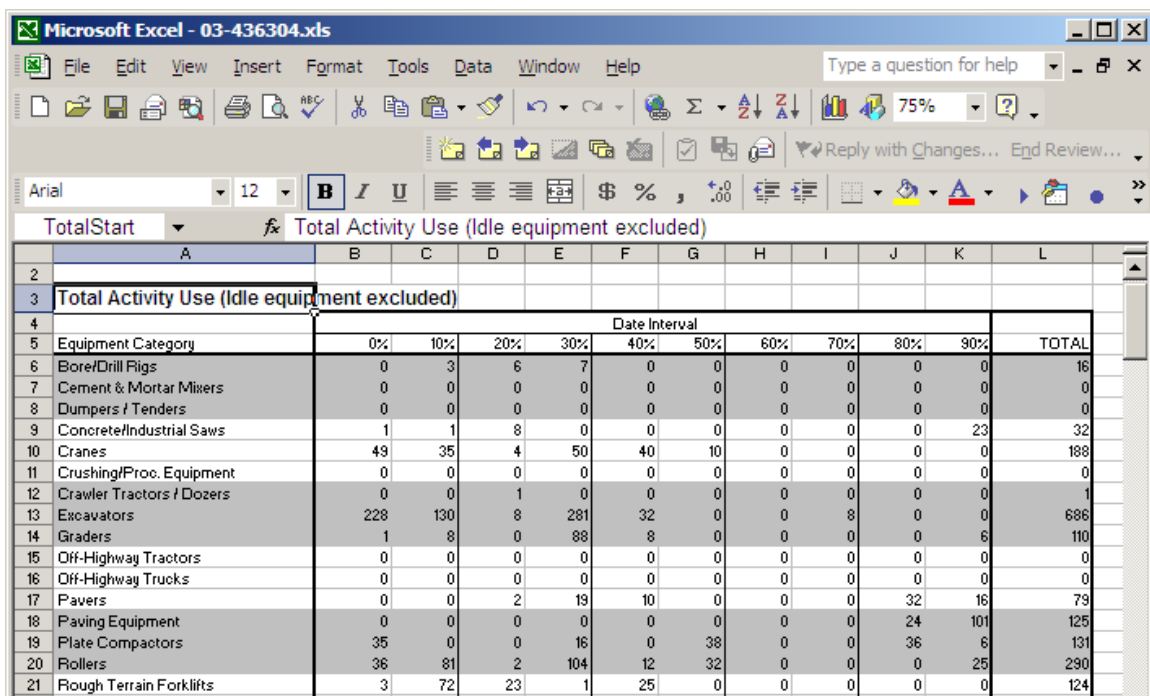
containing the total hours of equipment use broken down by project completion interval.

Table style output will be created for each project, and for the average equipment use across project types. The database style and table style outputs are illustrated in Figures 28 and 29. They will be discussed below in the program details.



PROJNUM	PROJTYPE	DATE_INT	EQUIP_C	NONROAD	PHASE	HRS	DATE	EQUIP_DECT	EQUIPCT	EQUIPCT	EQUIPCT	PAY_ITEM	CT_ITEM
03-436304	Construct, 95%		Heavy Duty Truck		Striping / F	3.0	7/2/2001	Far West	TRUCK	T&TT	12-20	73	840501
03-436304	Construct, 95%		Heavy Duty Truck		Striping / F	1.5	7/2/2001	Far West	TRUCK	T&TT	12-20	74	840515
03-436304	Construct, 95%		Heavy Duty Truck		Striping / F	2.0	7/2/2001	Far West	TRUCK	T&TT	12-20	75	850102
03-436304	Construct, 95%		Heavy Duty Truck		Traffic Con	1.3	7/2/2001	Far West	TRUCK	T&TT	20-28	2	120090
03-436304	Construct, 95%		Heavy Duty Truck		Traffic Con	0.5	7/2/2001	Far West	TRUCK	T&TT	20-28	3	120100
03-436304	Construct, 95%		Heavy Duty Truck		CCO	6.5	7/2/2001	Far West	TRUCK	T&TT	20-28	CCO1	
03-436304	Construct, 95%		Unknown / Not Equip		Traffic Con	1.3	7/2/2001	Far West	:	Flagger :		2	120090
03-436304	Construct, 95%		Unknown / Not Equip		Traffic Con	0.5	7/2/2001	Far West	:	Flagger :		3	120100
03-436304	Construct, 95%		Unknown / Not Equip		CCO	6.5	7/2/2001	Far West	:	Flagger :		CCO1	
03-436304	Construct, 95%		Light Duty Truck		Striping / F	0.5	7/2/2001	Central Fe	TRUCK	T&TT	06-12	64	820151

**Figure 28: Database style output**

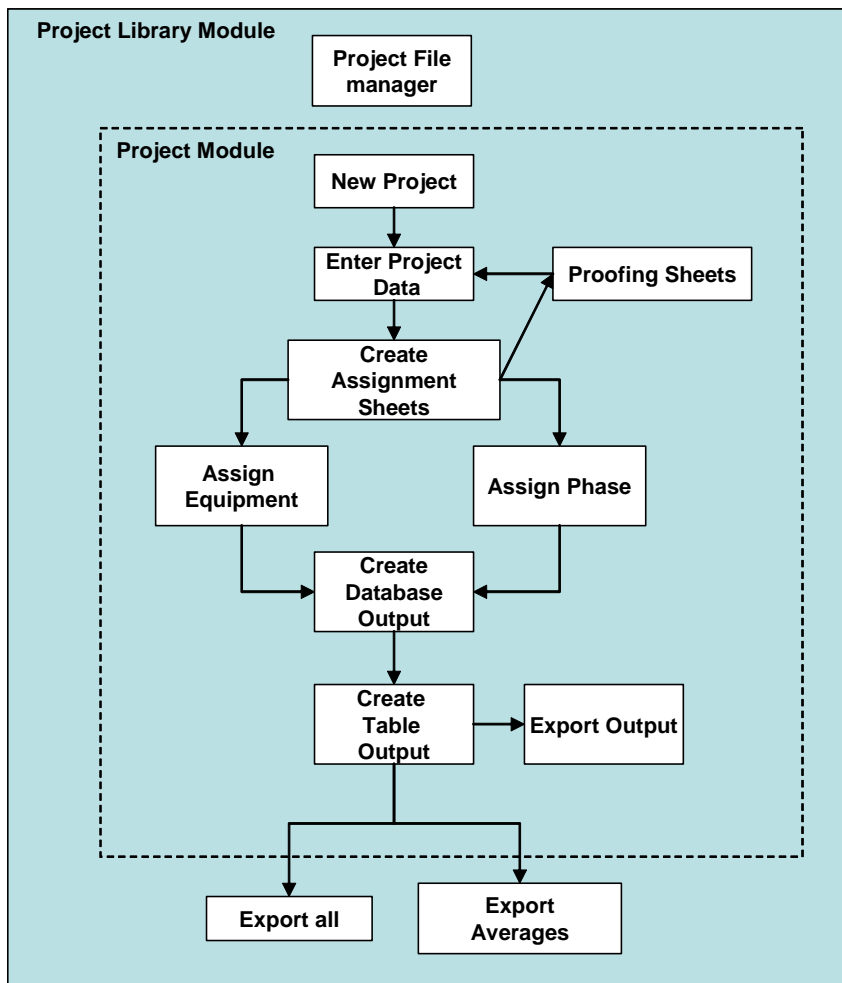


Total Activity Use (Idle equipment excluded)											
Equipment Category	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	TOTAL
Bore/Drill Rigs	0	3	6	7	0	0	0	0	0	0	16
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	1	1	8	0	0	0	0	0	0	23	32
Cranes	49	35	4	50	40	10	0	0	0	0	188
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	1	0	0	0	0	0	0	0	1
Excavators	228	130	8	281	32	0	0	8	0	0	686
Graders	1	8	0	88	8	0	0	0	0	6	110
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	2	19	10	0	0	0	32	16	79
Paving Equipment	0	0	0	0	0	0	0	0	24	101	125
Plate Compactors	35	0	0	16	0	38	0	0	36	6	131
Rollers	36	81	2	104	12	32	0	0	0	25	290
Rough Terrain Forklifts	3	72	23	1	25	0	0	0	0	0	124

**Figure 29: Table style output**

The spreadsheet tool is programmed to be flexible, and to accommodate adding additional projects to the data set. A diagram illustrating the different spreadsheet

modules and procedures included in the modules is in Figure 30. The tool consists of two basic spreadsheets. A new project module spreadsheet is created for each project, and the activity data is classified into categories in this module. The project module has its own output functions to provide individual project output. The Project Library Module then acts as a file manager for all of the Project Modules, and creates the output that requires data from all modules. Each module and procedure will be described in depth in the next sections.



**Figure 30: Diagram of the program flow between the two modules and many procedures that make up the data categorization tool**

### 4.5.3 The Project Module

The project module is a spreadsheet file that acts as a data-input/data-classification/data- output program for a single project. A new project module is created for each project and the output for the entire set of projects is generated by the project library module. The user performs eight primary procedures in each project module which are assisted by Excel functions and VBA code (Table 19). The project module will be described in this section in terms each procedure. The module is driven by a toolbar user interface and procedures included in the module are as follows:

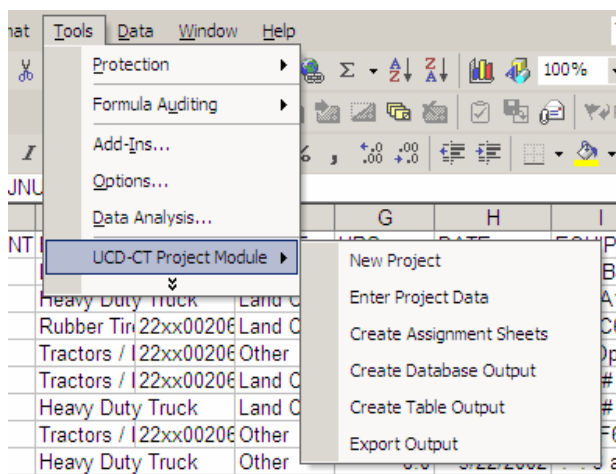
**Table 19: Project module functions**

---

New Project
Enter Project Data
Create Assignment Sheets
Assign Phase
Assign Equipment
Create Database Output
Create Table Output
Export Output

---

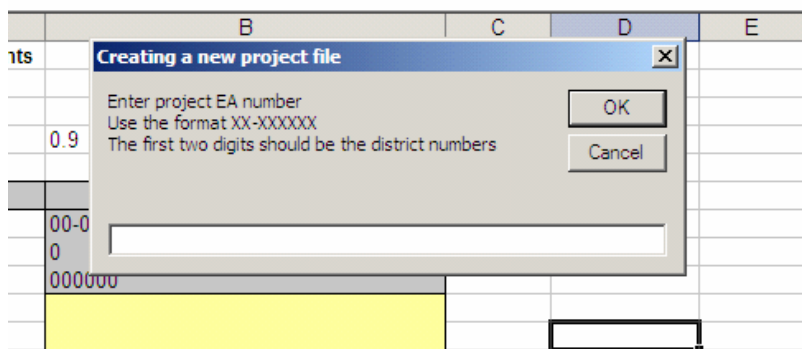
The VBA code for the project module is programmed as a VBA add-in called “UCD-CT Project Module”. The advantage of using an add-in is that multiple files share the same code base, so that changes in the code only have to be made once to affect all of the project module files. Add-ins need to be installed into Excel using the Tools->Add-Ins option. A separate installation file details the process. After the add-in is installed, the following master toolbar for the project module will appear in the tools menu (Figure 31). The equipment assignment and phase assignment procedures are not on the master menu because they are accessed using the Excel worksheet tabs.



**Figure 31: The master toolbar for the project module**

#### **4.5.3.1 New Project**

The new project procedure creates a project module file from a blank template file. the procedure prompts for a project number (Figure 32), allows the user to choose a location to save the file, and sets the default filename to the project number.



**Figure 32: The New Project procedure**

#### **4.5.3.2 Enter Project Data**

Selecting the “Enter Project Data” procedure on the UCD-CT Project Module menu displays a dialog instructing the user to populate the “Diaries” and “Definitions” sheets of the spreadsheet file.



The data in the definitions sheet (Figure 33) are descriptive variables for the project such as contractor name, route and a number of financial and working day indicators. These project variables are found in the Caltrans project database described in Section 4.2.2.

	A	B	C
1	<b>Variables and Constants</b>		
2			
3	<b>Constants</b>		
4	ProgramVersion	0.9	
5			
6	<b>Variables</b>		
7	ProjectNum	09-485623	
8	District	9	
9	EA	485623	
10	Description		
11	Project Type		
12	Contractor		
13	RE		
14	Route		
15	County		
16	PM_Start		
17	PM_End		
18	Loc_Description		
19	Award_Date		
20	Accept_date		
21	Original_Days		
22	Actual_Days		
23	CCO_Days		
24	Weather_Days		
25	Other_Days		
26	Award_Amount		
27	Final_Amount		
28	Original_Bridge_Amount		
29	Final_CCO_Amount		
30			
31			
32	Assign_Start		
33	Assign_End		

Ready

**Figure 33: Project definitions worksheet**

After the definitions data are entered, the user should enter the project diary data in the diaries sheet as described in Section 4.4. This is by far the most time intensive step of the entire process.

### 4.5.3.3 Create Assignment Sheets

The “Create Assignment Sheets” procedure first creates an internal database table from the input diaries that is used to generate the worksheets used for equipment and phase assignment. The contractor name, equipment number and equipment description and remarks strings for each instance of activity use are concatenated and used as the equipment identifiers in the rest of the program (Figure 34). The contractor for each piece of equipment is frequently written in the left margin of the diary, which the example in Figure 2 does not illustrate. If a value exists in the “No. Men” column then the multiple activities are generated accordingly.

res pump up through the end list of Al. Some equipment and personnel were idle

Granite Construction

Weather  
Cool Clear 60°F

EQUIPMENT AND/OR LABOR			HOURS - ITEM NO.										Weather		Remarks		
EQUIP. NO.	NO. MEN	DESCRIPTION of Equipment and labor	Item #22	Item #3													Reason for idleness or other remarks
12-086	1	Foreman	9 1/2														Tim Bunch -
23-930	1	GRAD CAT 3200	2														Cat 1406 Grader
44-036	2	Bulldozer 0-300															13' x 6' Trailer
00-284	1	T & IT 00-06	9 1/2														Utility Truck - 3/4 ton Ford
45	1	DEER 2485	5 1/2														John Deere 210c
16-265	1	ROV B HYST	7 1/2														Hypac C766C Roller
	1	ASPAV BK 2250	7 1/2														Blaw Knox 200B Paver

: 16-265 : ASPAV BK 2250 : Blaw Knox 200B Paver

**Figure 34: Example of converting equipment identifiers into a concatenated string**

This procedure then assigns a time category to each instance of activity use. The duration of the project is calculated from the first and last diary dates, and divided by twenty to create the 5% project completion intervals. A loop then uses this interval definition to automatically assign the interval categories to each instance of equipment activity.

The data from the database is then fed into two PivotTables that comprise the core of the phase assignment and equipment assignment tools. The phase assignment PivotTable sorts each instance of each contract item number and the equipment assignment PivotTable sorts each instance of each concatenated equipment string. Therefore assignments for each activity can be linked to each unique contract item and equipment description and then linked back to the original data. This effectively allows to user to assign equipment and phase categories to each unique equipment name and contract item rather than assigning categories to each instance of equipment activity use.

The procedure also generates the proofing sheets shown that are useful for checking the data input against the hard copy diaries (Figure 35). The proofing sheets only contain the contract items that are used for each diary.

	A	B	C	D	E	F	G	H	I
1	Day	46.X	Contracto	Equipnum	# Men	Description	Bid Items Matrix		
2	9/22/2004		Teichert Construction				8	82	Idle
3				17		T + TT 00-06	1.5	4	
4				12		T + TT 00-12	1.5	4	
5						TRAFA - Sol 1			0.5
6	9/22/2004		Teichert Construction				8	82	
7				17		T + TT 00-06	1.5	4	
8				12		T + TT 00-12	1.5	4	
9	9/15/2004		Teichert Construction				7	83	Idle
10				17		T + TT 00-06	5	2	6
11				9		Auger Truck T + TT 20-28	5	2	
12	9/10/2004		Teichert Construction				111	CCO 43	Idle
13						Personal Truck T + TT 00-06	3	2.5	5.5
14				139		T + TT 12-20	3	2.5	
15	9/3/2004		Teichert Construction				120		
16				V-120	1	Truck, T & tt, 12-20	4		
17	9/3/2004		Granite Construction				43		
18				601		Small Hand Controlled Strini	4		

**Figure 35: Proof sheet example**

At the end of processing, the procedure displays a screen instructing the user to complete the phase assignment and equipment assignment sheets.

#### 4.5.3.4 Assign Phase

The phase assignment sheet is a worksheet called Assign\_Phase. An example of the phase assignment sheet is shown in Figure 36. The sheet sorts out each occurrence of a contract item from the diaries in columns A and B, and allows that occurrence to be matched with the contract items from the “Engineer’s Estimate” (Column C). The original six digit Caltrans standard item code and standard item description are loaded in the next two columns. If the RE established subcategories for grouping each contract item, then the subcategory is displayed in column F. The next column, “Suggested Phase” looks up an external spreadsheet with a list of Caltrans standard item, and suggested phase descriptions. In column H, the user assigns a phase to each contract item from column A using with the aid of the information in the columns in between.

	A	B	C	D	E	F	G	H
1	<b>Phase Assignment Tool</b>							
2	Instructions: First assign each pay item from the diaries to the items on the pay items sheet using drop-down menus in the "Assign" Column							
3	Then, using the Caltrans master item description and the suggested project phase, assign a Phase.							
4	The Suggest button will fill in the suggested project phase into the "Suggested" column							
5								
6								
7	Count of PAY							
8	PAY ITEM	Total	Assign	CT Code	Item Description	RE Subcategory	Suggested Phase	Phase
9	1	4	1	24395	TRAFFIC PLASTIC DRUM	Traffic Control / Cc	#N/A	Traffic Control / Signage / Barriers
10	4	12	4	24396	TEMPORARY FENCE (ESA)	Striping/MBGR/Fc	#N/A	Other
11	5	22	5	74019	PREPARE STORM WATER POLLUTION PRE	Earthwork / Paving	Other	Drainage / Environmental / Landscaping
12	6	270	6	74020	WATER POLLUTION CONTROL	Earthwork / Paving	Other	Drainage / Environmental / Landscaping
13	7	10	7	120090	CONSTRUCTION AREA SIGNS	Traffic Control / Cc	Other	Traffic Control / Signage / Barriers
14	8	289	8	120100	TRAFFIC CONTROL SYSTEM	Traffic Control / Cc	Other	Traffic Control / Signage / Barriers
15	9	17	9	120149	TEMPORARY PAVEMENT MARKING (PAINT)	Striping/MBGR/Fc	Other	Striping / Painting
16	10	10	10	120151	TEMPORARY TRAFFIC STRIPE (TAPE)	Striping/MBGR/Fc	Other	Striping / Painting
17	11	2	11	120152	TEMPORARY PAVEMENT MARKING (TAPE)	Striping/MBGR/Fc	Other	Striping / Painting
18	12	34	12	120159	TEMPORARY TRAFFIC STRIPE (PAINT)	Striping/MBGR/Fc	Other	Striping / Painting
19	13	23	13	120300	TEMPORARY PAVEMENT MARKER	Striping/MBGR/Fc	Other	Striping / Painting
20	14	13	14	128650	PORTABLE CHANGEABLE MESSAGE SIGN	Traffic Control / Cc	Other	Traffic Control / Signage / Barriers
21	15	69	15	129000	TEMPORARY RAILING (TYPE K)	Traffic Control / Cc	Other	Traffic Control / Signage / Barriers
22	16	24	16	129110	TEMPORARY CRASH CUSHION	Traffic Control / Cc	Other	Traffic Control / Signage / Barriers
23	17	14	17	129150	TEMPORARY TRAFFIC SCREEN	Traffic Control / Cc	Other	Traffic Control / Signage / Barriers
24	18	3	18	150659	REMOVE TERMINAL SECTION	Striping/MBGR/Fc	Other	Traffic Control / Signage / Barriers
25	19	6	19	150662	REMOVE METAL BEAM GUARD RAILING	Striping/MBGR/Fc	Other	Traffic Control / Signage / Barriers
26	20	7	20	150668	REMOVE FLARED END SECTION	Striping/MBGR/Fc	Other	Traffic Control / Signage / Barriers
27	21	41	21	24397	REMOVE TRAFFIC STRIPE (WHITE)	Striping/MBGR/Fc	#N/A	Striping / Painting
28	22	44	22	24398	REMOVE TRAFFIC STRIPE (YELLOW)	Striping/MBGR/Fc	#N/A	Striping / Painting
29	23	17	23	150713	REMOVE PAVEMENT MARKING	Striping/MBGR/Fc	Other	Striping / Painting
30	24	12	24	150742	REMOVE ROADSIDE SIGN	Traffic Control / Cc	Other	Traffic Control / Signage / Barriers
31	26	11	26	150771	REMOVE ASPHALT CONCRETE DIKE	Earthwork / Paving	Other	Roadway Excavation
32	27	37	27	150805	REMOVE CULVERT	Drainage	Other	Drainage / Environmental / Landscaping
33	28	7	28	150821	REMOVE HEADWALL	Drainage + Wingw	Other	Other
34	29	13	29	150857	REMOVE ASPHALT CONCRETE SURFACING	Earthwork / Paving	Other	Roadway Excavation

**Figure 36: Phase assignment procedure screenshot**

The backup and restore functions allow the equipment assignments to be backed up in case the Create Assignment Sheets function needs to be run again. This ensures that phase assignments are not lost if corrections must be made to the original data.

#### ***4.5.3.5 Assign Equipment***

The equipment assignment tool is similar to the phase assignment tool, except categorizations for Caltrans equipment type, and NONROAD equipment type are both assigned in the same sheet.

The “Autofill” button uses a simple matching algorithm to try and determine the Caltrans and NONROAD classifications based on substrings in the concatenated strings in column A. For the Caltrans assignments that autofill misses, an equipment picker can be loaded by double-clicking the shaded columns C, D or E (Figure 37). The equipment picker lets the user scroll through the Caltrans classification and assign codes based on the selected equipment types. The code values are stored in the spreadsheet.

	A	B	C	D	E	F	G
1	<b>Equipment Assignment Tool</b>						
2	Instructions: Using the concatenated string of equipment number, equipment name and equipment remarks, assign a Caltrans and NONROAD classification with the equipment browser tool and the drop down menus in the "Equipment Assignment" column.						
3	Double click on the shaded area under the CT Category, subcategory or model columns to load the						
4	The Autofill button will match text segments to each string to attempt to guess the equipment cate						
5	The Suggest button will fill in the 'Suggestion' column with the NONROAD classification for each C						
6							
7							
8	<b>Count of CONCAT NAME</b>						
9	CONCAT NAME	Total	CT Category	CT Subcat	CT Model		
10	:	19					
11	: : : Hylft Boom Manlift :	2	HYLFT	BOOM			
12	: : : 010-020 [PUMWA] [APMP] : Water Pumps, one did n	1	PUMWA	APMP	010-020		
13	: : : 1 x Life - 4 Lights :	1	ELGEN	LITE	4 Light		
14	: : : 1.5 Ton Util PU :	1	TRUCK	T&T	12-20		
15	: : : 10W :	2					
16	: : : 1-Trlr Mtd Seq Arrow :	1	TRAFA	FLAS			
17	: : : 1x Pumps :	3	PUMWA	APMP			
18	: : : 1x2" Pump :	1	PUMWA	APMP			
19	: : : 1x4" Pump :	4	PUMWA	APMP			
20	: : : 2 CMS :	1	TRAFA	CMSN			
21	: : : 2 ea CMS :	3	TRAFA	CMSN			
22	: : : 2 ea Trlr Mtd Seq Arrow :	3	TRAFA	FLAS			
23	: : : 2 Seq. Arrow Trlr MTQ :	1	TRAFA	FLAS			
24	: : : 2 x 5 Gal Vac :	1	PUMWA	APMP			
25	: : : 2 X CMS :	1	TRAFA	CMSN			
26	: : : 2" water pump :	1	PUMWA	APMP			
27	: : : 200 Gal Paint Binder Trailer :	2	TRAIL	LB-A	200		
28	: : : 2ea CMS :	1	TRAFA	CMSN			
29	: : : 2ea Trlr Mtd Seq. Arrow :	1	TRAFA	FLAS			
30	: : : 2x CMS :	6	TRAFA	CMSN			
31	: : : 2x Pumps :	19	PUMWA	APMP			
32	: : : 2x2" Pump :	3	PUMWA	APMP			
33	: : : 2xGenerator 12 :	2	ELGEN	GEN			
34	: : : 3 AXL Truck :	3	TRUON	TRUN	3AXL		
35	: : : 3 Axle :	1	TRUON	TRUN	3AXL		
36	: : : 3 AXL-Truck :	2	TRUON	TRUN	3AXL		

**Equipment Picker**

Input String:  
: : 2 ea CMS :

Category: LDRRT  
Subcategory: CAT  
Model:

Suggest Type

Category Selector

- HCETD Hydraulic Cranes & Excavators, Truck Mtd. w/ C
- HCETG Hydraulic Cranes & Excavators, Truck Mtd. Less
- HYLFT Hydraulic Personnel Lifts & Aerial Work Platform
- LDRCL Loaders, Crankler
- LDRRT Loaders, Rubber Tire**
- LEADS Leads, Pile Driving
- NONOP Non-Operated Equipment (Daily Rates)

SubCategory Selector

- A-C Allis-Chalmers
- CASE Case
- CAT Caterpillar**
- CLRK Clark
- DEER John Deere
- DRES Dresser
- F-A Fiat-Allis

Model Selector

- 1860 416 w/backhoe**
- 1860A 416 Series II w/ backhoe
- 1861A 416B 4WD w/ extend-a-hoe
- 1861C 416C 4WD w/ backhoe
- 1861D 416D w/ backhoe
- 1861D4 416D 4WD w/ backhoe
- 1861M 420D w/ backhoe

Exit Prev Next Insert Adopt

Heavy Duty Truck Heavy Duty Truck  
Heavy Duty Truck Heavy Duty Truck

**Figure 37: Caltrans equipment picker**

The equipment picker suggests a NONROAD equipment classification based on data stored in an external definitions file. These suggestions can be loaded using the “Suggest” button and are displayed in Column F. The user then can select the equipment classification using the pull-down box in Column G. The backup and restore functions in this sheet are functionally the same as in the phase assignment sheet.

Once the equipment and phase assignments are made, then output can be generated for the project (Figure 38).

CONCAT NAME	Total	CT Category	CT Subcat	CT Model	Suggestion	Equipment Assignment
Count of CONCAT NAME	19					Unknown / Not Equipment
11 : : : Hylift Boom Manlift	2	HYLFT	BOOM		Aerial Lifts	Aerial Lifts
12 : : : 010-020 [PUMWA] [APMP] : Water Pumps, one did n	1	PUMWA	APMP	010-020	Pumps	Pumps
13 : : : 1 x Life - 4 Lights	1	ELGEN	LITE	4 Light	Signal Boards	Signal Boards
14 : : : 1.5 Ton Util PU	1	TRUCK	T&T	12-20	Heavy Duty Truck	Heavy Duty Truck
15 : : : 10W	2					Unknown / Not Equipment
16 : : : 1-Trlr Mtd Seq Arrow	1	TRAFA	FLAS		Signal Boards	Signal Boards
17 : : : 1x Pumps	3	PUMWA	APMP			Pumps
18 : : : 1x2" Pump	1	PUMWA	APMP			Pumps
19 : : : 1x4" Pump	4	PUMWA	APMP			Pumps
20 : : : 2 CMS	1	TRAFA	CMSN		Signal Boards	Signal Boards
21 : : : 2 ea CMS	3	TRAFA	CMSN		Signal Boards	Signal Boards
22 : : : 2 ea Trlr Mtd Seq Arrow	3	TRAFA	FLAS		Signal Boards	Signal Boards
23 : : : 2 Seq. Arrow Trlr MTQ	1	TRAFA	FLAS		Signal Boards	Signal Boards
24 : : : 2 x 5 Gal Vac	1	PUMWA	APMP			Non / Externally powered Equipment
25 : : : 2 X CMS	1	TRAFA	CMSN		Signal Boards	Signal Boards
26 : : : 2" water pump	1	PUMWA	APMP			Pumps
27 : : : 200 Gal Paint Binder Trailer	2	TRAIL	LB-A	200	Non / Externally powered	Non / Externally powered Equipment
28 : : : 2ea CMS	1	TRAFA	CMSN		Signal Boards	Signal Boards
29 : : : 2ea Trlr Mtd Seq. Arrow	1	TRAFA	FLAS		Signal Boards	Signal Boards
30 : : : 2x CMS	6	TRAFA	CMSN		Signal Boards	Signal Boards
31 : : : 2x Pumps	19	PUMWA	APMP			Pumps
32 : : : 2x2" Pump	3	PUMWA	APMP			Commercial Turf Equipment
33 : : : 2xGenerator 12	2	ELGEN	GEN			Generator Set
34 : : : 3 AXL Truck	3	TRUON	TRUN	3AXL	Heavy Duty Truck	Pumps
35 : : : 3 Axle	1	TRUON	TRUN	3AXL	Heavy Duty Truck	Air Compressors
36 : : : 3 AXL-Truck	2	TRUON	TRUN	3AXL	Heavy Duty Truck	Welders
37 : : : 35 Ton Crane	2	S&CCL			Heavy Duty Truck	Pressure Washers
38 : : : 3X2" Pump	2	PUMWA	APMP			Non / Externally powered Equipment
39 : : : 4 ea Light Towers	2	ELGEN	LITE	4 Light	Signal Boards	Unknown / Not Equipment
40 : : : 4ea Light Towers	2	ELGEN	LITE	4 Light	Signal Boards	Cranes

**Figure 38: Equipment assignment procedure screenshot**

#### 4.5.3.6 Create Database Output

A spreadsheet row in a database table will be created for each instance of equipment activity with each of the fields shown in Table 20. The “Static” items are constant for each project e.g. the project type will be the same for every line of input for each project. Variable items are generated for each line of diary data. The output database contains the original diary data on the same line as the equipment, phase and completion interval classifications. For added compatibility, the NONROAD SCC column is included for nonroad equipment. A screenshot of example output is shown in Figure 28.

**Table 20: Data generated for each instance of activity use**

Column	Name	Description	Static / Variable for each project
1	PROJNUM	Project number	Static
2	PROJTYPE	Project type	Static
3	DATE_INT	Project completion interval	Variable
4	EQUIP_CAT	Equipment assignment	Variable
5	NONROAD_SCC	SCC for NONROAD equipment	Variable
6	PHASE	Phase assignment	Variable
7	HRS	Hours of use	Variable
8	DATE	Date	Variable
9	EQUIP_DESC	Concatenated Equipment Description	Variable
10	CT_EQUIP_CAT	Caltrans equipment category code	Variable
11	CT_EQUIP_SUBCAT	Caltrans equipment Subcategory	Variable
12	CT_EQUIP_MODEL	Caltrans equipment model code	Variable
13	PAY_ITEM	Contract item	Variable
14	CT_ITEM	Standard item code	Variable
15	ITEM_NAME	Standard item description	Variable
16	REMARKS	Remarks column from diary	Variable
17	46.X	46.X identifier from diary	Variable
18	DE_NOTES	Data entry notes	Variable
19	AWARD_AMOUNT	Award amount at bid	Static
20	LENGTH_DAYS	Project duration	Static
21	ORIG_WORK_DAYS	Original estimated working days	Static

#### ***4.5.3.7 Create Table Output***

In the database output, each instance of equipment activity has a row with the number of hours of the activity along with the type/phase/equipment/interval categories and other descriptive information about the project and the activity. The tabular output procedure generates a chart that aggregates this data into an easy to understand format for each project.

A table with the project completion intervals on the row axis and the equipment types on the column axis is created for each project phase. The data summarized in the table are the total number of activity hours that fit into a particular



phase/completion/equipment combination. A similar spreadsheet with average equipment use for each project type is also created later in the project module.

The screenshot for the table output for a project is shown in Figure 30. In addition to tables for each phase, a table for total equipment use exists, as does a breakdown of the project completion intervals, and a table of project completion by phase. The output for each project in table form is included in Appendix D.

#### **4.5.3.8 *Export Output***

After the database and table output have been created for a project, they can be output in a variety of formats. The database output can be exported to Excel and tab-delineated formats, and the table output can be exported to a Word file.

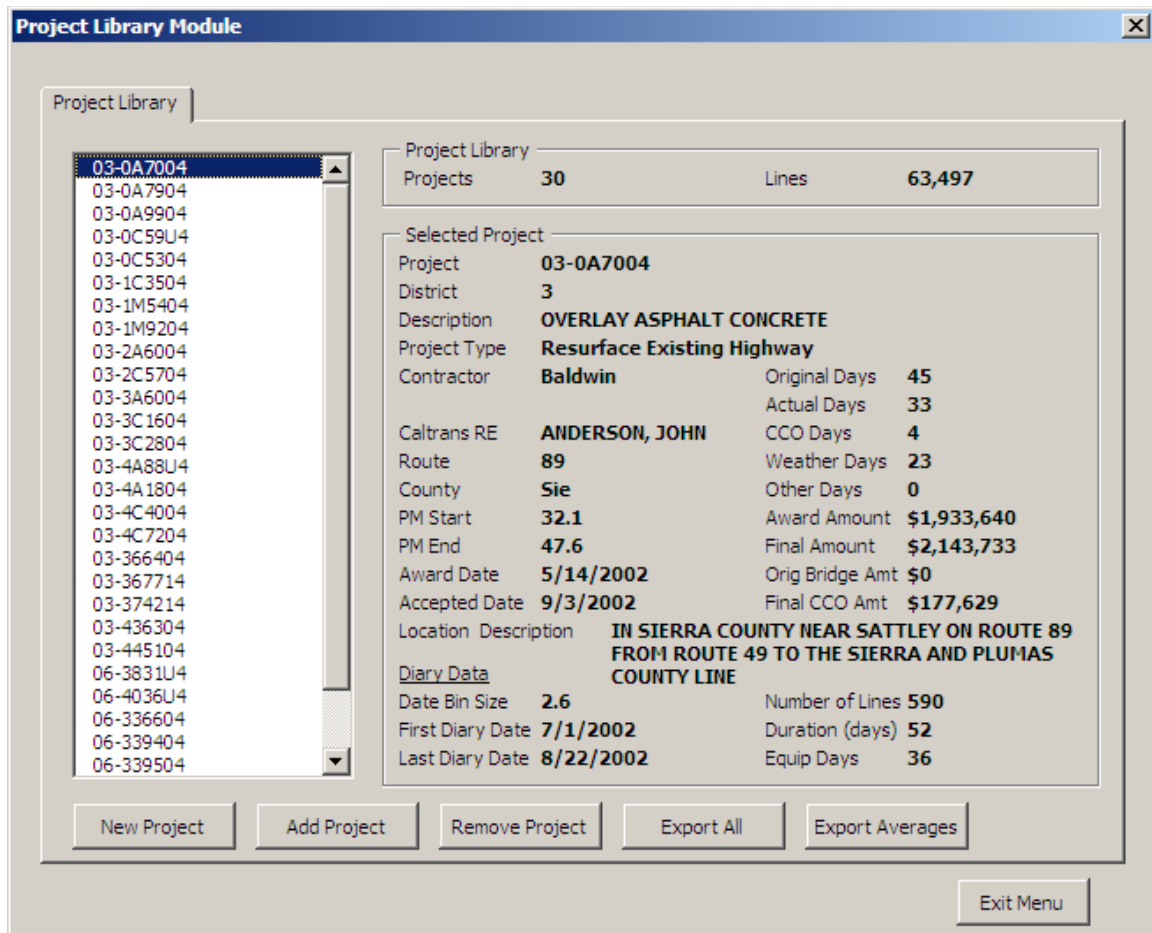
Once the data entry and processing for each project is complete, the project library module is used to create average activity use output, and output files for the entire project data set.

### **4.5.4 The Project Library Module**

The project library module performs four procedures that manage the project modules and create output which are adding files to the library, deleting files, exporting all project output and exporting average project output. The purpose of the module is to act as one single location where files can be managed, and to automate the creation of output sheets that would be tedious to create manually. Refer to Figure 30 for the flow diagram for project library module.

A screen shot of the main interface screen is shown in Figure 39. In this screen the main functions of the project can be accessed, and the details of each project can be viewed by selecting project numbers in the list box. The “New Project” button displays

instructions on how to use the project module to create a new project, and is not considered a procedure.



**Figure 39: Project module main interface**

#### **4.5.4.1 Add project**

The add project procedure loads a file dialog and prompts the user to add a project file to the library. Once added, the total number of projects in the library, and the total number of database lines in the library is updated. Each new file is added to the end of the project file list.

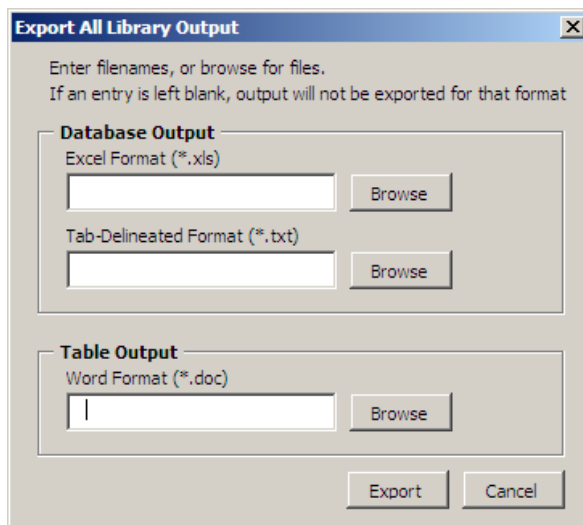
#### **4.5.4.2 Delete project**

The delete project procedure removes the selected project file from the library, and adjusts the number of projects and number of lines accordingly.

#### **4.5.4.3 *Export All***

The Export all procedure loads each project module and activates its Export Database and Export Table functions to create a single file for all projects database output, and a single file for all projects table output. The export screen is shown in Figure 40.

The database output is a data set that is appropriate for external analysis in statistical software. The file is can be export as a tab-delineated file, or an Excel file if the number of rows is less than 65,536.



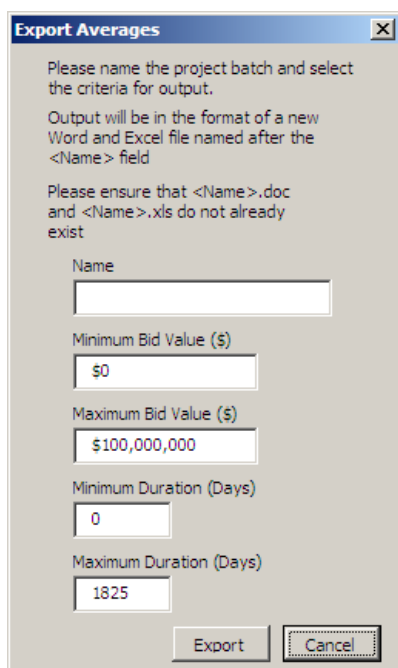
**Figure 40: The export all procedure**

#### **4.5.4.4 *Export Averages***

The output from the average table procedure allows the easy access to the average equipment activity by phase, equipment and percent completion categories for each project type. This tool is the base for the tables generated in Appendix A. The tables

nearly mimic the versions in the table output for the project file, except the hours are not aggregate values, but are average values across a particular project type.

An example of the Export Averages screen is shown in Figure 41. A minimum and maximum bid value, or award amount, and a minimum and maximum duration can be used to limit the data set that the averages are generated from. For example, by setting the parameters appropriately, it would be possible to compare average hours of use between projects with and award amount less than \$1,000,000 and more than \$1,000,000.



**Export Averages**

Please name the project batch and select the criteria for output.

Output will be in the format of a new Word and Excel file named after the <Name> field

Please ensure that <Name>.doc and <Name>.xls do not already exist

Name

Minimum Bid Value (\$)

Maximum Bid Value (\$)

Minimum Duration (Days)

Maximum Duration (Days)

**Figure 41: Screen shot from the export averages function**

## 5 Results

Recall that the primary objective of this study was to collect activity data and establish a framework for equipment activity analysis. However we have developed a set of first order results from this research that are presented in table form in the appendices. Appendix A contains the average equipment activity by phase for each project type. Appendix D contains the total equipment activity tables for each of the thirty projects in the sample. The combined database output for all of the projects is too lengthy to be printed and only exists in electronic form.

### ***5.1 Analysis by Project Type***

A few summations of the average activity data will be presented in this chapter. One of the primary elements we will examine is differences in average equipment use depending on project type, award amount and duration. A summary of the mean award amount, duration and original work days for each type of project is shown in Table 21. Each project type is assigned a four letter code which will be used to identify the project type in some of the tables in this chapter; the codes are listed in the second column of Table 21. Note also that project types and phases will often be abbreviated in this chapter, for example the “Construct Freeway / Extra Lane” project type will be referred to as “construction”.

**Table 21: Statistics by project type**

Project Type	Code	N	Award Amount	Original Days	Duration
Resurface Existing Highway	RESR	10	\$2,515,963	70	182
Construct Freeway / Extra Lane	CONS	6	\$5,918,713	147	394
Pavement Rehabilitation / Widening	REHB	8	\$2,931,403	103	223
Construct, Reconstruct Bridge	BRDG	3	\$5,819,151	205	329
Construct median, thrie beam barrier	BARR	2	\$566,374	58	181
Landscaping	LAND	1	\$797,237	885	270

In Table 21 it is clear that the mean duration for most project types is longer than the mean number of “original days”. This is not necessarily an indicator that the average project length was grossly underestimated in the planning phase; the duration is calculated by subtracting the last work date from the first work date while “original days” only accounts for planned active work days and not weekends or unexpected weather delays. Regardless though, the actual number of work days is 89% larger on average than the planned number of “original days”. We primarily use the project duration instead of “original days” when analyzing the data in this chapter because duration aligns with the calendar, but in general the projects with the highest number of “original days” also have the longest durations and the projects with the lowest number of “original days” also have the shortest durations.

The only landscaping project in the sample is unique because its duration is 70% shorter than the “original days”. Landscaping projects usually have an extremely large number of working days, but almost all of the days are devoted to regular upkeep such as watering and weeding over a multi-year span. It is not uncommon for project records to lack construction diaries for this general upkeep because it is so routine and is performed by a contracted gardening service.

The duration of a project is a possible indicator of the complexity of a project and hence the amount of equipment used for the project. It is clear that the construction, bridge and landscaping project types have the longest durations and the highest number of original days while the resurfacing, rehabilitation and median project types have the lowest of both. An evaluation of the link between duration and equipment use, and therefore emissions, will be performed later in this chapter.

Award amount, like duration, is also a potential indicator of project complexity and equipment use. The construction, bridge and rehabilitation project types tend to have the highest awarded, or original bid, dollar value. Landscaping, median and resurfacing jobs tend to have the lowest awarded amounts. The link between award amount and equipment use will also be analyzed.

Award amount and duration may be valuable indicators of equipment activity on a project, but it is likely that project type also factors strongly into equipment activity. Two different projects, even with the same award amount and same duration, could require different types and quantities of equipment depending on the nature of the project such as a bridge project versus a pavement rehabilitation project. Table 22 is useful for comparing the average hours of equipment use between project types.

**Table 22: Average nonroad equipment and truck use by project type**

Equipment Category	Project Type						
	RESR	CONS	REHB	BRDG	BARR	LAND	ALL
N	10	6	8	3	2	1	30
1. Signal Boards	942	2,241	2,575	3,312	938	0	1,842
2. Rollers	731	899	787	484	94	18	688
3. Tractors / Loaders / Backhoes	478	941	162	307	159	131	436
4. Rubber Tire Loaders	298	430	331	906	137	81	376
5. Pavers	385	380	302	201	6	0	305
6. Generator Set	35	647	33	1,274	0	27	278
7. Graders	139	446	390	119	78	0	257
8. Air Compressors	42	418	74	1,242	229	0	257
9. Sweepers / Scrubbers	239	201	408	35	2	0	232
10. Excavators	85	419	154	443	31	0	199
11. Surfacing Equipment	186	147	196	231	14	0	168
12. Rough Terrain Forklifts	19	373	16	443	9	0	130
13. Scrapers	11	383	120	11	0	0	113
14. Paving Equipment	110	139	131	103	14	0	110
15. Skid Steer Loaders	45	107	18	143	167	1,289	110
16. Crawler Tractors / Dozers	0	283	82	220	0	8	101
17. Other General Industrial Equipment	104	100	58	190	0	0	89
18. Bore/Drill Rigs	41	51	78	40	410	0	76
19. Concrete/Industrial Saws	24	149	63	117	4	0	67
20. Aerial Lifts	0	107	1	434	0	0	65
21. Pumps	11	232	2	60	0	0	57
22. Trenchers	22	30	1	6	0	870	43
23. Cement & Mortar Mixers	0	97	9	78	0	0	30
24. Cranes	5	54	3	132	0	0	26
25. Plate Compactors	21	61	2	45	5	0	24
<b>TOTAL NONROAD</b>	<b>4,019</b>	<b>9,448</b>	<b>6,004</b>	<b>10,831</b>	<b>2,302</b>	<b>2,455</b>	<b>6,149</b>
1. Light Duty Truck	1,865	4,444	2,090	6,218	1,433	5,563	2,970
2. Heavy Duty Truck	1,394	4,086	2,693	2,962	710	3,385	2,456
3. Water Truck	236	369	434	517	179	0	332
<b>TOTAL TRUCKS</b>	<b>3,494</b>	<b>8,900</b>	<b>5,217</b>	<b>9,697</b>	<b>2,321</b>	<b>8,948</b>	<b>5,758</b>
<b>GRAND TOTAL</b>	<b>7,513</b>	<b>18,348</b>	<b>11,220</b>	<b>20,527</b>	<b>4,623</b>	<b>11,403</b>	<b>11,907</b>

Table 22 does not cover the entire spectrum of equipment categories; some equipment categories with minimal average equipment use or no use for any project type, such as pressure washers, have been eliminated for clarity. The resurfacing, construction, rehabilitation and bridge project types all have higher total values of nonroad equipment use than truck use. Recall that nonroad equipment have less stringent emission controls



than on-road diesel and gasoline vehicles, so a higher share of equipment with high NO<sub>x</sub> and PM impacts is used on these projects than on project with a majority share of trucks. The median type has approximately the same amount of nonroad equipment and truck use, while landscaping had far less nonroad equipment use than truck use. Most of the work performed on landscaping projects is upkeep which usually only involves laborers moving around the job site in a truck.

Construction and bridge projects have the highest average nonroad equipment use out of all of the projects at 9,448 and 10,831 hours respectively while landscaping and barrier projects have the lowest at 2,455 and 2,302 hours respectively. There is a 1,985 hour difference in average nonroad equipment use between resurfacing and rehabilitation projects, where rehabilitation has the higher value, which is unusual considering that they both have similar mean award amounts. For the resurfacing and rehabilitation project types, project type alone may not be enough to estimate total nonroad equipment activity use. The landscaping project has the third highest total equipment use, which seems out of place but makes sense when it is observed that the type has the fifth lowest nonroad equipment use. The total number of nonroad equipment and truck hours by project type may not be enough to estimate equipment emissions alone; it is important to look at the characteristics of the equipment such as average engine horsepower (Table 23).

**Table 23: Select equipment average horsepower calculated from EPA, 2004d**

Equipment Category	Average HP
Scrapers	409
Crawler Tractor/Dozers	260
Rubber Tire Loaders	243
Cranes	231
Graders	204
Bore/Drill Rigs	176
Excavators	171
Pavers	124
Sweepers/Scrubbers	96
Tractors/Loaders/Backhoes	93
Rollers	92
Air Compressors	83
Trenchers	76
Paving Equipment	70
Skid Steer Loaders	55
Pumps	53
Generator Sets	50
Aerial Lifts	49
Signal Boards/Light Plants	24
Plate Compactors	8

Table 23 shows the average horsepower of select nonroad equipment categories.

The emissions of equipment are calculated by multiplying an emissions factor for a particular criteria pollutant (in grams per hp per hour) by engine horsepower and time.

The average horsepower values from Table 3 are much more variable than the NO<sub>x</sub> and PM emissions factors used in the UC Davis Construction Emissions Estimation Model (2004) which tend to be very similar for all construction types. Engine emissions are highly dependent on horsepower; higher horsepower engines will have higher emissions.

In reviewing Table 22 it can be seen that signal boards are heavily used on most projects. The equipment categories are ordered from top down starting with the equipment with the highest average use among the entire set of projects. Signal boards are used almost three times as much as rollers, the second most used category of equipment. However, signal boards engines only have an average of 24 hp while rollers

engines have almost four times as much at 92 hp. It should be noted that there is no designation whether the signal boards are fueled by diesel, gasoline or solar power. They are classified as a nonroad equipment category in the NONROAD model, and are presented as such in this research.

Most of the roadway and the bridge project types (resurfacing, construction, rehabilitation, bridge) heavily utilize rollers (92 hp), tractors / loaders / backhoes (93 hp), pavers (124 hp) and graders (204 hp). These are the typical types of heavy equipment used in large transportation construction projects. Generator sets (50 hp) rank prominently as the equipment category with the sixth highest average use, but along with air compressors (83 hp) they have much higher average use on bridge projects than any other project type. For bridge projects, generator sets were used 1,274 hours on average and air compressors were used 1,242 hours on average. Generator sets and air compressors are only used for 647 and 418 hours respectively on the highway construction project type which is the next highest instance of use for these two equipment types. This highlights the unique nature of bridge projects because many electric and compressed-air tools are used to build the falsework for the structural concrete phase and perform other details that are less horsepower intensive than, for example, grading for a ten mile long lane addition. Additionally the bridge category has the highest average use of aerial lifts (49 hp) which are used to lift workers to higher elevations. These four project types use high horsepower nonroad diesel equipment extensively, but the generator sets and air compressors that contribute to the high equipment use in bridge projects are lesser emissions contributors than the equipment used in resurfacing, construction and rehabilitation projects.

Some of the project types have a narrow scope of deliverables. For example, median projects are unique when compared to other project types because bore / drill rigs are the second most used category of equipment with an average of 410 hours.

Landscaping also has a unique equipment use profile. Almost all of the average equipment use for the type is distributed between skid-steer loaders and trenchers. This is consistent with landscaping tasks such as minor earthwork and trenching for irrigation. As was seen with the bridge projects, and is reinforced by these two project types, project type does end up being a useful tool to estimate equipment use as well as the relative emissions impact from equipment due to horsepower in these cases.

It is also useful to analyze average equipment operations for each phase of construction. Table 24 is a list of the top ten phases in terms of the average amount of nonroad equipment and truck operating hours.

**Table 24: Top ten categories of average equipment use by phase for all projects**

Phase	Average Hours
1. Traffic Control/Signage/Barriers	2,933
2. Paving	2,059
3. Structural Concrete	1,469
4. Change orders (CCO)	1,113
5. Roadway Excavation	1,100
6. Base and Subbase	929
7. Drainage/Environmental/Landscaping	900
8. Other (Not specified)	695
9. Idle	689
10. Structural Excavation	317

The phase for traffic control / signage / barriers involves, on average the most equipment and truck activity. Paving is the second most activity intensive phase while structural concrete is the third. An interesting finding is that change orders are the fourth most activity intensive phase on average. This means that a very large amount of activity

is performed on tasks that were not in the initial plans and specifications for the project.

The structural excavation phase is a phase that is prominent in many project-level microscopic models, but it accounts for a smaller portion of activity than phases that are not included such as drainage/environmental/landscape and change orders. It is also useful to determine the proportion of nonroad equipment and truck activity that occurs during each phase for each project type (Table 25).

**Table 25: Proportion of phases for each project type**

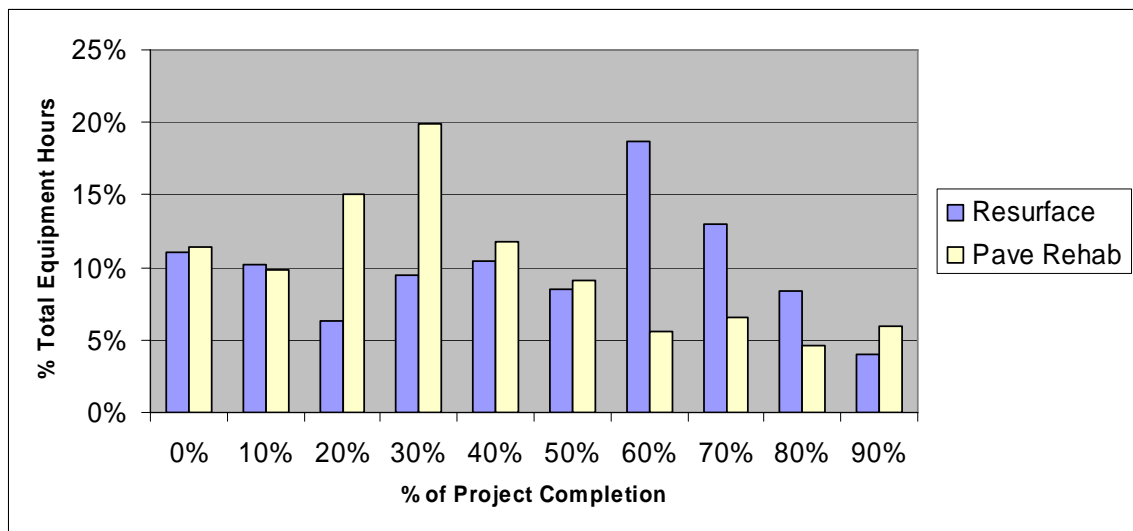
Phase	Project Type						
	RESR	CONS	REHB	BRDG	BARR	LAND	ALL
N	10	6	8	3	2	1	30
Traffic Control / Signage / Barriers	23%	22%	33%	17%	69%	0%	25%
Paving	33%	13%	23%	2%	7%	0%	17%
Structural Concrete	1%	10%	3%	48%	0%	0%	12%
Change Orders (CCO)	9%	10%	13%	7%	2%	5%	9%
Roadway Excavation	12%	12%	8%	3%	11%	0%	9%
Base and Subbase	5%	11%	8%	7%	4%	1%	8%
Drainage / Environmental / Landscaping	6%	10%	1%	2%	0%	87%	8%
Other (Not Specified)	4%	6%	4%	10%	6%	5%	6%
Structural Excavation	2%	2%	5%	3%	0%	0%	3%
Striping / Painting	5%	2%	2%	1%	0%	0%	2%
Total	100%	100%	100%	100%	100%	100%	100%
Total average hours	7,513	18,348	11,220	20,527	4,623	11,403	7,513

The highest proportion of nonroad equipment and truck activity for the entire data set, as well as for half of the individual project types, is in the traffic control / signage / barriers phase. Out of all of the projects, twenty five percent of the equipment and truck activity was used for traffic control / signage / barrier functions. For the median and barrier project types over two-thirds of the activity is linked to this phase because barrier work is included in the phase definition. It is important to note that while this is the phase with the highest proportion of truck and equipment use, most of the operations are by signal boards and trucks. Signal boards have some of the lowest horsepower engines (and hence lowest emissions) of any nonroad equipment category and trucks tend to have cleaner engines than nonroad equipment. Light trucks may also run on gasoline engines which are not as heavy of NOx and PM contributors as diesel engines.

The phase with the second highest amount of equipment use associated with it is paving; the three project types with large proportions of paving are resurfacing,

construction and rehabilitation. The final three project types – bridge, median and landscaping – have relatively small proportions of total average activity linked to paving. Bridge projects tend to be very equipment-intensive because of the large amount of structural concrete work performed, but the finished facilities usually cover a relatively short span of roadway compared to the distance covered by resurfacing, construction and rehabilitation projects and therefore consist of less pavement. Projects with large pavement phases are likely to require a large amount of high horsepower equipment.

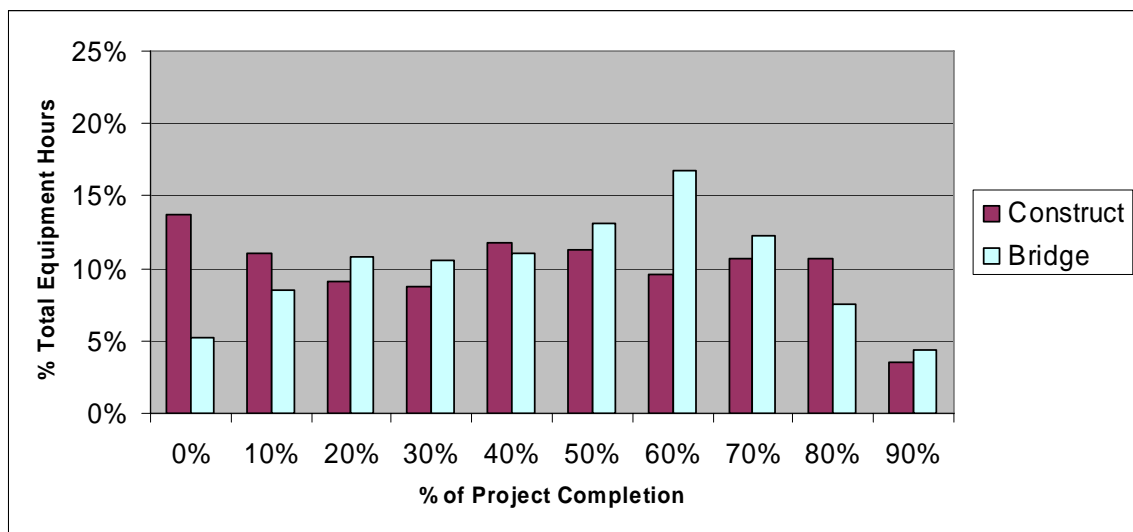
Another way to look at the differences in equipment use between project types is to determine how equipment is used on average over the project duration. Average nonroad equipment and truck activity hours are plotted versus time in Figures 42, 43 and 44; the plots represent the percent of average equipment use for the entire project type occurring in each time interval. Figure 42 compares the percent of average activity per interval for pavement rehabilitation and resurfacing.



**Figure 42: Average percent of activity per interval of project duration for resurfacing and rehabilitation projects**

Upon observation of Figure 42, it can be seen that the highest instances of resurfacing activity occur at the beginning of the project, and in the 60-70% interval of

the project. A different pattern emerges with rehabilitation projects; the degree of average activity increases to a peak of 20% at the 30% interval and then declines to the 5% level for the remainder of the project. Even though resurfacing and rehabilitation projects have similar mean award amounts and durations the profile of the average proportion of activity over time is different. Equipment use on resurfacing and rehabilitation projects is not consistent through the lifetime of the project, and most of the equipment used for these projects is high horsepower equipment. Emissions impacts will be weighted toward the first half of rehabilitation projects and the last half of resurfacing projects. Figure 43 shows this same type of comparison but with the percent of average activity by interval for construction and bridge projects.

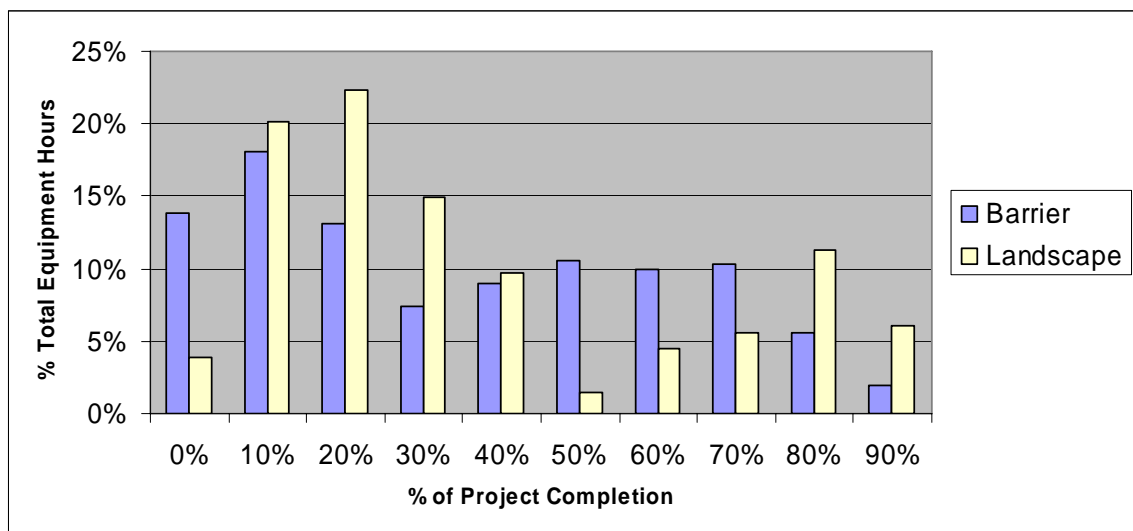


**Figure 43: Average percent of total activity per interval of project duration for bridge and construction projects**

Construction and bridge projects are similar in that both have high award amounts and long durations, although as was shown earlier, they have different equipment and phase profiles. These projects have a more even distribution of activity by interval than in resurfacing and rehabilitation jobs. There are slight variations in the pattern of



proportional activity between the two project types; construction jobs have a constant percent of activity that starts at 14% and drops off in the 90% interval, and on bridge jobs the proportion of activity slowly builds to 17% and then drops off for the remainder of the project at the 60% interval. Bridge projects have a slightly more variable profile of activity over time compared to construction, but overall both projects have a very consistent activity profile over time. Project level emissions will be consistent over time for construction projects (which have a multi-year mean duration of 394 days), and slightly weighted toward the latter 50% of the duration of bridge projects. Figure 44 is the same type of comparison but for barrier and landscaping projects.



**Figure 44: Average percent of total activity per interval of project duration for bridge and construction projects**

The comparison of proportion of activity per interval for landscaping and barrier projects reveals two very different types of projects. The equipment and truck activity for the landscaping project peaks in the first 50% of the project duration and then increases to another small peak in the 80% interval. Average equipment and truck activity in the barrier project, by contrast, peaks at the 20% interval, drops to a 10% proportion and then drops to a 2% proportion at the 90% interval. This means that, on

average, there is a bubble of activity at the beginning of barrier projects and then the activity level drops to a consistent level until the end. Both projects are emissions heavy in the first half of the project duration with landscaping more so than barrier projects. It should be noted again that the sample sizes for both of these project types is very small.

Equipment use by time is consistent with construction projects, but is weighted toward the latter 50% of project duration with resurfacing and bridge projects. The majority of equipment use occurs in the first 50% of project duration for landscaping, barrier and rehabilitation projects. Equipment use may not be consistent throughout the life of the project depending on project type. If a project such as a rehabilitation job is particularly long, such as two years, more emissions will be generated during in the first year than the second. This finding could help improve current project level emissions models to take emissions impacts over time in to consideration depending on project type.

## ***5.2 Analysis by Award Amount***

Along with the project type, the award amount and duration of each project are recorded for each instance of equipment activity in the data set and therefore it is possible to disaggregate the results and analyze equipment use by these two parameters. Table 26 shows the number of projects that fit into each bin of the disaggregated data sets, some of which will be discussed in the next sections.

**Table 26: Breakdown of award amount and duration within the data set**

Duration	< \$1M	> \$1M	Total
Less than 6 months	9	3	12
6 months – 1 year	6	5	11
Greater than 1 year	0	7	7
Total	15	15	30

It can be seen in Table 26 that there is an even split in the sample between projects with award amounts below one million dollars (\$1M) and projects with award amounts over one million dollars. By splitting the entire data set in two based on the \$1M divide, it can be determined what differences exist in the average equipment nonroad use between the two (Table 27).

**Table 27: Average nonroad equipment use based on award amount (hours)**

Equipment Category	< \$1M	> \$ 1M
1. Signal Boards	639	3,046
2. Rollers	226	1,151
3. Tractors / Loaders / Backhoes	60	813
4. Rubber Tire Loaders	89	662
5. Pavers	59	552
6. Generator Set	27	529
7. Graders	42	472
8. Air Compressors	62	451
9. Sweepers / Scrubbers	75	390
10. Excavators	33	366
11. Surfacing Equipment	57	278
12. Rough Terrain Forklifts	7	253
13. Scrapers	3	224
14. Paving Equipment	24	197
15. Skid Steer Loaders	115	104
Percent activity in top 15 categories	86%	90%

Table 27 is ranked like the top-25 nonroad equipment table (Table 22), except it covers 15 elements; the equipment category with the highest average equipment use over the entire data set is in the first row. It is obvious in Table 27 that there is a large difference in the average equipment use between projects less than \$1M and greater than \$1M. Most of the average equipment use for projects greater than \$1M is five times larger than the same equipment category in projects less than \$1M. The rank of the projects greater than \$1M follows the order of the original data set, but the projects less than \$1M follow a different order after signal boards and rollers. Skid steer loaders are the 15<sup>th</sup> most used category of equipment for the entire data set, but third for projects less than \$1M. This result could have to do with the almost exclusive use of skid-steer loaders in the landscaping project which was less than \$1M. Sweepers and scrubbers also ranked low in the entire data set but higher in projects less than \$1M.

When comparing the award amount of projects, it is also useful to determine how equipment use by phase varies for projects based on award amount. Table 28 shows the

average percent of trucks and nonroad equipment used for each phase based on two different project award amount bins. The top ten phases are listed based on the ranking of the entire dataset.

**Table 28: Project phase distribution by award amount**

Phase	< \$1M	> \$1M
1. Traffic Control / Signage / Barriers	29%	24%
2. Paving	18%	17%
3. Structural Concrete	3%	14%
4. Change Orders (CCO)	5%	10%
5. Roadway Excavation	6%	10%
6. Base and Subbase	7%	8%
7. Drainage / Environmental / Landscaping	20%	5%
8. Other (Not Specified)	7%	6%
9. Structural Excavation	0%	3%
10. Striping / Painting	5%	2%
Total average hours	1,756	10,542

In this analysis many of the phase proportions are the same regardless of award amount, such as for paving, base and subbase, and the “other” phase. Notable differences do exist though. The structural concrete phase is significantly larger (14%) in projects greater than \$1M than in projects less than \$1M (3%). This is likely due to almost all the bridge projects having greater than \$1M award amounts and involving large quantities of equipment. The change order share of activity is also higher in larger projects, which is an interesting finding because it may seem that change orders would have a proportionally larger impact on smaller projects, but in reality changes account for a larger proportion the larger the projects grow. The drainage / environmental / landscaping phase is also much larger in projects less than \$1M but this is likely because almost all of the activity from the landscaping project was categorized in this phase.

A 5% difference exists in the traffic control phase between the two award amount bins, but this is not an extreme difference because the proportions of activity for traffic

control are already high in all projects. A slightly higher proportion of activity is directed towards traffic control in smaller projects (29%). It should be noted that most of this contribution comes from signal boards and trucks which have less of an emissions impact than nonroad equipment.

### 5.3 Analysis by Duration

The dataset can also be split into subsets based on project duration. The three duration bins from Table 26 were used to determine any differences in equipment use based on overall project duration (Table 29).

**Table 29: Average nonroad equipment activity based on duration (hours)**

Equipment Category	< 6 Months	6-12 Months	> 12 Months
1. Signal Boards	942	2,016	3,114
2. Rollers	233	756	1,364
3. Tractors / Loaders / Backhoes	55	297	1,309
4. Rubber Tire Loaders	115	492	638
5. Pavers	106	263	713
6. Generator Set	15	359	602
7. Graders	40	326	520
8. Air Compressors	61	359	430
9. Sweepers / Scrubbers	158	199	412
10. Excavators	28	120	618
11. Surfacing Equipment	103	153	301
12. Rough Terrain Forklifts	22	113	343
13. Scrapers	1	90	343
14. Paving Equipment	81	69	225
15. Skid Steer Loaders	57	164	114
Percent of activity in top 15 categories	93%	90%	88%

The order of the equipment categories in the left hand column is in the order of highest average equipment use over the entire dataset of projects. The equipment category with the highest use is in the first row. It is clear that signal boards and rollers are still the top two equipment categories even when considering duration, but the ranking of equipment in each bin diverges much more from the ranking of the dataset,

than with the award amount (Table 27). The equipment use increases in almost every category as duration increases, so longer projects almost always mean greater operation of all major types of equipment.

As in the award amount analysis, there are a few equipment use anomalies based on duration categories. Tractors/loaders/backhoes on average are not used nearly as much on projects less than six months in duration compared with projects longer than twelve months. Sweepers and scrubbers are used frequently in projects less than six months duration compared longer projects; many shorter projects are resurfacing and rehabilitation jobs that frequently use sweepers (Table 22).

It is also possible to compare the proportion of activity by project phase based on duration. Table 30 presents these results, and the left hand column is sorted in the order of the proportion of activity in each phase for each duration bin.

**Table 30: Project phase distribution by duration**

Phase	< 6 mo	6mo – 1 yr	> 1yr
1. Traffic Control / Signage / Barriers	40%	22%	22%
2. Paving	31%	12%	18%
3. Structural Concrete	1%	22%	9%
4. Change Orders (CCO)	8%	6%	12%
5. Roadway Excavation	3%	10%	11%
6. Base and Subbase	6%	9%	7%
7. Drainage / Environmental / Landscaping	1%	11%	7%
8. Other (Not Specified)	3%	6%	7%
9. Structural Excavation	0%	1%	5%
10. Striping / Painting	8%	1%	2%
Total average activity hours	2,180	6,431	12,507

There are some striking trends when observing Table 30. Traffic control consumes a 40% share of truck and equipment activity for projects less than six months, while only a 22% share for project greater than six months. This means that projects longer than six months are likely to have greater emissions impacts because the traffic

control phase, which primarily consists of trucks and low emissions equipment, accounts for an 18% smaller proportion of total equipment hours than in projects less than six months. A greater proportion of the nonroad equipment and truck activity is used for traffic control on small projects, probably because there is less equipment involved in the actual project. This traffic control equipment usually consists of signal boards and trucks, which are generally much smaller contributors to pollutants than the equipment used for other construction phases.

A smaller share of activity occurs in the paving phase for projects less than six months than in projects longer than six months duration. This is likely because the smaller projects tend to be resurfacing and rehabilitation jobs where the primary goal is to improve the surface of an existing road. These small projects are not going to involve a great deal of equipment for other phases such as base/subbase or roadway excavation. The structural concrete phase is almost nonexistent for projects less than six months duration for this same reason. A larger share of equipment is used for the structural concrete phase in projects six months to one year duration which suggests that there is more bridge work encountered for projects in this bin.

A large proportion of activity use on most projects is for roadway excavation, but not for projects with a shorter duration than six months. This is also likely because in quick resurfacing jobs there may be very little excavation; the job could consist entirely of laying a new layer of pavement on top of an existing layer, striping it, and directing traffic around the job site.

There is an anomaly in the drainage / environmental / landscaping phase. While there is very small proportion of equipment used in this phase for projects shorter than six



months, there is a higher proportion for projects greater than six months but less than a year. This is because the landscaping project has a duration of 220 days, and almost all of its equipment use was categorized in the drainage / environmental / landscaping phase.

## **5.4 Conclusions**

A number of trends emerge when looking at the average equipment use data in terms of project type, award amount and duration. On average, construction and bridge projects have high award amounts and longer durations. Barrier projects have small award amounts and short durations. Resurfacing and rehabilitations place in the middle of the range, and the landscaping project was unique with a long duration and a small award amount.

By splitting the data set into groups by project type it is seen that some projects have a diverse equipment use profile while others have a more narrow profile. Resurfacing and rehabilitation projects have similar equipment use characteristics but rehabilitation projects tend to use a greater proportion of equipment on traffic control, a smaller proportion on pavers and a larger proportion on graders. The structural concrete phase of bridge projects consumes almost 50% of the overall equipment use. Construction projects use a large amount of equipment but tend to have a more balanced application of equipment over the different construction phases, as opposed to barrier projects where almost all of the equipment is used for traffic control / signage / barriers. Large projects such as bridge and construction projects have a more balanced equipment use profile over time than smaller projects, such as barrier projects, that have more variability by time interval.

First order results from this research show that construction, resurfacing and rehabilitation projects use equipment with higher emissions than do landscaping and bridge projects. Equipment use over project duration is also dependent on project type. Resurfacing and rehabilitation projects are similar but equipment use is weighted toward the first 50% in rehabilitation projects and the final 50% in resurfacing projects. In longer and more expensive projects, equipment is used for traffic control for a higher proportion than shorter projects and the equipment used for that phase tends to have less of an emissions impact than most nonroad equipment.

As the award amount of a project grows, so does the amount of equipment used. Almost every category of equipment has higher average activity on projects with award amounts greater than one million dollars compared to projects less than one million dollars. As a project becomes more expensive, the proportion of equipment used for change orders also grows. Also as the award amount grows, the proportion of equipment used for structural concrete and roadway excavation also increases.

Projects with longer durations also tend to have higher activity use. Most of the equipment activity (71%) on shorter projects tends to be for the traffic control and paving phases while the equipment use is spread out among a wider variety of phases on projects greater than six months duration. As with the award amount, as the duration increases, the proportion of equipment activity used for change orders also increases, as it does with roadway excavation. Along with project type, award amount and duration used as variables could be very useful for predicting equipment activity on projects.

Many different trends can be established from the tables in this chapter and from the appendices, but the most important contribution of this research is the empirical

dataset of equipment operations, and the framework for analysis that was created to make the data manageable. The data from this study help to expand our knowledge of construction emissions because very little research exists that focuses on construction activity from actual projects. These results show that emissions, equipment types and equipment use over time are dependent on the cost, type and duration of a project. Existing project-level emissions models do not take all of these parameters into account when generating results. This knowledge can be further refined and integrated into improving project-level emissions estimation models.

## **5.5 Limitations**

This study uses the equipment operating hours recorded in the Assistant Resident Engineers Daily Reports (diaries) as the basis for all results. It is not always the case that the equipment was operated continuously for the number of hours recorded in each daily diary; many pieces of heavy equipment were idle occasionally, and small trucks may have been parked for what was recorded as a full day. There are notable differences in the diligence of assistant resident engineers to record idle time in the diaries; some engineers frequently record idle hours while others do not. It also seems common practice to record an entire working day for small trucks on the job site when the trucks may only be operating for one or two hours per day.

Equipment use is not recorded in the construction diaries for air quality or environmental purposes; it is recorded for billing and dispute purposes. Therefore the recorded equipment hours are often a representation of the number of working hours that the equipment was physically on the site. The differences in record versus reality for light trucks is probably dramatic, but the difference in operating hours and recorded hours

for heavy equipment probably not as dramatic. Heavy construction equipment, because of its high cost of operation and rental, is likely to be active as much as possible. This equipment is more likely to be diesel and more likely to be a contributor of NO<sub>x</sub> and PM emissions.

This uncertainty between the operating hours recorded for this study, and actual equipment operating hours on the job site should be acknowledged. These results can be regarded as a liberal estimate of construction equipment activity. It is likely that an assistant resident engineer will record an overstatement of the operating hours than record an understatement.

The scope of the details about each piece of equipment is also limited. The dataset contains a NONROAD equipment classification, a Caltrans equipment classification and the original text of the diary entry. The Caltrans classification has more detail about each piece of equipment than the NONROAD classification, but data such as horsepower, model year and age are not included. Additionally, only the hours of operations are included in the data set, and there is no record of engine load factors or equipment idling (as opposed to idle equipment).

The primary focus when assigning equipment classifications to each instance of equipment use is to create a link to a NONROAD equipment type. The Caltrans equipment codes were introduced as a supplemental equipment classification scheme that could have some use for future research.

There were errors introduced in the data entry process due to the translation between the hard copy diaries and the spreadsheet. The quality of handwriting, and detail recorded between assistant resident engineer is highly variable. With the amount of data

entry required to complete the job, it is reasonable to expect that a certain amount of typographical errors are in the original text entries in the data set. Each instance of equipment use was assigned a NONROAD classification though, so the original intent of the assistant resident engineer was often understandable despite typographical and other errors. It is important to realize that some error exists because of these translation issues, but the most likely outcome of an illegible entry would be the equipment being classified as “Unknown”.

## **5.6 Next Steps**

A project-level data set of construction equipment operations was created for this research. The results alone are not an indicator of regional-level equipment activity, and hence regional-level emissions. The next logical step would be to gather an inventory of the number and types of projects that are completed in a region and apply the results of this research to develop a regional activity inventory. This would make for an easy comparison with survey-based regional models such as NONROAD and OFFROAD.

As was noted in above in the limitations section, there is uncertainty between the equipment operations that occurred on the construction site and the value that is recorded in the construction diaries. A potential way to evaluate the extent of this error is to physically observe the equipment operations on a number of construction projects and compare the results to the construction diaries recorded for the projects. This method should establish if systematic errors exist in the operating hour data for trucks, nonroad equipment or both.

The results from this research are also useful for refining the assumptions made in microscopic project-level emissions models. Activity and equipment quantity

assumptions in models such as the UCD Construction Emissions Estimation model are based on “rule-of-thumb” estimates from engineers who have worked in construction. The emissions estimates of these models are only as good as the assumptions that went into making them, which may not have been based on objective data. The findings of this research could be used to quality check and improve the underlying equipment activity and equipment quantity assumptions in project-level models.

The vast data set compiled in this research lends itself well to creating statistical models to predict construction equipment activity. Statistical estimates of equipment activity can be accompanied by indicators of variance and error which benefits the reliability of any equipment activity estimate.

A huge quantity of construction equipment operations were incorporated into the data set and the results of this research, but still only thirty projects were sampled. Some project types only include one or two representative projects. Any additional future results and averages generated from this data could benefit from diaries of additional projects being input and analyzed with the spreadsheet tool.

