
APPENDIX B
TRAFFIC VOLUME ESTIMATES

TRAFFIC VOLUME ESTIMATES FOR PROJECT OPERATIONAL SCENARIOS

Operational Scenarios for the Project

A major concern with concrete and asphalt plants is the amount of traffic their activities will generate. Since concrete and asphalt production varies over time, due primarily to seasonal demands and market conditions, it is difficult to predict the exact traffic volume that would be generated as a result of these activities. Nevertheless, some reasonable estimates can be made, based upon the production capacity of the plants and the loading capacity of the vehicles used to transport both final product and raw materials.

For the purposes of this EIR, two operational scenarios are analyzed. One scenario is based upon the estimated average production of both the concrete batch plant and the asphalt plant. The other scenario posits a "worst case" situation, in which production at both plants is at its maximum. The first scenario is considered to be a reasonable representation of typical conditions at the project site, and the impacts under this scenario would reflect typical effects of project operations. The second scenario presents a reasonable representation of a situation in which environmental impacts would be at their greatest.

Concrete Batch Plant Traffic

On average, the concrete batch plant would produce approximately 8,000 cubic yards of end product per year. Assuming that 210 days are worked in a year (subtracting Sundays, holidays, most Saturdays and some winter days), approximately 38.1 cubic yards of concrete would