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## **7 Appendix A: Average Equipment Use by Project Type**

**Tables start on the next page. Order:**  
**RESURFACE EXISTING HIGHWAY**  
**CONSTRUCT FREEWAY / EXTRA LANE**  
**PAVEMENT REHABILITATION / WIDENING**  
**CONSTRUCT / RECONSTRUCT BRIDGE**  
**CONSTRUCT MEDIAN, THREE BEAM BARRIER**  
**LANDSCAPING**

**RESURFACE EXISTING HIGHWAY      PAGE 1/14**

Sorted by Resurface Existing Highway  
 N 10  
 Mean - Bid Price \$2,515,963  
 Mean - Original Work Days 69.5  
 Mean - Duration (Days) 181.7

**Activity Use By Phase (NONROAD + Trucks)**

Phase	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Land Clearing and Grubbing	0	0	0	0	0	0	0	0	0	0	0
Roadway Excavation	151	76	0	212	170	88	143	73	18	6	936
Structural Excavation	31	27	21	46	6	7	0	1	0	0	139
Base and Subbase	3	12	4	22	44	85	60	58	35	18	341
Structural Concrete	0	12	13	11	14	29	0	11	7	0	95
Paving	255	370	178	201	284	192	638	253	92	52	2,514
Drainage / Environmental / Landscapi	44	29	14	19	53	29	123	68	52	23	452
Striping / Painting	0	17	17	4	1	19	104	48	96	75	382
Traffic Control / Signage / Barriers	242	153	155	97	160	115	247	301	234	28	1,731
CCO	74	55	58	64	35	37	63	125	69	70	649
Other	30	19	15	37	16	37	26	40	25	30	274
Idle	4	13	3	13	4	21	6	22	15	22	123
Total non-idle	830	768	474	713	782	636	1404	978	627	301	7,513

Project number	Award Amount	Original Days	Duration
03-0A7004	\$1,933,640	45	52
03-0A7904	\$4,911,901	80	173
03-0C59U4	\$470,534	25	55
03-1C3504	\$292,690	30	91
03-1M9204	\$775,317	45	59
03-2C5704	\$5,099,929	120	364
03-4A1804	\$1,183,330	30	20
06-3831U4	\$854,410	35	302
06-339404	\$6,343,620	165	436
06-339504	\$3,294,261	120	265
Average	\$2,515,963	70	182

# RESURFACE EXISTING HIGHWAY      PAGE 2/14

## Average Activity Use (Idle equipment excluded)

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	1	0	0	0	0	0	4	15	21	0	41
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	4	4	0	0	0	8
Concrete/Industrial Saws	3	2	4	8	1	1	2	1	0	2	24
Cranes	0	0	0	0	1	2	0	2	0	0	5
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	9	4	9	18	8	14	16	7	0	0	85
Graders	6	8	5	32	42	16	7	15	9	1	139
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	35	36	15	19	49	50	100	46	22	12	385
Paving Equipment	18	28	12	11	10	5	2	16	6	1	110
Plate Compactors	1	0	0	0	0	2	12	6	1	0	21
Rollers	55	182	36	71	90	62	135	68	20	12	731
Rough Terrain Forklifts	0	1	0	0	0	5	3	6	0	4	19
Rubber Tire Loaders	41	12	13	25	20	40	89	36	8	12	298
Scrapers	0	0	0	0	2	9	0	0	1	0	11
Signal Boards	125	119	117	65	100	52	146	105	100	14	942
Skid Steer Loaders	11	17	0	2	1	0	2	3	4	5	45
Surfacing Equipment	27	19	9	10	20	9	41	18	21	12	186
Trenchers	0	0	0	1	0	0	3	8	8	2	22
Tampers/Rammers	0	0	2	0	2	0	0	0	0	0	4
Tractors / Loaders / Backhoes	51	30	24	65	70	62	98	53	17	9	478
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	42	31	11	19	20	13	54	16	19	13	239
Other General Industrial Equipment	0	15	5	1	0	3	35	10	26	9	104
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	1	1
Generator Set	1	2	0	4	1	4	3	2	13	6	35
Pumps	0	0	1	0	0	0	0	1	1	9	11
Air Compressors	6	6	4	3	2	1	2	12	2	4	42
Welders	0	0	0	0	0	0	0	14	19	0	33
Pressure Washers	0	0	0	0	0	0	0	4	0	0	4
<b>TOTAL NONROAD</b>	<b>431</b>	<b>510</b>	<b>269</b>	<b>353</b>	<b>438</b>	<b>355</b>	<b>757</b>	<b>461</b>	<b>318</b>	<b>127</b>	<b>4019</b>
Heavy Duty Truck	149	97	70	170	147	99	273	199	126	63	1394
Light Duty Truck	229	153	124	151	156	152	329	292	175	104	1865
Water Truck	21	7	11	39	41	31	46	25	6	7	236
<b>TOTAL TRUCKS</b>	<b>399</b>	<b>258</b>	<b>205</b>	<b>360</b>	<b>344</b>	<b>281</b>	<b>648</b>	<b>517</b>	<b>308</b>	<b>175</b>	<b>3494</b>
<b>GRAND TOTAL</b>	<b>830</b>	<b>768</b>	<b>474</b>	<b>713</b>	<b>782</b>	<b>636</b>	<b>1404</b>	<b>978</b>	<b>627</b>	<b>301</b>	<b>7513</b>
Non-powered Equipment	9	9	2	10	11	8	21	26	31	18	144
Unknown / Not Equipment	19	79	32	37	88	80	83	53	31	5	505

## RESURFACE EXISTING HIGHWAY PAGE 3/14

**Land Clearing and Grubbing (average hours)**

[illegible]

# RESURFACE EXISTING HIGHWAY      PAGE 4/14

## Roadway Excavation (average hours)

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	4	0	0	0	4
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	5	1	0	0	0	0	0	6
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	4	0	0	4	2	4	13	1	0	0	27
Graders	4	6	0	24	28	6	2	5	2	0	77
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	3	0	0	0	0	1	2	0	1	0	7
Paving Equipment	4	0	0	0	0	0	1	0	0	0	5
Plate Compactors	0	0	0	0	0	0	0	4	0	0	4
Rollers	14	0	0	23	14	5	4	10	1	0	71
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	6	2	0	7	3	10	25	7	1	0	61
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	1	0	0	0	0	5	38	0	0	0	45
Skid Steer Loaders	1	9	0	0	0	0	0	0	0	1	11
Surfacing Equipment	0	6	0	1	5	0	0	0	0	0	12
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	17	2	0	25	35	21	16	15	4	0	135
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	7	5	0	3	2	1	3	3	1	0	25
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	2	0	0	0	0	0	0	2	0	0	5
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>63</b>	<b>29</b>	<b>0</b>	<b>95</b>	<b>90</b>	<b>53</b>	<b>107</b>	<b>47</b>	<b>9</b>	<b>1</b>	<b>494</b>
Heavy Duty Truck	35	28	0	66	28	8	6	8	2	1	181
Light Duty Truck	46	19	0	27	25	13	26	14	7	3	180
Water Truck	6	0	0	25	27	13	3	5	1	0	81
<b>TOTAL TRUCKS</b>	<b>88</b>	<b>47</b>	<b>0</b>	<b>117</b>	<b>80</b>	<b>35</b>	<b>36</b>	<b>26</b>	<b>9</b>	<b>5</b>	<b>442</b>
<b>GRAND TOTAL</b>	<b>151</b>	<b>76</b>	<b>0</b>	<b>212</b>	<b>170</b>	<b>88</b>	<b>143</b>	<b>73</b>	<b>18</b>	<b>6</b>	<b>936</b>
Non / Externally powered Equipment	0	3	0	0	0	0	5	0	0	0	7
Unknown / Not Equipment	7	0	0	20	28	16	1	0	6	0	79

# RESURFACE EXISTING HIGHWAY      PAGE 5/14

## Structural Excavation (average hours)

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	3	0	1	1	0	0	0	0	0	0	4
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	2	2	4	7	1	1	0	0	0	0	18
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	1	0	0	0	0	0	0	1	0	0	2
Rollers	0	0	0	0	0	0	0	0	0	0	0
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	2	0	0	0	0	0	0	0	0	0	2
Scrapers	0	0	0	0	0	1	0	0	0	0	1
Signal Boards	0	0	0	1	1	0	0	0	0	0	1
Skid Steer Loaders	0	0	0	1	0	0	0	0	0	0	1
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	4	13	8	10	1	3	0	1	0	0	39
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	1	0	0	0	0	0	0	1
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
TOTAL NONROAD	12	15	13	20	2	5	0	1	0	0	68
Heavy Duty Truck	6	6	2	8	2	1	0	0	0	0	24
Light Duty Truck	13	7	6	18	2	0	0	0	0	0	46
Water Truck	0	0	0	0	0	0	0	0	0	0	0
TOTAL TRUCKS	19	12	8	26	4	1	0	0	0	0	70
GRAND TOTAL	31	27	21	46	6	7	0	1	0	0	139
Non / Externally powered Equipment	0	2	0	1	0	0	0	0	0	0	3
Unknown / Not Equipment	0	0	0	2	0	0	0	0	0	0	2

# RESURFACE EXISTING HIGHWAY      PAGE 6/14

## Base and Subbase (average hours)

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	0	0	3	0	0	3
Graders	0	0	0	2	6	8	2	8	3	0	28
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	4	1	0	1	5	2	2	3	3	21
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	3	0	0	0	3
Rollers	1	4	0	2	7	12	6	7	6	1	46
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	0	2	3	9	9	5	2	3	32
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	1	7	8	13	2	7	5	4	45
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	4	0	1	1	2	4	2	3	1	18
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	1	0	0	1
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>2</b>	<b>12</b>	<b>1</b>	<b>13</b>	<b>25</b>	<b>50</b>	<b>28</b>	<b>34</b>	<b>20</b>	<b>12</b>	<b>197</b>
Heavy Duty Truck	0	0	1	4	9	15	19	3	2	2	56
Light Duty Truck	1	0	2	4	8	10	8	15	11	3	62
Water Truck	0	0	0	0	2	10	6	7	3	0	26
<b>TOTAL TRUCKS</b>	<b>1</b>	<b>0</b>	<b>3</b>	<b>9</b>	<b>19</b>	<b>35</b>	<b>32</b>	<b>25</b>	<b>15</b>	<b>6</b>	<b>144</b>
<b>GRAND TOTAL</b>	<b>3</b>	<b>12</b>	<b>4</b>	<b>22</b>	<b>44</b>	<b>85</b>	<b>60</b>	<b>58</b>	<b>35</b>	<b>18</b>	<b>341</b>
Non / Externally powered Equipment	0	0	0	2	5	2	0	0	1	0	10
Unknown / Not Equipment	0	8	0	0	3	5	0	0	0	0	15

# RESURFACE EXISTING HIGHWAY      PAGE 7/14

## Structural Concrete (average hours)

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	1	0	1	0	0	2
Cranes	0	0	0	0	0	1	0	0	0	0	1
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	2	8	0	0	0	0	10
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	4	4	0	1	0	0	0	1	0	9
Plate Compactors	0	0	0	0	0	1	0	0	0	0	1
Rollers	0	0	0	0	0	0	0	0	0	0	0
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	1	1	0	0	0	0	2	0	0	3
Scrapers	0	0	0	0	0	6	0	0	0	0	6
Signal Boards	0	1	0	0	1	0	0	1	1	0	3
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	1	1	4	7	3	0	0	0	0	16
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	1	2	0	0	0	0	3
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	1	0	0	1
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
TOTAL NONROAD	0	7	7	4	11	23	0	4	2	0	57
Heavy Duty Truck	0	1	3	3	1	2	0	3	1	0	13
Light Duty Truck	0	3	3	5	2	4	0	3	4	0	24
Water Truck	0	1	0	0	0	0	0	0	0	0	1
TOTAL TRUCKS	0	5	6	8	3	6	0	7	5	0	39
GRAND TOTAL	0	12	13	11	14	29	0	11	7	0	95
Non / Externally powered Equipment	0	0	0	0	0	0	0	0	0	0	0
Unknown / Not Equipment	0	0	0	0	1	0	0	6	2	0	9



## RESURFACE EXISTING HIGHWAY PAGE 8/14

## Paving (average hours)

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	4	4	0	0	0	8
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	2	2	2	1	3	2	0	0	13
Graders	0	2	4	5	5	0	1	0	0	0	18
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	25	26	14	17	40	37	96	43	16	5	319
Paving Equipment	11	21	8	9	9	5	1	3	3	1	71
Plate Compactors	0	0	0	0	0	0	9	0	0	0	9
Rollers	32	173	36	41	64	41	124	44	9	4	567
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	30	10	9	12	12	16	43	17	2	3	153
Scrapers	0	0	0	0	2	0	0	0	0	0	2
Signal Boards	0	0	0	1	0	3	11	0	0	0	15
Skid Steer Loaders	8	8	0	1	1	0	1	0	0	2	21
Surfacing Equipment	18	7	8	8	15	6	38	16	6	3	126
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	1	0	2	0	0	0	0	0	4
Tractors / Loaders / Backhoes	5	0	1	3	5	5	47	13	5	3	86
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	26	20	10	11	17	8	24	8	4	4	131
Other General Industrial Equipment	0	3	0	0	0	0	0	0	4	0	7
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	2	0	1	0	0	0	0	3	0	6
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	2	0	0	0	0	0	0	0	0	2
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	1	0	0	1
<b>TOTAL NONROAD</b>	<b>155</b>	<b>273</b>	<b>94</b>	<b>111</b>	<b>173</b>	<b>126</b>	<b>403</b>	<b>146</b>	<b>51</b>	<b>25</b>	<b>1557</b>
Heavy Duty Truck	30	35	40	49	54	20	89	36	14	9	375
Light Duty Truck	59	56	34	28	45	41	119	59	24	17	481
Water Truck	12	6	10	13	11	5	28	13	2	1	101
<b>TOTAL TRUCKS</b>	<b>101</b>	<b>97</b>	<b>84</b>	<b>90</b>	<b>110</b>	<b>66</b>	<b>235</b>	<b>107</b>	<b>40</b>	<b>27</b>	<b>957</b>
<b>GRAND TOTAL</b>	<b>255</b>	<b>370</b>	<b>178</b>	<b>201</b>	<b>284</b>	<b>192</b>	<b>638</b>	<b>253</b>	<b>92</b>	<b>52</b>	<b>2514</b>
Non / Externally powered Equipment	4	3	1	1	4	0	0	0	5	2	20
Unknown / Not Equipment	1	22	0	6	22	20	18	5	3	2	98

# RESURFACE EXISTING HIGHWAY      PAGE 9/14

## Drainage / Environmental / Landscaping (average hours)

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	1	2	0	0	0	2	0	0	4
Graders	2	0	0	0	1	0	0	0	0	0	3
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	7	2	0	0	0	0	9
Paving Equipment	0	0	0	0	0	0	0	10	0	0	10
Plate Compactors	0	0	0	0	0	0	1	1	1	0	2
Rollers	0	0	0	0	2	0	0	0	0	0	2
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	1	0	0	1	0	0	6	0	0	0	9
Scrapers	0	0	0	0	0	1	0	0	0	0	1
Signal Boards	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders	2	0	0	1	0	0	0	2	0	0	4
Surfacing Equipment	0	2	0	0	0	0	0	0	0	0	2
Trenchers	0	0	0	0	0	0	0	0	4	0	4
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	10	8	3	7	7	2	9	1	1	0	47
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	1	0	0	0	0	0	10	1	1	0	13
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	1	1
Generator Set	0	0	0	0	0	0	3	2	0	5	9
Pumps	0	0	0	0	0	0	0	1	0	5	6
Air Compressors	0	1	0	1	0	0	1	1	0	1	5
Welders	0	0	0	0	0	0	0	14	19	0	33
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>16</b>	<b>10</b>	<b>4</b>	<b>11</b>	<b>18</b>	<b>5</b>	<b>29</b>	<b>33</b>	<b>25</b>	<b>12</b>	<b>162</b>
Heavy Duty Truck	10	6	2	2	14	9	62	6	4	4	119
Light Duty Truck	18	12	7	6	20	16	26	29	24	7	165
Water Truck	0	0	0	0	1	0	6	0	0	0	7
<b>TOTAL TRUCKS</b>	<b>28</b>	<b>18</b>	<b>9</b>	<b>8</b>	<b>35</b>	<b>24</b>	<b>94</b>	<b>35</b>	<b>27</b>	<b>11</b>	<b>290</b>
<b>GRAND TOTAL</b>	<b>44</b>	<b>29</b>	<b>14</b>	<b>19</b>	<b>53</b>	<b>29</b>	<b>123</b>	<b>68</b>	<b>52</b>	<b>23</b>	<b>452</b>
Non / Externally powered Equipment	1	1	0	0	0	0	0	6	5	0	13
Unknown / Not Equipment	0	0	0	0	2	27	1	2	0	0	32

# RESURFACE EXISTING HIGHWAY      PAGE 10/14

## Striping / Painting (average hours)

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	0	0	0	0	0	0	0	0	0
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	4	4
Rubber Tire Loaders	0	0	0	0	0	0	0	0	0	0	0
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	2	0	0	6	8	13	1	28
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	0	0	0	4	0	2	13	4	23
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	0	0	0	0	0	0	0	0	0
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	5	2	7
Other General Industrial Equipment	0	10	4	1	0	3	35	10	22	9	93
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	9	0	9
Pumps	0	0	0	0	0	0	0	0	1	0	1
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
TOTAL NONROAD	0	10	4	2	0	6	41	20	63	19	166
Heavy Duty Truck	0	0	3	1	0	2	16	13	26	29	91
Light Duty Truck	0	7	10	1	1	11	47	15	6	27	125
Water Truck	0	0	0	0	0	0	0	0	0	0	0
TOTAL TRUCKS	0	7	13	2	1	13	63	29	33	56	216
GRAND TOTAL	0	17	17	4	1	19	104	48	96	75	382
Non / Externally powered Equipment	0	0	0	0	0	2	3	4	3	13	24
Unknown / Not Equipment	0	24	19	0	0	1	0	0	0	0	44

# RESURFACE EXISTING HIGHWAY      PAGE 11/14

## Traffic Control / Signage / Barriers (average hours)

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	1	0	0	0	0	0	0	15	21	0	37
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	2	1	0	0	0	2	0	0	0	4
Cranes	0	0	0	0	0	0	0	2	0	0	2
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	1	0	0	0	0	0	0	0	2	0	3
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	1	0	0	0	0	0	0	2	2	0	5
Rough Terrain Forklifts	0	0	0	0	0	5	3	6	0	0	14
Rubber Tire Loaders	0	0	0	0	0	0	1	0	2	0	4
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	121	108	110	51	92	41	72	77	78	11	761
Skid Steer Loaders	1	0	0	0	0	0	0	0	1	0	2
Surfacing Equipment	0	2	1	0	0	0	2	0	0	0	4
Trenchers	0	0	0	0	0	0	2	6	2	1	11
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	3	0	0	0	0	3	11	9	1	0	27
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	1	0	0	0	0	0	6	1	1	0	9
Other General Industrial Equipment	0	2	1	0	0	0	0	0	0	0	3
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	1	0	0	0	0	0	0	0	0	0	1
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	2	2	0	0	0	0	0	1	0	4
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>130</b>	<b>114</b>	<b>114</b>	<b>51</b>	<b>93</b>	<b>50</b>	<b>99</b>	<b>117</b>	<b>110</b>	<b>13</b>	<b>891</b>
Heavy Duty Truck	49	8	5	12	30	26	65	94	58	4	351
Light Duty Truck	62	31	35	33	38	38	82	90	65	11	487
Water Truck	1	0	0	0	0	0	1	0	0	0	2
<b>TOTAL TRUCKS</b>	<b>112</b>	<b>39</b>	<b>40</b>	<b>46</b>	<b>68</b>	<b>65</b>	<b>148</b>	<b>184</b>	<b>123</b>	<b>15</b>	<b>840</b>
<b>GRAND TOTAL</b>	<b>242</b>	<b>153</b>	<b>155</b>	<b>97</b>	<b>160</b>	<b>115</b>	<b>247</b>	<b>301</b>	<b>234</b>	<b>28</b>	<b>1731</b>
Non / Externally powered Equipment	1	0	0	0	0	4	6	1	9	0	22
Unknown / Not Equipment	2	18	12	9	11	4	22	10	3	0	91

## RESURFACE EXISTING HIGHWAY PAGE 12/14

## CCO (average hours)

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	2	2	0	0	0	0	0	2	6
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	2	1	2	2	0	1	0	0	0	0	8
Graders	0	0	1	1	2	1	2	2	4	1	13
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	2	3	0	0	1	2	1	1	1	3	15
Paving Equipment	0	0	0	0	0	0	0	3	3	1	6
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	4	3	0	1	3	2	1	4	3	6	25
Rough Terrain Forklifts	0	1	0	0	0	0	0	0	0	0	1
Rubber Tire Loaders	1	0	3	3	2	3	4	3	2	5	25
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	3	10	7	10	6	3	19	20	8	2	89
Skid Steer Loaders	0	0	0	0	0	0	0	2	3	1	6
Surfacing Equipment	2	2	0	0	0	0	1	0	3	3	11
Trenchers	0	0	0	0	0	0	0	0	0	1	1
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	12	6	8	9	3	6	5	4	0	1	54
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	5	2	2	2	1	1	6	2	4	4	29
Other General Industrial Equipment	0	0	0	0	0	0	0	1	0	0	1
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	1	0	0	0	0	0	0	1	2
Air Compressors	4	2	3	0	0	1	1	3	1	2	16
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
TOTAL NONROAD	34	30	28	30	18	20	39	45	32	33	308
Heavy Duty Truck	16	12	13	18	6	6	11	26	11	10	128
Light Duty Truck	23	12	17	14	9	8	12	53	25	23	197
Water Truck	1	0	1	2	1	3	1	1	1	5	15
TOTAL TRUCKS	40	25	30	34	16	17	24	81	37	38	341
GRAND TOTAL	74	55	58	64	35	37	63	125	69	70	649
Non / Externally powered Equipment	1	1	1	3	0	0	7	15	8	2	39
Unknown / Not Equipment	8	7	0	0	21	6	40	29	15	2	128

## RESURFACE EXISTING HIGHWAY PAGE 13/14

## Other (average hours)

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	1	0	0	0	0	0	1	1
Cranes	0	0	0	0	1	1	0	0	0	0	1
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	1	1	1	0	0	0	0	2
Graders	0	0	0	0	0	0	0	0	0	0	1
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	3	3	0	2	0	3	0	0	0	1	11
Paving Equipment	3	3	0	2	1	0	0	0	0	0	9
Plate Compactors	0	0	0	0	0	1	0	0	0	0	1
Rollers	3	3	0	4	0	2	0	1	0	1	14
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	1	0	1	1	0	2	1	2	0	1	8
Scrapers	0	0	0	0	0	1	0	0	1	0	1
Signal Boards	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0	0	1	0	0	0	1
Surfacing Equipment	7	0	0	0	0	0	0	0	0	1	8
Trenchers	0	0	0	1	0	0	1	2	3	0	6
Tampers/Rammers	0	0	1	0	0	0	0	0	0	0	1
Tractors / Loaders / Backhoes	1	1	2	1	4	5	8	4	2	1	29
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	2	0	0	2	0	1	0	0	0	2	7
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	1	0	2	0	0	1	1	5
Pumps	0	0	0	0	0	0	0	0	0	2	2
Air Compressors	0	0	0	2	2	0	0	3	0	1	8
Welders	0	0	0	0	0	0	0	0	1	0	1
Pressure Washers	0	0	0	0	0	0	0	3	0	0	3
TOTAL NONROAD	20	10	4	17	8	16	10	16	7	11	120
Heavy Duty Truck	4	1	3	5	3	10	6	10	9	4	55
Light Duty Truck	7	7	9	14	5	11	9	14	9	13	98
Water Truck	0	0	0	0	0	0	1	0	0	1	2
TOTAL TRUCKS	10	8	12	19	8	21	15	24	18	19	155
GRAND TOTAL	30	19	15	37	16	37	26	40	25	30	274
Non / Externally powered Equipment	1	0	0	3	1	0	0	0	0	1	5
Unknown / Not Equipment	1	0	0	0	0	1	1	1	1	0	7

## RESURFACE EXISTING HIGHWAY PAGE 14/14

Idle (average hours)

[illegible]

# **CONSTRUCT FREEWAY / EXTRA LANE      PAGE 1/14**

**Sorted by** Construct Freeway / Extra Lane  
**N** 6  
**Mean - Bid Price** \$5,918,713  
**Mean - Original Work Days** 146.6667  
**Mean - Duration (Days)** 393.8333

## **Activity Use By Phase (NONROAD + Trucks)**

Phase	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Land Clearing and Grubbing	232	37	20	37	3	32	1	4	0	4	369
Roadway Excavation	169	351	109	342	474	245	92	166	208	63	2,219
Structural Excavation	153	49	97	46	25	12	0	0	0	4	387
Base and Subbase	741	493	92	76	168	184	131	102	59	46	2,091
Structural Concrete	281	358	283	326	317	112	40	145	35	11	1,908
Paving	29	78	54	47	110	332	615	393	621	32	2,310
Drainage / Environmental / Landscap	332	219	238	294	342	100	73	26	86	43	1,753
Striping / Painting	50	0	57	3	43	17	1	41	73	108	391
Traffic Control / Signage / Barriers	496	394	559	111	257	636	443	501	419	170	3,985
CCO	3	13	77	130	149	301	254	425	349	63	1,764
Other	25	33	85	191	262	91	104	153	119	108	1,172
Idle	64	72	50	231	273	55	6	45	81	10	886
Total non-idle	2511	2025	1669	1603	2150	2062	1753	1956	1969	651	18,348

Project number	Award Amount	Original Days	Duration
03-0C5304	\$273,503	20	42
03-366404	\$15,667,513	200	528
03-367714	\$6,782,895	220	710
03-374214	\$788,761	60	281
06-336604	\$2,325,229	180	429
06-342154	\$9,674,380	200	373
Average	\$5,918,713	147	394



**CONSTRUCT FREEWAY / EXTRA LANE****PAGE 2/14****Average Activity Use (Idle equipment excluded)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	10	1	5	3	4	7	3	11	2	5	51
Cement & Mortar Mixers	0	0	5	0	0	13	16	51	12	0	97
Dumpers / Tenders	0	0	0	0	2	0	0	0	0	0	2
Concrete/Industrial Saws	0	2	7	3	5	23	40	42	25	3	149
Cranes	11	2	6	11	13	2	1	5	2	2	54
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	82	63	20	47	31	18	0	14	9	0	283
Excavators	171	62	40	42	11	48	16	11	16	2	419
Graders	90	91	28	21	58	32	39	49	26	12	446
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	27	17	5	11	81	89	88	59	2	380
Paving Equipment	2	5	4	0	11	15	39	19	37	8	139
Plate Compactors	12	9	0	18	9	10	0	1	0	1	61
Rollers	76	116	54	55	118	76	140	137	123	3	899
Rough Terrain Forklifts	31	22	32	51	70	60	14	62	27	3	373
Rubber Tire Loaders	21	65	48	53	84	58	21	18	35	27	430
Scrapers	183	58	1	28	65	5	11	23	8	1	383
Signal Boards	238	250	285	53	185	275	264	271	363	57	2241
Skid Steer Loaders	13	7	6	3	8	29	6	26	8	0	107
Surfacing Equipment	9	15	12	4	6	21	11	34	33	2	147
Trenchers	0	4	0	8	5	2	1	5	5	0	30
Tampers/Rammers	1	1	0	9	2	1	1	4	1	1	21
Tractors / Loaders / Backhoes	71	138	91	111	91	86	98	62	130	63	941
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	15	17	6	6	24	17	0	5	9	9	107
Forklifts	7	0	1	0	4	0	0	0	0	0	12
Sweepers / Scrubbers	6	13	21	11	23	27	15	16	65	5	201
Other General Industrial Equipment	5	1	18	0	10	14	15	9	22	7	100
Other Material Handling Equipment	0	0	0	0	1	0	0	0	1	0	2
Chain Saws < 6 HP (commercial)	0	17	14	0	0	0	0	0	0	0	31
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	4	0	0	0	20	25
Generator Set	106	22	32	126	135	8	52	122	45	0	647
Pumps	87	2	6	26	102	7	0	3	0	0	232
Air Compressors	15	8	33	41	54	96	80	53	23	14	418
Welders	0	4	4	4	0	4	1	1	1	0	20
Pressure Washers	0	0	0	0	0	0	0	0	0	1	1
<b>TOTAL NONROAD</b>	<b>1261</b>	<b>1022</b>	<b>796</b>	<b>739</b>	<b>1141</b>	<b>1038</b>	<b>971</b>	<b>1143</b>	<b>1089</b>	<b>249</b>	<b>9448</b>
Heavy Duty Truck	633	512	415	326	325	405	469	434	375	193	4086
Light Duty Truck	494	383	423	521	681	595	300	355	484	207	4444
Water Truck	122	107	36	17	3	24	14	24	20	2	369
<b>TOTAL TRUCKS</b>	<b>1250</b>	<b>1002</b>	<b>873</b>	<b>864</b>	<b>1009</b>	<b>1024</b>	<b>783</b>	<b>812</b>	<b>880</b>	<b>402</b>	<b>8900</b>
<b>GRAND TOTAL</b>	<b>2511</b>	<b>2025</b>	<b>1669</b>	<b>1603</b>	<b>2150</b>	<b>2062</b>	<b>1753</b>	<b>1956</b>	<b>1969</b>	<b>651</b>	<b>18348</b>
Non-powered Equipment	27	20	43	28	72	55	33	114	82	28	501
Unknown / Not Equipment	86	96	53	17	34	43	56	25	14	27	452



## CONSTRUCT FREEWAY / EXTRA LANE

PAGE 4/14

## Roadway Excavation (average hours)

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	3	1	0	1	2	1	2	10
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	14	25	10	41	30	13	0	9	9	0	150
Excavators	9	18	13	15	8	19	13	6	8	2	111
Graders	29	48	5	5	29	10	11	24	15	6	182
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	2	0	0	5	5	0	0	0	1	13
Rollers	9	41	14	42	59	7	10	2	4	0	188
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	6	7	16	44	8	2	11	8	12	113
Scrapers	38	44	1	18	54	2	1	12	8	1	179
Signal Boards	0	0	0	0	0	14	7	0	0	0	21
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	4	6	4	1	1	12	2	4	0	1	34
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	1	1	0	2
Tractors / Loaders / Backhoes	2	10	3	23	19	21	12	10	48	25	171
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	7	1	7	7	4	1	4	3	0	35
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	1	0	0	1	0	0	0	0	0	0	1
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	1	1	0	0	0	0	1	0	1	3
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>107</b>	<b>208</b>	<b>58</b>	<b>172</b>	<b>257</b>	<b>114</b>	<b>60</b>	<b>87</b>	<b>102</b>	<b>48</b>	<b>1213</b>
Heavy Duty Truck	23	47	23	83	83	77	26	34	52	7	454
Light Duty Truck	25	60	16	84	134	46	5	38	48	7	464
Water Truck	15	36	13	4	0	8	0	7	4	0	88
<b>TOTAL TRUCKS</b>	<b>62</b>	<b>143</b>	<b>51</b>	<b>171</b>	<b>217</b>	<b>131</b>	<b>31</b>	<b>80</b>	<b>105</b>	<b>14</b>	<b>1006</b>
<b>GRAND TOTAL</b>	<b>169</b>	<b>351</b>	<b>109</b>	<b>342</b>	<b>474</b>	<b>245</b>	<b>92</b>	<b>166</b>	<b>208</b>	<b>63</b>	<b>2219</b>
Non / Externally powered Equipment	0	0	2	1	5	3	0	1	1	0	13
Unknown / Not Equipment	34	33	10	8	5	6	18	1	3	0	119

**CONSTRUCT FREEWAY / EXTRA LANE** **PAGE 5/14**

### Structural Excavation (average hours)

[illegible]

**CONSTRUCT FREEWAY / EXTRA LANE****PAGE 6/14****Base and Subbase (average hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	2	0	0	0	0	0	2
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	52	36	1	1	0	0	0	4	0	0	95
Excavators	19	16	1	0	0	0	2	0	1	0	39
Graders	48	40	18	9	22	20	27	22	5	7	218
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	9	0	0	0	30	0	3	0	0	41
Paving Equipment	0	0	0	0	0	0	0	0	0	2	2
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	47	43	22	4	30	22	15	17	6	0	204
Rough Terrain Forklifts	0	1	0	0	0	0	0	0	0	0	1
Rubber Tire Loaders	5	17	12	3	15	21	1	0	4	7	85
Scrapers	140	14	0	6	6	3	10	10	0	0	190
Signal Boards	0	0	0	0	0	0	31	0	0	0	31
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	7	0	0	0	0	0	0	0	0	7
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	3	0	0	0	0	0	0	3
Tractors / Loaders / Backhoes	3	9	4	3	5	7	5	8	1	10	53
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	2	7	0	0	3	1	0	1	2	16
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>314</b>	<b>193</b>	<b>66</b>	<b>29</b>	<b>79</b>	<b>107</b>	<b>92</b>	<b>63</b>	<b>18</b>	<b>27</b>	<b>987</b>
Heavy Duty Truck	317	194	3	17	39	13	10	12	5	5	615
Light Duty Truck	46	51	14	21	47	55	22	11	29	13	308
Water Truck	65	55	9	9	3	8	8	16	8	2	181
<b>TOTAL TRUCKS</b>	<b>428</b>	<b>300</b>	<b>26</b>	<b>47</b>	<b>89</b>	<b>77</b>	<b>40</b>	<b>39</b>	<b>41</b>	<b>19</b>	<b>1104</b>
<b>GRAND TOTAL</b>	<b>741</b>	<b>493</b>	<b>92</b>	<b>76</b>	<b>168</b>	<b>184</b>	<b>131</b>	<b>102</b>	<b>59</b>	<b>46</b>	<b>2091</b>
Non / Externally powered Equipment	3	0	0	0	0	0	0	1	0	2	5
Unknown / Not Equipment	15	33	2	2	0	6	16	2	0	0	76

**CONSTRUCT FREEWAY / EXTRA LANE****PAGE 7/14****Structural Concrete (average hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	8	1	0	0	0	0	2	0	0	0	10
Cement & Mortar Mixers	0	0	0	0	0	0	1	23	0	0	25
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	2	4	0	0	0	0	0	0	0	6
Cranes	8	1	0	8	4	0	0	0	0	0	21
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	1	0	0	4	0	0	0	0	5
Excavators	1	0	0	2	0	3	0	0	0	0	6
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	6	0	0	0	0	0	0	0	0	6
Paving Equipment	2	3	1	0	3	0	1	0	0	5	14
Plate Compactors	3	2	0	5	1	2	0	0	0	0	13
Rollers	1	4	0	0	0	0	0	0	0	0	5
Rough Terrain Forklifts	30	12	22	38	67	18	2	11	1	0	202
Rubber Tire Loaders	1	6	4	15	8	7	0	0	5	0	46
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	2	0	0	0	0	0	0	2
Skid Steer Loaders	4	0	0	0	0	0	0	11	0	0	16
Surfacing Equipment	0	0	0	2	0	0	0	8	1	0	12
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	2	1	0	0	0	0	0	3
Tractors / Loaders / Backhoes	18	50	9	13	2	4	4	2	0	0	102
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	10	15	5	2	9	13	0	0	0	0	55
Forklifts	0	0	1	0	0	0	0	0	0	0	1
Sweepers / Scrubbers	0	0	1	0	0	0	0	0	0	0	1
Other General Industrial Equipment	0	1	0	0	0	0	0	0	1	0	1
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	17	14	0	0	0	0	0	0	0	31
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	20	22	29	51	8	0	0	0	1	0	131
Pumps	1	2	0	5	1	0	0	0	0	0	9
Air Compressors	7	4	2	13	29	2	12	28	2	0	99
Welders	0	4	0	0	0	0	0	0	0	0	4
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>113</b>	<b>150</b>	<b>93</b>	<b>160</b>	<b>132</b>	<b>53</b>	<b>22</b>	<b>85</b>	<b>12</b>	<b>5</b>	<b>824</b>
Heavy Duty Truck	16	101	110	72	27	2	10	49	11	2	401
Light Duty Truck	146	105	74	94	158	57	7	12	11	4	667
Water Truck	6	3	7	0	0	0	0	0	1	0	16
<b>TOTAL TRUCKS</b>	<b>167</b>	<b>208</b>	<b>191</b>	<b>166</b>	<b>185</b>	<b>59</b>	<b>18</b>	<b>60</b>	<b>23</b>	<b>6</b>	<b>1084</b>
<b>GRAND TOTAL</b>	<b>281</b>	<b>358</b>	<b>283</b>	<b>326</b>	<b>317</b>	<b>112</b>	<b>40</b>	<b>145</b>	<b>35</b>	<b>11</b>	<b>1908</b>
Non / Externally powered Equipment	5	3	5	7	10	0	3	0	6	1	39
Unknown / Not Equipment	14	10	4	1	0	1	1	8	2	0	40

## CONSTRUCT FREEWAY / EXTRA LANE

PAGE 8/14

## Paving (average hours)

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	21	38	0	0	0	59
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	1	0	0	0	0	1
Graders	0	2	2	0	1	1	0	1	5	0	12
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	4	7	5	8	35	74	76	57	1	266
Paving Equipment	0	2	3	0	9	15	35	19	36	0	117
Plate Compactors	0	0	0	1	0	1	0	0	0	0	2
Rollers	0	13	12	5	18	47	115	112	104	1	426
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	1	0	2	16	16	3	5	2	45
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	1	0	6	0	5	0	39	0	51
Skid Steer Loaders	1	4	0	0	0	0	0	0	0	0	5
Surfacing Equipment	3	0	1	0	3	3	5	3	17	0	35
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	1	0	0	1	2	0	0	4
Tractors / Loaders / Backhoes	1	6	3	2	5	17	40	29	59	12	174
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	3	1	3	7	11	13	5	51	0	94
Other General Industrial Equipment	0	0	0	0	0	1	0	0	0	0	1
Other Material Handling Equipment	0	0	0	0	1	0	0	0	0	0	1
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	1	1	0	0	0	1	5	2	0	0	9
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>7</b>	<b>34</b>	<b>31</b>	<b>17</b>	<b>58</b>	<b>170</b>	<b>345</b>	<b>251</b>	<b>373</b>	<b>16</b>	<b>1301</b>
Heavy Duty Truck	14	31	7	9	13	63	198	111	107	3	556
Light Duty Truck	8	13	15	21	39	98	68	30	137	13	439
Water Truck	0	1	0	0	0	2	5	1	5	0	14
<b>TOTAL TRUCKS</b>	<b>22</b>	<b>44</b>	<b>22</b>	<b>30</b>	<b>52</b>	<b>163</b>	<b>270</b>	<b>142</b>	<b>249</b>	<b>15</b>	<b>1009</b>
<b>GRAND TOTAL</b>	<b>29</b>	<b>78</b>	<b>54</b>	<b>47</b>	<b>110</b>	<b>332</b>	<b>615</b>	<b>393</b>	<b>621</b>	<b>32</b>	<b>2310</b>
Non / Externally powered Equipment	0	7	2	0	16	9	5	6	23	1	68
Unknown / Not Equipment	0	3	0	0	0	5	15	4	3	3	32

**CONSTRUCT FREEWAY / EXTRA LANE****PAGE 9/14****Drainage / Environmental / Landscaping (average hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	2	0	0	0	0	0	0	0	0	5	7
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	1	0	0	0	0	2	0	0	3
Cranes	0	0	0	2	0	0	0	0	0	0	2
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	2	0	1	0	0	0	0	0	0	0	4
Excavators	0	2	0	4	0	1	0	0	3	0	10
Graders	1	2	1	0	4	0	0	0	0	0	8
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	1	0	1
Paving Equipment	0	0	0	0	0	0	0	0	2	0	2
Plate Compactors	8	4	0	0	3	1	0	0	0	0	17
Rollers	1	6	3	1	5	0	0	0	3	0	19
Rough Terrain Forklifts	2	0	0	0	0	0	0	0	0	3	4
Rubber Tire Loaders	10	32	11	4	7	2	0	1	4	0	72
Scrapers	0	0	0	0	2	0	0	0	0	0	2
Signal Boards	0	0	0	0	0	0	0	0	24	0	24
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	0	0	0	1	0	0	0	0	1
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	1	1	0	0	1	1	0	0	0	0	4
Tractors / Loaders / Backhoes	33	50	40	23	20	9	21	4	4	1	205
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	2	0	0	0	0	0	0	0	0	2
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	1	0	1	4	0	0	1	0	6
Other General Industrial Equipment	0	1	1	0	0	0	0	0	1	0	2
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	4	0	0	0	20	24
Generator Set	80	0	1	47	123	7	0	0	0	0	258
Pumps	80	0	0	18	101	7	0	0	0	0	206
Air Compressors	1	2	20	7	1	1	3	2	3	0	39
Welders	0	0	4	4	0	0	1	1	1	0	11
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>222</b>	<b>102</b>	<b>84</b>	<b>112</b>	<b>268</b>	<b>37</b>	<b>25</b>	<b>10</b>	<b>47</b>	<b>29</b>	<b>936</b>
Heavy Duty Truck	22	43	61	51	22	16	21	1	15	11	263
Light Duty Truck	86	68	90	131	52	45	27	16	22	3	540
Water Truck	2	7	2	0	0	3	1	0	1	0	15
<b>TOTAL TRUCKS</b>	<b>110</b>	<b>117</b>	<b>153</b>	<b>182</b>	<b>75</b>	<b>64</b>	<b>48</b>	<b>17</b>	<b>39</b>	<b>14</b>	<b>817</b>
<b>GRAND TOTAL</b>	<b>332</b>	<b>219</b>	<b>238</b>	<b>294</b>	<b>342</b>	<b>100</b>	<b>73</b>	<b>26</b>	<b>86</b>	<b>43</b>	<b>1753</b>
Non / Externally powered Equipment	9	7	13	0	0	5	0	0	5	6	45
Unknown / Not Equipment	4	0	5	2	1	4	4	3	3	15	41



**CONSTRUCT FREEWAY / EXTRA LANE****PAGE 10/14****Striping / Painting (average hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	0	0	0	0	0	0	0	0	0
Rough Terrain Forklifts	0	0	0	0	0	0	0	1	2	0	3
Rubber Tire Loaders	0	0	0	0	0	0	0	0	1	0	1
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	0	3	1	0	0	0	0	3
Skid Steer Loaders	5	0	3	0	0	0	0	0	4	0	12
Surfacing Equipment	2	0	4	1	1	3	0	7	4	2	22
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	0	0	0	0	0	0	1	0	1
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	1
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	1	0	7	0	2	2	0	4	4	2	21
Other General Industrial Equipment	5	0	8	0	7	1	0	0	13	7	41
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	2	3	0	5
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	2	2	4
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	1	1
<b>TOTAL NONROAD</b>	<b>14</b>	<b>0</b>	<b>22</b>	<b>1</b>	<b>13</b>	<b>7</b>	<b>0</b>	<b>14</b>	<b>31</b>	<b>13</b>	<b>115</b>
Heavy Duty Truck	23	0	30	2	14	5	0	23	23	59	178
Light Duty Truck	13	0	5	0	16	5	1	3	19	36	98
Water Truck	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL TRUCKS</b>	<b>37</b>	<b>0</b>	<b>35</b>	<b>2</b>	<b>30</b>	<b>10</b>	<b>1</b>	<b>26</b>	<b>42</b>	<b>95</b>	<b>277</b>
<b>GRAND TOTAL</b>	<b>50</b>	<b>0</b>	<b>57</b>	<b>3</b>	<b>43</b>	<b>17</b>	<b>1</b>	<b>41</b>	<b>73</b>	<b>108</b>	<b>391</b>
Non / Externally powered Equipment	1	0	1	1	0	2	0	5	9	2	22
Unknown / Not Equipment	0	0	1	1	1	0	0	0	0	5	8

**CONSTRUCT FREEWAY / EXTRA LANE****PAGE 11/14****Traffic Control / Signage / Barriers (average hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	1	2	4	3	1	9	2	0	22
Cement & Mortar Mixers	0	0	5	0	0	13	15	9	0	0	42
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	1
Cranes	1	0	6	0	9	2	1	0	1	0	20
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	8	0	0	0	0	0	0	0	0	0	8
Excavators	22	2	5	2	2	12	1	5	1	0	52
Graders	7	0	0	0	1	0	1	0	0	0	8
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	9	9	0	0	16	15	10	1	0	59
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	14	0	1	0	2	0	0	0	0	0	18
Rough Terrain Forklifts	0	8	5	0	1	3	0	0	0	0	18
Rubber Tire Loaders	0	0	3	0	0	0	0	0	1	0	5
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	238	250	245	33	124	243	220	265	209	50	1877
Skid Steer Loaders	1	0	0	1	0	9	0	1	0	0	12
Surfacing Equipment	1	3	1	0	0	0	0	0	0	0	5
Trenchers	0	0	0	1	0	0	0	0	0	0	2
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	3	1	7	2	5	15	4	7	0	0	44
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	1	0	1	2
Forklifts	6	0	0	0	3	0	0	0	0	0	9
Sweepers / Scrubbers	3	0	2	0	4	3	0	1	0	0	13
Other General Industrial Equipment	0	0	8	0	0	11	15	9	1	0	43
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	1	0	0	0	0	1
Generator Set	0	0	1	0	4	0	0	0	0	0	5
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	2	0	1	3	0	1	1	1	0	4	14
Welders	0	0	0	0	0	4	0	0	0	0	4
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>306</b>	<b>273</b>	<b>302</b>	<b>44</b>	<b>159</b>	<b>335</b>	<b>273</b>	<b>317</b>	<b>217</b>	<b>56</b>	<b>2281</b>
Heavy Duty Truck	94	55	144	21	46	180	136	140	97	67	980
Light Duty Truck	85	64	111	46	53	122	34	44	105	46	709
Water Truck	11	3	2	0	0	0	0	0	0	0	16
<b>TOTAL TRUCKS</b>	<b>190</b>	<b>121</b>	<b>257</b>	<b>67</b>	<b>99</b>	<b>302</b>	<b>169</b>	<b>184</b>	<b>202</b>	<b>114</b>	<b>1704</b>
<b>GRAND TOTAL</b>	<b>496</b>	<b>394</b>	<b>559</b>	<b>111</b>	<b>257</b>	<b>636</b>	<b>443</b>	<b>501</b>	<b>419</b>	<b>170</b>	<b>3985</b>
Non / Externally powered Equipment	5	0	8	1	20	26	17	55	10	13	155
Unknown / Not Equipment	5	15	18	1	0	13	2	6	0	0	60

## CONSTRUCT FREEWAY / EXTRA LANE

PAGE 12/14

## CCO (average hours)

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	1	0	1	0	0	0	0	2
Cement & Mortar Mixers	0	0	0	0	0	0	0	19	12	0	31
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	1	0	0	0	0	38	23	0	63
Cranes	0	0	0	0	0	0	0	1	0	0	2
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	1	0	0	0	0	0	1
Excavators	0	2	3	0	0	0	0	0	1	0	7
Graders	0	0	0	6	2	0	0	0	2	0	9
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	1	1	2
Paving Equipment	0	0	0	0	0	0	3	0	0	0	3
Plate Compactors	0	0	0	0	0	2	0	1	0	0	3
Rollers	0	0	0	3	1	0	0	2	3	2	11
Rough Terrain Forklifts	0	0	0	1	1	39	12	50	24	0	128
Rubber Tire Loaders	0	0	0	6	5	4	1	2	4	2	25
Scrapers	0	0	0	4	2	0	0	0	0	0	7
Signal Boards	0	0	38	0	53	17	0	5	92	7	212
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	0	0	1	2	4	11	11	0	29
Trenchers	0	3	0	1	0	0	0	0	0	0	4
Tampers/Rammers	0	0	0	2	1	0	0	1	1	1	5
Tractors / Loaders / Backhoes	0	2	5	21	5	8	5	1	12	6	65
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	5	3	0	0	0	2	10
Forklifts	0	0	0	0	1	0	0	0	0	0	1
Sweepers / Scrubbers	0	0	0	0	2	1	0	1	5	1	11
Other General Industrial Equipment	0	0	0	0	0	0	0	0	1	0	1
Other Material Handling Equipment	0	0	0	0	0	0	0	0	1	0	1
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	7	0	1	52	120	41	0	221
Pumps	0	0	0	3	0	0	0	1	0	0	4
Air Compressors	0	0	0	0	1	91	52	12	13	1	170
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
TOTAL NONROAD	0	6	48	56	80	169	130	267	247	24	1027
Heavy Duty Truck	0	1	1	32	26	17	4	14	34	14	143
Light Duty Truck	2	6	28	38	43	112	120	144	68	25	585
Water Truck	0	0	1	4	0	3	0	0	1	0	9
TOTAL TRUCKS	3	6	29	74	70	132	124	158	103	39	737
GRAND TOTAL	3	13	77	130	149	301	254	425	349	63	1764
Non / Externally powered Equipment	0	0	0	1	1	5	0	32	15	2	56
Unknown / Not Equipment	1	3	5	3	4	7	0	0	3	1	27

**CONSTRUCT FREEWAY / EXTRA LANE****PAGE 13/14****Other (average hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	3	0	3	0	0	5
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	1	0	4	0	0	0	1	0	6
Cranes	0	0	0	0	0	0	0	4	0	2	6
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	1	0	0	0	0	0	0	0	1
Excavators	2	0	5	1	2	2	0	0	1	0	13
Graders	1	0	0	0	0	0	0	0	0	0	1
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	2	0	3	0	0	0	0	0	5
Paving Equipment	0	0	0	0	0	0	0	0	0	1	2
Plate Compactors	1	0	0	0	0	0	0	0	0	0	1
Rollers	0	2	0	0	4	0	0	4	5	0	14
Rough Terrain Forklifts	0	0	0	10	0	0	0	0	0	0	10
Rubber Tire Loaders	0	0	7	4	3	0	1	1	3	3	23
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	18	0	0	0	1	0	1	20
Skid Steer Loaders	0	3	4	2	3	19	6	14	4	0	54
Surfacing Equipment	0	0	1	0	1	0	0	0	0	0	3
Trenchers	0	1	0	5	5	2	1	5	5	0	24
Tampers/Rammers	0	0	0	1	0	0	0	0	0	0	1
Tractors / Loaders / Backhoes	2	4	12	15	24	0	6	2	5	9	78
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	4	10	1	0	4	9	6	33
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	1	0	2	0	0	0	0	1	0	0	4
Other General Industrial Equipment	0	0	1	0	3	0	0	0	5	0	9
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	1	0	0	21	0	0	0	0	0	0	22
Pumps	0	0	0	0	0	0	0	1	0	0	1
Air Compressors	0	0	2	14	19	1	9	7	4	7	62
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>8</b>	<b>11</b>	<b>38</b>	<b>96</b>	<b>80</b>	<b>28</b>	<b>22</b>	<b>46</b>	<b>42</b>	<b>28</b>	<b>399</b>
Heavy Duty Truck	5	8	13	24	44	21	64	50	32	23	284
Light Duty Truck	12	14	32	71	137	42	18	57	45	57	485
Water Truck	1	0	2	0	0	0	0	0	0	0	3
<b>TOTAL TRUCKS</b>	<b>18</b>	<b>22</b>	<b>47</b>	<b>95</b>	<b>181</b>	<b>63</b>	<b>82</b>	<b>107</b>	<b>77</b>	<b>80</b>	<b>772</b>
<b>GRAND TOTAL</b>	<b>25</b>	<b>33</b>	<b>85</b>	<b>191</b>	<b>262</b>	<b>91</b>	<b>104</b>	<b>153</b>	<b>119</b>	<b>108</b>	<b>1172</b>
Non / Externally powered Equipment	1	3	4	11	19	6	9	14	13	0	80
Unknown / Not Equipment	0	0	6	0	22	1	0	1	0	3	34



**PAVEMENT REHABILITATION / WIDENING****PAGE 1/14**

Sorted by Pavement Rehabilitation / Widening  
**N** 8  
**Mean - Bid Price** \$2,931,403  
**Mean - Original Work Days** 102.5  
**Mean - Duration (Days)** 222.5

**Activity Use By Phase (NONROAD + Trucks)**

Phase	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Land Clearing and Grubbing	17	5	1	2	0	0	0	0	0	0	25
Roadway Excavation	221	177	105	165	14	4	51	32	91	51	910
Structural Excavation	0	48	367	40	0	2	18	34	0	0	508
Base and Subbase	77	109	128	111	229	189	15	20	19	0	897
Structural Concrete	1	28	15	3	3	15	15	53	56	113	301
Paving	300	192	327	643	359	154	181	189	134	114	2,591
Drainage / Environmental / Landscap	9	10	0	1	17	65	5	1	0	10	117
Striping / Painting	0	1	37	20	42	23	2	29	3	70	226
Traffic Control / Signage / Barriers	354	272	514	539	490	452	298	339	198	273	3,729
CCO	57	233	166	683	134	52	31	34	5	18	1,414
Other	251	25	32	28	40	69	16	10	15	18	504
Idle	109	37	99	156	313	40	4	6	9	66	837
Total non-idle	1287	1100	1691	2234	1326	1025	630	742	520	666	11,220

Project number	Award Amount	Original Days	Duration
03-1M5404	\$847,526	30	56
03-2A6004	\$979,272	80	72
03-3A6004	\$571,114	60	360
03-3C1604	\$275,573	30	64
03-3C2804	\$720,490	60	183
03-4C7204	\$226,831	60	51
03-445104	\$10,559,000	200	683
11-1734U4	\$9,271,418	300	311
Average	\$2,931,403	103	223

## PAVEMENT REHABILITATION / WIDENING

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## Average Activity Use (Idle equipment excluded)

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	1	1	1	14	0	17	17	28	0	0	78
Cement & Mortar Mixers	0	7	0	0	0	0	0	0	0	2	9
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	9	29	17	1	0	0	1	0	4	2	63
Cranes	0	0	0	0	1	1	0	0	1	0	3
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	14	26	23	13	6	0	0	0	0	0	82
Excavators	23	5	45	70	8	2	0	1	0	0	154
Graders	53	65	49	69	58	41	14	9	21	13	390
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	17	8	35	108	44	13	19	21	19	18	302
Paving Equipment	20	3	25	11	14	12	16	19	10	2	131
Plate Compactors	1	0	0	1	0	0	0	0	0	0	2
Rollers	47	72	92	221	80	76	67	56	52	25	787
Rough Terrain Forklifts	0	0	0	4	2	4	3	1	2	0	16
Rubber Tire Loaders	45	38	52	45	31	48	9	28	19	14	331
Scrapers	16	21	10	0	21	23	9	3	11	6	120
Signal Boards	295	240	370	423	386	225	174	137	151	173	2575
Skid Steer Loaders	1	6	2	4	0	4	0	0	0	1	18
Surfacing Equipment	2	15	23	85	18	7	4	8	1	33	196
Trenchers	0	0	0	0	0	1	0	0	0	0	1
Tampers/Rammers	0	0	2	0	0	0	0	1	0	0	4
Tractors / Loaders / Backhoes	27	10	20	34	32	9	8	19	3	0	162
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	1	1
Forklifts	0	0	0	0	0	2	1	2	0	2	7
Sweepers / Scrubbers	21	37	47	109	71	36	27	22	22	15	408
Other General Industrial Equipment	9	9	5	19	1	6	0	0	0	11	58
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	4	9	2	0	0	5	1	1	2	9	33
Pumps	2	0	0	0	0	0	0	0	0	0	2
Air Compressors	10	9	10	1	1	18	1	2	7	15	74
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>615</b>	<b>608</b>	<b>831</b>	<b>1234</b>	<b>775</b>	<b>547</b>	<b>371</b>	<b>356</b>	<b>327</b>	<b>340</b>	<b>6004</b>
Heavy Duty Truck	396	234	523	523	284	217	108	177	70	163	2693
Light Duty Truck	201	200	307	401	225	232	123	178	85	138	2090
Water Truck	75	58	31	77	43	29	29	31	38	24	434
<b>TOTAL TRUCKS</b>	<b>672</b>	<b>492</b>	<b>860</b>	<b>1000</b>	<b>552</b>	<b>477</b>	<b>259</b>	<b>385</b>	<b>193</b>	<b>326</b>	<b>5217</b>
<b>GRAND TOTAL</b>	<b>1287</b>	<b>1100</b>	<b>1691</b>	<b>2234</b>	<b>1326</b>	<b>1025</b>	<b>630</b>	<b>742</b>	<b>520</b>	<b>666</b>	<b>11220</b>
Non-powered Equipment	69	84	150	169	318	164	166	135	85	26	1366
Unknown / Not Equipment	37	23	39	21	85	64	50	71	14	8	412

[illegible]



## PAVEMENT REHABILITATION / WIDENING

PAGE 4/14

## Roadway Excavation (average hours)

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	1	0	1	0	0	0	0	0	0	0	1
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	9	15	5	1	0	0	0	0	0	0	29
Excavators	0	0	0	3	0	0	0	0	0	0	3
Graders	32	40	13	16	2	1	10	5	20	11	149
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	19	26	13	20	3	1	2	2	9	4	97
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	13	8	8	1	0	0	5	10	9	5	59
Scrapers	15	18	5	0	0	0	7	2	11	5	62
Signal Boards	8	0	0	0	0	0	0	0	0	0	8
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	1	0	4	25	0	0	0	0	0	1	30
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	2	0	0	0	0	0	0	0	2
Tractors / Loaders / Backhoes	3	1	3	2	0	1	1	0	0	0	10
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	1	0	0	0	0	1
Sweepers / Scrubbers	7	6	2	13	1	0	6	3	10	5	51
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	1
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
TOTAL NONROAD	106	112	56	80	6	3	30	21	58	30	502
Heavy Duty Truck	16	1	7	14	0	1	6	1	0	0	44
Light Duty Truck	34	16	28	43	6	0	7	5	11	7	157
Water Truck	65	48	14	28	2	0	8	5	22	15	207
TOTAL TRUCKS	115	64	48	85	8	1	21	11	33	21	408
GRAND TOTAL	221	177	105	165	14	4	51	32	91	51	910
Non / Externally powered Equipment	0	0	1	0	0	0	0	0	0	0	1
Unknown / Not Equipment	16	12	1	5	0	0	0	1	0	1	35

## PAVEMENT REHABILITATION / WIDENING

PAGE 5/14

## Structural Excavation (average hours)

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	5	4	0	0	9
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	11	12	0	0	0	0	0	0	0	23
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	6	2	0	0	0	0	0	0	7
Excavators	0	0	35	4	0	0	0	0	0	0	39
Graders	0	0	7	1	0	0	0	0	0	0	7
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	3	0	0	0	0	0	0	0	3
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	13	0	0	0	0	0	0	0	13
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	2	0	0	0	1	0	0	3
Skid Steer Loaders	0	6	1	0	0	0	0	0	0	0	7
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	7	0	0	0	3	4	0	0	14
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	1	2	0	0	0	0	0	0	0	3
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	7	0	0	0	0	0	0	0	0	7
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	7	0	0	0	0	0	0	0	0	7
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
TOTAL NONROAD	0	32	87	9	0	1	8	9	0	0	144
Heavy Duty Truck	0	7	230	31	0	1	9	21	0	0	298
Light Duty Truck	0	10	50	0	0	0	2	4	0	0	65
Water Truck	0	0	0	0	0	0	0	0	0	0	0
TOTAL TRUCKS	0	16	281	31	0	1	10	25	0	0	364
GRAND TOTAL	0	48	367	40	0	2	18	34	0	0	508
Non / Externally powered Equipment	0	2	3	0	0	0	9	11	0	0	26
Unknown / Not Equipment	0	0	1	0	0	0	5	2	0	0	8

## PAVEMENT REHABILITATION / WIDENING

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## Base and Subbase (average hours)

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	1	0	0	0	0	0	0	0	1
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	4	9	11	1	3	0	0	0	0	0	29
Excavators	3	4	3	7	2	0	0	0	0	0	19
Graders	14	20	19	32	49	40	3	2	0	0	180
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	2	0	0	0	2	0	5
Paving Equipment	0	0	0	0	2	0	0	0	0	0	2
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	8	19	20	13	34	20	1	1	0	0	117
Rough Terrain Forklifts	0	0	0	0	1	0	0	0	0	0	1
Rubber Tire Loaders	4	3	7	4	17	34	1	3	4	0	77
Scrapers	1	3	5	0	19	22	2	1	0	0	53
Signal Boards	1	0	0	0	0	0	0	0	0	0	1
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	1	0	0	0	1	0	0	0	0	1
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	1	1	0	0	2	0	0	2	0	0	6
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	3	12	15	23	26	24	2	3	4	0	112
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	1	0	0	0	0	0	0	0	1
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
TOTAL NONROAD	38	72	82	81	159	141	10	12	10	0	603
Heavy Duty Truck	12	8	16	7	11	8	0	0	2	0	63
Light Duty Truck	20	23	18	21	28	13	2	6	8	0	139
Water Truck	6	7	13	2	32	27	3	2	0	0	91
TOTAL TRUCKS	39	38	46	30	70	48	5	8	9	0	294
GRAND TOTAL	77	109	128	111	229	189	15	20	19	0	897
Non / Externally powered Equipment	0	0	0	0	1	0	0	0	0	0	2
Unknown / Not Equipment	3	2	0	1	2	0	0	1	0	0	8

[illegible]

## PAVEMENT REHABILITATION / WIDENING

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## Paving (average hours)

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	1	0	0	0	0	0	0	0	1
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	8	0	3	0	0	0	0	0	0	0	12
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	9	0	0	0	0	0	0	0	0	0	9
Graders	1	3	6	2	4	0	0	2	0	2	20
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	11	5	30	99	40	13	19	19	17	18	269
Paving Equipment	13	2	24	9	10	11	16	18	10	1	113
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	8	14	47	156	38	51	64	53	44	20	495
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	13	14	9	15	4	6	3	10	4	9	86
Scrapers	0	0	0	0	2	0	0	0	0	1	3
Signal Boards	20	0	11	0	0	1	0	0	0	3	35
Skid Steer Loaders	0	0	1	1	0	1	0	0	0	0	3
Surfacing Equipment	1	11	6	28	9	7	4	1	1	7	75
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	1	0	0	1
Tractors / Loaders / Backhoes	12	1	5	5	28	0	0	0	1	0	51
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	9	17	23	50	36	10	18	14	9	10	197
Other General Industrial Equipment	0	0	0	14	0	0	0	0	0	4	18
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	1	0	0	1
Pumps	2	0	0	0	0	0	0	0	0	0	2
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
TOTAL NONROAD	109	66	166	380	170	100	123	119	85	74	1392
Heavy Duty Truck	141	64	81	87	78	27	38	36	26	15	594
Light Duty Truck	50	59	75	139	105	27	6	13	10	22	505
Water Truck	1	3	4	37	6	0	13	21	12	4	101
TOTAL TRUCKS	191	126	160	263	189	54	57	70	48	40	1199
GRAND TOTAL	300	192	327	643	359	154	181	189	134	114	2591
Non / Externally powered Equipment	2	3	12	18	37	5	4	2	0	2	85
Unknown / Not Equipment	0	3	14	1	40	4	3	5	3	0	72

## PAVEMENT REHABILITATION / WIDENING

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## Drainage / Environmental / Landscaping (average hours)

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	1	0	0	0	0	0	0	0	0	0	2
Graders	0	1	0	0	0	0	0	0	0	0	1
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	0	0	0	1	0	0	0	0	1
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	1	2	0	0	1	0	0	1	0	0	4
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	1	0	0	8	1	0	0	0	0	10
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	0	0	0	1	0	0	0	0	1
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	1	1
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	12	1	0	0	0	13
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
TOTAL NONROAD	2	3	0	0	9	15	1	1	0	1	31
Heavy Duty Truck	0	3	0	0	5	19	1	0	0	3	31
Light Duty Truck	6	3	0	1	3	30	3	1	0	5	52
Water Truck	1	1	0	0	0	0	0	0	0	0	1
TOTAL TRUCKS	7	6	0	1	8	50	4	1	0	8	85
GRAND TOTAL	9	10	0	1	17	65	5	1	0	10	117
Non / Externally powered Equipment	0	0	0	0	0	0	1	0	0	0	1
Unknown / Not Equipment	0	0	0	0	1	9	3	5	0	0	17

## PAVEMENT REHABILITATION / WIDENING

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## Striping / Painting (average hours)

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	3	0	1	0	0	4
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	1	0	0	0	0	1
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	0	0	0	0	0	0	0	0	0
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	1	0	0	0	0	0	0	0	0	1
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	11	0	3	0	0	0	0	0	14
Skid Steer Loaders	0	0	0	0	0	1	0	0	0	0	1
Surfacing Equipment	0	0	1	0	0	0	0	3	0	15	19
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	0	0	0	0	0	0	0	0	0
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	1	0	0	0	0	0	0	0	1
Other General Industrial Equipment	0	0	0	3	0	3	0	0	0	7	12
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	2	2
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
TOTAL NONROAD	0	1	14	3	3	6	0	5	0	23	54
Heavy Duty Truck	0	0	15	9	26	2	0	12	2	27	93
Light Duty Truck	0	0	7	8	13	15	2	13	1	20	78
Water Truck	0	0	0	0	0	0	0	0	0	0	0
TOTAL TRUCKS	0	0	23	17	39	17	2	25	3	47	171
GRAND TOTAL	0	1	37	20	42	23	2	29	3	70	226
Non / Externally powered Equipment	0	0	0	0	0	3	0	1	0	5	9
Unknown / Not Equipment	0	0	0	0	14	4	1	0	0	0	19

## PAVEMENT REHABILITATION / WIDENING

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## Traffic Control / Signage / Barriers (average hours)

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	1	0	0	13	0	12	10	21	0	0	57
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	1	0	0	0	1
Cranes	0	0	0	0	1	1	0	0	0	0	2
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	1	0	0	0	0	0	0	0	1
Excavators	0	0	0	0	0	1	0	0	0	0	1
Graders	0	0	0	1	0	0	0	0	0	0	1
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	1	0	2	0	0	0	0	0	0	0	3
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	3	0	0	2	0	0	0	0	4
Rough Terrain Forklifts	0	0	0	0	0	3	3	1	0	0	7
Rubber Tire Loaders	2	2	2	3	0	0	0	0	0	0	9
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	205	189	317	315	345	208	161	134	142	158	2172
Skid Steer Loaders	0	0	0	3	0	2	0	0	0	0	5
Surfacing Equipment	0	0	1	0	0	0	0	0	0	0	1
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	1	0	0	0	0	1	1	9	0	0	11
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	1	1	2	0	0	5
Sweepers / Scrubbers	0	0	1	1	0	1	1	0	0	0	4
Other General Industrial Equipment	0	0	0	1	0	1	0	0	0	0	2
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	1	0	0	0	0	4	1	0	0	0	6
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	3	0	3	1	0	2	0	1	0	0	10
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
TOTAL NONROAD	213	191	331	337	346	237	179	167	142	158	2300
Heavy Duty Truck	110	49	106	142	104	115	35	84	28	71	844
Light Duty Truck	31	32	78	58	40	100	82	89	28	43	581
Water Truck	0	0	0	1	0	1	2	0	0	0	4
TOTAL TRUCKS	141	81	183	202	144	215	119	173	56	115	1429
GRAND TOTAL	354	272	514	539	490	452	298	339	198	273	3729
Non / Externally powered Equipment	48	75	128	92	242	126	111	115	75	19	1032
Unknown / Not Equipment	18	6	5	4	20	24	20	29	0	1	126



## PAVEMENT REHABILITATION / WIDENING

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## CCO (average hours)

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	1	0	0	0	0	1	2	0	0	3
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	18	0	1	0	0	0	0	0	0	19
Cranes	0	0	0	0	0	0	0	0	1	0	1
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	1	1	0	10	3	0	0	0	0	0	15
Excavators	0	0	3	55	6	0	0	1	0	0	65
Graders	2	0	2	17	3	0	0	0	0	0	24
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	3	3	9	3	0	0	1	0	1	20
Paving Equipment	0	0	1	2	2	0	0	1	0	1	6
Plate Compactors	1	0	0	1	0	0	0	0	0	0	2
Rollers	0	11	7	31	5	0	0	1	0	1	56
Rough Terrain Forklifts	0	0	0	4	0	1	0	0	1	0	6
Rubber Tire Loaders	1	5	8	21	2	0	0	3	0	1	40
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	14	50	27	105	29	11	11	3	0	1	250
Skid Steer Loaders	0	0	0	1	0	0	0	0	0	1	2
Surfacing Equipment	0	3	7	32	9	0	0	0	0	0	51
Trenchers	0	0	0	0	0	1	0	0	0	0	1
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	8	4	27	3	2	2	2	0	0	48
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	3	5	23	8	1	0	1	0	1	40
Other General Industrial Equipment	4	2	2	1	1	1	0	0	0	0	11
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	1	0	2	0	0	0	0	0	0	1	4
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	4	1	1	0	0	2	0	1	1	0	10
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>28</b>	<b>105</b>	<b>72</b>	<b>340</b>	<b>72</b>	<b>17</b>	<b>14</b>	<b>15</b>	<b>2</b>	<b>6</b>	<b>670</b>
Heavy Duty Truck	12	91	54	224	35	17	11	11	1	11	466
Light Duty Truck	15	38	40	110	24	19	6	8	3	2	263
Water Truck	2	0	0	9	3	0	0	0	0	0	14
<b>TOTAL TRUCKS</b>	<b>29</b>	<b>129</b>	<b>94</b>	<b>343</b>	<b>62</b>	<b>35</b>	<b>17</b>	<b>20</b>	<b>3</b>	<b>12</b>	<b>743</b>
<b>GRAND TOTAL</b>	<b>57</b>	<b>233</b>	<b>166</b>	<b>683</b>	<b>134</b>	<b>52</b>	<b>31</b>	<b>34</b>	<b>5</b>	<b>18</b>	<b>1414</b>
Non / Externally powered Equipment	12	4	6	58	37	17	39	4	1	0	177
Unknown / Not Equipment	0	2	17	10	1	6	18	28	11	5	99

## PAVEMENT REHABILITATION / WIDENING

PAGE 13/14

## Other (average hours)

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	1	2	1	0	0	4
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	1	0	0	0	0	0	0	0	0	1
Excavators	8	0	4	0	0	1	0	0	0	0	13
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	5	0	0	0	0	0	0	0	0	0	5
Paving Equipment	7	1	0	0	0	0	0	0	0	0	8
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	12	1	0	0	0	1	0	0	0	0	15
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	11	3	2	0	8	8	0	1	2	0	35
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	47	1	3	1	1	5	2	0	2	1	63
Skid Steer Loaders	1	0	0	0	0	1	0	0	0	0	2
Surfacing Equipment	0	0	5	0	0	0	0	0	0	0	5
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	10	0	1	0	0	4	0	1	2	0	17
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	2	2
Sweepers / Scrubbers	1	0	0	0	0	0	0	1	0	0	2
Other General Industrial Equipment	4	6	0	0	0	2	0	0	0	0	12
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	2	1	0	0	0	1	0	0	0	0	4
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	2	1	3	0	1	2	0	0	0	2	10
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
TOTAL NONROAD	110	15	17	2	10	25	3	3	7	5	197
Heavy Duty Truck	100	3	7	7	25	23	6	4	4	7	185
Light Duty Truck	40	8	9	19	5	21	7	3	4	6	122
Water Truck	0	0	0	0	0	0	0	0	0	0	0
TOTAL TRUCKS	141	10	16	26	30	44	12	7	8	13	306
GRAND TOTAL	251	25	32	28	40	69	16	10	15	18	504
Non / Externally powered Equipment	7	0	0	1	0	9	2	2	0	1	21
Unknown / Not Equipment	1	0	2	0	8	17	0	1	0	1	29

## PAVEMENT REHABILITATION / WIDENING

PAGE 14/14

Idle (average hours)

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	2	0	0	0	1	0	0	3
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	2	2
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	4	4
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	1	1	4	11	0	0	0	0	0	0	16
Excavators	3	0	3	4	0	0	0	0	0	0	10
Graders	0	0	4	11	8	0	0	0	0	0	25
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	4	3	4	6	45	0	0	0	0	3	65
Paving Equipment	4	2	4	1	1	0	0	0	0	1	12
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	9	4	12	28	86	7	0	0	0	3	148
Rough Terrain Forklifts	0	0	0	3	0	0	0	0	0	0	3
Rubber Tire Loaders	11	3	13	12	0	6	1	0	0	3	48
Scrapers	1	0	0	0	0	0	0	0	0	0	1
Signal Boards	37	8	1	6	9	3	0	1	1	5	70
Skid Steer Loaders	0	0	1	2	1	1	0	0	0	0	4
Surfacing Equipment	0	0	3	3	6	0	0	0	0	6	17
Trenchers	0	0	0	0	0	1	0	0	0	0	1
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	23	2	11	25	19	1	0	1	0	0	81
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	2	2
Forklifts	0	0	0	1	0	0	0	0	0	0	1
Sweepers / Scrubbers	13	1	4	6	17	6	2	1	0	3	53
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	1
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	2	6	8
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	1	1	0	0	0	1	0	0	2	5	10
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>106</b>	<b>25</b>	<b>65</b>	<b>120</b>	<b>192</b>	<b>25</b>	<b>3</b>	<b>3</b>	<b>6</b>	<b>42</b>	<b>585</b>
Heavy Duty Truck	3	3	10	16	24	8	0	2	1	16	81
Light Duty Truck	1	10	25	18	96	7	0	0	1	7	165
Water Truck	0	0	0	2	2	0	0	0	1	1	6
<b>TOTAL TRUCKS</b>	<b>3</b>	<b>13</b>	<b>34</b>	<b>36</b>	<b>121</b>	<b>15</b>	<b>0</b>	<b>2</b>	<b>3</b>	<b>24</b>	<b>252</b>
<b>GRAND TOTAL</b>	<b>109</b>	<b>37</b>	<b>99</b>	<b>156</b>	<b>313</b>	<b>40</b>	<b>4</b>	<b>6</b>	<b>9</b>	<b>66</b>	<b>837</b>
Non / Externally powered Equipment	9	0	0	4	5	2	2	0	0	2	24
Unknown / Not Equipment	0	0	1	1	74	3	0	0	0	1	81

# **CONSTRUCT / RECONSTRUCT BRIDGE**      **PAGE 1/14**

**Sorted by** Construct, Reconstruct Bridge  
**N** 3  
**Mean - Bid Price** \$5,819,151  
**Mean - Original Work Days** 205  
**Mean - Duration (Days)** 329

## **Activity Use By Phase (NONROAD + Trucks)**

Phase	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Land Clearing and Grubbing	14	1	33	0	0	8	64	0	0	0	120
Roadway Excavation	69	150	196	37	0	76	0	2	54	100	684
Structural Excavation	180	88	0	188	14	54	13	0	47	0	584
Base and Subbase	8	579	267	37	10	0	173	306	34	26	1,439
Structural Concrete	263	393	673	985	1648	1763	2154	1042	645	188	9,754
Paving	30	9	76	97	13	20	22	48	1	139	455
Drainage / Environmental / Landscap	37	0	6	41	9	0	1	97	152	11	355
Striping / Painting	9	44	12	37	54	26	4	54	8	18	266
Traffic Control / Signage / Barriers	315	282	650	389	380	226	584	374	149	148	3,496
CCO	21	35	43	69	41	301	298	281	235	75	1,398
Other	130	161	251	291	94	205	133	302	217	192	1,976
Idle	226	319	767	202	40	177	49	38	54	68	1,940
Total non-idle	1075	1742	2208	2172	2263	2679	3446	2506	1542	896	20,527

Project number	Award Amount	Original Days	Duration
03-0A9904	\$2,623,568	125	186
03-4A88U4	\$13,343,151	240	353
03-436304	\$1,490,735	250	448
Average	\$5,819,151	205	329

**CONSTRUCT / RECONSTRUCT BRIDGE****PAGE 2/14****Average Activity Use (Idle equipment excluded)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	12	18	2	0	0	0	0	0	9	40
Cement & Mortar Mixers	7	1	0	0	0	52	18	0	0	0	78
Dumpers / Tenders	0	0	0	0	6	0	0	0	3	3	11
Concrete/Industrial Saws	0	8	3	2	0	12	52	25	6	10	117
Cranes	19	23	32	23	14	10	1	9	3	0	132
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	8	68	30	0	0	0	18	51	32	13	220
Excavators	91	87	35	94	11	0	28	22	49	27	443
Graders	0	8	43	30	3	0	3	15	10	7	119
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	6	4	31	30	39	40	5	20	11	16	201
Paving Equipment	0	3	5	3	0	11	4	17	8	53	103
Plate Compactors	12	0	0	7	0	13	0	0	12	2	45
Rollers	19	71	44	55	6	11	97	107	35	39	484
Rough Terrain Forklifts	1	36	45	24	70	85	74	104	3	0	443
Rubber Tire Loaders	39	57	97	162	73	78	123	128	90	58	906
Scrapers	0	0	0	6	1	0	0	0	0	3	11
Signal Boards	247	236	227	191	376	499	958	389	174	16	3312
Skid Steer Loaders	7	12	10	3	7	0	71	27	0	8	143
Surfacing Equipment	7	29	18	89	9	25	3	12	17	22	231
Trenchers	0	0	6	0	0	0	0	0	0	0	6
Tampers/Rammers	0	3	0	0	0	5	0	0	0	3	10
Tractors / Loaders / Backhoes	21	34	39	15	8	13	73	58	32	13	307
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	13	39	35	43	64	83	113	31	14	434
Forklifts	0	0	8	5	5	5	0	9	0	0	33
Sweepers / Scrubbers	3	16	4	5	0	0	0	0	0	7	35
Other General Industrial Equipment	0	2	5	3	87	55	22	4	10	3	190
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	17	13	92	113	178	374	264	175	44	6	1274
Pumps	0	13	0	0	6	2	9	13	13	4	60
Air Compressors	62	59	102	54	198	180	339	152	64	33	1242
Welders	0	3	13	23	36	4	1	9	0	0	89
Pressure Washers	0	0	0	5	0	42	0	36	32	0	115
<b>TOTAL NONROAD</b>	<b>564</b>	<b>810</b>	<b>944</b>	<b>978</b>	<b>1175</b>	<b>1579</b>	<b>2245</b>	<b>1495</b>	<b>676</b>	<b>365</b>	<b>10831</b>
Heavy Duty Truck	169	529	556	289	344	267	316	211	142	140	2962
Light Duty Truck	324	388	681	671	744	827	848	720	641	374	6218
Water Truck	18	15	27	235	0	6	37	80	83	17	517
<b>TOTAL TRUCKS</b>	<b>511</b>	<b>932</b>	<b>1264</b>	<b>1195</b>	<b>1088</b>	<b>1100</b>	<b>1201</b>	<b>1010</b>	<b>866</b>	<b>531</b>	<b>9697</b>
<b>GRAND TOTAL</b>	<b>1075</b>	<b>1742</b>	<b>2208</b>	<b>2172</b>	<b>2263</b>	<b>2679</b>	<b>3446</b>	<b>2506</b>	<b>1542</b>	<b>896</b>	<b>20527</b>
Non-powered Equipment	319	151	111	102	127	212	492	160	61	36	1772
Unknown / Not Equipment	163	111	11	94	40	43	50	60	21	15	608

**CONSTRUCT / RECONSTRUCT BRIDGE** **PAGE 3/14**

### Land Clearing and Grubbing (average hours)

[illegible]

**CONSTRUCT / RECONSTRUCT BRIDGE****PAGE 4/14****Roadway Excavation (average hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	1	0	0	0	0	0	0	0	0	1
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	13	15	0	0	0	0	0	7	13	47
Excavators	4	5	26	1	0	0	0	0	3	10	49
Graders	0	5	15	11	0	0	0	0	0	5	36
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	3	0	0	0	0	0	0	0	0	3
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	1	0	0	0	0	0	0	0	0	0	1
Rollers	2	12	9	1	0	0	0	0	10	13	46
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	3	6	16	2	0	0	0	0	7	16	49
Scrapers	0	0	0	2	0	0	0	0	0	0	2
Signal Boards	0	7	0	0	0	11	0	0	0	0	17
Skid Steer Loaders	1	0	1	0	0	0	0	0	0	0	2
Surfacing Equipment	4	7	3	2	0	0	0	0	6	3	25
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	5	0	0	0	0	5
Tractors / Loaders / Backhoes	4	11	16	4	0	3	0	0	7	1	45
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	1	0	2	0	0	0	0	0	0	0	3
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	3	0	0	0	0	3
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>18</b>	<b>68</b>	<b>102</b>	<b>23</b>	<b>0</b>	<b>21</b>	<b>0</b>	<b>1</b>	<b>40</b>	<b>61</b>	<b>334</b>
Heavy Duty Truck	26	59	61	6	0	19	0	0	0	7	178
Light Duty Truck	19	19	29	9	0	36	0	1	7	21	140
Water Truck	6	5	4	0	0	0	0	0	7	12	33
<b>TOTAL TRUCKS</b>	<b>51</b>	<b>82</b>	<b>94</b>	<b>15</b>	<b>0</b>	<b>55</b>	<b>0</b>	<b>1</b>	<b>14</b>	<b>39</b>	<b>351</b>
<b>GRAND TOTAL</b>	<b>69</b>	<b>150</b>	<b>196</b>	<b>37</b>	<b>0</b>	<b>76</b>	<b>0</b>	<b>2</b>	<b>54</b>	<b>100</b>	<b>684</b>
Non / Externally powered Equipment	1	0	1	0	0	4	0	0	0	0	5
Unknown / Not Equipment	5	0	6	7	0	0	0	0	3	0	20

**CONSTRUCT / RECONSTRUCT BRIDGE****PAGE 5/14****Structural Excavation (average hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	6	0	0	12	0	2	0	0	0	0	21
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	4	0	0	0	0	3	0	0	0	6
Excavators	55	17	0	55	4	0	0	0	0	0	131
Graders	0	0	0	4	2	0	0	0	0	0	6
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	6	0	0	5	0	13	0	0	12	0	36
Rollers	4	17	0	23	0	11	3	0	0	0	56
Rough Terrain Forklifts	1	0	0	0	0	0	0	0	0	0	1
Rubber Tire Loaders	14	11	0	14	4	0	0	0	5	0	47
Scrapers	0	0	0	4	0	0	0	0	0	0	4
Signal Boards	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	9	9	0	8	1	7	3	0	7	0	43
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	5	0	0	0	0	5
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	3	0	0	0	0	0	0	0	0	3
Air Compressors	0	3	0	3	0	5	0	0	0	0	11
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>94</b>	<b>63</b>	<b>0</b>	<b>126</b>	<b>11</b>	<b>43</b>	<b>8</b>	<b>0</b>	<b>24</b>	<b>0</b>	<b>369</b>
Heavy Duty Truck	31	2	0	10	0	5	0	0	5	0	53
Light Duty Truck	55	24	0	51	3	5	3	0	18	0	159
Water Truck	1	0	0	0	0	0	3	0	0	0	3
<b>TOTAL TRUCKS</b>	<b>86</b>	<b>26</b>	<b>0</b>	<b>61</b>	<b>3</b>	<b>11</b>	<b>5</b>	<b>0</b>	<b>23</b>	<b>0</b>	<b>215</b>
<b>GRAND TOTAL</b>	<b>180</b>	<b>88</b>	<b>0</b>	<b>188</b>	<b>14</b>	<b>54</b>	<b>13</b>	<b>0</b>	<b>47</b>	<b>0</b>	<b>584</b>
Non / Externally powered Equipment	6	1	0	15	0	9	0	0	7	0	38
Unknown / Not Equipment	20	20	0	23	2	0	0	0	0	0	65



**CONSTRUCT / RECONSTRUCT BRIDGE****PAGE 6/14****Base and Subbase (average hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	51	15	0	0	0	15	37	3	0	121
Excavators	0	30	3	1	1	0	0	20	3	3	61
Graders	0	0	26	6	0	0	0	15	3	0	50
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	4	0	0	4
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	2	30	18	9	2	0	49	68	6	6	190
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	3	26	8	3	0	18	35	6	7	105
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	1	0	0	0	0	0	0	0	0	1
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	1	0	0	0	0	0	4	0	0	5
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	3	0	0	0	0	0	0	0	0	3
Tractors / Loaders / Backhoes	0	7	11	1	1	0	28	34	0	0	81
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	16	0	0	0	0	0	0	0	0	16
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	1	1
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>2</b>	<b>142</b>	<b>99</b>	<b>25</b>	<b>7</b>	<b>0</b>	<b>110</b>	<b>215</b>	<b>21</b>	<b>17</b>	<b>638</b>
Heavy Duty Truck	0	370	159	3	0	0	0	4	3	0	539
Light Duty Truck	3	59	9	9	3	0	37	43	6	9	179
Water Truck	3	8	0	0	0	0	26	44	3	0	84
<b>TOTAL TRUCKS</b>	<b>5</b>	<b>437</b>	<b>168</b>	<b>12</b>	<b>3</b>	<b>0</b>	<b>63</b>	<b>91</b>	<b>13</b>	<b>9</b>	<b>801</b>
<b>GRAND TOTAL</b>	<b>8</b>	<b>579</b>	<b>267</b>	<b>37</b>	<b>10</b>	<b>0</b>	<b>173</b>	<b>306</b>	<b>34</b>	<b>26</b>	<b>1439</b>
Non / Externally powered Equipment	3	0	13	0	0	0	0	0	0	0	16
Unknown / Not Equipment	0	0	3	5	3	0	0	0	0	0	11

**CONSTRUCT / RECONSTRUCT BRIDGE****PAGE 7/14****Structural Concrete (average hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	7	0	0	0	0	0	0	0	7
Cement & Mortar Mixers	7	1	0	0	0	52	18	0	0	0	78
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	6	0	0	0	12	52	22	6	8	107
Cranes	0	2	20	6	1	8	1	6	0	0	43
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	3	0	0	0	0	0	0	1	0	0	4
Excavators	3	0	0	7	0	0	28	3	0	0	40
Graders	0	0	0	3	0	0	0	0	0	0	3
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	1	0	36	40	0	0	8	0	84
Paving Equipment	0	3	5	0	0	11	4	15	8	7	53
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	0	0	0	0	38	0	0	0	38
Rough Terrain Forklifts	0	32	17	9	54	66	56	70	0	0	303
Rubber Tire Loaders	1	1	31	105	56	56	84	30	14	1	380
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	38	26	5	0	94	89	195	57	36	0	540
Skid Steer Loaders	0	3	0	0	0	0	65	27	0	0	96
Surfacing Equipment	1	11	15	80	0	25	2	0	7	9	149
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	7	6	0	0	0	42	6	0	0	62
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	13	15	27	38	45	51	88	5	5	287
Forklifts	0	0	0	0	3	0	0	9	0	0	12
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	87	49	22	4	4	0	167
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	17	13	39	49	175	302	241	127	30	6	998
Pumps	0	0	0	0	6	2	6	0	0	0	14
Air Compressors	62	53	59	41	185	167	306	111	50	17	1050
Welders	0	0	0	0	0	0	1	3	0	0	4
Pressure Washers	0	0	0	0	0	42	0	2	0	0	44
<b>TOTAL NONROAD</b>	<b>130</b>	<b>172</b>	<b>219</b>	<b>327</b>	<b>733</b>	<b>965</b>	<b>1212</b>	<b>580</b>	<b>168</b>	<b>55</b>	<b>4560</b>
Heavy Duty Truck	27	30	76	90	246	142	191	36	33	20	890
Light Duty Truck	101	190	354	338	670	651	749	422	434	111	4019
Water Truck	6	2	24	230	0	6	3	4	10	1	285
<b>TOTAL TRUCKS</b>	<b>133</b>	<b>221</b>	<b>453</b>	<b>658</b>	<b>915</b>	<b>799</b>	<b>943</b>	<b>462</b>	<b>477</b>	<b>133</b>	<b>5194</b>
<b>GRAND TOTAL</b>	<b>263</b>	<b>393</b>	<b>673</b>	<b>985</b>	<b>1648</b>	<b>1763</b>	<b>2154</b>	<b>1042</b>	<b>645</b>	<b>188</b>	<b>9754</b>
Non / Externally powered Equipment	79	113	67	64	108	77	446	121	30	4	1108
Unknown / Not Equipment	0	6	3	0	15	28	50	9	10	3	124

**CONSTRUCT / RECONSTRUCT BRIDGE****PAGE 8/14****Paving (average hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	1	1
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	1	0	0	0	0	0	0	0	0	1
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	6	2	29	25	3	0	5	16	0	14	100
Paving Equipment	0	0	0	0	0	0	0	2	0	3	5
Plate Compactors	0	0	0	0	0	0	0	0	0	2	2
Rollers	4	0	16	19	4	0	5	14	0	20	81
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	1	1	3	5	1	0	1	8	0	2	24
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	0	0	0	0	0	0	3	3
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	3	3
Surfacing Equipment	2	2	0	0	0	0	1	2	0	10	17
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	3	3
Tractors / Loaders / Backhoes	1	0	2	0	0	4	0	0	0	9	15
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	2	0	0	3	0	0	0	0	0	7	12
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	7	7
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>15</b>	<b>6</b>	<b>50</b>	<b>51</b>	<b>9</b>	<b>4</b>	<b>13</b>	<b>41</b>	<b>1</b>	<b>84</b>	<b>273</b>
Heavy Duty Truck	3	2	4	13	1	0	3	4	0	8	39
Light Duty Truck	12	1	22	32	3	16	5	3	0	47	142
Water Truck	1	0	0	0	0	0	0	0	0	0	1
<b>TOTAL TRUCKS</b>	<b>16</b>	<b>3</b>	<b>26</b>	<b>45</b>	<b>4</b>	<b>16</b>	<b>9</b>	<b>7</b>	<b>1</b>	<b>55</b>	<b>182</b>
<b>GRAND TOTAL</b>	<b>30</b>	<b>9</b>	<b>76</b>	<b>97</b>	<b>13</b>	<b>20</b>	<b>22</b>	<b>48</b>	<b>1</b>	<b>139</b>	<b>455</b>
Non / Externally powered Equipment	0	0	0	0	0	0	0	2	0	0	2
Unknown / Not Equipment	3	0	0	0	1	8	0	6	0	0	19

**CONSTRUCT / RECONSTRUCT BRIDGE****PAGE 9/14****Drainage / Environmental / Landscaping (average hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	3	0	3
Concrete/Industrial Saws	0	0	0	1	0	0	0	0	0	0	1
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	11	20	0	31
Excavators	10	0	0	3	3	0	0	0	16	0	33
Graders	0	0	0	0	0	0	0	1	5	0	6
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	4	0	0	1	0	0	0	0	0	0	6
Rollers	0	0	0	2	0	0	0	16	17	0	36
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	3	0	0	2	3	0	0	11	20	1	40
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders	2	0	0	0	0	0	0	0	0	4	5
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	1	0	1	3	1	0	0	11	19	0	35
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	2	0	0	2
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	0	0	0	3	0	3
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	2	0	0	2
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	1	0	0	0	0	3	0	0	4
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>20</b>	<b>0</b>	<b>3</b>	<b>13</b>	<b>7</b>	<b>0</b>	<b>0</b>	<b>57</b>	<b>102</b>	<b>5</b>	<b>207</b>
Heavy Duty Truck	5	0	1	14	1	0	1	10	11	0	42
Light Duty Truck	12	0	3	14	1	0	0	26	20	6	82
Water Truck	0	0	0	0	0	0	0	5	20	0	25
<b>TOTAL TRUCKS</b>	<b>17</b>	<b>0</b>	<b>3</b>	<b>28</b>	<b>2</b>	<b>0</b>	<b>1</b>	<b>40</b>	<b>50</b>	<b>6</b>	<b>149</b>
<b>GRAND TOTAL</b>	<b>37</b>	<b>0</b>	<b>6</b>	<b>41</b>	<b>9</b>	<b>0</b>	<b>1</b>	<b>97</b>	<b>152</b>	<b>11</b>	<b>355</b>
Non / Externally powered Equipment	0	0	1	0	3	0	0	0	0	0	5
Unknown / Not Equipment	3	0	0	0	0	0	0	3	0	0	6

**CONSTRUCT / RECONSTRUCT BRIDGE****PAGE 10/14****Striping / Painting (average hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	5	5	0	0	0	0	0	0	0	9
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	6	0	0	0	0	3	9
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	2	0	0	0	0	0	0	0	2
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	7	7
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	0	0	0	0	0	0	0	0	0
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	0	1	0	0	0	0	0	0	1
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	2	0	0	12	7	0	0	0	0	21
Skid Steer Loaders	3	8	0	0	7	0	0	0	0	0	18
Surfacing Equipment	1	8	0	0	9	0	0	0	0	0	17
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	0	0	0	0	0	0	0	0	0
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	3	0	3
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	2	1	1	0	5	0	0	0	3	13
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	13	3	0	16
Air Compressors	0	0	0	0	0	0	0	3	0	0	3
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	5	0	0	0	0	0	0	5
<b>TOTAL NONROAD</b>	<b>4</b>	<b>24</b>	<b>8</b>	<b>8</b>	<b>34</b>	<b>12</b>	<b>0</b>	<b>16</b>	<b>6</b>	<b>13</b>	<b>124</b>
Heavy Duty Truck	5	10	3	8	1	5	4	0	0	4	40
Light Duty Truck	0	10	1	22	20	9	0	37	3	2	103
Water Truck	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL TRUCKS</b>	<b>5</b>	<b>20</b>	<b>4</b>	<b>30</b>	<b>20</b>	<b>14</b>	<b>4</b>	<b>37</b>	<b>3</b>	<b>5</b>	<b>142</b>
<b>GRAND TOTAL</b>	<b>9</b>	<b>44</b>	<b>12</b>	<b>37</b>	<b>54</b>	<b>26</b>	<b>4</b>	<b>54</b>	<b>8</b>	<b>18</b>	<b>266</b>
Non / Externally powered Equipment	7	0	0	0	0	4	0	0	3	0	14
Unknown / Not Equipment	6	0	0	7	7	0	0	31	0	0	51

**CONSTRUCT / RECONSTRUCT BRIDGE****PAGE 11/14****Traffic Control / Signage / Barriers (average hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	3	2	0	0	0	0	0	2	7
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	3	0	0	0	0	0	0	0	3
Cranes	3	0	0	0	0	0	0	0	3	0	6
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	1	0	0	0	0	0	0	1
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	5	0	0	0	0	0	0	5
Paving Equipment	0	0	0	3	0	0	0	0	0	10	13
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	1	0	0	0	0	0	0	0	1
Rough Terrain Forklifts	0	4	13	1	16	0	0	2	0	0	35
Rubber Tire Loaders	0	14	8	4	0	0	0	15	10	2	52
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	208	180	221	191	271	179	502	198	44	11	2005
Skid Steer Loaders	1	0	9	1	0	0	0	0	0	0	11
Surfacing Equipment	0	0	0	0	0	0	0	6	3	0	10
Trenchers	0	0	6	0	0	0	0	0	0	0	6
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	1	0	0	0	0	0	0	0	0	0	1
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	9	0	0	0	0	0	0	0	9
Forklifts	0	0	8	5	0	0	0	0	0	0	13
Sweepers / Scrubbers	0	0	2	0	0	0	0	0	0	0	2
Other General Industrial Equipment	0	0	3	0	0	0	0	0	0	0	4
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	23	0	0	0	0	0	0	0	23
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	31	3	0	0	0	6	3	8	51
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>213</b>	<b>198</b>	<b>337</b>	<b>216</b>	<b>286</b>	<b>179</b>	<b>502</b>	<b>228</b>	<b>63</b>	<b>33</b>	<b>2255</b>
Heavy Duty Truck	61	44	195	99	79	40	77	105	58	53	811
Light Duty Truck	41	40	118	74	15	7	4	41	28	62	430
Water Truck	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL TRUCKS</b>	<b>102</b>	<b>84</b>	<b>313</b>	<b>174</b>	<b>94</b>	<b>47</b>	<b>82</b>	<b>146</b>	<b>86</b>	<b>115</b>	<b>1241</b>
<b>GRAND TOTAL</b>	<b>315</b>	<b>282</b>	<b>650</b>	<b>389</b>	<b>380</b>	<b>226</b>	<b>584</b>	<b>374</b>	<b>149</b>	<b>148</b>	<b>3496</b>
Non / Externally powered Equipment	201	17	17	9	0	111	6	0	3	26	390
Unknown / Not Equipment	8	7	0	38	5	7	0	0	5	4	72

## CONSTRUCT / RECONSTRUCT BRIDGE

PAGE 12/14

## CCO (average hours)

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	1	3	0	0	0	0	0	0	2	6
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	1
Cranes	0	0	1	0	0	0	0	0	0	0	1
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	1	0	0	3	2	0	0	0	0	1	6
Graders	0	0	0	1	0	0	0	0	0	2	3
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	1	0	0	0	0	0	0	0	0	0	1
Rollers	3	0	0	1	0	0	0	0	0	1	4
Rough Terrain Forklifts	0	0	0	0	0	0	10	3	0	0	13
Rubber Tire Loaders	0	2	0	4	5	0	10	0	0	5	26
Scrapers	0	0	0	0	1	0	0	0	0	3	4
Signal Boards	0	15	1	0	0	213	189	125	93	2	639
Skid Steer Loaders	1	1	0	1	0	0	0	0	0	0	3
Surfacing Equipment	0	0	0	7	0	0	0	0	0	0	7
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	0	0	1	0	0	0	0	1	2
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	4	0	5	0	25	9	4	6	54
Forklifts	0	0	0	0	0	0	0	1	0	0	1
Sweepers / Scrubbers	0	0	0	2	0	0	0	0	0	0	2
Other General Industrial Equipment	0	0	0	1	0	0	0	0	3	0	5
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	6	0	3	27	16	9	2	0	62
Pumps	0	0	0	0	0	0	3	0	7	4	14
Air Compressors	0	3	8	5	0	0	3	20	9	0	49
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	34	32	0	65
TOTAL NONROAD	5	22	23	25	18	240	255	201	149	26	964
Heavy Duty Truck	10	6	8	18	3	52	17	11	5	15	144
Light Duty Truck	4	7	12	21	21	9	23	41	40	31	209
Water Truck	3	0	0	5	0	0	3	28	40	3	81
TOTAL TRUCKS	17	13	20	44	24	61	42	80	85	48	434
GRAND TOTAL	21	35	43	69	41	301	298	281	235	75	1398
Non / Externally powered Equipment	0	7	4	6	0	0	8	29	16	1	72
Unknown / Not Equipment	50	7	0	8	0	0	0	3	4	8	78

**CONSTRUCT / RECONSTRUCT BRIDGE****PAGE 13/14****Other (average hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	6	1	0	0	0	0	0	0	4	11
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	3	0	0	3
Cranes	10	21	9	4	13	0	0	3	0	0	60
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	5	0	0	0	0	0	0	3	1	0	9
Excavators	18	34	2	23	1	0	0	0	26	13	117
Graders	0	3	2	6	0	0	3	0	3	0	16
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	1	0	0	0	0	0	3	2	6
Paving Equipment	0	0	0	0	0	0	0	0	0	25	25
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	5	13	0	1	0	0	3	9	3	0	34
Rough Terrain Forklifts	0	0	16	14	1	19	8	29	3	0	90
Rubber Tire Loaders	17	19	14	19	1	17	10	29	28	23	177
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	5	0	0	0	0	58	8	2	0	73
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	1	1
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	3	0	1	0	5	0	0	7	0	1	17
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	11	7	0	19	7	14	19	3	79
Forklifts	0	0	0	0	2	0	0	0	0	0	2
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	24	64	0	43	8	36	12	0	187
Pumps	0	11	0	0	0	0	0	0	3	0	13
Air Compressors	0	0	2	3	12	8	0	9	2	0	36
Welders	0	3	13	23	36	4	0	6	0	0	84
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>58</b>	<b>115</b>	<b>96</b>	<b>164</b>	<b>71</b>	<b>110</b>	<b>96</b>	<b>156</b>	<b>103</b>	<b>72</b>	<b>1040</b>
Heavy Duty Truck	2	7	27	27	15	4	20	40	27	34	202
Light Duty Truck	70	39	128	101	8	92	15	106	85	86	729
Water Truck	0	0	0	0	0	0	3	0	3	0	5
<b>TOTAL TRUCKS</b>	<b>72</b>	<b>46</b>	<b>155</b>	<b>128</b>	<b>23</b>	<b>96</b>	<b>38</b>	<b>146</b>	<b>114</b>	<b>120</b>	<b>937</b>
<b>GRAND TOTAL</b>	<b>130</b>	<b>161</b>	<b>251</b>	<b>291</b>	<b>94</b>	<b>205</b>	<b>133</b>	<b>302</b>	<b>217</b>	<b>192</b>	<b>1976</b>
Non / Externally powered Equipment	23	13	8	9	17	7	2	8	3	5	94
Unknown / Not Equipment	67	72	0	6	7	0	0	10	0	0	161



**CONSTRUCT / RECONSTRUCT BRIDGE****PAGE 14/14****Idle (average hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	2	1	1	0	0	0	0	0	0	3
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	3	1	0	0	0	0	0	0	0	4
Cranes	10	3	0	3	0	0	0	0	0	0	15
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	1	1	6	0	0	0	0	3	3	0	14
Excavators	63	36	157	37	0	0	0	0	10	5	308
Graders	8	16	45	8	0	0	0	3	0	0	79
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	3	1	0	0	0	0	0	1	4
Paving Equipment	0	0	0	0	0	0	0	0	0	19	19
Plate Compactors	4	0	0	0	0	0	0	0	1	5	10
Rollers	8	51	147	13	0	0	8	8	9	8	251
Rough Terrain Forklifts	4	33	22	16	5	0	0	0	0	0	81
Rubber Tire Loaders	56	41	56	15	2	0	0	1	7	10	186
Scrapers	0	0	11	14	1	0	0	0	0	0	26
Signal Boards	0	1	0	0	0	164	0	0	1	0	166
Skid Steer Loaders	11	0	9	5	0	0	4	0	0	3	32
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	14	0	0	0	0	0	0	0	14
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	27	51	149	10	4	3	3	0	0	7	253
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	16	0	0	2	18
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	3	0	0	0	0	0	0	0	3
Other General Industrial Equipment	2	0	2	0	0	0	0	2	0	0	6
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	3	2	0	0	0	0	0	0	0	5
Pumps	0	8	0	0	0	0	0	0	0	0	8
Air Compressors	0	34	93	73	28	11	16	6	0	3	264
Welders	11	15	0	0	0	0	0	0	0	0	25
Pressure Washers	0	0	0	0	0	0	0	0	2	0	2
<b>TOTAL NONROAD</b>	<b>203</b>	<b>296</b>	<b>721</b>	<b>196</b>	<b>40</b>	<b>177</b>	<b>47</b>	<b>22</b>	<b>33</b>	<b>61</b>	<b>1796</b>
Heavy Duty Truck	1	3	14	2	0	0	2	3	6	4	35
Light Duty Truck	22	20	31	5	0	0	0	13	13	3	106
Water Truck	0	1	0	0	0	0	0	0	2	0	3
<b>TOTAL TRUCKS</b>	<b>24</b>	<b>23</b>	<b>46</b>	<b>7</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>15</b>	<b>22</b>	<b>7</b>	<b>145</b>
<b>GRAND TOTAL</b>	<b>226</b>	<b>319</b>	<b>767</b>	<b>202</b>	<b>40</b>	<b>177</b>	<b>49</b>	<b>38</b>	<b>54</b>	<b>68</b>	<b>1940</b>
Non / Externally powered Equipment	5	8	7	7	3	1	23	0	1	6	60
Unknown / Not Equipment	0	3	2	4	3	1	0	0	0	0	12

**CONSTRUCT MEDIAN, THRIE BEAM BARRIER      PAGE 1/14**

**Sorted by** Construct median, thrie beam barrier  
**N** 2  
**Mean - Bid Price** \$566,374  
**Mean - Original Work Days** 57.5  
**Mean - Duration (Days)** 181

**Activity Use By Phase (NONROAD + Trucks)**

Phase	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Land Clearing and Grubbing	0	0	0	0	0	0	0	0	0	0	0
Roadway Excavation	148	146	105	85	0	0	0	2	0	0	487
Structural Excavation	0	0	0	0	0	0	0	0	0	0	0
Base and Subbase	84	80	16	0	0	0	0	0	0	0	179
Structural Concrete	0	0	0	0	0	0	0	0	0	0	0
Paving	0	67	69	1	0	0	111	90	5	0	341
Drainage / Environmental / Landscap	0	2	0	0	0	0	0	7	0	0	8
Striping / Painting	0	0	0	0	0	0	0	0	0	18	18
Traffic Control / Signage / Barriers	259	437	410	242	406	484	351	333	256	29	3,206
CCO	18	24	1	0	8	0	0	2	0	46	99
Other	129	83	7	15	4	3	1	46	0	0	286
Idle	37	104	114	35	109	147	78	83	66	16	788
Total non-idle	637	838	607	343	417	487	463	479	261	93	4,623

Project number	Award Amount	Original Days	Duration
03-4C4004	\$625,418	45	45
06-467804	\$507,330	70	317
Average	\$566,374	58	181

# **CONSTRUCT MEDIAN, THRIE BEAM BARRIER**      **PAGE 2/14**

## **Average Activity Use (Idle equipment excluded)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	51	57	49	30	39	58	49	54	19	5	410
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	4	4
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	8	4	16	5	0	0	0	0	31
Graders	48	30	0	1	0	0	0	0	0	0	78
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	6	0	0	0	0	0	0	0	6
Paving Equipment	0	0	6	0	0	0	8	0	0	0	14
Plate Compactors	0	5	0	0	0	0	0	0	0	0	5
Rollers	51	22	14	0	0	0	0	0	0	8	94
Rough Terrain Forklifts	0	4	0	0	0	5	0	0	0	0	9
Rubber Tire Loaders	63	39	18	0	0	0	8	9	0	0	137
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	100	186	85	23	75	134	141	114	67	15	938
Skid Steer Loaders	14	0	14	15	25	30	26	33	7	4	167
Surfacing Equipment	0	9	0	0	0	0	0	5	0	0	14
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	2	0	0	3	0	2	6
Tractors / Loaders / Backhoes	0	27	48	51	6	0	0	10	10	8	159
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	2	0	0	0	0	0	0	0	2
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	9	8	17	13	43	42	42	27	25	5	229
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>336</b>	<b>386</b>	<b>264</b>	<b>136</b>	<b>204</b>	<b>272</b>	<b>273</b>	<b>253</b>	<b>128</b>	<b>51</b>	<b>2302</b>
Heavy Duty Truck	83	190	113	87	76	63	21	48	27	5	710
Light Duty Truck	160	213	183	98	136	153	170	178	106	37	1433
Water Truck	58	49	48	22	2	0	0	0	0	0	179
<b>TOTAL TRUCKS</b>	<b>301</b>	<b>452</b>	<b>343</b>	<b>207</b>	<b>213</b>	<b>215</b>	<b>190</b>	<b>226</b>	<b>133</b>	<b>42</b>	<b>2321</b>
<b>GRAND TOTAL</b>	<b>637</b>	<b>838</b>	<b>607</b>	<b>343</b>	<b>417</b>	<b>487</b>	<b>463</b>	<b>479</b>	<b>261</b>	<b>93</b>	<b>4623</b>
Non-powered Equipment	14	10	0	0	0	0	15	10	0	14	62
Unknown / Not Equipment	81	36	59	12	8	21	13	15	0	0	244

**CONSTRUCT MEDIAN, THRIE BEAM BARRIER**      **PAGE 3/14**

### Land Clearing and Grubbing (average hours)

[illegible]

# CONSTRUCT MEDIAN, THRIE BEAM BARRIER      PAGE 4/14

## Roadway Excavation (average hours)

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	1	0	0	1
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	21	16	0	1	0	0	0	0	0	0	38
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	31	14	4	0	0	0	0	0	0	0	49
Rough Terrain Forklifts	0	4	0	0	0	0	0	0	0	0	4
Rubber Tire Loaders	19	26	8	0	0	0	0	0	0	0	53
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	17	36	0	0	0	0	0	0	0	0	53
Skid Steer Loaders	7	0	1	0	0	0	0	0	0	0	8
Surfacing Equipment	0	2	0	0	0	0	0	0	0	0	2
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	2	36	46	0	0	0	0	0	0	84
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>95</b>	<b>99</b>	<b>49</b>	<b>47</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>291</b>
Heavy Duty Truck	4	7	8	16	0	0	0	0	0	0	35
Light Duty Truck	14	19	4	0	0	0	0	0	0	0	37
Water Truck	35	22	45	22	0	0	0	0	0	0	123
<b>TOTAL TRUCKS</b>	<b>53</b>	<b>47</b>	<b>57</b>	<b>38</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>195</b>
<b>GRAND TOTAL</b>	<b>148</b>	<b>146</b>	<b>105</b>	<b>85</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>487</b>
Non / Externally powered Equipment	0	0	0	0	0	0	0	0	0	0	0
Unknown / Not Equipment	33	12	36	12	0	0	0	0	0	0	93

**CONSTRUCT MEDIAN, THRIE BEAM BARRIER**      **PAGE 5/14**

### Structural Excavation (average hours)

[illegible]

# **CONSTRUCT MEDIAN, THRIE BEAM BARRIER**      **PAGE 6/14**

## **Base and Subbase (average hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	27	14	0	0	0	0	0	0	0	0	40
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	20	8	4	0	0	0	0	0	0	0	31
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	6	4	0	0	0	0	0	0	0	0	10
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	31	0	0	0	0	0	0	0	0	31
Skid Steer Loaders	4	0	0	0	0	0	0	0	0	0	4
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	4	3	0	0	0	0	0	0	0	7
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>57</b>	<b>60</b>	<b>7</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>123</b>
Heavy Duty Truck	0	4	2	0	0	0	0	0	0	0	6
Light Duty Truck	8	0	4	0	0	0	0	0	0	0	12
Water Truck	20	16	4	0	0	0	0	0	0	0	39
<b>TOTAL TRUCKS</b>	<b>27</b>	<b>20</b>	<b>9</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>56</b>
<b>GRAND TOTAL</b>	<b>84</b>	<b>80</b>	<b>16</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>179</b>
Non / Externally powered Equipment	0	0	0	0	0	0	0	0	0	0	0
Unknown / Not Equipment	28	24	8	0	0	0	0	0	0	0	60

**CONSTRUCT MEDIAN, THRIE BEAM BARRIER**      **PAGE 7/14**

### Structural Concrete (average hours)

[illegible]



# CONSTRUCT MEDIAN, THRIE BEAM BARRIER      PAGE 8/14

## Paving (average hours)

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	6	0	0	0	0	0	0	0	6
Paving Equipment	0	0	6	0	0	0	8	0	0	0	14
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	6	0	0	0	0	0	0	0	6
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	10	0	0	0	8	9	0	0	26
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	0	9	0	0	0	15	16	2	0	43
Surfacing Equipment	0	7	0	0	0	0	0	5	0	0	11
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	3	0	0	3
Tractors / Loaders / Backhoes	0	6	0	0	0	0	0	0	0	0	6
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	25	3	0	0	28
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
TOTAL NONROAD	0	13	37	0	0	0	56	34	2	0	142
Heavy Duty Truck	0	28	8	0	0	0	15	10	3	0	63
Light Duty Truck	0	26	24	1	0	0	40	45	0	0	136
Water Truck	0	0	0	0	0	0	0	0	0	0	0
TOTAL TRUCKS	0	54	32	1	0	0	55	55	3	0	199
GRAND TOTAL	0	67	69	1	0	0	111	90	5	0	341
Non / Externally powered Equipment	0	0	0	0	0	0	9	8	0	0	16
Unknown / Not Equipment	0	0	7	0	0	0	0	0	0	0	7

**CONSTRUCT MEDIAN, THRIE BEAM BARRIER**      **PAGE 9/14**

**Drainage / Environmental / Landscaping (average hours)**

[illegible]

**CONSTRUCT MEDIAN, THRIE BEAM BARRIER**      **PAGE 10/14**

**Striping / Painting (average hours)**

[illegible]

# **CONSTRUCT MEDIAN, THRIE BEAM BARRIER**      **PAGE 11/14**

## **Traffic Control / Signage / Barriers (average hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	38	36	49	30	39	58	49	45	19	5	367
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	8	4	16	5	0	0	0	0	31
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	0	0	0	0	0	0	0	0	0
Rough Terrain Forklifts	0	0	0	0	0	5	0	0	0	0	5
Rubber Tire Loaders	0	0	0	0	0	0	0	0	0	0	0
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	73	115	85	23	75	134	140	113	67	0	824
Skid Steer Loaders	0	0	4	15	25	30	11	13	5	4	106
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	9	9	0	0	0	0	3	10	2	32
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	2	0	0	0	0	0	0	0	2
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	9	8	17	13	43	42	17	23	25	5	200
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>119</b>	<b>168</b>	<b>172</b>	<b>84</b>	<b>197</b>	<b>272</b>	<b>216</b>	<b>196</b>	<b>126</b>	<b>16</b>	<b>1566</b>
Heavy Duty Truck	52	123	89	65	76	60	6	25	24	3	522
Light Duty Truck	88	147	149	93	133	152	129	113	106	10	1119
Water Truck	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL TRUCKS</b>	<b>139</b>	<b>269</b>	<b>238</b>	<b>158</b>	<b>209</b>	<b>212</b>	<b>135</b>	<b>137</b>	<b>131</b>	<b>13</b>	<b>1640</b>
<b>GRAND TOTAL</b>	<b>259</b>	<b>437</b>	<b>410</b>	<b>242</b>	<b>406</b>	<b>484</b>	<b>351</b>	<b>333</b>	<b>256</b>	<b>29</b>	<b>3206</b>
Non / Externally powered Equipment	0	0	0	0	0	0	2	0	0	0	2
Unknown / Not Equipment	5	0	8	0	0	10	8	9	0	0	39

# CONSTRUCT MEDIAN, THRIE BEAM BARRIER      PAGE 12/14

## CCO (average hours)

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	4	4
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	5	0	0	0	0	0	0	0	0	5
Rollers	0	0	0	0	0	0	0	0	0	8	8
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	11	8	0	0	0	0	0	0	0	0	19
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0	0	0	2	0	0	2
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	2	0	0	0	0	2	4
Tractors / Loaders / Backhoes	0	0	0	0	3	0	0	0	0	6	9
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
TOTAL NONROAD	11	13	0	0	4	0	0	2	0	20	49
Heavy Duty Truck	0	0	0	0	0	0	0	0	0	2	2
Light Duty Truck	8	7	1	0	2	0	0	0	0	24	41
Water Truck	0	5	0	0	2	0	0	0	0	0	6
TOTAL TRUCKS	8	11	1	0	4	0	0	0	0	26	49
GRAND TOTAL	18	24	1	0	8	0	0	2	0	46	99
Non / Externally powered Equipment	0	0	0	0	0	0	0	0	0	14	14
Unknown / Not Equipment	0	0	0	0	4	0	0	0	0	0	4

# CONSTRUCT MEDIAN, THRIE BEAM BARRIER      PAGE 13/14

## Other (average hours)

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	14	21	0	0	0	0	0	8	0	0	42
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	0	0	0	0	0	0	0	0	0
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	28	2	0	0	0	0	0	0	0	0	29
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	11	4	0	0	0	0	0	1	0	0	16
Skid Steer Loaders	3	0	0	0	0	0	0	2	0	0	5
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	6	0	5	3	0	0	7	0	0	21
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	1	0	0	1
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>55</b>	<b>33</b>	<b>0</b>	<b>5</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>19</b>	<b>0</b>	<b>0</b>	<b>114</b>
Heavy Duty Truck	27	29	7	6	0	3	0	12	0	0	83
Light Duty Truck	43	15	0	4	1	0	1	15	0	0	79
Water Truck	4	6	0	0	0	0	0	0	0	0	10
<b>TOTAL TRUCKS</b>	<b>74</b>	<b>50</b>	<b>7</b>	<b>10</b>	<b>1</b>	<b>3</b>	<b>1</b>	<b>27</b>	<b>0</b>	<b>0</b>	<b>172</b>
<b>GRAND TOTAL</b>	<b>129</b>	<b>83</b>	<b>7</b>	<b>15</b>	<b>4</b>	<b>3</b>	<b>1</b>	<b>46</b>	<b>0</b>	<b>0</b>	<b>286</b>
Non / Externally powered Equipment	14	10	0	0	0	0	4	3	0	0	30
Unknown / Not Equipment	16	0	0	0	4	12	6	6	0	0	43

# CONSTRUCT MEDIAN, THRIE BEAM BARRIER      PAGE 14/14

Idle (average hours)

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	9	13	25	7	19	35	35	21	7	1	171
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	2	2	0	0	0	0	4
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	1	0	0	0	0	0	0	0	1
Paving Equipment	0	0	5	0	0	0	3	0	0	0	8
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	1	0	0	0	0	0	0	0	1
Rough Terrain Forklifts	0	0	0	0	0	2	0	0	0	0	2
Rubber Tire Loaders	0	0	2	0	0	0	1	3	0	0	5
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	6	6	1	6	10	7	4	10	3	0	52
Skid Steer Loaders	0	0	17	3	8	10	10	2	5	0	55
Surfacing Equipment	0	5	0	0	0	0	0	2	0	0	6
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	11	4	0	0	0	0	5	9	4	31
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	7	2	9	14	6	16	6	0	58
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>15</b>	<b>34</b>	<b>62</b>	<b>18</b>	<b>47</b>	<b>69</b>	<b>58</b>	<b>57</b>	<b>29</b>	<b>5</b>	<b>391</b>
Heavy Duty Truck	17	42	26	7	26	48	9	14	20	7	213
Light Duty Truck	6	28	27	10	37	31	11	13	18	5	184
Water Truck	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL TRUCKS</b>	<b>23</b>	<b>70</b>	<b>53</b>	<b>16</b>	<b>62</b>	<b>79</b>	<b>20</b>	<b>26</b>	<b>37</b>	<b>12</b>	<b>397</b>
<b>GRAND TOTAL</b>	<b>37</b>	<b>104</b>	<b>114</b>	<b>35</b>	<b>109</b>	<b>147</b>	<b>78</b>	<b>83</b>	<b>66</b>	<b>16</b>	<b>788</b>
Non / Externally powered Equipment	0	0	0	0	0	0	3	0	0	0	3
Unknown / Not Equipment	0	0	1	0	0	1	2	3	0	0	7

**LANDSCAPING      PAGE 1/14**

**Sorted by** Landscaping  
**N** 1  
**Mean - Bid Price** \$797,237  
**Mean - Original Work Days** 885  
**Mean - Duration (Days)** 270

**Activity Use By Phase (NONROAD + Trucks)**

Phase	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Land Clearing and Grubbing	41	16	16	17	0	0	0	72	0	18	180
Roadway Excavation	0	0	0	0	0	0	0	0	0	9	9
Structural Excavation	0	0	0	0	0	0	0	0	0	0	0
Base and Subbase	0	0	0	0	12	0	48	0	0	24	84
Structural Concrete	0	0	0	0	0	0	0	0	0	0	0
Paving	0	0	0	0	0	0	0	0	0	0	0
Drainage / Environmental / Landscaping	25	2125	2507	1663	934	162	397	372	1280	484	9,949
Striping / Painting	0	0	0	0	0	0	0	0	0	0	0
Traffic Control / Signage / Barriers	0	0	0	0	0	2	0	0	0	41	43
CCO	374	158	27	23	0	0	14	12	0	0	607
Other	4	0	0	2	164	0	59	177	8	117	531
Idle	0	0	0	0	0	0	0	25	0	0	25
Total non-idle	444	2299	2550	1705	1110	164	518	633	1288	693	11,403

Project number	Award Amount	Original Days	Duration
06-4036U4	\$797,237	885	270
Average	\$797,237	885	270



# LANDSCAPING      PAGE 2/14

## Average Activity Use (Idle equipment excluded)

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	8	0	0	0	8
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	0	0	0	0	0	10	0	8	18
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	0	0	0	0	0	17	64	0	81
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders	10	388	301	0	24	0	123	90	280	73	1289
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	48	304	404	104	0	8	2	0	0	870
Tampers/Rammers	0	0	0	0	0	0	0	24	0	0	24
Tractors / Loaders / Backhoes	0	2	1	0	64	56	0	0	0	8	131
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	3	4	0	0	0	0	0	0	0	0	7
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	27	0	0	27
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>13</b>	<b>442</b>	<b>606</b>	<b>404</b>	<b>192</b>	<b>56</b>	<b>139</b>	<b>170</b>	<b>344</b>	<b>89</b>	<b>2455</b>
Heavy Duty Truck	102	533	641	457	474	58	379	191	408	142	3385
Light Duty Truck	328	1325	1303	844	444	50	0	272	536	462	5563
Water Truck	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL TRUCKS</b>	<b>431</b>	<b>1857</b>	<b>1944</b>	<b>1301</b>	<b>918</b>	<b>108</b>	<b>379</b>	<b>463</b>	<b>944</b>	<b>604</b>	<b>8948</b>
<b>GRAND TOTAL</b>	<b>444</b>	<b>2299</b>	<b>2550</b>	<b>1705</b>	<b>1110</b>	<b>164</b>	<b>518</b>	<b>633</b>	<b>1288</b>	<b>693</b>	<b>11403</b>
Non-powered Equipment	0	0	0	0	0	0	0	0	0	0	0
Unknown / Not Equipment	0	0	0	0	0	0	2	0	0	0	2

**LANDSCAPING      PAGE 3/14**

### Land Clearing and Grubbing (average hours)

[illegible]



**LANDSCAPING      PAGE 5/14**

### Structural Excavation (average hours)

[illegible]



**LANDSCAPING      PAGE 7/14**

### Structural Concrete (average hours)

[illegible]

**LANDSCAPING      PAGE 8/14**

**Paving (average hours)**

[illegible]

# LANDSCAPING      PAGE 9/14

## Drainage / Environmental / Landscaping (average hours)

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	0	0	0	0	0	2	0	0	2
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	0	0	0	0	0	9	64	0	73
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	334	294	0	0	0	57	51	280	42	1058
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	48	288	402	48	0	8	2	0	0	796
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	0	0	0	56	0	0	0	0	56
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	27	0	0	27
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
TOTAL NONROAD	0	382	582	402	48	56	65	91	344	42	2012
Heavy Duty Truck	0	450	640	438	474	57	332	116	408	84	2999
Light Duty Truck	25	1293	1285	823	412	49	0	165	528	358	4938
Water Truck	0	0	0	0	0	0	0	0	0	0	0
TOTAL TRUCKS	25	1743	1925	1261	886	106	332	281	936	442	7937
GRAND TOTAL	25	2125	2507	1663	934	162	397	372	1280	484	9949
Non / Externally powered Equipment	0	0	0	0	0	0	0	0	0	0	0
Unknown / Not Equipment	0	0	0	0	0	0	2	0	0	0	2



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**Striping / Painting (average hours)**

[illegible]

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### Traffic Control / Signage / Barriers (average hours)

[illegible]

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**CCO (average hours)**

[illegible]

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**Other (average hours)**

[illegible]

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**Idle (average hours)**

[illegible]

## 8 Appendix B: VBA Code for the Project Module

### Module 1

```
'* The main UCD-CT-Project Module procedures

Option Explicit

'/
'/ The filename definition section
'/

Public Const tempFile As String = "$temp.xls"
Public Const Blankname As String = "Blank_0.9.xls"
Public Const defFile As String = "Definitions.xls"
Public Const templateFile As String = "Templates.xls"

'/
'/ The worksheet title string section
'/

Public Const defnStr As String = "Definitions" ' The definitions page with the
project variables, etc...
Public defn As Worksheet

Public Const ofStr As String = "OutputForms"
Public of As Worksheet

Public Const listStr As String = "List_Definitions"
Public Lsht As Worksheet

Public Const dStr As String = "Daily Diaries"
Public d As Worksheet

Public Const piStr As String = "Pay_Items"
Public pi As Worksheet

Public Const aStr As String = "aggr_activ"
Public a As Worksheet

Public Const dayStr As String = "day_data"
Public day As Worksheet

Public Const proofStr As String = "proof_sheets"
Public proof As Worksheet

Public Const aeStr As String = "Assign_Equip"
Public AE As Worksheet

Public Const apStr As String = "Assign_Phase"
Public AP As Worksheet

Public Const apbStr As String = "APB" ' The equipment and phase backup
sheets
Public APB As Worksheet

Public Const aebStr As String = "AEB"
Public AEB As Worksheet
```

```

Public Const eiStr As String = "Equip_Codes" ' The equipment code sheet in the
def file
Public EI As Worksheet

Public Const ecstr As String = "Eq_Cat_Codes"
Public EC As Worksheet

Public Const escstr As String = "Eq_Subcat_Codes"
Public ESC As Worksheet

Public Const emstr As String = "Eq_Model_Codes"
Public EM As Worksheet

Public Const odbstr As String = "OutputDB"
Public odb As Worksheet

Public Const otstr As String = "OutputTable"
Public ot As Worksheet

' /
' / Misc row size and start values
' /

Const list_start_row As Integer = 3 ' The row to begin the categories list
when updating
Const line_item_start_column = 7
Const num_items_max As Integer = 10 ' The maximum number of items to
use
' On the proof sheets

Const endStr As String = "Notes"

' /
' / The public variables for the dynamic arrays for equipment, date, phase and
category
' / labels and tags
' /

Public psize As Integer
Public dsize As Integer
Public d10size As Integer
Public esize As Integer
Public csize As Integer

Public pvars As Integer
Public dvars As Integer
Public d10vars As Integer
Public evars As Integer
Public cvars As Integer

Public parr() As Variant
Public darr() As Variant
Public d10arr() As Variant
Public earr() As Variant
Public carr() As Variant

Public ecarr() As String ' The array for the equipment codes
Public ecsz As Integer

Public datetrans As String
Public phasetrans As String
Public equiptrans As String
Public hrtrans As String

```

```

' /
' / The columns used for each boolean tag variables in each array
' /

Public Const e_inGTot = 2      ' The equipment columns
Public Const e_NONROAD = 3
Public Const e_UCDEMM = 4

Public Const p_inGTot = 2      ' The phase columns
Public Const p_UCDEMM = 3

' /
' / The column number constants
' /

Const ag_date_col As Integer = 1      ' date
Const ag_contr_col As Integer = 2      ' contractor
Const ag_eqnum_col As Integer = 3      ' equipment number
Const ag_eqdsc_col As Integer = 4      ' equipment description
Const ag_item_col As Integer = 5      ' pay item for equipment
Const ag_hr_col As Integer = 6      ' number of hours equipment used
Const ag_note_col As Integer = 7      ' equipment notes
Const ag_dateint_col As Integer = 8      ' date interval column
Const ag_concatname_col As Integer = 9      ' Concatenated name
Const ag_46x_col As Integer = 10      ' 46.x designation for the day
Const ag_de_notes_col As Integer = 11      ' Data entry notes

Const day_date_col As Integer = 1
Const day_contractor_col As Integer = 2
Const day_tot_equip_col As Integer = 3
Const day_tot_equip_hr_col As Integer = 4
Const day_start_shift_col As Integer = 5
Const day_stop_shift_col As Integer = 6
Const day_subcontr_col As Integer = 7
Const day_notes_col As Integer = 8

Const diary_date_col As Integer = 1      ' The column numbers for the diary
and
Const diary_46X_col As Integer = 2      ' proof sheets
Const diary_contractor_col As Integer = 3
Const diary equipnum_col As Integer = 4
Const diary_nummen_col As Integer = 5
Const diary equipdesc_col As Integer = 6

Public Const o_projnum_col As Integer = 1      ' The column numbers for the
output database
Public Const o_projtype_col As Integer = 2
Public Const o_dateint_col As Integer = 3      ' The category columns
Public Const o equipcat_col As Integer = 4
Public Const o_scccode_col As Integer = 5
Public Const o_phase_col As Integer = 6
Public Const o_hrs_col As Integer = 7
Public Const o_date_col As Integer = 8      ' The date
Public Const o equipdesc_col As Integer = 9      ' Equipment data
Public Const o equipCTcat_col As Integer = 10
Public Const o equipCTsubcat_col As Integer = 11
Public Const o equipCTmodel_col As Integer = 12
Public Const o_biditem_col As Integer = 13      ' Bid item/phase data
Public Const o_ctcode_col As Integer = 14
Public Const o_itemname_col As Integer = 15
Public Const o_notes_col As Integer = 16      ' Misc
Public Const o_46x_col As Integer = 17

```



```

Public Const o_DEnotes_col As Integer = 18
Public Const o_awardamount_col As Integer = 19      ' Predictive data
Public Const o_lengthdays_col As Integer = 20
Public Const o_originaldays_col As Integer = 21

Public Const ei_ccode_col As Integer = 1
Public Const ei_sccode_col As Integer = 2
Public Const ei_mcode_col As Integer = 3
Public Const ei_cname_col As Integer = 4
Public Const ei_scname_col As Integer = 5
Public Const ei_mname_col As Integer = 6
Public Const ei_nonroad_col As Integer = 7

Const pf_bidcol = 7
Const pf_endcol = pf_bidcol + num_items_max - 1      ' The last bid item column
in the proof sheets

Public Const OTableSpace = 50

' /
' / The New_Project sub is the macro activated when the "New Project" menu item
is
' / selected. It opens the blank template project, prompts for a project name
and
' / saves the project under that project name
' /

Sub New_Project()

    Dim Filename As Variant

    Dim NewName As String
    Dim Nameok As Boolean
    Dim Finfo As String
    Dim FileSaveName As String
    Dim Temppath As String

    Dim wkbook As Workbook

    Dim inputstring As String

    Nameok = False
    Finfo = "Excel Files (*.xls),*.xls," & "All Files (*.*),*.*"

    ' *
    ' * Check to make sure the blank project spreadsheet is not already open
    ' *

    For Each wkbook In Workbooks
        If wkbook.name = Blankname Then
            MsgBox "Please close " & Blankname & " before continuing"
            Exit Sub
        End If
    Next wkbook

    ' *
    ' * This loop opens the blank project, and brings up a dialog box if the
file is not
    ' * in the current directory
    ' *

    ChDir ThisWorkbook.Path

```

```

On Error GoTo OpenError

FileCopy Blankname, tempFile
Workbooks.Open tempFile

On Error GoTo 0

Temppath = ActiveWorkbook.Path

' *
' * Once the blank file is opened, ask for the new project number and
' * check for errors
' *

inputstring = "Enter project EA number" & vbCrLf & _
              "Use the format XX-XXXXXX" & vbCrLf & _
              "The first two digits should be the district numbers"

Do
    ' Prompt for a project number
    Nameok = True
    NewName = InputBox(inputstring, "Creating a new project file")

    ' Check that the number is nine characters
    Nameok = (Len(NewName) = 9)

    ' Check that a dash is in the third space, if the number of spaces is
right    If Nameok Then
        Nameok = (Mid(NewName, 3, 1) = "-")
    End If

    ' Exit if cancel is hit
    If (Len(NewName) = 0) Then

        Exit Sub
    End If

Loop Until Nameok

' *
' * Save the project file under the new name (hopefully)
' *

Range("ProjectNum") = NewName
NewName = NewName & ".xls"
Worksheets("Definitions").Activate

MsgBox "Select the location to save the project file"

FileSaveName = Application.GetSaveAsFilename( _
    InitialFileName:=NewName, filefilter:=Finfo)

ActiveWorkbook.SaveAs Filename:=FileSaveName

' Fix the following statement if adding a save dialog. Deletes the
tempfile

On Error Resume Next
Kill Temppath & "\" & tempFile
On Error GoTo 0

```

```

        ' Add the list definitions so that the project category can be selected
from      ' a pull-down menu in the definitions sheet.

        Update_ListDef

        Worksheets("Definitions").Activate

    Exit Sub

' The error handler loads an open file dialog box to find the blank file
OpenError:

    ' Show an error and bring up the file browser
    MsgBox " Error opening " & Blankname & ", please locate", vbCritical
    Filename = Application.GetOpenFilename(Finfo, 2, "Locate " & Blankname)

    ' exit if cancel is selected
    If Filename = False Then
        MsgBox Blankname & " not selected. Exiting procedure"
        Exit Sub
    End If

    ' re-loop if the filename still has not been selected
    If GetFileName(Filename) <> Blankname Then
        GoTo OpenError
    End If

    Resume

End Sub

'/
'/ The Project_Window function selects the definitions sheet, and then informs
the user what
'/ data to enter on the definitions, diaries, and pay items sheets
'/

Sub Project_Window()

    Dim Msg As String

    '*
    '* Check if a project file is active
    '*

    If Not IsProjectActive Then
        MsgBox "This procedure must be run from a project-module file"
        Exit Sub
    End If

    '*
    '* Select the definitions sheet, and display the following message
    '*

    Worksheets("Definitions").Activate

    Msg = "INSTRUCTIONS FOR DATA ENTRY" & vbCrLf & vbCrLf & _
        "Project variables should be entered in the shaded section of the "
& _
        """"Definitions"" sheet" & vbCrLf & vbCrLf & _

```

```

        "Project diaries should be entered in the assigned format in the
"Diaries"" & _
        " sheet " & vbCrLf & vbCrLf & _
        "Pay items, and pay item categories should be entered in the " _
        & ""Pay_Items"" sheet" _
        & vbCrLf & vbCrLf & _
        "After project data is entered into these three sheets, the " & _
        ""Create Assignment Sheets"" tool should be run, to create the " &
-
        "equipment and phase assignment sheets, and then the output."

MsgBox Msg

End Sub

'/
'/ The Update_ListDef subroutine updates the list definitions for equipment,
phase and project
'/ category from the definitions.xls file. It is called at the end of
New_Project, and whenever
'/ Requested from the control menu.
'/
'/ This procedure also decodes the master Caltrans equipment code sheet into
the three
'/ tiered heirarchy used by the equipment picker dialog box
'/

Sub Update_ListDef()

    Dim defBook As Workbook
    Dim projBook As Workbook

    Dim CopyRange As Range

    Dim r As Integer

    ' Check if a project file is active

    If Not IsProjectActive Then
        MsgBox "This procedure must be run from a project-module file"
        Exit Sub
    End If

    Set projBook = ActiveWorkbook

    ' Open the definitions file

    If Not OpenOrFind(defFile) Then
        MsgBox "Unable to open " & defFile, vbCritical
        Exit Sub
    End If

    Set defBook = ActiveWorkbook

    projBook.Activate

    ' Clear the lists worksheet

    Set Lsht = Worksheets(listStr)
    Lsht.Activate
    Lsht.Cells.ClearContents

    ' Set the start row for the copying

```

```

r = list_start_row

' *
' * Load and copy Category Definitions and set up the name label
' *

Set CopyRange = defBook.Worksheets("Categories").Range("A1").CurrentRegion

CopyRange.Copy Lsht.Cells(r, 1)

r = r + CopyRange.rows.Count + 1

' select the range and remove the header row before assigning the name
label
Set CopyRange = Lsht.Cells(r - 2, 1).CurrentRegion
Set CopyRange = CopyRange.Offset(1, 0).Resize(CopyRange.rows.Count - 1, 1)

Names.Add name:="Categories", RefersTo:="=" & listStr & "!" &
CopyRange.Address

' *
' * Load and copy Equipment Definitions and set up the name label
' *

Set CopyRange = defBook.Worksheets("EquipTypes").Range("A1").CurrentRegion

CopyRange.Copy Lsht.Cells(r, 1)

r = r + CopyRange.rows.Count + 1

' select the range and remove the header row and tags before assigning the
name label
Set CopyRange = Lsht.Cells(r - 2, 1).CurrentRegion
Set CopyRange = CopyRange.Offset(1, 0).Resize(CopyRange.rows.Count - 1, 1)

Names.Add name:="EquipTypes", RefersTo:="=" & listStr & "!" &
CopyRange.Address

' *
' * Load and copy Phase Definitions and set up the name label
' *

Set CopyRange = defBook.Worksheets("Phases").Range("A1").CurrentRegion

CopyRange.Copy Lsht.Cells(r, 1)

' select the range and remove the header row and tags before assigning the
name label
Set CopyRange = Lsht.Cells(r + 1, 1).CurrentRegion
Set CopyRange = CopyRange.Offset(1, 0).Resize(CopyRange.rows.Count - 1, 1)

Names.Add name:="Phases", RefersTo:="=" & listStr & "!" & CopyRange.Address

Range("A1") = "DO NOT EDIT THIS PAGE DIRECTLY! Make changes to " & defFile
& " and then update definitions"

' *
' * Build the Caltrans equipment code sheets
' *

' * Set up all of the worksheets

```

```

projBook.Activate
delete_worksheet (ecstr)
delete_worksheet (escstr)
delete_worksheet (emstr)

If (Add_Blank_Sheet(ecstr, listStr)) Then
    If (Add_Blank_Sheet(escstr, ecstr)) Then
        If (Add_Blank_Sheet(emstr, escstr)) Then
            End If
        End If
    End If

Set EI = defBook.Worksheets(eiStr)
Set EC = projBook.Worksheets(ecstr)
Set ESC = projBook.Worksheets(escstr)
Set EM = projBook.Worksheets(emstr)

' * Loop through input file and create an entry for each equip cat, subcat
and model

Dim i As Integer
Dim c As Integer
Dim sc As Integer
Dim m As Integer

Dim cblank As Boolean
Dim scblank As Boolean
Dim mblank As Boolean

i = 2
c = 1
sc = 1
m = 1

Do While EI.Cells(i, ei_ccode_col) <> ""

    ' * Set empty cell variables

    cblank = (EI.Cells(i, ei_ccode_col) = "")
    scblank = (EI.Cells(i, ei_sccode_col) = "")
    mblank = (EI.Cells(i, ei_mcode_col) = "")

    ' * The logic for building the cat/subcat/model sheets. Blank lines in
the
    ' * input file are skipped

    If Not (cblank And scblank And mblank) Then
        If (scblank And mblank) Then
            EC.Cells(c, ei_ccode_col) = EI.Cells(i, ei_ccode_col)
            EC.Cells(c, ei_cname_col) = EI.Cells(i + 2, ei_cname_col)
            EC.Cells(c, ei_nonroad_col) = EI.Cells(i, ei_nonroad_col)
            c = c + 1
        Else
            If (mblank) Then
                ESC.Cells(sc, ei_ccode_col) = EI.Cells(i, ei_ccode_col)
                ESC.Cells(sc, ei_sccode_col) = EI.Cells(i, ei_sccode_col)
                ESC.Cells(sc, ei_cname_col) = EI.Cells(i + 1, ei_cname_col)
                ESC.Cells(sc, ei_scname_col) = EI.Cells(i + 1,
ei_scname_col)
                ESC.Cells(sc, ei_nonroad_col) = EI.Cells(i, ei_nonroad_col)

                sc = sc + 1
            Else

```

```

        EM.Cells(m, ei_ccode_col) = EI.Cells(i, ei_ccode_col)
        EM.Cells(m, ei_sccode_col) = EI.Cells(i, ei_sccode_col)
        EI.Cells(i, ei_mcode_col).Copy Destination:=EM.Cells(m,
ei_mcode_col)
        EM.Cells(m, ei_cname_col) = EI.Cells(i, ei_cname_col)
        EM.Cells(m, ei_scname_col) = EI.Cells(i, ei_scname_col)
        EI.Cells(i, ei_mname_col).Copy Destination:=EM.Cells(m,
ei_mname_col)
        EM.Cells(m, ei_nonroad_col) = EI.Cells(i, ei_nonroad_col)

        m = m + 1
    End If
End If
End If

    i = i + 1
Loop

defBook.Close

End Sub

'/
'/ The dummy routine used to load the assignment update box and call the
'/ Create_Assign routine
'/

Sub Create_Assign_Start()

    Range("Assign_Start") = Time
    Create_Assign_form.Show

End Sub

'/
'/ The Create_Assign routine formats the diary date into phase and equipment
assignment
'/ sheets which allow each instance of an equipment type, and a pay item to be
assigned
'/ to a broader equipment and phase definitions
'/
'/ The routine first aggregates the diary data into a database-style sheet
called
'/ aggr_activ, and then calls routines that set up the assignment sheets using
pivot-tables
'/
'/ In addition, a database-style sheet for each diary is created, as well as a
proofing sheet
'/ that summarizes the entire set of diaries in a format that allows for quick
error
'/ checking against the hard copies.
'/

Sub Create_Assign()

    '*
    '* Check if a project file is active
    '*

    If Not IsProjectActive Then
        MsgBox "This procedure must be run from a project-module file"
        Exit Sub
    End If

```

```

End If

' *
' * Double check if the user wants to run the routine
' *

Dim dans As Variant
Dim checkstr As String

checkstr = "Create Assignment sheets?" & vbCrLf & _
"Equipment and Phase assignments will" & vbCrLf & _
"lost if not backed up first"

dans = MsgBox(checkstr, vbYesNo)

If dans = vbNo Then
    Unload Create_Assign_form
    Exit Sub
End If

' *
' * Update the definitions
' *

Update_ListDef
Create_Assign_form.ca_update = "Updated"
DoEvents

' *
' * Check that the endstring for the list of line items is found
' *

Dim c As Integer
Dim r As Integer
Dim endCol As Integer
Dim NumBid As Integer
Set d = Worksheets(dStr)

d.Activate

r = 1
c = line_item_start_column

Do Until d.Cells(r, c) = endStr
    c = c + 1

    If c > 250 Then
        MsgBox "Line item end string not found", vbCritical
        Exit Sub
    End If

Loop

endCol = c
NumBid = (c - line_item_start_column)

' *
' * Fill the dynamic bid item array with the item names. For the proof
sheets
' *

Dim BidArray() As Variant
Dim Workbidarray() As Variant

```



```

ReDim BidArray(1 To NumBid, 1 To 2)

c = line_item_start_column

Do Until d.Cells(1, c) = endStr
    c = c + 1
    BidArray(c - line_item_start_column, 1) = d.Cells(1, c - 1)
    BidArray(c - line_item_start_column, 2) = 0
Loop

Workbidarray = BidArray

' *
' * Find out how many diary entries there are
' *

Dim ans As Integer
ans = vbNo

Dim prompt As String

' prompt the user to identify the final row in order to weed out blank
lines
Do Until ans = vbYes
    d.Cells(1, 1).CurrentRegion.Select
    r = Selection.Rows.Count

    d.Rows(r).Select

    prompt = "Diary lines detected: " & r & vbCrLf _
        & vbCrLf & "Is the final diary row selected?"

    ans = MsgBox(prompt, vbYesNoCancel)

    Select Case ans
        Case vbNo
            d.Rows(r + 1).Delete
        Case vbCancel
            Exit Sub
    End Select
Loop

Range("Num_Diaries") = r - 1

Create_Assign_form.ca_validate = "Validated"
DoEvents

' *
' * Delete and then re-create aggr_activ, day_data and proof_sheets
' *

delete_worksheet (aStr)
delete_worksheet (dayStr)
delete_worksheet (proofStr)

Worksheets.Add before:=Worksheets(ofStr)
Set proof = ActiveSheet
proof.name = proofStr

Worksheets.Add before:=Worksheets(ofStr)
Set a = ActiveSheet
a.name = aStr

```

```

Worksheets.Add before:=Worksheets(ofStr)
Set day = ActiveSheet
day.name = dayStr

Create_Assign_form.ca_delete = "Deleted"
DoEvents

' *
' * Set up the header rows in the aggr_activ and day_data sheets
' *

a.Cells(1, ag_date_col) = "DATE"
a.Cells(1, ag_contr_col) = "CONTRACTOR"
a.Cells(1, ag_eqnum_col) = "EQUIP_NUM"
a.Cells(1, ag_eqdsc_col) = "EQUIP_DESC"
a.Cells(1, ag_item_col) = "PAY_ITEM"
a.Cells(1, ag_hr_col) = "HRS"
a.Cells(1, ag_note_col) = "NOTES"
a.Cells(1, ag_dateint_col) = "TIME BIN"
a.Cells(1, ag_concatname_col) = "CONCAT NAME"
a.Cells(1, ag_46x_col) = "46.X"
a.Cells(1, ag_de_notes_col) = "DE NOTES"

a.Columns(ag_date_col).NumberFormat = "m/d/yyyy"
a.Columns(ag_date_col).ColumnWidth = 10

day.Cells(1, day_date_col) = "DATE"
day.Cells(1, day_contractor_col) = "CONTRACTOR"
day.Cells(1, day_tot_equip_col) = "TOT_EQUIP"
day.Cells(1, day_tot_equip_hr_col) = "TOT_EQUIP_HR"
day.Cells(1, day_start_shift_col) = "START_SHIFT"
day.Cells(1, day_stop_shift_col) = "STOP_SHIFT"
day.Cells(1, day_subcontr_col) = "SUBCONTR"
day.Cells(1, day_notes_col) = "DE NOTES"

day.Columns(day_date_col).NumberFormat = "m/d/yyyy"
day.Columns(day_date_col).ColumnWidth = 10

proof.Cells(1, diary_date_col) = "Day"
proof.Cells(1, diary_46X_col) = "46.X"
proof.Cells(1, diary_contractor_col) = "Contractor"
proof.Cells(1, diary_equipnum_col) = "Equipnum"
proof.Cells(1, diary_nummen_col) = "# Men"
proof.Cells(1, diary_equipdesc_col) = "Description"
proof.Cells(1, diary_equipdesc_col + 1) = "Bid Items Matrix"

proof.Cells(1, pf_endcol + 1) = "NOTES"
proof.Cells(1, pf_endcol + 2) = "START_SHIFT"
proof.Cells(1, pf_endcol + 3) = "STOP_SHIFT"
proof.Cells(1, pf_endcol + 4) = "SUBCONTR"
proof.Cells(1, pf_endcol + 5) = "DE NOTES"

proof.Columns(diary_date_col).NumberFormat = "m/d/yyyy"
proof.Columns(diary_date_col).ColumnWidth = 10
proof.Columns(diary_equipdesc_col).ColumnWidth = 24
proof.rows(1).Font.Bold = True

Create_Assign_form.ca_create = "Created"
DoEvents

' *

```

```

'* Start the assignment sheet algorithm
'*

    Dim DR As Integer          ' The row and column incrementors for various
sheets
    Dim DC As Integer
    Dim AR As Integer
    Dim DAYR As Integer
    Dim PSR As Integer
    Dim PSC As Integer
    Dim PSDay As Integer
    Dim man_cnt As Integer
    Dim numdiaries As Integer
    Dim num_equip As Integer          ' # men (multiple equipment) not
considered

    Dim cur_contr As String          ' Temp strings for data read from
diaries
    Dim cur_equip As String
    Dim cur_hr As Single
    Dim cur_men As Integer
    Dim cur_day As String
    Dim cur_descrip As String
    Dim cur_notes As String
    Dim cur_de_notes As String
    Dim cur_46x As String

    Dim ErrorString As String          ' Variables needed for the input
box
    Dim result As Variant

    Dim cnt_equip As Integer          ' equipment and hours counters per
day (# men taken into account)
    Dim cnt_hr As Single

    Dim cur_day_contr As String

    DR = 2
    AR = 2
    DAYR = 2
    PSR = 2

    numdiaries = Range("Num_diaries") + 1

    a.Activate

    Do While DR <= numdiaries

        ' This inner loop fills in an entry in the 'days data' spreadsheet if
there is a
        ' anything in the first column of the diary spreadsheet for each row(a
date line)
        ' This loop also fills in the day data for the proof sheet

        If Not IsEmpty(d.Cells(DR, 1)) Then

            day.Cells(DAYR, day_date_col) = d.Cells(DR, 1)          ' cur_day
            cur_day = day.Cells(DAYR, day_date_col)
            cur_46x = d.Cells(DR, 2)
            day.Cells(DAYR, day_contractor_col) = d.Cells(DR, 3)          '
cur_day_contr

```

```

        day.Cells(DAYR, day_start_shift_col) = d.Cells(DR, endCol + 1) '
cur_day_stop
        day.Cells(DAYR, day_stop_shift_col) = d.Cells(DR, endCol + 2) '
cur_day_subcontr
        day.Cells(DAYR, day_subcontr_col) = d.Cells(DR, endCol + 3) '
cur_day_notes
        day.Cells(DAYR, day_notes_col) = d.Cells(DR, endCol + 4) '
data entry notes

        proof.Cells(PSR, diary_date_col) = cur_day
        proof.Cells(PSR, diary_46X_col) = cur_46x
        proof.Cells(PSR, diary_contractor_col) = d.Cells(DR,
diary_contractor_col)

        proof.Cells(PSR, pf_endcol + 1) = d.Cells(DR, endCol) ' Notes
        proof.Cells(PSR, pf_endcol + 2) = d.Cells(DR, endCol + 1) ' Start
Shift
        proof.Cells(PSR, pf_endcol + 3) = d.Cells(DR, endCol + 2) ' Stop
Shift
        proof.Cells(PSR, pf_endcol + 4) = d.Cells(DR, endCol + 3) '
Subcontr
        proof.Cells(PSR, pf_endcol + 5) = d.Cells(DR, endCol + 4) ' DE
Notes

        proof.rows(PSR).Font.Bold = True

        '* Reset the bid items array
        Workbidarray = BidArray
        num_equip = 0

        cnt_equip = 0
        cnt_hr = 0

        DAYR = DAYR + 1
        PSDay = PSR ' for filling in the proof matrix later
        PSR = PSR + 1

        'Temp_Num_Diaries = DAYR - 1

Else
    '*
    '* The Else loop runs if there is no data in the first column for
a row, this would
    '* indicate an equipment line
    '*

    cur_contr = d.Cells(DR, 3) 'cur_contr
    cur_equip = d.Cells(DR, 4) 'cur_equip

    num_equip = num_equip + 1
    ReDim Preserve Workbidarray(1 To NumBid, 1 To num_equip + 2)

    '*
    '* Deal with the cur_men column. Assume it refers to the number of
pieces
    '* of that piece of equipment that are used. Set negative values
to zero,
    '* empty values to 1, and invalid values to 1
    '*

    cur_men = 1

```

```

On Error GoTo Invalidnum
cur_men = d.Cells(DR, 5)          'cur_men
On Error GoTo 0

If cur_men = 0 Then
    cur_men = 1
End If

' * Load common variables for this equipment instance

cur_descrip = d.Cells(DR, 6)      'cur_descrip
cur_notes = d.Cells(DR, endCol)
cur_de_notes = d.Cells(DR, endCol + 4)

' *
' * Add a proof sheet entry for the first instance of equipment
' *

proof.Cells(PSR, diary_contractor_col) = _
    d.Cells(DR, diary_contractor_col) ' Contractor
proof.Cells(PSR, diary equipnum_col) = _
    d.Cells(DR, diary equipnum_col) ' Equipnum
proof.Cells(PSR, diary_nummen_col) = _
    d.Cells(DR, diary_nummen_col) ' Num men
proof.Cells(PSR, diary equipdesc_col) = _
    d.Cells(DR, diary equipdesc_col) ' Equip Desc
proof.Cells(PSR, pf_endcol + 1) = _
    d.Cells(DR, endCol) ' Notes
proof.Cells(PSR, pf_endcol + 5) = _
    d.Cells(DR, endCol) ' DE Notes

PSR = PSR + 1

' *
' * The equipment entry loop repeats for equipment with num_men > 1
' *

man_cnt = 0

Do While man_cnt < cur_men

    DC = line_item_start_column      ' Start in the line item
section after the equip data

    cnt_equip = cnt_equip + 1

    Do While DC < endCol

        ' * This loop progresses through each line item for a row

        If Not IsEmpty(d.Cells(DR, DC)) Then

            ' * If the line item is not empty, the following is
inserted

            a.Cells(AR, ag_date_col) = cur_day
            a.Cells(AR, ag_contr_col) = d.Cells(DR,
diary_contractor_col)
            a.Cells(AR, ag_eqnum_col) = cur_equip
            a.Cells(AR, ag_eqnum_col).NumberFormat = "@"
            a.Cells(AR, ag_eqdsc_col) = cur_descrip
            a.Cells(AR, ag_item_col) = d.Cells(1, DC) ' Copy from
the first row (line item)

```

```

a.Cells(AR, ag_item_col).NumberFormat = "@"

RetryHour:
On Error GoTo InvalidItem
cur_hr = d.Cells(DR, DC) ' Copy from the place in
the matrix

On Error GoTo 0

a.Cells(AR, ag_hr_col) = cur_hr
a.Cells(AR, ag_hr_col).NumberFormat = "0.0"
a.Cells(AR, ag_note_col) = cur_notes
a.Cells(AR, ag_concatname_col) = cur_contr & " : " & _
                                cur_equip & " : " & _
                                cur_descrip & " : " & _
                                cur_notes
' The above concatenates the three equipment identifier
strings

a.Cells(AR, ag_46x_col) = cur_46x
a.Cells(AR, ag_de_notes_col) = d.Cells(DR, endCol + 4)

cnt_hr = cnt_hr + cur_hr

Workbidarray(DC - line_item_start_column + 1, 2) = 1
Workbidarray(DC - line_item_start_column + 1, num_equip
+ 2) = _

a.Cells(AR, ag_hr_col)

AR = AR + 1

End If

DC = DC + 1
Loop

man_cnt = man_cnt + 1
Loop

End If

'* Update incrementors and form counter

Create_Assign_form.ca_aggr_counter = DR & " / " & numdiaries
DoEvents

DR = DR + 1

If Not IsEmpty(d.Cells(DR, 1)) Then
    day.Cells(DAYR - 1, day_tot_equip_col) = cnt_equip
    day.Cells(DAYR - 1, day_tot_equip_hr_col) = cnt_hr

    '*
    '* Fill in the proof sheet matrix for this day
    '*

PSC = 0

For c = 1 To NumBid
    If Workbidarray(c, 2) = 1 Then
        proof.Cells(PSDay, PSC + pf_bidcol) = Workbidarray(c, 1)

        For r = 1 To num_equip
            proof.Cells(PSDay + r, PSC + pf_bidcol) = _

```

```

        Workbidarray(c, r + 2)

    Next r

    PSC = PSC + 1

End If
Next c

End If

Loop

' *
' * Perform the above function for the final day
' *

day.Cells(DAYR - 1, day_tot_equip_col) = cnt_equip
day.Cells(DAYR - 1, day_tot_equip_hr_col) = cnt_hr

PSC = 0

For c = 1 To NumBid
    If Workbidarray(c, 2) = 1 Then
        proof.Cells(PSDay, PSC + pf_bidcol) = Workbidarray(c, 1)

        For r = 1 To num_equip
            proof.Cells(PSDay + r, PSC + pf_bidcol) = _
                Workbidarray(c, r + 2)

        Next r

        PSC = PSC + 1

    End If
Next c

' *
' * Create a name label for the entire aggregate activity table
' *

Dim Aggr_str As String
Dim drString As String
Dim date_col As String
Dim aggr_total As String

Aggr_str = Range(aStr & "!" & "$A$1").CurrentRegion.Address
Aggr_str = "=" & aStr & "!" & Aggr_str

Names.Add name:="Aggr_Data", RefersTo:=Aggr_str

drString = "=" & dayStr & "!" & day.Cells(2, 1).Address & ":" & _
    day.Range("A1").End(xlDown).Address

Names.Add name:="dayrange", RefersTo:=drString

' *
' * Create an address string to find the first date using a
' * worksheet function
' *

date_col = aStr & "!" & a.Columns("A").Address
Range("Firstdate") = WorksheetFunction.Min(Range(date_col))

```

```

Range("Lastdate") = WorksheetFunction.Max(Range(date_col))
Range("Length") = Range("Lastdate") - Range("Firstdate")
Range("BinInc") = Range("Length") / 20

aggr_total = Range("Aggr_Data").rows.Count
Range("aggr_total") = aggr_total

' *
' * Insert the date increment labels
' *

Insert_Dates

' *
' * Time the sub, enable the OK button on the form and return control
' *

Range("Assign_End") = Time
Range("Assign_Time") = Range("Assign_End") - Range("Assign_Start")
Range("Assign_date") = Date

Create_Assign_form.ca_lastrun_date.Caption = _
    FormatDateTime(Range("Assign_date"))
Create_Assign_form.ca_lastrun_time.Caption = _
    FormatDateTime(Range("Assign_end"))

DoEvents

' *
' * Create the equipment assignment sheet
' *

Update_AE

Create_Assign_form.ca_ae_counter = "Created"

DoEvents

' *
' * Create the phase assignment sheet
' *

Dim ItemStr As String

ItemStr = piStr & "!" & Range("PIStart").Address _
& ":" & Range("PIStart").End(xlDown).Address

Names.Add name:="ITEMS", RefersTo:="=" & ItemStr

Update_AP

Create_Assign_form.ca_ap_counter = "Created"

Create_Assign_form.ca_ok.Enabled = True

DoEvents

' *
' * Display the end-of-routine instructions
' *

Dim endmsg As String

```



```

    endmsg = "The equipment and phase assignment sheets have now been created"
& _
    vbCrLf & vbCrLf & _
    "In the "Assign_Equip"" sheet, each instance of equipment use " & vbCrLf & _
    "can be assigned to Caltrans and NONROAD codes" & _
    vbCrLf & vbCrLf & _
    "In the "Assign_Phase"" sheet, each instance of work assigned to " &
vbCrLf & _
    "a pay item can be assigned to a project phase." & _
    vbCrLf & vbCrLf & _
    "In addition, the "proof_sheets"" sheet can be used to help " & vbCrLf & _
    "error-check the hard copy diaries" & _
    vbCrLf & vbCrLf & _
    "After the assignment sheets have been completed, output can be " & vbCrLf
& _
    "created by using the "Create Database Output" and " & vbCrLf & _
    ""Create Tabular Output"" menu items."

```

```

MsgBox endmsg

```

```

DoEvents

```

```

Exit Sub

```

```

' *
' * This error handler is called when there is a non-integer value
' * in the numMen column
' *

```

```

Invalidnum:

```

```

    cur_men = 1

```

```

    Resume Next

```

```

' *
' * This error handler is called when there is a non-numerical value
' * listed as the hours
' *

```

```

InvalidItem:

```

```

d.Activate
d.Cells(DR, DC).Select

```

```

ErrorString = "Invalid Hours Value: " & d.Cells(DR, DC) & vbCrLf & _
    "On Date: " & cur_day & vbCrLf & _
    "Equipment Description: " & cur_descrip & vbCrLf & _
    "Pay Item: " & d.Cells(1, DC) & vbCrLf

```

```

ErrorString = ErrorString & vbCrLf & "Please enter a numerical value"

```

```

result = InputBox(ErrorString, "Invalid Value", 0)

```

```

If result = "" Then
    Unload Create_Assign_form
    Exit Sub
End If

```

```

d.Cells(DR, DC) = result

```

```

Resume RetryHour

```

```

'45171
End Sub

'/
'/ Insert the strings that indicate which 5% block of the project the activity
'/ Is used for.
'/

Sub Insert_Dates()

Set a = Worksheets(aStr)

Dim Startpos As Range
Dim Counter As Range

Dim date_read As Date
Dim date_comp As Date

Set Startpos = Range("FIRSTDATE")

Dim aggr_total As Integer

Dim ti As Integer           ' time bin incrementor
Dim AR As Integer           ' Row counter in aggregate sheet

AR = 2
ti = 1

aggr_total = Range("aggr_total")

Do While Not IsEmpty(a.Cells(AR, ag_date_col))

    ' Enter the beginning of the 0% block for the first day

    If Startpos = a.Cells(AR, ag_date_col) Then
        a.Cells(AR, ag_dateint_col) = Startpos.Offset(0, -1)
    End If

    ' Scroll through 5% blocks until the right one is found.

    For ti = 0 To 19
        If (Startpos.Offset(ti, 0)) <= a.Cells(AR, ag_date_col) Then
            a.Cells(AR, ag_dateint_col) = Startpos.Offset(ti, -1)
        End If
    Next ti

    ' Enter the beginning of the 95% block for the last day

    If a.Cells(AR, ag_dateint_col) = Startpos.Offset(20, -1) Then
        a.Cells(AR, ag_dateint_col) = Startpos.Offset(19, -1)
    End If

    a.Cells(AR, ag_dateint_col).NumberFormat = "@"

    AR = AR + 1

    Create_Assign_form.ca_date_counter.Caption = (AR - 1) & " / " & aggr_total
    DoEvents

Loop

```

```

End Sub

' /
' /  Update_AE assembles the equipment assignment worksheet
' /

Sub Update_AE()

    Dim numRows As Integer
    Dim nameStr As String

    Dim TableStr As String
    Dim UserStr1 As String
    Dim UserStr2 As String

    Dim result As Boolean
    delete_worksheet (aeStr)
    result = Load_Sheet_Template(aeStr, proofStr)

    Set AE = Worksheets(aeStr)
    AE.Activate
    AE.Cells(1, 1).Select

    Dim insertPt As Range    ' refer to range labels on the sheet
    Dim startPt As Range

    Set insertPt = Range("AEPIVINSERT")
    Set startPt = Range("AEPIVSTART")

    '*
    '*  Set up the pivot table
    '*

    Dim prevalerts As Integer

    prevalerts = Application.DisplayAlerts
    Application.DisplayAlerts = False

    On Error GoTo ExitSub

    ActiveWorkbook.PivotCaches.Add(SourceType:=xlDatabase, SourceData:= _
        "aggr_data").CreatePivotTable TableDestination:= _
        Range("AEPIVINSERT").name.RefersToR1C1, TableName:="AEPT", _
        DefaultVersion:=xlPivotTableVersion10

    On Error GoTo 0

    Application.DisplayAlerts = prevalerts

    Range("A9").Select
    With ActiveSheet.PivotTables("AEPT").PivotFields("CONCAT NAME")
        .Orientation = xlRowField
        .Position = 1
    End With

    With ActiveSheet.PivotTables("AEPT").PivotFields("CONCAT NAME")
        .Orientation = xlDataField
        .Position = 1
    End With

    ActiveSheet.PivotTables("AEPT").ColumnGrand = False

```

```

Dim PT As PivotTable
Set PT = ActiveSheet.PivotTables("AEPT")

numrows = PT.RowRange.rows.Count - 1

AE.Cells(1, 1).Activate

' *
' * Set up some useful names
' *

TableStr = aeStr & "!" & startPt.Resize(numrows, ae_num_cols).Address

UserStr1 = aeStr & "!" & startPt.Offset(0, ae_ctCatCode_col - 1). _
    Resize(numrows, 3).Address
UserStr2 = aeStr & "!" & startPt.Offset(0, ae_equipassign_col - 1). _
    Resize(numrows, 1).Address

Names.Add name:="AETableRange", RefersTo:="=" & TableStr
Names.Add name:="AEUserRange1", RefersTo:="=" & UserStr1
Names.Add name:="AEUserRange2", RefersTo:="=" & UserStr2

' *
' * Format the page
' *

FormatAE (numrows)

' *
' * Set the validation for the user input columns
' *

startPt.Offset(0, ae_equipassign_col - 1).Resize(numrows, 1).Validation _
    .Add Type:=xlValidateList, Operator:=xlBetween, Formula1:="=Equiptypes"

Exit Sub

ExitSub:

MsgBox "Error loading equipment assignment PivotTable", vbCritical

Application.DisplayAlerts = prealerts

End Sub

Sub Update_AP()

    Dim numrows As Integer
    Dim nameStr As String

    Dim TableStr As String
    Dim UserStr1 As String
    Dim UserStr2 As String

    '*** TEMPORARY LINES
    Dim result As Boolean
    delete_worksheet (apStr)
    result = Load_Sheet_Template(apStr, aeStr)

    Set AP = Worksheets(apStr)
    AP.Activate
    AP.Cells(1, 1).Select

```

```

Dim insertPt As Range    ' refer to range labels on the sheet
Dim startPt As Range

Set insertPt = Range("APPIVINSERT")
Set startPt = Range("APPIVSTART")

' *
' * Set up the pivot table
' *

Dim prevalerts As Integer

prevalerts = Application.DisplayAlerts
Application.DisplayAlerts = False

On Error GoTo ExitSub

ActiveWorkbook.PivotCaches.Add(SourceType:=xlDatabase, SourceData:= _
    "=aggr_data").CreatePivotTable TableDestination:= _
    Range("APPIVINSERT").name.RefersToR1C1, TableName:="APPT", _
    DefaultVersion:=xlPivotTableVersion10

On Error GoTo 0

Application.DisplayAlerts = prevalerts

Range("A9").Select
With ActiveSheet.PivotTables("APPT").PivotFields("PAY_ITEM")
    .Orientation = xlRowField
    .Position = 1
End With

With ActiveSheet.PivotTables("APPT").PivotFields("PAY_ITEM")
    .Orientation = xlDataField
    .Position = 1
End With

ActiveSheet.PivotTables("APPT").ColumnGrand = False

Dim PT As PivotTable
Set PT = ActiveSheet.PivotTables("APPT")

numrows = PT.RowRange.rows.Count - 1

AP.Cells(1, 1).Activate

' *
' * Set up some useful name definitions
' *

TableStr = apStr & "!" & startPt.Resize(numrows,
ap_phaseassign_col).Address

UserStr1 = apStr & "!" & startPt.Offset(0, ap_itemassign_col - 1). _
    Resize(numrows, 1).Address
UserStr2 = apStr & "!" & startPt.Offset(0, ap_phaseassign_col - 1). _
    Resize(numrows, 1).Address

Names.Add name:="APTableRange", RefersTo:="=" & TableStr
Names.Add name:="APUserRange1", RefersTo:="=" & UserStr1
Names.Add name:="APUserRange2", RefersTo:="=" & UserStr2

' *

```

```

'* Format the pivot table
'*

FormatAP (numrows)

'*
'* Set the validation for the user input columns
'*

startPt.Offset(0, ap_itemassign_col - 1).Resize(numrows, 1).Validation _
    .Add Type:=xlValidateList, Operator:=xlBetween, Formula1:="=Items"

startPt.Offset(0, ap_phaseassign_col - 1).Resize(numrows, 1).Validation _
    .Add Type:=xlValidateList, Operator:=xlBetween, Formula1:="=Phases"

'*
'* Insert the Vlookup functions
'*

Dim ItemAreaStr As String '* set a string for the item sheet cells
Dim ccell As String
Dim i As Integer

Dim CTStr As String
Dim DescStr As String
Dim REStr As String

ItemAreaStr = Range("Items").Resize(Range("items").rows.Count, 7).Address

ItemAreaStr = piStr & "!" & ItemAreaStr

For i = 0 To numrows - 1

    ccell = startPt.Offset(i, ap_itemassign_col - 1).Address

    CTStr = "VLOOKUP(" & ccell & "," & ItemAreaStr & ",2)"

    startPt.Offset(i, ap_ctcode_col - 1).Formula = _
        "=IF(ISERROR(" & CTStr & "),""", " & CTStr & ")"

    DescStr = "VLOOKUP(" & ccell & "," & ItemAreaStr & ",3)"

    startPt.Offset(i, ap_itemdesc_col - 1).Formula = _
        "=IF(ISERROR(" & DescStr & "),""", " & DescStr & ")"

    REStr = "VLOOKUP(" & ccell & "," & ItemAreaStr & ",7)"

    startPt.Offset(i, ap_REcat_col - 1).Formula = _
        "=IF(ISERROR(" & REStr & "),""", " & REStr & ")"

Next i

Exit Sub

ExitSub:

MsgBox "Error loading phase assignment PivotTable", vbCritical

Application.DisplayAlerts = prevalerts

End Sub

```

```

'/
'/ The sub used to launch the counter screen for output DB which then submits
control
'/ to the actual sub.
'/

Sub Output_DB_Start()

    Output_DB_Form.Show

End Sub

'/
'/ Output the database style sheet that links each instance of equipment use
to an
'/ assigned phase and equipment.
'/

Sub Output_DB()

    '*
    '* Set the timing
    '*

    Range("ODB_Start") = Time

    '*
    '* Check if a project file is active
    '*

    If Not IsProjectActive Then
        MsgBox "This procedure must be run from a project-module file"
        Exit Sub
    End If

    '*
    '* Update the definitions and define variables
    '*

    Load_List_Arrays

    Set AE = Worksheets(aeStr)
    Set AP = Worksheets(apStr)
    Set a = Worksheets(aStr)

    delete_worksheet (odbstr)

    If (Add_Blank_Sheet(odbstr, piStr) = False) Then
        Exit Sub
    End If

    Set odb = Worksheets(odbstr)

    odb.Activate

    Dim i As Integer
    Dim o As Integer
    Dim p As Integer
    Dim aggr_total As Integer

    Dim eststring As String
    Dim pstring As String
    Dim Lookup_Val As Variant

```

```

Dim OStart_Str As String

estring = aeStr & "!" & Range("AETableRange").Address
pstring = apStr & "!" & Range("APTableRange").Address

' *
' * Label the header of the output sheet
' *

odb.Cells(1, o_projnum_col) = "PROJNUM"
odb.Cells(1, o_projtype_col) = "PROJTYPE"
odb.Cells(1, o_dateint_col) = "DATE_INT"
odb.Cells(1, o_equipcat_col) = "EQUIP_CAT"
odb.Cells(1, o_scccode_col) = "NONROAD_SCC"
odb.Cells(1, o_phase_col) = "PHASE"
odb.Cells(1, o_hrs_col) = "HRS"
odb.Cells(1, o_date_col) = "DATE"
odb.Cells(1, o_equipdesc_col) = "EQUIP_DESC"
odb.Cells(1, o_equipCTcat_col) = "CT_EQUIP_CAT"
odb.Cells(1, o_equipCTsubcat_col) = "CT_EQUIP_SUBCAT"
odb.Cells(1, o_equipCTmodel_col) = "CT_EQUIP_MODEL"
odb.Cells(1, o_biditem_col) = "PAY_ITEM"
odb.Cells(1, o_ctcode_col) = "CT_ITEM_CODE"
odb.Cells(1, o_itemname_col) = "ITEM_NAME"
odb.Cells(1, o_notes_col) = "REMARKS"
odb.Cells(1, o_46x_col) = "46.X"
odb.Cells(1, o_DEnotes_col) = "DE_NOTES"
odb.Cells(1, o_awardamount_col) = "AWARD_AMOUNT"
odb.Cells(1, o_lengthdays_col) = "LENGTH_DAYS"
odb.Cells(1, o_originaldays_col) = "ORIG_WORK_DAYS"

odb.Columns(o_date_col).ColumnWidth = 10

' *
' * Loop through aggr_activ, copy the static data and match up equip
' * and phase assignments
' *

i = 2 ' the first data row in each sheet
o = 2

aggr_total = Range("aggr_total")

Do While Not IsEmpty(a.Cells(i, 1))

' *
' * Copy over the static data from aggr_activ and the definitions
' *

odb.Cells(o, o_projnum_col) = Range("Projectnum")
odb.Cells(o, o_projtype_col) = Range("Category")
a.Cells(i, ag_dateint_col).Copy odb.Cells(o, o_dateint_col)
a.Cells(i, ag_hr_col).Copy odb.Cells(o, o_hrs_col)
a.Cells(i, ag_date_col).Copy odb.Cells(o, o_date_col)
a.Cells(i, ag_concatname_col).Copy odb.Cells(o, o_equipdesc_col)
a.Cells(i, ag_item_col).Copy odb.Cells(o, o_biditem_col)
a.Cells(i, ag_note_col).Copy odb.Cells(o, o_notes_col)
a.Cells(i, ag_46x_col).Copy odb.Cells(o, o_46x_col)
a.Cells(i, ag_de_notes_col).Copy odb.Cells(o, o_DEnotes_col)

odb.Cells(o, o_awardamount_col) = Range("Award_Amount")
odb.Cells(o, o_awardamount_col).NumberFormat = "$#,##0"
odb.Cells(o, o_lengthdays_col) = Range("Length")

```



```

odb.Cells(o, o_originaldays_col) = Range("Original_days")

' *
' * Use lookup functions to find the equipment assignment
' *

Lookup_Val = a.Cells(i, ag_concatname_col)

odb.Cells(o, o_equipcat_col) = WorksheetFunction.VLookup(Lookup_Val, _
    Range(estring), ae_equipassign_col)

odb.Cells(o, o_scccode_col) = SCCLookup(odb.Cells(o, o_equipcat_col))

odb.Cells(o, o_equipCTcat_col) = WorksheetFunction.VLookup(Lookup_Val,
-
    Range(estring), ae_ctCatCode_col)
odb.Cells(o, o_equipCTsubcat_col) =
WorksheetFunction.VLookup(Lookup_Val, _
    Range(estring), ae_ctSubCatCode_col)

odb.Cells(o, o_equipCTmodel_col).NumberFormat = "@"
odb.Cells(o, o_equipCTmodel_col) =
WorksheetFunction.VLookup(Lookup_Val, _
    Range(estring), ae_ctModelCode_col)

' *
' * Use lookup functions to find the phase assignment. For some reason
' * vlookup doesn't work. I think it has to do with the Pivottable
data
' * types.
' *

Lookup_Val = a.Cells(i, ag_item_col)

odb.Cells(o, o_ctcode_col) = WorksheetFunction.VLookup(Lookup_Val, _
    Range(pstring), ap_ctcode_col, False)
odb.Cells(o, o_itemname_col) = WorksheetFunction.VLookup(Lookup_Val, _
    Range(pstring), ap_itemdesc_col, False)
odb.Cells(o, o_phase_col) = WorksheetFunction.VLookup(Lookup_Val, _
    Range(pstring), ap_phaseassign_col, False)

' For p = 0 To (Range(pstring).rows.Count - 1)
' If Lookup_Val = Range("APBStart").Offset(p, 0) Then
'     odb.Cells(o, o_ctcode_col) = Range("APPivStart").Offset(p,
ap_ctcode_col - 1)
'     odb.Cells(o, o_itemname_col) = Range("APPivStart").Offset(p,
ap_itemdesc_col - 1)
'     odb.Cells(o, o_phase_col) = Range("APPivStart").Offset(p,
ap_phaseassign_col - 1)
' End If
' Next p

o = o + 1
i = i + 1

Output_DB_Form.ODB_Counter.Caption = (o - 1) & " / " & aggr_total
DoEvents
Loop

OStart_Str = "=" & odbstr & "!" & Range("A2").Address

Names.Add name:="ODBStart", RefersTo:=OStart_Str

```

```

Range("ODB_Date") = Date
Range("ODB_End") = Time
Range("ODB_Time") = Range("ODB_End") - Range("ODB_Start")

Output_DB_Form.ODB_Lastrun_date.Caption = FormatDateTime(Range("ODB_Date"))
Output_DB_Form.ODB_Lastrun_Time.Caption = FormatDateTime(Range("ODB_End"))
'   Output_DB_Form.ODB_Running_Time.Caption = Minute(Range("ODB_Time")) & ":"
& _
'           Second(Range("ODB_Time"))

Output_DB_Form.odb_ok.Enabled = True

End Sub

'/
'/ SCCLOOKUP Returns the NONROAD SCC code based on the text description of the
'/ equipment
'/

Function SCCLookup(Instring As String) As String

    Dim Etypes As Range
    Dim ReturnVal As String

    Set Etypes = Range("EquipTypes")

    Set Etypes = Etypes.Resize(Etypes.rows.Count, 2)

    On Error GoTo Nomatch

    ReturnVal = WorksheetFunction.VLookup(Instring, Etypes, 2, False)

    On Error GoTo 0

    SCCLookup = ReturnVal

    Exit Function

Nomatch:

    SCCLookup = ""

End Function

'/
'/ The sub used to launch the counter screen for output DB which then submits
control
'/ to the actual sub.
'/

Sub Output_Table_Start()

    Output_Table_Form.Show

End Sub

'/
'/ This routine outputs tabular output that summarizes the equipment activity
use
'/ by date interval. The sizes and number of tables depend on the number of
equipment
'/ and phase types.
'/

```

```

'/ Be aware though that these tables must be output to word documents later,
and too
'/ large of tables may cause trouble
'/

```

```

Sub Output_Table()

```

```

    DoEvents

```

```

    '*
    '* Start timing the procedure
    '*

```

```

    Range("OTT_Start") = Time

```

```

    '*
    '* Check if a project file is active
    '*

```

```

    If Not IsProjectActive Then
        MsgBox "This procedure must be run from a project-module file"
        Exit Sub
    End If

```

```

    '*
    '* Check if the activity database has been created (Output DB exists)
    '*

```

```

    If Not worksheet_exists(odbstr) Then
        MsgBox "Please generate the database output" & vbCrLf & _
            "before running this procedure"
        Exit Sub
    End If

```

```

    '*
    '* Load type arrays, and load template
    '*

```

```

    Load_List_Arrays

```

```

    delete_worksheet (otstr)

```

```

    If Not Load_Sheet_Template(otstr, odbstr) Then
        Exit Sub
    End If

```

```

    Set ot = Worksheets(otstr)
    ot.Activate

```

```

    On Error Resume Next
    Range("B1").Formula = "=ProjectNum"
    Range("G1").Formula = "=Category"
    On Error GoTo 0

```

```

    '*
    '* Set up the counter values
    '*

```

```

    Dim suffixstr As String
    Dim curOps As Integer

```

```

    suffixstr = " / " & (psize * esize * dsize)
    curOps = 0

```

```

' *
' *   Define important variables and starting points
' *

Dim pspacing As Integer
Dim pstart As Integer
Dim r As Integer
Dim p As Integer

pspacing = esize + 2 + 3 + 2
Range("OTableSpace") = pspacing

Dim OTS As Range
Set OTS = Range("TotalStart")

Dim otsstr As String

' *
' *   Set up the transfer strings to be used for sum_activity
' *

Set odb = Worksheets(odbstr)
Dim odblen As Integer

odblen = odb.Range("A1").CurrentRegion.Rows.Count - 1

datetrans = Range("ODBStart").Offset(0, o_dateint_col - 1).Resize(odblen,
1).Address
datetrans = "=Sum( ('" & odbstr & "!' & datetrans & "=""")

equiptrans = Range("ODBStart").Offset(0, o_equipcat_col - 1). _
Resize(odblen, 1).Address
equiptrans = """)*(('" & odbstr & "!' & equiptrans & "=""")

phasetrans = Range("ODBStart").Offset(0, o_phase_col - 1). _
Resize(odblen, 1).Address
phasetrans = """)*(('" & odbstr & "!' & phasetrans & "=""")

hrtrans = Range("ODBStart").Offset(0, o_hrs_col - 1). _
Resize(odblen, 1).Address
hrtrans = """)*(('" & odbstr & "!' & hrtrans & ")))"

Dim TStart As Range ' A reference point to fill in each matrix
Dim e As Integer
Dim d As Integer
Dim d10 As Integer
Dim c As Integer

' *
' *   Define the totals to be calculated
' *

Dim Nonroadnum As Integer
Dim Trucknum As Integer
Dim Othernum As Integer
Dim Curline As Integer
Dim SubT As Range
Dim idlephase As Boolean

Dim PhaseStart As Range
Set PhaseStart = Range("PHASECHART")
Set PhaseStart = PhaseStart.Resize(1, 1).Offset(2, 0)

```

```

For p = 1 To psize
    Set TStart = Range("OTStart").Offset(OTableSpace * (p - 1) + 2, 0)
    TStart.Offset(-2, 0) = parr(p, 1) & " (hours)"

    '* Determine if this phase is idle and should be left out of grand
totals
    If parr(p, 2) = 1 Then
        idlephase = False
    Else
        idlephase = True
    End If

    '*
    '* Fill in the date fields
    '*

    For d = 1 To d10size
        TStart.Offset(0, d) = d10arr(d, 1)

    Next d

    '*
    '* Do the NONROAD equipment first
    '*

    Nonroadnum = 0
    For e = 1 To esize

        '* Enter the equipment names

        If earr(e, 4) = 1 Then
            Nonroadnum = Nonroadnum + 1
            TStart.Offset(Nonroadnum, 0) = earr(e, 1)

            '* Cycle through the grid

            For d = 1 To d10size
                TStart.Offset(Nonroadnum, d) = _
                    Sum_activity(earr(e, 1), parr(p, 1), darr(2 * d - 1,
1)) + _
                    Sum_activity(earr(e, 1), parr(p, 1), darr(2 * d, 1))

                TStart.Offset(Nonroadnum, d).NumberFormat = "0"

                '* Add to the total chart

                If Not idlephase Then
                    OTS.Offset(Nonroadnum + 2, d) = OTS.Offset(Nonroadnum +
2, d) + _
                    TStart.Offset(Nonroadnum, d)
                    OTS.Offset(Nonroadnum + 2, d).NumberFormat = "0"
                End If

                curOps = curOps + 2
                Output_Table_Form.OT_Counter = curOps & suffixstr
                DoEvents

            Next d

            '* Sum each line

```

```

        Set SubT = TStart.Offset(Nonroadnum, 1).Resize(1, d10size)
        SubT.Select
        TStart.Offset(Nonroadnum, d10size + 1) =
WorksheetFunction.Sum(SubT)
        TStart.Offset(Nonroadnum, d10size + 1).NumberFormat = "0"

        If Not idlephase Then
            OTS.Offset(Nonroadnum + 2, d10size + 1) =
OTS.Offset(Nonroadnum + 2, d10size + 1) + _
            TStart.Offset(Nonroadnum, d10size + 1)
            OTS.Offset(Nonroadnum + 2, d10size + 1).NumberFormat = "0"
        End If

    End If

Next e

' *
' * Subtotal NONROAD
' *

For d = 1 To d10size + 1

    TStart.Offset(Nonroadnum + 1, d) = WorksheetFunction.Sum( _
        TStart.Offset(1, d).Resize(Nonroadnum, 1))
    TStart.Offset(Nonroadnum + 1, d).NumberFormat = "0"

    If Not idlephase Then
        OTS.Offset(Nonroadnum + 3, d) = OTS.Offset(Nonroadnum + 3, d) +
-
            TStart.Offset(Nonroadnum + 1, d)
        OTS.Offset(Nonroadnum + 3, d).NumberFormat = "0"
    End If

Next d

' *
' * Then do the trucks
' *

Trucknum = 0
Curline = Nonroadnum + 1

For e = 1 To esize

    ' * Enter the equipment names

    If earr(e, 6) = 1 Then
        Trucknum = Trucknum + 1
        Curline = Curline + 1
        TStart.Offset(Curline, 0) = earr(e, 1)

        ' * Cycle through the grid

        For d = 1 To d10size
            TStart.Offset(Curline, d) = _
                Sum_activity(earr(e, 1), parr(p, 1), darr(2 * d - 1,
1)) + _
                Sum_activity(earr(e, 1), parr(p, 1), darr(2 * d, 1))
            TStart.Offset(Curline, d).NumberFormat = "0"

            ' * Add to the total chart

```

```

        If Not idlephase Then
            OTS.Offset(Curline + 2, d) = OTS.Offset(Curline + 2, d)
+ _
            TStart.Offset(Curline, d)
            OTS.Offset(Curline + 2, d).NumberFormat = "0"
        End If

        curOps = curOps + 2
        Output_Table_Form.OT_Counter = curOps & suffixstr
        DoEvents

    Next d

    '* Sum each line

    Set SubT = TStart.Offset(Curline, 1).Resize(1, d10size)
    SubT.Select
    TStart.Offset(Curline, d10size + 1) =
WorksheetFunction.Sum(SubT)
    TStart.Offset(Curline, d10size + 1).NumberFormat = "0"

    If Not idlephase Then
        OTS.Offset(Curline + 2, d10size + 1) = OTS.Offset(Curline +
2, d10size + 1) + _
            TStart.Offset(Curline, d10size + 1)
        OTS.Offset(Curline + 2, d10size + 1).NumberFormat = "0"
    End If

End If

Next e

'*
'* Subtotal Trucks
'*

For d = 1 To d10size + 1

    TStart.Offset(Curline + 1, d) = WorksheetFunction.Sum( _
        TStart.Offset(Nonroadnum + 2, d).Resize(Trucknum, 1))
    TStart.Offset(Curline + 1, d).NumberFormat = "0"

    If Not idlephase Then
        OTS.Offset(Curline + 3, d) = OTS.Offset(Curline + 3, d) + _
            TStart.Offset(Curline + 1, d)
        OTS.Offset(Curline + 3, d).NumberFormat = "0"
    End If

Next d

'*
'* Grand total
'*

PhaseStart.Offset(p, 0) = parr(p, 1)

For d = 1 To d10size + 1

    TStart.Offset(Curline + 2, d) = TStart.Offset(Nonroadnum + 1, d) +
-
        TStart.Offset(Nonroadnum + Trucknum + 2, d)
    TStart.Offset(Curline + 2, d).NumberFormat = "0"

```

```

    If Not idlephase Then
        OTS.Offset(Curline + 4, d) = OTS.Offset(Curline + 4, d) + _
            TStart.Offset(Curline + 2, d)
        OTS.Offset(Curline + 4, d).NumberFormat = "0"
    End If

    '* Also copy to the phase chart

    PhaseStart.Offset(p, d) = TStart.Offset(Curline + 2, d)
Next d

'*
'* Fill in uncounted items
'*

Othernum = 0
Curline = Curline + 2

For e = 1 To esize

    '* Enter the equipment names

    If earr(e, 3) = 0 Then
        Othernum = Othernum + 1
        Curline = Curline + 1
        TStart.Offset(Curline, 0) = earr(e, 1)

        '* Cycle through the grid

        For d = 1 To d10size
            TStart.Offset(Curline, d) = _
                Sum_activity(earr(e, 1), parr(p, 1), darr(2 * d - 1,
1)) + _
                Sum_activity(earr(e, 1), parr(p, 1), darr(2 * d, 1))
            TStart.Offset(Curline, d).NumberFormat = "0"

            '* Add to the total chart

            If Not idlephase Then
                OTS.Offset(Curline + 2, d) = OTS.Offset(Curline + 2, d)
+ _
                TStart.Offset(Curline, d)
                OTS.Offset(Curline + 2, d).NumberFormat = "0"
            End If

            curOps = curOps + 2
            Output_Table_Form.OT_Counter = curOps & suffixstr
            DoEvents

        Next d

        '* Sum each line

        Set SubT = TStart.Offset(Curline, 1).Resize(1, d10size)
        SubT.Select
        TStart.Offset(Curline, d10size + 1) =
WorksheetFunction.Sum(SubT)
        TStart.Offset(Curline, d10size + 1).NumberFormat = "0"

        If Not idlephase Then
            OTS.Offset(Curline + 2, d10size + 1) = OTS.Offset(Curline +
2, d10size + 1) + _
            TStart.Offset(Curline, d10size + 1)

```



```

        OTS.Offset(Curline + 2, d10size + 1).NumberFormat = "0"
    End If

End If

Next e

Next p

' * Calculate the totals in the activity total chart (non-idle)

Dim temptotal As Single

For d = 1 To d10size + 1

    temptotal = 0

    For p = 1 To psize

        If parr(p, 2) = 1 Then
            temptotal = temptotal + PhaseStart.Offset(p, d)
        End If
    Next p

    PhaseStart.Offset(psize + 1, d) = temptotal

Next d

' *
' * Fill in the date interval table
' *

For d = 0 To d10size - 1
    Range("DSStart").Offset(0, d) = d10arr(d + 1, 1)
    If d < d10size - 1 Then
        Range("DSStart").Offset(1, d) = d10arr(d + 2, 1)
    Else
        Range("DSStart").Offset(1, d) = 1
    End If
    Range("DSStart").Offset(2, d) =
FormatDateTime(Range("Firstdate").Offset(2 * d, 0), vbShortDate)
    Range("DSStart").Offset(2, d).NumberFormat = "m/d/yy"

    Range("DSStart").Offset(3, d) =
FormatDateTime(Range("Firstdate").Offset((2 * d) + 2, 0), vbShortDate)
    Range("DSStart").Offset(3, d).NumberFormat = "m/d/yy"

Next d

' *
' * Timing, etc..
' *

OTS.Select

Range("OTT_End") = Time
Range("OTT_Time") = Range("OTT_End") - Range("OTT_Start")
Range("OT_Date") = Date

Output_Table_Form.OT_Lastrun_date.Caption =
FormatDateTime(Range("OT_Date"))
Output_Table_Form.OT_Lastrun_Time.Caption =
FormatDateTime(Range("OTT_End"))

```

```

DoEvents

Output_Table_Form.OT_ok.Enabled = True

End Sub

'/
'/ This function outputs the database table from OutputDB to either a Excel or
'/ tab-deliniated file, and allows for appending
'/
'/ mode: 0 = new, 1 = append
'/ outtype: 0 = excel sheet, 1 = tab deliniated
'/ returns 1 if there is a file open error, 0 otherwise
'/
'/ Make sure to name excel file .xls and tab files .txt
'/

Function OutputExcelDB(f As String, mode As Integer, outtype As Integer)

    Dim BeginRange As String
    Dim EndRange As String
    Dim tbl As Range
    Dim ns As Worksheet

    Dim mainwkb As Workbook
    Dim newwkb As Workbook

    Set mainwkb = ThisWorkbook

    Worksheets(odbstr).Activate

    'On Error GoTo OpenError

    If mode = 1 Then
        ' Append mode

        Set tbl = Range("ODBStart").CurrentRegion
        'tbl.Offset(1, 0).Resize(tbl.rows.Count - 1, tbl.Columns.Count).Copy

        On Error GoTo OpenError

        Set newwkb = Workbooks.Open(f)

        On Error GoTo 0

        Set ns = newwkb.ActiveSheet

        ns.Range("A1").End(xlDown).Offset(1, 0).Select

        tbl.Offset(1, 0).Resize(tbl.rows.Count - 1, tbl.Columns.Count).Copy
        ns.Paste

    Else
        ' New File mode
        Range("ODBStart").CurrentRegion.Copy

        On Error GoTo OpenError

        Set newwkb = Workbooks.Add

        On Error GoTo 0
    
```

```

        ActiveSheet.Paste

    End If

    newwkb.Activate

    If mode = 1 Then

        If outtype = 1 Then
            ' Tab delimited
            newwkb.Save
        Else
            ' excel sheet
            newwkb.Save
        End If

    Else
        If outtype = 1 Then
            ' Tab delimited
            newwkb.SaveAs Filename:=f, FileFormat:=xlText, CreateBackup:=False
        Else
            ' excel sheet
            newwkb.SaveAs Filename:=f, FileFormat:=xlNormal,
CreateBackup:=False
        End If
    End If

    mainwkb.Activate

    newwkb.Close SaveChanges:=False

    OutputExcelDB = 0    'Everything went as planned

    Exit Function

OpenError:
    ' return 1 if something goes wrong
    OutputExcelDB = 1

End Function

Sub Test()
    Dim result As Integer

    MsgBox OutputWordTable("Outtest.doc", 0)
End Sub

'/
'/ Output the table output to a word document
'/ If the document exists, then append the output
'/   mode: 0 = new, 1 = append
'/   returns 1 if there is a file open error, 0 otherwise
'/

Function OutputWordTable(Outfile As String, mode As Integer)

    Dim RangeStart As String
    Dim RangeEnd As String
    Dim CopyRange As String

    ' 1. Setup the internals of the word program.  Make references to the
program,
    ' document and selection

```

```

Dim wdapp As Word.Application
Dim wda As Word.Document
Dim wds As Word.Selection

Set wdapp = CreateObject("Word.Application")

With wdapp
    .Visible = True
    .WindowState = wdWindowStateMaximize
End With

' 2. Open a file with the assigned filename. Trigger the error handler if
' it doesn't work and create the file with the filename

Dim Filename As String
Filename = Outfile

Dim newfile As Boolean
newfile = False

Dim ans As String
Dim Msg As String

wdapp.ChangeFileOpenDirectory ThisWorkbook.Path

On Error GoTo OpenError

wdapp.Documents.Open Filename:=Filename

' 3. Scroll to the end of the document (or the beginning if this is a new
document)
' insert a page break and set the first page to landscape from that point
on.

Set wda = wdapp.ActiveDocument
Set wds = wdapp.Selection

On Error GoTo 0

If Not newfile Then
    wds.EndKey Unit:=wdStory

    ' landscape from here on out code
    wda.Range(start:=wds.start, End:=wds.start). _
        InsertBreak Type:=wdSectionBreakNextPage
    wds.start = wdapp.Selection.start + 1
'
'     wda.Range(start:=wds.start, End:=wda. _
'         Content.End).PageSetup.Orientation = wdOrientLandscape
End If

' If newfile Then
'     wdapp.ActiveDocument.Range(start:=wdapp.Selection.start,
End:=wdapp.ActiveDocument. _
'         Content.End).PageSetup.Orientation = wdOrientLandscape
' End If

' 4. Paste the first two charts

```

```

wds.Font.Bold = True
wds.Font.name = "Aerial"
wds.Font.size = 12
wds.TypeText Text:="PROJECT: " & Range("Projectnum") & vbTab & _
    UCase(Range("Category")) & vbTab & "PAGE 1/14"
wds.TypeParagraph
wds.TypeParagraph

Range(ofStr & "!" & "IDTABLE").Copy ' Copy the header table

wds.Range.PasteSpecial Placement:=wdInLine,
DataType:=wdPasteEnhancedMetafile

wds.EndKey Unit:=wdStory
wds.TypeParagraph
wds.TypeParagraph

Range(ofStr & "!" & "DICHART").Copy ' Copy the time headers

wds.Range.PasteSpecial Placement:=wdInLine,
DataType:=wdPasteEnhancedMetafile

wds.EndKey Unit:=wdStory
wds.TypeParagraph
wds.TypeParagraph

Range(ofStr & "!" & "PHASECHART").Copy ' Copy the phase summary

wds.Range.PasteSpecial Placement:=wdInLine,
DataType:=wdPasteEnhancedMetafile

wds.EndKey Unit:=wdStory
wds.TypeParagraph

wda.Range(start:=wds.start, End:=wds.start).InsertBreak
Type:=wdSectionBreakNextPage
wds.start = wdapp.Selection.start + 1

wds.TypeText Text:="PROJECT: " & Range("Projectnum") & vbTab & _
    UCase(Range("Category")) & vbTab & "PAGE 2/14"
wds.TypeParagraph
wds.TypeParagraph

Range(otstr & "!" & "TOTALCHART").Copy ' Copy the total chart

wds.Range.PasteSpecial Placement:=wdInLine,
DataType:=wdPasteEnhancedMetafile
wds.TypeParagraph

' 5. Copy the remaining 9 charts onto individual pages

wds.EndKey Unit:=wdStory

Dim p As Integer

For p = 1 To 12

    wda.Range(start:=wds.start, End:=wds.start). _
        InsertBreak Type:=wdSectionBreakNextPage
    wds.start = wdapp.Selection.start + 1

    wds.Font.Bold = True
    wds.Font.name = "Aerial"

```

```

wds.Font.size = 12
wds.TypeText Text:="PROJECT: " & Range("Projectnum") & vbTab & _
    UCase(Range("Category")) & vbTab & "PAGE " & (p + 2) & "/14"
wds.TypeParagraph

RangeStart = Range("OTStart").Offset((p - 1) * OTableSpace, 0).Address
RangeEnd = Range("OTStart").Offset((p - 1) * OTableSpace + OTableSpace
- 2, 11).Address
CopyRange = otstr & "!" & RangeStart & ":" & RangeEnd

Range(CopyRange).Copy

wds.Range.PasteSpecial Placement:=wdInLine,
DataType:=wdPasteEnhancedMetafile
wds.EndKey Unit:=wdStory
wds.TypeParagraph
wds.TypeParagraph

Next

' 6. Save file, close file, exit word, clean up memory (Maybe don't clean
up or
' make cleanup an option

wda.Close SaveChanges:=wdSaveChanges

wdapp.Quit

Set wdapp = Nothing          ' Optional Cleanup, figure out later
Set wda = Nothing
Set wds = Nothing

OutputWordTable = 0

Exit Function

OpenError:

If mode = 0 Then
    wdapp.Documents.Add
    wdapp.ActiveDocument.SaveAs Filename:=Filename
    newfile = True
    Resume Next
End If

OutputWordTable = 1

wdapp.Quit

Set wdapp = Nothing
Set wda = Nothing
Set wds = Nothing

End Function

Sub Export_Window()

    Export_Output.Show

End Sub

```

**Module 2**

' Display Utilities: These functions create boxes, color ranges, etc..

Option Explicit

' BoxRange and BoxRangeS surround a range of cells with a thick or thin box. A thick

' box can be specified by setting Thk = 1, and a thin box with Thk = 0

' The procedure should be called in the following manner:

'

' BoxRange A, Thk

'

' Where A is a range that has been assigned using the set command and Thk is the thickness

'

' BoxRangeS works the same as above, except creates the box from an address string

'

Sub BoxRange(ByRef a As Range, Thk As Integer)

    Dim Thickness As Integer

    If Thk = 1 Then

        Thickness = xlMedium

    Else

        Thickness = xlThin

    End If

    a.Borders(xlDiagonalDown).LineStyle = xlNone

    a.Borders(xlDiagonalUp).LineStyle = xlNone

    With a.Borders(xlEdgeLeft)

        .LineStyle = xlContinuous

        .Weight = Thickness

        .ColorIndex = xlAutomatic

    End With

    With a.Borders(xlEdgeTop)

        .LineStyle = xlContinuous

        .Weight = Thickness

        .ColorIndex = xlAutomatic

    End With

    With a.Borders(xlEdgeBottom)

        .LineStyle = xlContinuous

        .Weight = Thickness

        .ColorIndex = xlAutomatic

    End With

    With a.Borders(xlEdgeRight)

        .LineStyle = xlContinuous

        .Weight = Thickness

        .ColorIndex = xlAutomatic

    End With

    'a.Borders(xlInsideVertical).LineStyle = xlNone

    'a.Borders(xlInsideHorizontal).LineStyle = xlNone

End Sub

Sub BoxRangeS(ByRef a As String, Thk As Integer)

    BoxRange Range(a), Thk

End Sub

```

' ShadeRange and ShadeRangeS shade a range of cells with a color. The color is
' specified by setting the col variable. grey = 15, yellow = 36, clear =
xlNone
' The procedure should be called in the following manner:
'
' ShadeRange A, col
'
' Where A is a range that has been assigned using the set command and col is
the color
'
' ShadeRangeS works the same as above, except shades from an address string
' If xlNone is called then a solid color is not used
'

```

```

Sub shadeRange(ByRef a As Range, col As Integer)

```

```

    With a.Interior
        .ColorIndex = col
        .Pattern = xlSolid
    End With

    If col = xlNone Then
        a.Interior.Pattern = xlNone
    End If

```

```

End Sub

```

```

Sub ShadeRangeS(ByRef a As String, col As Integer)

```

```

    shadeRange Range(a), col

```

```

End Sub

```

```

'Sub DrawOutputBox(ByRef Startrange As Range)

```

```

'
'   ' Various counters
'   Dim r As Integer
'   Dim C As Integer
'   Dim e As Integer
'
'   ' The locations of the total rows for the different equipment categories
'   Dim nonroadRow As Integer
'   Dim otherRow As Integer
'   Dim nonopRow As Integer
'

```

```

'   e = 1
'   r = 1
'

```

```

'   '*
'   '* Print the NONROAD equipment defs first
'   '*
'

```

```

'   Do While e <= esize
'

```

```

'       If earr(e, 3) Then
'           Startrange.Offset(r + 1, 0) = earr(e, 1)
'           r = r + 1
'       End If
'       e = e + 1
'

```

```

'   Loop
'

```

```

'   Startrange.Offset(r + 1, 0) = "Total NONROAD Hours"

```



```

'
'   r = r + 1
'
'   '*
'   '*   Print the equipment in UCDEMM that is not in NONROAD
'   '*
'
'   e = 1
'
'   Do While e <= esize
'
'       If (earr(e, 3) = 0) And (earr(e, 2) = 1) Then
'           Startrange.Offset(r + 1, 0) = earr(e, 1)
'           r = r + 1
'       End If
'       e = e + 1
'
'   Loop
'
'   Startrange.Offset(r + 1, 0) = "Total Other Equipment Hours"
'
'   r = r + 1
'
'   '*
'   '*   Print nonoperated and unknown equipment
'   '*
'
'   e = 1
'
'   Do While e <= esize
'
'       If (earr(e, 2) = 0) Then
'           Startrange.Offset(r + 1, 0) = earr(e, 1)
'           r = r + 1
'       End If
'       e = e + 1
'
'   Loop
'
'   Startrange.Offset(r + 1, 0) = "Total Non-operated hours"
'
'   r = r + 1
'
'   Startrange.Offset(r + 1, 0) = "Grand total Operated"
'
'   Startrange.Activate
'
'End Sub

Sub Test()
    Dim result As Boolean
    Dim sendrange As Range

    If Not IsProjectActive() Then
        MsgBox "Activate project", vbCritical
        Exit Sub
    End If

    ActiveWorkbook.Worksheets("test").Activate

    Set sendrange = Range("A7")

    Load_List_Arrays

```

```

        DrawOutputBox sendrange
End Sub

'*
'* Draws the box style used for the output tables at Startrange with r
(interior) rows.
'* The box has sumrows summary rows, and sumcols summary cols at the end.
Special controls
'* the special effects
'*
'* Special:
'*      0: No effects
'*      1: Shading every three lines
'*      2: Vertical lines every two columns
'*      3: Shading and vertical lines
'*

Sub DrawOutputBox(ByRef Startrange As Range, nrows As Integer, ncols As
Integer, _
    sumrows As Integer, sumcols As Integer, special As Integer)

    Dim modrange As Range
    Dim c As Integer
    Dim r As Integer
    Dim d As Integer

    '* Draw vertical lines if requested

    If (special = 2) Or (special = 3) Then
        For c = 2 To ncols
            If (c Mod 2) = 0 Then
                BoxRange Startrange.Offset(1, c - 1).Resize(nrows + sumrows +
1, 2), 0
            End If
        Next c
    End If

    '* Draw the primary boxes

    BoxRange Startrange.Resize(nrows + 2 + sumrows, ncols + 1 + sumcols), 1
    BoxRange Startrange.Offset(2, 1).Resize(nrows + sumrows, ncols + sumcols),
1
    BoxRange Startrange.Offset(0, 1).Resize(nrows + 2 + sumrows, ncols), 1
    BoxRange Startrange.Offset(2, 0).Resize(nrows, ncols + 1 + sumcols), 1

    '* Draw shading

    If (special = 1) Or (special = 3) Then
        For r = 1 To nrows + 3
            If (r Mod 6) = 0 Then
                shadeRange Startrange.Offset(r - 6 + 2, 0). _
                    Resize(3, ncols + 1 + sumcols), 15
            End If
        Next r
    End If

    '* Fill in the date labels

    For d = 1 To dsize
        Startrange.Offset(1, d) = darr(d, 1)
    Next d

```

```

Startrange.Offset(1, 0) = "Equipment Category"
Startrange.Offset(1, 1).Resize(1, ncols).NumberFormat = "0%"

If sumcols > 0 Then
    Startrange.Offset(1, ncols + 1) = "TOTAL"
End If

'* Set up the merged column

Startrange.Offset(0, 1).Resize(1, 20).Merge
Startrange.Offset(0, 1) = "Date Interval"
Startrange.Offset(0, 1).HorizontalAlignment = xlCenter

End Sub

'/
'/ This procedure draws a box filled in with the equipment categories
'/

Sub DrawEquipBox(ByRef Startrange As Range)

    Dim r As Integer

    DrawOutputBox Startrange, esize, 20, 3, 1, 3

    For r = 1 To esize

        Startrange.Offset(r + 1, 0) = earr(r, 1)
        Startrange.Offset(r + 1, 0).HorizontalAlignment = xlLeft

    Next r

    Startrange.Offset(esize + 2, 0) = "Total NONROAD Equipment"
    Startrange.Offset(esize + 3, 0) = "Total Truck"
    Startrange.Offset(esize + 4, 0) = "Grand Total Operated"

End Sub

Sub textbox()

    Load_List_Arrays
    Worksheets(otstr).Activate

    Dim ts As Range
    Set ts = Range("TotalStart")

    DrawEquipBox ts.Offset(1, 0)

End Sub

Module 3

'Functional Utilities: File utilities, parsers, etc...

Option Explicit

Public Const rnStr As String = "Range_Names"
Dim rn As Worksheet

' Check if a file exists
Function FileExists(sFilePath As String) As Boolean

```

```

        If Len(Dir(sFilePath)) = 0 Then
            FileExists = False
        Else
            FileExists = True
        End If
    End Function

' If a cell is empty then return an empty string rather than an error
Function Notempty(istr As String) As String

    If IsEmpty(istr) Then
        Notempty = ""
    Else
        Notempty = istr
    End If

End Function

' /
' / Returns true if a worksheet with the string name wsstr exists, and false if
it
' / doesn't.
' /

Function worksheet_exists(wsstr As String) As Boolean

    Dim ws As Worksheet

    On Error GoTo notexist

    Set ws = Worksheets(wsstr)

    On Error GoTo 0

    worksheet_exists = True

Exit Function
notexist:

worksheet_exists = False

End Function

' Return the short filename
Function GetFileName(FullPath As Variant)
Dim StrFind As String
Dim icount As Integer

    Do Until Left(StrFind, 1) = "\"
        icount = icount + 1
        StrFind = Right(FullPath, icount)
        If icount = Len(FullPath) Then Exit Do
    Loop

    GetFileName = Right(StrFind, Len(StrFind) - 1)

End Function

' /
' / delete_worksheet:
' / Deletes a worksheet without calling an error message or asking for
verification

```

```

' /

Sub delete_worksheet(name As String)

    On Error Resume Next

    Application.DisplayAlerts = False
    Worksheets(name).Delete
    Application.DisplayAlerts = True

    On Error GoTo 0

End Sub

' / Function OpenOrFind:
' / The OpenOrFind function opens a system file such as the definitions file
that should be located
' / in the same directory as the add-in. If it is not, then a file dialog is
opened and the user is
' / prompted to find it. Only good for the .xls extension
' /
' / Return Values: 1 = the file has been opened.
' /                  0 = the user canceled the dialog box or there was another
error
' /

Function OpenOrFind(openname As String) As Boolean

    Dim wkbook As Workbook

    Dim Filename As Variant
    Dim Finfo As String
    Finfo = "Excel Files (*.xls),*.xls," & "All Files (*.*),*.*"

    ' *
    ' * Exit if this file is already open, and return 1
    ' *

    For Each wkbook In Workbooks
        If wkbook.name = openname Then
            wkbook.Activate
            OpenOrFind = 1
            Exit Function
        End If
    Next wkbook

    ' *
    ' * Change to the project add-in directory, attempt to open the file, and
trip the error handler
    ' * if there is a problem
    ' *

    ChDir ThisWorkbook.Path

    On Error GoTo OpenError

    Workbooks.Open openname

    On Error GoTo 0

    OpenOrFind = True

    Exit Function

```

```

    '*
    '* The error handler loads an open file dialog box to find the file.
False is returned if
    '* the user cancels the error handler.
    '*

OpenError:

    ' Show an error and bring up the file browser
    MsgBox " Error opening " & openname & ", please locate", vbCritical
    Filename = Application.GetOpenFilename(Finfo, 2, "Locate " & openname)

    ' exit if cancel is selected and return 0
    If Filename = False Then
        MsgBox openname & " not selected. Exiting procedure"
        OpenOrFind = False
        Exit Function
    End If

    ' re-loop if the filename still has not been selected
    If GetFileName(Filename) <> openname Then
        GoTo OpenError
    End If

    Resume

End Function

'/ Function IsProjectActive:
'/ This function returns 0 if the active file is not a project module file, and
1 if it is.
'/ It uses the fact that the text "ProgramVersion" is in cell A4 in the
"Definitions" sheet
'/ So do not mess around with that field
'/
'/ Possible future upgrade to determine if the version of the VBA code and the
spreadsheet template match
'/

Function IsProjectActive() As Boolean

    On Error GoTo ActiveError

    IsProjectActive = (ActiveWorkbook.Worksheets(defnStr).Cells(4, 1) =
"ProgramVersion")

    On Error GoTo 0

Exit Function

ActiveError:

IsProjectActive = 0

End Function

'/
'/ Load_List_Arrays loads the time, category, equipment and phase lists into
public dynamic arrays
'/

Sub Load_List_Arrays()

```

```

Dim r As Integer
Dim c As Integer

'* Find the size of the arrays

psize = Range("Phases").rows.Count
dsize = Range("DateLabels").rows.Count
dl0size = 10
esize = Range("EquipTypes").rows.Count
csize = Range("Categories").rows.Count

pvars = Range("Phases").CurrentRegion.Columns.Count
dvars = 1
dl0vars = 1
evars = Range("EquipTypes").CurrentRegion.Columns.Count
cvars = Range("Categories").CurrentRegion.Columns.Count

'* Resize the arrays

ReDim parr(1 To psize, 1 To pvars)
ReDim darr(1 To dsize, 1 To dvars)
ReDim dl0arr(1 To dl0size, 1 To dl0vars)
ReDim earr(1 To esize, 1 To evars)
ReDim carr(1 To csize, 1 To cvars)

'* Populate the arrays

For r = 1 To psize
    For c = 1 To pvars
        parr(r, c) = Range("Phases").rows(r).Columns(c)
    Next c
Next r

For r = 1 To dsize
    For c = 1 To dvars
        darr(r, c) = Range("DateLabels").rows(r).Columns(c)
    Next c
Next r

For r = 1 To dl0size
    For c = 1 To dl0vars
        dl0arr(r, c) = Range("DateLabels").rows((r * 2) - 1).Columns(c)
    Next c
Next r

For r = 1 To esize
    For c = 1 To evars
        earr(r, c) = Range("EquipTypes").rows(r).Columns(c)
    Next c
Next r

For r = 1 To csize
    For c = 1 To cvars
        carr(r, c) = Range("Categories").rows(r).Columns(c)
    Next c
Next r

End Sub

'*

```

```

'* This procedure loads the contents of the equipment codes page into a
dynamic array
'* A lot of memory is likely used, so it may be worth figuring out how to
clear it later
'*

Sub Load_ec_array()

    '*
    '* Open the definitions workbook and count the rows
    '*

    Dim DEF As Workbook
    Dim proj As Workbook

    Dim CT As Worksheet

    Set proj = ActiveWorkbook

    If OpenOrFind(defFile) = False Then
        Exit Sub
    End If

    Set DEF = ActiveWorkbook

    Set CT = DEF.Worksheets("Equip_Codes")
    CT.Activate

    ecsizesize = Range("A1").CurrentRegion.rows.Count - 1

    proj.Activate

    '*
    '* Resize the arrays
    '*

    ReDim ecarr(1 To ecsizesize, 1 To 7)

    '*
    '* Fill the array
    '*

    Dim i As Integer
    Dim j As Integer

    For i = 1 To ecsizesize - 1
        For j = 1 To 7
            ecarr(i, j) = CT.Range("A1").Offset(i, j - 1)
        Next j
    Next i

    DEF.Close

End Sub

'/
'/ This function determines if a string is included in the array of phase names
'/ Be sure that Load_List_Arrays() has been run first
'/

```



```

Function IsPhase(pStr As String) As Boolean

Dim i As Integer

IsPhase = False

For i = 1 To psize
    If parr(i, 1) = pStr Then
        IsPhase = True
    End If
Next i
End Function

' /
' / This function determines if a string is included in the array of equipment
names
' / Be sure that Load_List_Arrays() has been run first
' /

Function IsEquip(eStr As String) As Boolean

Dim i As Integer

IsEquip = False

For i = 1 To esize
    If earr(i, 1) = eStr Then
        IsEquip = True
    End If
Next i
End Function

' /
' / Load_sheet_template copies sheet shtName from the template file along with
' / the relevant range names defined in the file's Range_Names sheet
' /
' / Make sure that the template does not exist before calling!!!
' /

Function Load_Sheet_Template(ShtName As String, Aftstr As String) As Boolean

    Dim tempBook As Workbook
    Dim projBook As Workbook

    Set projBook = ActiveWorkbook

    '*
    '* Open the template file, and copy the page
    '*

    If Not OpenOrFind(templateFile) Then
        MsgBox "Unable to open " & tempFile, vbCritical
        Exit Function
    End If

    Set tempBook = ActiveWorkbook

    projBook.Activate

    On Error GoTo templateerror

```

```

        tempBook.Worksheets(ShtName).Copy After:=projBook.Worksheets(Aftstr)

On Error GoTo 0

' *
' * Copy the range values from the "Range_Names" sheet in the template file
' *

Dim rs As Worksheet
Set rs = tempBook.Worksheets("Range_Names")

Dim r As Integer

Dim addname As String

r = 2

Do While Not IsEmpty(rs.Cells(r, 1))

    If UCase(rs.Cells(r, 1)) = UCase(ShtName) Then
        addname = "=" & rs.Cells(r, 1) & "!" & rs.Cells(r, 3)

        On Error GoTo nameerror
        projBook.Names.Add name:=rs.Cells(r, 2), RefersTo:=addname
        On Error GoTo 0
    End If

    r = r + 1
Loop

tempBook.Close

Load_Sheet_Template = True

Exit Function

templateerror:
    MsgBox "Error copying template worksheet: " & ShtName & vbCrLf & _
        "after worksheet: " & Aftstr, vbCritical
    Load_Sheet_Template = False
    Exit Function

nameerror:
    MsgBox "Error adding name " & rs.Cells(r, 2) & " to the names definitions "
    & vbCrLf & _
        "under address: " & addname
    Load_Sheet_Template = False

End Function

' /
' / Add_Blank_sheet add's a blank sheet. Be sure to delete the existing sheet
' / before running. Otherwise it will trigger an error
' /

Function Add_Blank_Sheet(ShtName As String, Aftstr As String) As Boolean

    Dim prevsheet As Worksheet
    Set prevsheet = ActiveSheet

    'On Error GoTo loadererror

```

```

Worksheets.Add After:=Worksheets(Aftstr)

'On Error GoTo 0

ActiveSheet.name = ShtName

prevsheet.Activate

Add_Blank_Sheet = True

Exit Function

loadererror:
MsgBox "Error creating worksheet: " & ShtName & vbCrLf & _
      "after worksheet: " & Aftstr, vbCritical
Add_Blank_Sheet = False
Exit Function

End Function

Sub Test()

Dim result As Boolean

delete_worksheet ("Assign_equip")
result = Load_Sheet_Template("Assign_equip", "Pay_Items")

End Sub

'/ Load_Range_Template (String)

'/ Each one of the above should set the name definitions for page

'/
'/ Sub_activity sums all activity for a specific phase, date interval and
'/ equipment type from the output DB.
'/

Function Sum_activity(equipstr As Variant, phase As Variant, incr As Variant)
As Variant

    Range("Arraytotal").FormulaArray = datetrans & incr & equipstrans & equipstr
& _
    phasetrans & phase & hrtrans

    Sum_activity = Range("Arraytotal").Value

End Function

' The entire body of the sum_activity fast function
' Range("Arraytotal").FormulaArray = "=Sum( (OutputDB!C2:C8283=" & incr &
'
'                                     ")*(OutputDB!D2:D8283=" & equipstr
& _
'                                     ")*(OutputDB!E2:E8283=" & phase &
'
'                                     ")*(OutputDB!F2:F8283))"

' Do While Not IsEmpty(OS.Offset(i, 0))
'     If (OS.Offset(i, o_equipcat_col - 1) = equipstr) And _
'         (OS.Offset(i, o_phase_col - 1) = phase) And _
'         (OS.Offset(i, o_dateint_col - 1) = incr) Then
'         runttotal = runttotal + OS.Offset(i, o_hrs_col - 1)

```

```

'           End If
'
'           i = i + 1
'       Loop

Sub CTCompleted()

    Dim i As Integer
    Dim tot As Integer
    Dim res As Single

    i = 0
    tot = 0

    Dim cell As Range

    For Each cell In Selection

        If cell.Value <> "" Then
            i = i + 1
        End If

        tot = tot + 1

    Next cell

    res = i / tot

    MsgBox res

End Sub

Module 4

Option Explicit
'/
'/  MODULE 4.  Support procedures used for the Phase assignment sheet.  Backup,
'/              restore, suggestion lookup, etc...
'/

' The column numbers for the phase assignment sheet

Public Const ap_itempt_col As Integer = 1           ' The pay item column in the
pivot table (from diaries)
Public Const ap_totalpt_col As Integer = 2           ' The total column in the
pivot table
Public Const ap_itemassign_col As Integer = 3         ' The column to assign the
pay item to the pt value
Public Const ap_ctcode_col As Integer = 4           ' The six digit CT code
Public Const ap_itemdesc_col As Integer = 5           ' The pay item description
Public Const ap_suggphase_col As Integer = 7         ' The suggested phase from
the master code lookup
Public Const ap_REcat_col As Integer = 6             ' The RE suggested category
name + 46.X ?
Public Const ap_phaseassign_col As Integer = 8       ' The phase assignment
column
Public Const ap_num_cols As Integer = 8             ' The total number of phase
assignment columns

'/
'/ AP_Insert_suggested inserts the caltrans work item codes from the
definitions file

```

```

' / when the "Suggest" button is clicked.
' / The calling code for this routine is in the templates file.
' /

Sub AP_Insert_suggested()

    ' *
    ' * Open the definitions file and set references
    ' *

    Dim DEF As Workbook
    Dim proj As Workbook

    Dim CT As Worksheet

    Set proj = ActiveWorkbook

    If OpenOrFind(defFile) = False Then
        Exit Sub
    End If

    Set DEF = ActiveWorkbook

    proj.Activate

    Set AP = Worksheets(apStr)
    AP.Activate
    AP.Cells(1, 1).Select

    Set CT = DEF.Worksheets("Phase_Codes")

    ' *
    ' * Scroll through all of the assigned phases and try to find a suggested
phase
    ' *

    Dim i As Integer
    Dim rows As Integer
    Dim Lookup_Val As Variant
    Dim start As Range
    Dim code_range As Range

    rows = Range("APTableRange").rows.Count
    Set start = Range("APPivStart")

    DEF.Activate

    Set code_range = DEF.Worksheets("Phase_Codes").Cells(1,
1).CurrentRegion.Offset(1, 0)

    Set code_range = code_range.Resize(code_range.rows.Count - 1,
code_range.Columns.Count)

    proj.Activate

    For i = 0 To rows - 1

        Lookup_Val = start.Offset(i, 3).Value

        start.Offset(i, ap_suggphase_col - 1) = Application.VLookup(Lookup_Val,
-
        code_range, 4, False)

```

```

Next i

DEF.Close

End Sub

' /
' / FormatAP formats the boxes, shading and labels in the AP sheet. Changes to
' / any of these properties should be made in this routine. Some column widths
' / are also included
' /
' / The routine relies on the APPIVSTART and APPIVINSERT range labels
' /

Sub FormatAP(numrows As Integer)

    Dim i As Integer

    Set AP = Worksheets(apStr)
    AP.Activate
    AP.Cells(1, 1).Select

    Dim insertPt As Range    ' refer to range labels on the sheet
    Dim startPt As Range

    Set insertPt = Range("APPIVINSERT")
    Set startPt = Range("APPIVSTART")

    '*
    '* Set up the header labels
    '*

    insertPt.Offset(1, ap_itemassign_col - 1) = "Assign"
    insertPt.Offset(1, ap_ctcode_col - 1) = "CT Code"
    insertPt.Offset(1, ap_itemdesc_col - 1) = "Item Description"
    insertPt.Offset(1, ap_suggphase_col - 1) = "Suggested Phase"
    insertPt.Offset(1, ap_REcat_col - 1) = "RE Subcategory"
    insertPt.Offset(1, ap_phaseassign_col - 1) = "Phase"

    '*
    '* Adjust the column widths
    '*

    AP.Columns(1).ColumnWidth = 12
    AP.Columns(2).ColumnWidth = 4.29

    '*
    '* Set the colors
    '*

    shadeRange insertPt.Offset(1, 1).Resize(1, 7), 15
    shadeRange startPt.Offset(0, 2).Resize(numrows, 1), 36
    shadeRange startPt.Offset(0, 7).Resize(numrows, 1), 36

    '*
    '* Set the borders
    '*

    BoxRange insertPt.Offset(0, 1).Resize(1, 7), 0
    BoxRange insertPt.Offset(1, 1).Resize(1, 7), 0

    For i = 3 To ap_num_cols
        BoxRange insertPt.Offset(0, i - 1).Resize(numrows + 2), 0
    
```

```

        Next i

End Sub

' /
' / Clear_AP clears the user input columns and hence the entire phase
assignment
' / worksheet
' /

Sub Clear_AP()

    Dim ans As Integer
    Dim rows As Integer

    ans = MsgBox("Clear Phase Assignments?", vbYesNo)

    If ans = vbNo Then
        Exit Sub
    End If

    rows = Range("APUserRange2").rows.Count

    Range("APUserRange1").ClearContents
    Range("APUserRange2").Offset(0, -1).Resize(rows, 1).ClearContents
    Range("APUserRange2").ClearContents

End Sub

' /
' / Backup the phase definitions in case the raw diary data is changed and the
' / user would like to use the existing assignments on the updated data
' /
' / Inserts the backup sheet after the list definition sheet, so the assumption
is
' / that sheet already exists
' /

Public Sub Backup_AP()

    '*
    '* Confirm the user wants to back up
    '*

    Dim ans As Integer

    ans = MsgBox("Backup Phase Assignments?", vbYesNo)

    If ans = vbNo Then
        Exit Sub
    End If

    Dim A_Str As String
    Dim rows As Integer

    '*
    '* Set up the worksheet
    '*

    delete_worksheet (apbStr)

    If (Load_Sheet_Template(apbStr, listStr) = False) Then
        Exit Sub
    End If

```

```

End If

Set AP = Worksheets(apStr)
AP.Activate
AP.Cells(1, 1).Select

Set APB = Worksheets(apbStr)

' *
' *   Copy the cells without formatting or validation
' *

ActiveCell.Select

Range("APTableRange").Copy

Range("APBStart").PasteSpecial Paste:=xlPasteValues

Range("APLastBackupT") = Time
Range("APLastBackupD") = Date

A_Str = Range("APBStart").CurrentRegion.Address

A_Str = "=" & apbStr & "!" & A_Str

Names.Add name:="APBData", RefersTo:=A_Str

AP.Cells(1, 1).Activate

Application.CutCopyMode = False

End Sub

'/
'/ Restores phase assignments into the phase assignment spreadsheet
'/

Sub Restore_AP()

    Load_List_Arrays

    ' *
    ' *   Declare variables and check if user wants to restore
    ' *

    Dim rows As Integer
    Dim i As Integer
    Dim j As Integer
    Dim Sel1 As String
    Dim Sel2 As String

    Dim Lookup_Val As String
    Dim Table_Loc As String

    Set a = Worksheets(aStr)
    Set AP = Worksheets(apStr)
    Set APB = Worksheets(apbStr)

    Dim ans As Integer
    Dim Brows As Integer                ' Number of backup rows

    ans = MsgBox("Restore Phase Assignments?", vbYesNo)

```



```

If ans = vbNo Then
    Exit Sub
End If

' *
' * Clear existing contents, and cycle through the rows finding matches in
the
' * backup table
' *

Range("APPivStart").Offset(0, 6).Select

rows = Range("APTableRange").rows.Count
Brows = Range("APBData").rows.Count

Range("APUserRange1").ClearContents
Range("APUserRange2").Offset(0, -1).Resize(rows, 1).ClearContents
'Range("APUserRange1").ClearFormats
Range("APUserRange2").ClearContents
'Range("APUserRange2").ClearFormats

Dim start As String
Dim BStart As String

start = apStr & "!" & Range("APPivStart").Address
BStart = apbStr & "!" & Range("APBStart").Address

i = 0

' Turn off the validation and set up error handling to deal with blank
lines

On Error Resume Next

For i = 0 To rows - 1

    Lookup_Val = Range(start).Offset(i, 0).Value

    For j = 0 To Brows - 1
        If (Lookup_Val = Range("APBStart").Offset(j, 0)) Then
            Range("APPivStart").Offset(i, ap_itemassign_col - 1) _
                = Range("APBStart").Offset(j, ap_itemassign_col - 1)
            If IsPhase(Range("APBStart").Offset(j, ap_phaseassign_col - 1))
Then
                Range("APPivStart").Offset(i, ap_phaseassign_col - 1) _
                    = Range("APBStart").Offset(j, ap_phaseassign_col - 1)
            End If
        End If
    Next j

Next i

Range("APLastRestoreT") = Time
Range("APLastRestoreD") = Date

End Sub

Module 5

'/
'/ MODULE 5. Support procedures used for the Equipment assignment sheet.

```

```

'/'          Backup, restore, and CT lookup procedures, etc...
'/'
Public Const ae_concat_col As Integer = 1
Public Const ae_numocc_col As Integer = 2
Public Const ae_ctCatCode_col As Integer = 3
Public Const ae_ctSubCatCode_col As Integer = 4
Public Const ae_ctModelCode_col As Integer = 5
'Public Const ae_ctCatName_col As Integer = 6
'Public Const ae_ctSubCatName_col As Integer = 7
'Public Const ae_ctModelName_col As Integer = 8
Public Const ae_suggestion_col As Integer = 6
Public Const ae_equipassign_col As Integer = 7
Public Const ae_num_cols As Integer = 7

'/'
'/' FormatAE formats the boxes, shading and labels in the AE sheet.  Changes to
'/' any of these properties should be made in this routine.  Some column widths
'/' are also included
'/'
'/' The routine relies on the AEPIVSTART and AEPIVINSERT range labels
'/'

Sub FormatAE(numrows As Integer)

    Dim i As Integer

    Set AE = Worksheets(aeStr)
    AE.Activate
    AE.Cells(1, 1).Select

    Dim insertPt As Range    ' refer to range labels on the sheet
    Dim startPt As Range

    Set insertPt = Range("AEPIVINSERT")
    Set startPt = Range("AEPIVSTART")

    '*'
    '*' Set up the header labels
    '*'

    insertPt.Offset(1, ae_ctCatCode_col - 1) = "CT Category"
    insertPt.Offset(1, ae_ctSubCatCode_col - 1) = "CT Subcat"
    insertPt.Offset(1, ae_ctModelCode_col - 1) = "CT Model"
    ' insertPt.Offset(1, ae_ctCatName_col - 1) = "CT Category"
    ' insertPt.Offset(1, ae_ctSubCatName_col - 1) = "CT Subcategory"
    ' insertPt.Offset(1, ae_ctModelName_col - 1) = "CT Model"
    insertPt.Offset(1, ae_suggestion_col - 1) = "Suggestion"
    insertPt.Offset(1, ae_equipassign_col - 1) = "Equipment Assignment"

    '*'
    '*' Adjust the column widths
    '*'

    AE.Columns(1).ColumnWidth = 48
    AE.Columns(2).ColumnWidth = 4.29

    '*'
    '*' Set the colors
    '*'

    shadeRange insertPt.Offset(1, 0).Resize(1, ae_num_cols), 15
    shadeRange Range("AEUserRange1"), 36

```

```

    shadeRange Range("AEUserRange2"), 36

    '*
    '* Set the borders
    '*

    BoxRange insertPt.Offset(0, 0).Resize(1, ae_num_cols), 0
    BoxRange insertPt.Offset(1, 0).Resize(1, ae_num_cols), 0

    For i = 3 To ae_num_cols
        BoxRange insertPt.Offset(0, i - 1).Resize(numrows + 2), 0
    Next i

End Sub

'/
'/ Clear_AE clears the user input columns and hence the entire equipment
assignment
'/ worksheet
'/

Sub Clear_AE()

    Dim ans As Integer

    ans = MsgBox("Clear Phase Assignments?", vbYesNo)

    If ans = vbNo Then
        Exit Sub
    End If

    Range("AEUserRange1").ClearContents
    Range("AEUserRange2").ClearContents

End Sub

'/
'/ Backup the equipment definitions in case the raw diary data is changed and
the
'/ user would like to use the existing assignments on the updated data
'/
'/ Inserts the backup sheet after the list definition sheet, so the assumption
is
'/ that sheet already exists
'/

Public Sub Backup_AE()

    '*
    '* Confirm the user wants to back up
    '*

    Dim ans As Integer

    ans = MsgBox("Backup Equipment Assignments?", vbYesNo)

    If ans = vbNo Then
        Exit Sub
    End If

    Dim A_Str As String
    Dim rows As Integer

```

```

' *
' * Set up the worksheet
' *

delete_worksheet (aebStr)

If (Load_Sheet_Template(aebStr, listStr) = False) Then
    Exit Sub
End If

Set AE = Worksheets(aeStr)
AE.Activate
AE.Cells(1, 1).Select

Set AEB = Worksheets(aebStr)

' *
' * Copy the cells without formatting or validation
' *

ActiveCell.Select

Range("AETableRange").Copy

Range("AEBStart").PasteSpecial Paste:=xlPasteValues

Range("AELastBackupT") = Time
Range("AELastBackupD") = Date

A_Str = Range("AEBStart").CurrentRegion.Address

A_Str = "=" & aebStr & "!" & A_Str

Names.Add name:="AEBData", RefersTo:=A_Str

AE.Cells(1, 1).Activate

Application.CutCopyMode = False

End Sub

'/
'/ Restores equipment assignments into the equipment assignment spreadsheet
'/

Sub Restore_AE()

    Load_List_Arrays

    ' *
    ' * Declare variables and check if user wants to restore
    ' *

    Dim rows As Integer
    Dim i As Integer
    Dim j As Integer
    Dim Sel1 As String
    Dim Sel2 As String

    Dim Lookup_Val As String
    Dim Table_Loc As String

    Set AE = Worksheets(aeStr)

```

```

Set AEB = Worksheets(aebStr)

AE.EnableCalculation = False

Dim ans As Integer
Dim Brows As Integer           ' Number of backup rows

ans = MsgBox("Restore Equipment Assignments?", vbYesNo)

If ans = vbNo Then
    Exit Sub
End If

' *
' * Clear existing contents, and cycle through the rows finding matches in
the
' * backup table
' *

Range("AEPivStart").Offset(0, 6).Select

rows = Range("AETableRange").rows.Count
Brows = Range("AEBData").rows.Count

Range("AEUserRange1").ClearContents
Range("AEUserRange2").ClearContents

Dim start As String
Dim BStart As String

start = aeStr & "!" & Range("AEPivStart").Address
BStart = aebStr & "!" & Range("AEBStart").Address

i = 0

' Turn off the validation and set up error handling to deal with blank
lines

On Error Resume Next

For i = 0 To rows - 1

    Lookup_Val = Range(start).Offset(i, 0).Value

    For j = 0 To Brows - 1
        If (Lookup_Val = Range("AEBStart").Offset(j, 0)) Then
            Range("AEPivStart").Offset(i, ae_ctCatCode_col - 1) _
                = Range("AEBStart").Offset(j, ae_ctCatCode_col - 1)
            Range("AEPivStart").Offset(i, ae_ctSubCatCode_col - 1) _
                = Range("AEBStart").Offset(j, ae_ctSubCatCode_col - 1)
            Range("AEPivStart").Offset(i, ae_ctModelCode_col - 1) _
                = Range("AEBStart").Offset(j, ae_ctModelCode_col - 1)

            If IsEquip(Range("AEBStart").Offset(j, ae_equipassign_col - 1))
Then
                Range("AEPivStart").Offset(i, ae_equipassign_col - 1) _
                    = Range("AEBStart").Offset(j, ae_equipassign_col - 1)
            End If
        End If
    Next j

Next i

```

```

    AE.EnableCalculation = True

    Range("AELastRestoreT") = Time
    Range("AELastRestoreD") = Date

End Sub

' /
' / The dummy procedure used to start the autofill counter
' /

Sub Autofill_AE()
    Autofill_Count.Show
End Sub

' /
' / Autofill uses a set of strings to fill in equipment assignments
' /

Sub Autofill_AE_core()

    Application.Calculation = xlCalculationManual ' Turn off the calculation
to speed execution

    '*
    '* Time the routine
    '*

    Range("AF_Start") = Time

    Load_ec_array

    '*
    '* Open the definitions workbook and count the rows
    '*

    Dim DEF As Workbook
    Dim proj As Workbook

    Dim AF As Worksheet

    Set proj = ActiveWorkbook

    If OpenOrFind(defFile) = False Then
        Exit Sub
    End If

    Set DEF = ActiveWorkbook

    Set AF = DEF.Worksheets("Autofill")
    AF.Activate

    '*
    '* Fill in a dynamic two dimensional array with the autofill table
    '*

    Dim aFSIZE As Integer
    aFSIZE = Range("A1").CurrentRegion.Rows.Count - 1

    Dim i As Integer ' Incrementor

```

```

Dim r As Integer      ' Row incrementor
Dim c As Integer      ' Column incrementor

Dim StartAF As Range
Set StartAF = AF.Range("A2")

Dim afarr() As String
ReDim afarr(afsize, 6)

' Row 0 is the first substring
' Row 1 is the second substring
' Row 2 is the equipment category

For r = 0 To afsize - 1

    afarr(r, 0) = StartAF.Offset(r, 0)      ' The first substring
    afarr(r, 1) = StartAF.Offset(r, 1)      ' The second substring
    afarr(r, 2) = StartAF.Offset(r, 2)      ' The CT category code
    afarr(r, 3) = StartAF.Offset(r, 3)      ' The CT subcategory code
    afarr(r, 4) = StartAF.Offset(r, 4)      ' The CT model code
    afarr(r, 5) = StartAF.Offset(r, 5)      ' The equipment assignment
' The CT subcategory

Next r

DEF.Close

' *
' * Initialize the equipment sheet, variables, and matching strings
' *

proj.Activate

Set AE = Worksheets(aeStr)
AE.Activate

Dim Startpos As Range
Set Startpos = AE.Range("AEPIVSTART")

Dim result As Boolean
Dim dualStrings As Boolean

Dim FindStr As String
Dim FindStr2 As String
Dim Categ As String
Dim checkstr As String

' *
' * Execute the main matching loop
' *

For r = 0 To afsize - 1

    FindStr = afarr(r, 0)
    FindStr2 = afarr(r, 1)
    Categ = afarr(r, 5)

    Autofill_Count.AF_String = r + 1 & " / " & afsize
    Autofill_Count.curname1 = FindStr
    Autofill_Count.curname2 = FindStr2
    DoEvents

    FindStr = UCase(FindStr)

```

```

dualStrings = False

If Not (FindStr2 = "") Then
    dualStrings = True
End If

FindStr2 = UCase(FindStr2)

i = 0

Do While Not IsEmpty(Startpos.Offset(i, 0))

    checkstr = Startpos.Offset(i, 0)

    checkstr = UCase(checkstr)

    On Error GoTo Finderror

        result = Not WorksheetFunction.IsError( _
            WorksheetFunction.Find(FindStr, checkstr))

        If (result = True) And dualStrings Then

            result = Not WorksheetFunction.IsError( _
                WorksheetFunction.Find(FindStr2, checkstr))

        End If

    On Error GoTo 0

    If result = True Then
        Startpos.Offset(i, ae_ctCatCode_col - 1) = afarr(r, 2)
        Startpos.Offset(i, ae_ctSubCatCode_col - 1) = afarr(r, 3)
        Startpos.Offset(i, ae_ctModelCode_col - 1).NumberFormat = "@"
        Startpos.Offset(i, ae_ctModelCode_col - 1) = afarr(r, 4)
        Startpos.Offset(i, ae_equipassign_col - 1) = afarr(r, 5)
    End If

    i = i + 1
Loop

Next r

Range("AF_End") = Time

Range("AF_Time") = Range("AF_End") - Range("AF_Start")

Application.Calculation = xlCalculationAutomatic

Autofill_Count.af_ok.Enabled = True

Exit Sub

' The error handler is thrown if the substring match can't be found and then
' control is returned to the loop

Finderror:

result = Not True

Resume Next

```



```

End Sub

' /
' / The procedure is called when the equip_pick form is loaded by double-
clicking
' /

Sub load_equip_pick()

    Equip_Pick.Show

End Sub

' /
' / This procedure loads the equipment picker listboxes based on the values in
the
' / passed row
' /

Sub Load_Listboxes(inrow As Integer)

    '* Load the category list and read the input values from the row

    Set AE = Worksheets(aeStr)

    Dim Catval As String
    Dim subcatval As String
    Dim ModelVal As String

    Dim i As Integer

    Catval = AE.Cells(inrow, ae_ctCatCode_col)
    subcatval = AE.Cells(inrow, ae_ctSubCatCode_col)
    ModelVal = AE.Cells(inrow, ae_ctModelCode_col)
    Equip_Pick.Instring = AE.Cells(inrow, ae_concat_col)

    '* if the combination is not valid, then select nothing

    If Not validateC(Catval) Then
        Catval = ""
        subcatval = ""
        ModelVal = ""
    End If

    If (Not validateSC(Catval, subcatval)) And (subcatval <> "") Then
        subcatval = ""
        ModelVal = ""
    End If

    If (Not validateM(Catval, subcatval, ModelVal)) And (ModelVal <> "") Then
        ModelVal = ""
    End If

    Load_Cat_List

    '* Select the initial condition

    If Catval <> "" Then
        Select_Cat (Catval)
        Highlight_Cat (Catval)
    End If

```

```

        If subcatval <> "" Then
            Select_SubCat Catval, subcatval
            Highlight_SubCat (subcatval)

            If ModelVal <> "" Then
                Select_Model ModelVal
                Highlight_Model (ModelVal)
            End If
        End If
    End If

End Sub

' *
' * The following function highlights the category string in the selection box
' *

Sub Highlight_Cat(cval As String)

    Dim i As Integer

    i = 0

    Do Until Equip_Pick.CatBox.List(i, 0) = cval
        i = i + 1
    Loop

    Equip_Pick.CatBox.ListIndex = i

End Sub

' *
' * The following function highlights the subcategory string in the selection
box
' *

Sub Highlight_SubCat(scval As String)

    Dim i As Integer

    i = 0

    Do Until Equip_Pick.SubCatBox.List(i, 0) = scval
        i = i + 1
    Loop

    Equip_Pick.SubCatBox.ListIndex = i

End Sub

' *
' * The following function highlights the model string in the selection box
' *

Sub Highlight_Model(mval As String)

    Dim i As Integer

    i = 0

```

```

    Do Until Equip_Pick.ModelBox.List(i, 0) = mval
        i = i + 1
    Loop

    Equip_Pick.ModelBox.ListIndex = i
End Sub

' *
' * This function evaluates whether an equipment category code is valid
' *

Function validateC(cval As String) As Boolean

    Set EC = Worksheets(ecstr)

    Dim c As Integer

    ' * Trap an error using the match function to determining validity
    On Error GoTo notfound

    c = WorksheetFunction.Match(cval, EC.Columns(1), 0)

    On Error GoTo 0

    validateC = True

    Exit Function

notfound:

    validateC = False

End Function

' *
' * This function evaluates whether an equipment subcategory code is valid
' *

Function validateSC(cval As String, scval As String) As Boolean

    Set ESC = Worksheets(escstr)

    Dim sc As Integer

    sc = 1

    Do While Not IsEmpty(ESC.Cells(sc, ei_sccode_col))
        If ESC.Cells(sc, ei_sccode_col) = scval And _
            ESC.Cells(sc, ei_ccode_col) = cval Then

            validateSC = True
            Exit Function

        End If
        sc = sc + 1
    Loop

    validateSC = False

End Function

' *

```

```

'* This function evaluates whether an equipment model code is valid
'*

Function validateM(cval As String, scval As String, mval As String) As Boolean

    Set EM = Worksheets(emstr)

    Dim m As Integer

    m = 1

    Do While Not IsEmpty(EM.Cells(m, ei_mcode_col))
        If EM.Cells(m, ei_mcode_col) = mval And _
            EM.Cells(m, ei_sccode_col) = scval And _
            EM.Cells(m, ei_ccode_col) = cval Then

            validateM = True
            Exit Function

        End If
        m = m + 1
    Loop

    validateM = False

End Function

Sub testbutton()
    Highlight_Cat Equip_Pick.CatLabel

End Sub

'
' This is called when a category value is selected
'
Sub Select_Cat(Val As String)

    '* Clear the other selection

    Equip_Pick.SubcatLabel = ""
    Equip_Pick.ModelLabel = ""

    Equip_Pick.SubCatBox.Clear
    Equip_Pick.ModelBox.Clear

    Equip_Pick.CatLabel = Val

    Equip_Pick.TypeLabel = getsuggest(Val, "", "")

    Load_Subcat_List (Val)

End Sub

'
' This is called when a Sub-category value is selected
'

Sub Select_SubCat(cval As String, scval As String)

    Equip_Pick.ModelLabel = ""
    Equip_Pick.ModelBox.Clear

```

```

    Equip_Pick.SubcatLabel = scval

    Equip_Pick.TypeLabel = getsuggest(cval, scval, "")

    Load_Model_List cval, scval
End Sub

'
' This is called when a Model value is selected
'

Sub Select_Model(mval As String)

    Equip_Pick.ModelLabel = mval
    Equip_Pick.TypeLabel = getsuggest(Equip_Pick.CatLabel,
    Equip_Pick.SubcatLabel, mval)
End Sub

'/
'/ Loads the category listbox
'/

Sub Load_Cat_List()

    Set EC = Worksheets(ecstr)

    Dim i As Integer

    i = 1

    With Equip_Pick.CatBox
        .Clear
        .ColumnCount = 2
        .ColumnWidths = "38;72"
    End With

    Do While Not IsEmpty(EC.Cells(i, ei_ccode_col))

        With Equip_Pick.CatBox
            .AddItem EC.Cells(i, ei_ccode_col)
            .List(.ListCount - 1, 1) = EC.Cells(i, 4)

        End With

        i = i + 1
    Loop

    Equip_Pick.CatBox.ListIndex = 0
End Sub

'/
'/ Loads the sub category listbox
'/

Sub Load_Subcat_List(Catval As String)

    Set ESC = Worksheets(escstr)

    Dim firstrow As Integer

```

```

    '* Find the first row of the category

    firstrow = WorksheetFunction.Match(Catval, ESC.Columns(1), 0)

    Dim i As Integer

    i = firstrow

    With Equip_Pick.SubCatBox
        .Clear
        .ColumnCount = 2
        .ColumnWidths = "38;72"
    End With

    Do While ESC.Cells(i, 1) = Catval
        If ESC.Cells(i, 2) <> ESC.Cells(i + 1, 2) Then
            With Equip_Pick.SubCatBox
                .AddItem ESC.Cells(i, 2)
                .List(.ListCount - 1, 1) = ESC.Cells(i, 5)

                End With
            End If
            i = i + 1
        End While

    Loop

    Equip_Pick.SubCatBox.ListIndex = 0
End Sub

' /
' / Loads the model category listbox
' /

Sub Load_Model_List(Catval As String, subcatval As String)

    Set EM = Worksheets(emstr)

    Dim firstrow As Integer

    '* Find the first row of the category

    firstrow = WorksheetFunction.Match(Catval, EM.Columns(ei_ccode_col), 0)

    Dim i As Integer

    i = firstrow

    Do Until EM.Cells(i, ei_sccode_col) = subcatval
        i = i + 1
    Loop

    With Equip_Pick.ModelBox
        .Clear
        .ColumnCount = 2
        .ColumnWidths = "38;72"
    End With

    Do While EM.Cells(i, ei_sccode_col) = subcatval
        If EM.Cells(i, ei_mcode_col) <> EM.Cells(i + 1, ei_mcode_col) Then
            With Equip_Pick.ModelBox
                .AddItem EM.Cells(i, 3)
                .List(.ListCount - 1, 1) = EM.Cells(i, 6)
            End With
        End If
        i = i + 1
    Loop
End Sub

```

```

        End With
    End If
    i = i + 1

Loop

Equip_Pick.ModelBox.ListIndex = 0

End Sub

' /
' / The dummy procedure used to start the autofill counter
' /

Sub CTfill_AE()
    CTfill_Count.Show
End Sub

' /
' / This function fills in the CT codes as far as they can go depending on if
the category
' / subcategory and model are listed
' /

Sub CTFill_AE_core()

    Set EC = Worksheets(ecstr)
    Set ESC = Worksheets(escstr)
    Set EM = Worksheets(emstr)

    Dim cblank As Boolean
    Dim scfind As Boolean
    Dim mfind As Boolean
    Dim result As Boolean

    Dim cval As String

    Dim c As Integer
    Dim sc As Integer
    Dim m As Integer
    Dim i As Integer

    Dim numrows As Integer

    cblank = (cval = "")
    scblank = (scval = "")
    mblank = (mval = "")

    Set AE = Worksheets(aeStr)
    AE.Activate

    Dim Startpos As Range
    Set Startpos = AE.Range("AEPIVSTART")
    numrows = AE.Range("AEUerrangel").rows.Count

    Dim checkstr As String

    '* Cycle through all of the entries in assign_equip

    i = 0

    Do While Not IsEmpty(Startpos.Offset(i, 0))

```

```

checkstr = Startpos.Offset(i, 0)

checkstr = UCase(checkstr)

'* First search for a match of the codes in the category sheet with
checkstr

c = 1

Do While Not IsEmpty(EC.Cells(c, ei_ccode_col))

    On Error GoTo Finderror

    result = Not WorksheetFunction.IsError( _
        WorksheetFunction.Find(EC.Cells(c, ei_ccode_col), checkstr))

    On Error GoTo 0

    If result = True Then

        '* If found, fill in the cat code and look for a subcat match

        cval = EC.Cells(c, ei_ccode_col)

        Startpos.Offset(i, ae_ctCatCode_col - 1) = cval

        sc = WorksheetFunction.Match(cval, ESC.Columns(ei_ccode_col),
0)

        Do While ESC.Cells(sc, ei_ccode_col) = cval

            On Error GoTo Finderror

            result = Not WorksheetFunction.IsError( _
                WorksheetFunction.Find(ESC.Cells(sc, ei_sccode_col),
checkstr))

            On Error GoTo 0

            If result = True Then

                '* If found, fill in the subcat code and look for a
model match

                scval = ESC.Cells(sc, ei_sccode_col)

                Startpos.Offset(i, ae_ctSubCatCode_col - 1) = scval

                m = WorksheetFunction.Match(cval,
EM.Columns(ei_ccode_col), 0)

                Do Until EM.Cells(m, ei_sccode_col) = scval
                    m = m + 1
                Loop

                Do While EM.Cells(m, ei_sccode_col) = scval

                    On Error GoTo Finderror

                    result = Not WorksheetFunction.IsError( _
                        WorksheetFunction.Find( _
                            EM.Cells(m, ei_mcode_col), checkstr))

```



```

        On Error GoTo 0

        If result = True Then

            Startpos.Offset(i, ae_ctModelCode_col - 1) = _
                EM.Cells(m, ei_mcode_col)

            GoTo Getout

        End If

        m = m + 1
    Loop

    End If

    sc = sc + 1
Loop

    GoTo Getout
End If

c = c + 1
Loop

Getout:

'       If EC.Cells(c, ei_nonroad_col) <> "" Then
'
'           getsuggest = EC.Cells(c, ei_nonroad_col)
'           Exit Sub
'       Else
'
'           On Error GoTo 0

'           '* If not, search for the subcategory in the subcategory sheet,
and do the same
'
'           sc = WorksheetFunction.Match(cval, ESC.Columns(ei_ccode_col), 0)
'
'           Do Until ESC.Cells(sc, ei_sccode_col) = scval
'               sc = sc + 1
'           Loop

'           If ESC.Cells(sc, ei_nonroad_col) <> "" Then
'
'               getsuggest = ESC.Cells(sc, ei_nonroad_col)
'               Exit Sub
'           Else
'
'               '* Repeat for the model, and select that type
'
'               m = WorksheetFunction.Match(cval, EM.Columns(ei_ccode_col), 0)
'
'               Do Until EM.Cells(m, ei_sccode_col) = scval
'                   m = m + 1
'               Loop

'               Do Until EM.Cells(m, ei_mcode_col) = mval
'                   m = m + 1
'               Loop

```

```

'           getsuggest = EM.Cells(m, ei_nonroad_col)
'
'           Exit Sub
'       End If
'
'       End If
'
'       CTfill_Count.CF_String = (i + 1) & " / " & numRows
'       DoEvents
'
'       i = i + 1
'   Loop
'
'   CTfill_Count.cf_ok.Enabled = True
'
'   On Error GoTo 0
'
'   Exit Sub
'
' The error handler is thrown if the substring match can't be found and then
' control is returned to the loop
'
Finderror:
result = Not True
Resume Next
End Sub
' *
' * Returns a suggestion for the equipment type based on category, subcat and
' * model
' *
Function getsuggest(cval As String, ByVal scval As String, mval As String) As
String
    Set EC = Worksheets(ecstr)
    Set ESC = Worksheets(escstr)
    Set EM = Worksheets(emstr)
    Dim cblank As Boolean
    Dim scblank As Boolean
    Dim mblank As Boolean
    Dim c As Integer
    Dim sc As Integer
    Dim m As Integer
    cblank = (cval = "")
    scblank = (scval = "")
    mblank = (mval = "")
    ' * Exit the function if there is no input
    If cblank Then
        getsuggest = ""
        Exit Function
    End If
    If mblank And scblank And (validateC(cval) = False) Then
        getsuggest = ""
    End If

```

```

        Exit Function
    End If

    If (validateSC(cval, scval) = False) Or (validateM(cval, scval, mval) =
False) Then
        scval = ""
        mval = ""
    End If

    '* First search for the cval in the category sheet, and check if there is
an equipment
    '* type assigned to the entire category

    c = WorksheetFunction.Match(cval, EC.Columns(ei_ccode_col), 0)

    If EC.Cells(c, ei_nonroad_col) <> "" Then

        getsuggest = EC.Cells(c, ei_nonroad_col)
        Exit Function
    Else

        '* If not, search for the subcategory in the subcategory sheet, and do
the same

        sc = WorksheetFunction.Match(cval, ESC.Columns(ei_ccode_col), 0)

        Do Until ESC.Cells(sc, ei_sccode_col) = scval
            sc = sc + 1
        Loop

        If ESC.Cells(sc, ei_nonroad_col) <> "" Then

            getsuggest = ESC.Cells(sc, ei_nonroad_col)
            Exit Function
        Else

            '* Repeat for the model, and select that type

            m = WorksheetFunction.Match(cval, EM.Columns(ei_ccode_col), 0)

            Do Until EM.Cells(m, ei_sccode_col) = scval
                m = m + 1
            Loop

            Do Until EM.Cells(m, ei_mcode_col) = mval
                m = m + 1
            Loop

            getsuggest = EM.Cells(m, ei_nonroad_col)

            Exit Function
        End If
    End If

End If

On Error GoTo 0

End Function

Sub clear_ep_boxes()

    Equip_Pick.CatBox.Clear
    Equip_Pick.SubCatBox.Clear

```

```

Equip_Pick.ModelBox.Clear

Equip_Pick.CatLabel = ""
Equip_Pick.SubcatLabel = ""
Equip_Pick.ModelLabel = ""

Equip_Pick.TypeLabel = ""

End Sub

Sub fill_suggestions()

    Dim start As Range

    Dim rows As Integer
    Dim i As Integer

    rows = Range("AETablerange").rows.Count

    Set start = Worksheets(aeStr).Range("AEPivStart")

    For i = 0 To rows - 1

        start.Offset(i, ae_suggestion_col - 1) = _
            getsuggest(start.Offset(i, ae_ctCatCode_col - 1), _
                start.Offset(i, ae_ctSubCatCode_col - 1), _
                start.Offset(i, ae_ctModelCode_col - 1))

    Next i

End Sub

Autofill_Count Form Code

Private Sub af_ok_Click()
    Unload Autofill_Count
End Sub

Private Sub UserForm_Activate()
    Autofill_AE_core
End Sub

Private Sub UserForm_Click()

End Sub

Create_Assign_Form Form Code

Private Sub ca_ok_Click()
    Unload Create_Assign_form
End Sub

'/'
'/ This procedure bounces control back to the Create_Assign routine once
'/ the form is activated. The form is called from the Create_Assign_Start
'/ routine which is called from the tools taskbar from the add-in
'/'

Private Sub UserForm_Activate()

    If Not IsEmpty(Range("Assign_Date")) Then

```

```

        ca_lastrun_date.Caption = FormatDateTime(Range("Assign_date"))
        ca_lastrun_time.Caption = FormatDateTime(Range("Assign_end"))
    End If

    Call Create_Assign

End Sub

Private Sub UserForm_Terminate()

End Sub

CTFill_Count Form Code

Private Sub cf_ok_Click()
    Unload CTfill_Count
End Sub

Private Sub UserForm_Activate()
    CTfill_AE_core
End Sub

Private Sub UserForm_Click()

End Sub

Equip_Pick Form Code

Private Sub ep_adopt_Click()
    AE.Cells(Selection.Row, ae_ctCatCode_col) = Equip_Pick.CatLabel
    AE.Cells(Selection.Row, ae_ctSubCatCode_col) = Equip_Pick.SubcatLabel
    AE.Cells(Selection.Row, ae_ctModelCode_col) = Equip_Pick.ModelLabel

    If Equip_Pick.TypeLabel <> "" Then
        AE.Cells(Selection.Row, ae_suggestion_col) = Equip_Pick.TypeLabel
        AE.Cells(Selection.Row, ae_equipassign_col) = Equip_Pick.TypeLabel
    End If

End Sub

Private Sub ep_exit_Click()
    Unload Equip_Pick
End Sub

Private Sub ep_insert_Click()
    AE.Cells(Selection.Row, ae_ctCatCode_col) = Equip_Pick.CatLabel
    AE.Cells(Selection.Row, ae_ctSubCatCode_col) = Equip_Pick.SubcatLabel
    AE.Cells(Selection.Row, ae_ctModelCode_col) = Equip_Pick.ModelLabel

    If Equip_Pick.TypeLabel <> "" Then
        AE.Cells(Selection.Row, ae_suggestion_col) = Equip_Pick.TypeLabel
    End If

End Sub

```

```

Private Sub ep_next_Click()

    Selection.Offset(1, 0).Select
    clear_ep_boxes
    Load_Listboxes (Selection.Row)

End Sub

Private Sub ep_prev_Click()
    Selection.Offset(-1, 0).Select
    clear_ep_boxes
    Load_Listboxes (Selection.Row)
End Sub

'Private Sub CatBox_Click()
'    Select_Cat Equip_Pick.CatBox.Value
'End Sub
'
'Private Sub SubCatBox_Click()
'    Select_SubCat Equip_Pick.CatLabel, Equip_Pick.SubCatBox.Value
'End Sub
'
'Private Sub ModelBox_Click()
'    Select_Model Equip_Pick.ModelBox.Value
'End Sub

Private Sub CatBox_dblClick(ByVal Cancel As MSForms.ReturnBoolean)
    Select_Cat Equip_Pick.CatBox.Value
End Sub

Private Sub SubCatBox_dblClick(ByVal Cancel As MSForms.ReturnBoolean)
    Select_SubCat Equip_Pick.CatLabel, Equip_Pick.SubCatBox.Value
End Sub

Private Sub ModelBox_dblClick(ByVal Cancel As MSForms.ReturnBoolean)
    Select_Model Equip_Pick.ModelBox.Value
End Sub

Private Sub UserForm_Initialize()
    Equip_Pick.CatLabel = ""
    Equip_Pick.SubcatLabel = ""
    Equip_Pick.ModelLabel = ""
    Equip_Pick.TypeLabel = ""

    Load_Listboxes (Selection.Row)

End Sub

Private Sub UserForm_Terminate()

End Sub

```

**Export\_Output Form Code**

```

'*
'* Brings up the file selection box for the XLS function
'*

Private Sub EO_BrowseExcel_Click()

    Dim Filename As Variant
    Dim Finfo As String
    Finfo = "Excel Files (*.xls),*.xls," & "All Files (*.*),*.*"

    Filename = Application.GetSaveAsFilename("", Finfo, 1)

    ' exit if cancel is selected and return 0
    If Filename = False Then
        Exit Sub
    End If

    EO_Excelout_Name = Filename

    EO_Excelout_Name_AfterUpdate

End Sub

'*
'* Handle what happens when the excelout field is changed.
'*

Private Sub EO_Excelout_Name_AfterUpdate()

    Dim fname As Variant
    Dim fnamestr As String

    fname = EO_Excelout_Name

    '* Exit the sub if there is no name

    If fname = "" Then
        XLSType = "Mode"
        Exit Sub
    End If

    If Right(fname, 4) <> ".xls" Then
        MsgBox "File type is not .xls" & vbCrLf & _
            "Please use a .xls extension", vbExclamation
        EO_Excelout_Name = ""
        XLSType = "Mode"
        Exit Sub
    End If

    fnamestr = fname

    If FileExists(fnamestr) Then
        XLSType = "Append"
    Else
        XLSType = "New"
    End If

End Sub

Private Sub EO_BrowseTab_Click()

```

```

Dim Filename As Variant
Dim Finfo As String
Finfo = "Text Files (*.txt),*.txt," & "All Files (*.*),*.*"

Filename = Application.GetSaveAsFilename("", Finfo, 1)

' exit if cancel is selected and return 0
If Filename = False Then
    Exit Sub
End If

EO_Tabout_Name = Filename

EO_Tabout_Name_AfterUpdate
End Sub

```

```

Private Sub EO_Tabout_Name_AfterUpdate()

    Dim fname As Variant
    Dim fnamestr As String

    fname = EO_Tabout_Name

    '* Exit the sub if there is no name

    If fname = "" Then
        TXTMode = "Mode"
        Exit Sub
    End If

    If Right(fname, 4) <> ".txt" Then
        MsgBox "File type is not .txt" & vbCrLf & _
            "Please use a .txt extension", vbExclamation
        EO_Tabout_Name = ""
        TXTMode = "Mode"
        Exit Sub
    End If

    fnamestr = fname

    If FileExists(fnamestr) Then
        TXTMode = "Append"
    Else
        TXTMode = "New"
    End If
End Sub

```

```

Private Sub EO_BrowseWord_Click()
    Dim Filename As Variant
    Dim Finfo As String
    Finfo = "Word Files (*.doc),*.doc," & "All Files (*.*),*.*"

    Filename = Application.GetSaveAsFilename("", Finfo, 1)

    ' exit if cancel is selected and return 0
    If Filename = False Then
        Exit Sub
    End If

    EO_Wordout_Name = Filename

```



```

    EO_Wordout_Name_AfterUpdate
End Sub

Private Sub EO_Wordout_Name_AfterUpdate()
    Dim fname As Variant
    Dim fnamestr As String

    fname = EO_Wordout_Name

    '* Exit the sub if there is no name

    If fname = "" Then
        DOCMode = "Mode"
        Exit Sub
    End If

    If Right(fname, 4) <> ".doc" Then
        MsgBox "File type is not .doc" & vbCrLf & _
            "Please use a .doc extension", vbExclamation
        EO_Wordout_Name = ""
        DOCMode = "Mode"
        Exit Sub
    End If

    fnamestr = fname

    If FileExists(fnamestr) Then
        DOCMode = "Append"
    Else
        DOCMode = "New"
    End If
End Sub

'/'
'/' This is the output logic that occurs when the "Export" button is clicked
'/'

Private Sub EO_Export_Click()

    Dim xlsresult As Integer
    Dim txtresult As Integer
    Dim docresult As Integer

    Select Case XLMode
        Case "New": xlsresult = OutputExcelDB(EO_Excelout_Name, 0, 0)
        Case "Append": xlsresult = OutputExcelDB(EO_Excelout_Name, 1, 0)
    End Select

    Select Case TXTMode
        Case "New": txtresult = OutputExcelDB(EO_Tabout_Name, 0, 1)
        Case "Append": txtresult = OutputExcelDB(EO_Tabout_Name, 1, 1)
    End Select

    Select Case DOCMode
        Case "New": docresult = OutputWordTable(EO_Wordout_Name, 0)
        Case "Append": docresult = OutputWordTable(EO_Wordout_Name, 1)
    End Select

    Unload Export_Output

End Sub

```

```

Private Sub EO_Cancel_Click()

    Unload Export_Output

End Sub

Output_DB_Form Form Code

Private Sub odb_ok_Click()
    Unload Output_DB_Form
End Sub

' /
' / This procedure bounces control back to the Output_DB routine once
' / the form is activated. The form is called from the Output_DB_Start
' / routine which is called from the tools taskbar from the add-in
' /

Private Sub UserForm_Activate()

    If Not IsEmpty(Range("ODB_Date")) Then
        ODB_Lastrun_date.Caption = FormatDateTime(Range("ODB_date"))
        ODB_Lastrun_Time.Caption = FormatDateTime(Range("ODB_end"))
    End If

    Call Output_DB

End Sub

Output_Table_Form Form Code

Private Sub ot_ok_Click()
    Unload Output_Table_Form
End Sub

' /
' / This procedure bounces control back to the Output_Table routine once
' / the form is activated. The form is called from the Output_Table_Start
' / routine which is called from the tools taskbar from the add-in
' /

Private Sub UserForm_Activate()

    If Not IsEmpty(Range("OT_Date")) Then
        OT_Lastrun_date.Caption = FormatDateTime(Range("OT_date"))
        OT_Lastrun_Time.Caption = FormatDateTime(Range("OTT_end"))
    End If

    Call Output_Table

End Sub

```

## 9 Appendix C: VBA Code for the Project Library Module

### Module 1

Option Explicit

```
' Sheet defs from project library module
Public Const libstr As String = "FileLib"
Public Const dfstr As String = "Definitions"
Public Const taStr As String = "ToAverage"
Public Const tsStr As String = "Type Summary"
Public Const eptStr As String = "Results E&P&T"

' Sheet defs from project module
Const aStr As String = "aggr_activ"           ' The activity detail sheet
Const dayStr As String = "day_data"          ' The day detail sheet
Const dStr As String = "Daily Diaries"       ' The raw diary input sheet
Const masterStr As String = "Master"         ' The master control sheet
Const aeStr As String = "Assign_Equip"       ' Equipment assignment sheet
Const aebStr As String = "AEB"              ' Equipment assignment backup sheet
Const apStr As String = "Assign_Phase"       ' Phase assignment Sheet
Const apbStr As String = "APB"              ' Phase assignment backup sheet
Const odbStr As String = "OutputDB"         ' Output DB Sheet
Const otStr As String = "OutputTable"       ' Output Table sheet
Const piStr As String = "Pay_Items"
Const ofStr As String = "OutputForms"       ' The data output header table

Public Const defFile As String = "Definitions.xls"
Public Const templateFile As String = "Templates.xls"

Public Const listStr As String = "List_Definitions"
Public Lsht As Worksheet

Const list_start_row As Integer = 3          ' The row to begin the categories list
when updating

'/
'/ The public variables for the dynamic arrays for equipment, date, phase and
category
'/ labels and tags
'/

Public psize As Integer
Public dsize As Integer
Public dl0size As Integer
Public esize As Integer
Public csize As Integer

Public pvars As Integer
Public dvars As Integer
Public dl0vars As Integer
Public evars As Integer
Public cvars As Integer

Public parr() As Variant
Public darr() As Variant
Public dl0arr() As Variant
Public earr() As Variant
Public carr() As Variant

Public Const Lib_Filename_Col = 1
Public Const Lib_ProjNum_col = 2
```

```

Public Const Lib_District_col = 3
Public Const Lib_EA_col = 4
Public Const Lib_Description_col = 5
Public Const Lib_projtype_col = 6
Public Const Lib_contractor_col = 7
Public Const Lib_RE_col = 8
Public Const Lib_Route_col = 9
Public Const Lib_County_col = 10
Public Const Lib_PM_Start_col = 11
Public Const Lib_PM_End_Col = 12
Public Const Lib_Loc_Description_col = 13
Public Const Lib_Award_Date_col = 14
Public Const Lib_Accept_Date_col = 15
Public Const Lib_origdays_col = 16
Public Const Lib_Actual_Days_col = 17
Public Const Lib_CCO_Days_col = 18
Public Const Lib_Weather_Days_col = 19
Public Const Lib_Other_Days_col = 20
Public Const Lib_awardamount_col = 21
Public Const Lib_Final_Amount_col = 22
Public Const Lib_Final_Bridge_Amount_col = 23
Public Const Lib_Final_CCO_Amount_col = 24
Public Const Lib_NumLines_col = 25
Public Const Lib_BinInc_col = 26
Public Const Lib_firstdate_col = 27
Public Const Lib_lastdate_col = 28
Public Const Lib_Distinctdays_col = 29
Public Const Lib_Length_col = 30

Const OTableSpace As Integer = 50

' /
' /  Addfile() brings up a file dialog, and adds a file to the library
' /

Sub AddFile()

    Dim Nextrow As Integer

    ' * Add a diary file to the file library

    Dim Finfo As String
    Dim FilterIndex As Integer
    Dim Title As String
    Dim Filename As Variant

    Dim i As Integer
    Dim baselen As Integer
    Dim result As Integer

    Finfo = "Excel Files (*.xls), *.xls," & _
           "All Files (*.*),*.*"

    FilterIndex = 1

    ' Set up the library sheet as an object

    Nextrow = WorksheetFunction.CountA(Columns(Lib_Filename_Col))

    Title = "Select Diary File To Add"

    ChDir ThisWorkbook.Path

```

```

Filename = Application.GetOpenFilename(Finfo, FilterIndex, Title)

If Filename = 0 Then
    Exit Sub
End If

i = 0

' Run a loop to get to the end of the range and to count the number of
projects

Do While Not IsEmpty(Range("FilelibStart").Offset(i + 1, 0))

    i = i + 1

Loop

Range("NUMPROJECTS") = i + 1

baselen = Len(FunctionGetFileName(Filename)) - 4

Range("FileLibStart").Offset(i + 1, 0) = Filename
'Range("FilelibStart").Offset(i + 1, 1) =
Left(FunctionGetFileName(filename), baselen)

result = Update_project(CStr(Filename), i + 1)

If result = 1 Then
    MsgBox "File opening error"
End If

Range("NUMLINES") = Range("NUMLINES") + _
    Range("FileLibStart").Offset(i + 1, Lib_NumLines_col - 1)

End Sub

' /
' / Removeproj removes the project fname from the file library
' /

Sub removeproj(fname As String)

    Dim i As Integer

    Dim dellines As Integer

    Dim fl As Worksheet

    Set fl = Worksheets(libstr)

    i = 1

    Do Until Range("FilelibStart").Offset(i, Lib_ProjNum_col - 1) = fname

        i = i + 1

    Loop

    dellines = Range("Filelibstart").Offset(i, Lib_NumLines_col - 1)

    i = i + 1

    fl.Rows(i).Delete

```

```

    Range("NUMPROJECTS") = Range("NUMPROJECTS") - 1
    Range("NUMLINES") = Range("NUMLINES") - dellines
End Sub

'/
'/ Returns the local filename without the path information
'/

Function FunctionGetFileName(FullPath As Variant)
Dim StrFind As String
Dim icount As Integer

    Do Until Left(StrFind, 1) = "\"
        icount = icount + 1
        StrFind = Right(FullPath, icount)
        If icount = Len(FullPath) Then Exit Do
    Loop

    FunctionGetFileName = Right(StrFind, Len(StrFind) - 1)
End Function

'/
'/ Re-totals the NUMLINES and NUMPROJECTS variables
'/

Function Update_project_list()

    Dim i As Integer
    Dim result As Integer

    i = 0

    Range("NUMLINES") = 0

    ' Run a loop to get to the end of the range and to count the number of projects
    Do While Not IsEmpty(Range("FilelibStart").Offset(i + 1, 0))

        result = Update_project(Range("FilelibStart").Offset(i + 1, 0), i + 1)

        Range("NUMLINES") = Range("NUMLINES") + _
            Range("FileLibStart").Offset(i + 1, Lib_NumLines_col - 1)

        i = i + 1

    Loop

    Range("NUMPROJECTS") = i
End Function

'/
'/ This function opens the project file f, and inputs its library information
'/ onto line i of the file library.
'/
'/ A return value of 0 indicates no error, and 1 indicates an error (file
error)
'/

```

```

Function Update_project(f As String, i As Integer)

' Inputs:
' f - The input filename
' i - The row in the file library spreadsheet that has the entry

Dim Project As Workbook
Dim ProjLib As Workbook
Dim pd As Worksheet      ' project definition sheet
Dim pl As Worksheet      ' Project library file library sheet
Dim pform As UserForm    ' The project form

Set ProjLib = ThisWorkbook
Set pl = ThisWorkbook.Worksheets(libstr)

On Error GoTo OpenError

Set Project = Workbooks.Open(f)

On Error GoTo 0

Set pd = Project.Worksheets("Definitions")

' Copy desired ranges

pl.Activate

Range("FileLibStart").Offset(i, Lib_ProjNum_col - 1) = pd.Range("Projectnum")
Range("FileLibStart").Offset(i, Lib_projtype_col - 1) = pd.Range("Category")
Range("FileLibStart").Offset(i, Lib_origdays_col - 1) =
pd.Range("Original_days")
Range("FileLibStart").Offset(i, Lib_awardamount_col - 1) =
pd.Range("Award_amount")
Range("FileLibStart").Offset(i, Lib_District_col - 1) = _
pd.Range("Projectnum").Offset(1, 0)
Range("FileLibStart").Offset(i, Lib_EA_col - 1) = _
pd.Range("Projectnum").Offset(2, 0)
Range("FileLibStart").Offset(i, Lib_Description_col - 1) =
pd.Range("Description")
Range("FileLibStart").Offset(i, Lib_contractor_col - 1) =
pd.Range("Contractor")
Range("FileLibStart").Offset(i, Lib_RE_col - 1) = pd.Range("RE")
Range("FileLibStart").Offset(i, Lib_Route_col - 1) = pd.Range("Route")
Range("FileLibStart").Offset(i, Lib_County_col - 1) = pd.Range("County")
Range("FileLibStart").Offset(i, Lib_PM_Start_col - 1) = pd.Range("PM_Start")
Range("FileLibStart").Offset(i, Lib_PM_End_Col - 1) = pd.Range("PM_End")
Range("FileLibStart").Offset(i, Lib_Loc_Description_col - 1) =
pd.Range("Loc_description")
Range("FileLibStart").Offset(i, Lib_Award_Date_col - 1) =
pd.Range("Award_Date")
Range("FileLibStart").Offset(i, Lib_Accept_Date_col - 1) =
pd.Range("Accept_Date")
Range("FileLibStart").Offset(i, Lib_Actual_Days_col - 1) =
pd.Range("Actual_Days")
Range("FileLibStart").Offset(i, Lib_CCO_Days_col - 1) = pd.Range("CCO_Days")
Range("FileLibStart").Offset(i, Lib_Weather_Days_col - 1) =
pd.Range("Weather_Days")
Range("FileLibStart").Offset(i, Lib_Other_Days_col - 1) =
pd.Range("Other_Days")
Range("FileLibStart").Offset(i, Lib_Final_Amount_col - 1) =
pd.Range("Final_amount")
Range("FileLibStart").Offset(i, Lib_Final_Bridge_Amount_col - 1) =
pd.Range("Original_Bridge_amount")

```

```

Range("FileLibStart").Offset(i, Lib_Final_CCO_Amount_col - 1) =
pd.Range("Final_CCO_Amount")
Range("FileLibStart").Offset(i, Lib_NumLines_col - 1) = pd.Range("Aggr_total")
Range("FileLibStart").Offset(i, Lib_BinInc_col - 1) = pd.Range("BinInc")
Range("FileLibStart").Offset(i, Lib_firstdate_col - 1) = pd.Range("Firstdate")
Range("FileLibStart").Offset(i, Lib_lastdate_col - 1) = pd.Range("Lastdate")
Range("FileLibStart").Offset(i, Lib_Distinctdays_col - 1) =
pd.Range("DistinctDays")
Range("FileLibStart").Offset(i, Lib_Length_col - 1) = pd.Range("Length")

```

```
Project.Close SaveChanges:=False
```

```
' Return no error
```

```
Update_project = 0
```

```
Exit Function
```

```
OpenError:
```

```
Update_project = 1      ' Return a file open error
```

```
End Function
```

```
Function WksExists(wksName As String) As Boolean
```

```
    On Error Resume Next
```

```
    WksExists = CBool(Len(Worksheets(wksName).name) > 0)
```

```
End Function
```

```
Sub Runavg()
```

```
    Dim result As Integer
```

```
    ThisWorkbook.Activate
```

```
    ActiveCell.Select
```

```
    result = avg_sheets("Resurface Existing Highway", 2)
```

```
End Sub
```

```
'/
```

```
'/ avg_sheets creates an average sheet called wsname. It averages the sheets
```

```
'/ listed in the ToAverage page. asize is the number of projects to average
```

```
'/
```

```
Function avg_sheets(ByVal wsname As String, asize As Integer)
```

```
    Dim Project As Workbook      ' The currently open project
```

```
    Dim pt As Worksheet          ' The table worksheet in the workbook
```

```
    Dim BlankWks As Worksheet    ' Blank output template
```

```
    Dim Toaverage As Worksheet   ' Dynamic sheet of averages
```

```
    Set Toaverage = Worksheets("ToAverage")
```

```
    Dim AvgS As Worksheet        ' Average sheet
```

```
    Dim T1Start As Range         ' Input Start Range
```

```
    Dim T0Start As Range         ' Output Start Range
```

```
    Dim Totalrow As Integer
```



```

Dim OTrow As Integer

Dim origname As String

Dim f As Integer
Dim p As Integer
Dim d As Integer
Dim e As Integer

Dim award_amount As Double
Dim original_days As Integer
Dim duration As Integer

Dim TotalStartI As Integer
Dim DSStartI As Integer
Dim PhaseStartI As Integer

Dim TotalStartO As Integer
Dim DSStartO As Integer
Dim PhaseStartO As Integer

Const DescLine As Integer = 3
Const NLine As Integer = 4
Const BidLine As Integer = 5
Const DaysLine As Integer = 6
Const DurLine As Integer = 7

' Set up the dynamic arrays

Load_List_Arrays

'* Replace characters in the phase name that are incompatible with sheet
titles

Dim curfile As String

origname = wsname
wsname = Left(Replace(wsname, "/", "-"), 30)

'* Delete the average output and blank worksheets if they exist

delete_worksheet (wsname)
delete_worksheet ("Blank_Sheet")

'* Create a new worksheet for the output and load the blank template

Set AvgS = Worksheets.Add

AvgS.Move Before:=Worksheets(tsStr)
AvgS.name = wsname

Dim result As Integer

result = Load_Sheet_Template("OutputTable", "List_Definitions")

Set BlankWks = Worksheets("OutputTable")
BlankWks.name = "Blank_Sheet"

BlankWks.Activate

'* Setup the blank workbook

Rows(1).Delete

```

```

Dim i As Integer

For i = 1 To 7
    Rows(2).Insert Shift:=xlDown
Next i

BlankWks.Cells(1, 1) = "Average Activity Use"
BlankWks.Cells(1, 1).Font.Size = 12
BlankWks.Cells(DescLine, 1) = "Sorted by"
BlankWks.Cells(NLine, 1) = "N"
BlankWks.Cells(BidLine, 1) = "Mean - Bid Price"
BlankWks.Cells(DaysLine, 1) = "Mean - Original Work Days"
BlankWks.Cells(DurLine, 1) = "Mean - Duration (Days)"
BlankWks.Cells(9, 1) = "Average Activity Use (Idle equipment excluded)"

Range("A1:A7").Font.Bold = True
Range("B1:B7").HorizontalAlignment = xlLeft

Range(Cells(BidLine, 2), Cells(BidLine, 3)).Merge ' Merge the currency row
to fit
Cells(BidLine, 2).HorizontalAlignment = xlLeft

TotalStartO = Range("TOTALSTART").Row
DSStartO = Range("DSSTART").Row
PhaseStartO = Range("PHASECHART").Resize(1, 1).Row

Cells.Copy

AvgS.Activate
AvgS.Paste

AvgS.Cells(DescLine, 2) = origname          ' What this is averaged by
'
'   ActiveWindow.Zoom = 70

' Exit if there are no files

If asize = 0 Then
    AvgS.Cells(NLine, 2) = 0
    AvgS.Cells(BidLine, 2) = 0
    AvgS.Cells(DaysLine, 2) = 0
    AvgS.Cells(DurLine, 2) = 0
    Exit Function
End If

' Find the starting positions for different tables

Totalrow = BlankWks.Range("TotalStart").Row
OTrow = BlankWks.Range("OTStart").Row

' *
' * STEP 1, SUM UP THE RUNNING TOTALS
' *

For f = 1 To asize
    ' Select and open the file
    curfile = Toaverage.Cells(f, 1)

    Set Project = Workbooks.Open(curfile)
    Set pt = Project.Worksheets(otStr)
    pt.Activate

```

```

award_amount = Range("Award_amount")
original_days = Range("Original_days")
duration = Range("Length")

' Setup the header

AvgS.Activate
AvgS.Cells(NLine, 2) = AvgS.Cells(NLine, 2) + 1 'N
AvgS.Cells(BidLine, 2) = AvgS.Cells(BidLine, 2) _
    + award_amount ' Original bid
AvgS.Cells(BidLine, 2).NumberFormat = "$#,##0"
AvgS.Cells(DaysLine, 2) = AvgS.Cells(DaysLine, 2) _
    + original_days ' Original working days
AvgS.Cells(DurLine, 2) = AvgS.Cells(DurLine, 2) _
    + duration ' Duration

'* Sum up the total chart

Set TOSTart = AvgS.Cells(TotalStartO + 2, 1)
Project.Activate
Set TISTart = Range("TotalStart").Offset(2, 0)
AvgS.Activate

For e = 1 To esize + 3
    TOSTart.Offset(e, 0) = TISTart.Offset(e, 0)
    For d = 1 To dl0size + 1
        TOSTart.Offset(e, d) = TOSTart.Offset(e, d) + _
            TISTart.Offset(e, d) ' Add to running total
    Next d
Next e

'* Sum up the date interval chart

Set TOSTart = AvgS.Cells(DSStartO - 1, 1)

For e = 3 To 4
    For d = 1 To dl0size
        TOSTart.Offset(e, d) = "-"
    Next d
Next e

'* Sum up the total phase chart

Set TOSTart = AvgS.Cells(PhaseStartO + 2, 1)
Project.Activate
Set TISTart = Range("PHASECHART").Resize(1, 1).Offset(2, 0)
AvgS.Activate

For p = 1 To psize + 1
    TOSTart.Offset(p, 0) = TISTart.Offset(p, 0)
    For d = 1 To dl0size + 1
        TOSTart.Offset(p, d) = TOSTart.Offset(p, d) + _
            TISTart.Offset(p, d) ' Add to running total
    Next d
Next p

'* Sum for each phase
For p = 1 To psize

    ' Set up the output starting points for each phase

    AvgS.Activate
    Set TOSTart = AvgS.Range("A1"). _

```

```

        Offset(OTableSpace * (p - 1) + 2 + (OTrow - 1), 0)
TOSTart.Offset(-2, 0) = parr(p, 1) & " (average hours)"

' Set up the input starting points for each phase

Project.Activate
Set TISTart = Range("OTStart").Offset(OTableSpace * (p - 1) + 2, 0)

' Build the table

AvgS.Activate

'* Sum up each chart

For e = 1 To esize + 3
    TOSTart.Offset(e, 0) = TISTart.Offset(e, 0)
    For d = 1 To dl0size + 1
        TOSTart.Offset(e, d) = TOSTart.Offset(e, d) + _
            TISTart.Offset(e, d)      ' Add to running total
    Next d
Next e

Next p

Project.Close SaveChanges:=False

Next f

'*
'* STEP 2: DIVIDE THE RUNNING TOTALS BY N
'*

'* Average the header
AvgS.Activate

AvgS.Cells(BidLine, 2) = AvgS.Cells(BidLine, 2) / asize
AvgS.Cells(DaysLine, 2) = AvgS.Cells(DaysLine, 2) / asize
AvgS.Cells(DurLine, 2) = AvgS.Cells(DurLine, 2) / asize

'* Average the total chart

Set TOSTart = AvgS.Cells(TotalStartO + 2, 1)

For e = 1 To esize + 3
    For d = 1 To dl0size + 1
        TOSTart.Offset(e, d) = TOSTart.Offset(e, d) / asize
        TOSTart.Offset(e, d).NumberFormat = "0"
    Next d
Next e

'* Average the Total By Phase Chart

Set TOSTart = AvgS.Cells(PhaseStartO + 2, 1)

For p = 1 To psize + 1
    For d = 1 To dl0size + 1
        TOSTart.Offset(p, d) = TOSTart.Offset(p, d) / asize
        TOSTart.Offset(p, d).NumberFormat = "0"
    Next d
Next p

'* Average each phase

```

```

For p = 1 To psize
    ' Set up the output starting points for each phase

    Set TOSTart = AvgS.Range("A1"). _
        Offset(OTableSpace * (p - 1) + 2 + (OTrow - 1), 0)
    TOSTart.Offset(-2, 0) = parr(p, 1) & " (average hours)"

    ' Loop though each table and divide and format

    For e = 1 To esize + 3

        For d = 1 To dl0size + 1
            TOSTart.Offset(e, d) = TOSTart.Offset(e, d) / asize
            TOSTart.Offset(e, d).NumberFormat = "0"
        Next d
    Next e

Next p

AvgS.Cells(1, 1).Select

End Function

Sub maketypepagesall()

    MakeTypePages 0, 100000000, 0, 50000

End Sub

'/
'/  MakeTypePages uses the avg_sheets routine to output average sheets for all
'/  of the project types
'/
'/  The minamount, maxamount, mindur and maxdur values limit the sample in
range
'/

Sub MakeTypePages(minamount As Currency, maxamount As Currency, _
    Mindur As Integer, Maxdur As Integer)

    Dim Lib As Worksheet
    Set Lib = Worksheets(libStr)

    Dim TA As Worksheet
    Set TA = Worksheets(taStr)

    Dim TS As Worksheet
    Set TS = Worksheets(tsStr)

    Dim EPT As Worksheet
    Set EPT = Worksheets(eptStr)

    Dim i As Integer
    Dim num As Integer
    Dim result As Integer
    Dim ti As Integer
    Dim c As Integer

    Dim awardamount As Currency
    Dim duration As Integer

```

```

Update_ListDef

Load_List_Arrays

ThisWorkbook.Activate
ActiveCell.Select

TA.Cells.ClearContents
TS.Cells.ClearContents
TS.Cells.ClearFormats

ti = 1

' Loop through each project type and run the average sub

For c = 1 To csize
    i = 0
    num = 0
    TA.Cells.ClearContents

    ' Write a header row for the summary sheet

    TS.Activate

    TS.Cells(ti, 1) = carr(c, 1)
    ti = ti + 1
    TS.Cells(ti, 1) = "Project number"
    TS.Cells(ti, 2) = "Award Amount"
    TS.Cells(ti, 3) = "Original Days"
    TS.Cells(ti, 4) = "Duration"

    TS.Cells(ti - 1, 1).Resize(2, 4).Font.Bold = True

    ti = ti + 1

    '* Loop through the file library

    Do While Not IsEmpty(Lib.Range("FileLibStart").Offset(i + 1, 0))

        '* Determine if the project type is correct

        If Lib.Range("FileLibStart").Offset(i + 1, Lib_projtype_col - 1) _
            = carr(c, 1) Then

            awardamount = Lib.Range("filelibstart"). _
                Offset(i + 1, Lib_awardamount_col - 1)

            duration = Lib.Range("FilelibStart"). _
                Offset(i + 1, Lib_Length_col - 1)

            '* Determine if the project fits the cost/duration requirements

            If (awardamount >= minamount) And (awardamount < maxamount) And

                (duration >= Mindur) And (duration < Maxdur) Then

                '* make an entry on the "ToAverage" page
                TA.Cells(num + 1, 1) = Lib.Range("FileLibStart"). _
                    Offset(i + 1, Lib_Filename_Col - 1)
                num = num + 1

                '* Update the summary sheet

```

```

        TS.Cells(ti, 1) = Lib.Range("FileLibStart"). _
            Offset(i + 1, Lib_ProjNum_col - 1)
        TS.Cells(ti, 2) = awardamount
        TS.Cells(ti, 3) = Lib.Range("FilelibStart"). _
            Offset(i + 1, Lib_origdays_col - 1)
        TS.Cells(ti, 4) = duration
        ti = ti + 1
    End If

    End If
    i = i + 1
Loop

TS.Cells(ti, 1) = "Average"

If num > 0 Then
    TS.Cells(ti, 2) = WorksheetFunction.Average( _
        Cells(ti - num, 2).Resize(num, 1))
    TS.Cells(ti, 2).NumberFormat = "$#,##0"

    TS.Cells(ti, 3) = WorksheetFunction.Average( _
        Cells(ti - num, 3).Resize(num, 1))
    TS.Cells(ti, 3).NumberFormat = "0"

    TS.Cells(ti, 4) = WorksheetFunction.Average( _
        Cells(ti - num, 4).Resize(num, 1))
    TS.Cells(ti, 4).NumberFormat = "0"

Else
    TS.Cells(ti, 2) = 0
    TS.Cells(ti, 3) = 0
    TS.Cells(ti, 4) = 0
End If

ti = ti + 2
result = avg_sheets(carr(c, 1), num)

Next c

End Sub

Sub FillePT()

    Dim EPT As Worksheet
    Set EPT = Worksheets(eptStr)

    Dim t As Integer
    Dim e As Integer
    Dim d As Integer
    Dim p As Integer

    Load_List_Arrays

    '* Set up some reference points

    Dim firstequiprow As Integer
    Dim avgrow As Integer
    Dim phaserow As Integer
    Dim ptrow As Integer

    Dim TNR As Integer ' for the date-type chart input
    Dim TT As Integer
    Dim GT As Integer

```

```

Dim NRTOutR As Integer ' for the date-type chart output
Dim NROutR As Integer
Dim TOutR As Integer

Dim DTcol As Integer

firstequiprow = Range("TotalStart").Row + 3
avgrow = 6
phaserow = Range("PHASECHART").Resize(1, 1).Row + 3
ptrow = avgrow + esize + 9

' MODIFY THESE IF THE EQUIPMENT LIST CHANGES!!

TNR = 50 ' Nonroad total row
TT = 54 ' Truck total row
GT = 55 ' Grand total row

NRTOutR = 6
NROutR = 23
TOutR = 40

DTcol = 11

'* The poor mans method of creating an array to scroll through the sheets
for
'* the project types (since they differ slightly from the project names)

Const tsize As Integer = 6
' column 1 is the name, column 2 is N, column 3 is workspace

Dim tarr(1 To tsize, 1 To 3) As Variant

tarr(1, 1) = "Resurface Existing Highway"
tarr(2, 1) = "Construct Freeway - Extra Lane"
tarr(3, 1) = "Pavement Rehabilitation - Wide"
tarr(4, 1) = "Construct, Reconstruct Bridge"
tarr(5, 1) = "Construct median, thrie beam b"
tarr(6, 1) = "Landscaping"

'* Populate the average activity use sheet

For t = 1 To tsize

    '* Get N for each type

    tarr(t, 2) = Sheets(tarr(t, 1)).Range("B4")

    '* Copy into the equipment-type table

    Sheets(tarr(t, 1)).Activate

    Range(Cells(firstequiprow, dl0size + 2), _
        Cells(esize + firstequiprow + 2, dl0size + 2)).Copy

    EPT.Cells(avgrow, t + 2).PasteSpecial Paste:=xlPasteValues

    '* Copy into the phase-type table

    Sheets(tarr(t, 1)).Activate

    Range(Cells(phaserow, dl0size + 2), _
        Cells(psize + phaserow + 1, dl0size + 2)).Copy

```



```

EPT.Cells(ptrow, t + 2).PasteSpecial Paste:=xlPasteValues

'* Copy into the date-hours table
'* Grand total first

Sheets(tarr(t, 1)).Activate

Range(Cells(GT, 2), Cells(GT, d10size + 2)).Copy

EPT.Cells(NRTOuR, DTcol + t).PasteSpecial Paste:=xlPasteValues, _
    Transpose:=True

Application.CutCopyMode = xlCopy

EPT.Cells(NRTOuR + d10size + 1, DTcol + t) = Sheets(tarr(t,
1)).Range("B7")

'* Then NONROAD Equipment

Sheets(tarr(t, 1)).Activate

Range(Cells(TNR, 2), Cells(TNR, d10size + 2)).Copy

EPT.Cells(NROuR, DTcol + t).PasteSpecial Paste:=xlPasteValues, _
    Transpose:=True

Application.CutCopyMode = xlCopy

EPT.Cells(NROuR + d10size + 1, DTcol + t) = Sheets(tarr(t,
1)).Range("B7")

'* Then Trucks

Sheets(tarr(t, 1)).Activate

Range(Cells(TT, 2), Cells(TT, d10size + 2)).Copy

EPT.Cells(TOuR, DTcol + t).PasteSpecial Paste:=xlPasteValues, _
    Transpose:=True

Application.CutCopyMode = xlCopy

EPT.Cells(TOuR + d10size + 1, DTcol + t) = Sheets(tarr(t,
1)).Range("B7")

Next t

'* Insert the N values

EPT.Activate

For t = 1 To 6

    Cells(avgrow - 1, 2 + t) = tarr(t, 2)
    Cells(ptrow - 1, 2 + t) = tarr(t, 2)
    Cells(NRTOuR - 1, DTcol + t) = tarr(t, 2)
    Cells(NROuR - 1, DTcol + t) = tarr(t, 2)
    Cells(TOuR - 1, DTcol + t) = tarr(t, 2)

Next t

```

```

Application.CutCopyMode = False

EPT.Activate

Range("A1").Activate

End Sub

'/
'/ Returns true if a file exists. False if it does not.
'/

'Function FileExists(sFilePath As String) As Boolean
'    If Len(Dir(sFilePath)) = 0 Then
'        FileExists = False
'    Else
'        FileExists = True
'    End If
'End Function

'/
'/ This procedure creates an output file containing the database from each of
the
'/ project files in text format. Only new files are allowed
'/

Sub OutputWordTables(f As Variant)

    ThisWorkbook.Activate
    ActiveCell.Select

    Dim Lib As Worksheet
    Set Lib = Worksheets(libstr)

    Dim ProjLib As Workbook
    Dim Project As Workbook

    Set ProjLib = ThisWorkbook

    Dim i As Integer
    Dim Filename As String
    Dim fstr As String
    Dim numfiles As Integer
    Dim result As Integer

    '* Count the number of files

    fstr = f
    i = 0

    Do While Not IsEmpty(Lib.Range("FileLibStart").Offset(i + 1, 0))
        i = i + 1
    Loop

    numfiles = i

    '* Turn off the alerts display to stop the "lots of info on clipboard"
dialog

```

```

Application.DisplayAlerts = False

'* Output the first file

If numfiles > 0 Then

    Filename = Lib.Range("FileLibStart").Offset(1, 0)
    Set Project = Workbooks.Open(Filename)

    result = Application.Run("'" & Filename & "'!OutputWordTable" _
        , fstr, 0)

    Project.Close SaveChanges:=False

End If

'* Output the rest of the files if there are any

If numfiles > 1 Then

    i = 1

    Do While Not IsEmpty(Lib.Range("FileLibStart").Offset(i + 1, 0))

        Filename = Lib.Range("FileLibStart").Offset(i + 1, 0)
        Set Project = Workbooks.Open(Filename)

        result = Application.Run("'" & Filename & "'!OutputWordTable" _
            , fstr, 1)

        Project.Close SaveChanges:=False

        i = i + 1
    Loop

End If

Application.DisplayAlerts = True

End Sub

Sub Outavgrun()

    OutputAverageTables ("Dog.xls")

End Sub

' /
' / This procedure creates an output file with all of the averages by project
type
' /

Sub OutputAverageTables(f As Variant)

    ThisWorkbook.Activate
    ActiveCell.Select

    '* Turn off the alerts display to stop the "lots of info on clipboard"
dialog

    Application.DisplayAlerts = False

```

```

    '* Output the first file
Worksheets("Resurface Existing Highway").Activate
MsgBox "Resurface Existing Highway"

    '* Then output the remaining files

Worksheets("Construct Freeway - Extra Lane").Activate
MsgBox "Construct Freeway / Extra Lane"

Worksheets("Pavement Rehabilitation - Wide").Activate
MsgBox "Pavement Rehabilitation / Widening"

Worksheets("Construct, Reconstruct Bridge").Activate
MsgBox "Construct, Reconstruct Bridge"

Worksheets("Construct median, thrie beam b").Activate
MsgBox "Construct median, thrie beam barrier"

Worksheets("Landscaping").Activate
MsgBox "Landscaping"

Application.DisplayAlerts = True
End Sub

' /
' / This procedure creates an output file containing the database from each of
the
' / project files in excel format
' /
' / Outtype: 0 = excel, 1 = text (tab delin)
' /

Sub OutputExcelDBs(f As Variant, outtype As Integer)

    ThisWorkbook.Activate
    ActiveCell.Select

    Dim Lib As Worksheet
    Set Lib = Worksheets(libstr)

    Dim ProjLib As Workbook
    Dim Project As Workbook

    Set ProjLib = ThisWorkbook

    Dim i As Integer
    Dim Filename As String
    Dim fstr As String
    Dim numfiles As Integer
    Dim result As Integer

    '* Count the number of files

    fstr = f
    i = 0

    Do While Not IsEmpty(Lib.Range("FileLibStart").Offset(i + 1, 0))
        i = i + 1
    Loop

    numfiles = i

```

```

    '* Turn off the alerts display to stop the "lots of info on clipboard"
dialog

    Application.DisplayAlerts = False

    '* Output the first file

    If numfiles > 0 Then

        Filename = Lib.Range("FileLibStart").Offset(1, 0)
        Set Project = Workbooks.Open(Filename)

        result = Application.Run("'" & Filename & "'!OutputExcelDB" _
            , fstr, 0, outtype)

        Project.Close SaveChanges:=False

    End If

    '* Output the rest of the files if there are any

    If numfiles > 1 Then

        i = 1

        Do While Not IsEmpty(Lib.Range("FileLibStart").Offset(i + 1, 0))

            Filename = Lib.Range("FileLibStart").Offset(i + 1, 0)
            Set Project = Workbooks.Open(Filename)

            result = Application.Run("'" & Filename & "'!OutputExcelDB" _
                , fstr, 1, outtype)

            Project.Close SaveChanges:=False

            i = i + 1
        Loop

    End If

    Application.DisplayAlerts = True

End Sub

'/'
'/' This function adds all of the files from the file library into the listbox
on
'/' the user interface page.
'/'

Sub Update_Listbox()

    Dim Lib As Worksheet
    Set Lib = Worksheets(libstr)

    Dim i As Integer

    MainUI.ProjListBox.Clear

    Do While Not IsEmpty(Lib.Range("FileLibStart").Offset(i + 1, 0))

```

```

        MainUI.ProjListBox.AddItem _
            Lib.Range("FileLibStart").Offset(i + 1, Lib_ProjNum_col - 1)

        i = i + 1
    Loop

    If i > 0 Then

        MainUI.ProjListBox.ListIndex = 0
    End If
End Sub

' /
' / The Update_ListDef subroutine updates the list definitions for equipment,
' / phase and project
' / category from the definitions.xls file.
' /

Sub Update_ListDef()

    Dim defBook As Workbook
    Dim projBook As Workbook

    Dim CopyRange As Range

    Dim r As Integer

    Set projBook = ActiveWorkbook

    ' Open the definitions file

    If Not OpenOrFind(defFile) Then
        MsgBox "Unable to open " & defFile, vbCritical
        Exit Sub
    End If

    Set defBook = ActiveWorkbook

    projBook.Activate

    ' Clear the lists worksheet

    Set Lsht = Worksheets(listStr)
    Lsht.Activate
    Lsht.Cells.ClearContents

    ' Set the start row for the copying

    r = list_start_row

    '*
    '* Load and copy Category Definitions and set up the name label
    '*

    Set CopyRange = defBook.Worksheets("Categories").Range("A1").CurrentRegion

    CopyRange.Copy Lsht.Cells(r, 1)

    r = r + CopyRange.Rows.Count + 1

    ' select the range and remove the header row before assigning the name
    label

```

```

Set CopyRange = Lsht.Cells(r - 2, 1).CurrentRegion
Set CopyRange = CopyRange.Offset(1, 0).Resize(CopyRange.Rows.Count - 1, 1)

Names.Add name:="Categories", RefersTo:="=" & listStr & "!" &
CopyRange.Address

' *
' * Load and copy Equipment Definitions and set up the name label
' *

Set CopyRange = defBook.Worksheets("EquipTypes").Range("A1").CurrentRegion

CopyRange.Copy Lsht.Cells(r, 1)

r = r + CopyRange.Rows.Count + 1

' select the range and remove the header row and tags before assigning the
name label
Set CopyRange = Lsht.Cells(r - 2, 1).CurrentRegion
Set CopyRange = CopyRange.Offset(1, 0).Resize(CopyRange.Rows.Count - 1, 1)

Names.Add name:="EquipTypes", RefersTo:="=" & listStr & "!" &
CopyRange.Address

' *
' * Load and copy Phase Definitions and set up the name label
' *

Set CopyRange = defBook.Worksheets("Phases").Range("A1").CurrentRegion

CopyRange.Copy Lsht.Cells(r, 1)

' select the range and remove the header row and tags before assigning the
name label
Set CopyRange = Lsht.Cells(r + 1, 1).CurrentRegion
Set CopyRange = CopyRange.Offset(1, 0).Resize(CopyRange.Rows.Count - 1, 1)

Names.Add name:="Phases", RefersTo:="=" & listStr & "!" & CopyRange.Address

Range("A1") = "DO NOT EDIT THIS PAGE DIRECTLY! Make changes to " & defFile
& " and then update definitions"

defBook.Close

End Sub

' *
' * Runs the OutputDB and OutputTable functions in all of the project files.
' * Great for running and then going to bed.
' *

Sub runalloutput()

Dim startrun As Date
Dim endrun As Date

startrun = Time

ThisWorkbook.Activate
ActiveCell.Select

Dim Lib As Worksheet
Set Lib = Worksheets(libstr)

```

```

Dim ProjLib As Workbook
Dim Project As Workbook

Set ProjLib = ThisWorkbook

Dim i As Integer
Dim Filename As String
Dim fstr As String
Dim numfiles As Integer
Dim result As Integer

i = 0

Do While Not IsEmpty(Lib.Range("FileLibStart").Offset(i + 1, 0))

    Filename = Lib.Range("FileLibStart").Offset(i + 1, 0)
    Set Project = Workbooks.Open(Filename)

    result = Application.Run("'" & Filename & "'!Output_DB")
    result = Application.Run("'" & Filename & "'!Output_Table")

    Project.Close SaveChanges:=True

    i = i + 1
Loop

endrun = Time

MsgBox FormatDateTime(startrun, vbLongTime) & vbCrLf & _
    FormatDateTime(endrun, vbLongTime)

End Sub

Sub tstout()

    ExportExcelAverages ("Testout.xls")

End Sub

'/
'/ This routine copies all of the phase sheets to an external workbook
'/

Sub ExportExcelAverages(fname As Variant)

    Dim ProjLib As Workbook
    Dim Outbook As Workbook
    Dim EPTSheet As Worksheet

    Set ProjLib = ThisWorkbook

    Set Outbook = Workbooks.Add

    ProjLib.Activate

    '*
    '* Copy the type worksheet and the phase worksheets
    '*

    ProjLib.Sheets("Landscaping").Copy Before:=Outbook.Sheets(1)
    ProjLib.Sheets("Construct median, thrie beam b").Copy
    Before:=Outbook.Sheets(1)

```



```

    ProjLib.Sheets("Construct, Reconstruct Bridge").Copy
Before:=Outbook.Sheets(1)
    ProjLib.Sheets("Pavement Rehabilitation - Wide").Copy
Before:=Outbook.Sheets(1)
    ProjLib.Sheets("Construct Freeway - Extra Lane").Copy
Before:=Outbook.Sheets(1)
    ProjLib.Sheets("Resurface Existing Highway").Copy Before:=Outbook.Sheets(1)

' *
' *   Copy the E&P&S worksheet
' *

Outbook.Sheets.Add Before:=Outbook.Sheets(1)

Set EPTSheet = ActiveSheet
EPTSheet.name = "Results E&P&T"

ProjLib.Sheets("Results E&P&T").Activate
Cells.Select
Selection.Copy

EPTSheet.Activate
ActiveWindow.Zoom = 75

Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks
-
    :=False, Transpose:=False
Selection.PasteSpecial Paste:=xlPasteFormats, Operation:=xlNone, _
    SkipBlanks:=False, Transpose:=False
Selection.PasteSpecial Paste:=xlPasteColumnWidths, Operation:=xlNone, _
    SkipBlanks:=False, Transpose:=False

Application.CutCopyMode = False

' *
' *   Copy the Type Summary Worksheet
' *

ProjLib.Sheets("Type Summary").Copy Before:=Outbook.Sheets(1)

Application.CutCopyMode = False

ActiveWorkbook.SaveAs Filename:= _
    fname, _
    FileFormat:=xlNormal, Password:="", WriteResPassword:="", _
    ReadOnlyRecommended:=False, CreateBackup:=False
ActiveWindow.Close

ProjLib.Activate

End Sub

Sub batchout(name As String, minamount As Currency, maxamount As Currency, _
    Mindur As Integer, Maxdur As Integer)

' * Run MakeTypes, make the Excel sheets

MakeTypePages minamount, maxamount, Mindur, Maxdur

' * Update E&P&T

FillePT

```

```

    '* Export the Excel sheets to an external excel file

ExportExcelAverages (name & ".xls")

    '* Export the Excel sheets to Word

    '* Delete the sheets in projlib

delete_worksheet ("Resurface Existing Highway")
delete_worksheet ("Construct Freeway - Extra Lane")
delete_worksheet ("Pavement Rehabilitation - Wide")
delete_worksheet ("Construct, Reconstruct Bridge")
delete_worksheet ("Construct median, thrie beam b")
delete_worksheet ("Landscaping")
delete_worksheet ("Other")

End Sub

Sub runbatch()

    batchout "B1-All", 0, 100000000, 0, 5000

    batchout "B1-LT1M-all", 0, 1000000, 0, 5000
    batchout "B1-GT1M-all", 1000000, 1000000000, 0, 5000

    batchout "B1-all-LT6MO", 0, 100000000, 0, 182
    batchout "B1-all-6MO1YR", 0, 100000000, 182, 365
    batchout "B1-all-GT1YR", 0, 100000000, 365, 5000

    batchout "B1-LT1M-LT6MO", 0, 1000000, 0, 182
    batchout "B1-LT1M-6MO1YR", 0, 1000000, 182, 365
    batchout "B1-LT1M-GT1YR", 0, 1000000, 365, 5000

    batchout "B1-GT1M-LT6MO", 1000000, 1000000000, 0, 182
    batchout "B1-GT1M-6MO1YR", 1000000, 1000000000, 182, 365
    batchout "B1-GT1M-GT1YR", 1000000, 1000000000, 365, 5000

End Sub

```

## Module 2

'Functional Utilities: File utilities, parsers, etc...

```
Public Const ofStr As String = "OutputForms"
Public of As Worksheet
```

```
Public Const templateFile As String = "Templates.xls"
```

```
Option Explicit
```

```
Public Const rnStr As String = "Range_Names"
Dim rn As Worksheet
```

```

' Check if a file exists
Function FileExists(sFilePath As String) As Boolean
    If Len(Dir(sFilePath)) = 0 Then
        FileExists = False
    Else
        FileExists = True
    End If

```

```

End Function

' If a cell is empty then return an empty string rather than an error
Function Notempty(istr As String) As String

If IsEmpty(istr) Then
    Notempty = ""
Else
    Notempty = istr
End If

End Function

'/
'/ Returns true if a worksheet with the string name wsstr exists, and false if
it
'/ doesn't.
'/

Function worksheet_exists(wsstr As String) As Boolean

    Dim ws As Worksheet

    On Error GoTo notexist

    Set ws = Worksheets(wsstr)

    On Error GoTo 0

    worksheet_exists = True

Exit Function
notexist:

worksheet_exists = False

End Function

' Return the short filename
Function GetFileName(FullPath As Variant)
Dim StrFind As String
Dim icount As Integer

    Do Until Left(StrFind, 1) = "\"
        icount = icount + 1
        StrFind = Right(FullPath, icount)
        If icount = Len(FullPath) Then Exit Do
    Loop

    GetFileName = Right(StrFind, Len(StrFind) - 1)

End Function

'/
'/ delete_worksheet:
'/ Deletes a worksheet without calling an error message or asking for
verification
'/

Sub delete_worksheet(name As String)

    On Error Resume Next

```

```

    Application.DisplayAlerts = False
    Worksheets(name).Delete
    Application.DisplayAlerts = True

    On Error GoTo 0

End Sub

'/ Function OpenOrFind:
'/ The OpenOrFind function opens a system file such as the definitions file
that should be located
'/ in the same directory as the add-in. If it is not, then a file dialog is
opened and the user is
'/ prompted to find it. Only good for the .xls extension
'/
'/ Return Values: 1 = the file has been opened.
'/                0 = the user canceled the dialog box or there was another
error
'/

Function OpenOrFind(openname As String) As Boolean

    Dim wkbook As Workbook

    Dim Filename As Variant
    Dim Finfo As String
    Finfo = "Excel Files (*.xls),*.xls," & "All Files (*.*),*.*"

    '*
    '* Exit if this file is already open, and return 1
    '*

    For Each wkbook In Workbooks
        If wkbook.name = openname Then
            wkbook.Activate
            OpenOrFind = 1
            Exit Function
        End If
    Next wkbook

    '*
    '* Change to the project add-in directory, attempt to open the file, and
trip the error handler
    '* if there is a problem
    '*

    ChDir ThisWorkbook.Path

    On Error GoTo OpenError

    Workbooks.Open openname

    On Error GoTo 0

    OpenOrFind = True

    Exit Function

    '*
    '* The error handler loads an open file dialog box to find the file.
False is returned if
    '* the user cancels the error handler.

```

```

' *

OpenError:

    ' Show an error and bring up the file browser
    MsgBox " Error opening " & openname & ", please locate", vbCritical
    Filename = Application.GetOpenFilename(Finfo, 2, "Locate " & openname)

    ' exit if cancel is selected and return 0
    If Filename = False Then
        MsgBox openname & " not selected. Exiting procedure"
        OpenOrFind = False
        Exit Function
    End If

    ' re-loop if the filename still has not been selected
    If GetFileName(Filename) <> openname Then
        GoTo OpenError
    End If

    Resume

End Function

'/
'/ Make sure that the template does not exist before calling!!!
'/

Function Load_Sheet_Template(ShtName As String, Aftstr As String) As Boolean

    Dim tempBook As Workbook
    Dim projBook As Workbook

    Set projBook = ActiveWorkbook

    ' *
    ' * Open the template file, and copy the page
    ' *

    If Not OpenOrFind(templateFile) Then
        MsgBox "Unable to open " & templateFile, vbCritical
        Exit Function
    End If

    Set tempBook = ActiveWorkbook

    projBook.Activate

    On Error GoTo templateerror

        tempBook.Worksheets(ShtName).Copy After:=projBook.Worksheets(Aftstr)

    On Error GoTo 0

    ' *
    ' * Copy the range values from the "Range_Names" sheet in the template file
    ' *

    Dim rs As Worksheet
    Set rs = tempBook.Worksheets("Range_Names")

    Dim r As Integer

```

```

Dim addname As String

r = 2

Do While Not IsEmpty(rs.Cells(r, 1))

    If UCase(rs.Cells(r, 1)) = UCase(ShtName) Then
        addname = "=" & rs.Cells(r, 1) & "!" & rs.Cells(r, 3)

        On Error GoTo nameerror
        projBook.Names.Add name:=rs.Cells(r, 2), RefersTo:=addname
        On Error GoTo 0
    End If

    r = r + 1
Loop

tempBook.Close

Load_Sheet_Template = True

Exit Function

templateerror:
    MsgBox "Error copying template worksheet: " & ShtName & vbCrLf & _
        "after worksheet: " & Aftstr, vbCritical
    Load_Sheet_Template = False
    Exit Function

nameerror:
    MsgBox "Error adding name " & rs.Cells(r, 2) & " to the names definitions "
    & vbCrLf & _
        "under address: " & addname
    Load_Sheet_Template = False

End Function

'/ Function IsProjectActive:
'/ This function returns 0 if the active file is not a project module file, and
1 if it is.
'/ It uses the fact that the text "ProgramVersion" is in cell A4 in the
"Definitions" sheet
'/ So do not mess around with that field
'/
'/ Possible future upgrade to determine if the version of the VBA code and the
spreadsheet template match
'/

Function IsProjectActive() As Boolean

    On Error GoTo ActiveError

    IsProjectActive = (ActiveWorkbook.Worksheets(defnStr).Cells(4, 1) =
"ProgramVersion")

    On Error GoTo 0

Exit Function

ActiveError:

IsProjectActive = 0

```

```

End Function

' /
' / Load_List_Arrays loads the time, category, equipment and phase lists into
public dynamic arrays
' /

Sub Load_List_Arrays()

Dim r As Integer
Dim c As Integer

' * Find the size of the arrays

psize = Range("Phases").Rows.Count
dsize = Range("DateLabels").Rows.Count
dl0size = 10
esize = Range("EquipTypes").Rows.Count
csize = Range("Categories").Rows.Count

pvars = Range("Phases").CurrentRegion.Columns.Count
dvars = 1
dl0vars = 1
evars = Range("EquipTypes").CurrentRegion.Columns.Count
cvars = Range("Categories").CurrentRegion.Columns.Count

' * Resize the arrays

ReDim parr(1 To psize, 1 To pvars)
ReDim darr(1 To dsize, 1 To dvars)
ReDim dl0arr(1 To dl0size, 1 To dl0vars)
ReDim earr(1 To esize, 1 To evars)
ReDim carr(1 To csize, 1 To cvars)

' * Populate the arrays

For r = 1 To psize
    For c = 1 To pvars
        parr(r, c) = Range("Phases").Rows(r).Columns(c)
    Next c
Next r

For r = 1 To dsize
    For c = 1 To dvars
        darr(r, c) = Range("DateLabels").Rows(r).Columns(c)
    Next c
Next r

For r = 1 To dl0size
    For c = 1 To dl0vars
        dl0arr(r, c) = Range("DateLabels").Rows((r * 2) - 1).Columns(c)
    Next c
Next r

For r = 1 To esize
    For c = 1 To evars
        earr(r, c) = Range("EquipTypes").Rows(r).Columns(c)
    Next c
Next r

For r = 1 To csize
    For c = 1 To cvars
        carr(r, c) = Range("Categories").Rows(r).Columns(c)
    Next c
Next r

```

```

        Next c
    Next r

End Sub

' *
' * This procedure loads the contents of the equipment codes page into a
dynamic array
' * A lot of memory is likely used, so it may be worth figuring out how to
clear it later
' *

Sub Load_ec_array()

    ' *
    ' * Open the definitions workbook and count the rows
    ' *

    Dim DEF As Workbook
    Dim proj As Workbook

    Dim CT As Worksheet

    Set proj = ActiveWorkbook

    If OpenOrFind(defFile) = False Then
        Exit Sub
    End If

    Set DEF = ActiveWorkbook

    Set CT = DEF.Worksheets("Equip_Codes")
    CT.Activate

    ecsizes = Range("A1").CurrentRegion.Rows.Count - 1

    proj.Activate

    ' *
    ' * Resize the arrays
    ' *

    ReDim ecarr(1 To ecsizes, 1 To 7)

    ' *
    ' * Fill the array
    ' *

    Dim i As Integer
    Dim j As Integer

    For i = 1 To ecsizes - 1
        For j = 1 To 7
            ecarr(i, j) = CT.Range("A1").Offset(i, j - 1)
        Next j
    Next i

    DEF.Close

End Sub

```



```

'/'
'/ This function determines if a string is included in the array of phase names
'/ Be sure that Load_List_Arrays() has been run first
'/'

```

```
Function IsPhase(pStr As String) As Boolean
```

```
Dim i As Integer
```

```
IsPhase = False
```

```
For i = 1 To psize
    If parr(i, 1) = pStr Then
        IsPhase = True
    End If

```

```
Next i
End Function
```

```

'/'
'/ This function determines if a string is included in the array of equipment
names
'/ Be sure that Load_List_Arrays() has been run first
'/'

```

```
Function IsEquip(eStr As String) As Boolean
```

```
Dim i As Integer
```

```
IsEquip = False
```

```
For i = 1 To esize
    If earr(i, 1) = eStr Then
        IsEquip = True
    End If

```

```
Next i
End Function
```

```

'/'
'/ Add_Blank_sheet add's a blank sheet. Be sure to delete the existing sheet
'/ before running. Otherwise it will trigger an error
'/'

```

```
Function Add_Blank_Sheet(ShtName As String, Aftstr As String) As Boolean
```

```
Dim prevsheet As Worksheet
Set prevsheet = ActiveSheet
```

```
'On Error GoTo loadererror
```

```
Worksheets.Add After:=Worksheets(Aftstr)
```

```
'On Error GoTo 0
```

```
ActiveSheet.name = ShtName
```

```
prevsheet.Activate
```

```

Add_Blank_Sheet = True

Exit Function

loadererror:
    MsgBox "Error creating worksheet: " & ShtName & vbCrLf & _
        "after worksheet: " & Aftstr, vbCritical
    Add_Blank_Sheet = False
    Exit Function

End Function

Sub Test()

Dim result As Boolean

delete_worksheet ("Assign_equip")
result = Load_Sheet_Template("Assign_equip", "Pay_Items")

End Sub

'/ Load_Range_Template (String)

'/ Each one of the above should set the name definitions for page

'/
'/ Sub_activity sums all activity for a specific phase, date interval and
'/ equipment type from the output DB.
'/

Function Sum_activity(equipstr As Variant, phase As Variant, incr As Variant)
As Variant

    Range("Arraytotal").FormulaArray = datetrans & incr & equiptrans & equipstr
& _
    phasetrans & phase & hrtrans

    Sum_activity = Range("Arraytotal").Value

End Function

' The entire body of the sum_activity fast function
' Range("Arraytotal").FormulaArray = "=Sum( (OutputDB!C2:C8283=""" & incr &
'
'                                     """)*(OutputDB!D2:D8283=""" & equipstr
& _
'                                     """)*(OutputDB!E2:E8283=""" & phase &
'
'                                     """)*(OutputDB!F2:F8283))"

' Do While Not IsEmpty(OS.Offset(i, 0))
'     If (OS.Offset(i, o_equipcat_col - 1) = equipstr) And _
'         (OS.Offset(i, o_phase_col - 1) = phase) And _
'         (OS.Offset(i, o_dateint_col - 1) = incr) Then
'         runttotal = runttotal + OS.Offset(i, o_hrs_col - 1)
'     End If
'
'     i = i + 1
' Loop

Sub testout()
Dim res As Integer

```

```

res = OutputAvgTable("avgtest", 0)

End Sub

'/
'/ Output the table output to a word document
'/ If the document exists, then append the output
'/   mode: 0 = new, 1 = append
'/   returns 1 if there is a file open error, 0 otherwise
'/

Function OutputAvgTable(Outfile As String, mode As Integer)

    Dim RangeStart As String
    Dim RangeEnd As String
    Dim CopyRange As String

    ' 1. Setup the internals of the word program.  Make references to the
program,
    ' document and selection

    Dim wdapp As Word.Application
    Dim wda As Word.Document
    Dim wds As Word.Selection

    Dim otStr As String

    otStr = "OutputTable"

    Set wdapp = CreateObject("Word.Application")

    With wdapp
        .Visible = True
        .WindowState = wdWindowStateMaximize
    End With

    ' 2. Open a file with the assigned filename.  Trigger the error handler if
    ' it doesn't work and create the file with the filename

    Dim Filename As String
    Filename = Outfile

    Dim newfile As Boolean
    newfile = False

    Dim ans As String
    Dim Msg As String

    wdapp.ChangeFileOpenDirectory ThisWorkbook.Path

    On Error GoTo OpenError

    wdapp.Documents.Open Filename:=Filename

    ' 3. Scroll to the end of the document (or the beginning if this is a new
document)
    ' insert a page break and set the first page to landscape from that point
on.

    Set wda = wdapp.ActiveDocument
    Set wds = wdapp.Selection

    On Error GoTo 0

```

```

If Not newfile Then
    wds.EndKey Unit:=wdStory

    ' landscape from here on out code
    wda.Range(Start:=wds.Start, End:=wds.Start). _
        InsertBreak Type:=wdSectionBreakNextPage
    wds.Start = wdapp.Selection.Start + 1
'
'
'    wda.Range(start:=wds.start, End:=wda. _
'        Content.End).PageSetup.Orientation = wdOrientLandscape
End If

'
'    If newfile Then
'        wdapp.ActiveDocument.Range(start:=wdapp.Selection.start,
End:=wdapp.ActiveDocument. _
'            Content.End).PageSetup.Orientation = wdOrientLandscape
'    End If

' 4. Paste the first two charts

wds.Font.Bold = True
wds.Font.name = "Aerial"
wds.Font.Size = 12
wds.TypeText Text:="PROJECT: " & Range("Projectnum") & vbTab & _
    UCase(Range("Category")) & vbTab & "PAGE 1/14"
wds.TypeParagraph
wds.TypeParagraph

'    Range(ofStr & "!" & "IDTABLE").Copy ' Copy the header table
'
'    wds.Range.PasteSpecial Placement:=wdInLine,
DataType:=wdPasteEnhancedMetafile
'
'    wds.EndKey Unit:=wdStory
'    wds.TypeParagraph
'    wds.TypeParagraph

Range(otStr & "!" & "DICHART").Copy ' Copy the time headers

wds.Range.PasteSpecial Placement:=wdInLine,
DataType:=wdPasteEnhancedMetafile

wds.EndKey Unit:=wdStory
wds.TypeParagraph
wds.TypeParagraph

Range(otStr & "!" & "PHASECHART").Copy ' Copy the phase summary

wds.Range.PasteSpecial Placement:=wdInLine,
DataType:=wdPasteEnhancedMetafile

wds.EndKey Unit:=wdStory
wds.TypeParagraph

wda.Range(Start:=wds.Start, End:=wds.Start).InsertBreak
Type:=wdSectionBreakNextPage
wds.Start = wdapp.Selection.Start + 1

wds.TypeText Text:="PROJECT: " & Range("Projectnum") & vbTab & _

```

```

        UCase(Range("Category")) & vbTab & "PAGE 2/14"
wds.TypeParagraph
wds.TypeParagraph

Range(otStr & "!" & "TOTALCHART").Copy ' Copy the total chart

wds.Range.PasteSpecial Placement:=wdInLine,
DataType:=wdPasteEnhancedMetafile
wds.TypeParagraph

' 5. Copy the remaining 9 charts onto individual pages

wds.EndKey Unit:=wdStory

Dim p As Integer

For p = 1 To 12

    wda.Range(Start:=wds.Start, End:=wds.Start). _
    InsertBreak Type:=wdSectionBreakNextPage
    wds.Start = wdapp.Selection.Start + 1

    wds.Font.Bold = True
    wds.Font.name = "Aerial"
    wds.Font.Size = 12
    wds.TypeText Text:="PROJECT: " & Range("Projectnum") & vbTab & _
        UCase(Range("Category")) & vbTab & "PAGE " & (p + 2) & "/14"
    wds.TypeParagraph

    RangeStart = Range("OTStart").Offset((p - 1) * OTableSpace, 0).Address
    RangeEnd = Range("OTStart").Offset((p - 1) * OTableSpace + OTableSpace
- 2, 11).Address
    CopyRange = otStr & "!" & RangeStart & ":" & RangeEnd

    Range(CopyRange).Copy

    wds.Range.PasteSpecial Placement:=wdInLine,
DataType:=wdPasteEnhancedMetafile
    wds.EndKey Unit:=wdStory
    wds.TypeParagraph
    wds.TypeParagraph

Next

' 6. Save file, close file, exit word, clean up memory (Maybe don't clean
up or
' make cleanup an option

wda.Close SaveChanges:=wdSaveChanges

wdapp.Quit

Set wdapp = Nothing ' Optional Cleanup, figure out later
Set wda = Nothing
Set wds = Nothing

OutputAvgTable = 0

Exit Function

OpenError:

```

```

    If mode = 0 Then
        wdapp.Documents.Add
        wdapp.ActiveDocument.SaveAs Filename:=Filename
        newfile = True
        Resume Next
    End If

    OutputAvgTable = 1

    wdapp.Quit

    Set wdapp = Nothing
    Set wda = Nothing
    Set wds = Nothing

End Function

Export_All Form Code

' *
' * Brings up the file selection box for the XLS function
' *

Private Sub EO_BrowseExcel_Click()

    Dim Filename As Variant
    Dim Finfo As String
    Finfo = "Excel Files (*.xls),*.xls," & "All Files (*.*),*.*"

    Filename = Application.GetSaveAsFilename("", Finfo, 1)

    ' exit if cancel is selected and return 0
    If Filename = False Then
        Exit Sub
    End If

    EO_Excelout_Name = Filename

    EO_Excelout_Name_AfterUpdate

End Sub

' *
' * Handle what happens when the excelout field is changed.
' *

Private Sub EO_Excelout_Name_AfterUpdate()

    Dim fname As Variant
    Dim fnamestr As String

    fname = EO_Excelout_Name

    ' * Exit the sub if there is no name

    If fname = "" Then
        Exit Sub
    End If

    ' * Exit sub if there are too many rows

```

```

    If Range("NUMLINES") > 65536 Then
        MsgBox "Unable to export more than 65,536 rows to an Excel file",
vbExclamation
        EO_Excelout_Name = ""
        Exit Sub
    End If

    If Right(fname, 4) <> ".xls" Then
        MsgBox "File type is not .xls" & vbCrLf & _
            "Please use a .xls extension", vbExclamation
        EO_Excelout_Name = ""
        Exit Sub
    End If

    fnamestr = fname

    If FileExists(fnamestr) Then
        MsgBox "File already exists!" & vbCrLf & _
            "Please choose a new filename", vbExclamation
        EO_Excelout_Name = ""
    End If

End Sub

Private Sub EO_BrowseTab_Click()

    Dim Filename As Variant
    Dim Finfo As String
    Finfo = "Text Files (*.txt),*.txt," & "All Files (*.*),*.*"

    Filename = Application.GetSaveAsFilename("", Finfo, 1)

    ' exit if cancel is selected and return 0
    If Filename = False Then
        Exit Sub
    End If

    EO_Tabout_Name = Filename

    EO_Tabout_Name_AfterUpdate
End Sub

Private Sub EO_Tabout_Name_AfterUpdate()

    Dim fname As Variant
    Dim fnamestr As String

    fname = EO_Tabout_Name

    '* Exit the sub if there is no name

    If fname = "" Then
        Exit Sub
    End If

    If Right(fname, 4) <> ".txt" Then
        MsgBox "File type is not .txt" & vbCrLf & _
            "Please use a .txt extension", vbExclamation
        EO_Tabout_Name = ""
    End If

```

```

        Exit Sub
    End If

    fnamestr = fname

    If FileExists(fnamestr) Then
        MsgBox "File already exists!" & vbCrLf & _
            "Please choose a new filename", vbExclamation
        EO_Tabout_Name = ""
    End If
End Sub

Private Sub EO_BrowseWord_Click()
    Dim Filename As Variant
    Dim Finfo As String
    Finfo = "Word Files (*.doc),*.doc," & "All Files (*.*),*.*"

    Filename = Application.GetSaveAsFilename("", Finfo, 1)

    ' exit if cancel is selected and return 0
    If Filename = False Then
        Exit Sub
    End If

    EO_Wordout_Name = Filename

    EO_Wordout_Name_AfterUpdate
End Sub

Private Sub EO_Wordout_Name_AfterUpdate()
    Dim fname As Variant
    Dim fnamestr As String

    fname = EO_Wordout_Name

    '* Exit the sub if there is no name

    If fname = "" Then
        Exit Sub
    End If

    If Right(fname, 4) <> ".doc" Then
        MsgBox "File type is not .doc" & vbCrLf & _
            "Please use a .doc extension", vbExclamation
        EO_Wordout_Name = ""
        Exit Sub
    End If

    fnamestr = fname

    If FileExists(fnamestr) Then
        MsgBox "File already exists!" & vbCrLf & _
            "Please choose a new filename", vbExclamation
        EO_Wordout_Name = ""
    End If
End Sub

'* The logic used to output the files when "Export" is clicked

Private Sub EO_Export_Click()

```



```

Dim xlsresult As Integer
Dim txtresult As Integer
Dim docresult As Integer

If EO_Excelout_Name <> "" Then
    OutputExcelDBs EO_Excelout_Name, 0
End If

If EO_Tabout_Name <> "" Then
    OutputExcelDBs EO_Tabout_Name, 1
End If

If EO_Wordout_Name <> "" Then
    OutputWordTables (EO_Wordout_Name)
End If

Unload Export_All

End Sub

Private Sub EO_Cancel_Click()
    Unload Export_All
End Sub

Export_Avg Form Code

' /
' / The procedures run to generate the average sheets and export the results
' /
' / THIS PROCEDURE COULD BE MUCH MORE DYNAMIC BY MAKING THE PROJECT-TYPE
WORKSHEET
' / NAMES INTO SOME KIND OF DYNAMICALLY GENERATED ARRAY. DIDN'T IMPLEMENT
BECAUSE OF
' / TIME. THEY DO NOT MATCH THE ACTUAL PROJECT NAMES BECAUSE OF LENGTH AND
SPECIAL
' / CHARACTER RESTRICTIONS (e.g "/" ) FOR WORKSHEET NAMES
' /

Private Sub EA_Export_Click()

    '* Check for blank fields

    If (BatchName = "") Or (Minbid = "") Or (Maxbid = "") _
        Or (Mindur = "") Or (Maxdur = "") Then

        MsgBox "Please fill in all data fields", vbExclamation
        Exit Sub
    End If

    '* Check the the max values are larger than the min values

    If (Maxdur < Mindur) Or (Maxbid < Minbid) Then
        MsgBox "Please make sure that the minimum values are less than the
maximum values", vbExclamation
        Exit Sub
    End If

    If FileExists(BatchName & ".xls") Then
        MsgBox ("Excel output file already exists")
        Exit Sub
    End If

```

```

'* Unload the form

Unload Export_avg

'* Run MakeTypes, make the Excel sheets

MakeTypePages Minbid, Maxbid, Mindur, Maxdur

'* Update E&P&T

FillePT

'* Export the Excel sheets to an external excel file

ExportExcelAverages (BatchName & ".xls")

'* Export the Excel sheets to Word

'* Delete the sheets in projlib

delete_worksheet ("Resurface Existing Highway")
delete_worksheet ("Construct Freeway - Extra Lane")
delete_worksheet ("Pavement Rehabilitation - Wide")
delete_worksheet ("Construct, Reconstruct Bridge")
delete_worksheet ("Construct median, thrie beam b")
delete_worksheet ("Landscaping")
delete_worksheet ("Other")

End Sub

Private Sub EO_Cancel_Click()

    Unload Export_avg

End Sub

'*
'* Handle what happens when the <Name> field is changed
'*

Private Sub BatchName_Change()
    Dim fname As Variant
    Dim fnamestr As String

    fname = BatchName

    '* Exit the sub if there is no name

    If fname = "" Then
        Exit Sub
    End If

    fnamestr = fname

    If FileExists(fnamestr & ".xls") Then
        MsgBox "File already exists!" & vbCrLf & _
            "Please choose a new filename", vbExclamation
        BatchName = ""
    End If
End Sub

```

```

End If

If FileExists(fnamestr & ".doc") Then
    MsgBox "File already exists!" & vbCrLf & _
        "Please choose a new filename", vbExclamation
    BatchName = ""
End If

End Sub

' *
' * Ensure that a currency value is entered into the maxbid field.
' *

Private Sub Maxbid_AfterUpdate()

    If Maxbid = "" Then
        Exit Sub
    End If

    Dim inval As Currency

    On Error GoTo ConvError

    inval = Maxbid

    On Error GoTo 0

    Maxbid = FormatCurrency(inval, 0)

    Exit Sub

ConvError:

MsgBox "Please enter a valid currency amount"
Maxbid = ""

End Sub

' *
' * Ensure that a currency value is entered into the Minbid field.
' *

Private Sub Minbid_AfterUpdate()

    If Minbid = "" Then
        Exit Sub
    End If

    Dim inval As Currency

    On Error GoTo ConvError

    inval = Minbid

    On Error GoTo 0

    Minbid = FormatCurrency(inval, 0)

    Exit Sub

```

```

ConvError:

MsgBox "Please enter a valid currency amount"
Minbid = ""

End Sub

' *
' * Ensure that an integer value is entered into the Mindur field.
' *

Private Sub Mindur_AfterUpdate()

    If Mindur = "" Then
        Exit Sub
    End If

    Dim inval As Integer

    On Error GoTo ConvError

    inval = Mindur

    On Error GoTo 0

    Mindur = inval

    Exit Sub

ConvError:

MsgBox "Please enter a valid integer duration"
Mindur = ""

End Sub

' *
' * Ensure that an integer value is entered into the maxdur field.
' *

Private Sub maxdur_AfterUpdate()

    If Maxdur = "" Then
        Exit Sub
    End If

    Dim inval As Integer

    On Error GoTo ConvError

    inval = Maxdur

    On Error GoTo 0

    Maxdur = inval

    Exit Sub

ConvError:

MsgBox "Please enter a valid integer duration"
Maxdur = ""

```

```
End Sub
```

# **MainUI Form Code**

```
Private Sub AddNewButton_Click()  
    AddFile  
    Update_Listbox
```

```
End Sub
```

```
Private Sub DeleteButton_Click()
```

```
    Dim delproj As Variant
```

```
    delproj = ProjListBox.Value
```

```
    If delproj <> "" Then
```

```
        removeproj (delproj)
```

```
        Unload MainUI
```

```
        MainUI.Show
```

```
    End If
```

```
End Sub
```

```
Private Sub ExitButton_Click()
```

```
    Unload MainUI
```

```
End Sub
```

```
Private Sub ImportButton_Click()
```

```
End Sub
```

```
    '
```

```
    '/ Brings up the dialog to export all of the output from the projects in  
    appended
```

```
    '/ files
```

```
    '
```

```
Private Sub ExportAllButton_Click()
```

```
    MsgBox "Please make sure the Output Table procedure" & vbCrLf & _  
        "has been run in all project files before exporting!", vbExclamation
```

```
    Unload MainUI
```

```
    Export_All.Show
```

```
    MainUI.Show
```

```
End Sub
```

```
    '
```

```
    '/ This procedure loads the screen that is used to export the average  
    equipment use
```

```
    '/ for all project types based on some bid and duration criteria
```

```
    '
```

```
Private Sub ExportAvgButton_Click()
```

```

Unload MainUI

Export_avg.Show

MainUI.Show

End Sub

Private Sub NewProjButton_Click()

    MsgBox "To add a new project, select Tools->UCD-CT Project Module->New
    Project"

End Sub

Private Sub ProjListBox_Click()

    Dim Lib As Worksheet
    Set Lib = Worksheets(libstr)

    Dim Start As Range

    Dim i As Integer

    Set Start = Lib.Range("FileLibStart")

    Do While Not IsEmpty(Start.Offset(i + 1, 0))

        If Start.Offset(i + 1, 1) = ProjListBox.Value Then
            MainUI.ProjectNum_label = Start.Offset(i + 1, Lib_ProjNum_col - 1)
            MainUI.District_Label = Start.Offset(i + 1, Lib_District_col - 1)
            MainUI.Description_Label = Start.Offset(i + 1, Lib_Description_col -
1)
            MainUI.ProjType_Label = Start.Offset(i + 1, Lib_projtype_col - 1)
            MainUI.Contractor_Label = Start.Offset(i + 1, Lib_contractor_col -
1)
            MainUI.RE_Label = Start.Offset(i + 1, Lib_RE_col - 1)
            MainUI.Route_Label = Start.Offset(i + 1, Lib_Route_col - 1)
            MainUI.County_Label = Start.Offset(i + 1, Lib_County_col - 1)
            MainUI.PM_Start_Label = Start.Offset(i + 1, Lib_PM_Start_col - 1)
            MainUI.PM_END_Label = Start.Offset(i + 1, Lib_PM_End_Col - 1)
            MainUI.Loc_Description_Label = Start.Offset(i + 1,
Lib_Loc_Description_col - 1)
            MainUI.award_date_label = Start.Offset(i + 1, Lib_Award_Date_col -
1)
            MainUI.accept_date_label = Start.Offset(i + 1, Lib_Accept_Date_col -
1)
            MainUI.Actual_days_label = Start.Offset(i + 1, Lib_Actual_Days_col -
1)
            MainUI.CCO_Days_label = Start.Offset(i + 1, Lib_CCO_Days_col - 1)
            MainUI.Weather_Days_label = Start.Offset(i + 1, Lib_Weather_Days_col
- 1)
            MainUI.Final_Amount_label.Caption = FormatCurrency( _
                Start.Offset(i + 1, Lib_Final_Amount_col - 1), 0)
            MainUI.Final_Bridge_Amount_label = FormatCurrency( _
                Start.Offset(i + 1, Lib_Final_Bridge_Amount_col - 1), 0)
            MainUI.Final_CCO_Amount_label = FormatCurrency( _
                Start.Offset(i + 1, Lib_Final_CCO_Amount_col - 1), 0)
            MainUI.Other_Days_label = Start.Offset(i + 1, Lib_Other_Days_col -
1)

```

```

1)      MainUI.Original_Days_label = Start.Offset(i + 1, Lib_origdays_col -
MainUI.Award_Amount_label = FormatCurrency( _
      Start.Offset(i + 1, Lib_awardamount_col - 1), 0)

MainUI.Bininc_label = Start.Offset(i + 1, Lib_BinInc_col - 1)
MainUI.Firstdate_label = Start.Offset(i + 1, Lib_firstdate_col - 1)
MainUI.LastDate_label = Start.Offset(i + 1, Lib_lastdate_col - 1)
MainUI.Distinctdays_label = FormatNumber( _
      Start.Offset(i + 1, Lib_Distinctdays_col - 1), 0)
MainUI.Length_label = Start.Offset(i + 1, Lib_Length_col - 1)
MainUI.projnumlines_label = FormatNumber( _
      Start.Offset(i + 1, Lib_NumLines_col - 1), 0)

MainUI.NumProjects_Label = Range("NUMPROJECTS")
MainUI.Numlines_label = FormatNumber(Range("NUMLINES"), 0)
End If

      i = i + 1
Loop

DoEvents

End Sub

Private Sub UserForm_Initialize()

      ThisWorkbook.Activate
      Update_Listbox

End Sub

```

## 10 Appendix D: Table Output for Individual Projects

### Project Order:

Project Number	Project Type
03-0A7004	Resurface Existing Highway
03-0A7904	Resurface Existing Highway
03-0A9904	Construct, Reconstruct Bridge
03-0C59U4	Resurface Existing Highway
03-0C5304	Construct Freeway / Extra Lane
03-1C3504	Resurface Existing Highway
03-1M5404	Pavement Rehabilitation / Widening
03-1M9204	Resurface Existing Highway
03-2A6004	Pavement Rehabilitation / Widening
03-2C5704	Resurface Existing Highway
03-3A6004	Pavement Rehabilitation / Widening
03-3C1604	Pavement Rehabilitation / Widening
03-3C2804	Pavement Rehabilitation / Widening
03-4A88U4	Construct, Reconstruct Bridge
03-4A1804	Resurface Existing Highway
03-4C4004	Construct median, thrie beam barrier
03-4C7204	Pavement Rehabilitation / Widening
03-366404	Construct Freeway / Extra Lane
03-367714	Construct Freeway / Extra Lane
03-374214	Construct Freeway / Extra Lane
03-436304	Construct, Reconstruct Bridge
03-445104	Pavement Rehabilitation / Widening
06-3831U4	Resurface Existing Highway
06-4036U4	Landscaping
06-336604	Construct Freeway / Extra Lane
06-339404	Resurface Existing Highway
06-339504	Resurface Existing Highway
06-342154	Construct Freeway / Extra Lane
06-467804	Construct median, thrie beam barrier
11-1734U4	Pavement Rehabilitation / Widening



**PROJECT: 03-0A7004      RESURFACE EXISTING HIGHWAY      PAGE 1/14**

**Project Identifiers**

Description	OVERLAY ASPHALT CONCRETE				
Project Type	#NAME?				
Contractor	Baldwin	Award Date	5/14/2002	Original Days	45
RE	ANDERSON, JOHN	Accepted Date	9/3/2002	Actual Days	33
Route	89	Award Amount	\$1,933,640	CCO Days	4
County	Sie	Final Amount	\$2,143,733	Weather Days	23
PM Start	32.1	Final Bridge Amount	#NAME?	Other Days	0
PM End	47.6	Final Cco Amount	\$177,629		
Diary Analysis Data		First date	1/0/1900	Equipment Days	36
Date Bin Increments	0	Last Date	8/22/2002	Days in diary span	52
Location Description	IN SIERRA COUNTY NEAR SATTLEY ON ROUTE 89 FROM ROUTE 49 TO THE SIERRA AND PLUMAS COUNTY LINE				

**Date Interval Specification**

Label	Date Interval									
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%
From %	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%
To %	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
From Date	7/1/02	7/6/02	7/11/02	7/16/02	7/21/02	7/27/02	8/1/02	8/6/02	8/11/02	8/16/02
To Date	7/6/02	7/11/02	7/16/02	7/21/02	7/27/02	8/1/02	8/6/02	8/11/02	8/16/02	8/22/02

**Activity Use By Phase (NONROAD + Trucks)**

Phase	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Land Clearing and Grubbing	0	0	0	0	0	0	0	0	0	0	0
Roadway Excavation	0	0	0	0	0	0	0	0	0	0	0
Structural Excavation	0	0	0	0	0	0	0	0	0	0	0
Base and Subbase	0	0	0	0	0	0	127	134	160	0	421
Structural Concrete	0	0	0	0	0	0	0	0	0	0	0
Paving	0	113	313	399	479	389	100	0	0	0	1,792
Drainage / Environmental / Landscapi	0	0	0	0	0	0	0	0	0	0	0
Striping / Painting	0	0	0	0	2	0	0	0	33	552	587
Traffic Control / Signage / Barriers	11	8	78	19	43	262	139	56	153	32	799
CCO	0	33	21	0	0	56	0	0	194	80	384
Other	0	8	17	32	54	4	0	0	0	15	129
Idle	0	10	7	20	6	0	0	0	0	0	43
Total non-idle	11	162	429	449	578	711	366	190	540	678	4,111

**Total Activity Use (Idle equipment excluded)**

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]



[illegible]

[illegible]

**PROJECT: 03-0A7004      RESURFACE EXISTING HIGHWAY      PAGE 11/14**

**Traffic Control / Signage / Barriers (hours)**[illegible]

[illegible]

[illegible]

[illegible]

**PROJECT: 03-0A7904****RESURFACE EXISTING HIGHWAY****PAGE 1/14****Project Identifiers**

Description	ASPHALT CONCRETE OVERLAY				
Project Type	#NAME?				
Contractor	Baldwin	Award Date	3/30/1999	Original Days	80
RE	DEMARTINI, MARK	Accepted Date	11/22/1999	Actual Days	109
Route	20	Award Amount	\$4,911,901	CCO Days	34
County	Nev	Final Amount	\$5,682,664	Weather Days	37
PM Start	28.2	Final Bridge Amount	#NAME?	Other Days	0
PM End	74.4	Final Cco Amount	\$738,787		
Diary Analysis Data		First date	1/0/1900	Equipment Days	112
Date Bin Increments	0	Last Date	11/23/1999	Days in diary span	173
Location Description	IN NEVADA AND PLACER COUNTIES NEAR NEVADA CITY FROM 0.2 KM EAST OF THE NORTHERN JUNCTION OF ROUTES 20 AND 49 TO THE 80/20 SEPARATION				

**Date Interval Specification**

Label	Date Interval									
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%
From %	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%
To %	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
From Date	6/3/99	6/20/99	7/7/99	7/24/99	8/11/99	8/28/99	9/14/99	10/2/99	10/19/99	11/5/99
To Date	6/20/99	7/7/99	7/24/99	8/11/99	8/28/99	9/14/99	10/2/99	10/19/99	11/5/99	11/23/99

**Activity Use By Phase (NONROAD + Trucks)**

Phase	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Land Clearing and Grubbing	0	0	0	0	0	0	0	0	0	0	0
Roadway Excavation	336	756	0	0	0	0	119	0	0	58	1,268
Structural Excavation	0	0	0	0	0	0	0	0	0	0	0
Base and Subbase	19	0	8	73	91	300	308	0	86	23	907
Structural Concrete	0	0	0	0	0	0	0	0	0	0	0
Paving	1277	891	757	768	908	24	8	201	53	95	4,982
Drainage / Environmental / Landscap	105	31	0	0	0	0	0	10	0	0	146
Striping / Painting	0	0	0	0	0	42	255	137	0	101	535
Traffic Control / Signage / Barriers	573	455	627	471	727	357	1113	910	425	38	5,694
CCO	262	47	67	43	25	22	391	1120	421	79	2,476
Other	0	0	0	36	0	0	0	0	0	0	36
Idle	8	116	0	0	0	16	0	0	0	0	140
Total non-idle	2570	2179	1459	1391	1751	745	2193	2378	984	393	16,042

[illegible]



[illegible]



[illegible]

[illegible]

[illegible]

**PROJECT: 03-0A7904      RESURFACE EXISTING HIGHWAY      PAGE 8/14**  
**Paving (hours)**

[illegible]

**PROJECT: 03-0A7904      RESURFACE EXISTING HIGHWAY      PAGE 9/14**

**Drainage / Environmental / Landscaping (hours)**

[illegible]

[illegible]



**PROJECT: 03-0A7904      RESURFACE EXISTING HIGHWAY      PAGE 11/14**

**Traffic Control / Signage / Barriers (hours)**[illegible]

**PROJECT: 03-0A7904      RESURFACE EXISTING HIGHWAY      PAGE 12/14**  
CCO (hours)

[illegible]

[illegible]

**Idle (hours)**

[illegible]

**PROJECT: 03-0A9904**  
**1/14**

**CONSTRUCT, RECONSTRUCT BRIDGE**

**PAGE**

**Project Identifiers**

Description	REPLACE BRIDGE				
Project Type	#NAME?				
Contractor	Benco Contracting & Engin	Award Date	3/12/2001	Original Days	125
RE	BURTON, BOB	Accepted Date	11/8/2001	Actual Days	125
Route	80	Award Amount	\$2,623,568	CCO Days	0
County	NEV	Final Amount	\$2,889,130	Weather Days	19
PM Start	21.1	Final Bridge Amount	#NAME?	Other Days	0
PM End	21.1	Final Cco Amount	\$139,546		
Diary Analysis Data		First date	1/0/1900	Equipment Days	139
Date Bin Increments	0	Last Date	11/2/2001	Days in diary span	186
Location Description	IN NEVADA COUNTY IN TRUCKEE AT DONNER PARK OVERCROSSING				

**Date Interval Specification**

Label	Date Interval									
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%
From %	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%
To %	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
From Date	4/30/01	5/18/01	6/6/01	6/24/01	7/13/01	8/1/01	8/19/01	9/7/01	9/25/01	10/14/01
To Date	5/18/01	6/6/01	6/24/01	7/13/01	8/1/01	8/19/01	9/7/01	9/25/01	10/14/01	11/2/01

**Activity Use By Phase (NONROAD + Trucks)**

Phase	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Land Clearing and Grubbing	31	0	0	0	0	0	0	0	0	0	31
Roadway Excavation	190	0	0	0	0	0	0	0	163	297	650
Structural Excavation	51	103	0	64	0	0	40	0	0	0	257
Base and Subbase	23	1479	0	0	0	0	518	917	68	31	3,036
Structural Concrete	200	22	456	1045	1235	1194	1507	792	19	99	6,568
Paving	77	0	0	0	0	0	0	0	0	283	360
Drainage / Environmental / Landscapi	0	0	0	0	0	0	0	233	456	0	689
Striping / Painting	2	14	26	0	0	0	0	0	17	20	79
Traffic Control / Signage / Barriers	157	177	182	64	0	24	47	375	221	152	1,399
CCO	0	0	21	0	0	0	0	0	49	77	147
Other	108	53	81	20	0	0	0	106	255	322	943
Idle	10	24	0	0	0	0	33	46	64	89	266
Total non-idle	838	1847	766	1192	1235	1218	2112	2423	1247	1280	14,157

**PROJECT: 03-0A9904**  
**2/14**

**CONSTRUCT, RECONSTRUCT BRIDGE**

**PAGE**

**Total Activity Use (Idle equipment excluded)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	32	41	0	0	0	0	0	0	8	81
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	8	8	16
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	6	6
Cranes	9	34	91	18	3	20	2	0	8	0	184
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	25	151	0	0	0	0	54	153	95	38	515
Excavators	46	112	0	0	0	0	0	59	130	81	428
Graders	0	0	0	0	0	0	0	46	22	14	82
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	17	0	0	0	0	0	0	11	0	32	60
Paving Equipment	0	9	0	0	0	32	0	0	0	57	98
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	21	86	0	0	0	0	154	260	99	93	712
Rough Terrain Forklifts	0	0	0	0	0	0	27	179	0	0	206
Rubber Tire Loaders	12	0	110	312	140	132	258	243	161	115	1482
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	78	131	168	52	64	21	32	16	0	0	562
Skid Steer Loaders	0	0	0	0	0	0	0	82	0	0	82
Surfacing Equipment	20	1	0	15	0	75	5	30	29	56	231
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	8	0	0	0	0	0	0	0	0	8
Tractors / Loaders / Backhoes	45	42	8	20	0	0	93	137	77	27	448
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	54	34	20	18	125
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	9	49	0	0	0	0	0	0	0	22	80
Other General Industrial Equipment	0	0	0	0	0	0	0	0	8	8	16
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	40	0	14	0	97	256	257	102	0	0	766
Pumps	0	8	0	0	17	7	4	0	38	11	85
Air Compressors	52	9	0	7	51	88	86	53	9	45	398
Welders	0	0	0	1	0	0	0	0	0	0	1
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>373</b>	<b>670</b>	<b>431</b>	<b>424</b>	<b>371</b>	<b>631</b>	<b>1024</b>	<b>1405</b>	<b>702</b>	<b>637</b>	<b>6666</b>
Heavy Duty Truck	95	949	86	31	103	13	120	254	224	216	2088
Light Duty Truck	341	206	250	737	762	575	884	620	215	387	4974
Water Truck	30	23	0	0	0	0	85	145	107	41	430
<b>TOTAL TRUCKS</b>	<b>465</b>	<b>1177</b>	<b>335</b>	<b>768</b>	<b>864</b>	<b>588</b>	<b>1088</b>	<b>1019</b>	<b>545</b>	<b>643</b>	<b>7491</b>
<b>GRAND TOTAL</b>	<b>838</b>	<b>1847</b>	<b>766</b>	<b>1192</b>	<b>1235</b>	<b>1218</b>	<b>2112</b>	<b>2423</b>	<b>1247</b>	<b>1280</b>	<b>14157</b>
Non-powered Equipment	37	14	63	15	0	6	18	81	2	21	256
Unknown / Not Equipment	78	0	0	32	36	66	86	55	8	9	370

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**Land Clearing and Grubbing (hours)**

[illegible]

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### Roadway Excavation (hours)

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	21	38	59
Excavators	9	0	0	0	0	0	0	0	10	30	49
Graders	0	0	0	0	0	0	0	0	0	14	14
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	4	0	0	0	0	0	0	0	29	40	73
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	8	0	0	0	0	0	0	0	21	49	78
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	11	0	0	0	0	0	0	0	19	8	38
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	11	0	0	0	0	0	0	0	21	0	32
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	3	0	0	0	0	0	0	0	0	0	3
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
TOTAL NONROAD	46	0	0	0	0	0	0	0	121	179	346
Heavy Duty Truck	73	0	0	0	0	0	0	0	0	20	93
Light Duty Truck	53	0	0	0	0	0	0	0	21	62	136
Water Truck	18	0	0	0	0	0	0	0	21	36	75
TOTAL TRUCKS	144	0	0	0	0	0	0	0	42	118	304
GRAND TOTAL	190	0	0	0	0	0	0	0	163	297	650
Non / Externally powered Equipment	0	0	0	0	0	0	0	0	0	0	0
Unknown / Not Equipment	14	0	Unknown	0	0	0	0	0	8	0	22



**PROJECT: 03-0A9904****CONSTRUCT, RECONSTRUCT BRIDGE****PAGE****5/14****Structural Excavation (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	11	0	0	0	0	8	0	0	0	19
Excavators	21	19	0	0	0	0	0	0	0	0	40
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	2	8	0	0	0	0	8	0	0	0	18
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	0	0	0	0	0	0	0	0	0
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	14	28	0	20	0	0	8	0	0	0	70
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	8	0	0	0	0	0	0	0	0	8
Air Compressors	0	8	0	0	0	0	0	0	0	0	8
Welders	0	0	0	1	0	0	0	0	0	0	1
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>37</b>	<b>81</b>	<b>0</b>	<b>21</b>	<b>0</b>	<b>0</b>	<b>24</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>163</b>
Heavy Duty Truck	1	5	0	18	0	0	0	0	0	0	23
Light Duty Truck	11	17	0	25	0	0	8	0	0	0	61
Water Truck	2	0	0	0	0	0	8	0	0	0	10
<b>TOTAL TRUCKS</b>	<b>14</b>	<b>22</b>	<b>0</b>	<b>43</b>	<b>0</b>	<b>0</b>	<b>16</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>94</b>
<b>GRAND TOTAL</b>	<b>51</b>	<b>103</b>	<b>0</b>	<b>64</b>	<b>0</b>	<b>0</b>	<b>40</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>257</b>
Non / Externally powered Equipment	0	3	0	3	0	0	0	0	0	0	6
Unknown / Not Equipment	9	0	0	24	0	0	0	0	0	0	33

**Base and Subbase (hours)**

[illegible]

**PROJECT: 03-0A9904****CONSTRUCT, RECONSTRUCT BRIDGE****PAGE****7/14****Structural Concrete (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	16	0	0	0	0	0	0	0	16
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	6	6
Cranes	0	5	57	18	3	20	2	0	0	0	104
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	8	0	0	0	0	0	0	2	0	0	10
Excavators	8	0	0	0	0	0	0	0	0	0	8
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	9	0	0	0	32	0	0	0	0	41
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	0	0	0	0	0	0	0	0	0
Rough Terrain Forklifts	0	0	0	0	0	0	27	173	0	0	200
Rubber Tire Loaders	4	0	85	312	140	132	205	53	0	4	933
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	0	64	0	0	0	0	0	64
Skid Steer Loaders	0	0	0	0	0	0	0	82	0	0	82
Surfacing Equipment	2	1	0	15	0	75	5	0	0	18	116
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	3	8	0	0	0	0	2	0	0	13
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	54	34	0	0	88
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	40	0	14	0	97	256	257	102	0	0	766
Pumps	0	0	0	0	17	7	4	0	0	0	28
Air Compressors	52	1	0	7	51	88	86	34	0	15	333
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>113</b>	<b>19</b>	<b>179</b>	<b>351</b>	<b>371</b>	<b>610</b>	<b>638</b>	<b>481</b>	<b>0</b>	<b>43</b>	<b>2804</b>
Heavy Duty Truck	0	0	47	4	103	13	118	57	0	29	369
Light Duty Truck	87	0	230	690	762	572	752	255	19	23	3388
Water Truck	0	3	0	0	0	0	0	0	0	4	7
<b>TOTAL TRUCKS</b>	<b>87</b>	<b>3</b>	<b>277</b>	<b>694</b>	<b>864</b>	<b>585</b>	<b>870</b>	<b>311</b>	<b>19</b>	<b>56</b>	<b>3764</b>
<b>GRAND TOTAL</b>	<b>200</b>	<b>22</b>	<b>456</b>	<b>1045</b>	<b>1235</b>	<b>1194</b>	<b>1507</b>	<b>792</b>	<b>19</b>	<b>99</b>	<b>6568</b>
Non / Externally powered Equipment	0	0	14	0	0	0	0	81	0	0	95
Unknown / Not Equipment	0	0	0	0	36	66	86	17	0	0	205

8/14

**Paving (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	17	0	0	0	0	0	0	0	0	27	44
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	8	0	0	0	0	0	0	0	0	44	52
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	0	0	0	0	0	0	0	4	4
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	5	0	0	0	0	0	0	0	0	30	35
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	3	0	0	0	0	0	0	0	0	27	30
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	6	0	0	0	0	0	0	0	0	22	28
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	22	22
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
TOTAL NONROAD	39	0	0	0	0	0	0	0	0	175	214
Heavy Duty Truck	9	0	0	0	0	0	0	0	0	20	29
Light Duty Truck	27	0	0	0	0	0	0	0	0	89	116
Water Truck	2	0	0	0	0	0	0	0	0	0	2
TOTAL TRUCKS	38	0	0	0	0	0	0	0	0	109	147
GRAND TOTAL	77	0	0	0	0	0	0	0	0	283	360
Non / Externally powered Equipment	0	0	0	0	0	0	0	0	0	0	0
Unknown / Not Equipment	10	0	Unknown	0	0	0	0	0	0	0	10

**PROJECT: 03-0A9904****CONSTRUCT, RECONSTRUCT BRIDGE****PAGE****9/14****Drainage / Environmental / Landscaping (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	8	0	8
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	33	60	0	93
Excavators	0	0	0	0	0	0	0	0	49	0	49
Graders	0	0	0	0	0	0	0	2	14	0	16
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	0	0	0	0	0	49	52	0	101
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	0	0	0	0	0	33	60	0	93
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	0	0	0	0	0	33	56	0	89
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	0	0	0	8	0	8
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
TOTAL NONROAD	0	0	0	0	0	0	0	150	305	0	455
Heavy Duty Truck	0	0	0	0	0	0	0	30	32	0	62
Light Duty Truck	0	0	0	0	0	0	0	39	60	0	99
Water Truck	0	0	0	0	0	0	0	14	60	0	74
TOTAL TRUCKS	0	0	0	0	0	0	0	83	151	0	234
GRAND TOTAL	0	0	0	0	0	0	0	233	456	0	689
Non / Externally powered Equipment	0	0	0	0	0	0	0	0	0	0	0
Unknown / Not Equipment	0	0	0	0	0	0	0	8	0	0	8

**10/14**

**Striping / Painting (hours)**

[illegible]

11/14

**Traffic Control / Signage / Barriers (hours)**[illegible]

12/14

CCO (hours)

[illegible]



**PROJECT: 03-0A9904****CONSTRUCT, RECONSTRUCT BRIDGE****PAGE****13/14****Other (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	18	3	0	0	0	0	0	0	8	29
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	29	27	0	0	0	0	0	0	0	56
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	14	0	0	0	0	0	0	8	4	0	26
Excavators	8	6	0	0	0	0	0	0	61	40	115
Graders	0	0	0	0	0	0	0	0	8	0	8
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	5	5
Paving Equipment	0	0	0	0	0	0	0	0	0	57	57
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	0	0	0	0	0	8	8	0	16
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	25	0	0	0	0	8	42	44	119
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	6	0	0	0	0	0	0	0	0	0	6
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	8	0	8
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>28</b>	<b>53</b>	<b>54</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>24</b>	<b>131</b>	<b>154</b>	<b>443</b>
Heavy Duty Truck	4	0	27	8	0	0	0	8	77	68	191
Light Duty Truck	76	0	0	12	0	0	0	74	39	100	301
Water Truck	0	0	0	0	0	0	0	0	8	0	8
<b>TOTAL TRUCKS</b>	<b>80</b>	<b>0</b>	<b>27</b>	<b>20</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>82</b>	<b>124</b>	<b>168</b>	<b>500</b>
<b>GRAND TOTAL</b>	<b>108</b>	<b>53</b>	<b>81</b>	<b>20</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>106</b>	<b>255</b>	<b>322</b>	<b>943</b>
Non / Externally powered Equipment	0	0	25	0	0	0	0	0	0	0	25
Unknown / Not Equipment	43	0	0	8	0	0	0	30	0	0	81

14/14

Idle (hours)

[illegible]

**PROJECT: 03-0C59U4      RESURFACE EXISTING HIGHWAY      PAGE 1/14****Project Identifiers**

Description	OPEN GRADE ASPHALT CONCRETE OVERLAY				
Project Type	#NAME?				
Contractor	Vintage Paving	Award Date	4/23/2001	Original Days	25
RE	DEMARTINI, MARK	Accepted Date	7/27/2001	Actual Days	43
Route	20	Award Amount	\$470,534	CCO Days	6
County	NEV	Final Amount	\$440,452	Weather Days	2
PM Start	Variable	Final Bridge Amount	#NAME?	Other Days	2
PM End	Variable	Final Cco Amount	\$9,118		
Diary Analysis Data		First date	1/0/1900	Equipment Days	23
Date Bin Increments	0	Last Date	7/29/2001	Days in diary span	55
Location Description	IN NEVADA COUNTY AT VARIOUS LOCATIONS				

**Date Interval Specification**

Label	Date Interval									
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%
From %	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%
To %	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
From Date	6/4/01	6/9/01	6/15/01	6/20/01	6/26/01	7/1/01	7/7/01	7/12/01	7/18/01	7/23/01
To Date	6/9/01	6/15/01	6/20/01	6/26/01	7/1/01	7/7/01	7/12/01	7/18/01	7/23/01	7/29/01

**Activity Use By Phase (NONROAD + Trucks)**

Phase	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Land Clearing and Grubbing	0	0	0	0	0	0	0	0	0	0	0
Roadway Excavation	42	0	0	0	0	0	0	0	0	0	42
Structural Excavation	0	0	0	0	0	0	0	0	0	0	0
Base and Subbase	0	0	0	0	0	0	0	0	0	0	0
Structural Concrete	0	0	0	0	0	0	0	0	0	0	0
Paving	673	449	58	146	86	0	8	8	288	56	1,771
Drainage / Environmental / Landscaping	0	0	0	0	0	0	0	0	0	0	0
Striping / Painting	0	100	0	15	0	38	0	144	577	0	874
Traffic Control / Signage / Barriers	337	207	48	0	207	48	0	0	463	19	1,329
CCO	0	0	0	0	0	0	28	0	0	0	28
Other	239	122	29	187	0	0	0	0	0	0	577
Idle	0	0	0	0	0	0	0	0	0	0	0
Total non-idle	1290	878	135	348	293	86	36	152	1328	75	4,620

**Total Activity Use (Idle equipment excluded)**

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]



[illegible]

[illegible]

[illegible]

[illegible]

**PROJECT: 03-0C59U4      RESURFACE EXISTING HIGHWAY      PAGE 11/14**

**Traffic Control / Signage / Barriers (hours)**[illegible]

[illegible]

[illegible]

**PROJECT: 03-0C59U4      RESURFACE EXISTING HIGHWAY      PAGE 14/14**

Idle (hours)

[illegible]



**PROJECT: 03-0C5304**  
**1/14**

**CONSTRUCT FREEWAY / EXTRA LANE**

**PAGE**

**Project Identifiers**

Description	WIDEN EXISTING HIGHWAY				
Project Type	#NAME?				
Contractor	Granite	Award Date	4/24/2002	Original Days	20
RE	TAHRAOUI, ABDELKADER	Accepted Date	10/17/2002	Actual Days	18
Route	20	Award Amount	\$273,503	CCO Days	0
County	NEV	Final Amount	\$277,150	Weather Days	0
PM Start	27.4	Final Bridge Amount	#NAME?	Other Days	0
PM End	28.2	Final Cco Amount	\$16,591		
Diary Analysis Data		First date	1/0/1900	Equipment Days	17
Date Bin Increments	0	Last Date	10/11/2002	Days in diary span	42
Location Description	IN NEVADA COUNTY IN AND NEAR NEVADA CITY FROM 0.7 KM WEST OF UREN STREET TO 0.2 KM EAST OF UREN STREET				

**Date Interval Specification**

Label	Date Interval									
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%
From %	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%
To %	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
From Date	8/30/02	9/3/02	9/7/02	9/11/02	9/15/02	9/20/02	9/24/02	9/28/02	10/2/02	10/6/02
To Date	9/3/02	9/7/02	9/11/02	9/15/02	9/20/02	9/24/02	9/28/02	10/2/02	10/6/02	10/11/02

**Activity Use By Phase (NONROAD + Trucks)**

Phase	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Land Clearing and Grubbing	0	0	0	0	0	0	0	0	0	0	0
Roadway Excavation	0	0	0	0	0	0	0	27	0	0	27
Structural Excavation	0	0	0	0	0	0	0	0	0	0	0
Base and Subbase	0	0	0	0	0	0	0	0	0	0	0
Structural Concrete	0	0	0	0	0	0	0	0	0	0	0
Paving	0	0	0	0	0	0	0	141	0	17	157
Drainage / Environmental / Landscapi	0	0	0	0	0	0	22	0	229	0	251
Striping / Painting	0	0	0	0	0	0	0	0	0	84	84
Traffic Control / Signage / Barriers	14	0	0	0	48	0	0	227	197	106	591
CCO	0	0	0	0	0	0	0	8	15	0	23
Other	0	0	0	0	102	10	68	32	0	2	214
Idle	0	0	0	0	0	0	0	0	0	0	0
Total non-idle	14	0	0	0	150	10	90	434	440	208	1,346



**3/14**

**Land Clearing and Grubbing (hours)**

[illegible]

4/14

### Roadway Excavation (hours)

[illegible]

5/14

### Structural Excavation (hours)

[illegible]

6/14

**Base and Subbase (hours)**

[illegible]

7/14

### Structural Concrete (hours)

[illegible]

8/14

**Paving (hours)**

[illegible]



9/14

**Drainage / Environmental / Landscaping (hours)**

[illegible]

10/14

**Striping / Painting (hours)**

[illegible]

11/14

**Traffic Control / Signage / Barriers (hours)**

[illegible]

12/14

CCO (hours)

[illegible]

13/14

**Other (hours)**

[illegible]

14/14

Idle (hours)

[illegible]

**PROJECT: 03-1C3504****RESURFACE EXISTING HIGHWAY****PAGE 1/14****Project Identifiers**

Description	RESURFACE ASPHALT CONCRETE				
Project Type	#NAME?				
Contractor	Vintage Paving	Award Date	4/5/2002	Original Days	30
RE	HARGROVE, BEN	Accepted Date	9/17/2002	Actual Days	63
Route	174	Award Amount	\$292,690	CCO Days	33
County	Nev	Final Amount	\$372,435	Weather Days	27
PM Start	Various	Final Bridge Amount	#NAME?	Other Days	0
PM End	Various	Final Cco Amount	\$74,538		
Diary Analysis Data		First date	1/0/1900	Equipment Days	27
Date Bin Increments	0	Last Date	9/5/2002	Days in diary span	91
Location Description	IN COLUSA AND NEVADA COUNTIES AT VARIOUS LOCATIONS				

**Date Interval Specification**

Label	Date Interval									
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%
From %	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%
To %	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
From Date	6/6/02	6/15/02	6/24/02	7/3/02	7/12/02	7/21/02	7/30/02	8/8/02	8/17/02	8/26/02
To Date	6/15/02	6/24/02	7/3/02	7/12/02	7/21/02	7/30/02	8/8/02	8/17/02	8/26/02	9/5/02

**Activity Use By Phase (NONROAD + Trucks)**

Phase	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Land Clearing and Grubbing	0	0	0	0	0	0	0	0	0	0	0
Roadway Excavation	0	0	0	0	0	0	0	0	0	0	0
Structural Excavation	0	0	0	0	0	0	0	0	0	0	0
Base and Subbase	0	0	0	0	0	0	0	0	0	0	0
Structural Concrete	0	0	0	0	0	0	0	0	0	0	0
Paving	112	233	0	0	19	0	0	0	0	0	363
Drainage / Environmental / Landscapi	0	0	0	0	0	0	0	0	0	0	0
Striping / Painting	0	3	0	27	8	7	0	73	13	1	130
Traffic Control / Signage / Barriers	51	141	0	20	128	0	0	180	35	2	556
CCO	0	0	0	0	80	8	0	1	23	0	111
Other	0	0	0	0	0	7	22	0	0	0	29
Idle	0	0	0	25	0	0	0	43	80	2	149
Total non-idle	162	377	0	46	234	22	22	254	70	3	1,189

PROJECT: 03-1C3504

RESURFACE EXISTING HIGHWAY

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## Total Activity Use (Idle equipment excluded)

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	3	0	0	0	0	0	0	0	0	0	3
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	12	30	0	0	0	0	0	0	0	0	42
Paving Equipment	11	29	0	0	0	0	0	0	1	0	40
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	13	29	0	0	0	0	0	0	7	0	49
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	12	28	0	0	0	0	0	0	4	0	44
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	12	120	0	20	138	0	0	136	23	0	449
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	4	0	0	0	4	0	0	22	4	0	34
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	0	0	0	0	0	0	0	0	0
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	4	30	0	0	0	0	0	0	3	0	37
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	10	0	0	0	0	0	0	0	0	0	10
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	4	0	4
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>81</b>	<b>264</b>	<b>0</b>	<b>20</b>	<b>142</b>	<b>0</b>	<b>0</b>	<b>158</b>	<b>45</b>	<b>0</b>	<b>710</b>
Heavy Duty Truck	45	29	0	16	17	22	17	19	5	2	170
Light Duty Truck	23	84	0	11	75	0	6	78	20	1	296
Water Truck	14	0	0	0	0	0	0	0	0	0	14
<b>TOTAL TRUCKS</b>	<b>82</b>	<b>113</b>	<b>0</b>	<b>26</b>	<b>92</b>	<b>22</b>	<b>22</b>	<b>96</b>	<b>25</b>	<b>3</b>	<b>479</b>
<b>GRAND TOTAL</b>	<b>162</b>	<b>377</b>	<b>0</b>	<b>46</b>	<b>234</b>	<b>22</b>	<b>22</b>	<b>254</b>	<b>70</b>	<b>3</b>	<b>1189</b>
Non-powered Equipment	0	0	0	0	0	0	0	0	4	0	4
Unknown / Not Equipment	0	5	0	0	0	34	0	0	0	0	39



[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

**PROJECT: 03-1C3504      RESURFACE EXISTING HIGHWAY      PAGE 8/14**  
**Paving (hours)**

[illegible]

[illegible]

**PROJECT: 03-1C3504****RESURFACE EXISTING HIGHWAY****PAGE 10/14****Striping / Painting (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	0	0	0	0	0	0	0	0	0
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	3	0	0	0	0	0	0	0	0	3
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	16	0	0	0	0	0	0	16
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	0	0	4	0	0	22	4	0	30
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	0	0	0	0	0	0	0	0	0
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	3	0	3
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	0	3	0	16	4	0	0	22	7	0	51
Heavy Duty Truck	0	0	0	11	0	7	0	14	1	1	32
Light Duty Truck	0	0	0	1	4	0	0	37	6	0	47
Water Truck	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL TRUCKS</b>	0	0	0	11	4	7	0	51	6	1	80
<b>GRAND TOTAL</b>	0	3	0	27	8	7	0	73	13	1	130
Non / Externally powered Equipment	0	0	0	0	0	0	0	0	0	0	0
Unknown / Not Equipment	0	0	0	0	0	14	0	0	0	0	14



**PROJECT: 03-1C3504      RESURFACE EXISTING HIGHWAY      PAGE 11/14**

**Traffic Control / Signage / Barriers (hours)**

**PROJECT: 03-1C3504****RESURFACE EXISTING HIGHWAY****PAGE 12/14****CCO (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	1	0	1
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	0	0	0	0	0	0	7	0	7
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	0	0	0	0	0	0	4	0	4
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	0	32	0	0	0	0	0	32
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	0	0	0	0	0	0	0	0	0
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	4	0	4
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
TOTAL NONROAD	0	0	0	0	32	0	0	0	16	0	48
Heavy Duty Truck	0	0	0	0	17	8	0	0	0	0	25
Light Duty Truck	0	0	0	0	31	0	0	1	7	0	39
Water Truck	0	0	0	0	0	0	0	0	0	0	0
TOTAL TRUCKS	0	0	0	0	48	8	0	1	7	0	64
GRAND TOTAL	0	0	0	0	80	8	0	1	23	0	111
Non / Externally powered Equipment	0	0	0	0	0	0	0	0	4	0	4
Unknown / Not Equipment	0	5	0	0	0	20	0	0	0	0	25

[illegible]

Idle (hours)

**PROJECT: 03-1M5404****PAVEMENT REHABILITATION / WIDENING****PAGE 1/14****Project Identifiers**

Description	DIGOUTS AND CHIP SEAL			
Project Type	#NAME?			
Contractor	ZINK, PHIL 89 PLA	Award Date		Original Days
RE		Accepted Date	8/7/2003	Actual Days
Route		Award Amount	\$847,526	CCO Days
County		Final Amount	\$877,353	Weather Days
PM Start		Final Bridge Amount	#NAME?	Other Days
PM End		Final Cco Amount	\$17,002	
Diary Analysis Data		First date	1/0/1900	Equipment Days
Date Bin Increments	0	Last Date	8/12/2003	Days in diary span
Location Description	IN PLACER AND SIERRA COUNTIES AT VARIOUS LOCATIONS			

**Date Interval Specification**

Label	Date Interval									
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%
From %	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%
To %	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
From Date	6/17/03	6/22/03	6/28/03	7/3/03	7/9/03	7/15/03	7/20/03	7/26/03	7/31/03	8/6/03
To Date	6/22/03	6/28/03	7/3/03	7/9/03	7/15/03	7/20/03	7/26/03	7/31/03	8/6/03	8/12/03

**Activity Use By Phase (NONROAD + Trucks)**

Phase	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Land Clearing and Grubbing	0	0	0	0	0	0	0	0	0	0	0
Roadway Excavation	0	0	0	0	0	0	0	0	0	0	0
Structural Excavation	0	0	0	0	0	0	0	0	0	0	0
Base and Subbase	0	41	0	0	0	33	5	0	4	0	82
Structural Concrete	0	0	0	0	0	0	0	0	0	0	0
Paving	0	558	641	0	0	119	83	4	0	0	1,404
Drainage / Environmental / Landscapi	0	0	0	0	0	0	0	0	0	0	0
Striping / Painting	0	0	98	0	0	0	0	60	10	0	168
Traffic Control / Signage / Barriers	10	60	104	0	0	128	20	0	10	5	337
CCO	8	22	0	0	0	0	33	0	0	0	63
Other	0	0	0	0	0	0	0	0	0	0	0
Idle	0	52	0	0	0	0	0	0	0	0	52
Total non-idle	18	681	843	0	0	280	140	64	24	5	2,053

**PROJECT: 03-1M5404****PAVEMENT REHABILITATION / WIDENING****PAGE 2/14****Total Activity Use (Idle equipment excluded)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	16	26	0	0	0	0	0	0	0	42
Paving Equipment	0	16	42	0	0	0	0	0	0	0	58
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	44	52	0	0	31	24	0	0	0	151
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	12	0	0	0	0	0	0	0	0	12
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	74	44	0	0	72	38	0	0	0	227
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	44	26	0	0	17	0	0	0	0	86
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	12	26	0	0	0	0	0	0	0	38
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	55	58	0	0	81	41	2	0	0	237
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	0	271	274	0	0	201	103	2	0	0	849
Heavy Duty Truck	0	279	429	0	0	70	23	60	12	0	873
Light Duty Truck	18	131	124	0	0	9	14	2	12	5	315
Water Truck	0	0	16	0	0	0	0	0	0	0	16
<b>TOTAL TRUCKS</b>	18	410	569	0	0	79	37	62	24	5	1203
<b>GRAND TOTAL</b>	18	681	843	0	0	280	140	64	24	5	2053
Non-powered Equipment	0	0	32	0	0	0	10	0	0	0	42
Unknown / Not Equipment	0	0	0	0	0	0	7	0	0	0	7

## PAVEMENT REHABILITATION / WIDENING

**PAGE 3/14**

**Land Clearing and Grubbing (hours)**

[illegible]

## PAVEMENT REHABILITATION / WIDENING

**PAGE 4/14**

**Roadway Excavation (hours)**

[illegible]



## PAVEMENT REHABILITATION / WIDENING

**PAGE 5/14**

### Structural Excavation (hours)

**PROJECT: 03-1M5404****PAVEMENT REHABILITATION / WIDENING****PAGE 6/14****Base and Subbase (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	5	0	0	0	0	0	0	0	0	5
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	5	0	0	0	0	0	0	0	0	5
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	5	0	0	0	5	0	0	0	0	10
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	5	0	0	0	0	0	0	0	0	5
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	9	0	0	0	28	3	0	0	0	40
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	0	27	0	0	0	33	3	0	0	0	63
Heavy Duty Truck	0	0	0	0	0	0	0	0	2	0	2
Light Duty Truck	0	14	0	0	0	0	2	0	2	0	17
Water Truck	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL TRUCKS</b>	0	14	0	0	0	0	2	0	4	0	19
<b>GRAND TOTAL</b>	0	41	0	0	0	33	5	0	4	0	82
Non / Externally powered Equipment	0	0	0	0	0	0	2	0	0	0	2
Unknown / Not Equipment	0	0	0	0	0	0	1	0	0	0	1

## PAVEMENT REHABILITATION / WIDENING

**PAGE 7/14**

### Structural Concrete (hours)

**PROJECT: 03-1M5404****PAVEMENT REHABILITATION / WIDENING****PAGE 8/14****Paving (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	16	26	0	0	0	0	0	0	0	42
Paving Equipment	0	16	42	0	0	0	0	0	0	0	58
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	39	52	0	0	23	24	0	0	0	138
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	7	0	0	0	0	0	0	0	0	7
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	24	0	0	0	0	0	0	0	24
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	39	26	0	0	12	0	0	0	0	77
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	7	26	0	0	0	0	0	0	0	33
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	46	58	0	0	44	33	2	0	0	183
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	0	170	254	0	0	79	57	2	0	0	562
Heavy Duty Truck	0	279	255	0	0	40	13	0	0	0	587
Light Duty Truck	0	109	116	0	0	0	13	2	0	0	240
Water Truck	0	0	16	0	0	0	0	0	0	0	16
<b>TOTAL TRUCKS</b>	0	388	387	0	0	40	26	2	0	0	842
<b>GRAND TOTAL</b>	0	558	641	0	0	119	83	4	0	0	1404
Non / Externally powered Equipment	0	0	0	0	0	0	8	0	0	0	8
Unknown / Not Equipment	0	0	0	0	0	0	6	0	0	0	6

**PROJECT: 03-1M5404      PAVEMENT REHABILITATION / WIDENING**  
**PAGE 9/14**

**Drainage / Environmental / Landscaping (hours)**

## PAVEMENT REHABILITATION / WIDENING

**PAGE 10/14**

**Striping / Painting (hours)**

**PROJECT: 03-1M5404      PAVEMENT REHABILITATION / WIDENING**

**PAGE 11/14**

**Traffic Control / Signage / Barriers (hours)**

## PAVEMENT REHABILITATION / WIDENING

**PAGE 12/14**

CCO (hours)



## PAVEMENT REHABILITATION / WIDENING

**PAGE 13/14**

**Other (hours)**

[illegible]

## PAVEMENT REHABILITATION / WIDENING

**PAGE 14/14**

Idle (hours)

[illegible]

**PROJECT: 03-1M9204****RESURFACE EXISTING HIGHWAY****PAGE 1/14****Project Identifiers**

Description	THIN AC BLANKET				
Project Type	#NAME?				
Contractor	Donald P Garcia Excavating	Award Date	7/6/2001	Original Days	45
RE	MURPHY, ROD	Accepted Date	10/18/2001	Actual Days	38
Route	65	Award Amount	\$775,317	CCO Days	0
County	PLA	Final Amount	\$1,039,970	Weather Days	9
PM Start	Various	Final Bridge Amount	#NAME?	Other Days	0
PM End	Various	Final Cco Amount	\$282,085		
Diary Analysis Data		First date	1/0/1900	Equipment Days	27
Date Bin Increments	0	Last Date	9/28/2001	Days in diary span	59
Location Description	ON ROUTE 049, FROM EL DORADO COUNTY LINE TO BORLAND AVENUE ON ROUTE 065, FROM ROUTE 080 TO 0.1 MILE SOUTH OF BLUE OAKS OVERCROSSING #19-153S				

**Date Interval Specification**

Label	Date Interval									
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%
From %	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%
To %	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
From Date	7/31/01	8/5/01	8/11/01	8/17/01	8/23/01	8/29/01	9/4/01	9/10/01	9/16/01	9/22/01
To Date	8/5/01	8/11/01	8/17/01	8/23/01	8/29/01	9/4/01	9/10/01	9/16/01	9/22/01	9/28/01

**Activity Use By Phase (NONROAD + Trucks)**

Phase	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Land Clearing and Grubbing	0	0	0	0	0	0	0	0	0	0	0
Roadway Excavation	0	0	0	0	0	0	0	0	0	0	0
Structural Excavation	0	0	0	0	0	0	0	0	0	0	0
Base and Subbase	0	0	35	0	58	0	0	0	0	0	93
Structural Concrete	0	0	0	0	0	0	0	0	0	0	0
Paving	0	357	371	266	263	0	0	0	0	0	1,256
Drainage / Environmental / Landscaping	0	0	0	0	0	0	0	0	0	0	0
Striping / Painting	0	0	0	0	0	105	725	97	0	0	927
Traffic Control / Signage / Barriers	12	519	573	154	185	96	311	41	0	0	1,891
CCO	0	89	39	180	37	0	35	92	0	20	491
Other	0	0	0	0	0	0	0	0	0	0	0
Idle	0	0	0	0	3	0	0	0	0	0	3
Total non-idle	12	965	1017	600	542	201	1071	230	0	20	4,657

PROJECT: 03-1M9204

RESURFACE EXISTING HIGHWAY

PAGE 2/14

## Total Activity Use (Idle equipment excluded)

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	16	8	0	0	0	0	0	0	0	24
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	40	23	53	0	0	0	0	0	115
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	72	44	74	0	0	0	0	0	189
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	0	25	0	0	0	0	0	0	25
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	380	489	189	135	88	288	110	0	5	1683
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	84	20	12	0	24	0	0	0	0	140
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	12	22	19	0	0	0	0	0	52
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	99	19	30	26	0	0	0	0	0	174
Other General Industrial Equipment	0	46	8	0	0	18	248	24	0	0	344
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	16	8	0	0	0	0	0	0	5	29
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	0	640	676	344	305	130	536	134	0	10	2774
Heavy Duty Truck	0	159	112	68	59	0	37	2	0	0	437
Light Duty Truck	12	133	230	171	170	71	498	94	0	10	1388
Water Truck	0	33	0	18	8	0	0	0	0	0	59
<b>TOTAL TRUCKS</b>	12	325	342	257	237	71	535	96	0	10	1883
<b>GRAND TOTAL</b>	12	965	1017	600	542	201	1071	230	0	20	4657
Non-powered Equipment	12	0	0	16	2	24	26	0	0	0	80
Unknown / Not Equipment	0	180	100	86	83	18	112	51	0	0	630

[illegible]

[illegible]

[illegible]

[illegible]



[illegible]

**PROJECT: 03-1M9204      RESURFACE EXISTING HIGHWAY      PAGE 8/14**  
**Paving (hours)**

[illegible]

[illegible]

[illegible]

**PROJECT: 03-1M9204      RESURFACE EXISTING HIGHWAY      PAGE 11/14****Traffic Control / Signage / Barriers (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	16	8	0	0	0	0	0	0	0	24
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	0	0	0	0	0	0	0	0	0
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	0	0	0	0	0	0	0	0	0
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	345	462	94	121	88	270	38	0	0	1417
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	16	8	0	0	0	0	0	0	0	24
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	0	0	0	0	0	0	0	0	0
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	16	8	0	0	0	0	0	0	0	24
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	16	8	0	0	0	0	0	0	0	24
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	0	409	494	94	121	88	270	38	0	0	1513
Heavy Duty Truck	0	79	42	0	6	0	0	2	0	0	129
Light Duty Truck	12	31	37	61	59	8	41	2	0	0	250
Water Truck	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL TRUCKS</b>	12	110	80	61	64	8	41	4	0	0	379
<b>GRAND TOTAL</b>	12	519	573	154	185	96	311	41	0	0	1891
Non / Externally powered Equipment	12	0	0	0	0	0	0	0	0	0	12
Unknown / Not Equipment	0	180	100	86	64	18	83	30	0	0	561

**PROJECT: 03-1M9204****RESURFACE EXISTING HIGHWAY****PAGE 12/14****CCO (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	4	0	0	0	0	0	4
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	0	0	5	0	0	0	0	0	5
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	0	5	0	0	0	0	0	0	5
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	35	28	90	14	0	18	72	0	5	261
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	8	0	0	0	0	0	0	0	0	8
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	0	3	0	0	0	0	0	0	3
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	10	0	5	1	0	0	0	0	0	16
Other General Industrial Equipment	0	3	0	0	0	0	0	0	0	0	3
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	5	5
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	0	56	28	102	23	0	18	72	0	10	308
Heavy Duty Truck	0	8	6	25	4	0	0	0	0	0	43
Light Duty Truck	0	21	6	46	10	0	18	20	0	10	129
Water Truck	0	4	0	7	0	0	0	0	0	0	11
<b>TOTAL TRUCKS</b>	0	33	11	78	14	0	18	20	0	10	183
<b>GRAND TOTAL</b>	0	89	39	180	37	0	35	92	0	20	491
Non / Externally powered Equipment	0	0	0	16	0	0	0	0	0	0	16
Unknown / Not Equipment	0	0	0	0	19	0	29	21	0	0	69

**PROJECT: 03-1M9204      RESURFACE EXISTING HIGHWAY      PAGE 13/14**  
Other (hours)

[illegible]

**PROJECT: 03-1M9204      RESURFACE EXISTING HIGHWAY      PAGE 14/14**

Idle (hours)

[illegible]



**PROJECT: 03-2A6004****PAVEMENT REHABILITATION / WIDENING****PAGE 1/14****Project Identifiers**

Description	CONSTRUCT RIGHT TURN POCKET				
Project Type	#NAME?				
Contractor	Steve Manning Construction	Award Date	6/27/2002	Original Days	80
RE	ACEVES, SERGIO	Accepted Date	10/17/2002	Actual Days	46
Route	70	Award Amount	\$979,272	CCO Days	0
County	BUT	Final Amount	\$1,046,531	Weather Days	1
PM Start	42.3	Final Bridge Amount	#NAME?	Other Days	0
PM End	43	Final Cco Amount	\$42,912		
Diary Analysis Data		First date	1/0/1900	Equipment Days	47
Date Bin Increments	0	Last Date	9/25/2002	Days in diary span	72
Location Description	IN BUTTE COUNTY NEAR OROVILLE FROM 0.3 KM WEST OF PENTZ ROAD TO 0.4 KM EAST PENTZ ROAD				

**Date Interval Specification**

Label	Date Interval									
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%
From %	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%
To %	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
From Date	7/15/02	7/22/02	7/29/02	8/5/02	8/12/02	8/20/02	8/27/02	9/3/02	9/10/02	9/17/02
To Date	7/22/02	7/29/02	8/5/02	8/12/02	8/20/02	8/27/02	9/3/02	9/10/02	9/17/02	9/25/02

**Activity Use By Phase (NONROAD + Trucks)**

Phase	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Land Clearing and Grubbing	63	8	0	13	0	0	0	0	0	0	83
Roadway Excavation	0	0	5	4	28	22	5	0	0	0	64
Structural Excavation	0	0	0	0	0	0	0	0	0	0	0
Base and Subbase	223	258	249	265	247	0	0	0	0	0	1,241
Structural Concrete	0	0	0	0	0	0	0	0	0	0	0
Paving	0	0	0	0	54	134	80	104	148	0	520
Drainage / Environmental / Landscaping	37	0	0	8	0	39	9	6	0	70	169
Striping / Painting	0	0	0	0	0	0	0	8	0	43	51
Traffic Control / Signage / Barriers	9	85	169	109	78	314	243	305	55	37	1,402
CCO	4	0	0	3	0	0	0	0	0	0	7
Other	0	20	0	0	9	30	0	2	0	44	104
Idle	0	0	0	3	5	12	17	10	0	0	46
Total non-idle	336	371	423	401	415	538	337	425	203	194	3,639

**PROJECT: 03-2A6004****PAVEMENT REHABILITATION / WIDENING****PAGE 2/14****Total Activity Use (Idle equipment excluded)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	25	24	16	0	0	65
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	12	0	0	0	0	0	0	0	12
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	31	58	55	12	26	0	0	0	0	0	181
Excavators	41	37	25	65	19	8	0	0	0	0	195
Graders	18	0	0	19	46	2	0	2	0	0	86
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	14	0	7	51	0	72
Paving Equipment	0	0	0	0	0	0	0	1	0	0	1
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	31	55	55	43	59	110	0	0	17	0	368
Rough Terrain Forklifts	0	0	0	0	11	25	24	8	0	0	68
Rubber Tire Loaders	25	5	0	11	8	0	3	16	10	3	79
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	78	140	94	75	140	87	141	53	35	842
Skid Steer Loaders	0	0	0	0	0	8	0	0	0	0	8
Surfacing Equipment	0	0	0	0	5	0	16	6	0	14	40
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	10	0	0	10
Tractors / Loaders / Backhoes	0	0	0	0	0	24	0	0	9	0	33
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	17	12	18	0	12	58
Sweepers / Scrubbers	0	0	0	0	10	8	16	10	0	0	43
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	14	14
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	5	0	0	5
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	6	4	0	2	0	0	0	0	12
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>145</b>	<b>233</b>	<b>293</b>	<b>246</b>	<b>256</b>	<b>380</b>	<b>181</b>	<b>237</b>	<b>140</b>	<b>77</b>	<b>2187</b>
Heavy Duty Truck	78	62	55	55	54	49	62	100	17	41	572
Light Duty Truck	113	77	75	100	67	103	78	88	29	76	804
Water Truck	0	0	0	0	39	6	16	0	18	0	78
<b>TOTAL TRUCKS</b>	<b>191</b>	<b>138</b>	<b>130</b>	<b>155</b>	<b>159</b>	<b>158</b>	<b>156</b>	<b>188</b>	<b>63</b>	<b>117</b>	<b>1453</b>
<b>GRAND TOTAL</b>	<b>336</b>	<b>371</b>	<b>423</b>	<b>401</b>	<b>415</b>	<b>538</b>	<b>337</b>	<b>425</b>	<b>203</b>	<b>194</b>	<b>3639</b>
Non-powered Equipment	0	83	99	118	136	513	306	298	175	104	1831
Unknown / Not Equipment	0	0	0	0	0	20	131	230	91	38	509

## PAVEMENT REHABILITATION / WIDENING

**PAGE 3/14**

**Land Clearing and Grubbing (hours)**

[illegible]

## PAVEMENT REHABILITATION / WIDENING

**PAGE 4/14**

### Roadway Excavation (hours)

[illegible]

## PAVEMENT REHABILITATION / WIDENING

**PAGE 5/14**

### Structural Excavation (hours)

[illegible]

## PAVEMENT REHABILITATION / WIDENING

**PAGE 6/14**

**Base and Subbase (hours)**

[illegible]

## PAVEMENT REHABILITATION / WIDENING

**PAGE 7/14**

### Structural Concrete (hours)

[illegible]

**PROJECT: 03-2A6004****PAVEMENT REHABILITATION / WIDENING****PAGE 8/14****Paving (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	0	0	0	0	4	0	0	2	0	0	5
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	14	0	7	51	0	72
Paving Equipment	0	0	0	0	0	0	0	1	0	0	1
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	0	0	4	87	0	0	17	0	107
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	0	0	0	0	0	11	10	0	21
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0	8	0	0	0	0	8
Surfacing Equipment	0	0	0	0	5	0	16	6	0	0	26
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	10	0	0	10
Tractors / Loaders / Backhoes	0	0	0	0	0	0	0	0	9	0	9
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	3	0	0	0	0	3
Sweepers / Scrubbers	0	0	0	0	6	8	16	10	0	0	39
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	5	0	0	5
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	0	0	0	0	17	119	32	49	87	0	304
Heavy Duty Truck	0	0	0	0	24	3	32	40	17	0	116
Light Duty Truck	0	0	0	0	14	12	16	15	27	0	83
Water Truck	0	0	0	0	0	0	0	0	18	0	18
<b>TOTAL TRUCKS</b>	0	0	0	0	37	15	48	55	61	0	216
<b>GRAND TOTAL</b>	0	0	0	0	54	134	80	104	148	0	520
Non / Externally powered Equipment	0	0	0	0	0	43	16	10	0	0	69
Unknown / Not Equipment	0	0	0	0	0	0	0	2	0	0	2



**PROJECT: 03-2A6004****PAVEMENT REHABILITATION / WIDENING****PAGE 9/14****Drainage / Environmental / Landscaping (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	10	0	0	0	0	2	0	0	0	0	12
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	0	0	0	5	0	0	0	0	5
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	0	0	0	0	0	5	0	0	5
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	0	0	0	9	0	0	0	0	9
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	7	7
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>10</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>16</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>7</b>	<b>38</b>
Heavy Duty Truck	1	0	0	0	0	7	6	0	0	24	38
Light Duty Truck	26	0	0	8	0	16	3	1	0	40	94
Water Truck	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL TRUCKS</b>	<b>27</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>0</b>	<b>23</b>	<b>9</b>	<b>1</b>	<b>0</b>	<b>64</b>	<b>131</b>
<b>GRAND TOTAL</b>	<b>37</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>0</b>	<b>39</b>	<b>9</b>	<b>6</b>	<b>0</b>	<b>70</b>	<b>169</b>
Non / Externally powered Equipment	0	0	0	0	0	0	0	0	0	0	0
Unknown / Not Equipment	0	0	0	0	0	0	0	43	0	0	43

## PAVEMENT REHABILITATION / WIDENING

**PAGE 10/14**

**Striping / Painting (hours)**

[illegible]

**PROJECT: 03-2A6004****PAVEMENT REHABILITATION / WIDENING****PAGE 11/14****Traffic Control / Signage / Barriers (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	25	24	16	0	0	64
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	2	0	0	0	0	0	0	0	2
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	5	0	0	0	0	0	0	0	5
Excavators	0	3	0	0	0	0	0	0	0	0	3
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	5	0	0	4	0	0	0	0	9
Rough Terrain Forklifts	0	0	0	0	0	25	24	6	0	0	55
Rubber Tire Loaders	0	0	0	0	0	0	0	0	0	0	0
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	78	140	94	75	140	87	141	53	35	842
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	0	0	0	4	0	0	0	0	4
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	9	10	18	0	0	37
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	4	0	2	0	0	0	0	6
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	0	81	151	98	75	208	145	180	53	35	1025
Heavy Duty Truck	0	0	7	0	0	34	24	58	0	0	122
Light Duty Truck	9	4	12	11	3	67	58	68	2	2	235
Water Truck	0	0	0	0	0	6	16	0	0	0	22
<b>TOTAL TRUCKS</b>	9	4	18	11	3	106	98	125	2	2	378
<b>GRAND TOTAL</b>	9	85	169	109	78	314	243	305	55	37	1402
Non / Externally powered Equipment	0	83	99	118	125	470	290	288	175	104	1751
Unknown / Not Equipment	0	0	0	0	0	16	5	0	0	0	21

**PROJECT: 03-2A6004****PAVEMENT REHABILITATION / WIDENING****PAGE 12/14****CCO (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	2	0	0	3	0	0	0	0	0	0	5
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	0	0	0	0	0	0	0	0	0
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	0	0	0	0	0	0	0	0	0
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	0	0	0	0	0	0	0	0	0
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>5</b>
Heavy Duty Truck	0	0	0	0	0	0	0	0	0	0	0
Light Duty Truck	2	0	0	0	0	0	0	0	0	0	2
Water Truck	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL TRUCKS</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>
<b>GRAND TOTAL</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>7</b>
Non / Externally powered Equipment	0	0	0	0	0	0	0	0	0	0	0
Unknown / Not Equipment	0	0	0	0	0	4	127	185	91	38	444

## PAVEMENT REHABILITATION / WIDENING

**PAGE 13/14**

**Other (hours)**

[illegible]

## PAVEMENT REHABILITATION / WIDENING

**PAGE 14/14**

**Idle (hours)**

[illegible]

**PROJECT: 03-2C5704****RESURFACE EXISTING HIGHWAY****PAGE 1/14****Project Identifiers**

Description	RESURFACE EXISTING ROADWAY			
Project Type	#NAME?			
Contractor	FLAHERTY, KEITH 80 NEV	Award Date		Original Days
RE		Accepted Date	11/13/2003	Actual Days
Route		Award Amount	\$5,099,929	CCO Days
County		Final Amount	\$5,994,015	Weather Days
PM Start		Final Bridge Amount	#NAME?	Other Days
PM End		Final Cco Amount	\$386,411	
Diary Analysis Data		First date	1/0/1900	Equipment Days
Date Bin Increments	0	Last Date	10/7/2003	Days in diary span
Location Description	IN NEVADA AND SIERRA COUNTIES NEAR FLORISTON FROM THE TRUCKEE RIVER BRIDGE TO THE NEVADA STATE LINE			

**Date Interval Specification**

Label	Date Interval									
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%
From %	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%
To %	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
From Date	10/8/02	11/13/02	12/19/02	1/25/03	3/2/03	4/8/03	5/14/03	6/19/03	7/26/03	8/31/03
To Date	11/13/02	12/19/02	1/25/03	3/2/03	4/8/03	5/14/03	6/19/03	7/26/03	8/31/03	10/7/03

**Activity Use By Phase (NONROAD + Trucks)**

Phase	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Land Clearing and Grubbing	0	0	0	0	0	0	0	0	0	0	0
Roadway Excavation	0	0	0	0	0	242	1215	122	0	0	1,578
Structural Excavation	0	0	0	0	0	0	0	0	0	0	0
Base and Subbase	0	0	0	0	0	0	0	0	0	0	0
Structural Concrete	0	0	0	0	0	0	0	0	0	0	0
Paving	315	0	0	0	0	324	1215	1148	46	0	3,047
Drainage / Environmental / Landscaping	0	0	0	0	0	93	818	359	426	0	1,695
Striping / Painting	0	0	0	0	0	0	0	0	168	35	203
Traffic Control / Signage / Barriers	820	0	0	0	0	0	0	780	947	32	2,578
CCO	4	0	0	0	0	72	140	35	26	289	565
Other	0	0	0	0	0	69	0	0	18	67	153
Idle	29	0	0	0	0	94	39	67	25	181	434
Total non-idle	1139	0	0	0	0	799	3388	2442	1630	422	9,818

PROJECT: 03-2C5704

RESURFACE EXISTING HIGHWAY

PAGE 2/14

## Total Activity Use (Idle equipment excluded)

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	42	146	188	0	376
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	41	159	20	0	0	220
Graders	0	0	0	0	0	0	20	16	0	0	36
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	120	0	0	0	0	71	208	217	12	29	657
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	93	0	0	0	0	46	185	274	0	59	656
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	102	0	0	0	0	156	456	143	20	54	929
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	400	0	0	0	0	90	493	154	177	0	1314
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	0	0	0	0	10	54	28	32	124
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	0	0	0	45	234	103	4	0	385
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	40	219	95	39	38	429
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	7	7
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	142	192	0	334
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>715</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>487</b>	<b>2024</b>	<b>1363</b>	<b>658</b>	<b>217</b>	<b>5464</b>
Heavy Duty Truck	414	0	0	0	0	129	629	412	495	75	2154
Light Duty Truck	10	0	0	0	0	179	669	632	478	80	2046
Water Truck	0	0	0	0	0	4	66	35	0	50	155
<b>TOTAL TRUCKS</b>	<b>424</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>312</b>	<b>1364</b>	<b>1079</b>	<b>973</b>	<b>205</b>	<b>4355</b>
<b>GRAND TOTAL</b>	<b>1139</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>799</b>	<b>3388</b>	<b>2442</b>	<b>1630</b>	<b>422</b>	<b>9818</b>
Non-powered Equipment	0	0	0	0	0	0	40	69	155	20	283
Unknown / Not Equipment	0	0	0	0	0	50	0	8	0	0	58



[illegible]

**PROJECT: 03-2C5704****RESURFACE EXISTING HIGHWAY****PAGE 4/14****Roadway Excavation (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	42	0	0	0	42
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	27	126	0	0	0	153
Graders	0	0	0	0	0	0	11	16	0	0	27
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	7	0	0	0	7
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	0	0	0	0	17	22	0	0	39
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	0	0	0	50	234	24	0	0	308
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	0	0	51	381	0	0	0	432
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	0	0	0	25	149	20	0	0	193
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	3	26	17	0	0	46
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	0	0	0	0	0	156	993	98	0	0	1246
Heavy Duty Truck	0	0	0	0	0	50	4	4	0	0	58
Light Duty Truck	0	0	0	0	0	37	218	20	0	0	274
Water Truck	0	0	0	0	0	0	1	0	0	0	1
<b>TOTAL TRUCKS</b>	0	0	0	0	0	87	222	24	0	0	332
<b>GRAND TOTAL</b>	0	0	0	0	0	242	1215	122	0	0	1578
Non / Externally powered Equipment	0	0	0	0	0	0	40	0	0	0	40
Unknown / Not Equipment	0	0	0	0	0	32	0	0	0	0	32

[illegible]

[illegible]

[illegible]

**PROJECT: 03-2C5704****RESURFACE EXISTING HIGHWAY****PAGE 8/14****Paving (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	9	33	20	0	0	62
Graders	0	0	0	0	0	0	9	0	0	0	9
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	120	0	0	0	0	62	201	215	12	0	609
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	93	0	0	0	0	36	168	245	0	0	542
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	102	0	0	0	0	65	203	116	0	0	486
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	0	0	31	112	0	0	0	143
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	0	0	0	0	10	53	0	0	63
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	0	0	0	10	43	55	0	0	108
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	18	44	64	0	0	126
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>315</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>230</b>	<b>823</b>	<b>767</b>	<b>12</b>	<b>0</b>	<b>2146</b>
Heavy Duty Truck	0	0	0	0	0	11	17	81	35	0	142
Light Duty Truck	0	0	0	0	0	83	364	265	0	0	712
Water Truck	0	0	0	0	0	0	12	35	0	0	47
<b>TOTAL TRUCKS</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>94</b>	<b>393</b>	<b>381</b>	<b>35</b>	<b>0</b>	<b>901</b>
<b>GRAND TOTAL</b>	<b>315</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>324</b>	<b>1215</b>	<b>1148</b>	<b>46</b>	<b>0</b>	<b>3047</b>
Non / Externally powered Equipment	0	0	0	0	0	0	0	0	0	0	0
Unknown / Not Equipment	0	0	0	0	0	18	0	8	0	0	26



**PROJECT: 03-2C5704      RESURFACE EXISTING HIGHWAY      PAGE 10/14**  
**Striping / Painting (hours)**

[illegible]



**PROJECT: 03-2C5704      RESURFACE EXISTING HIGHWAY      PAGE 11/14**

**Traffic Control / Signage / Barriers (hours)**[illegible]

[illegible]

[illegible]

**PROJECT: 03-2C5704      RESURFACE EXISTING HIGHWAY      PAGE 14/14**

Idle (hours)

[illegible]

**PROJECT: 03-3A6004****PAVEMENT REHABILITATION / WIDENING****PAGE 1/14****Project Identifiers**

Description	WIDEN EXISTING RAMPS				
Project Type	#NAME?				
Contractor	Baldwin Contracting Comp	Award Date	6/4/2002	Original Days	60
RE	FEUSI, ROBERT	Accepted Date	9/4/2003	Actual Days	55
Route	80	Award Amount	\$571,114	CCO Days	11
County	SAC	Final Amount	\$605,638	Weather Days	200
PM Start		Final Bridge Amount	#NAME?	Other Days	0
PM End		Final Cco Amount	\$17,172		
Diary Analysis Data		First date	1/0/1900	Equipment Days	45
Date Bin Increments	0	Last Date	8/16/2003	Days in diary span	360
Location Description	IN SACRAMENTO COUNTY IN SACRAMENTO AT EL CAMINO AVENUE AND FULTON AVENUE OVERCROSSINGS AND AT WATT AVENUE OVERCROSSING				

**Date Interval Specification**

Label	Date Interval									
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%
From %	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%
To %	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
From Date	8/21/02	9/26/02	11/1/02	12/7/02	1/12/03	2/17/03	3/25/03	4/30/03	6/5/03	7/11/03
To Date	9/26/02	11/1/02	12/7/02	1/12/03	2/17/03	3/25/03	4/30/03	6/5/03	7/11/03	8/16/03

**Activity Use By Phase (NONROAD + Trucks)**

Phase	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Land Clearing and Grubbing	57	17	0	0	0	0	0	0	0	0	74
Roadway Excavation	463	30	0	0	0	0	0	0	0	0	493
Structural Excavation	0	0	0	0	0	0	0	0	0	0	0
Base and Subbase	182	30	0	0	0	0	0	0	0	0	212
Structural Concrete	0	0	0	0	0	0	0	0	0	0	0
Paving	76	440	0	0	0	0	0	0	0	236	752
Drainage / Environmental / Landscapi	14	76	0	0	0	0	0	0	0	0	90
Striping / Painting	0	0	0	0	0	0	0	0	0	107	107
Traffic Control / Signage / Barriers	629	326	40	0	0	190	0	0	0	43	1,227
CCO	200	0	0	0	0	0	0	0	0	0	200
Other	75	32	0	0	0	0	0	0	0	0	107
Idle	29	85	0	0	0	0	0	0	0	208	322
Total non-idle	1696	951	40	0	0	190	0	0	0	386	3,262



[illegible]

## PAVEMENT REHABILITATION / WIDENING

**PAGE 4/14**

### Roadway Excavation (hours)

[illegible]



## PAVEMENT REHABILITATION / WIDENING

**PAGE 5/14**

### Structural Excavation (hours)

[illegible]

## PAVEMENT REHABILITATION / WIDENING

**PAGE 6/14**

**Base and Subbase (hours)**

[illegible]

[illegible]

## PAVEMENT REHABILITATION / WIDENING

**PAGE 8/14**

**Paving (hours)**

[illegible]

## PAVEMENT REHABILITATION / WIDENING

**PAGE 9/14**

**Drainage / Environmental / Landscaping (hours)**[illegible]

## PAVEMENT REHABILITATION / WIDENING

**PAGE 10/14**

**Striping / Painting (hours)**

[illegible]



## PAVEMENT REHABILITATION / WIDENING

**PAGE 12/14**

CCO (hours)[illegible]



## PAVEMENT REHABILITATION / WIDENING

**PAGE 13/14**

**Other (hours)**

[illegible]

## PAVEMENT REHABILITATION / WIDENING

**PAGE 14/14**

Idle (hours)

[illegible]

**PROJECT: 03-3C1604****PAVEMENT REHABILITATION / WIDENING****PAGE 1/14****Project Identifiers**

Description	DIGOUTS AND CHIP SEAL				
Project Type	#NAME?				
Contractor	Graham Contactors Inc	Award Date	5/30/2002	Original Days	30
RE	HARGROVE, BEN	Accepted Date	9/17/2002	Actual Days	48
Route	162	Award Amount	\$275,573	CCO Days	18
County	BUT	Final Amount	\$358,358	Weather Days	4
PM Start	0	Final Bridge Amount	#NAME?	Other Days	0
PM End	14	Final Cco Amount	\$45,754		
Diary Analysis Data		First date	1/0/1900	Equipment Days	15
Date Bin Increments	0	Last Date	9/10/2002	Days in diary span	64
Location Description	IN BUTTE COUNTY FROM GLENN BUTTE COUNTY LINE TO LARKIN ROAD				

**Date Interval Specification**

Label	Date Interval									
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%
From %	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%
To %	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
From Date	7/8/02	7/14/02	7/20/02	7/27/02	8/2/02	8/9/02	8/15/02	8/21/02	8/28/02	9/3/02
To Date	7/14/02	7/20/02	7/27/02	8/2/02	8/9/02	8/15/02	8/21/02	8/28/02	9/3/02	9/10/02

**Activity Use By Phase (NONROAD + Trucks)**

Phase	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Land Clearing and Grubbing	0	0	0	0	0	0	0	0	0	0	0
Roadway Excavation	0	0	0	0	0	0	0	0	0	0	0
Structural Excavation	0	0	0	0	0	0	0	0	0	0	0
Base and Subbase	0	0	154	0	0	0	0	0	0	0	154
Structural Concrete	0	0	0	0	0	0	0	0	0	0	0
Paving	0	533	244	0	0	0	0	0	0	0	776
Drainage / Environmental / Landscapi	0	0	0	0	0	0	0	0	0	0	0
Striping / Painting	0	0	54	159	0	6	0	0	0	16	235
Traffic Control / Signage / Barriers	24	47	107	0	0	0	0	0	0	0	178
CCO	0	0	21	0	0	0	0	0	0	83	104
Other	0	0	0	0	0	0	0	0	0	0	0
Idle	0	64	62	3	0	0	0	0	0	42	171
Total non-idle	24	580	579	159	0	6	0	0	0	99	1,446

**PROJECT: 03-3C1604****PAVEMENT REHABILITATION / WIDENING****PAGE 2/14****Total Activity Use (Idle equipment excluded)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	6	6
Paving Equipment	0	0	0	0	0	0	0	0	0	6	6
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	34	43	0	0	0	0	0	0	6	83
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	85	25	0	0	0	0	0	0	6	116
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	69	0	0	0	0	0	0	0	69
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	6	6
Surfacing Equipment	0	30	9	0	0	0	0	0	0	0	39
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	2	0	0	0	0	0	0	0	2
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	70	111	0	0	0	0	0	0	6	187
Other General Industrial Equipment	0	0	0	22	0	2	0	0	0	0	24
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	10	0	0	0	0	0	0	0	0	0	10
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>10</b>	<b>219</b>	<b>259</b>	<b>22</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>33</b>	<b>545</b>
Heavy Duty Truck	0	254	245	75	0	2	0	0	0	61	636
Light Duty Truck	14	103	76	62	0	2	0	0	0	6	262
Water Truck	0	4	0	0	0	0	0	0	0	0	4
<b>TOTAL TRUCKS</b>	<b>14</b>	<b>361</b>	<b>320</b>	<b>137</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>66</b>	<b>901</b>
<b>GRAND TOTAL</b>	<b>24</b>	<b>580</b>	<b>579</b>	<b>159</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>99</b>	<b>1446</b>
Non-powered Equipment	0	22	0	0	0	2	0	0	0	0	24
Unknown / Not Equipment	0	0	61	2	0	0	0	0	0	7	69

## PAVEMENT REHABILITATION / WIDENING

**PAGE 3/14**

**Land Clearing and Grubbing (hours)**

[illegible]

## PAVEMENT REHABILITATION / WIDENING

**PAGE 4/14**

**Roadway Excavation (hours)**

[illegible]

## PAVEMENT REHABILITATION / WIDENING

**PAGE 5/14**

**Structural Excavation (hours)**

[illegible]

## PAVEMENT REHABILITATION / WIDENING

**PAGE 6/14**

**Base and Subbase (hours)**

[illegible]



## PAVEMENT REHABILITATION / WIDENING

**PAGE 7/14**

### Structural Concrete (hours)

[illegible]

## PAVEMENT REHABILITATION / WIDENING

**PAGE 8/14**

**Paving (hours)**

[illegible]

## PAVEMENT REHABILITATION / WIDENING

**PAGE 9/14**

**Drainage / Environmental / Landscaping (hours)**

[illegible]

**PROJECT: 03-3C1604****PAVEMENT REHABILITATION / WIDENING****PAGE 10/14****Striping / Painting (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	0	0	0	0	0	0	0	0	0
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	0	0	0	0	0	0	0	0	0
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	9	0	0	0	0	0	0	0	9
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	0	0	0	0	0	0	0	0	0
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	9	0	0	0	0	0	0	0	9
Other General Industrial Equipment	0	0	0	22	0	2	0	0	0	0	24
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	0	0	18	22	0	2	0	0	0	0	42
Heavy Duty Truck	0	0	18	75	0	2	0	0	0	16	111
Light Duty Truck	0	0	18	62	0	2	0	0	0	0	82
Water Truck	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL TRUCKS</b>	0	0	36	137	0	4	0	0	0	16	193
<b>GRAND TOTAL</b>	0	0	54	159	0	6	0	0	0	16	235
Non / Externally powered Equipment	0	0	0	0	0	2	0	0	0	0	2
Unknown / Not Equipment	0	0	0	2	0	0	0	0	0	1	3

**PROJECT: 03-3C1604****PAVEMENT REHABILITATION / WIDENING****PAGE 11/14****Traffic Control / Signage / Barriers (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	0	0	0	0	0	0	0	0	0
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	0	0	0	0	0	0	0	0	0
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	69	0	0	0	0	0	0	0	69
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	0	0	0	0	0	0	0	0	0
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	10	0	0	0	0	0	0	0	0	0	10
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>10</b>	<b>0</b>	<b>69</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>79</b>
Heavy Duty Truck	0	23	0	0	0	0	0	0	0	0	23
Light Duty Truck	14	25	38	0	0	0	0	0	0	0	76
Water Truck	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL TRUCKS</b>	<b>14</b>	<b>47</b>	<b>38</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>99</b>
<b>GRAND TOTAL</b>	<b>24</b>	<b>47</b>	<b>107</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>178</b>
Non / Externally powered Equipment	0	0	0	0	0	0	0	0	0	0	0
Unknown / Not Equipment	0	0	37	0	0	0	0	0	0	1	38

**PROJECT: 03-3C1604****PAVEMENT REHABILITATION / WIDENING****PAGE 12/14****CCO (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	6	6
Paving Equipment	0	0	0	0	0	0	0	0	0	6	6
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	0	0	0	0	0	0	0	6	6
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	0	0	0	0	0	0	0	6	6
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	6	6
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	0	0	0	0	0	0	0	0	0
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	6	6
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	0	0	0	0	0	0	0	0	0	33	33
Heavy Duty Truck	0	0	11	0	0	0	0	0	0	45	56
Light Duty Truck	0	0	10	0	0	0	0	0	0	6	16
Water Truck	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL TRUCKS</b>	0	0	21	0	0	0	0	0	0	50	71
<b>GRAND TOTAL</b>	0	0	21	0	0	0	0	0	0	83	104
Non / Externally powered Equipment	0	0	0	0	0	0	0	0	0	0	0
Unknown / Not Equipment	0	0	24	0	0	0	0	0	0	5	29

## PAVEMENT REHABILITATION / WIDENING

**PAGE 13/14**

**Other (hours)**

[illegible]

**PROJECT: 03-3C1604****PAVEMENT REHABILITATION / WIDENING****PAGE 14/14****Idle (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	12	0	0	0	0	0	0	0	0	12
Paving Equipment	0	12	0	0	0	0	0	0	0	0	12
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	12	9	0	0	0	0	0	0	0	21
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	14	0	0	0	0	0	0	0	14
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	0	0	0	0	0	0	0	0	0
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	8	2	0	0	0	0	0	0	0	10
Other General Industrial Equipment	0	0	0	1	0	0	0	0	0	0	1
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	0	44	25	1	0	0	0	0	0	0	70
Heavy Duty Truck	0	20	37	1	0	0	0	0	0	38	96
Light Duty Truck	0	0	0	1	0	0	0	0	0	4	5
Water Truck	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL TRUCKS</b>	0	20	37	2	0	0	0	0	0	42	101
<b>GRAND TOTAL</b>	0	64	62	3	0	0	0	0	0	42	171
Non / Externally powered Equipment	0	0	0	0	0	0	0	0	0	0	0
Unknown / Not Equipment	0	0	0	1	0	0	0	0	0	5	5



**PROJECT: 03-3C2804****PAVEMENT REHABILITATION / WIDENING****PAGE 1/14****Project Identifiers**

Description	BRIDGE REHABILITATION				
Project Type	#NAME?				
Contractor	American Civil Constructors	Award Date	4/4/2002	Original Days	60
RE	TIPTON, ANTHONY	Accepted Date	11/4/2002	Actual Days	86
Route	80	Award Amount	\$720,490	CCO Days	12
County	SAC	Final Amount	\$1,041,876	Weather Days	127
PM Start	14.3	Final Bridge Amount	#NAME?	Other Days	14
PM End	14.8	Final Cco Amount	\$278,108		
Diary Analysis Data		First date	1/0/1900	Equipment Days	49
Date Bin Increments	0	Last Date	10/11/2002	Days in diary span	183
Location Description	IN SACRAMENTO COUNTY IN SACRAMENTO AT DEL PASO PARK OVERHEAD				

**Date Interval Specification**

Label	Date Interval									
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%
From %	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%
To %	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
From Date	4/11/02	4/29/02	5/17/02	6/4/02	6/23/02	7/11/02	7/29/02	8/17/02	9/4/02	9/22/02
To Date	4/29/02	5/17/02	6/4/02	6/23/02	7/11/02	7/29/02	8/17/02	9/4/02	9/22/02	10/11/02

**Activity Use By Phase (NONROAD + Trucks)**

Phase	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Land Clearing and Grubbing	0	0	0	0	0	0	0	0	0	0	0
Roadway Excavation	0	0	0	0	0	0	0	0	0	0	0
Structural Excavation	0	216	18	0	0	0	0	0	0	0	234
Base and Subbase	0	0	0	0	0	0	0	0	0	0	0
Structural Concrete	8	227	0	0	0	0	0	0	318	521	1,073
Paving	0	0	0	0	0	0	0	0	0	0	0
Drainage / Environmental / Landscaping	0	0	0	0	0	0	0	0	0	0	0
Striping / Painting	0	0	0	0	0	0	0	0	0	0	0
Traffic Control / Signage / Barriers	208	304	0	0	0	0	0	0	285	772	1,569
CCO	243	24	63	0	0	0	0	42	33	63	468
Other	190	139	0	0	0	0	0	0	0	47	376
Idle	6	15	0	0	0	0	0	0	63	219	303
Total non-idle	649	910	81	0	0	0	0	42	636	1403	3,720

## PAVEMENT REHABILITATION / WIDENING

**PAGE 2/14**

**Total Activity Use (Idle equipment excluded)**

[illegible]

## PAVEMENT REHABILITATION / WIDENING

**PAGE 3/14**

**Land Clearing and Grubbing (hours)**

[illegible]

## PAVEMENT REHABILITATION / WIDENING

**PAGE 4/14**

### Roadway Excavation (hours)

[illegible]

## PAVEMENT REHABILITATION / WIDENING

**PAGE 5/14**

### Structural Excavation (hours)

[illegible]

## PAVEMENT REHABILITATION / WIDENING

**PAGE 6/14**

**Base and Subbase (hours)**

[illegible]

## PAVEMENT REHABILITATION / WIDENING

**PAGE 7/14**

### Structural Concrete (hours)

[illegible]

## PAVEMENT REHABILITATION / WIDENING

**PAGE 8/14**

**Paving (hours)**

[illegible]



## PAVEMENT REHABILITATION / WIDENING

**PAGE 9/14**

**Drainage / Environmental / Landscaping (hours)**[illegible]

## PAVEMENT REHABILITATION / WIDENING

**PAGE 10/14**

**Striping / Painting (hours)**

[illegible]

## PAVEMENT REHABILITATION / WIDENING

**PAGE 11/14**

**Traffic Control / Signage / Barriers (hours)**[illegible]

## PAVEMENT REHABILITATION / WIDENING

**PAGE 12/14**

CCO (hours)[illegible]

## PAVEMENT REHABILITATION / WIDENING

**PAGE 13/14**

**Other (hours)**

[illegible]

## PAVEMENT REHABILITATION / WIDENING

**PAGE 14/14**

Idle (hours)

[illegible]

**PROJECT: 03-4A88U4**  
**1/14**

**CONSTRUCT, RECONSTRUCT BRIDGE**

**PAGE**

**Project Identifiers**

Description	REHABILITATE EXISTING BRIDGE				
Project Type	#NAME?				
Contractor	West Coast Bridge Inc.	Award Date	10/31/2000	Original Days	240
RE	FEUSI, ROBERT	Accepted Date	4/4/2002	Actual Days	292
Route	5	Award Amount	\$13,343,151	CCO Days	52
County	SAC	Final Amount	\$13,302,359	Weather Days	168
PM Start	39.6	Final Bridge Amount	#NAME?	Other Days	0
PM End	40.8	Final Cco Amount	\$1,717,546		
Diary Analysis Data		First date	1/0/1900	Equipment Days	238
Date Bin Increments	0	Last Date	1/10/2002	Days in diary span	353
Location Description	IN SACRAMENTO COUNTY IN SACRAMENTO FROM 0.3 KM SOUTH TO 0.9 KM NORTH OF THE AMERICAN RIVER BRIDGE				

**Date Interval Specification**

Label	Date Interval									
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%
From %	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%
To %	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
From Date	1/22/01	2/26/01	4/2/01	5/7/01	6/12/01	7/17/01	8/21/01	9/26/01	10/31/01	12/5/01
To Date	2/26/01	4/2/01	5/7/01	6/12/01	7/17/01	8/21/01	9/26/01	10/31/01	12/5/01	1/10/02

**Activity Use By Phase (NONROAD + Trucks)**

Phase	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Land Clearing and Grubbing	0	0	100	0	0	24	192	0	0	0	316
Roadway Excavation	0	451	513	0	0	227	0	7	0	0	1,198
Structural Excavation	0	0	0	0	0	0	0	0	0	0	0
Base and Subbase	0	257	801	0	0	0	0	0	35	0	1,093
Structural Concrete	581	760	1096	1816	3497	4085	4956	1982	599	0	19,370
Paving	0	27	229	261	19	60	66	143	4	8	817
Drainage / Environmental / Landscapi	0	0	16	98	0	0	3	59	0	0	176
Striping / Painting	0	119	11	60	162	78	12	161	0	0	603
Traffic Control / Signage / Barriers	666	668	1222	1042	1140	654	1705	746	225	83	8,150
CCO	0	81	85	142	20	886	893	842	655	45	3,649
Other	0	22	548	672	4	616	400	765	335	58	3,419
Idle	0	0	40	0	0	500	114	16	19	0	689
Total non-idle	1247	2384	4619	4090	4842	6629	8227	4705	1853	194	38,788





**PROJECT: 03-4A88U4      CONSTRUCT, RECONSTRUCT BRIDGE      PAGE**  
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**Land Clearing and Grubbing (hours)**

[illegible]

**PROJECT: 03-4A88U4****CONSTRUCT, RECONSTRUCT BRIDGE****PAGE****4/14****Roadway Excavation (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	4	0	0	0	0	0	0	0	0	4
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	38	44	0	0	0	0	0	0	0	82
Excavators	0	14	69	0	0	0	0	0	0	0	83
Graders	0	16	45	0	0	0	0	0	0	0	61
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	8	0	0	0	0	0	1	0	0	9
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	35	27	0	0	0	0	1	0	0	63
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	17	48	0	0	0	0	1	0	0	66
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	20	0	0	0	32	0	0	0	0	52
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	21	0	0	0	0	0	1	0	0	22
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	14	0	0	0	0	14
Tractors / Loaders / Backhoes	0	33	48	0	0	8	0	0	0	0	89
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	6	0	0	0	0	0	0	0	6
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	8	0	0	0	0	8
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	0	205	286	0	0	62	0	4	0	0	557
Heavy Duty Truck	0	176	145	0	0	57	0	1	0	0	379
Light Duty Truck	0	56	71	0	0	108	0	2	0	0	237
Water Truck	0	14	11	0	0	0	0	0	0	0	25
<b>TOTAL TRUCKS</b>	0	246	227	0	0	165	0	3	0	0	641
<b>GRAND TOTAL</b>	0	451	513	0	0	227	0	7	0	0	1198
Non / Externally powered Equipment	0	0	2	0	0	11	0	0	0	0	13
Unknown / Not Equipment	0	0	17	0	0	0	0	0	0	0	17

### Structural Excavation (hours)

[illegible]

**PROJECT: 03-4A88U4****CONSTRUCT, RECONSTRUCT BRIDGE****PAGE****6/14****Base and Subbase (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	12	45	0	0	0	0	0	0	0	57
Excavators	0	4	10	0	0	0	0	0	0	0	14
Graders	0	0	78	0	0	0	0	0	8	0	86
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	12	55	0	0	0	0	0	7	0	74
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	9	77	0	0	0	0	0	9	0	95
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	4	0	0	0	0	0	0	0	0	4
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	4	0	0	0	0	0	0	0	0	4
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	8	32	0	0	0	0	0	0	0	40
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	0	53	297	0	0	0	0	0	24	0	374
Heavy Duty Truck	0	186	476	0	0	0	0	0	2	0	664
Light Duty Truck	0	13	28	0	0	0	0	0	9	0	50
Water Truck	0	5	0	0	0	0	0	0	0	0	5
<b>TOTAL TRUCKS</b>	0	204	504	0	0	0	0	0	11	0	719
<b>GRAND TOTAL</b>	0	257	801	0	0	0	0	0	35	0	1093
Non / Externally powered Equipment	0	0	39	0	0	0	0	0	0	0	39
Unknown / Not Equipment	0	0	8	0	0	0	0	0	0	0	8

**PROJECT: 03-4A88U4****CONSTRUCT, RECONSTRUCT BRIDGE****PAGE****7/14****Structural Concrete (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	5	0	0	0	0	0	0	0	5
Cement & Mortar Mixers	20	4	0	0	0	156	54	0	0	0	234
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	19	0	0	0	37	155	67	19	0	296
Cranes	0	0	0	0	0	0	0	17	0	0	17
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	0	83	0	0	0	83
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	107	119	0	0	0	0	226
Paving Equipment	0	0	16	0	0	0	12	44	0	0	72
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	0	0	0	0	114	0	0	0	114
Rough Terrain Forklifts	0	25	28	27	139	198	141	37	0	0	595
Rubber Tire Loaders	0	4	8	0	26	36	48	29	0	0	150
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	115	78	15	0	217	267	586	172	83	0	1532
Skid Steer Loaders	0	10	0	0	0	0	195	0	0	0	205
Surfacing Equipment	0	31	44	227	0	0	0	0	21	0	323
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	3	0	0	0	127	0	0	0	130
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	39	44	82	113	134	99	229	16	0	756
Forklifts	0	0	0	0	9	0	0	0	0	0	9
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	260	148	67	13	13	0	500
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	10	38	103	146	429	649	467	271	23	0	2134
Pumps	0	0	0	0	0	0	14	0	0	0	14
Air Compressors	134	153	155	114	499	412	833	298	98	0	2694
Welders	0	0	0	0	0	0	4	9	0	0	13
Pressure Washers	0	0	0	0	0	126	0	7	0	0	133
<b>TOTAL NONROAD</b>	<b>278</b>	<b>400</b>	<b>420</b>	<b>595</b>	<b>1798</b>	<b>2282</b>	<b>2998</b>	<b>1192</b>	<b>272</b>	<b>0</b>	<b>10232</b>
Heavy Duty Truck	81	89	167	264	622	412	454	45	54	0	2186
Light Duty Truck	206	270	439	267	1077	1373	1495	735	244	0	6103
Water Truck	17	3	71	690	0	19	10	11	30	0	849
<b>TOTAL TRUCKS</b>	<b>303</b>	<b>361</b>	<b>676</b>	<b>1221</b>	<b>1699</b>	<b>1803</b>	<b>1959</b>	<b>791</b>	<b>327</b>	<b>0</b>	<b>9138</b>
<b>GRAND TOTAL</b>	<b>581</b>	<b>760</b>	<b>1096</b>	<b>1816</b>	<b>3497</b>	<b>4085</b>	<b>4956</b>	<b>1982</b>	<b>599</b>	<b>0</b>	<b>19370</b>
Non / Externally powered Equipment	236	339	186	192	321	232	1339	282	67	0	3192
Unknown / Not Equipment	0	8	0	0	10	16	64	9	31	0	137

**PROJECT: 03-4A88U4****CONSTRUCT, RECONSTRUCT BRIDGE****PAGE****8/14****Paving (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	4	0	0	0	0	0	0	0	0	4
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	0	0	0	0	0	0	0	0	1	0	1
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	5	88	56	0	0	16	47	0	0	212
Paving Equipment	0	0	0	0	0	0	0	6	0	0	6
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	48	56	7	0	16	41	0	0	168
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	4	10	15	4	0	4	23	1	0	61
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	0	0	0	0	0	0	8	8
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	6	0	0	0	0	4	5	0	0	15
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	5	0	0	11	0	0	0	0	16
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	8	0	0	0	0	0	0	8
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	0	19	151	135	11	11	40	122	2	8	499
Heavy Duty Truck	0	5	12	40	4	0	10	11	1	0	83
Light Duty Truck	0	3	66	86	4	49	16	10	1	0	235
Water Truck	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL TRUCKS</b>	0	8	78	126	8	49	26	21	2	0	318
<b>GRAND TOTAL</b>	0	27	229	261	19	60	66	143	4	8	817
Non / Externally powered Equipment	0	0	0	0	0	0	0	6	0	0	6
Unknown / Not Equipment	0	0	0	0	3	25	0	18	0	0	46

[illegible]

**PROJECT: 03-4A88U4****CONSTRUCT, RECONSTRUCT BRIDGE****PAGE****10/14****Striping / Painting (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	18	0	0	0	0	0	18
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	0	0	0	0	0	0	0	0	0
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	0	0	0	0	0	0	0	0	0
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	6	0	0	36	20	0	0	0	0	62
Skid Steer Loaders	0	23	0	0	20	0	0	0	0	0	43
Surfacing Equipment	0	23	0	0	27	0	0	0	0	0	50
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	0	0	0	0	0	0	0	0	0
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	7	4	0	0	16	0	0	0	0	27
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	40	0	0	40
Air Compressors	0	0	0	0	0	0	0	9	0	0	9
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	16	0	0	0	0	0	0	16
<b>TOTAL NONROAD</b>	0	59	4	16	101	36	0	49	0	0	265
Heavy Duty Truck	0	30	4	0	2	16	12	0	0	0	64
Light Duty Truck	0	30	4	44	59	26	0	112	0	0	275
Water Truck	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL TRUCKS</b>	0	60	7	44	61	42	12	112	0	0	338
<b>GRAND TOTAL</b>	0	119	11	60	162	78	12	161	0	0	603
Non / Externally powered Equipment	0	0	0	0	0	12	0	0	0	0	12
Unknown / Not Equipment	0	0	0	22	20	1	0	92	0	0	135



**PROJECT: 03-4A88U4****CONSTRUCT, RECONSTRUCT BRIDGE****PAGE****11/14****Traffic Control / Signage / Barriers (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	2	0	0	0	0	0	0	7	9
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	15	0	0	0	0	0	0	15
Paving Equipment	0	0	0	8	0	0	0	0	0	0	8
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	0	0	0	0	0	0	0	0	0
Rough Terrain Forklifts	0	12	38	2	47	0	0	0	0	0	99
Rubber Tire Loaders	0	43	24	8	0	0	0	0	0	0	75
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	492	408	496	520	812	517	1475	578	132	34	5463
Skid Steer Loaders	0	0	8	0	0	0	0	0	0	0	8
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	0	0	0	0	0	0	0	0	0
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	27	0	0	0	0	0	0	0	27
Forklifts	0	0	24	16	0	0	0	0	0	0	40
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	8	0	0	0	0	0	0	0	8
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	66	0	0	0	0	0	0	0	66
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	70	8	0	0	0	0	0	0	78
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>492</b>	<b>463</b>	<b>761</b>	<b>577</b>	<b>859</b>	<b>517</b>	<b>1475</b>	<b>578</b>	<b>132</b>	<b>41</b>	<b>5894</b>
Heavy Duty Truck	158	111	303	273	236	120	230	168	73	18	1689
Light Duty Truck	16	94	158	193	45	17	0	0	20	25	567
Water Truck	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL TRUCKS</b>	<b>174</b>	<b>205</b>	<b>461</b>	<b>465</b>	<b>281</b>	<b>137</b>	<b>230</b>	<b>168</b>	<b>93</b>	<b>43</b>	<b>2256</b>
<b>GRAND TOTAL</b>	<b>666</b>	<b>668</b>	<b>1222</b>	<b>1042</b>	<b>1140</b>	<b>654</b>	<b>1705</b>	<b>746</b>	<b>225</b>	<b>83</b>	<b>8150</b>
Non / Externally powered Equipment	594	40	20	15	0	328	0	0	8	46	1051
Unknown / Not Equipment	22	20	0	113	16	20	0	0	14	0	205

**PROJECT: 03-4A88U4****CONSTRUCT, RECONSTRUCT BRIDGE****PAGE****12/14****CCO (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	6	6
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	1	0	0	0	0	0	0	1
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	0	0	0	2	0	0	0	0	0	0	2
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	0	0	0	0	0	0	0	0	0
Rough Terrain Forklifts	0	0	0	0	0	0	29	9	0	0	38
Rubber Tire Loaders	0	7	0	2	0	0	30	0	0	0	39
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	29	4	0	0	640	568	376	279	7	1902
Skid Steer Loaders	0	2	0	0	0	0	0	0	0	0	2
Surfacing Equipment	0	0	0	22	0	0	0	0	0	0	22
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	0	0	0	0	0	0	0	0	0
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	13	0	4	0	76	28	0	0	121
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	6	0	0	0	0	0	0	6
Other General Industrial Equipment	0	0	0	0	0	0	0	0	10	0	10
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	18	0	4	80	47	28	5	0	182
Pumps	0	0	0	0	0	0	8	0	0	0	8
Air Compressors	0	8	25	16	0	0	8	61	28	0	145
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	101	95	0	195
<b>TOTAL NONROAD</b>	0	45	59	49	8	720	766	602	416	12	2676
Heavy Duty Truck	0	18	8	41	0	156	50	34	9	16	332
Light Duty Truck	0	18	18	38	12	10	69	124	119	17	423
Water Truck	0	0	0	15	0	0	8	83	112	0	218
<b>TOTAL TRUCKS</b>	0	36	26	94	12	166	127	240	240	33	973
<b>GRAND TOTAL</b>	0	81	85	142	20	886	893	842	655	45	3649
Non / Externally powered Equipment	0	18	13	18	0	0	24	88	47	4	211
Unknown / Not Equipment	0	6	0	14	0	0	0	8	12	0	39

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**Other (hours)**

[illegible]

**PROJECT: 03-4A88U4****CONSTRUCT, RECONSTRUCT BRIDGE****PAGE****14/14****Idle (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	16	0	0	0	0	0	0	0	16
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	0	0	0	0	0	0	0	0	0
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	0	0	0	0	0	0	0	0	0
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	0	0	492	0	0	3	0	495
Skid Steer Loaders	0	0	0	0	0	0	12	0	0	0	12
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	24	0	0	8	0	0	0	0	32
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	48	0	0	0	48
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	0	0	7	0	0	7
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	48	9	0	0	57
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	7	0	7
<b>TOTAL NONROAD</b>	0	0	40	0	0	500	108	16	10	0	674
Heavy Duty Truck	0	0	0	0	0	0	6	0	3	0	9
Light Duty Truck	0	0	0	0	0	0	0	0	0	0	0
Water Truck	0	0	0	0	0	0	0	0	7	0	7
<b>TOTAL TRUCKS</b>	0	0	0	0	0	0	6	0	10	0	16
<b>GRAND TOTAL</b>	0	0	40	0	0	500	114	16	19	0	689
Non / Externally powered Equipment	0	0	0	0	0	4	70	0	0	0	74
Unknown / Not Equipment	0	0	0	12	0	0	0	0	0	0	12

**PROJECT: 03-4A1804****RESURFACE EXISTING HIGHWAY****PAGE 1/14****Project Identifiers**

Description	ASPHALT CONCRETE OVERLAY				
Project Type	#NAME?				
Contractor	Serrano and Cone Inc	Award Date	4/28/1999	Original Days	30
RE	BURTON, BOB	Accepted Date	7/8/1999	Actual Days	35
Route	28	Award Amount	\$1,183,330	CCO Days	0
County	Pla	Final Amount	\$1,350,219	Weather Days	11
PM Start	1.3	Final Bridge Amount	#NAME?	Other Days	4
PM End	17.7	Final Cco Amount	\$29,589		
Diary Analysis Data		First date	1/0/1900	Equipment Days	16
Date Bin Increments	0	Last Date	6/30/1999	Days in diary span	20
Location Description	IN PLACER COUNTY NEAR TAHOE CITY FROM TAHOE STATE PARK DRIVE TO THE CALIFORNIA NEVADA STATE LINE				

**Date Interval Specification**

Label	Date Interval									
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%
From %	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%
To %	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
From Date	6/10/99	6/12/99	6/14/99	6/16/99	6/18/99	6/20/99	6/22/99	6/24/99	6/26/99	6/28/99
To Date	6/12/99	6/14/99	6/16/99	6/18/99	6/20/99	6/22/99	6/24/99	6/26/99	6/28/99	6/30/99

**Activity Use By Phase (NONROAD + Trucks)**

Phase	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Land Clearing and Grubbing	0	0	0	0	0	0	0	0	0	0	0
Roadway Excavation	0	0	0	0	0	0	0	0	0	0	0
Structural Excavation	0	0	0	0	0	0	0	0	0	0	0
Base and Subbase	0	0	0	0	0	0	0	0	0	0	0
Structural Concrete	0	0	0	0	0	0	0	0	0	0	0
Paving	140	78	260	218	83	128	175	135	0	90	1,306
Drainage / Environmental / Landscapi	0	0	0	0	0	0	0	0	0	0	0
Striping / Painting	0	0	0	0	0	0	0	0	0	32	32
Traffic Control / Signage / Barriers	220	90	164	174	25	136	251	232	0	97	1,387
CCO	0	0	0	0	0	0	0	0	0	10	10
Other	32	12	32	24	16	8	28	19	0	45	216
Idle	0	0	12	1	0	35	9	48	0	7	112
Total non-idle	392	180	456	416	124	271	454	386	0	274	2,950

PROJECT: 03-4A1804

RESURFACE EXISTING HIGHWAY

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## Total Activity Use (Idle equipment excluded)

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	7	7
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	16	8	28	28	8	8	8	16	0	8	128
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	28	28	8	16	16	11	0	8	115
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	8	6	42	29	2	13	25	22	0	16	162
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	170	72	101	84	0	94	166	151	0	59	896
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	8	12	31	23	8	27	34	26	0	8	177
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	0	0	0	0	0	0	0	0	0
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	25	18	43	29	21	22	31	15	0	8	210
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	8	8
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>227</b>	<b>116</b>	<b>271</b>	<b>221</b>	<b>47</b>	<b>180</b>	<b>280</b>	<b>240</b>	<b>0</b>	<b>121</b>	<b>1702</b>
Heavy Duty Truck	0	0	0	0	0	0	0	0	0	40	40
Light Duty Truck	137	52	154	166	65	72	143	131	0	105	1023
Water Truck	28	12	31	29	12	20	31	15	0	8	186
<b>TOTAL TRUCKS</b>	<b>165</b>	<b>64</b>	<b>185</b>	<b>195</b>	<b>77</b>	<b>92</b>	<b>174</b>	<b>146</b>	<b>0</b>	<b>153</b>	<b>1249</b>
<b>GRAND TOTAL</b>	<b>392</b>	<b>180</b>	<b>456</b>	<b>416</b>	<b>124</b>	<b>271</b>	<b>454</b>	<b>386</b>	<b>0</b>	<b>274</b>	<b>2950</b>
Non-powered Equipment	0	0	0	0	0	0	0	0	0	8	8
Unknown / Not Equipment	0	0	0	4	0	0	0	0	0	20	24

[illegible]

[illegible]



[illegible]

[illegible]

[illegible]

**PROJECT: 03-4A1804****RESURFACE EXISTING HIGHWAY****PAGE 8/14****Paving (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	16	8	28	28	8	8	8	16	0	8	128
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	28	28	8	16	16	11	0	8	115
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	8	6	42	29	2	13	25	22	0	16	162
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	8	12	31	23	8	27	34	26	0	8	177
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	0	0	0	0	0	0	0	0	0
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	25	18	43	29	21	22	31	15	0	8	210
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>57</b>	<b>44</b>	<b>171</b>	<b>137</b>	<b>47</b>	<b>86</b>	<b>114</b>	<b>89</b>	<b>0</b>	<b>48</b>	<b>791</b>
Heavy Duty Truck	0	0	0	0	0	0	0	0	0	8	8
Light Duty Truck	56	22	59	52	24	22	30	31	0	26	322
Water Truck	28	12	31	29	12	20	31	15	0	8	186
<b>TOTAL TRUCKS</b>	<b>84</b>	<b>34</b>	<b>90</b>	<b>81</b>	<b>36</b>	<b>42</b>	<b>61</b>	<b>46</b>	<b>0</b>	<b>42</b>	<b>515</b>
<b>GRAND TOTAL</b>	<b>140</b>	<b>78</b>	<b>260</b>	<b>218</b>	<b>83</b>	<b>128</b>	<b>175</b>	<b>135</b>	<b>0</b>	<b>90</b>	<b>1306</b>
Non / Externally powered Equipment	0	0	0	0	0	0	0	0	0	0	0
Unknown / Not Equipment	0	0	0	4	0	0	0	0	0	14	18

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[illegible]

**PROJECT: 03-4A1804      RESURFACE EXISTING HIGHWAY      PAGE 11/14**

**Traffic Control / Signage / Barriers (hours)**

[illegible]

[illegible]



[illegible]

[illegible]

**PROJECT: 03-4C4004**  
**PAGE 1/14**

**CONSTRUCT MEDIAN, THRIE BEAM BARRIER**

**Project Identifiers**

Description	INSTALL THRIE BEAM MEDIAN BARRIER				
Project Type	#NAME?				
Contractor	MURPHY, ROD	Award Date		Original Days	45
RE		Accepted Date	5/18/2004	Actual Days	53
Route		Award Amount	\$625,418	CCO Days	8
County		Final Amount	\$609,777	Weather Days	8
PM Start		Final Bridge Amount	#NAME?	Other Days	0
PM End		Final Cco Amount	\$2,396		
Diary Analysis Data		First date	1/0/1900	Equipment Days	36
Date Bin Increments	0	Last Date	5/17/2004	Days in diary span	45
Location Description	IN PLACER COUNTY IN ROSEVILLE AND ROCKLIN FROM ROUTE 65 AND 80 SEPARATION TO PLEASANT GROVE CREEK BRIDGE				

**Date Interval Specification**

Label	Date Interval									
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%
From %	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%
To %	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
From Date	4/2/04	4/6/04	4/11/04	4/15/04	4/20/04	4/24/04	4/29/04	5/3/04	5/8/04	5/12/04
To Date	4/6/04	4/11/04	4/15/04	4/20/04	4/24/04	4/29/04	5/3/04	5/8/04	5/12/04	5/17/04

**Activity Use By Phase (NONROAD + Trucks)**

Phase	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Land Clearing and Grubbing	0	0	0	0	0	0	0	0	0	0	0
Roadway Excavation	0	28	4	0	0	0	0	4	0	0	36
Structural Excavation	0	0	0	0	0	0	0	0	0	0	0
Base and Subbase	0	0	0	0	0	0	0	0	0	0	0
Structural Concrete	0	0	0	0	0	0	0	0	0	0	0
Paving	0	133	138	0	0	0	221	179	10	0	680
Drainage / Environmental / Landscapi	0	3	1	0	0	0	0	13	0	0	17
Striping / Painting	0	0	0	0	0	0	0	0	0	36	36
Traffic Control / Signage / Barriers	433	445	565	246	786	969	702	667	512	57	5,380
CCO	0	0	0	0	0	0	0	4	0	0	4
Other	0	52	0	0	0	6	3	91	0	0	151
Idle	75	208	228	69	217	295	155	166	132	32	1,576
Total non-idle	433	662	707	246	786	974	925	957	522	93	6,303

**PROJECT: 03-4C4004****CONSTRUCT MEDIAN, THRIE BEAM BARRIER****PAGE 2/14****Total Activity Use (Idle equipment excluded)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	76	89	98	40	74	115	97	108	38	10	744
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	15	8	31	9	0	0	0	0	63
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	11	0	0	0	0	0	0	0	11
Paving Equipment	0	0	13	0	0	0	16	0	0	0	29
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	12	0	0	0	0	0	0	0	12
Rough Terrain Forklifts	0	0	0	0	0	10	0	0	0	0	10
Rubber Tire Loaders	0	0	20	0	0	0	16	17	0	0	53
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	125	132	170	46	149	267	281	228	134	30	1561
Skid Steer Loaders	0	0	28	13	50	59	52	66	15	8	290
Surfacing Equipment	0	18	0	0	0	0	0	9	0	0	27
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	5	0	0	5
Tractors / Loaders / Backhoes	0	34	18	0	0	0	0	21	19	3	95
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	17	16	33	26	86	84	83	53	50	10	458
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>218</b>	<b>289</b>	<b>416</b>	<b>133</b>	<b>390</b>	<b>544</b>	<b>545</b>	<b>506</b>	<b>256</b>	<b>61</b>	<b>3356</b>
Heavy Duty Truck	92	185	79	26	147	125	41	95	54	6	849
Light Duty Truck	124	188	213	87	249	305	339	356	213	26	2099
Water Truck	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL TRUCKS</b>	<b>216</b>	<b>373</b>	<b>292</b>	<b>113</b>	<b>396</b>	<b>430</b>	<b>380</b>	<b>451</b>	<b>266</b>	<b>32</b>	<b>2948</b>
<b>GRAND TOTAL</b>	<b>433</b>	<b>662</b>	<b>707</b>	<b>246</b>	<b>786</b>	<b>974</b>	<b>925</b>	<b>957</b>	<b>522</b>	<b>93</b>	<b>6303</b>
Non-powered Equipment	0	0	0	0	0	0	29	20	0	0	49
Unknown / Not Equipment	9	0	8	0	0	42	27	29	0	0	115

## CONSTRUCT MEDIAN, THRIE BEAM BARRIER

**PAGE 3/14**

**Land Clearing and Grubbing (hours)**

[illegible]

## CONSTRUCT MEDIAN, THRIE BEAM BARRIER

**PAGE 4/14**

**Roadway Excavation (hours)**

[illegible]

## CONSTRUCT MEDIAN, THRIE BEAM BARRIER

**PAGE 5/14**

**Structural Excavation (hours)**

[illegible]

## CONSTRUCT MEDIAN, THRIE BEAM BARRIER

**PAGE 6/14**

**Base and Subbase (hours)**

[illegible]



## CONSTRUCT MEDIAN, THRIE BEAM BARRIER

**PAGE 7/14**

### Structural Concrete (hours)

[illegible]

## CONSTRUCT MEDIAN, THRIE BEAM BARRIER

**PAGE 8/14**

**Paving (hours)**

[illegible]

**Drainage / Environmental / Landscaping (hours)**

[illegible]

## CONSTRUCT MEDIAN, THRIE BEAM BARRIER

**PAGE 10/14**

**Striping / Painting (hours)**

[illegible]

**PROJECT: 03-4C4004****CONSTRUCT MEDIAN, THRIE BEAM BARRIER****PAGE 11/14****Traffic Control / Signage / Barriers (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	76	73	98	40	74	115	97	90	38	10	710
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	15	8	31	9	0	0	0	0	63
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	0	0	0	0	0	0	0	0	0
Rough Terrain Forklifts	0	0	0	0	0	10	0	0	0	0	10
Rubber Tire Loaders	0	0	0	0	0	0	0	0	0	0	0
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	125	124	170	46	149	267	281	226	134	0	1521
Skid Steer Loaders	0	0	8	13	50	59	22	25	10	8	195
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	18	18	0	0	0	0	7	19	3	64
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	17	16	33	26	86	84	33	45	50	10	400
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>218</b>	<b>230</b>	<b>341</b>	<b>133</b>	<b>390</b>	<b>544</b>	<b>433</b>	<b>392</b>	<b>251</b>	<b>31</b>	<b>2961</b>
Heavy Duty Truck	92	105	60	26	147	120	12	50	49	6	666
Light Duty Truck	124	111	164	87	249	305	257	225	213	20	1753
Water Truck	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL TRUCKS</b>	<b>216</b>	<b>216</b>	<b>224</b>	<b>113</b>	<b>396</b>	<b>425</b>	<b>269</b>	<b>275</b>	<b>261</b>	<b>26</b>	<b>2419</b>
<b>GRAND TOTAL</b>	<b>433</b>	<b>445</b>	<b>565</b>	<b>246</b>	<b>786</b>	<b>969</b>	<b>702</b>	<b>667</b>	<b>512</b>	<b>57</b>	<b>5380</b>
Non / Externally powered Equipment	0	0	0	0	0	0	4	0	0	0	4
Unknown / Not Equipment	9	0	8	0	0	19	15	18	0	0	69

## CONSTRUCT MEDIAN, THRIE BEAM BARRIER

**PAGE 12/14**

CCO (hours)[illegible]

**PROJECT: 03-4C4004****CONSTRUCT MEDIAN, THRIE BEAM BARRIER****PAGE 13/14****Other (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	16	0	0	0	0	0	16	0	0	32
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	0	0	0	0	0	0	0	0	0
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	0	0	0	0	0	0	0	0	0
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	8	0	0	0	0	1	2	0	0	11
Skid Steer Loaders	0	0	0	0	0	0	0	4	0	0	4
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	0	0	0	0	0	14	0	0	14
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	1	0	0	0	0	0	2	0	0	3
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	0	25	0	0	0	0	1	37	0	0	62
Heavy Duty Truck	0	18	0	0	0	5	0	24	0	0	47
Light Duty Truck	0	10	0	0	0	1	2	30	0	0	43
Water Truck	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL TRUCKS</b>	0	28	0	0	0	6	2	54	0	0	89
<b>GRAND TOTAL</b>	0	52	0	0	0	6	3	91	0	0	151
Non / Externally powered Equipment	0	0	0	0	0	0	8	5	0	0	13
Unknown / Not Equipment	0	0	0	0	0	23	12	11	0	0	46

**PROJECT: 03-4C4004****CONSTRUCT MEDIAN, THRIE BEAM BARRIER****PAGE 14/14****Idle (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	17	26	51	14	38	70	69	42	13	2	341
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	1	3	4	0	0	0	0	8
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	2	0	0	0	0	0	0	0	2
Paving Equipment	0	0	9	0	0	0	6	0	0	0	15
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	1	0	0	0	0	0	0	0	1
Rough Terrain Forklifts	0	0	0	0	0	3	0	0	0	0	3
Rubber Tire Loaders	0	0	4	0	0	0	1	5	0	0	10
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	12	12	2	12	19	13	7	20	6	0	103
Skid Steer Loaders	0	0	34	6	15	20	20	4	11	0	110
Surfacing Equipment	0	9	0	0	0	0	0	3	0	0	12
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	22	8	0	0	0	0	9	17	7	63
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	13	4	18	27	12	31	11	0	116
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>29</b>	<b>68</b>	<b>123</b>	<b>37</b>	<b>93</b>	<b>137</b>	<b>115</b>	<b>114</b>	<b>58</b>	<b>9</b>	<b>782</b>
Heavy Duty Truck	34	84	51	13	51	95	18	27	39	14	426
Light Duty Truck	12	56	54	20	73	63	22	25	35	9	368
Water Truck	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL TRUCKS</b>	<b>46</b>	<b>140</b>	<b>105</b>	<b>33</b>	<b>124</b>	<b>158</b>	<b>40</b>	<b>52</b>	<b>74</b>	<b>23</b>	<b>794</b>
<b>GRAND TOTAL</b>	<b>75</b>	<b>208</b>	<b>228</b>	<b>69</b>	<b>217</b>	<b>295</b>	<b>155</b>	<b>166</b>	<b>132</b>	<b>32</b>	<b>1576</b>
Non / Externally powered Equipment	0	0	0	0	0	0	6	0	0	0	6
Unknown / Not Equipment	0	0	2	0	0	1	4	6	0	0	13



**PROJECT: 03-4C7204****PAVEMENT REHABILITATION / WIDENING****PAGE 1/14****Project Identifiers**

Description		REHABILITATE BRIDGE			
Project Type		#NAME?			
Contractor		Award Date		Original Days	
RE		Accepted Date		Actual Days	
Route		Award Amount		CCO Days	
County		Final Amount		Weather Days	
PM Start		Final Bridge Amount		Other Days	
PM End		Final Cco Amount			
Diary Analysis Data		First date		Equipment Days	
Date Bin Increments		Last Date		Days in diary span	
Location Description		IN SIERRA COUNTY NEAR HALLELUJAH JUNCTION AT LONG VALLEY UNDERCROSSING			

**Date Interval Specification**

Label	Date Interval									
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%
From %	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%
To %	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
From Date	5/26/04	5/31/04	6/5/04	6/10/04	6/15/04	6/20/04	6/25/04	6/30/04	7/5/04	7/10/04
To Date	5/31/04	6/5/04	6/10/04	6/15/04	6/20/04	6/25/04	6/30/04	7/5/04	7/10/04	7/16/04

**Activity Use By Phase (NONROAD + Trucks)**

Phase	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Land Clearing and Grubbing	0	0	0	0	0	0	0	0	0	0	0
Roadway Excavation	0	0	0	0	0	0	0	0	0	0	0
Structural Excavation	0	0	0	0	0	1	0	0	0	0	1
Base and Subbase	0	0	0	0	0	0	0	0	0	0	0
Structural Concrete	0	0	104	11	21	90	0	0	70	0	296
Paving	0	0	0	0	0	0	0	0	64	2	66
Drainage / Environmental / Landscapi	0	0	0	0	0	0	0	0	0	0	0
Striping / Painting	0	0	1	0	0	0	0	0	0	6	7
Traffic Control / Signage / Barriers	0	0	45	4	0	60	4	0	19	8	140
CCO	0	0	0	0	0	0	0	0	0	0	0
Other	9	0	95	0	37	26	33	0	16	0	215
Idle	0	0	0	0	0	0	0	0	0	0	0
Total non-idle	9	0	245	15	58	177	36	0	169	16	725

[illegible]

## PAVEMENT REHABILITATION / WIDENING

**PAGE 3/14**

**Land Clearing and Grubbing (hours)**

[illegible]

## PAVEMENT REHABILITATION / WIDENING

**PAGE 4/14**

### Roadway Excavation (hours)

[illegible]

[illegible]

## PAVEMENT REHABILITATION / WIDENING

**PAGE 6/14**

**Base and Subbase (hours)**

[illegible]

## PAVEMENT REHABILITATION / WIDENING

**PAGE 7/14**

### Structural Concrete (hours)

[illegible]

## PAVEMENT REHABILITATION / WIDENING

**PAGE 8/14**

**Paving (hours)**

Equipment Category	Date Interval									TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	0	0	0	0	0
Graders	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	0	0	0	0	0	16	0	16
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	0	0	0	0	0	8	0	8
Scrapers	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	0	0	0	0	0	8	0	8
Trenchers	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	0	0	0	0	0	0	0	0
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0
TOTAL NONROAD	0	0	0	0	0	0	0	32	0	32
Heavy Duty Truck	0	0	0	0	0	0	0	16	1	17
Light Duty Truck	0	0	0	0	0	0	0	16	1	17
Water Truck	0	0	0	0	0	0	0	0	0	0
TOTAL TRUCKS	0	0	0	0	0	0	0	32	2	34
GRAND TOTAL	0	0	0	0	0	0	0	64	2	66
Non / Externally powered Equipment	0	0	0	0	0	0	0	0	0	0
Unknown / Not Equipment	0	0	0	0	0	0	0	22	0	22



## PAVEMENT REHABILITATION / WIDENING

**PAGE 9/14**

**Drainage / Environmental / Landscaping (hours)**

[illegible]

## PAVEMENT REHABILITATION / WIDENING

**PAGE 10/14**

**Striping / Painting (hours)**

[illegible]

## PAVEMENT REHABILITATION / WIDENING

**PAGE 11/14**

**Traffic Control / Signage / Barriers (hours)**

[illegible]

## PAVEMENT REHABILITATION / WIDENING

**PAGE 12/14**

CCO (hours)[illegible]

## PAVEMENT REHABILITATION / WIDENING

**PAGE 13/14**

**Other (hours)**

[illegible]

## PAVEMENT REHABILITATION / WIDENING

**PAGE 14/14**

Idle (hours)

[illegible]

**PROJECT: 03-366404**  
**1/14**

**CONSTRUCT FREEWAY / EXTRA LANE**

**PAGE**

**Project Identifiers**

Description	WIDEN EXISTING HIGHWAY				
Project Type	#NAME?				
Contractor	Teichert Construction	Award Date	10/16/2001	Original Days	200
RE	RIVAS, LUIS	Accepted Date	12/24/2002	Actual Days	212
Route	50	Award Amount	\$15,667,513	CCO Days	12
County	ED	Final Amount	\$16,748,244	Weather Days	155
PM Start	34	Final Bridge Amount	#NAME?	Other Days	0
PM End	46.7	Final Cco Amount	\$1,227,512		
Diary Analysis Data		First date	1/0/1900	Equipment Days	323
Date Bin Increments	0	Last Date	12/19/2002	Days in diary span	528
Location Description	IN EL DORADO COUNTY NEAR PLACERVILLE FROM 3.0 KM EAST OF NEWTOWN ROAD OVERCROSSING TO 0.2 KM EAST OF SAWMILL ROAD UNDERCROSSING				

**Date Interval Specification**

Label	Date Interval									
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%
From %	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%
To %	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
From Date	7/9/01	8/30/01	10/22/01	12/14/01	2/5/02	3/30/02	5/21/02	7/13/02	9/4/02	10/27/02
To Date	8/30/01	10/22/01	12/14/01	2/5/02	3/30/02	5/21/02	7/13/02	9/4/02	10/27/02	12/19/02

**Activity Use By Phase (NONROAD + Trucks)**

Phase	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Land Clearing and Grubbing	1163	200	26	0	0	182	5	0	0	24	1,600
Roadway Excavation	367	826	435	43	38	739	146	44	49	0	2,686
Structural Excavation	489	288	117	0	0	0	0	0	0	0	893
Base and Subbase	2455	1977	348	2	4	314	0	168	21	14	5,303
Structural Concrete	113	781	70	109	82	62	142	76	151	5	1,590
Paving	124	470	312	30	74	861	2466	1237	483	31	6,086
Drainage / Environmental / Landscapi	469	818	1067	325	91	77	407	91	116	0	3,459
Striping / Painting	40	0	0	8	0	0	0	201	158	36	442
Traffic Control / Signage / Barriers	2649	2027	2554	488	696	3456	2532	2431	1566	389	18,788
CCO	6	0	2	0	4	49	22	0	141	29	252
Other	90	108	160	0	366	382	492	366	102	226	2,291
Idle	32	127	60	0	0	137	2	4	0	0	361
Total non-idle	7962	7496	5090	1006	1354	6120	6211	4613	2786	754	43,390

**PROJECT: 03-366404**  
**2/14**

**CONSTRUCT FREEWAY / EXTRA LANE**

**PAGE**

**Total Activity Use (Idle equipment excluded)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	4	0	0	28	8	46	7	0	92
Cement & Mortar Mixers	0	0	32	0	0	79	96	52	0	0	258
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	1	7	0	0	8	4	8	2	0	29
Cranes	8	8	9	0	8	0	0	0	0	0	33
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	221	166	53	0	0	47	0	0	0	0	486
Excavators	918	264	43	10	0	212	14	30	0	0	1491
Graders	193	218	126	2	6	119	8	21	0	0	691
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	23	103	0	0	160	324	210	48	0	866
Paving Equipment	0	12	19	0	0	55	217	106	21	8	435
Plate Compactors	40	41	0	6	4	16	0	0	0	1	107
Rollers	331	388	225	0	5	274	658	315	4	0	2200
Rough Terrain Forklifts	0	0	0	0	0	5	0	0	0	0	5
Rubber Tire Loaders	18	179	103	0	0	13	8	5	104	35	465
Scrapers	0	52	0	0	0	0	0	0	0	0	52
Signal Boards	1425	1501	1286	198	504	1410	1319	1328	1009	198	10177
Skid Steer Loaders	8	29	7	0	14	176	26	88	0	0	348
Surfacing Equipment	16	73	33	4	13	77	41	41	97	0	393
Trenchers	0	8	0	0	9	0	4	0	0	0	21
Tampers/Rammers	7	8	0	6	4	0	5	9	0	0	38
Tractors / Loaders / Backhoes	160	577	290	45	95	284	487	211	20	23	2190
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	10	3	0	0	0	0	0	0	0	13
Forklifts	0	0	0	0	0	0	0	0	2	0	2
Sweepers / Scrubbers	28	79	42	0	9	111	77	52	129	0	526
Other General Industrial Equipment	0	5	42	0	2	73	88	52	28	0	289
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	14	9	0	8	0	0	0	0	30
Pumps	0	3	0	8	6	0	0	8	0	0	25
Air Compressors	28	40	136	20	50	8	111	52	40	65	547
Welders	0	0	21	27	0	26	8	4	9	0	94
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>3399</b>	<b>3682</b>	<b>2595</b>	<b>334</b>	<b>729</b>	<b>3183</b>	<b>3501</b>	<b>2634</b>	<b>1517</b>	<b>329</b>	<b>21900</b>
Heavy Duty Truck	3046	2272	1315	169	238	1699	2310	1611	737	194	13590
Light Duty Truck	1090	1275	1113	503	388	1141	368	339	506	231	6953
Water Truck	428	267	66	0	0	98	33	29	27	0	947
<b>TOTAL TRUCKS</b>	<b>4564</b>	<b>3814</b>	<b>2494</b>	<b>672</b>	<b>625</b>	<b>2938</b>	<b>2710</b>	<b>1979</b>	<b>1270</b>	<b>425</b>	<b>21490</b>
<b>GRAND TOTAL</b>	<b>7962</b>	<b>7496</b>	<b>5090</b>	<b>1006</b>	<b>1354</b>	<b>6120</b>	<b>6211</b>	<b>4613</b>	<b>2786</b>	<b>754</b>	<b>43390</b>
Non-powered Equipment	93	93	147	8	59	158	179	229	178	13	1156
Unknown / Not Equipment	100	56	34	12	0	58	52	115	0	0	426





**PROJECT: 03-366404****CONSTRUCT FREEWAY / EXTRA LANE****PAGE****4/14****Roadway Excavation (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	2	0	0	0	2
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	64	25	30	0	0	47	0	0	0	0	165
Excavators	46	21	31	0	0	71	9	0	0	0	177
Graders	7	46	32	0	0	28	8	8	0	0	129
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	16	0	0	0	0	16
Rollers	50	57	54	0	0	16	0	0	0	0	176
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	37	40	0	0	1	0	0	9	0	86
Scrapers	0	17	0	0	0	0	0	0	0	0	17
Signal Boards	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	34	14	0	3	56	13	0	0	0	120
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	42	7	16	8	67	36	8	9	0	192
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	1	45	3	0	0	14	2	8	0	0	73
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	6	4	0	0	1	0	0	0	0	11
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>168</b>	<b>328</b>	<b>214</b>	<b>16</b>	<b>11</b>	<b>315</b>	<b>70</b>	<b>24</b>	<b>18</b>	<b>0</b>	<b>1162</b>
Heavy Duty Truck	111	278	135	4	18	264	74	4	24	0	912
Light Duty Truck	45	172	57	23	9	122	2	8	7	0	445
Water Truck	43	49	30	0	0	39	0	8	0	0	168
<b>TOTAL TRUCKS</b>	<b>199</b>	<b>499</b>	<b>222</b>	<b>27</b>	<b>27</b>	<b>424</b>	<b>76</b>	<b>20</b>	<b>31</b>	<b>0</b>	<b>1524</b>
<b>GRAND TOTAL</b>	<b>367</b>	<b>826</b>	<b>435</b>	<b>43</b>	<b>38</b>	<b>739</b>	<b>146</b>	<b>44</b>	<b>49</b>	<b>0</b>	<b>2686</b>
Non / Externally powered Equipment	0	0	12	0	3	0	0	0	8	0	23
Unknown / Not Equipment	17	6	3	0	0	1	4	0	0	0	30

5/14

### Structural Excavation (hours)

[illegible]

**PROJECT: 03-366404****CONSTRUCT FREEWAY / EXTRA LANE****PAGE****6/14****Base and Subbase (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	86	131	6	0	0	0	0	0	0	0	223
Excavators	110	98	6	0	0	0	0	0	0	0	214
Graders	130	161	71	2	0	85	0	8	0	0	456
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	16	0	0	16
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	1	1
Rollers	166	179	89	0	0	64	0	20	0	0	517
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	61	38	0	0	0	0	0	9	3	111
Scrapers	0	35	0	0	0	0	0	0	0	0	35
Signal Boards	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	39	0	0	0	0	0	0	0	0	39
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	32	23	0	4	39	0	32	0	2	131
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	12	14	0	0	11	0	0	0	0	37
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>492</b>	<b>746</b>	<b>246</b>	<b>2</b>	<b>4</b>	<b>199</b>	<b>0</b>	<b>76</b>	<b>9</b>	<b>6</b>	<b>1779</b>
Heavy Duty Truck	1635	869	19	0	0	17	0	72	0	4	2615
Light Duty Truck	149	193	60	1	0	50	0	4	12	4	471
Water Truck	181	170	24	0	0	48	0	16	0	0	439
<b>TOTAL TRUCKS</b>	<b>1964</b>	<b>1231</b>	<b>103</b>	<b>1</b>	<b>0</b>	<b>115</b>	<b>0</b>	<b>92</b>	<b>12</b>	<b>8</b>	<b>3525</b>
<b>GRAND TOTAL</b>	<b>2455</b>	<b>1977</b>	<b>348</b>	<b>2</b>	<b>4</b>	<b>314</b>	<b>0</b>	<b>168</b>	<b>21</b>	<b>14</b>	<b>5303</b>
Non / Externally powered Equipment	16	0	0	0	0	0	0	4	0	0	20
Unknown / Not Equipment	39	30	11	0	0	3	0	0	0	0	83

**PROJECT: 03-366404****CONSTRUCT FREEWAY / EXTRA LANE****PAGE****7/14****Structural Concrete (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	8	0	0	0	8
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	3	0	0	0	0	10	0	0	0	0	13
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	8	0	0	0	8
Plate Compactors	0	11	0	0	4	0	0	0	0	0	15
Rollers	6	1	0	0	0	0	0	0	0	0	7
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	0	0	0	0	0	0	32	0	32
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	4	0	0	0	0	0	4
Tractors / Loaders / Backhoes	0	203	36	8	4	15	25	14	0	0	304
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	0	0	0	5	0	5
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	3	0	8	6	0	0	0	0	0	17
Air Compressors	0	14	5	0	4	0	31	24	15	0	92
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>9</b>	<b>233</b>	<b>41</b>	<b>16</b>	<b>22</b>	<b>25</b>	<b>71</b>	<b>38</b>	<b>51</b>	<b>0</b>	<b>505</b>
Heavy Duty Truck	22	213	0	0	0	14	62	0	54	3	367
Light Duty Truck	74	336	29	93	60	22	8	38	40	3	702
Water Truck	8	0	0	0	0	0	1	0	7	0	16
<b>TOTAL TRUCKS</b>	<b>104</b>	<b>548</b>	<b>29</b>	<b>93</b>	<b>60</b>	<b>37</b>	<b>71</b>	<b>38</b>	<b>101</b>	<b>5</b>	<b>1085</b>
<b>GRAND TOTAL</b>	<b>113</b>	<b>781</b>	<b>70</b>	<b>109</b>	<b>82</b>	<b>62</b>	<b>142</b>	<b>76</b>	<b>151</b>	<b>5</b>	<b>1590</b>
Non / Externally powered Equipment	0	13	0	0	4	0	12	0	33	0	62
Unknown / Not Equipment	0	0	0	4	0	0	8	49	0	0	61

**PROJECT: 03-366404****CONSTRUCT FREEWAY / EXTRA LANE****PAGE****8/14****Paving (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	2	0	2
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	0	10	14	0	3	6	0	5	0	0	37
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	23	40	0	0	66	236	134	48	0	546
Paving Equipment	0	11	16	0	0	55	209	106	21	0	416
Plate Compactors	0	0	0	6	0	0	0	0	0	0	6
Rollers	0	80	70	0	0	194	658	295	4	0	1301
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	8	0	0	12	0	0	14	9	43
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	8	0	0	0	0	0	0	0	8
Skid Steer Loaders	8	21	0	0	0	0	0	0	0	0	29
Surfacing Equipment	0	0	2	0	10	15	28	0	50	0	105
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	6	0	0	5	9	0	0	20
Tractors / Loaders / Backhoes	8	36	21	6	2	62	239	117	7	0	496
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	21	6	0	6	57	75	18	85	0	267
Other General Industrial Equipment	0	0	0	0	0	6	0	0	0	0	6
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	8	5	0	0	0	0	27	11	0	0	51
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>24</b>	<b>206</b>	<b>184</b>	<b>18</b>	<b>21</b>	<b>472</b>	<b>1476</b>	<b>694</b>	<b>229</b>	<b>9</b>	<b>3331</b>
Heavy Duty Truck	69	186	43	0	29	257	882	481	151	5	2102
Light Duty Truck	31	75	84	12	24	121	80	58	83	17	583
Water Truck	0	4	2	0	0	11	29	5	20	0	71
<b>TOTAL TRUCKS</b>	<b>100</b>	<b>265</b>	<b>129</b>	<b>12</b>	<b>53</b>	<b>389</b>	<b>991</b>	<b>544</b>	<b>254</b>	<b>22</b>	<b>2756</b>
<b>GRAND TOTAL</b>	<b>124</b>	<b>470</b>	<b>312</b>	<b>30</b>	<b>74</b>	<b>861</b>	<b>2466</b>	<b>1237</b>	<b>483</b>	<b>31</b>	<b>6086</b>
Non / Externally powered Equipment	0	40	10	0	15	0	20	33	64	8	189
Unknown / Not Equipment	0	16	0	0	0	0	8	8	0	0	32

**PROJECT: 03-366404****CONSTRUCT FREEWAY / EXTRA LANE****PAGE****9/14****Drainage / Environmental / Landscaping (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	6	0	0	0	2	8	0	0	16
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	4	1	8	0	0	0	0	0	0	0	13
Excavators	0	11	1	0	0	0	0	0	0	0	12
Graders	3	1	7	0	0	0	0	0	0	0	10
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	37	27	0	0	0	0	0	0	0	0	63
Rollers	3	22	0	0	0	0	0	0	0	0	25
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	60	0	0	0	0	0	5	15	0	80
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	0	0	0	6	0	0	0	0	6
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	6	6	0	0	0	0	0	0	0	0	13
Tractors / Loaders / Backhoes	113	190	150	7	25	16	128	15	0	0	643
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	10	3	0	0	0	0	0	0	0	13
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	1	6	0	0	16	0	0	0	0	23
Other General Industrial Equipment	0	5	4	0	0	0	0	0	5	0	14
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	8	9	0	0	0	0	0	0	17
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	8	12	119	2	0	0	15	14	10	0	179
Welders	0	0	21	27	0	0	8	4	9	0	68
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>173</b>	<b>346</b>	<b>332</b>	<b>43</b>	<b>25</b>	<b>38</b>	<b>153</b>	<b>45</b>	<b>39</b>	<b>0</b>	<b>1192</b>
Heavy Duty Truck	93	206	329	103	0	12	125	4	24	0	896
Light Duty Truck	203	243	401	179	66	27	126	43	53	0	1340
Water Truck	0	23	5	0	0	0	3	0	0	0	31
<b>TOTAL TRUCKS</b>	<b>296</b>	<b>472</b>	<b>735</b>	<b>282</b>	<b>66</b>	<b>39</b>	<b>254</b>	<b>46</b>	<b>77</b>	<b>0</b>	<b>2267</b>
<b>GRAND TOTAL</b>	<b>469</b>	<b>818</b>	<b>1067</b>	<b>325</b>	<b>91</b>	<b>77</b>	<b>407</b>	<b>91</b>	<b>116</b>	<b>0</b>	<b>3459</b>
Non / Externally powered Equipment	51	28	78	0	0	0	0	0	6	0	162
Unknown / Not Equipment	0	0	10	0	0	0	24	20	0	0	53

**PROJECT: 03-366404****CONSTRUCT FREEWAY / EXTRA LANE****PAGE****10/14****Striping / Painting (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	0	0	0	0	0	0	0	0	0
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	0	0	0	0	0	0	0	0	0
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	10	0	0	4	0	0	0	41	22	0	77
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	0	0	0	0	0	0	0	0	0
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	5	0	0	0	0	0	0	23	22	0	50
Other General Industrial Equipment	0	0	0	0	0	0	0	0	7	0	7
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	11	11	22
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>15</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>64</b>	<b>61</b>	<b>11</b>	<b>155</b>
Heavy Duty Truck	20	0	0	4	0	0	0	137	57	4	221
Light Duty Truck	5	0	0	0	0	0	0	0	41	21	66
Water Truck	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL TRUCKS</b>	<b>25</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>137</b>	<b>97</b>	<b>25</b>	<b>288</b>
<b>GRAND TOTAL</b>	<b>40</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>201</b>	<b>158</b>	<b>36</b>	<b>442</b>
Non / Externally powered Equipment	5	0	0	8	0	0	0	30	22	3	68
Unknown / Not Equipment	0	0	0	4	0	0	0	0	0	0	4



**PROJECT: 03-366404****CONSTRUCT FREEWAY / EXTRA LANE****PAGE****11/14****Traffic Control / Signage / Barriers (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	4	0	0	15	8	31	7	0	64
Cement & Mortar Mixers	0	0	32	0	0	79	88	52	0	0	250
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	1	0	0	0	0	0	0	0	1
Cranes	0	0	9	0	8	0	0	0	0	0	17
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	48	0	0	0	0	0	0	0	0	0	48
Excavators	89	10	0	10	0	63	5	30	0	0	206
Graders	42	0	0	0	3	0	0	0	0	0	45
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	54	0	0	94	88	60	0	0	295
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	86	0	0	0	0	0	0	0	0	0	86
Rough Terrain Forklifts	0	0	0	0	0	5	0	0	0	0	5
Rubber Tire Loaders	0	0	0	0	0	0	0	0	7	2	9
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	1425	1501	1278	198	504	1410	1319	1328	989	195	10146
Skid Steer Loaders	0	0	0	0	0	54	0	5	0	0	59
Surfacing Equipment	6	0	8	0	0	0	0	0	0	0	13
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	20	2	8	9	6	79	13	23	0	0	158
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	2	0	2
Sweepers / Scrubbers	18	0	4	0	3	13	0	3	0	0	41
Other General Industrial Equipment	0	0	38	0	2	67	88	52	6	0	252
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	4	0	0	0	0	0	0	0	4
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	10	0	8	19	0	4	6	0	0	25	72
Welders	0	0	0	0	0	26	0	0	0	0	26
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>1743</b>	<b>1512</b>	<b>1446</b>	<b>235</b>	<b>526</b>	<b>1906</b>	<b>1614</b>	<b>1583</b>	<b>1010</b>	<b>222</b>	<b>11797</b>
Heavy Duty Truck	456	294	714	58	69	990	800	778	330	93	4581
Light Duty Truck	386	221	394	196	101	561	118	70	226	75	2346
Water Truck	64	0	0	0	0	0	0	0	0	0	64
<b>TOTAL TRUCKS</b>	<b>906</b>	<b>515</b>	<b>1108</b>	<b>253</b>	<b>170</b>	<b>1550</b>	<b>918</b>	<b>848</b>	<b>556</b>	<b>167</b>	<b>6991</b>
<b>GRAND TOTAL</b>	<b>2649</b>	<b>2027</b>	<b>2554</b>	<b>488</b>	<b>696</b>	<b>3456</b>	<b>2532</b>	<b>2431</b>	<b>1566</b>	<b>389</b>	<b>18788</b>
Non / Externally powered Equipment	15	0	46	0	24	121	104	131	0	0	440
Unknown / Not Equipment	20	0	5	4	0	54	8	35	0	0	125

12/14

**CCO (hours)**

[illegible]

**PROJECT: 03-366404****CONSTRUCT FREEWAY / EXTRA LANE****PAGE****13/14****Other (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	8	0	15	0	0	23
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	12	0	0	0	0	14	0	0	0	0	25
Graders	7	0	0	0	0	0	0	0	0	0	7
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	10	0	0	0	0	0	0	0	10
Paving Equipment	0	0	3	0	0	0	0	0	0	8	11
Plate Compactors	3	2	0	0	0	0	0	0	0	0	5
Rollers	0	8	0	0	5	0	0	0	0	0	13
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	6	0	0	0	8	0	19	13	45
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	0	0	0	0	0	0	3	3
Skid Steer Loaders	0	8	7	0	14	113	26	83	0	0	251
Surfacing Equipment	0	0	8	0	0	0	0	0	0	0	8
Trenchers	0	8	0	0	9	0	4	0	0	0	21
Tampers/Rammers	0	1	0	0	0	0	0	0	0	0	1
Tractors / Loaders / Backhoes	3	22	16	0	47	2	25	3	4	11	131
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	1	10	0	0	0	0	0	0	0	10
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	8	0	0	8
Air Compressors	0	3	0	0	46	0	32	3	4	29	116
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>25</b>	<b>52</b>	<b>58</b>	<b>0</b>	<b>120</b>	<b>137</b>	<b>95</b>	<b>111</b>	<b>27</b>	<b>63</b>	<b>687</b>
Heavy Duty Truck	29	37	35	0	122	101	363	135	53	76	950
Light Duty Truck	36	19	65	0	124	144	34	120	23	88	652
Water Truck	0	0	2	0	0	0	0	0	0	0	2
<b>TOTAL TRUCKS</b>	<b>65</b>	<b>56</b>	<b>102</b>	<b>0</b>	<b>246</b>	<b>245</b>	<b>397</b>	<b>255</b>	<b>76</b>	<b>163</b>	<b>1604</b>
<b>GRAND TOTAL</b>	<b>90</b>	<b>108</b>	<b>160</b>	<b>0</b>	<b>366</b>	<b>382</b>	<b>492</b>	<b>366</b>	<b>102</b>	<b>226</b>	<b>2291</b>
Non / Externally powered Equipment	3	11	0	0	13	35	43	32	30	2	168
Unknown / Not Equipment	0	0	7	0	0	0	0	4	0	0	11

14/14

Idle (hours)

[illegible]

**PROJECT: 03-367714**  
**1/14**

**CONSTRUCT FREEWAY / EXTRA LANE**

**PAGE**

**Project Identifiers**

Description	WIDEN AND OVERLAY EXISTING HIGHWAY			
Project Type	#NAME?			
Contractor	MURPHY, ROD 49 PLA	Award Date		Original Days
RE		Accepted Date	10/20/2004	Actual Days
Route		Award Amount	\$6,782,895	CCO Days
County		Final Amount	\$8,023,762	Weather Days
PM Start		Final Bridge Amount	#NAME?	Other Days
PM End		Final Cco Amount	\$1,191,936	
Diary Analysis Data		First date	1/0/1900	Equipment Days
Date Bin Increments	0	Last Date	9/22/2004	Days in diary span
Location Description	IN PLACER AND NEVADA COUNTIES NEAR AUBURN FROM 0.5 KM SOUTH OF NEVADA COUNTY LINE TO WOLF AND COMBIE ROADS			

**Date Interval Specification**

Label	Date Interval									
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%
From %	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%
To %	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
From Date	10/13/02	12/23/02	3/4/03	5/14/03	7/24/03	10/3/03	12/13/03	2/22/04	5/3/04	7/13/04
To Date	12/23/02	3/4/03	5/14/03	7/24/03	10/3/03	12/13/03	2/22/04	5/3/04	7/13/04	9/22/04

**Activity Use By Phase (NONROAD + Trucks)**

Phase	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Land Clearing and Grubbing	50	0	93	224	19	7	0	0	0	0	392
Roadway Excavation	0	0	0	1855	2765	391	0	359	779	56	6,204
Structural Excavation	213	0	463	276	152	71	0	0	0	25	1,200
Base and Subbase	0	0	0	32	990	236	0	0	333	126	1,717
Structural Concrete	756	0	116	1045	1592	580	75	780	59	2	5,003
Paving	0	0	0	16	549	469	0	12	2763	65	3,873
Drainage / Environmental / Landscapi	1285	0	157	1295	1918	511	12	66	118	54	5,415
Striping / Painting	0	0	223	7	165	103	0	33	65	243	839
Traffic Control / Signage / Barriers	0	0	508	20	643	326	25	220	510	134	2,384
CCO	0	0	361	273	670	1707	1463	2426	1884	256	9,039
Other	0	0	11	782	875	47	4	215	292	241	2,466
Idle	64	0	85	1194	1588	191	0	265	486	59	3,930
Total non-idle	2304	0	1931	5824	10334	4447	1579	4109	6802	1201	38,529

**PROJECT: 03-367714**  
**2/14**

**CONSTRUCT FREEWAY / EXTRA LANE**

**PAGE**

**Total Activity Use (Idle equipment excluded)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	28	8	13	4	0	12	8	0	73
Cement & Mortar Mixers	0	0	0	0	1	0	0	256	70	0	327
Dumpers / Tenders	0	0	0	0	10	0	0	0	0	0	10
Concrete/Industrial Saws	0	0	1	19	29	2	2	241	143	3	439
Cranes	21	0	29	64	68	12	0	19	6	0	218
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	22	0	26	285	184	57	0	24	24	0	621
Excavators	36	0	69	238	46	22	0	31	73	0	515
Graders	0	0	0	27	338	38	0	12	73	0	488
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	42	33	0	0	202	8	284
Paving Equipment	0	0	0	1	69	33	16	0	194	10	322
Plate Compactors	0	0	0	104	49	31	2	8	0	2	195
Rollers	1	0	0	267	673	129	0	26	561	12	1668
Rough Terrain Forklifts	163	0	86	279	419	356	86	375	160	0	1922
Rubber Tire Loaders	4	0	0	208	479	166	8	14	77	21	976
Scrapers	0	0	0	103	389	30	0	0	25	5	552
Signal Boards	0	0	424	8	561	154	4	112	817	59	2138
Skid Steer Loaders	0	0	0	8	32	0	0	69	16	0	125
Surfacing Equipment	0	0	0	4	18	41	24	116	81	2	285
Trenchers	0	0	0	30	19	8	0	8	16	0	81
Tampers/Rammers	0	0	0	5	7	7	0	8	4	8	39
Tractors / Loaders / Backhoes	16	0	78	391	371	234	13	33	506	56	1697
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	34	0	0	8	91	100	0	0	53	34	319
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	32	45	127	50	0	17	236	18	523
Other General Industrial Equipment	0	0	25	0	2	9	0	1	0	4	41
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	27	0	0	0	18	45
Generator Set	584	0	0	506	762	40	312	732	267	0	3202
Pumps	514	0	37	150	606	39	0	9	0	0	1354
Air Compressors	45	0	45	204	238	564	351	244	100	16	1805
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>1440</b>	<b>0</b>	<b>878</b>	<b>2957</b>	<b>5640</b>	<b>2180</b>	<b>818</b>	<b>2362</b>	<b>3708</b>	<b>274</b>	<b>20255</b>
Heavy Duty Truck	53	0	440	908	1279	491	23	448	1027	337	5004
Light Duty Truck	798	0	614	1951	3404	1739	738	1268	1972	578	13059
Water Truck	14	0	0	8	12	37	0	32	96	13	211
<b>TOTAL TRUCKS</b>	<b>865</b>	<b>0</b>	<b>1053</b>	<b>2867</b>	<b>4695</b>	<b>2267</b>	<b>761</b>	<b>1747</b>	<b>3094</b>	<b>927</b>	<b>18274</b>
<b>GRAND TOTAL</b>	<b>2304</b>	<b>0</b>	<b>1931</b>	<b>5824</b>	<b>10334</b>	<b>4447</b>	<b>1579</b>	<b>4109</b>	<b>6802</b>	<b>1201</b>	<b>38529</b>
Non-powered Equipment	52	0	53	125	332	152	0	196	134	23	1066
Unknown / Not Equipment	6	0	0	32	61	113	0	0	53	13	277

**3/14**

**Land Clearing and Grubbing (hours)**

**PROJECT: 03-367714****CONSTRUCT FREEWAY / EXTRA LANE****PAGE****4/14****Roadway Excavation (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	19	7	0	0	7	3	0	36
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	243	179	33	0	24	24	0	503
Excavators	0	0	0	93	46	15	0	31	26	0	210
Graders	0	0	0	19	177	18	0	12	35	0	261
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	29	13	0	0	0	1	42
Rollers	0	0	0	251	354	6	0	12	13	0	636
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	0	93	259	37	0	0	15	1	404
Scrapers	0	0	0	103	325	10	0	0	25	5	468
Signal Boards	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	0	4	0	5	0	0	1	0	10
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	4	0	4
Tractors / Loaders / Backhoes	0	0	0	51	105	59	0	8	121	12	355
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	45	44	6	0	0	17	0	111
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	3	0	0	0	0	0	0	3
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	5	0	2	7
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	0	0	0	922	1522	201	0	99	283	21	3046
Heavy Duty Truck	0	0	0	481	478	81	0	107	252	14	1412
Light Duty Truck	0	0	0	453	766	100	0	121	218	21	1677
Water Truck	0	0	0	0	0	10	0	32	27	1	70
<b>TOTAL TRUCKS</b>	0	0	0	934	1243	191	0	260	496	36	3159
<b>GRAND TOTAL</b>	0	0	0	1855	2765	391	0	359	779	56	6204
Non / Externally powered Equipment	0	0	0	4	29	5	0	5	0	0	43
Unknown / Not Equipment	0	0	0	20	0	7	0	0	0	0	27



5/14

**Structural Excavation (hours)**[illegible]

**PROJECT: 03-367714****CONSTRUCT FREEWAY / EXTRA LANE****PAGE****6/14****Base and Subbase (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	10	0	0	0	0	0	10
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	8	0	0	0	0	0	0	8
Excavators	0	0	0	0	0	0	0	0	7	0	7
Graders	0	0	0	0	126	20	0	0	31	0	176
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	10	10
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	0	8	178	39	0	0	33	1	259
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	0	0	89	37	0	0	15	5	146
Scrapers	0	0	0	0	39	20	0	0	0	0	58
Signal Boards	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	0	0	24	2	0	0	9	12	46
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	6	0	0	5	10	21
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	0	0	0	16	464	123	0	0	99	38	740
Heavy Duty Truck	0	0	0	0	233	38	0	0	29	16	315
Light Duty Truck	0	0	0	8	281	76	0	0	160	63	587
Water Truck	0	0	0	8	12	0	0	0	46	10	75
<b>TOTAL TRUCKS</b>	0	0	0	16	526	114	0	0	234	88	977
<b>GRAND TOTAL</b>	0	0	0	32	990	236	0	0	333	126	1717
Non / Externally powered Equipment	0	0	0	0	0	0	0	0	0	10	10
Unknown / Not Equipment	0	0	0	0	0	11	0	0	0	0	11

7/14

### Structural Concrete (hours)

[illegible]

**PROJECT: 03-367714****CONSTRUCT FREEWAY / EXTRA LANE****PAGE****8/14****Paving (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	0	0	0	0	0	0	0	0	4	0	4
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	42	33	0	0	199	0	273
Paving Equipment	0	0	0	0	53	33	0	0	194	0	279
Plate Compactors	0	0	0	0	0	0	0	0	0	1	1
Rollers	0	0	0	0	106	83	0	0	498	0	687
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	0	0	12	13	0	0	14	0	39
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	0	34	0	0	0	210	0	244
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	0	0	8	6	0	0	31	0	44
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	3	0	0	3
Tractors / Loaders / Backhoes	0	0	0	6	27	40	0	0	265	14	350
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	36	9	0	0	205	0	249
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	5	0	0	0	1	6
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	0	0	0	6	315	220	0	3	1618	16	2177
Heavy Duty Truck	0	0	0	1	44	53	0	0	424	9	530
Light Duty Truck	0	0	0	10	190	197	0	9	711	40	1156
Water Truck	0	0	0	0	0	0	0	0	11	0	11
<b>TOTAL TRUCKS</b>	0	0	0	11	234	250	0	9	1145	49	1696
<b>GRAND TOTAL</b>	0	0	0	16	549	469	0	12	2763	65	3873
Non / Externally powered Equipment	0	0	0	0	81	45	0	0	64	0	190
Unknown / Not Equipment	0	0	0	0	0	5	0	0	18	0	23

**PROJECT: 03-367714****CONSTRUCT FREEWAY / EXTRA LANE****PAGE****9/14****Drainage / Environmental / Landscaping (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	2	0	2	0	0	4
Cranes	0	0	0	14	0	0	0	0	0	0	14
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	8	0	0	2	0	0	0	0	0	0	10
Excavators	0	0	0	25	0	2	0	0	18	0	45
Graders	0	0	0	0	26	0	0	0	0	0	26
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	19	6	0	0	0	0	25
Rollers	1	0	0	8	31	0	0	0	0	0	40
Rough Terrain Forklifts	10	0	0	0	0	0	0	0	0	0	10
Rubber Tire Loaders	4	0	0	23	44	13	0	0	2	0	86
Scrapers	0	0	0	0	12	0	0	0	0	0	12
Signal Boards	0	0	0	0	0	0	0	2	0	0	2
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	3	7	0	0	0	0	10
Tractors / Loaders / Backhoes	16	0	51	134	55	37	0	9	25	2	328
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	3	5	0	0	0	0	8
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	24	0	0	0	18	42
Generator Set	474	0	0	267	738	40	0	0	0	0	1519
Pumps	482	0	0	110	606	39	0	0	0	0	1237
Air Compressors	1	0	0	38	4	4	0	0	6	0	53
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>996</b>	<b>0</b>	<b>51</b>	<b>619</b>	<b>1541</b>	<b>178</b>	<b>0</b>	<b>13</b>	<b>51</b>	<b>20</b>	<b>3467</b>
Heavy Duty Truck	0	0	36	183	135	85	0	0	10	23	471
Light Duty Truck	282	0	70	494	243	232	12	53	51	11	1446
Water Truck	8	0	0	0	0	17	0	0	6	0	31
<b>TOTAL TRUCKS</b>	<b>290</b>	<b>0</b>	<b>106</b>	<b>676</b>	<b>377</b>	<b>334</b>	<b>12</b>	<b>53</b>	<b>67</b>	<b>34</b>	<b>1948</b>
<b>GRAND TOTAL</b>	<b>1285</b>	<b>0</b>	<b>157</b>	<b>1295</b>	<b>1918</b>	<b>511</b>	<b>12</b>	<b>66</b>	<b>118</b>	<b>54</b>	<b>5415</b>
Non / Externally powered Equipment	4	0	0	2	1	28	0	0	0	0	35
Unknown / Not Equipment	0	0	0	11	8	22	0	0	0	0	41

**PROJECT: 03-367714****CONSTRUCT FREEWAY / EXTRA LANE****PAGE****10/14****Striping / Painting (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	0	0	0	2	0	2
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	0	0	0	0	0	0	0	0	0
Rough Terrain Forklifts	0	0	0	0	0	0	0	7	10	0	17
Rubber Tire Loaders	0	0	0	0	0	0	0	0	4	0	4
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	0	15	5	0	0	0	0	20
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	0	0	6	18	0	0	0	0	24
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	0	2	0	0	0	0	3	0	5
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	32	0	14	12	0	0	0	0	58
Other General Industrial Equipment	0	0	25	0	0	9	0	0	0	0	34
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	13	16	0	29
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	0	0	57	2	35	43	0	20	35	0	192
Heavy Duty Truck	0	0	166	5	66	32	0	0	6	125	400
Light Duty Truck	0	0	0	0	64	28	0	13	24	118	247
Water Truck	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL TRUCKS</b>	0	0	166	5	130	60	0	13	30	243	647
<b>GRAND TOTAL</b>	0	0	223	7	165	103	0	33	65	243	839
Non / Externally powered Equipment	0	0	0	0	0	14	0	0	0	0	14
Unknown / Not Equipment	0	0	0	0	8	0	0	0	0	0	8

**PROJECT: 03-367714****CONSTRUCT FREEWAY / EXTRA LANE****PAGE****11/14****Traffic Control / Signage / Barriers (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	3	0	13	4	0	12	8	0	40
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	2	2
Cranes	0	0	29	0	46	12	0	0	6	0	92
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	0	0	0	5	0	5
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	3	0	3
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	0	0	0	0	0	0	0	0	0
Rough Terrain Forklifts	0	0	32	0	9	15	0	0	0	0	55
Rubber Tire Loaders	0	0	0	0	0	0	0	0	1	0	1
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	194	0	197	46	4	77	90	27	634
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	2	0	0	2
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	1	1	0	10	0	8	3	0	21
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	5	5
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	22	5	0	2	0	0	29
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	3	0	0	0	0	3
Generator Set	0	0	0	0	24	0	0	0	0	0	24
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	8	2	0	10
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	0	0	258	1	311	93	4	109	116	34	924
Heavy Duty Truck	0	0	141	7	131	89	0	0	126	44	536
Light Duty Truck	0	0	110	13	201	144	21	111	269	57	924
Water Truck	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL TRUCKS</b>	0	0	250	19	332	233	21	111	395	101	1460
<b>GRAND TOTAL</b>	0	0	508	20	643	326	25	220	510	134	2384
Non / Externally powered Equipment	0	0	0	0	96	33	0	0	0	3	132
Unknown / Not Equipment	0	0	0	1	2	26	0	0	0	0	29

PROJECT: 03-367714

CONSTRUCT FREEWAY / EXTRA LANE

PAGE

12/14

CCO (hours)

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	8	0	0	0	0	0	0	8
Cement & Mortar Mixers	0	0	0	0	0	0	0	117	70	0	187
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	1	230	140	1	372
Cranes	0	0	0	0	0	0	0	9	0	0	9
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	6	0	0	0	0	0	6
Excavators	0	0	0	0	0	0	0	0	8	0	8
Graders	0	0	0	0	10	0	0	0	3	0	13
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	8	8
Paving Equipment	0	0	0	0	0	0	16	0	0	0	16
Plate Compactors	0	0	0	0	1	9	2	8	0	0	20
Rollers	0	0	0	0	5	1	0	14	14	11	45
Rough Terrain Forklifts	0	0	0	0	8	234	73	299	144	0	758
Rubber Tire Loaders	0	0	0	0	28	27	8	14	26	10	112
Scrapers	0	0	0	0	14	1	0	0	0	0	15
Signal Boards	0	0	230	0	315	104	0	29	517	32	1227
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	0	0	4	12	24	66	42	2	149
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	4	0	0	5	0	8	17
Tractors / Loaders / Backhoes	0	0	0	44	25	45	10	0	66	14	203
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	16	0	0	0	9	25
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	9	6	0	9	9	8	41
Other General Industrial Equipment	0	0	0	0	2	0	0	1	0	0	3
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	10	0	0	312	719	245	0	1286
Pumps	0	0	0	16	0	0	0	9	0	0	25
Air Compressors	0	0	0	1	6	542	312	70	76	6	1012
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
TOTAL NONROAD	0	0	230	79	436	996	758	1596	1358	107	5559
Heavy Duty Truck	0	0	1	86	35	80	23	49	143	41	457
Light Duty Truck	0	0	130	109	199	623	682	782	376	107	3007
Water Truck	0	0	0	0	0	8	0	0	7	2	17
TOTAL TRUCKS	0	0	131	194	234	711	705	830	526	149	3480
GRAND TOTAL	0	0	361	273	670	1707	1463	2426	1884	256	9039
Non / Externally powered Equipment	0	0	0	2	0	26	0	191	70	10	299
Unknown / Not Equipment	0	0	0	0	0	43	0	0	21	4	68



**PROJECT: 03-367714****CONSTRUCT FREEWAY / EXTRA LANE****PAGE****13/14****Other (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	1	0	0	0	0	0	1
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	1	0	22	0	1	2	0	0	26
Cranes	0	0	0	0	0	0	0	10	0	0	10
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	0	0	0	8	0	8
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	1	0	0	0	0	0	0	1
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	0	0	0	0	0	0	3	0	3
Rough Terrain Forklifts	0	0	0	40	0	0	0	0	0	0	40
Rubber Tire Loaders	0	0	0	27	0	0	0	0	0	6	32
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	0	0	0	0	4	0	0	4
Skid Steer Loaders	0	0	0	8	0	0	0	0	16	0	24
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	30	19	8	0	6	16	0	79
Tampers/Rammers	0	0	0	5	0	0	0	0	0	0	5
Tractors / Loaders / Backhoes	0	0	2	86	87	0	3	8	16	2	203
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	59	4	0	0	53	20	135
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	6	0	0	6
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	72	0	0	0	0	0	0	72
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	79	64	0	0	16	17	8	184
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	0	0	3	347	251	12	4	52	129	35	832
Heavy Duty Truck	0	0	4	51	57	12	0	0	24	55	203
Light Duty Truck	0	0	4	385	567	24	0	163	139	152	1432
Water Truck	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL TRUCKS</b>	0	0	8	436	624	36	0	163	163	207	1634
<b>GRAND TOTAL</b>	0	0	11	782	875	47	4	215	292	241	2466
Non / Externally powered Equipment	0	0	2	37	70	0	0	0	0	0	109
Unknown / Not Equipment	0	0	0	0	44	0	0	0	0	9	52

**PROJECT: 03-367714****CONSTRUCT FREEWAY / EXTRA LANE****PAGE****14/14****Idle (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	1	0	0	0	0	0	4	0	5
Cement & Mortar Mixers	0	0	0	0	0	0	0	78	0	0	78
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	1	5	1	0	0	0	0	6
Cranes	0	0	0	0	0	1	0	0	1	0	2
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	1	75	43	12	0	0	0	0	130
Excavators	0	0	3	25	15	2	0	4	11	0	59
Graders	0	0	0	0	22	1	0	0	0	0	23
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	15	0	0	0	20	0	34
Paving Equipment	0	0	0	8	22	0	0	0	20	0	49
Plate Compactors	0	0	0	16	10	7	0	0	0	0	33
Rollers	0	0	0	79	285	17	0	0	52	0	433
Rough Terrain Forklifts	2	0	0	8	35	7	0	16	0	0	67
Rubber Tire Loaders	0	0	0	89	115	8	0	0	6	0	217
Scrapers	0	0	0	109	62	12	0	0	0	0	183
Signal Boards	0	0	0	0	51	0	0	6	44	5	105
Skid Steer Loaders	0	0	0	0	0	0	0	16	0	0	16
Surfacing Equipment	0	0	0	0	10	6	0	20	0	0	35
Trenchers	0	0	0	11	21	0	0	2	0	0	34
Tampers/Rammers	0	0	0	6	17	0	0	0	0	0	23
Tractors / Loaders / Backhoes	0	0	1	66	95	20	0	0	84	0	265
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	24	0	0	0	16	0	0	0	0	4	44
Forklifts	0	0	0	2	0	0	0	0	0	0	2
Sweepers / Scrubbers	0	0	0	11	52	3	0	2	7	0	75
Other General Industrial Equipment	0	0	11	0	0	4	0	0	0	0	15
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	5	0	0	0	0	5
Generator Set	0	0	0	25	6	0	0	0	0	0	31
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	38	0	0	83	77	7	0	62	0	0	267
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>64</b>	<b>0</b>	<b>16</b>	<b>612</b>	<b>970</b>	<b>109</b>	<b>0</b>	<b>205</b>	<b>247</b>	<b>9</b>	<b>2229</b>
Heavy Duty Truck	0	0	28	258	151	31	0	46	170	26	708
Light Duty Truck	0	0	42	325	468	52	0	14	70	21	990
Water Truck	0	0	0	0	0	0	0	0	0	4	4
<b>TOTAL TRUCKS</b>	<b>0</b>	<b>0</b>	<b>69</b>	<b>582</b>	<b>618</b>	<b>83</b>	<b>0</b>	<b>60</b>	<b>239</b>	<b>51</b>	<b>1701</b>
<b>GRAND TOTAL</b>	<b>64</b>	<b>0</b>	<b>85</b>	<b>1194</b>	<b>1588</b>	<b>191</b>	<b>0</b>	<b>265</b>	<b>486</b>	<b>59</b>	<b>3930</b>
Non / Externally powered Equipment	30	0	0	247	248	24	0	0	39	0	588
Unknown / Not Equipment	0	0	0	2	0	0	0	0	0	0	2

**PROJECT: 03-374214**  
**1/14**

**CONSTRUCT FREEWAY / EXTRA LANE**

**PAGE**

**Project Identifiers**

Description	CONSTRUCT ROADWAY RAMP				
Project Type	#NAME?				
Contractor	Goodfellow Bros. Inc.	Award Date	9/1/2000	Original Days	60
RE	DONGO, JOSEPH	Accepted Date	8/24/2001	Actual Days	83
Route	5	Award Amount	\$788,761	CCO Days	0
County	YOL	Final Amount	\$831,216	Weather Days	109
PM Start	9	Final Bridge Amount	#NAME?	Other Days	23
PM End	9.4	Final Cco Amount	\$39,555		
Diary Analysis Data		First date	1/0/1900	Equipment Days	122
Date Bin Increments	0	Last Date	8/23/2001	Days in diary span	281
Location Description	IN YOLO COUNTY IN AND NEAR WOODLAND AT COUNTY ROAD 102 OVERCROSSING				

**Date Interval Specification**

Label	Date Interval									
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%
From %	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%
To %	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
From Date	11/15/00	12/13/00	1/10/01	2/7/01	3/7/01	4/4/01	5/2/01	5/30/01	6/27/01	7/25/01
To Date	12/13/00	1/10/01	2/7/01	3/7/01	4/4/01	5/2/01	5/30/01	6/27/01	7/25/01	8/23/01

**Activity Use By Phase (NONROAD + Trucks)**

Phase	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Land Clearing and Grubbing	64	6	0	0	0	2	0	0	0	0	72
Roadway Excavation	28	145	0	0	0	339	404	259	156	191	1,520
Structural Excavation	0	0	0	0	0	0	0	0	0	0	0
Base and Subbase	338	443	0	0	0	68	562	21	0	2	1,432
Structural Concrete	0	0	0	0	0	32	22	17	0	50	121
Paving	0	0	0	0	0	68	141	58	115	14	395
Drainage / Environmental / Landscapi	60	31	0	0	0	14	0	0	52	39	196
Striping / Painting	0	0	0	0	0	0	2	10	53	34	99
Traffic Control / Signage / Barriers	16	0	0	0	0	36	100	64	26	20	260
CCO	0	0	0	0	0	12	1	20	35	7	74
Other	28	87	7	13	0	101	63	305	130	88	822
Idle	32	0	0	0	0	0	33	0	0	0	65
Total non-idle	533	711	7	13	0	671	1295	752	565	445	4,990

**PROJECT: 03-374214**  
**2/14**

**CONSTRUCT FREEWAY / EXTRA LANE**

**PAGE**

**Total Activity Use (Idle equipment excluded)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	8	11	10	0	0	29
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	2	6	2	0	14	23
Cranes	0	0	0	0	0	0	5	14	4	12	35
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	45	102	0	0	0	2	0	31	32	0	212
Excavators	6	45	0	5	0	56	82	0	21	9	223
Graders	45	28	0	0	0	34	155	14	0	2	276
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	13	8	15	0	36
Paving Equipment	0	0	0	0	0	0	0	0	0	27	27
Plate Compactors	14	0	0	0	0	15	0	0	0	5	34
Rollers	48	50	2	0	0	33	157	39	55	4	387
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	42	43	0	0	0	10	13	51	0	38	196
Scrapers	0	0	0	0	0	0	45	0	0	0	45
Signal Boards	0	0	0	0	0	83	260	0	24	0	367
Skid Steer Loaders	0	10	0	0	0	0	8	0	0	0	18
Surfacing Equipment	0	0	0	0	0	10	0	0	7	4	21
Trenchers	0	0	0	0	0	4	0	24	16	0	44
Tampers/Rammers	0	0	0	0	0	0	0	8	4	0	12
Tractors / Loaders / Backhoes	30	8	0	0	0	0	85	22	25	85	255
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	31	3	18	52
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	7	2	0	0	0	3	10	0	9	0	30
Other General Industrial Equipment	0	0	0	0	0	0	0	0	12	6	18
Other Material Handling Equipment	0	0	0	0	0	0	0	0	4	0	4
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	7	7
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	7	8	20	0	5	40
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>236</b>	<b>287</b>	<b>2</b>	<b>5</b>	<b>0</b>	<b>265</b>	<b>857</b>	<b>272</b>	<b>230</b>	<b>233</b>	<b>2385</b>
Heavy Duty Truck	198	303	0	0	0	125	163	304	163	64	1318
Light Duty Truck	81	122	5	8	0	282	275	176	173	148	1269
Water Truck	18	0	0	0	0	0	0	0	0	0	18
<b>TOTAL TRUCKS</b>	<b>297</b>	<b>424</b>	<b>5</b>	<b>8</b>	<b>0</b>	<b>406</b>	<b>438</b>	<b>480</b>	<b>336</b>	<b>212</b>	<b>2605</b>
<b>GRAND TOTAL</b>	<b>533</b>	<b>711</b>	<b>7</b>	<b>13</b>	<b>0</b>	<b>671</b>	<b>1295</b>	<b>752</b>	<b>565</b>	<b>445</b>	<b>4990</b>
Non-powered Equipment	0	24	0	0	0	18	19	60	93	21	235
Unknown / Not Equipment	75	73	0	2	0	65	207	0	31	4	456

3/14

**Land Clearing and Grubbing (hours)**

**PROJECT: 03-374214****CONSTRUCT FREEWAY / EXTRA LANE****PAGE****4/14****Roadway Excavation (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	6	2	0	14	22
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	20	48	0	0	0	0	0	31	30	0	128
Excavators	3	43	0	0	0	27	69	0	20	9	171
Graders	2	13	0	0	0	16	58	7	0	2	96
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	2	0	0	0	3	5
Rollers	3	10	0	0	0	19	62	0	10	0	103
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	1	0	0	0	8	9	51	0	38	106
Scrapers	0	0	0	0	0	0	8	0	0	0	8
Signal Boards	0	0	0	0	0	83	41	0	0	0	124
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	0	0	0	10	0	0	0	0	10
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	8	0	0	8
Tractors / Loaders / Backhoes	0	0	0	0	0	0	35	2	25	78	140
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	3	4	0	0	0	6
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	2	2
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>28</b>	<b>115</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>167</b>	<b>292</b>	<b>100</b>	<b>84</b>	<b>144</b>	<b>928</b>
Heavy Duty Truck	0	4	0	0	0	117	83	95	39	24	361
Light Duty Truck	0	27	0	0	0	56	30	64	33	23	232
Water Truck	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL TRUCKS</b>	<b>0</b>	<b>31</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>173</b>	<b>113</b>	<b>159</b>	<b>72</b>	<b>47</b>	<b>593</b>
<b>GRAND TOTAL</b>	<b>28</b>	<b>145</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>339</b>	<b>404</b>	<b>259</b>	<b>156</b>	<b>191</b>	<b>1520</b>
Non / Externally powered Equipment	0	0	0	0	0	10	0	0	0	2	12
Unknown / Not Equipment	15	48	0	0	0	29	104	0	15	0	210

5/14

**Structural Excavation (hours)**

**PROJECT: 03-374214****CONSTRUCT FREEWAY / EXTRA LANE****PAGE****6/14****Base and Subbase (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	2	0	0	0	0	2
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	25	53	0	0	0	2	0	0	0	0	80
Excavators	3	0	0	0	0	3	11	0	0	0	16
Graders	36	15	0	0	0	14	93	7	0	0	164
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	1	0	0	0	0	1
Rollers	39	40	0	0	0	11	64	0	0	0	153
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	20	40	0	0	0	2	4	0	0	0	66
Scrapers	0	0	0	0	0	0	37	0	0	0	37
Signal Boards	0	0	0	0	0	0	187	0	0	0	187
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	2	8	0	0	0	0	28	6	0	0	43
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	2	2	0	0	0	0	7	0	0	0	10
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>126</b>	<b>156</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>34</b>	<b>429</b>	<b>13</b>	<b>0</b>	<b>0</b>	<b>757</b>
Heavy Duty Truck	162	281	0	0	0	5	60	0	0	0	508
Light Duty Truck	36	6	0	0	0	29	73	8	0	2	154
Water Truck	14	0	0	0	0	0	0	0	0	0	14
<b>TOTAL TRUCKS</b>	<b>212</b>	<b>287</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>34</b>	<b>133</b>	<b>8</b>	<b>0</b>	<b>2</b>	<b>676</b>
<b>GRAND TOTAL</b>	<b>338</b>	<b>443</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>68</b>	<b>562</b>	<b>21</b>	<b>0</b>	<b>2</b>	<b>1432</b>
Non / Externally powered Equipment	0	0	0	0	0	0	0	0	0	0	0
Unknown / Not Equipment	28	24	0	0	0	21	98	0	0	0	170



**PROJECT: 03-374214****CONSTRUCT FREEWAY / EXTRA LANE****PAGE****7/14****Structural Concrete (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	11	0	0	0	11
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	10	0	0	0	0	10
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	27	27
Plate Compactors	0	0	0	0	0	9	0	0	0	0	9
Rollers	0	0	0	0	0	0	0	0	0	0	0
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	0	0	0	0	0	0	0	0	0
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	0	0	0	0	0	0	0	0	0
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	0	0	0	0	0	19	11	0	0	27	57
Heavy Duty Truck	0	0	0	0	0	0	0	0	0	0	0
Light Duty Truck	0	0	0	0	0	14	11	17	0	23	65
Water Truck	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL TRUCKS</b>	0	0	0	0	0	14	11	17	0	23	65
<b>GRAND TOTAL</b>	0	0	0	0	0	32	22	17	0	50	121
Non / Externally powered Equipment	0	0	0	0	0	0	3	0	0	8	11
Unknown / Not Equipment	0	0	0	0	0	4	0	0	0	0	4

**PROJECT: 03-374214****CONSTRUCT FREEWAY / EXTRA LANE****PAGE****8/14****Paving (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	4	0	0	0	0	4
Graders	0	0	0	0	0	3	1	0	0	0	4
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	13	8	11	0	32
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	3	0	0	0	0	3
Rollers	0	0	0	0	0	4	30	16	19	4	71
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	0	0	0	0	0	0	0	0	0
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	0	0	0	32	0	24	0	56
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	0	0	0	0	0	0	7	0	7
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	0	0	0	0	1	8	0	4	13
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	9	0	9
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	0	0	0	0	0	14	77	32	69	7	198
Heavy Duty Truck	0	0	0	0	0	0	7	8	18	4	36
Light Duty Truck	0	0	0	0	0	55	58	18	28	4	161
Water Truck	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL TRUCKS</b>	0	0	0	0	0	55	64	26	46	7	197
<b>GRAND TOTAL</b>	0	0	0	0	0	68	141	58	115	14	395
Non / Externally powered Equipment	0	0	0	0	0	8	8	0	13	0	29
Unknown / Not Equipment	0	0	0	0	0	3	1	0	0	0	4

**PROJECT: 03-374214****CONSTRUCT FREEWAY / EXTRA LANE****PAGE****9/14****Drainage / Environmental / Landscaping (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	1	0	0	0	0	0	0	0	0	1
Excavators	0	0	0	0	0	4	0	0	0	0	4
Graders	4	0	0	0	0	0	0	0	0	0	4
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	14	0	0	0	0	0	0	0	0	0	14
Rollers	0	0	0	0	0	0	0	0	0	0	0
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	6	2	0	0	0	0	0	0	0	0	8
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	15	0	0	0	0	0	0	0	0	2	17
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	7	7
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>39</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>9</b>	<b>55</b>
Heavy Duty Truck	9	6	0	0	0	0	0	0	32	22	69
Light Duty Truck	12	22	0	0	0	10	0	0	20	8	72
Water Truck	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL TRUCKS</b>	<b>21</b>	<b>28</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>10</b>	<b>0</b>	<b>0</b>	<b>52</b>	<b>30</b>	<b>141</b>
<b>GRAND TOTAL</b>	<b>60</b>	<b>31</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>14</b>	<b>0</b>	<b>0</b>	<b>52</b>	<b>39</b>	<b>196</b>
Non / Externally powered Equipment	0	16	0	0	0	0	0	0	24	8	48
Unknown / Not Equipment	21	0	0	0	0	1	0	0	16	0	38

**10/14**

**Striping / Painting (hours)**

[illegible]

**PROJECT: 03-374214****CONSTRUCT FREEWAY / EXTRA LANE****PAGE****11/14****Traffic Control / Signage / Barriers (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	9	0	0	9
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	5	0	0	0	5
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	9	2	0	1	0	12
Graders	0	0	0	0	0	1	3	0	0	0	4
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	2	2
Rollers	0	0	0	0	0	0	2	0	0	0	2
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	0	0	0	0	0	0	0	0	0
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0	1	0	1
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	0	0	0	0	10	1	0	2	13
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	5	0	0	5
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	1	1
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	0	0	0	0	0	9	22	15	2	5	52
Heavy Duty Truck	5	0	0	0	0	1	14	31	3	6	60
Light Duty Truck	11	0	0	0	0	26	64	18	21	10	148
Water Truck	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL TRUCKS</b>	16	0	0	0	0	27	78	49	24	16	208
<b>GRAND TOTAL</b>	16	0	0	0	0	36	100	64	26	20	260
Non / Externally powered Equipment	0	0	0	0	0	0	0	9	0	3	12
Unknown / Not Equipment	10	0	0	0	0	1	4	0	0	0	14

12/14

CCO (hours)[illegible]

**PROJECT: 03-374214****CONSTRUCT FREEWAY / EXTRA LANE****PAGE****13/14****Other (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	8	0	0	0	0	8
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	14	3	12	28
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	1	0	0	0	0	0	0	0	0	1
Excavators	0	1	0	5	0	0	0	0	0	0	6
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	2	0	0	0	0	23	25	0	50
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	0	0	0	0	0	0	0	0	0
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	10	0	0	0	0	8	0	0	0	18
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	4	0	24	15	0	43
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	4	0	0	0	0	0	8	0	0	0	12
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	22	2	14	37
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	6	0	0	0	0	0	0	0	0	0	6
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	7	8	20	0	3	38
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>10</b>	<b>12</b>	<b>2</b>	<b>5</b>	<b>0</b>	<b>18</b>	<b>24</b>	<b>103</b>	<b>44</b>	<b>28</b>	<b>245</b>
Heavy Duty Truck	0	8	0	0	0	3	0	160	49	0	219
Light Duty Truck	15	67	5	8	0	81	40	43	37	60	354
Water Truck	4	0	0	0	0	0	0	0	0	0	4
<b>TOTAL TRUCKS</b>	<b>19</b>	<b>75</b>	<b>5</b>	<b>8</b>	<b>0</b>	<b>83</b>	<b>40</b>	<b>203</b>	<b>86</b>	<b>60</b>	<b>577</b>
<b>GRAND TOTAL</b>	<b>28</b>	<b>87</b>	<b>7</b>	<b>13</b>	<b>0</b>	<b>101</b>	<b>63</b>	<b>305</b>	<b>130</b>	<b>88</b>	<b>822</b>
Non / Externally powered Equipment	0	8	0	0	0	0	8	51	39	0	106
Unknown / Not Equipment	0	1	0	2	0	8	0	0	0	0	11

14/14

Idle (hours)

[illegible]



**PROJECT: 03-436304**  
**1/14**

**CONSTRUCT, RECONSTRUCT BRIDGE**

**PAGE**

**Project Identifiers**

Description	REPLACE BRIDGE				
Project Type	#NAME?				
Contractor	Benco Contracting & Engin	Award Date	2/9/2000	Original Days	250
RE	RIVERA, FERNANDO	Accepted Date	7/6/2001	Actual Days	217
Route	128	Award Amount	\$1,490,735	CCO Days	13
County	YOL	Final Amount	\$1,546,857	Weather Days	118
PM Start	12.4	Final Bridge Amount	#NAME?	Other Days	0
PM End	12.4	Final Cco Amount	\$119,456		
Diary Analysis Data		First date	1/0/1900	Equipment Days	230
Date Bin Increments	0	Last Date	7/2/2001	Days in diary span	448
Location Description	IN YOLO COUNTY NEAR WINTERS AT APRICOT DRAW BRIDGE				

**Date Interval Specification**

Label	Date Interval									
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%
From %	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%
To %	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
From Date	4/10/00	5/24/00	7/8/00	8/22/00	10/6/00	11/20/00	1/3/01	2/17/01	4/3/01	5/18/01
To Date	5/24/00	7/8/00	8/22/00	10/6/00	11/20/00	1/3/01	2/17/01	4/3/01	5/18/01	7/2/01

**Activity Use By Phase (NONROAD + Trucks)**

Phase	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Land Clearing and Grubbing	10	3	0	0	0	0	0	0	0	0	13
Roadway Excavation	17	0	74	112	0	0	0	0	0	3	206
Structural Excavation	488	162	0	499	43	162	0	0	141	0	1,495
Base and Subbase	0	0	0	112	30	0	0	0	0	47	188
Structural Concrete	10	396	466	96	214	11	0	351	1318	464	3,325
Paving	14	0	0	29	19	0	0	0	0	126	188
Drainage / Environmental / Landscapi	112	0	3	26	27	0	0	0	0	34	201
Striping / Painting	25	0	0	52	0	0	0	0	8	33	118
Traffic Control / Signage / Barriers	122	0	548	62	0	0	0	0	0	209	940
CCO	63	25	23	65	104	16	0	2	0	102	399
Other	281	410	126	182	277	0	0	36	60	198	1,567
Idle	669	933	2260	607	121	32	0	51	79	116	4,866
Total non-idle	1141	994	1239	1234	712	189	0	389	1527	1215	8,638

**PROJECT: 03-436304**  
**2/14**

**CONSTRUCT, RECONSTRUCT BRIDGE**

**PAGE**

**Total Activity Use (Idle equipment excluded)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	3	6	7	0	0	0	0	0	0	16
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	1	1	8	0	0	0	0	0	0	23	32
Cranes	49	35	4	50	40	10	0	0	0	0	188
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	1	0	0	0	0	0	0	0	1
Excavators	228	130	8	281	32	0	0	8	0	0	686
Graders	1	8	0	88	8	0	0	0	0	6	110
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	2	19	10	0	0	0	32	16	79
Paving Equipment	0	0	0	0	0	0	0	0	24	101	125
Plate Compactors	35	0	0	16	0	38	0	0	36	6	131
Rollers	36	81	2	104	12	32	0	0	0	25	290
Rough Terrain Forklifts	3	72	23	1	25	0	0	0	0	0	124
Rubber Tire Loaders	105	84	0	122	50	0	0	9	60	48	477
Scrapers	0	0	0	19	4	0	0	0	0	9	32
Signal Boards	55	32	0	0	0	0	0	0	24	0	111
Skid Steer Loaders	20	0	21	8	0	0	0	0	0	24	73
Surfacing Equipment	2	0	9	6	0	0	0	0	0	10	26
Trenchers	0	0	17	0	0	0	0	0	0	0	17
Tampers/Rammers	0	0	0	0	0	0	0	0	0	9	9
Tractors / Loaders / Backhoes	18	19	10	18	24	21	0	32	20	12	173
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	12	0	0	0	0	24	36
Forklifts	0	0	0	0	7	16	0	28	0	0	51
Sweepers / Scrubbers	0	0	5	0	0	0	0	0	0	0	5
Other General Industrial Equipment	0	0	2	9	0	0	0	0	0	0	11
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	2	0	4	0	0	8	72	19	105
Pumps	0	32	0	1	0	0	0	0	0	0	33
Air Compressors	0	7	54	19	43	16	0	0	56	53	248
Welders	0	9	0	1	107	0	0	0	0	0	117
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>551</b>	<b>512</b>	<b>173</b>	<b>766</b>	<b>377</b>	<b>133</b>	<b>0</b>	<b>85</b>	<b>324</b>	<b>382</b>	<b>3302</b>
Heavy Duty Truck	173	18	352	104	67	16	0	24	64	150	966
Light Duty Truck	410	465	715	365	269	40	0	280	1139	674	4354
Water Truck	8	0	0	0	0	0	0	0	0	9	17
<b>TOTAL TRUCKS</b>	<b>590</b>	<b>483</b>	<b>1066</b>	<b>468</b>	<b>335</b>	<b>56</b>	<b>0</b>	<b>304</b>	<b>1203</b>	<b>833</b>	<b>5337</b>
<b>GRAND TOTAL</b>	<b>1141</b>	<b>994</b>	<b>1239</b>	<b>1234</b>	<b>712</b>	<b>189</b>	<b>0</b>	<b>389</b>	<b>1527</b>	<b>1215</b>	<b>8638</b>
Non-powered Equipment	91	44	7	68	61	32	0	0	60	31	392
Unknown / Not Equipment	388	300	8	102	36	1	0	0	0	36	869

**3/14**

**Land Clearing and Grubbing (hours)**

[illegible]

**PROJECT: 03-436304****CONSTRUCT, RECONSTRUCT BRIDGE****PAGE****4/14****Roadway Excavation (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	2	0	8	4	0	0	0	0	0	0	14
Graders	0	0	0	33	0	0	0	0	0	0	33
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	2	0	0	0	0	0	0	0	0	0	2
Rollers	1	0	0	2	0	0	0	0	0	0	3
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	0	5	0	0	0	0	0	0	5
Scrapers	0	0	0	7	0	0	0	0	0	0	7
Signal Boards	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders	2	0	3	0	0	0	0	0	0	0	5
Surfacing Equipment	2	0	9	6	0	0	0	0	0	0	16
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	0	12	0	0	0	0	0	3	15
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>8</b>	<b>0</b>	<b>20</b>	<b>68</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>98</b>
Heavy Duty Truck	6	0	39	18	0	0	0	0	0	0	62
Light Duty Truck	4	0	16	27	0	0	0	0	0	0	47
Water Truck	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL TRUCKS</b>	<b>10</b>	<b>0</b>	<b>55</b>	<b>45</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>109</b>
<b>GRAND TOTAL</b>	<b>17</b>	<b>0</b>	<b>74</b>	<b>112</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>206</b>
Non / Externally powered Equipment	2	0	0	0	0	0	0	0	0	0	2
Unknown / Not Equipment	0	0	0	20	0	0	0	0	0	0	20

**PROJECT: 03-436304****CONSTRUCT, RECONSTRUCT BRIDGE****PAGE****5/14****Structural Excavation (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	19	0	0	37	0	7	0	0	0	0	63
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	143	33	0	164	13	0	0	0	0	0	352
Graders	0	0	0	11	6	0	0	0	0	0	17
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	19	0	0	16	0	38	0	0	36	0	109
Rollers	9	42	0	68	0	32	0	0	0	0	150
Rough Terrain Forklifts	3	0	0	0	0	0	0	0	0	0	3
Rubber Tire Loaders	41	32	0	41	12	0	0	0	16	0	141
Scrapers	0	0	0	11	0	0	0	0	0	0	11
Signal Boards	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	12	0	0	4	3	21	0	0	20	0	60
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	16	0	0	0	0	16
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	8	0	16	0	0	0	0	24
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>244</b>	<b>107</b>	<b>0</b>	<b>358</b>	<b>34</b>	<b>130</b>	<b>0</b>	<b>0</b>	<b>72</b>	<b>0</b>	<b>944</b>
Heavy Duty Truck	92	0	0	13	0	16	0	0	16	0	136
Light Duty Truck	153	55	0	129	10	16	0	0	53	0	415
Water Truck	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL TRUCKS</b>	<b>244</b>	<b>55</b>	<b>0</b>	<b>141</b>	<b>10</b>	<b>32</b>	<b>0</b>	<b>0</b>	<b>69</b>	<b>0</b>	<b>551</b>
<b>GRAND TOTAL</b>	<b>488</b>	<b>162</b>	<b>0</b>	<b>499</b>	<b>43</b>	<b>162</b>	<b>0</b>	<b>0</b>	<b>141</b>	<b>0</b>	<b>1495</b>
Non / Externally powered Equipment	19	0	0	42	0	26	0	0	20	0	107
Unknown / Not Equipment	50	61	0	46	6	0	0	0	0	0	162

**PROJECT: 03-436304****CONSTRUCT, RECONSTRUCT BRIDGE****PAGE****6/14****Base and Subbase (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	2	2	0	0	0	0	0	4
Graders	0	0	0	19	1	0	0	0	0	0	20
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	0	28	7	0	0	0	0	8	43
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	0	24	9	0	0	0	0	16	49
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	1	1
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	0	3	2	0	0	0	0	1	6
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	2	2
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	0	0	0	75	21	0	0	0	0	28	124
Heavy Duty Truck	0	0	0	9	0	0	0	0	0	0	9
Light Duty Truck	0	0	0	28	9	0	0	0	0	19	56
Water Truck	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL TRUCKS</b>	0	0	0	37	9	0	0	0	0	19	65
<b>GRAND TOTAL</b>	0	0	0	112	30	0	0	0	0	47	188
Non / Externally powered Equipment	0	0	0	0	0	0	0	0	0	0	0
Unknown / Not Equipment	0	0	0	16	10	0	0	0	0	0	26

**PROJECT: 03-436304****CONSTRUCT, RECONSTRUCT BRIDGE****PAGE****7/14****Structural Concrete (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	19	19
Cranes	0	0	4	0	0	3	0	0	0	0	7
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	1	0	0	0	0	0	0	0	1
Excavators	0	0	0	22	0	0	0	8	0	0	30
Graders	0	0	0	8	0	0	0	0	0	0	8
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	2	0	0	0	0	0	24	0	26
Paving Equipment	0	0	0	0	0	0	0	0	24	22	46
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	0	0	0	0	0	0	0	0	0
Rough Terrain Forklifts	0	71	22	1	22	0	0	0	0	0	116
Rubber Tire Loaders	0	0	0	3	3	0	0	9	42	0	57
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	0	0	0	0	0	24	0	24
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	0	0	0	0	0	0	0	10	10
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	19	7	0	0	0	0	16	0	0	42
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	16	16
Forklifts	0	0	0	0	0	0	0	26	0	0	26
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	8	67	19	94
Pumps	0	0	0	1	0	0	0	0	0	0	1
Air Compressors	0	6	23	2	6	0	0	0	51	35	123
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	0	96	59	36	31	3	0	67	232	121	645
Heavy Duty Truck	0	0	14	3	13	0	0	8	46	33	116
Light Duty Truck	10	300	393	57	170	8	0	276	1040	311	2565
Water Truck	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL TRUCKS</b>	10	300	407	60	183	8	0	284	1086	343	2680
<b>GRAND TOTAL</b>	10	396	466	96	214	11	0	351	1318	464	3325
Non / Externally powered Equipment	0	0	0	0	3	0	0	0	24	11	38
Unknown / Not Equipment	0	11	8	0	0	1	0	0	0	10	30

8/14

**Paving (hours)**

[illegible]



9/14

**Drainage / Environmental / Landscaping (hours)**

[illegible]

10/14

**Striping / Painting (hours)**

[illegible]

11/14

**Traffic Control / Signage / Barriers (hours)**

[illegible]

**PROJECT: 03-436304****CONSTRUCT, RECONSTRUCT BRIDGE****PAGE****12/14****CCO (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	3	0	0	0	0	0	0	0	0	3
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	1	0	0	0	0	0	0	0	0	1
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	2	0	0	9	6	0	0	0	0	0	16
Graders	0	0	0	0	1	0	0	0	0	6	7
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	3	0	0	0	0	0	0	0	0	0	3
Rollers	8	0	0	3	0	0	0	0	0	2	12
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	0	9	16	0	0	0	0	7	32
Scrapers	0	0	0	0	4	0	0	0	0	9	13
Signal Boards	0	16	0	0	0	0	0	0	0	0	16
Skid Steer Loaders	2	0	0	4	0	0	0	0	0	0	6
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	0	0	2	0	0	0	0	4	6
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	12	0	0	0	0	0	12
Forklifts	0	0	0	0	0	0	0	2	0	0	2
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	4	0	0	0	0	0	0	4
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	4	0	0	0	0	0	4
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	1	0	0	0	0	0	0	0	1	2
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>14</b>	<b>20</b>	<b>0</b>	<b>28</b>	<b>45</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>28</b>	<b>136</b>
Heavy Duty Truck	29	0	10	14	8	0	0	0	0	11	71
Light Duty Truck	13	5	13	24	51	16	0	0	0	55	177
Water Truck	8	0	0	0	0	0	0	0	0	9	17
<b>TOTAL TRUCKS</b>	<b>50</b>	<b>5</b>	<b>23</b>	<b>38</b>	<b>59</b>	<b>16</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>74</b>	<b>264</b>
<b>GRAND TOTAL</b>	<b>63</b>	<b>25</b>	<b>23</b>	<b>65</b>	<b>104</b>	<b>16</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>102</b>	<b>399</b>
Non / Externally powered Equipment	0	4	0	0	0	0	0	0	0	0	4
Unknown / Not Equipment	149	14	0	9	0	0	0	0	0	25	197

**PROJECT: 03-436304****CONSTRUCT, RECONSTRUCT BRIDGE****PAGE****13/14****Other (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	29	35	0	13	40	0	0	0	0	0	117
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	47	96	0	68	2	0	0	0	0	0	213
Graders	0	8	0	18	0	0	0	0	0	0	26
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	8	0	8
Paving Equipment	0	0	0	0	0	0	0	0	0	18	18
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	16	39	0	3	0	0	0	0	0	0	58
Rough Terrain Forklifts	0	1	0	0	3	0	0	0	0	0	4
Rubber Tire Loaders	52	52	0	34	2	0	0	0	2	15	157
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	16	0	0	0	0	0	0	0	0	16
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	4	4
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	2	0	3	0	14	0	0	16	0	4	39
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	8	8
Forklifts	0	0	0	0	7	0	0	0	0	0	7
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	5	0	5
Pumps	0	32	0	0	0	0	0	0	0	0	32
Air Compressors	0	0	7	8	37	0	0	0	5	0	57
Welders	0	9	0	0	107	0	0	0	0	0	116
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>146</b>	<b>288</b>	<b>10</b>	<b>143</b>	<b>212</b>	<b>0</b>	<b>0</b>	<b>16</b>	<b>20</b>	<b>48</b>	<b>882</b>
Heavy Duty Truck	1	17	7	0	44	0	0	16	3	13	100
Light Duty Truck	134	105	109	39	21	0	0	4	38	137	585
Water Truck	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL TRUCKS</b>	<b>135</b>	<b>122</b>	<b>116</b>	<b>39</b>	<b>65</b>	<b>0</b>	<b>0</b>	<b>20</b>	<b>40</b>	<b>150</b>	<b>685</b>
<b>GRAND TOTAL</b>	<b>281</b>	<b>410</b>	<b>126</b>	<b>182</b>	<b>277</b>	<b>0</b>	<b>0</b>	<b>36</b>	<b>60</b>	<b>198</b>	<b>1567</b>
Non / Externally powered Equipment	69	40	0	26	50	6	0	0	8	10	209
Unknown / Not Equipment	158	215	0	11	20	0	0	0	0	0	403

**PROJECT: 03-436304****CONSTRUCT, RECONSTRUCT BRIDGE****PAGE****14/14****Idle (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	5	2	3	0	0	0	0	0	0	10
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	8	4	0	0	0	0	0	0	0	12
Cranes	30	8	0	8	0	0	0	0	0	0	46
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	1	0	0	0	0	0	0	0	1
Excavators	188	103	471	112	0	0	0	0	0	0	874
Graders	23	48	136	23	0	0	0	0	0	0	230
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	9	2	0	0	0	0	0	2	13
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	11	0	0	0	0	0	0	0	4	14	29
Rollers	23	144	440	40	0	0	0	0	0	24	671
Rough Terrain Forklifts	13	100	67	48	15	0	0	0	0	0	243
Rubber Tire Loaders	167	122	168	45	5	0	0	3	20	30	559
Scrapers	0	0	32	43	4	0	0	0	0	0	79
Signal Boards	0	4	0	0	0	0	0	0	0	0	4
Skid Steer Loaders	33	0	27	16	0	0	0	0	0	8	83
Surfacing Equipment	1	0	0	0	0	0	0	0	0	0	1
Trenchers	0	0	43	0	0	0	0	0	0	0	43
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	79	149	422	29	12	0	0	0	0	13	703
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	6	6
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	9	0	0	0	0	0	0	0	9
Other General Industrial Equipment	0	0	6	0	0	0	0	0	0	0	6
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	8	6	0	0	0	0	0	0	0	14
Pumps	0	23	0	0	0	0	0	0	0	0	23
Air Compressors	0	102	280	220	85	32	0	8	0	8	734
Welders	32	44	0	0	0	0	0	0	0	0	76
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>598</b>	<b>866</b>	<b>2123</b>	<b>587</b>	<b>121</b>	<b>32</b>	<b>0</b>	<b>11</b>	<b>24</b>	<b>104</b>	<b>4465</b>
Heavy Duty Truck	4	8	43	6	0	0	0	8	16	12	97
Light Duty Truck	67	59	94	14	0	0	0	32	39	0	304
Water Truck	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL TRUCKS</b>	<b>71</b>	<b>67</b>	<b>137</b>	<b>20</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>40</b>	<b>55</b>	<b>12</b>	<b>401</b>
<b>GRAND TOTAL</b>	<b>669</b>	<b>933</b>	<b>2260</b>	<b>607</b>	<b>121</b>	<b>32</b>	<b>0</b>	<b>51</b>	<b>79</b>	<b>116</b>	<b>4866</b>
Non / Externally powered Equipment	14	24	22	20	8	0	0	0	4	17	107
Unknown / Not Equipment	0	8	5	0	8	2	0	0	0	0	23

**PROJECT: 03-445104****PAVEMENT REHABILITATION / WIDENING****PAGE 1/14****Project Identifiers**

Description	REPLACE STRUCTURAL SECTIONS				
Project Type	#NAME?				
Contractor	Granite	Award Date	10/26/1998	Original Days	200
RE	BEREXA, CARL	Accepted Date	10/3/2000	Actual Days	191
Route	80	Award Amount	\$10,559,000	CCO Days	0
County	PLA	Final Amount	\$13,007,429	Weather Days	280
PM Start	5.5	Final Bridge Amount	#NAME?	Other Days	0
PM End	23.5	Final Cco Amount	\$2,911,279		
Diary Analysis Data		First date	1/0/1900	Equipment Days	310
Date Bin Increments	0	Last Date	9/22/2000	Days in diary span	683
Location Description	IN PLACER COUNTY IN AND NEAR ROCKLIN, LOOMIS, PENRYN AND NEWCASTLE				

**Date Interval Specification**

Label	Date Interval									
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%
From %	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%
To %	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
From Date	11/9/98	1/16/99	3/25/99	6/1/99	8/9/99	10/16/99	12/23/99	3/1/00	5/8/00	7/15/00
To Date	1/16/99	3/25/99	6/1/99	8/9/99	10/16/99	12/23/99	3/1/00	5/8/00	7/15/00	9/22/00

**Activity Use By Phase (NONROAD + Trucks)**

Phase	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Land Clearing and Grubbing	0	0	0	0	0	0	0	0	0	0	0
Roadway Excavation	0	0	304	516	84	1	0	24	0	0	928
Structural Excavation	0	167	2919	318	0	14	143	270	0	0	3,830
Base and Subbase	0	0	0	99	108	0	0	96	147	0	449
Structural Concrete	0	0	0	0	0	0	0	0	0	0	0
Paving	2323	0	1469	2962	2784	303	39	143	0	535	10,555
Drainage / Environmental / Landscapi	0	0	0	0	115	478	27	0	0	6	626
Striping / Painting	0	0	138	0	314	179	12	24	12	136	815
Traffic Control / Signage / Barriers	941	109	2686	2760	2604	1513	699	1109	20	398	12,836
CCO	0	1821	1247	5461	1069	416	214	234	8	0	10,470
Other	1731	12	163	86	274	437	93	62	100	44	3,000
Idle	773	60	706	1220	2497	138	2	33	5	51	5,484
Total non-idle	4995	2109	8924	12200	7349	3340	1226	1961	287	1118	43,508

**PROJECT: 03-445104****PAVEMENT REHABILITATION / WIDENING****PAGE 2/14****Total Activity Use (Idle equipment excluded)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	7	0	111	0	92	112	208	0	0	529
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	67	230	126	9	0	0	5	0	0	0	436
Cranes	0	0	0	0	8	6	4	0	0	0	18
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	8	52	96	21	0	0	0	0	0	176
Excavators	139	0	333	496	48	10	0	8	0	0	1033
Graders	0	0	119	182	70	0	0	4	2	0	377
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	136	25	220	429	332	0	6	40	19	123	1328
Paving Equipment	160	0	146	65	90	0	0	40	2	0	503
Plate Compactors	0	0	0	4	0	0	0	0	0	0	4
Rollers	160	91	340	1005	358	0	0	0	0	122	2075
Rough Terrain Forklifts	0	0	0	33	1	8	0	0	0	0	42
Rubber Tire Loaders	166	36	257	307	109	51	0	73	48	44	1090
Scrapers	1	0	0	0	16	0	0	0	0	0	17
Signal Boards	1016	479	1998	2307	2115	745	316	95	0	46	9117
Skid Steer Loaders	5	0	19	33	0	18	0	0	0	0	75
Surfacing Equipment	7	28	98	348	141	43	0	0	0	0	664
Trenchers	0	0	0	0	0	4	0	0	0	0	4
Tampers/Rammers	0	0	19	0	0	0	0	0	0	0	19
Tractors / Loaders / Backhoes	178	61	126	272	258	47	47	137	16	0	1139
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	2	0	0	0	0	0	0	2
Sweepers / Scrubbers	83	20	100	569	382	4	0	34	29	48	1269
Other General Industrial Equipment	0	22	38	129	4	30	0	0	0	39	262
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	3	0	36	8	0	0	0	47
Pumps	18	0	0	0	0	0	0	0	0	0	18
Air Compressors	0	8	18	2	0	132	10	13	3	0	186
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>2134</b>	<b>1013</b>	<b>4005</b>	<b>6400</b>	<b>3952</b>	<b>1225</b>	<b>507</b>	<b>651</b>	<b>119</b>	<b>420</b>	<b>20424</b>
Heavy Duty Truck	2283	791	3166	3549	1976	1051	357	853	68	501	14594
Light Duty Truck	579	305	1753	2089	1328	1065	363	458	100	197	8235
Water Truck	0	0	0	162	94	0	0	0	0	0	256
<b>TOTAL TRUCKS</b>	<b>2861</b>	<b>1096</b>	<b>4919</b>	<b>5800</b>	<b>3397</b>	<b>2116</b>	<b>720</b>	<b>1310</b>	<b>168</b>	<b>698</b>	<b>23084</b>
<b>GRAND TOTAL</b>	<b>4995</b>	<b>2109</b>	<b>8924</b>	<b>12200</b>	<b>7349</b>	<b>3340</b>	<b>1226</b>	<b>1961</b>	<b>287</b>	<b>1118</b>	<b>43508</b>
Non-powered Equipment	83	47	764	677	2029	368	702	384	0	6	5059
Unknown / Not Equipment	8	13	250	126	664	459	259	339	0	0	2115



## PAVEMENT REHABILITATION / WIDENING

**PAGE 3/14**

**Land Clearing and Grubbing (hours)**

[illegible]

**PROJECT: 03-445104****PAVEMENT REHABILITATION / WIDENING****PAGE 4/14****Roadway Excavation (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	6	0	0	0	0	0	0	6
Excavators	0	0	2	24	1	0	0	0	0	0	27
Graders	0	0	0	2	6	0	0	4	0	0	12
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	19	28	14	0	0	0	0	0	61
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	23	6	0	0	0	8	0	0	37
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	0	34	0	0	0	0	0	0	34
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	19	0	0	0	0	0	0	0	19
Tractors / Loaders / Backhoes	0	0	23	13	1	1	0	0	0	0	37
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	101	10	0	0	4	0	0	115
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	2	0	0	0	0	0	0	0	2
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	0	0	87	214	32	1	0	16	0	0	349
Heavy Duty Truck	0	0	53	112	0	0	0	4	0	0	169
Light Duty Truck	0	0	164	174	42	0	0	4	0	0	384
Water Truck	0	0	0	16	10	0	0	0	0	0	26
<b>TOTAL TRUCKS</b>	0	0	217	302	52	0	0	8	0	0	579
<b>GRAND TOTAL</b>	0	0	304	516	84	1	0	24	0	0	928
Non / Externally powered Equipment	0	0	8	0	0	0	0	0	0	0	8
Unknown / Not Equipment	0	0	7	0	0	0	0	8	0	0	15

**PROJECT: 03-445104****PAVEMENT REHABILITATION / WIDENING****PAGE 5/14****Structural Excavation (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	3	37	33	0	0	73
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	86	98	0	0	0	0	0	0	0	184
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	46	13	0	0	0	0	0	0	58
Excavators	0	0	282	32	0	0	0	0	0	0	314
Graders	0	0	54	4	0	0	0	0	0	0	58
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	23	2	0	0	0	0	0	0	25
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	99	1	0	0	0	0	0	0	100
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	19	0	0	3	6	0	0	28
Skid Steer Loaders	0	0	6	0	0	0	0	0	0	0	6
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	56	3	0	2	23	32	0	0	116
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	1	0	0	0	0	0	0	0	1
Other General Industrial Equipment	0	7	20	0	0	0	0	0	0	0	27
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	0	93	683	72	0	5	63	71	0	0	986
Heavy Duty Truck	0	53	1843	244	0	9	68	170	0	0	2386
Light Duty Truck	0	21	394	2	0	0	12	30	0	0	459
Water Truck	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL TRUCKS</b>	0	74	2236	246	0	9	80	200	0	0	2845
<b>GRAND TOTAL</b>	0	167	2919	318	0	14	143	270	0	0	3830
Non / Externally powered Equipment	0	18	21	1	0	3	74	90	0	0	207
Unknown / Not Equipment	0	0	5	0	0	3	43	17	0	0	67

**PROJECT: 03-445104****PAVEMENT REHABILITATION / WIDENING****PAGE 6/14****Base and Subbase (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	0	0	0	19	11	0	0	0	0	0	30
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	19	0	19
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	0	17	20	0	0	0	0	0	37
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	0	11	0	0	0	24	30	0	65
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	0	0	16	0	0	16	0	0	32
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	21	28	0	0	16	28	0	93
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	0	0	0	68	74	0	0	56	77	0	275
Heavy Duty Truck	0	0	0	0	0	0	0	0	10	0	10
Light Duty Truck	0	0	0	13	21	0	0	40	60	0	134
Water Truck	0	0	0	18	13	0	0	0	0	0	31
<b>TOTAL TRUCKS</b>	0	0	0	31	34	0	0	40	70	0	174
<b>GRAND TOTAL</b>	0	0	0	99	108	0	0	96	147	0	449
Non / Externally powered Equipment	0	0	0	0	0	0	0	0	0	0	0
Unknown / Not Equipment	0	0	0	5	0	0	0	8	0	0	13

[illegible]

**PROJECT: 03-445104****PAVEMENT REHABILITATION / WIDENING****PAGE 8/14****Paving (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	67	0	28	0	0	0	0	0	0	0	95
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	75	0	0	0	0	0	0	0	0	0	75
Graders	0	0	49	13	30	0	0	0	0	0	92
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	88	0	178	356	311	0	6	33	0	123	1094
Paving Equipment	107	0	138	48	76	0	0	33	0	0	402
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	61	0	225	711	287	0	0	0	0	122	1406
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	100	0	60	97	30	0	0	18	0	44	347
Scrapers	1	0	0	0	16	0	0	0	0	0	17
Signal Boards	156	0	65	0	8	0	0	0	0	0	229
Skid Steer Loaders	0	0	8	8	0	0	0	0	0	0	16
Surfacing Equipment	7	0	1	61	67	43	0	0	0	0	178
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	98	0	8	40	221	0	0	0	0	0	366
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	73	0	51	258	281	0	0	0	0	48	711
Other General Industrial Equipment	0	0	4	110	0	0	0	0	0	0	114
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	18	0	0	0	0	0	0	0	0	0	18
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>849</b>	<b>0</b>	<b>814</b>	<b>1700</b>	<b>1317</b>	<b>51</b>	<b>6</b>	<b>84</b>	<b>0</b>	<b>336</b>	<b>5155</b>
Heavy Duty Truck	1117	0	203	408	599	154	15	33	0	72	2599
Light Duty Truck	358	0	453	803	824	99	18	26	0	127	2707
Water Truck	0	0	0	51	44	0	0	0	0	0	95
<b>TOTAL TRUCKS</b>	<b>1475</b>	<b>0</b>	<b>655</b>	<b>1262</b>	<b>1467</b>	<b>252</b>	<b>33</b>	<b>59</b>	<b>0</b>	<b>199</b>	<b>5400</b>
<b>GRAND TOTAL</b>	<b>2323</b>	<b>0</b>	<b>1469</b>	<b>2962</b>	<b>2784</b>	<b>303</b>	<b>39</b>	<b>143</b>	<b>0</b>	<b>535</b>	<b>10555</b>
Non / Externally powered Equipment	14	0	94	146	300	0	5	0	0	0	559
Unknown / Not Equipment	0	0	109	10	316	32	18	37	0	0	522

**PROJECT: 03-445104****PAVEMENT REHABILITATION / WIDENING****PAGE 9/14****Drainage / Environmental / Landscaping (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	0	0	0	0	0	0	0	0	0
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	0	0	4	0	0	0	0	0	4
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	0	65	9	0	0	0	2	76
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	0	0	0	0	0	0	0	0	0
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	95	6	0	0	0	101
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	0	0	0	0	69	104	6	0	0	2	181
Heavy Duty Truck	0	0	0	0	42	148	0	0	0	0	190
Light Duty Truck	0	0	0	0	4	227	21	0	0	4	256
Water Truck	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL TRUCKS</b>	0	0	0	0	46	375	21	0	0	4	446
<b>GRAND TOTAL</b>	0	0	0	0	115	478	27	0	0	6	626
Non / Externally powered Equipment	0	0	0	0	0	0	8	0	0	0	8
Unknown / Not Equipment	0	0	0	0	4	69	21	0	0	0	94

**PROJECT: 03-445104****PAVEMENT REHABILITATION / WIDENING****PAGE 10/14****Striping / Painting (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	20	0	8	0	0	28
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	5	0	0	0	0	5
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	0	0	0	0	0	0	0	0	0
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	0	0	0	0	0	0	0	0	0
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	90	0	0	0	0	0	0	0	90
Skid Steer Loaders	0	0	0	0	0	4	0	0	0	0	4
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	0	0	0	0	0	0	0	0	0
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	20	0	0	0	39	59
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	0	0	90	0	0	49	0	8	0	39	186
Heavy Duty Truck	0	0	8	0	206	16	0	0	8	65	303
Light Duty Truck	0	0	40	0	108	114	12	16	4	33	327
Water Truck	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL TRUCKS</b>	0	0	48	0	314	130	12	16	12	98	629
<b>GRAND TOTAL</b>	0	0	138	0	314	179	12	24	12	136	815
Non / Externally powered Equipment	0	0	0	0	0	25	0	8	0	0	33
Unknown / Not Equipment	0	0	0	0	112	28	8	0	0	0	148



**PROJECT: 03-445104****PAVEMENT REHABILITATION / WIDENING****PAGE 11/14****Traffic Control / Signage / Barriers (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	108	0	66	57	149	0	0	379
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	5	0	0	0	5
Cranes	0	0	0	0	8	6	4	0	0	0	18
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	5	0	0	0	0	5
Graders	0	0	0	8	0	0	0	0	0	0	8
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	8	0	19	0	0	0	0	0	0	0	27
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	18	0	0	0	0	0	0	0	18
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	4	0	8	23	0	0	0	2	0	0	37
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	509	95	1624	1439	1818	607	236	75	0	44	6445
Skid Steer Loaders	0	0	0	20	0	14	0	0	0	0	34
Surfacing Equipment	0	0	8	0	0	0	0	0	0	0	8
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	8	0	0	0	0	2	5	68	0	0	83
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	11	8	0	0	0	0	0	0	19
Other General Industrial Equipment	0	0	0	8	0	5	0	0	0	0	13
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	30	8	0	0	0	38
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	16	0	0	7	2	8	0	0	33
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>529</b>	<b>95</b>	<b>1704</b>	<b>1613</b>	<b>1826</b>	<b>742</b>	<b>316</b>	<b>302</b>	<b>0</b>	<b>44</b>	<b>7169</b>
Heavy Duty Truck	390	10	608	935	674	409	161	536	20	321	4062
Light Duty Truck	22	4	374	203	104	363	222	272	0	34	1597
Water Truck	0	0	0	9	0	0	0	0	0	0	9
<b>TOTAL TRUCKS</b>	<b>412</b>	<b>14</b>	<b>982</b>	<b>1147</b>	<b>778</b>	<b>772</b>	<b>383</b>	<b>807</b>	<b>20</b>	<b>354</b>	<b>5668</b>
<b>GRAND TOTAL</b>	<b>941</b>	<b>109</b>	<b>2686</b>	<b>2760</b>	<b>2604</b>	<b>1513</b>	<b>699</b>	<b>1109</b>	<b>20</b>	<b>398</b>	<b>12836</b>
Non / Externally powered Equipment	18	0	590	64	1436	141	289	257	0	6	2800
Unknown / Not Equipment	0	0	2	33	158	174	150	230	0	0	746

**PROJECT: 03-445104****PAVEMENT REHABILITATION / WIDENING****PAGE 12/14****CCO (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	7	0	0	0	0	4	12	0	0	23
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	144	0	9	0	0	0	0	0	0	153
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	8	3	77	21	0	0	0	0	0	109
Excavators	0	0	21	437	47	0	0	8	0	0	513
Graders	0	0	16	136	24	0	0	0	0	0	175
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	25	23	73	21	0	0	7	0	0	148
Paving Equipment	0	0	8	17	14	0	0	7	0	0	46
Plate Compactors	0	0	0	4	0	0	0	0	0	0	4
Rollers	0	91	55	247	38	0	0	0	0	0	430
Rough Terrain Forklifts	0	0	0	33	1	8	0	0	0	0	42
Rubber Tire Loaders	0	36	63	170	14	0	0	18	2	0	302
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	384	219	842	232	84	65	14	0	0	1840
Skid Steer Loaders	0	0	4	5	0	0	0	0	0	0	9
Surfacing Equipment	0	28	52	254	75	0	0	0	0	0	408
Trenchers	0	0	0	0	0	4	0	0	0	0	4
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	61	35	217	21	16	19	15	0	0	382
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	2	0	0	0	0	0	0	2
Sweepers / Scrubbers	0	20	38	181	64	4	0	10	0	0	316
Other General Industrial Equipment	0	15	15	11	4	5	0	0	0	0	50
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	3	0	0	0	0	0	0	3
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	8	0	2	0	13	2	5	0	0	30
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	0	826	549	2718	574	134	90	95	2	0	4986
Heavy Duty Truck	0	728	423	1796	277	134	78	78	2	0	3515
Light Duty Truck	0	268	276	880	192	148	47	61	4	0	1874
Water Truck	0	0	0	69	27	0	0	0	0	0	95
<b>TOTAL TRUCKS</b>	0	996	698	2744	496	282	125	139	6	0	5484
<b>GRAND TOTAL</b>	0	1821	1247	5461	1069	416	214	234	8	0	10470
Non / Externally powered Equipment	0	29	51	463	293	132	312	16	0	0	1295
Unknown / Not Equipment	0	13	116	78	12	46	20	35	0	0	317

**PROJECT: 03-445104****PAVEMENT REHABILITATION / WIDENING****PAGE 13/14****Other (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	4	0	3	14	6	0	0	27
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	3	0	0	0	0	0	0	0	3
Excavators	64	0	29	3	0	0	0	0	0	0	96
Graders	0	0	1	0	0	0	0	0	2	0	3
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	40	0	0	0	0	0	0	0	0	0	40
Paving Equipment	53	0	0	0	0	0	0	0	2	0	55
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	99	0	1	1	0	0	0	0	0	0	101
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	62	0	5	0	61	51	0	4	16	0	199
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	352	0	0	8	0	38	13	0	0	0	410
Skid Steer Loaders	5	0	2	0	0	0	0	0	0	0	7
Surfacing Equipment	0	0	37	0	0	0	0	0	0	0	37
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	72	0	4	0	0	26	0	6	16	0	124
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	10	0	0	0	0	0	0	4	1	0	15
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	6	0	0	0	0	6
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	17	0	0	3	0	20
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>757</b>	<b>0</b>	<b>80</b>	<b>16</b>	<b>61</b>	<b>141</b>	<b>27</b>	<b>20</b>	<b>40</b>	<b>0</b>	<b>1140</b>
Heavy Duty Truck	776	0	30	55	179	182	35	33	28	44	1361
Light Duty Truck	199	12	54	15	34	115	31	9	32	0	500
Water Truck	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL TRUCKS</b>	<b>975</b>	<b>12</b>	<b>83</b>	<b>70</b>	<b>213</b>	<b>297</b>	<b>66</b>	<b>42</b>	<b>60</b>	<b>44</b>	<b>1860</b>
<b>GRAND TOTAL</b>	<b>1731</b>	<b>12</b>	<b>163</b>	<b>86</b>	<b>274</b>	<b>437</b>	<b>93</b>	<b>62</b>	<b>100</b>	<b>44</b>	<b>3000</b>
Non / Externally powered Equipment	51	0	0	4	0	67	14	14	0	0	150
Unknown / Not Equipment	8	0	12	0	63	108	0	4	0	0	194

**PROJECT: 03-445104****PAVEMENT REHABILITATION / WIDENING****PAGE 14/14****Idle (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	4	0	12	0	0	0	10	0	0	25
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	1	0	0	0	0	0	0	0	1
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	4	33	84	0	0	0	0	0	0	121
Excavators	21	0	26	28	0	3	0	0	0	0	78
Graders	0	0	33	89	67	0	0	0	0	0	189
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	35	11	28	47	357	0	0	0	0	0	478
Paving Equipment	29	0	33	7	9	0	0	0	0	0	78
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	65	16	78	221	684	0	0	0	0	0	1064
Rough Terrain Forklifts	0	0	0	23	0	0	0	0	0	0	23
Rubber Tire Loaders	69	6	88	96	2	0	0	0	0	10	270
Scrapers	7	0	0	0	0	0	0	0	0	0	7
Signal Boards	284	0	5	51	69	25	0	5	0	5	444
Skid Steer Loaders	0	0	7	13	10	0	0	0	0	0	30
Surfacing Equipment	0	0	20	20	45	0	0	0	0	0	85
Trenchers	0	0	0	0	0	5	0	0	0	0	5
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	181	12	90	201	152	5	1	7	0	0	649
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	11	0	0	0	0	0	0	11
Sweepers / Scrubbers	69	0	33	44	138	0	0	0	0	14	298
Other General Industrial Equipment	0	0	2	0	0	0	0	0	0	1	3
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	4	0	0	0	5	0	0	5	0	14
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>760</b>	<b>56</b>	<b>475</b>	<b>945</b>	<b>1533</b>	<b>43</b>	<b>1</b>	<b>22</b>	<b>5</b>	<b>30</b>	<b>3867</b>
Heavy Duty Truck	8	2	37	126	184	62	0	10	0	21	448
Light Duty Truck	5	2	195	139	765	34	1	2	0	0	1142
Water Truck	0	0	0	11	16	0	0	0	0	0	27
<b>TOTAL TRUCKS</b>	<b>13</b>	<b>4</b>	<b>231</b>	<b>275</b>	<b>965</b>	<b>96</b>	<b>1</b>	<b>12</b>	<b>0</b>	<b>21</b>	<b>1617</b>
<b>GRAND TOTAL</b>	<b>773</b>	<b>60</b>	<b>706</b>	<b>1220</b>	<b>2497</b>	<b>138</b>	<b>2</b>	<b>33</b>	<b>5</b>	<b>51</b>	<b>5484</b>
Non / Externally powered Equipment	73	1	1	28	34	13	0	3	0	0	152
Unknown / Not Equipment	0	0	9	9	594	23	0	1	0	0	636

**PROJECT: 06-3831U4      RESURFACE EXISTING HIGHWAY      PAGE 1/14**

### Project Identifiers

Description	ASPHALT CONCRETE OVERLAY				
Project Type	#NAME?				
Contractor	W Jaxon Baker Inc	Award Date	10/19/1998	Original Days	35
RE	PALLESEN, JEFF	Accepted Date	3/31/2000	Actual Days	191
Route	41	Award Amount	\$854,410	CCO Days	0
County	MAD	Final Amount	\$1,061,529	Weather Days	149
PM Start	24.8	Final Bridge Amount	#NAME?	Other Days	160
PM End	33.6	Final Cco Amount	\$151,373		
Diary Analysis Data		First date	1/07/1900	Equipment Days	29
Date Bin Increments	0	Last Date	3/22/2000	Days in diary span	302
Location Description	IN MADERA COUNTY NEAR COARSEGOLD FROM 0.2 KM SOUTH OF DAULTON ROAD TO 1.4 KM NORTH OF YOSEMITE SPRINGS PARKWAY				

### Date Interval Specification

	Date Interval									
Label	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%
From %	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%
To %	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
From Date	5/25/99	6/24/99	7/24/99	8/23/99	9/22/99	10/23/99	11/22/99	12/22/99	1/21/00	2/20/00
To Date	6/24/99	7/24/99	8/23/99	9/22/99	10/23/99	11/22/99	12/22/99	1/21/00	2/20/00	3/22/00

### Activity Use By Phase (NONROAD + Trucks)

[illegible]

PROJECT: 06-3831U4

RESURFACE EXISTING HIGHWAY

PAGE 2/14

## Total Activity Use (Idle equipment excluded)

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	11	0	0	0	0	0	0	0	0	0	11
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	75	156	0	0	0	0	0	0	0	22	252
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	48	1478	0	0	0	0	0	0	0	0	1525
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	12	0	0	0	0	0	0	0	34	46
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	8	16	0	0	0	0	0	0	0	0	24
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	0	0	0	0	0	0	0	0	0
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	17	58	0	0	0	0	0	0	0	11	86
Other General Industrial Equipment	0	0	40	0	0	0	0	0	0	0	40
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>158</b>	<b>1719</b>	<b>40</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>67</b>	<b>1984</b>
Heavy Duty Truck	65	12	28	0	0	0	0	0	0	19	124
Light Duty Truck	52	166	110	0	0	0	0	0	0	0	328
Water Truck	47	0	0	0	0	0	0	0	0	0	47
<b>TOTAL TRUCKS</b>	<b>164</b>	<b>178</b>	<b>138</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>19</b>	<b>499</b>
<b>GRAND TOTAL</b>	<b>322</b>	<b>1897</b>	<b>178</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>86</b>	<b>2482</b>
Non-powered Equipment	0	0	0	0	0	0	0	0	0	0	0
Unknown / Not Equipment	103	580	212	0	0	0	0	0	0	0	895

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[illegible]



[illegible]

**PROJECT: 06-3831U4****RESURFACE EXISTING HIGHWAY****PAGE 10/14****Striping / Painting (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	0	0	0	0	0	0	0	0	0
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	0	0	0	0	0	0	0	0	0
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	0	0	0	0	0	0	0	0	0
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	40	0	0	0	0	0	0	0	40
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	0	0	40	0	0	0	0	0	0	0	40
Heavy Duty Truck	0	0	28	0	0	0	0	0	0	0	28
Light Duty Truck	0	65	104	0	0	0	0	0	0	0	169
Water Truck	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL TRUCKS</b>	0	65	132	0	0	0	0	0	0	0	197
<b>GRAND TOTAL</b>	0	65	172	0	0	0	0	0	0	0	237
Non / Externally powered Equipment	0	0	0	0	0	0	0	0	0	0	0
Unknown / Not Equipment	0	235	194	0	0	0	0	0	0	0	429

**PROJECT: 06-3831U4      RESURFACE EXISTING HIGHWAY      PAGE 11/14****Traffic Control / Signage / Barriers (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	14	0	0	0	0	0	0	0	0	0	14
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	0	0	0	0	0	0	0	0	0
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	0	0	0	0	0	0	0	0	0
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	0	0	0	0	0	0	0	0	0
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>14</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>14</b>
Heavy Duty Truck	20	0	0	0	0	0	0	0	0	0	20
Light Duty Truck	8	48	6	0	0	0	0	0	0	0	62
Water Truck	8	0	0	0	0	0	0	0	0	0	8
<b>TOTAL TRUCKS</b>	<b>36</b>	<b>48</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>90</b>
<b>GRAND TOTAL</b>	<b>50</b>	<b>48</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>104</b>
Non / Externally powered Equipment	0	0	0	0	0	0	0	0	0	0	0
Unknown / Not Equipment	8	0	18	0	0	0	0	0	0	0	26







[illegible]

**PROJECT: 06-4036U4      LANDSCAPING      PAGE 1/14**

**Project Identifiers**

Description	IRRIGATION AND PLANTING UPGRADE				
Project Type	#NAME?				
Contractor	J S Brar Company	Award Date	12/29/1999	Original Days	885
RE	SHAEFFER, M.A.	Accepted Date	5/21/2004	Actual Days	1050
Route	99	Award Amount	\$797,237	CCO Days	16
County	MAD	Final Amount	\$886,711	Weather Days	17
PM Start	15.9	Final Bridge Amount	#NAME?	Other Days	166
PM End	20.1	Final Cco Amount	\$79,435		
Diary Analysis Data		First date	1/0/1900	Equipment Days	149
Date Bin Increments	0	Last Date	11/10/2000	Days in diary span	270
Location Description	IN MADERA COUNTY IN AND NEAR MADERA FROM 0.5 KM SOUTH OF ROUTE 145/99 SEPARATION TO 0.6 KM NORTH OF CLEVELAND AVENUE OVERCROSSING				

**Date Interval Specification**

Label	Date Interval									
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%
From %	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%
To %	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
From Date	2/14/00	3/12/00	4/8/00	5/5/00	6/1/00	6/28/00	7/25/00	8/21/00	9/17/00	10/14/00
To Date	3/12/00	4/8/00	5/5/00	6/1/00	6/28/00	7/25/00	8/21/00	9/17/00	10/14/00	11/10/00

**Activity Use By Phase (NONROAD + Trucks)**

Phase	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Land Clearing and Grubbing	41	16	16	17	0	0	0	72	0	18	180
Roadway Excavation	0	0	0	0	0	0	0	0	0	9	9
Structural Excavation	0	0	0	0	0	0	0	0	0	0	0
Base and Subbase	0	0	0	0	12	0	48	0	0	24	84
Structural Concrete	0	0	0	0	0	0	0	0	0	0	0
Paving	0	0	0	0	0	0	0	0	0	0	0
Drainage / Environmental / Landscaping	25	2125	2507	1663	934	162	397	372	1280	484	9,949
Striping / Painting	0	0	0	0	0	0	0	0	0	0	0
Traffic Control / Signage / Barriers	0	0	0	0	0	2	0	0	0	41	43
CCO	374	158	27	23	0	0	14	12	0	0	607
Other	4	0	0	2	164	0	59	177	8	117	531
Idle	0	0	0	0	0	0	0	25	0	0	25
Total non-idle	444	2299	2550	1705	1110	164	518	633	1288	693	11,403

**PROJECT: 06-4036U4      LANDSCAPING      PAGE 2/14**

**Total Activity Use (Idle equipment excluded)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	8	0	0	0	8
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	0	0	0	0	0	10	0	8	18
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	0	0	0	0	0	17	64	0	81
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders	10	388	301	0	24	0	123	90	280	73	1289
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	48	304	404	104	0	8	2	0	0	870
Tampers/Rammers	0	0	0	0	0	0	0	24	0	0	24
Tractors / Loaders / Backhoes	0	2	1	0	64	56	0	0	0	8	131
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	3	4	0	0	0	0	0	0	0	0	7
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	27	0	0	27
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>13</b>	<b>442</b>	<b>606</b>	<b>404</b>	<b>192</b>	<b>56</b>	<b>139</b>	<b>170</b>	<b>344</b>	<b>89</b>	<b>2455</b>
Heavy Duty Truck	102	533	641	457	474	58	379	191	408	142	3385
Light Duty Truck	328	1325	1303	844	444	50	0	272	536	462	5563
Water Truck	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL TRUCKS</b>	<b>431</b>	<b>1857</b>	<b>1944</b>	<b>1301</b>	<b>918</b>	<b>108</b>	<b>379</b>	<b>463</b>	<b>944</b>	<b>604</b>	<b>8948</b>
<b>GRAND TOTAL</b>	<b>444</b>	<b>2299</b>	<b>2550</b>	<b>1705</b>	<b>1110</b>	<b>164</b>	<b>518</b>	<b>633</b>	<b>1288</b>	<b>693</b>	<b>11403</b>
Non-powered Equipment	0	0	0	0	0	0	0	0	0	0	0
Unknown / Not Equipment	0	0	0	0	0	0	2	0	0	0	2

[illegible]



**PROJECT: 06-4036U4      LANDSCAPING      PAGE 5/14**  
**Structural Excavation (hours)**





[illegible]

**PROJECT: 06-4036U4      LANDSCAPING      PAGE 8/14**  
**Paving (hours)**

[illegible]

**PROJECT: 06-4036U4      LANDSCAPING      PAGE 9/14****Drainage / Environmental / Landscaping (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	0	0	0	0	0	2	0	0	2
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	0	0	0	0	0	9	64	0	73
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	334	294	0	0	0	57	51	280	42	1058
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	48	288	402	48	0	8	2	0	0	796
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	0	0	0	56	0	0	0	0	56
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	27	0	0	27
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	0	382	582	402	48	56	65	91	344	42	2012
Heavy Duty Truck	0	450	640	438	474	57	332	116	408	84	2999
Light Duty Truck	25	1293	1285	823	412	49	0	165	528	358	4938
Water Truck	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL TRUCKS</b>	25	1743	1925	1261	886	106	332	281	936	442	7937
<b>GRAND TOTAL</b>	25	2125	2507	1663	934	162	397	372	1280	484	9949
Non / Externally powered Equipment	0	0	0	0	0	0	0	0	0	0	0
Unknown / Not Equipment	0	0	0	0	0	0	2	0	0	0	2

**PROJECT: 06-4036U4      LANDSCAPING      PAGE 10/14**  
**Striping / Painting (hours)**

[illegible]

**PROJECT: 06-4036U4      LANDSCAPING      PAGE 11/14**

**Traffic Control / Signage / Barriers (hours)**

**PROJECT: 06-4036U4      LANDSCAPING      PAGE 12/14**  
**CCO (hours)**

PROJECT: 06-4036U4 LANDSCAPING PAGE 13/14  
Other (hours)

**PROJECT: 06-4036U4      LANDSCAPING      PAGE 14/14**

Idle (hours)



**PROJECT: 06-336604**  
**1/14**

**CONSTRUCT FREEWAY / EXTRA LANE**

**PAGE**

**Project Identifiers**

Description	CONSTRUCT AUXILIARY LANE				
Project Type	#NAME?				
Contractor	Magnum Pacific Inc	Award Date	10/16/2001	Original Days	180
RE	MARK MENGONI	Accepted Date	5/29/2003	Actual Days	222
Route	99	Award Amount	\$2,325,229	CCO Days	16
County	FRE	Final Amount	\$2,549,195	Weather Days	45
PM Start	29	Final Bridge Amount	#NAME?	Other Days	86
PM End	32.5	Final Cco Amount	\$240,534		
Diary Analysis Data		First date	1/0/1900	Equipment Days	148
Date Bin Increments	0	Last Date	5/28/2003	Days in diary span	429
Location Description	IN FRESNO COUNTY IN FRESNO FROM 1.0 KM SOUTH OF JENSEN AVENUE UNDERCROSSING TO 0.2 KM SOUTH OF VETURA STREET OVERCROSSING				

**Date Interval Specification**

Label	Date Interval									
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%
From %	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%
To %	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
From Date	3/25/02	5/6/02	6/18/02	7/31/02	9/12/02	10/25/02	12/7/02	1/19/03	3/3/03	4/15/03
To Date	5/6/02	6/18/02	7/31/02	9/12/02	10/25/02	12/7/02	1/19/03	3/3/03	4/15/03	5/28/03

**Activity Use By Phase (NONROAD + Trucks)**

Phase	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Land Clearing and Grubbing	68	15	0	0	0	0	0	0	0	0	83
Roadway Excavation	174	678	181	39	42	0	0	0	0	0	1,114
Structural Excavation	218	8	0	2	0	0	0	0	0	0	228
Base and Subbase	0	224	184	169	0	0	0	0	0	0	577
Structural Concrete	804	1156	1318	639	229	0	0	0	0	0	4,146
Paving	48	0	9	110	37	0	0	0	0	4	208
Drainage / Environmental / Landscapi	20	28	31	142	46	0	0	0	0	0	267
Striping / Painting	261	0	116	0	90	0	0	0	162	0	629
Traffic Control / Signage / Barriers	296	330	210	138	158	0	0	0	115	14	1,260
CCO	9	55	0	206	222	4	0	0	0	0	495
Other	9	0	187	353	227	5	0	0	161	21	963
Idle	258	304	157	194	48	0	0	0	0	0	961
Total non-idle	1907	2494	2236	1796	1051	9	0	0	437	39	9,967

**PROJECT: 06-336604**  
**2/14**

**CONSTRUCT FREEWAY / EXTRA LANE**

**PAGE**

**Total Activity Use (Idle equipment excluded)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	46	6	0	11	8	0	0	0	0	0	71
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	12	28	0	0	0	0	0	0	0	40
Cranes	35	4	0	0	0	0	0	0	0	0	39
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	52	43	0	0	0	0	0	0	0	95
Excavators	68	63	75	0	21	0	0	0	0	0	227
Graders	29	133	32	15	0	0	0	0	0	0	209
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	142	0	29	26	0	0	0	0	0	197
Paving Equipment	11	18	4	0	0	0	0	0	0	0	33
Plate Compactors	16	12	0	0	0	0	0	0	0	0	28
Rollers	0	172	92	46	32	0	0	0	0	4	346
Rough Terrain Forklifts	26	134	104	30	0	0	0	0	0	0	294
Rubber Tire Loaders	0	0	36	24	18	0	0	0	0	0	78
Scrapers	0	64	0	0	0	0	0	0	0	0	64
Signal Boards	0	0	0	114	0	0	0	0	0	0	114
Skid Steer Loaders	64	0	32	4	0	0	0	0	32	0	132
Surfacing Equipment	40	16	29	14	8	0	0	0	0	0	107
Trenchers	0	16	0	0	0	0	0	0	0	0	16
Tampers/Rammers	0	0	0	40	0	0	0	0	0	0	40
Tractors / Loaders / Backhoes	146	68	63	71	79	0	0	0	0	7	434
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	54	89	32	30	55	0	0	0	0	0	260
Forklifts	41	0	8	0	22	0	0	0	0	0	71
Sweepers / Scrubbers	0	0	53	19	0	0	0	0	0	0	72
Other General Industrial Equipment	32	3	40	0	56	0	0	0	90	0	221
Other Material Handling Equipment	0	0	0	0	6	0	0	0	0	0	6
Chain Saws < 6 HP (commercial)	0	104	82	0	0	0	0	0	0	0	186
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	54	132	174	242	48	0	0	0	0	0	650
Pumps	8	6	0	0	0	0	0	0	0	0	14
Air Compressors	16	7	12	22	32	0	0	0	0	0	88
Welders	0	26	0	0	0	0	0	0	0	0	26
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>684</b>	<b>1278</b>	<b>937</b>	<b>710</b>	<b>411</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>122</b>	<b>11</b>	<b>4152</b>
Heavy Duty Truck	361	334	648	700	384	4	0	0	165	0	2595
Light Duty Truck	795	654	574	354	255	5	0	0	150	28	2815
Water Truck	67	228	77	32	2	0	0	0	0	0	406
<b>TOTAL TRUCKS</b>	<b>1223</b>	<b>1216</b>	<b>1299</b>	<b>1086</b>	<b>640</b>	<b>9</b>	<b>0</b>	<b>0</b>	<b>315</b>	<b>28</b>	<b>5815</b>
<b>GRAND TOTAL</b>	<b>1907</b>	<b>2494</b>	<b>2236</b>	<b>1796</b>	<b>1051</b>	<b>9</b>	<b>0</b>	<b>0</b>	<b>437</b>	<b>39</b>	<b>9967</b>
Non-powered Equipment	9	4	61	35	8	0	0	0	30	0	146
Unknown / Not Equipment	166	313	13	0	143	0	0	0	0	0	635

**3/14**

**Land Clearing and Grubbing (hours)**

**PROJECT: 06-336604****CONSTRUCT FREEWAY / EXTRA LANE****PAGE****4/14****Roadway Excavation (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	52	31	0	0	0	0	0	0	0	83
Excavators	6	46	48	0	0	0	0	0	0	0	100
Graders	24	123	0	11	0	0	0	0	0	0	158
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	12	0	0	0	0	0	0	0	0	12
Rollers	0	150	31	4	0	0	0	0	0	0	185
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	0	4	8	0	0	0	0	0	12
Scrapers	0	64	0	0	0	0	0	0	0	0	64
Signal Boards	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	24	0	1	0	0	0	0	0	0	0	25
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	14	18	2	3	0	0	0	0	0	0	36
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	6	0	0	0	0	0	0	0	0	0	6
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>73</b>	<b>465</b>	<b>113</b>	<b>22</b>	<b>8</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>680</b>
Heavy Duty Truck	24	0	0	11	0	0	0	0	0	0	35
Light Duty Truck	39	104	35	3	32	0	0	0	0	0	212
Water Truck	38	109	34	4	2	0	0	0	0	0	187
<b>TOTAL TRUCKS</b>	<b>101</b>	<b>213</b>	<b>69</b>	<b>17</b>	<b>34</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>434</b>
<b>GRAND TOTAL</b>	<b>174</b>	<b>678</b>	<b>181</b>	<b>39</b>	<b>42</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1114</b>
Non / Externally powered Equipment	0	0	0	0	0	0	0	0	0	0	0
Unknown / Not Equipment	36	40	0	0	32	0	0	0	0	0	108

**5/14**

### Structural Excavation (hours)

6/14

**Base and Subbase (hours)**

7/14

### Structural Concrete (hours)

8/14

**Paving (hours)**





**PROJECT: 06-336604****CONSTRUCT FREEWAY / EXTRA LANE****PAGE****10/14****Striping / Painting (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	2	0	0	0	0	0	0	0	0	0	2
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	0	0	0	0	0	0	0	0	0
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	0	0	0	0	0	0	0	0	0
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders	32	0	16	0	0	0	0	0	22	0	70
Surfacing Equipment	0	0	24	0	0	0	0	0	0	0	24
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	0	0	0	0	0	0	0	0	0
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	8	0	0	0	0	0	0	0	8
Other General Industrial Equipment	32	0	24	0	40	0	0	0	59	0	155
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>66</b>	<b>0</b>	<b>72</b>	<b>0</b>	<b>40</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>80</b>	<b>0</b>	<b>258</b>
Heavy Duty Truck	120	0	16	0	16	0	0	0	61	0	213
Light Duty Truck	75	0	28	0	34	0	0	0	22	0	159
Water Truck	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL TRUCKS</b>	<b>195</b>	<b>0</b>	<b>44</b>	<b>0</b>	<b>50</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>82</b>	<b>0</b>	<b>371</b>
<b>GRAND TOTAL</b>	<b>261</b>	<b>0</b>	<b>116</b>	<b>0</b>	<b>90</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>162</b>	<b>0</b>	<b>629</b>
Non / Externally powered Equipment	0	0	8	0	0	0	0	0	20	0	28
Unknown / Not Equipment	0	0	8	0	0	0	0	0	0	0	8

**PROJECT: 06-336604****CONSTRUCT FREEWAY / EXTRA LANE****PAGE****11/14****Traffic Control / Signage / Barriers (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	11	8	0	0	0	0	0	19
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	1	0	0	0	0	0	0	0	1
Cranes	5	0	0	0	0	0	0	0	0	0	5
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	46	0	27	0	12	0	0	0	0	0	85
Graders	0	2	0	0	0	0	0	0	0	0	2
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	55	0	0	0	0	0	0	0	0	55
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	8	0	12	0	0	0	0	0	20
Rough Terrain Forklifts	0	51	0	0	0	0	0	0	0	0	51
Rubber Tire Loaders	0	0	0	0	0	0	0	0	0	0	0
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	16	0	0	0	0	0	0	0	0	16
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	13	0	24	0	0	0	0	0	37
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	34	0	0	0	16	0	0	0	0	0	50
Sweepers / Scrubbers	0	0	7	0	0	0	0	0	0	0	7
Other General Industrial Equipment	0	0	8	0	0	0	0	0	0	0	8
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>85</b>	<b>123</b>	<b>64</b>	<b>11</b>	<b>72</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>355</b>
Heavy Duty Truck	106	31	4	60	76	0	0	0	47	0	323
Light Duty Truck	105	160	128	67	11	0	0	0	68	14	552
Water Truck	0	16	14	0	0	0	0	0	0	0	30
<b>TOTAL TRUCKS</b>	<b>211</b>	<b>207</b>	<b>146</b>	<b>127</b>	<b>86</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>115</b>	<b>14</b>	<b>905</b>
<b>GRAND TOTAL</b>	<b>296</b>	<b>330</b>	<b>210</b>	<b>138</b>	<b>158</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>115</b>	<b>14</b>	<b>1260</b>
Non / Externally powered Equipment	9	0	0	3	0	0	0	0	0	0	12
Unknown / Not Equipment	0	89	5	0	0	0	0	0	0	0	94

**PROJECT: 06-336604****CONSTRUCT FREEWAY / EXTRA LANE****PAGE****12/14****CCO (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	12	0	0	0	0	0	0	0	0	12
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	0	0	0	0	0	0	0	0	0
Rough Terrain Forklifts	0	0	0	8	0	0	0	0	0	0	8
Rubber Tire Loaders	0	0	0	0	0	0	0	0	0	0	0
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	16	0	0	0	0	0	0	0	0	16
Tampers/Rammers	0	0	0	12	0	0	0	0	0	0	12
Tractors / Loaders / Backhoes	0	0	0	37	6	0	0	0	0	0	43
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	31	0	0	0	0	0	31
Forklifts	0	0	0	0	6	0	0	0	0	0	6
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	31	0	0	0	0	0	0	31
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	2	0	0	0	0	0	0	2
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	0	28	0	89	43	0	0	0	0	0	160
Heavy Duty Truck	0	0	0	68	122	4	0	0	0	0	194
Light Duty Truck	9	27	0	49	57	0	0	0	0	0	142
Water Truck	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL TRUCKS</b>	9	27	0	117	179	4	0	0	0	0	336
<b>GRAND TOTAL</b>	9	55	0	206	222	4	0	0	0	0	495
Non / Externally powered Equipment	0	0	0	2	8	0	0	0	0	0	10
Unknown / Not Equipment	4	16	0	0	23	0	0	0	0	0	43

**PROJECT: 06-336604****CONSTRUCT FREEWAY / EXTRA LANE****PAGE****13/14****Other (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	3	0	0	0	0	0	0	0	3
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	6	0	0	0	0	0	0	0	6
Excavators	0	0	0	0	9	0	0	0	0	0	9
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	20	0	0	0	0	0	20
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	0	0	20	0	0	0	0	0	20
Rough Terrain Forklifts	0	0	0	22	0	0	0	0	0	0	22
Rubber Tire Loaders	0	0	0	0	10	0	0	0	0	0	10
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	110	0	0	0	0	0	0	110
Skid Steer Loaders	0	0	16	4	0	0	0	0	11	0	30
Surfacing Equipment	0	0	0	0	8	0	0	0	0	0	8
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	28	6	9	0	0	0	0	7	50
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	26	0	0	0	0	0	0	26
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	4	0	0	0	0	0	0	0	4
Other General Industrial Equipment	0	0	8	0	16	0	0	0	32	0	56
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	7	0	0	52	0	0	0	0	0	0	59
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	12	4	0	0	0	0	0	0	16
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>7</b>	<b>0</b>	<b>76</b>	<b>224</b>	<b>92</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>42</b>	<b>7</b>	<b>448</b>
Heavy Duty Truck	0	0	31	92	39	0	0	0	58	0	219
Light Duty Truck	2	0	81	35	96	5	0	0	61	14	294
Water Truck	0	0	0	2	0	0	0	0	0	0	2
<b>TOTAL TRUCKS</b>	<b>2</b>	<b>0</b>	<b>112</b>	<b>129</b>	<b>135</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>119</b>	<b>14</b>	<b>515</b>
<b>GRAND TOTAL</b>	<b>9</b>	<b>0</b>	<b>187</b>	<b>353</b>	<b>227</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>161</b>	<b>21</b>	<b>963</b>
Non / Externally powered Equipment	0	0	23	30	0	0	0	0	11	0	63
Unknown / Not Equipment	0	0	0	0	88	0	0	0	0	0	88



**PROJECT: 06-339404****RESURFACE EXISTING HIGHWAY****PAGE 1/14****Project Identifiers**

Description		ASPHALT CONCRETE OVERLAY			
Project Type		Resurface Existing Highway			
Contractor		Award Date		Original Days	
RE		Accepted Date		Actual Days	
Route		Award Amount		CCO Days	
County		Final Amount		Weather Days	
PM Start		Final Bridge Amount		Other Days	
PM End		Final Cco Amount			
Diary Analysis Data		First date		Equipment Days	
Date Bin Increments		Last Date		Days in diary span	
Location Description					

**Date Interval Specification**

Label	Date Interval									
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%
From %	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%
To %	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
From Date	11/17/03	12/30/03	2/12/04	3/26/04	5/9/04	6/22/04	8/4/04	9/17/04	10/30/04	12/13/04
To Date	12/30/03	2/12/04	3/26/04	5/9/04	6/22/04	8/4/04	9/17/04	10/30/04	12/13/04	1/26/05

**Activity Use By Phase (NONROAD + Trucks)**

Phase	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Land Clearing and Grubbing	0	0	0	4	0	0	0	0	0	0	4
Roadway Excavation	1006	0	0	1993	1420	636	97	613	179	0	5,942
Structural Excavation	0	0	0	189	22	29	0	12	0	0	252
Base and Subbase	9	0	0	0	10	451	168	447	105	69	1,258
Structural Concrete	0	0	0	0	126	227	0	67	43	2	464
Paving	0	0	0	8	209	497	4326	1012	530	277	6,858
Drainage / Environmental / Landscaping	0	0	0	43	503	169	223	302	96	225	1,561
Striping / Painting	3	0	0	0	0	0	0	32	166	28	229
Traffic Control / Signage / Barriers	178	0	16	116	289	194	524	809	315	45	2,485
CCO	0	0	0	0	10	149	14	2	24	228	426
Other	0	0	0	60	55	257	169	313	210	172	1,235
Idle	0	0	0	70	26	70	11	62	44	30	312
Total non-idle	1195	0	16	2413	2643	2608	5520	3608	1666	1045	20,712

PROJECT: 06-339404

RESURFACE EXISTING HIGHWAY

PAGE 2/14

## Total Activity Use (Idle equipment excluded)

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	24	0	24
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	64	8	14	16	8	0	16	126
Cranes	0	0	4	0	8	18	0	16	2	0	48
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	38	0	0	82	52	102	0	51	0	0	324
Graders	27	0	0	235	258	105	10	99	19	0	752
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	167	241	594	185	125	48	1359
Paving Equipment	40	0	0	0	8	0	0	96	8	0	152
Plate Compactors	0	0	0	1	0	16	122	56	8	0	203
Rollers	133	0	0	236	181	238	920	340	102	48	2197
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	51	0	0	65	11	107	168	149	7	11	568
Scrapers	0	0	0	0	0	89	0	0	8	0	97
Signal Boards	97	0	0	8	14	0	16	0	0	0	135
Skid Steer Loaders	0	0	0	0	0	0	18	15	0	8	41
Surfacing Equipment	0	0	0	8	0	29	356	77	73	20	563
Trenchers	0	0	0	0	0	0	32	75	84	16	207
Tampers/Rammers	0	0	0	0	21	0	0	0	0	0	21
Tractors / Loaders / Backhoes	127	0	0	282	464	419	614	313	156	87	2460
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	57	0	0	32	56	28	228	25	25	16	465
Other General Industrial Equipment	2	0	0	0	0	0	0	16	159	4	181
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	6	6
Generator Set	0	0	0	16	8	44	28	15	8	61	180
Pumps	0	0	0	0	0	0	0	5	8	86	99
Air Compressors	0	0	0	11	0	0	0	86	8	24	129
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>572</b>	<b>0</b>	<b>4</b>	<b>1037</b>	<b>1254</b>	<b>1450</b>	<b>3120</b>	<b>1625</b>	<b>822</b>	<b>451</b>	<b>10333</b>
Heavy Duty Truck	243	0	0	760	665	365	1068	834	311	171	4414
Light Duty Truck	355	0	12	367	461	532	1034	983	506	417	4665
Water Truck	26	0	0	249	264	262	299	167	28	7	1300
<b>TOTAL TRUCKS</b>	<b>623</b>	<b>0</b>	<b>12</b>	<b>1376</b>	<b>1389</b>	<b>1158</b>	<b>2400</b>	<b>1983</b>	<b>844</b>	<b>595</b>	<b>10379</b>
<b>GRAND TOTAL</b>	<b>1195</b>	<b>0</b>	<b>16</b>	<b>2413</b>	<b>2643</b>	<b>2608</b>	<b>5520</b>	<b>3608</b>	<b>1666</b>	<b>1045</b>	<b>20712</b>
Non-powered Equipment	0	0	0	8	0	0	8	9	15	8	48
Unknown / Not Equipment	32	0	0	203	533	533	588	419	287	27	2621



**PROJECT: 06-339404****RESURFACE EXISTING HIGHWAY****PAGE 3/14****Land Clearing and Grubbing (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	0	0	0	0	0	0	0	0	0
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	0	0	0	0	0	0	0	0	0
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	0	2	0	0	0	0	0	0	2
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
TOTAL NONROAD	0	0	0	2	0	0	0	0	0	0	2
Heavy Duty Truck	0	0	0	0	0	0	0	0	0	0	0
Light Duty Truck	0	0	0	2	0	0	0	0	0	0	2
Water Truck	0	0	0	0	0	0	0	0	0	0	0
TOTAL TRUCKS	0	0	0	2	0	0	0	0	0	0	2
GRAND TOTAL	0	0	0	4	0	0	0	0	0	0	4
Non / Externally powered Equipment	0	0	0	0	0	0	0	0	0	0	0
Unknown / Not Equipment	0	0	0	2	0	0	0	0	0	0	2

**PROJECT: 06-339404****RESURFACE EXISTING HIGHWAY****PAGE 4/14****Roadway Excavation (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	53	8	0	0	0	0	0	61
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	35	0	0	39	21	10	0	10	0	0	115
Graders	27	0	0	235	236	61	10	37	17	0	622
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	10	0	0	11	0	21
Paving Equipment	39	0	0	0	0	0	0	0	0	0	39
Plate Compactors	0	0	0	0	0	0	0	44	0	0	44
Rollers	129	0	0	232	121	50	11	78	6	0	626
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	49	0	0	65	11	51	0	49	7	0	231
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	13	0	0	0	0	0	0	0	0	0	13
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	0	8	0	0	0	0	0	0	8
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	115	0	0	238	315	190	11	127	40	0	1034
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	49	0	0	32	11	4	0	10	8	0	113
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	2	0	0	0	22	0	0	24
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>456</b>	<b>0</b>	<b>0</b>	<b>902</b>	<b>721</b>	<b>376</b>	<b>32</b>	<b>376</b>	<b>87</b>	<b>0</b>	<b>2949</b>
Heavy Duty Truck	227	0	0	619	232	30	21	72	17	0	1218
Light Duty Truck	298	0	0	224	209	96	23	116	66	0	1032
Water Truck	25	0	0	249	258	134	21	50	9	0	745
<b>TOTAL TRUCKS</b>	<b>550</b>	<b>0</b>	<b>0</b>	<b>1092</b>	<b>699</b>	<b>260</b>	<b>65</b>	<b>237</b>	<b>92</b>	<b>0</b>	<b>2994</b>
<b>GRAND TOTAL</b>	<b>1006</b>	<b>0</b>	<b>0</b>	<b>1993</b>	<b>1420</b>	<b>636</b>	<b>97</b>	<b>613</b>	<b>179</b>	<b>0</b>	<b>5942</b>
Non / Externally powered Equipment	0	0	0	0	0	0	0	0	0	0	0
Unknown / Not Equipment	32	0	0	178	250	132	10	0	61	0	662

**PROJECT: 06-339404****RESURFACE EXISTING HIGHWAY****PAGE 5/14****Structural Excavation (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	5	0	0	0	0	0	0	5
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	38	6	11	0	0	0	0	55
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	1	0	0	0	6	0	0	7
Rollers	0	0	0	0	0	0	0	0	0	0	0
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	0	0	0	0	0	0	0	0	0
Scrapers	0	0	0	0	0	10	0	0	0	0	10
Signal Boards	0	0	0	5	6	0	0	0	0	0	11
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	0	16	0	8	0	6	0	0	30
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	10	0	0	0	0	0	0	10
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	0	0	0	75	12	29	0	12	0	0	128
Heavy Duty Truck	0	0	0	18	4	0	0	0	0	0	22
Light Duty Truck	0	0	0	97	6	0	0	0	0	0	103
Water Truck	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL TRUCKS</b>	0	0	0	115	10	0	0	0	0	0	125
<b>GRAND TOTAL</b>	0	0	0	189	22	29	0	12	0	0	252
Non / Externally powered Equipment	0	0	0	8	0	0	0	0	0	0	8
Unknown / Not Equipment	0	0	0	22	0	0	0	0	0	0	22

**PROJECT: 06-339404****RESURFACE EXISTING HIGHWAY****PAGE 6/14****Base and Subbase (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	3	0	0	0	0	0	0	26	0	0	29
Graders	0	0	0	0	0	40	0	60	0	0	100
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	30	0	19	0	0	49
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	27	0	0	0	27
Rollers	2	0	0	0	0	75	20	53	28	8	185
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	2	0	0	0	0	25	38	34	0	0	99
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	0	0	0	98	15	70	48	35	266
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	11	0	0	11
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	8	0	0	8
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>7</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>268</b>	<b>99</b>	<b>279</b>	<b>76</b>	<b>43</b>	<b>772</b>
Heavy Duty Truck	0	0	0	0	10	38	21	24	0	0	93
Light Duty Truck	2	0	0	0	0	65	27	104	29	26	253
Water Truck	0	0	0	0	0	80	21	40	0	0	141
<b>TOTAL TRUCKS</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>10</b>	<b>183</b>	<b>69</b>	<b>168</b>	<b>29</b>	<b>26</b>	<b>486</b>
<b>GRAND TOTAL</b>	<b>9</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>10</b>	<b>451</b>	<b>168</b>	<b>447</b>	<b>105</b>	<b>69</b>	<b>1258</b>
Non / Externally powered Equipment	0	0	0	0	0	0	0	0	6	0	6
Unknown / Not Equipment	0	0	0	0	20	45	0	0	0	0	65

**PROJECT: 06-339404****RESURFACE EXISTING HIGHWAY****PAGE 7/14****Structural Concrete (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	14	0	7	0	0	21
Cranes	0	0	0	0	3	10	0	0	0	0	13
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	20	76	0	0	0	0	96
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	5	0	0	0	8	0	13
Plate Compactors	0	0	0	0	0	11	0	0	0	0	11
Rollers	0	0	0	0	0	0	0	0	0	0	0
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	0	0	0	0	0	18	0	0	18
Scrapers	0	0	0	0	0	62	0	0	0	0	62
Signal Boards	0	0	0	0	8	0	0	0	0	0	8
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	0	0	66	2	0	0	3	0	71
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	5	24	0	0	0	1	30
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	8	0	0	8
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
TOTAL NONROAD	0	0	0	0	107	199	0	32	11	1	350
Heavy Duty Truck	0	0	0	0	9	10	0	34	5	0	58
Light Duty Truck	0	0	0	0	10	18	0	1	27	1	57
Water Truck	0	0	0	0	0	0	0	0	0	0	0
TOTAL TRUCKS	0	0	0	0	19	28	0	35	32	1	115
GRAND TOTAL	0	0	0	0	126	227	0	67	43	2	464
Non / Externally powered Equipment	0	0	0	0	0	0	0	0	0	0	0
Unknown / Not Equipment	0	0	0	0	6	0	0	8	0	0	14

**PROJECT: 06-339404****RESURFACE EXISTING HIGHWAY****PAGE 8/14****Paving (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	2	0	0	0	0	2
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	0	0	0	0	10	0	0	0	2	0	12
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	93	143	594	166	114	44	1153
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	90	0	0	0	90
Rollers	0	0	0	4	40	92	889	181	69	36	1310
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	0	0	0	31	112	32	0	11	186
Scrapers	0	0	0	0	0	3	0	0	0	0	3
Signal Boards	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0	0	9	0	0	0	9
Surfacing Equipment	0	0	0	0	0	29	340	77	55	8	509
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	21	0	0	0	0	0	21
Tractors / Loaders / Backhoes	0	0	0	0	0	20	429	71	50	30	599
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	45	20	164	0	17	16	262
Other General Industrial Equipment	0	0	0	0	0	0	0	0	38	0	38
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	4	0	0	0	0	4
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	0	0	0	4	209	343	2626	526	344	145	4197
Heavy Duty Truck	0	0	0	4	0	35	841	226	48	35	1188
Light Duty Truck	0	0	0	0	0	97	633	184	119	91	1123
Water Truck	0	0	0	0	0	22	227	77	19	6	351
<b>TOTAL TRUCKS</b>	0	0	0	4	0	154	1700	486	186	132	2662
<b>GRAND TOTAL</b>	0	0	0	8	209	497	4326	1012	530	277	6858
Non / Externally powered Equipment	0	0	0	0	0	0	0	0	9	0	9
Unknown / Not Equipment	0	0	0	0	0	14	51	40	29	8	142

**PROJECT: 06-339404      RESURFACE EXISTING HIGHWAY      PAGE 9/14****Drainage / Environmental / Landscaping (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	0	0	15	0	0	15
Graders	0	0	0	0	12	0	0	0	0	0	12
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	74	17	0	0	0	0	91
Paving Equipment	0	0	0	0	0	0	0	96	0	0	96
Plate Compactors	0	0	0	0	0	0	5	6	6	0	17
Rollers	0	0	0	0	20	0	0	0	0	0	20
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	0	0	0	0	10	0	0	0	10
Scrapers	0	0	0	0	0	9	0	0	3	0	12
Signal Boards	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0	0	0	15	0	0	15
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0	39	0	39
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	0	23	54	9	88	10	4	0	187
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	6	6
Generator Set	0	0	0	0	0	0	28	15	0	51	94
Pumps	0	0	0	0	0	0	0	5	0	54	59
Air Compressors	0	0	0	9	0	0	0	11	0	8	28
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	0	0	0	32	160	35	130	173	52	119	701
Heavy Duty Truck	0	0	0	0	143	18	22	42	36	36	297
Light Duty Truck	0	0	0	11	195	116	66	87	8	70	552
Water Truck	0	0	0	0	6	0	5	0	0	0	11
<b>TOTAL TRUCKS</b>	0	0	0	11	344	134	93	129	44	106	860
<b>GRAND TOTAL</b>	0	0	0	43	503	169	223	302	96	225	1561
Non / Externally powered Equipment	0	0	0	0	0	0	0	8	0	0	8
Unknown / Not Equipment	0	0	0	0	21	270	10	16	0	0	317





**PROJECT: 06-339404      RESURFACE EXISTING HIGHWAY      PAGE 11/14****Traffic Control / Signage / Barriers (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	24	0	24
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	16	0	0	0	16
Cranes	0	0	4	0	0	0	0	16	2	0	22
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	1	0	0	0	0	0	0	0	0	0	1
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	2	0	0	0	0	0	0	18	0	0	20
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	0	0	0	0	8	0	0	0	8
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	84	0	0	0	0	0	16	0	0	0	100
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	0	0	0	0	16	0	0	0	16
Trenchers	0	0	0	0	0	0	24	59	19	8	110
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	13	0	0	0	0	0	0	0	0	0	13
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	8	0	0	0	0	0	64	0	0	0	72
Other General Industrial Equipment	0	0	0	0	0	0	0	0	3	0	3
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	4	6	0	10
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>108</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>144</b>	<b>97</b>	<b>54</b>	<b>8</b>	<b>414</b>
Heavy Duty Truck	16	0	0	116	252	140	109	337	87	8	1063
Light Duty Truck	54	0	12	0	38	54	257	376	175	29	994
Water Truck	1	0	0	0	0	0	14	0	0	0	15
<b>TOTAL TRUCKS</b>	<b>71</b>	<b>0</b>	<b>12</b>	<b>116</b>	<b>289</b>	<b>194</b>	<b>380</b>	<b>712</b>	<b>261</b>	<b>37</b>	<b>2071</b>
<b>GRAND TOTAL</b>	<b>178</b>	<b>0</b>	<b>16</b>	<b>116</b>	<b>289</b>	<b>194</b>	<b>524</b>	<b>809</b>	<b>315</b>	<b>45</b>	<b>2485</b>
Non / Externally powered Equipment	0	0	0	0	0	0	8	0	0	0	8
Unknown / Not Equipment	0	0	0	0	50	25	133	68	31	0	306

**PROJECT: 06-339404****RESURFACE EXISTING HIGHWAY****PAGE 12/14****CCO (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	16	16
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	23	0	0	0	4	27
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	0	0	0	12	0	0	0	4	16
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	0	0	0	0	0	0	0	0	0
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	8	8
Surfacing Equipment	0	0	0	0	0	0	0	0	18	12	30
Trenchers	0	0	0	0	0	0	0	0	0	8	8
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	0	0	10	48	0	2	0	13	72
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	8	8
Air Compressors	0	0	0	0	0	0	0	0	0	16	16
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
TOTAL NONROAD	0	0	0	0	10	82	0	2	18	89	201
Heavy Duty Truck	0	0	0	0	0	12	14	0	0	48	73
Light Duty Truck	0	0	0	0	0	30	0	0	6	90	126
Water Truck	0	0	0	0	0	26	0	0	0	1	27
TOTAL TRUCKS	0	0	0	0	0	67	14	0	6	139	226
GRAND TOTAL	0	0	0	0	10	149	14	2	24	228	426
Non / Externally powered Equipment	0	0	0	0	0	0	0	0	0	8	8
Unknown / Not Equipment	0	0	0	0	187	35	370	273	152	19	1036

**PROJECT: 06-339404****RESURFACE EXISTING HIGHWAY****PAGE 13/14****Other (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	6	0	0	0	2	0	0	8
Cranes	0	0	0	0	5	6	0	0	0	0	11
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	5	5	5	0	0	0	0	15
Graders	0	0	0	0	0	4	0	2	0	0	6
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	18	0	0	0	0	18
Paving Equipment	0	0	0	0	3	0	0	0	0	0	3
Plate Compactors	0	0	0	0	0	5	0	0	2	0	7
Rollers	0	0	0	0	0	10	0	11	0	0	21
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	0	0	0	0	0	17	0	0	17
Scrapers	0	0	0	0	0	5	0	0	5	0	10
Signal Boards	0	0	0	3	0	0	0	0	0	0	3
Skid Steer Loaders	0	0	0	0	0	0	9	0	0	0	9
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	8	16	26	0	50
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	0	3	20	46	72	28	12	9	189
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	4	0	4	0	0	8
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	6	3	16	0	0	8	9	42
Pumps	0	0	0	0	0	0	0	0	0	24	24
Air Compressors	0	0	0	0	0	0	0	33	2	0	35
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	0	0	0	23	36	119	89	112	55	42	475
Heavy Duty Truck	0	0	0	4	15	82	40	101	86	32	360
Light Duty Truck	0	0	0	33	4	56	28	100	69	98	388
Water Truck	0	0	0	0	0	0	12	0	0	0	12
<b>TOTAL TRUCKS</b>	0	0	0	37	19	138	80	201	155	130	760
<b>GRAND TOTAL</b>	0	0	0	60	55	257	169	313	210	172	1235
Non / Externally powered Equipment	0	0	0	0	0	0	0	1	0	0	1
Unknown / Not Equipment	0	0	0	2	0	12	14	14	14	0	56

**PROJECT: 06-339404****RESURFACE EXISTING HIGHWAY****PAGE 14/14****Idle (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	5	0	10	0	0	0	0	15
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	23	10	24	0	0	0	0	57
Graders	0	0	0	0	0	0	0	1	0	0	1
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	7	0	0	0	4	0	0	11
Rollers	0	0	0	0	0	0	0	1	0	0	1
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	0	0	0	0	0	5	0	0	5
Scrapers	0	0	0	0	0	20	0	0	0	0	20
Signal Boards	0	0	0	0	10	0	0	0	0	0	10
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	0	0	0	0	0	7	0	0	7
Trenchers	0	0	0	0	0	0	0	3	4	0	7
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	0	7	0	0	0	2	4	0	13
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	4	0	12	0	0	0	6	22
Pumps	0	0	0	0	0	0	0	3	0	24	27
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	0	0	0	46	20	66	0	26	8	30	196
Heavy Duty Truck	0	0	0	3	0	0	11	20	36	0	69
Light Duty Truck	0	0	0	22	6	4	0	9	0	0	41
Water Truck	0	0	0	0	0	0	0	7	0	0	7
<b>TOTAL TRUCKS</b>	0	0	0	25	6	4	11	36	36	0	117
<b>GRAND TOTAL</b>	0	0	0	70	26	70	11	62	44	30	312
Non / Externally powered Equipment	0	0	0	0	0	0	0	0	0	0	0
Unknown / Not Equipment	0	0	0	1	0	0	0	4	0	0	5

**PROJECT: 06-339504****RESURFACE EXISTING HIGHWAY****PAGE 1/14****Project Identifiers**

Description	ASPHALT CONCRETE OVERLAY			
Project Type	#NAME?			
Contractor		Award Date		Original Days
RE	RAUL LOPEZ	Accepted Date	1/14/2005	Actual Days
Route	63	Award Amount	\$3,294,261	CCO Days
County	TUL	Final Amount	\$3,428,907	Weather Days
PM Start		Final Bridge Amount	#NAME?	Other Days
PM End		Final Cco Amount	\$404,436	
Diary Analysis Data		First date	1/0/1900	Equipment Days
Date Bin Increments	0	Last Date	1/13/2005	Days in diary span
Location Description	IN TULARE COUNTY IN VISALIA FROM MINERAL KING AVENUE TO HOUSTON AVENUE			

**Date Interval Specification**

Label	Date Interval									
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%
From %	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%
To %	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
From Date	4/23/04	5/19/04	6/15/04	7/11/04	8/7/04	9/2/04	9/29/04	10/25/04	11/21/04	12/17/04
To Date	5/19/04	6/15/04	7/11/04	8/7/04	9/2/04	9/29/04	10/25/04	11/21/04	12/17/04	1/13/05

**Activity Use By Phase (NONROAD + Trucks)**

Phase	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Land Clearing and Grubbing	0	0	0	0	0	0	0	0	0	0	0
Roadway Excavation	0	0	0	126	276	0	0	0	0	0	402
Structural Excavation	313	271	209	270	38	36	0	0	0	0	1,136
Base and Subbase	0	0	0	145	284	95	0	0	0	0	523
Structural Concrete	0	115	125	114	12	60	0	39	24	0	489
Paving	0	16	17	205	793	556	553	24	0	0	2,162
Drainage / Environmental / Landscapi	336	255	137	144	26	28	187	8	0	0	1,120
Striping / Painting	0	0	0	0	0	0	64	0	0	0	64
Traffic Control / Signage / Barriers	167	62	35	19	2	54	133	0	0	20	491
CCO	381	287	449	417	194	60	21	5	0	0	1,813
Other	15	43	77	28	32	30	40	65	24	0	354
Idle	0	5	15	14	3	0	0	0	0	0	36
Total non-idle	1211	1048	1048	1465	1655	919	997	141	48	20	8,551

PROJECT: 06-339504

RESURFACE EXISTING HIGHWAY

PAGE 2/14

## Total Activity Use (Idle equipment excluded)

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	8	0	0	0	0	0	0	0	0	0	8
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	40	36	0	0	0	76
Concrete/Industrial Saws	31	1	34	17	0	0	0	0	0	0	82
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	45	35	74	78	0	0	0	0	0	0	231
Graders	0	0	0	37	122	40	0	0	0	0	198
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	32	175	105	140	0	0	0	451
Paving Equipment	0	40	40	0	0	0	0	0	0	0	80
Plate Compactors	8	0	0	0	0	0	0	0	0	0	8
Rollers	0	0	0	90	349	199	151	0	0	0	788
Rough Terrain Forklifts	0	8	0	0	0	0	0	0	0	0	8
Rubber Tire Loaders	16	8	33	47	110	48	143	0	0	0	404
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	22	40	31	0	0	0	0	8	8	0	109
Skid Steer Loaders	24	0	0	16	0	0	0	0	0	0	40
Surfacing Equipment	0	0	0	16	101	0	0	0	0	0	117
Trenchers	4	0	0	0	0	0	0	0	0	0	4
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	218	281	231	340	216	123	8	16	8	0	1439
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	12	0	0	0	0	0	12
Other General Industrial Equipment	0	0	0	0	0	0	48	5	0	3	56
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	8	0	0	0	0	0	0	0	8
Air Compressors	37	18	20	0	0	8	24	0	0	0	107
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	40	0	0	40
<b>TOTAL NONROAD</b>	<b>412</b>	<b>431</b>	<b>470</b>	<b>671</b>	<b>1083</b>	<b>561</b>	<b>549</b>	<b>69</b>	<b>16</b>	<b>3</b>	<b>4264</b>
Heavy Duty Truck	239	208	211	345	143	102	47	0	0	9	1303
Light Duty Truck	560	401	361	430	409	256	402	72	32	8	2930
Water Truck	0	8	7	19	21	0	0	0	0	0	55
<b>TOTAL TRUCKS</b>	<b>799</b>	<b>617</b>	<b>579</b>	<b>794</b>	<b>572</b>	<b>358</b>	<b>448</b>	<b>72</b>	<b>32</b>	<b>17</b>	<b>4287</b>
<b>GRAND TOTAL</b>	<b>1211</b>	<b>1048</b>	<b>1048</b>	<b>1465</b>	<b>1655</b>	<b>919</b>	<b>997</b>	<b>141</b>	<b>48</b>	<b>20</b>	<b>8551</b>
Non-powered Equipment	6	24	14	36	76	16	0	0	0	0	171
Unknown / Not Equipment	8	0	5	75	261	167	127	48	24	0	714

[illegible]

**PROJECT: 06-339504****RESURFACE EXISTING HIGHWAY****PAGE 4/14****Roadway Excavation (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	6	0	0	0	0	0	0	6
Graders	0	0	0	10	39	0	0	0	0	0	49
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	0	0	21	0	0	0	0	0	21
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	0	8	20	0	0	0	0	0	28
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	0	6	45	0	0	0	0	0	51
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	0	16	38	0	0	0	0	0	54
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	12	0	0	0	0	0	12
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	0	0	0	46	174	0	0	0	0	0	220
Heavy Duty Truck	0	0	0	38	43	0	0	0	0	0	81
Light Duty Truck	0	0	0	43	46	0	0	0	0	0	89
Water Truck	0	0	0	0	13	0	0	0	0	0	13
<b>TOTAL TRUCKS</b>	0	0	0	81	102	0	0	0	0	0	182
<b>GRAND TOTAL</b>	0	0	0	126	276	0	0	0	0	0	402
Non / Externally powered Equipment	0	0	0	0	0	0	0	0	0	0	0
Unknown / Not Equipment	0	0	0	21	35	0	0	0	0	0	55



[illegible]

**PROJECT: 06-339504****RESURFACE EXISTING HIGHWAY****PAGE 6/14****Base and Subbase (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	0	0	0	22	55	40	0	0	0	0	117
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	0	11	55	23	0	0	0	0	89
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	0	10	8	0	0	0	0	0	18
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	0	58	76	32	0	0	0	0	166
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	0	0	0	100	194	95	0	0	0	0	389
Heavy Duty Truck	0	0	0	9	24	0	0	0	0	0	33
Light Duty Truck	0	0	0	36	66	0	0	0	0	0	102
Water Truck	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL TRUCKS</b>	0	0	0	45	90	0	0	0	0	0	135
<b>GRAND TOTAL</b>	0	0	0	145	284	95	0	0	0	0	523
Non / Externally powered Equipment	0	0	0	19	52	16	0	0	0	0	86
Unknown / Not Equipment	0	0	0	0	8	0	0	0	0	0	8

**PROJECT: 06-339504****RESURFACE EXISTING HIGHWAY****PAGE 7/14****Structural Concrete (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	4	0	0	0	0	0	0	0	4
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	3	2	1	0	0	0	0	0	0	6
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	40	40	0	0	0	0	0	0	0	80
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	0	0	0	0	0	0	0	0	0
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	8	6	0	0	0	0	0	0	0	14
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	8	0	0	0	0	0	8	8	0	24
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	6	14	36	0	32	0	0	0	0	88
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	0	65	66	37	0	32	0	8	8	0	216
Heavy Duty Truck	0	14	25	26	4	8	0	0	0	0	77
Light Duty Truck	0	28	34	51	8	20	0	31	16	0	188
Water Truck	0	8	0	0	0	0	0	0	0	0	8
<b>TOTAL TRUCKS</b>	0	50	59	77	12	28	0	31	16	0	273
<b>GRAND TOTAL</b>	0	115	125	114	12	60	0	39	24	0	489
Non / Externally powered Equipment	0	0	0	0	4	0	0	0	0	0	4
Unknown / Not Equipment	0	0	0	0	0	0	0	48	24	0	72

**PROJECT: 06-339504****RESURFACE EXISTING HIGHWAY****PAGE 8/14****Paving (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	40	36	0	0	0	76
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	0	0	0	0	4	0	0	0	0	0	4
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	32	167	104	140	0	0	0	442
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	0	69	252	172	151	0	0	0	643
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	2	9	64	41	81	0	0	0	196
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	0	10	52	0	0	0	0	0	62
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	4	13	36	19	0	0	0	0	72
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	8	0	0	8
<b>TOTAL NONROAD</b>	0	0	6	132	574	375	407	8	0	0	1501
Heavy Duty Truck	0	0	7	19	12	45	11	0	0	0	92
Light Duty Truck	0	16	4	46	208	137	135	16	0	0	561
Water Truck	0	0	0	9	0	0	0	0	0	0	9
<b>TOTAL TRUCKS</b>	0	16	11	73	219	182	146	16	0	0	662
<b>GRAND TOTAL</b>	0	16	17	205	793	556	553	24	0	0	2162
Non / Externally powered Equipment	0	0	0	0	16	0	0	0	0	0	16
Unknown / Not Equipment	0	0	0	54	216	167	127	0	0	0	563

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**PROJECT: 06-339504      RESURFACE EXISTING HIGHWAY      PAGE 11/14****Traffic Control / Signage / Barriers (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	8	0	0	0	0	0	0	0	0	0	8
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	0	0	0	0	2	0	0	0	0	0	2
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	1	0	0	0	0	1
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	0	0	0	0	0	0	0	0	0
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	0	0	0	1	4	0	0	0	5
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	22	0	0	0	0	0	0	0	0	0	22
Skid Steer Loaders	8	0	0	0	0	0	0	0	0	0	8
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	0	0	0	0	0	0	0	0	0
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	3	3
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	8	0	0	0	0	0	0	0	8
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>38</b>	<b>0</b>	<b>8</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>57</b>
Heavy Duty Truck	0	0	8	2	0	3	4	0	0	9	26
Light Duty Truck	129	62	19	17	0	49	125	0	0	8	408
Water Truck	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL TRUCKS</b>	<b>129</b>	<b>62</b>	<b>27</b>	<b>19</b>	<b>0</b>	<b>52</b>	<b>129</b>	<b>0</b>	<b>0</b>	<b>17</b>	<b>434</b>
<b>GRAND TOTAL</b>	<b>167</b>	<b>62</b>	<b>35</b>	<b>19</b>	<b>2</b>	<b>54</b>	<b>133</b>	<b>0</b>	<b>0</b>	<b>20</b>	<b>491</b>
Non / Externally powered Equipment	0	0	0	0	0	0	0	0	0	0	0
Unknown / Not Equipment	8	0	5	0	0	0	0	0	0	0	13

**PROJECT: 06-339504****RESURFACE EXISTING HIGHWAY****PAGE 12/14****CCO (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	1	23	17	0	0	0	0	0	0	41
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	18	8	24	23	0	0	0	0	0	0	73
Graders	0	0	0	5	22	0	0	0	0	0	27
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	8	0	0	0	0	0	8
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	0	11	22	1	0	0	0	0	33
Rough Terrain Forklifts	0	8	0	0	0	0	0	0	0	0	8
Rubber Tire Loaders	0	0	17	12	18	6	0	0	0	0	53
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	32	31	0	0	0	0	0	0	0	63
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	0	1	4	0	0	0	0	0	4
Trenchers	4	0	0	0	0	0	0	0	0	0	4
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	89	60	77	85	20	5	0	0	0	0	335
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	0	0	5	0	0	5
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	8	0	0	0	0	0	0	0	8
Air Compressors	35	13	12	0	0	8	10	0	0	0	78
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>146</b>	<b>122</b>	<b>192</b>	<b>153</b>	<b>92</b>	<b>20</b>	<b>10</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>738</b>
Heavy Duty Truck	93	74	109	158	41	30	6	0	0	0	510
Light Duty Truck	143	92	142	96	54	10	5	0	0	0	540
Water Truck	0	0	7	11	8	0	0	0	0	0	25
<b>TOTAL TRUCKS</b>	<b>236</b>	<b>165</b>	<b>258</b>	<b>264</b>	<b>102</b>	<b>40</b>	<b>11</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1075</b>
<b>GRAND TOTAL</b>	<b>381</b>	<b>287</b>	<b>449</b>	<b>417</b>	<b>194</b>	<b>60</b>	<b>21</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>1813</b>
Non / Externally powered Equipment	6	8	11	17	0	0	0	0	0	0	42
Unknown / Not Equipment	0	0	0	0	3	0	0	0	0	0	3



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**PROJECT: 06-342154**  
**1/14**

**CONSTRUCT FREEWAY / EXTRA LANE**

**PAGE**

**Project Identifiers**

Description	WIDEN EXISTING EXPRESSWAY				
Project Type	#NAME?				
Contractor	Ford Construction	Award Date	10/20/2000	Original Days	200
RE	MARK MENGONI	Accepted Date	3/18/2002	Actual Days	313
Route	41	Award Amount	\$9,674,380	CCO Days	17
County	FRE	Final Amount	\$10,868,729	Weather Days	15
PM Start	10.4	Final Bridge Amount	#NAME?	Other Days	58
PM End	26	Final Cco Amount	\$738,272		
Diary Analysis Data		First date	1/0/1900	Equipment Days	177
Date Bin Increments	0	Last Date	1/18/2002	Days in diary span	373
Location Description	IN FRESNO COUNTY NEAR EASTON FROM 1.2 KM NORTH OF ELKHORN AVENUE TO 0.2 KM SOUTH OF ADAMS AVENUE				

**Date Interval Specification**

Label	Date Interval									
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%
From %	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%
To %	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
From Date	1/10/01	2/16/01	3/25/01	5/1/01	6/8/01	7/15/01	8/21/01	9/28/01	11/4/01	12/11/01
To Date	2/16/01	3/25/01	5/1/01	6/8/01	7/15/01	8/21/01	9/28/01	11/4/01	12/11/01	1/18/02

**Activity Use By Phase (NONROAD + Trucks)**

Phase	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Land Clearing and Grubbing	44	0	0	0	0	0	0	23	0	0	67
Roadway Excavation	447	456	38	118	0	0	0	311	262	130	1,762
Structural Excavation	0	0	0	0	0	0	0	0	0	0	0
Base and Subbase	1655	314	18	252	13	484	224	424	0	132	3,515
Structural Concrete	12	211	196	163	0	0	0	0	0	8	590
Paving	0	0	0	127	0	596	1081	908	367	62	3,141
Drainage / Environmental / Landscapi	158	437	172	0	0	0	0	0	0	166	932
Striping / Painting	0	0	0	0	0	0	6	0	0	249	255
Traffic Control / Signage / Barriers	0	7	83	20	0	0	0	65	100	354	629
CCO	5	20	98	303	0	34	36	96	22	88	702
Other	24	3	148	0	0	0	0	0	33	69	276
Idle	0	0	0	0	0	0	0	0	0	0	0
Total non-idle	2345	1447	752	983	13	1114	1347	1827	784	1257	11,868

**PROJECT: 06-342154**  
**2/14**

**CONSTRUCT FREEWAY / EXTRA LANE**

**PAGE**

**Total Activity Use (Idle equipment excluded)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	12	0	0	0	0	0	0	0	0	32	44
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	6	0	0	128	226	0	5	0	365
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	202	56	0	0	0	0	0	28	0	0	286
Excavators	0	0	51	0	0	0	0	0	0	0	51
Graders	275	168	8	81	7	0	72	246	85	72	1013
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	294	195	304	82	7	882
Paving Equipment	0	0	0	0	0	0	0	8	0	0	8
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	78	87	8	17	0	18	24	435	104	0	771
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	17	17
Rubber Tire Loaders	64	167	149	87	0	160	95	8	24	64	817
Scrapers	1097	232	8	65	0	0	24	138	20	0	1584
Signal Boards	0	0	0	0	0	0	0	0	0	9	9
Skid Steer Loaders	0	0	0	8	0	0	0	0	0	0	8
Surfacing Equipment	0	0	8	0	0	0	0	44	16	4	72
Trenchers	0	0	0	16	0	0	0	0	0	0	16
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	76	176	118	156	0	0	0	109	232	206	1073
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	18	8	0	26
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	35	35
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	98	98
Generator Set	0	0	1	0	0	0	0	0	0	0	1
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	6	0	0	0	0	0	0	0	6
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	6	6
<b>TOTAL NONROAD</b>	<b>1803</b>	<b>886</b>	<b>362</b>	<b>430</b>	<b>7</b>	<b>600</b>	<b>636</b>	<b>1338</b>	<b>576</b>	<b>549</b>	<b>7186</b>
Heavy Duty Truck	142	165	88	178	0	99	297	156	136	483	1744
Light Duty Truck	196	248	231	311	0	405	365	251	72	225	2304
Water Truck	204	148	71	64	7	10	49	82	0	0	635
<b>TOTAL TRUCKS</b>	<b>542</b>	<b>561</b>	<b>390</b>	<b>553</b>	<b>7</b>	<b>514</b>	<b>711</b>	<b>489</b>	<b>208</b>	<b>708</b>	<b>4682</b>
<b>GRAND TOTAL</b>	<b>2345</b>	<b>1447</b>	<b>752</b>	<b>983</b>	<b>13</b>	<b>1114</b>	<b>1347</b>	<b>1827</b>	<b>784</b>	<b>1257</b>	<b>11868</b>
Non-powered Equipment	0	0	0	0	0	0	0	0	0	25	25
Unknown / Not Equipment	171	136	272	58	0	20	80	34	0	146	916

**3/14**

**Land Clearing and Grubbing (hours)**

[illegible]

**PROJECT: 06-342154****CONSTRUCT FREEWAY / EXTRA LANE****PAGE****4/14****Roadway Excavation (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	24	0	0	0	0	0	0	0	0	24
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	143	104	0	0	0	0	0	116	54	32	449
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	30	0	0	0	0	0	0	0	0	30
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	0	0	0	0	0	8	24	32	64
Scrapers	231	184	6	2	0	0	0	74	20	0	517
Signal Boards	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	8	0	0	0	0	26	0	4	38
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	8	68	0	0	0	40	132	58	306
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	18	0	0	18
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>373</b>	<b>342</b>	<b>22</b>	<b>70</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>282</b>	<b>230</b>	<b>126</b>	<b>1445</b>
Heavy Duty Truck	0	0	0	0	0	0	0	0	0	4	4
Light Duty Truck	64	58	4	28	0	0	0	25	32	0	211
Water Truck	10	56	12	20	0	0	0	4	0	0	102
<b>TOTAL TRUCKS</b>	<b>74</b>	<b>114</b>	<b>16</b>	<b>48</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>29</b>	<b>32</b>	<b>4</b>	<b>317</b>
<b>GRAND TOTAL</b>	<b>447</b>	<b>456</b>	<b>38</b>	<b>118</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>311</b>	<b>262</b>	<b>130</b>	<b>1762</b>
Non / Externally powered Equipment	0	0	0	0	0	0	0	0	0	0	0
Unknown / Not Equipment	139	104	60	30	0	0	0	5	0	0	338

5/14

### Structural Excavation (hours)

[illegible]

**PROJECT: 06-342154****CONSTRUCT FREEWAY / EXTRA LANE****PAGE****6/14****Base and Subbase (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	202	32	0	0	0	0	0	24	0	0	258
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	122	64	8	48	7	0	72	118	0	40	479
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	180	0	0	0	0	180
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	78	40	0	0	0	18	24	80	0	0	240
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	8	0	0	0	0	89	0	0	0	32	129
Scrapers	838	48	2	38	0	0	24	60	0	0	1010
Signal Boards	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	16	8	0	8	0	0	0	10	0	44	86
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>1264</b>	<b>192</b>	<b>10</b>	<b>94</b>	<b>7</b>	<b>287</b>	<b>120</b>	<b>292</b>	<b>0</b>	<b>116</b>	<b>2381</b>
Heavy Duty Truck	106	0	0	37	0	21	0	0	0	8	172
Light Duty Truck	91	38	4	101	0	176	56	54	0	8	528
Water Truck	194	84	4	20	7	0	48	78	0	0	435
<b>TOTAL TRUCKS</b>	<b>391</b>	<b>122</b>	<b>8</b>	<b>158</b>	<b>7</b>	<b>197</b>	<b>104</b>	<b>132</b>	<b>0</b>	<b>16</b>	<b>1134</b>
<b>GRAND TOTAL</b>	<b>1655</b>	<b>314</b>	<b>18</b>	<b>252</b>	<b>13</b>	<b>484</b>	<b>224</b>	<b>424</b>	<b>0</b>	<b>132</b>	<b>3515</b>
Non / Externally powered Equipment	0	0	0	0	0	0	0	0	0	0	0
Unknown / Not Equipment	24	32	4	10	0	0	0	13	0	0	83



**PROJECT: 06-342154****CONSTRUCT FREEWAY / EXTRA LANE****PAGE****7/14****Structural Concrete (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	0	0	0	0	0	0	0	0	0
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	4	33	26	48	0	0	0	0	0	0	111
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	2	59	5	32	0	0	0	0	0	0	97
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	6	0	0	0	0	0	0	0	6
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>6</b>	<b>92</b>	<b>37</b>	<b>80</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>214</b>
Heavy Duty Truck	6	115	65	58	0	0	0	0	0	8	252
Light Duty Truck	0	5	60	26	0	0	0	0	0	0	91
Water Truck	0	0	34	0	0	0	0	0	0	0	34
<b>TOTAL TRUCKS</b>	<b>6</b>	<b>120</b>	<b>159</b>	<b>84</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>376</b>
<b>GRAND TOTAL</b>	<b>12</b>	<b>211</b>	<b>196</b>	<b>163</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>590</b>
Non / Externally powered Equipment	0	0	0	0	0	0	0	0	0	0	0
Unknown / Not Equipment	6	0	24	0	0	0	0	0	0	0	30

**PROJECT: 06-342154****CONSTRUCT FREEWAY / EXTRA LANE****PAGE****8/14****Paving (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	128	226	0	0	0	354
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	0	0	0	0	0	0	0	0	25	0	25
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	114	195	304	82	7	702
Paving Equipment	0	0	0	0	0	0	0	8	0	0	8
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	0	0	0	0	0	355	104	0	459
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	0	0	0	71	95	0	0	0	166
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	0	0	0	0	0	18	16	0	34
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	0	0	0	0	0	51	84	53	188
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	8	0	8
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	0	0	0	0	0	313	516	736	319	60	1944
Heavy Duty Truck	0	0	0	41	0	70	297	100	48	0	556
Light Duty Truck	0	0	0	86	0	213	268	72	0	2	641
Water Truck	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL TRUCKS</b>	0	0	0	127	0	283	565	172	48	2	1197
<b>GRAND TOTAL</b>	0	0	0	127	0	596	1081	908	367	62	3141
Non / Externally powered Equipment	0	0	0	0	0	0	0	0	0	0	0
Unknown / Not Equipment	0	0	0	0	0	20	80	16	0	16	132

**PROJECT: 06-342154****CONSTRUCT FREEWAY / EXTRA LANE****PAGE****9/14****Drainage / Environmental / Landscaping (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	12	0	0	0	0	0	0	0	0	32	44
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	16	8	0	0	0	0	0	0	0	24
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	17	17
Rubber Tire Loaders	52	133	65	0	0	0	0	0	0	0	250
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	54	99	33	0	0	0	0	0	0	0	186
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	98	98
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>118</b>	<b>248</b>	<b>106</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>147</b>	<b>618</b>
Heavy Duty Truck	30	40	4	0	0	0	0	0	0	19	93
Light Duty Truck	10	141	55	0	0	0	0	0	0	0	206
Water Truck	0	8	8	0	0	0	0	0	0	0	16
<b>TOTAL TRUCKS</b>	<b>40</b>	<b>189</b>	<b>67</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>19</b>	<b>315</b>
<b>GRAND TOTAL</b>	<b>158</b>	<b>437</b>	<b>172</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>166</b>	<b>932</b>
Non / Externally powered Equipment	0	0	0	0	0	0	0	0	0	25	25
Unknown / Not Equipment	2	0	23	0	0	0	0	0	0	90	115

10/14

**Striping / Painting (hours)**

[illegible]

**PROJECT: 06-342154****CONSTRUCT FREEWAY / EXTRA LANE****PAGE****11/14****Traffic Control / Signage / Barriers (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	3	0	0	0	0	0	0	0	3
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	0	0	0	0	0	0	0	0	0
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	19	1	0	0	0	0	0	0	20
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	0	0	8	0	0	0	0	0	0	8
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	8	0	0	0	0	0	0	8
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	1	22	1	0	0	0	8	0	0	32
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	0	1	44	18	0	0	0	8	0	0	71
Heavy Duty Truck	0	6	4	1	0	0	0	30	74	249	364
Light Duty Truck	0	0	35	1	0	0	0	27	26	105	194
Water Truck	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL TRUCKS</b>	0	6	39	2	0	0	0	57	100	354	558
<b>GRAND TOTAL</b>	0	7	83	20	0	0	0	65	100	354	629
Non / Externally powered Equipment	0	0	0	0	0	0	0	0	0	0	0
Unknown / Not Equipment	0	0	101	0	0	0	0	0	0	0	101

**PROJECT: 06-342154****CONSTRUCT FREEWAY / EXTRA LANE****PAGE****12/14****CCO (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	6	0	0	0	0	0	0	0	6
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	20	0	0	0	0	0	0	0	20
Graders	0	0	0	33	0	0	0	0	6	0	39
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	0	17	0	0	0	0	0	0	17
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	2	39	0	0	0	0	0	0	40
Scrapers	0	0	0	25	0	0	0	0	0	0	25
Signal Boards	0	0	0	0	0	0	0	0	0	9	9
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	8	0	0	0	0	0	0	8
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	10	27	47	0	0	0	0	8	14	106
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	1	0	0	0	0	0	0	0	1
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	0	10	55	169	0	0	0	0	14	23	270
Heavy Duty Truck	0	4	7	42	0	8	0	26	4	39	130
Light Duty Truck	5	7	33	69	0	16	35	70	4	26	265
Water Truck	0	0	3	24	0	10	1	0	0	0	38
<b>TOTAL TRUCKS</b>	5	11	43	135	0	34	36	96	8	65	432
<b>GRAND TOTAL</b>	5	20	98	303	0	34	36	96	22	88	702
Non / Externally powered Equipment	0	0	0	0	0	0	0	0	0	0	0
Unknown / Not Equipment	0	0	30	18	0	0	0	0	0	4	52

**PROJECT: 06-342154****CONSTRUCT FREEWAY / EXTRA LANE****PAGE****13/14****Other (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	5	0	5
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	29	0	0	0	0	0	0	0	29
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	1	0	0	0	0	0	0	0	0	1
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	2	37	0	0	0	0	0	0	0	39
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	4	0	24	0	0	0	0	0	8	37	73
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>4</b>	<b>3</b>	<b>90</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>13</b>	<b>37</b>	<b>146</b>
Heavy Duty Truck	0	0	8	0	0	0	0	0	10	8	26
Light Duty Truck	20	0	40	0	0	0	0	0	10	24	94
Water Truck	0	0	10	0	0	0	0	0	0	0	10
<b>TOTAL TRUCKS</b>	<b>20</b>	<b>0</b>	<b>58</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>20</b>	<b>32</b>	<b>130</b>
<b>GRAND TOTAL</b>	<b>24</b>	<b>3</b>	<b>148</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>33</b>	<b>69</b>	<b>276</b>
Non / Externally powered Equipment	0	0	0	0	0	0	0	0	0	0	0
Unknown / Not Equipment	0	0	31	0	0	0	0	0	0	12	43

14/14

Idle (hours)

[illegible]



**PROJECT: 06-467804****CONSTRUCT MEDIAN, THRIE BEAM BARRIER****PAGE 1/14****Project Identifiers**

Description	CONSTRUCT MEDIAN BARRIERS				
Project Type	#NAME?				
Contractor	Standard Engineering	Award Date	6/7/2002	Original Days	70
RE	SHAEFFER, MARGARET	Accepted Date	6/9/2003	Actual Days	226
Route	41	Award Amount	\$507,330	CCO Days	4
County	FRE	Final Amount	\$548,070	Weather Days	0
PM Start	34.8,48.9	Final Bridge Amount	#NAME?	Other Days	152
PM End	35.6,50.2	Final Cco Amount	\$40,953		
Diary Analysis Data		First date	1/0/1900	Equipment Days	84
Date Bin Increments	0	Last Date	5/28/2003	Days in diary span	317
Location Description	IN FRESNO COUNTY IN FRESNO AT VARIOUS LOCATIONS				

**Date Interval Specification**

Label	Date Interval									
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%
From %	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%
To %	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
From Date	7/15/02	8/15/02	9/16/02	10/18/02	11/18/02	12/20/02	1/21/03	2/21/03	3/25/03	4/26/03
To Date	8/15/02	9/16/02	10/18/02	11/18/02	12/20/02	1/21/03	2/21/03	3/25/03	4/26/03	5/28/03

**Activity Use By Phase (NONROAD + Trucks)**

Phase	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Land Clearing and Grubbing	0	0	0	0	0	0	0	0	0	0	0
Roadway Excavation	297	265	206	170	0	0	0	0	0	0	937
Structural Excavation	0	0	0	0	0	0	0	0	0	0	0
Base and Subbase	167	160	31	0	0	0	0	0	0	0	358
Structural Concrete	0	0	0	0	0	0	0	0	0	0	0
Paving	0	0	0	2	0	0	0	0	0	0	2
Drainage / Environmental / Landscapi	0	0	0	0	0	0	0	0	0	0	0
Striping / Painting	0	0	0	0	0	0	0	0	0	0	0
Traffic Control / Signage / Barriers	84	429	255	238	26	0	0	0	0	0	1,032
CCO	37	48	2	0	15	0	0	0	0	92	194
Other	257	113	13	30	8	0	0	0	0	0	421
Idle	0	0	0	0	0	0	0	0	0	0	0
Total non-idle	841	1014	507	440	49	0	0	0	0	92	2,943

**PROJECT: 06-467804****CONSTRUCT MEDIAN, THRIE BEAM BARRIER****PAGE 2/14****Total Activity Use (Idle equipment excluded)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	27	26	0	20	4	0	0	0	0	0	77
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	8	8
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	96	59	0	2	0	0	0	0	0	0	157
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	10	0	0	0	0	0	0	0	0	10
Rollers	103	43	15	0	0	0	0	0	0	16	177
Rough Terrain Forklifts	0	8	0	0	0	0	0	0	0	0	8
Rubber Tire Loaders	127	79	16	0	0	0	0	0	0	0	221
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	75	239	0	0	0	0	0	0	0	0	314
Skid Steer Loaders	28	0	0	16	0	0	0	0	0	0	44
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	3	0	0	0	0	4	7
Tractors / Loaders / Backhoes	0	20	78	102	11	0	0	0	0	12	223
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	3	0	0	0	0	0	0	0	3
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>455</b>	<b>484</b>	<b>112</b>	<b>140</b>	<b>18</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>40</b>	<b>1248</b>
Heavy Duty Truck	73	195	147	148	4	0	0	0	0	4	571
Light Duty Truck	197	238	152	108	24	0	0	0	0	48	767
Water Truck	117	98	96	44	3	0	0	0	0	0	357
<b>TOTAL TRUCKS</b>	<b>387</b>	<b>531</b>	<b>395</b>	<b>300</b>	<b>31</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>52</b>	<b>1695</b>
<b>GRAND TOTAL</b>	<b>841</b>	<b>1014</b>	<b>507</b>	<b>440</b>	<b>49</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>92</b>	<b>2943</b>
Non-powered Equipment	27	20	0	0	0	0	0	0	0	28	75
Unknown / Not Equipment	154	72	109	24	15	0	0	0	0	0	374

## CONSTRUCT MEDIAN, THRIE BEAM BARRIER

**PAGE 3/14**

**Land Clearing and Grubbing (hours)**

[illegible]

**PROJECT: 06-467804****CONSTRUCT MEDIAN, THRIE BEAM BARRIER****PAGE 4/14****Roadway Excavation (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	43	32	0	2	0	0	0	0	0	0	77
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	63	28	8	0	0	0	0	0	0	0	99
Rough Terrain Forklifts	0	8	0	0	0	0	0	0	0	0	8
Rubber Tire Loaders	39	52	16	0	0	0	0	0	0	0	106
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	33	72	0	0	0	0	0	0	0	0	105
Skid Steer Loaders	14	0	0	0	0	0	0	0	0	0	14
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	72	92	0	0	0	0	0	0	164
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>191</b>	<b>192</b>	<b>96</b>	<b>94</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>572</b>
Heavy Duty Truck	8	6	13	32	0	0	0	0	0	0	59
Light Duty Truck	29	23	8	0	0	0	0	0	0	0	60
Water Truck	70	44	89	44	0	0	0	0	0	0	247
<b>TOTAL TRUCKS</b>	<b>106</b>	<b>73</b>	<b>110</b>	<b>76</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>365</b>
<b>GRAND TOTAL</b>	<b>297</b>	<b>265</b>	<b>206</b>	<b>170</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>937</b>
Non / Externally powered Equipment	0	0	0	0	0	0	0	0	0	0	0
Unknown / Not Equipment	67	24	72	24	0	0	0	0	0	0	187

## CONSTRUCT MEDIAN, THRIE BEAM BARRIER

**PAGE 5/14**

### Structural Excavation (hours)

[illegible]

**PROJECT: 06-467804****CONSTRUCT MEDIAN, THRIE BEAM BARRIER****PAGE 6/14****Base and Subbase (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	53	27	0	0	0	0	0	0	0	0	80
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	40	15	7	0	0	0	0	0	0	0	62
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	12	8	0	0	0	0	0	0	0	0	20
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	61	0	0	0	0	0	0	0	0	61
Skid Steer Loaders	8	0	0	0	0	0	0	0	0	0	8
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	8	6	0	0	0	0	0	0	0	14
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>113</b>	<b>119</b>	<b>13</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>245</b>
Heavy Duty Truck	0	8	3	0	0	0	0	0	0	0	11
Light Duty Truck	15	0	8	0	0	0	0	0	0	0	23
Water Truck	39	33	7	0	0	0	0	0	0	0	79
<b>TOTAL TRUCKS</b>	<b>54</b>	<b>41</b>	<b>18</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>113</b>
<b>GRAND TOTAL</b>	<b>167</b>	<b>160</b>	<b>31</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>358</b>
Non / Externally powered Equipment	0	0	0	0	0	0	0	0	0	0	0
Unknown / Not Equipment	55	48	16	0	0	0	0	0	0	0	119

## CONSTRUCT MEDIAN, THRIE BEAM BARRIER

**PAGE 7/14**

### Structural Concrete (hours)

[illegible]

**PROJECT: 06-467804****CONSTRUCT MEDIAN, THRIE BEAM BARRIER****PAGE 8/14****Paving (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	0	0	0	0	0	0	0	0	0
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	0	0	0	0	0	0	0	0	0
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	0	0	0	0	0	0	0	0	0
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
TOTAL NONROAD	0	0	0	0	0	0	0	0	0	0	0
Heavy Duty Truck	0	0	0	0	0	0	0	0	0	0	0
Light Duty Truck	0	0	0	2	0	0	0	0	0	0	2
Water Truck	0	0	0	0	0	0	0	0	0	0	0
TOTAL TRUCKS	0	0	0	2	0	0	0	0	0	0	2
GRAND TOTAL	0	0	0	2	0	0	0	0	0	0	2
Non / Externally powered Equipment	0	0	0	0	0	0	0	0	0	0	0
Unknown / Not Equipment	0	0	13	0	0	0	0	0	0	0	13



## CONSTRUCT MEDIAN, THRIE BEAM BARRIER

**PAGE 9/14**

**Drainage / Environmental / Landscaping (hours)**

[illegible]

## CONSTRUCT MEDIAN, THRIE BEAM BARRIER

**PAGE 10/14**

**Striping / Painting (hours)**

[illegible]

**PROJECT: 06-467804****CONSTRUCT MEDIAN, THRIE BEAM BARRIER****PAGE 11/14****Traffic Control / Signage / Barriers (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	20	4	0	0	0	0	0	24
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	0	0	0	0	0	0	0	0	0
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	0	0	0	0	0	0	0	0	0
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	21	106	0	0	0	0	0	0	0	0	127
Skid Steer Loaders	0	0	0	16	0	0	0	0	0	0	16
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	0	0	0	0	0	0	0	0	0
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	3	0	0	0	0	0	0	0	3
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>21</b>	<b>106</b>	<b>3</b>	<b>36</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>170</b>
Heavy Duty Truck	11	141	118	104	4	0	0	0	0	0	378
Light Duty Truck	52	182	134	98	18	0	0	0	0	0	484
Water Truck	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL TRUCKS</b>	<b>63</b>	<b>323</b>	<b>252</b>	<b>202</b>	<b>22</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>862</b>
<b>GRAND TOTAL</b>	<b>84</b>	<b>429</b>	<b>255</b>	<b>238</b>	<b>26</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1032</b>
Non / Externally powered Equipment	0	0	0	0	0	0	0	0	0	0	0
Unknown / Not Equipment	0	0	8	0	0	0	0	0	0	0	8

**PROJECT: 06-467804****CONSTRUCT MEDIAN, THRIE BEAM BARRIER****PAGE 12/14****CCO (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	8	8
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	10	0	0	0	0	0	0	0	0	10
Rollers	0	0	0	0	0	0	0	0	0	16	16
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	21	16	0	0	0	0	0	0	0	0	37
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	3	0	0	0	0	4	7
Tractors / Loaders / Backhoes	0	0	0	0	5	0	0	0	0	12	17
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>21</b>	<b>26</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>40</b>	<b>95</b>
Heavy Duty Truck	0	0	0	0	0	0	0	0	0	4	4
Light Duty Truck	16	13	2	0	4	0	0	0	0	48	83
Water Truck	0	9	0	0	3	0	0	0	0	0	12
<b>TOTAL TRUCKS</b>	<b>16</b>	<b>22</b>	<b>2</b>	<b>0</b>	<b>7</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>52</b>	<b>99</b>
<b>GRAND TOTAL</b>	<b>37</b>	<b>48</b>	<b>2</b>	<b>0</b>	<b>15</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>92</b>	<b>194</b>
Non / Externally powered Equipment	0	0	0	0	0	0	0	0	0	28	28
Unknown / Not Equipment	0	0	0	0	7	0	0	0	0	0	7

**PROJECT: 06-467804****CONSTRUCT MEDIAN, THRIE BEAM BARRIER****PAGE 13/14****Other (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	27	26	0	0	0	0	0	0	0	0	53
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	0	0	0	0	0	0	0	0	0
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	55	3	0	0	0	0	0	0	0	0	58
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	21	0	0	0	0	0	0	0	0	0	21
Skid Steer Loaders	6	0	0	0	0	0	0	0	0	0	6
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	12	0	10	6	0	0	0	0	0	28
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>109</b>	<b>41</b>	<b>0</b>	<b>10</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>166</b>
Heavy Duty Truck	54	40	13	12	0	0	0	0	0	0	119
Light Duty Truck	86	20	0	8	2	0	0	0	0	0	116
Water Truck	8	12	0	0	0	0	0	0	0	0	20
<b>TOTAL TRUCKS</b>	<b>148</b>	<b>72</b>	<b>13</b>	<b>20</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>255</b>
<b>GRAND TOTAL</b>	<b>257</b>	<b>113</b>	<b>13</b>	<b>30</b>	<b>8</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>421</b>
Non / Externally powered Equipment	27	20	0	0	0	0	0	0	0	0	47
Unknown / Not Equipment	32	0	0	0	8	0	0	0	0	0	40

## CONSTRUCT MEDIAN, THRIE BEAM BARRIER

**PAGE 14/14**

Idle (hours)

[illegible]

**PROJECT: 11-1734U4****PAVEMENT REHABILITATION / WIDENING****PAGE 1/14****Project Identifiers**

Description	PAVEMENT REHABILITATION				
Project Type	#NAME?				
Contractor	Granite Construction Company	Award Date	11/6/2001	Original Days	300
RE	AKHONDZADEH, RAHIM	Accepted Date	3/6/2003	Actual Days	310
Route	98	Award Amount	\$9,271,418	CCO Days	0
County	IMP	Final Amount	\$11,324,489	Weather Days	4
PM Start	1.8	Final Bridge Amount	#NAME?	Other Days	0
PM End	35.2	Final Cco Amount	\$1,916,956		
Diary Analysis Data		First date	1/0/1900	Equipment Days	201
Date Bin Increments	0	Last Date	11/8/2002	Days in diary span	311
Location Description	IN IMPERIAL COUNTY NEAR OCOTILLO FROM 0.6 KM W OF IMPERIAL HWY TO 0.2 KM W OF THE WESTSIDE MAIN CANAL AND NEAR CALEXICO FROM 0.6 KM E OF THE EADST HIGHLINE CANAL				

**Date Interval Specification**

Label	Date Interval									
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%
From %	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%
To %	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
From Date	1/1/02	2/1/02	3/4/02	4/4/02	5/5/02	6/5/02	7/6/02	8/6/02	9/6/02	10/7/02
To Date	2/1/02	3/4/02	4/4/02	5/5/02	6/5/02	7/6/02	8/6/02	9/6/02	10/7/02	11/8/02

**Activity Use By Phase (NONROAD + Trucks)**

Phase	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Land Clearing and Grubbing	15	19	9	0	0	0	0	0	0	0	43
Roadway Excavation	1306	1383	528	799	0	11	406	232	728	407	5,798
Structural Excavation	0	0	0	0	0	0	0	0	0	0	0
Base and Subbase	212	545	622	527	1481	1476	112	63	0	0	5,036
Structural Concrete	0	0	15	13	0	27	122	421	60	383	1,040
Paving	0	3	260	2181	32	678	1243	1261	858	140	6,654
Drainage / Environmental / Landscaping	24	0	0	0	19	0	0	5	0	0	48
Striping / Painting	0	8	2	0	20	0	0	143	0	250	423
Traffic Control / Signage / Barriers	1011	1242	960	1437	1238	1415	1421	1302	1199	920	12,143
CCO	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	142	0	62	0	16	0	9	229
Idle	66	24	23	21	0	168	10	2	0	6	319
Total non-idle	2567	3199	2395	5097	2789	3668	3303	3442	2844	2109	31,412

**PROJECT: 11-1734U4****PAVEMENT REHABILITATION / WIDENING****PAGE 2/14****Total Activity Use (Idle equipment excluded)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	8	0	0	0	0	0	0	0	8
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	70	140	78	0	0	0	0	0	0	0	288
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	334	494	271	348	350	328	111	64	164	102	2564
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	38	439	22	86	143	115	85	0	926
Paving Equipment	0	0	9	26	22	84	125	107	80	0	452
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	172	310	248	719	226	464	511	440	383	45	3516
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	82	99	93	39	133	334	70	129	86	48	1111
Scrapers	129	169	80	0	154	180	74	24	85	48	942
Signal Boards	678	838	663	985	886	836	950	852	810	580	8077
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	50	333	0	0	17	61	0	149	609
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	6	0	0	0	17	19	0	0	41
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	63	128	108	304	177	196	162	129	150	56	1472
Other General Industrial Equipment	0	0	0	0	0	14	0	0	0	28	42
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	2	0	0	0	0	0	0	24	26
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>1527</b>	<b>2176</b>	<b>1651</b>	<b>3191</b>	<b>1969</b>	<b>2522</b>	<b>2177</b>	<b>1937</b>	<b>1841</b>	<b>1079</b>	<b>20069</b>
Heavy Duty Truck	169	199	192	498	225	357	410	389	378	237	3052
Light Duty Truck	342	397	321	957	387	567	503	871	371	612	5326
Water Truck	529	428	231	452	209	222	214	245	255	181	2965
<b>TOTAL TRUCKS</b>	<b>1040</b>	<b>1023</b>	<b>744</b>	<b>1907</b>	<b>821</b>	<b>1146</b>	<b>1126</b>	<b>1505</b>	<b>1003</b>	<b>1030</b>	<b>11343</b>
<b>GRAND TOTAL</b>	<b>2567</b>	<b>3199</b>	<b>2395</b>	<b>5097</b>	<b>2789</b>	<b>3668</b>	<b>3303</b>	<b>3442</b>	<b>2844</b>	<b>2109</b>	<b>31412</b>
Non-powered Equipment	357	519	307	555	379	378	311	380	294	72	3551
Unknown / Not Equipment	267	142	0	41	19	32	3	0	0	4	507



[illegible]

**PROJECT: 11-1734U4****PAVEMENT REHABILITATION / WIDENING****PAGE 4/14****Roadway Excavation (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	70	118	39	0	0	0	0	0	0	0	227
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	240	318	107	126	0	3	82	33	164	84	1155
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	146	208	86	130	0	0	15	12	68	33	697
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	68	62	43	2	0	0	35	73	72	36	390
Scrapers	121	142	41	0	0	3	52	17	85	38	498
Signal Boards	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	29	166	0	0	0	0	0	7	202
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	0	0	0	0	9	0	0	0	9
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	40	43	15	1	0	0	45	17	76	38	275
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>684</b>	<b>889</b>	<b>359</b>	<b>425</b>	<b>0</b>	<b>6</b>	<b>237</b>	<b>151</b>	<b>464</b>	<b>236</b>	<b>3450</b>
Heavy Duty Truck	0	0	0	0	0	0	49	0	0	0	49
Light Duty Truck	117	115	58	170	0	3	55	40	90	55	701
Water Truck	505	379	112	205	0	2	66	41	174	116	1599
<b>TOTAL TRUCKS</b>	<b>622</b>	<b>494</b>	<b>169</b>	<b>374</b>	<b>0</b>	<b>5</b>	<b>169</b>	<b>81</b>	<b>264</b>	<b>171</b>	<b>2349</b>
<b>GRAND TOTAL</b>	<b>1306</b>	<b>1383</b>	<b>528</b>	<b>799</b>	<b>0</b>	<b>11</b>	<b>406</b>	<b>232</b>	<b>728</b>	<b>407</b>	<b>5798</b>
Non / Externally powered Equipment	0	0	0	0	0	0	0	0	0	0	0
Unknown / Not Equipment	112	93	0	41	0	0	0	0	0	4	249

## PAVEMENT REHABILITATION / WIDENING

**PAGE 5/14**

### Structural Excavation (hours)

[illegible]

**PROJECT: 11-1734U4****PAVEMENT REHABILITATION / WIDENING****PAGE 6/14****Base and Subbase (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	22	39	0	0	0	0	0	0	0	61
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	80	157	156	222	350	318	23	15	0	0	1319
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	17	0	0	0	0	0	17
Paving Equipment	0	0	0	0	17	0	0	0	0	0	17
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	26	103	95	49	209	164	10	6	0	0	660
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	6	17	44	10	133	270	10	3	0	0	492
Scrapers	8	27	40	0	154	175	15	8	0	0	426
Signal Boards	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	0	0	0	0	0	0	0	0	0
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	23	85	75	163	177	165	17	8	0	0	711
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>143</b>	<b>409</b>	<b>447</b>	<b>443</b>	<b>1057</b>	<b>1091</b>	<b>73</b>	<b>39</b>	<b>0</b>	<b>0</b>	<b>3701</b>
Heavy Duty Truck	0	0	0	0	61	64	0	0	0	0	125
Light Duty Truck	45	87	74	84	155	107	14	9	0	0	574
Water Truck	24	49	101	0	209	214	25	15	0	0	637
<b>TOTAL TRUCKS</b>	<b>69</b>	<b>136</b>	<b>175</b>	<b>84</b>	<b>425</b>	<b>385</b>	<b>39</b>	<b>24</b>	<b>0</b>	<b>0</b>	<b>1335</b>
<b>GRAND TOTAL</b>	<b>212</b>	<b>545</b>	<b>622</b>	<b>527</b>	<b>1481</b>	<b>1476</b>	<b>112</b>	<b>63</b>	<b>0</b>	<b>0</b>	<b>5036</b>
Non / Externally powered Equipment	0	0	0	0	0	0	0	0	0	0	0
Unknown / Not Equipment	19	12	0	0	19	0	0	0	0	0	49

## PAVEMENT REHABILITATION / WIDENING

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### Structural Concrete (hours)

[illegible]

## PAVEMENT REHABILITATION / WIDENING

**PAGE 8/14**

**Paving (hours)**

[illegible]

**PROJECT: 11-1734U4      PAVEMENT REHABILITATION / WIDENING**  
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**Drainage / Environmental / Landscaping (hours)**[illegible]

## PAVEMENT REHABILITATION / WIDENING

**PAGE 10/14**

**Striping / Painting (hours)**

[illegible]



**PROJECT: 11-1734U4****PAVEMENT REHABILITATION / WIDENING****PAGE 11/14****Traffic Control / Signage / Barriers (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	0	0	0	0	0	0	0	0	0
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	13	4	0	0	0	0	0	3	0	20
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	678	838	663	985	866	836	950	852	810	580	8057
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	0	0	0	0	0	0	0	0	0
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	0	0	0	0	0	0	0	0	0
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	0	0	0	0	0	0	0	0
Other General Industrial Equipment	0	0	0	0	0	0	0	0	0	0	0
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	0	0
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	<b>678</b>	<b>851</b>	<b>667</b>	<b>985</b>	<b>866</b>	<b>836</b>	<b>950</b>	<b>852</b>	<b>813</b>	<b>580</b>	<b>8077</b>
Heavy Duty Truck	169	199	129	200	159	265	98	76	185	80	1559
Light Duty Truck	164	192	164	253	213	314	373	374	201	261	2507
Water Truck	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL TRUCKS</b>	<b>333</b>	<b>391</b>	<b>293</b>	<b>452</b>	<b>373</b>	<b>579</b>	<b>471</b>	<b>450</b>	<b>386</b>	<b>341</b>	<b>4066</b>
<b>GRAND TOTAL</b>	<b>1011</b>	<b>1242</b>	<b>960</b>	<b>1437</b>	<b>1238</b>	<b>1415</b>	<b>1421</b>	<b>1302</b>	<b>1199</b>	<b>920</b>	<b>12143</b>
Non / Externally powered Equipment	357	519	305	555	379	378	311	374	294	42	3513
Unknown / Not Equipment	137	38	0	0	0	0	3	0	0	0	177

## PAVEMENT REHABILITATION / WIDENING

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CCO (hours)[illegible]

**PROJECT: 11-1734U4****PAVEMENT REHABILITATION / WIDENING****PAGE 13/14****Other (hours)**

Equipment Category	Date Interval										TOTAL
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	
Bore/Drill Rigs	0	0	0	0	0	0	0	0	0	0	0
Cement & Mortar Mixers	0	0	0	0	0	0	0	0	0	0	0
Dumpers / Tenders	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws	0	0	0	0	0	0	0	0	0	0	0
Cranes	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors / Dozers	0	0	0	0	0	0	0	0	0	0	0
Excavators	0	0	0	0	0	0	0	0	0	0	0
Graders	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Tractors	0	0	0	0	0	0	0	0	0	0	0
Off-Highway Trucks	0	0	0	0	0	0	0	0	0	0	0
Pavers	0	0	0	1	0	0	0	0	0	0	1
Paving Equipment	0	0	0	0	0	0	0	0	0	0	0
Plate Compactors	0	0	0	0	0	0	0	0	0	0	0
Rollers	0	0	0	0	0	0	0	0	0	0	0
Rough Terrain Forklifts	0	0	0	0	0	0	0	0	0	0	0
Rubber Tire Loaders	0	0	0	0	0	12	0	0	0	0	12
Scrapers	0	0	0	0	0	0	0	0	0	0	0
Signal Boards	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders	0	0	0	0	0	0	0	0	0	0	0
Surfacing Equipment	0	0	0	1	0	0	0	0	0	0	1
Trenchers	0	0	0	0	0	0	0	0	0	0	0
Tampers/Rammers	0	0	0	0	0	0	0	0	0	0	0
Tractors / Loaders / Backhoes	0	0	0	0	0	0	0	0	0	0	0
Other Construction Equipment	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts	0	0	0	0	0	0	0	0	0	0	0
Forklifts	0	0	0	0	0	0	0	0	0	0	0
Sweepers / Scrubbers	0	0	0	1	0	0	0	0	0	0	1
Other General Industrial Equipment	0	0	0	0	0	14	0	0	0	0	14
Other Material Handling Equipment	0	0	0	0	0	0	0	0	0	0	0
Chain Saws < 6 HP (commercial)	0	0	0	0	0	0	0	0	0	0	0
Chippers/Stump Grinders	0	0	0	0	0	0	0	0	0	0	0
Commercial Turf Equipment	0	0	0	0	0	0	0	0	0	0	0
Generator Set	0	0	0	0	0	0	0	0	0	0	0
Pumps	0	0	0	0	0	0	0	0	0	0	0
Air Compressors	0	0	0	0	0	0	0	0	0	9	9
Welders	0	0	0	0	0	0	0	0	0	0	0
Pressure Washers	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL NONROAD</b>	0	0	0	2	0	26	0	0	0	9	36
Heavy Duty Truck	0	0	0	0	0	3	0	0	0	0	3
Light Duty Truck	0	0	0	140	0	34	0	16	0	0	190
Water Truck	0	0	0	1	0	0	0	0	0	0	1
<b>TOTAL TRUCKS</b>	0	0	0	141	0	36	0	16	0	0	193
<b>GRAND TOTAL</b>	0	0	0	142	0	62	0	16	0	9	229
Non / Externally powered Equipment	0	0	0	0	0	0	0	0	0	0	0
Unknown / Not Equipment	0	0	0	0	0	32	0	0	0	0	32

## PAVEMENT REHABILITATION / WIDENING

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Idle (hours)

[illegible]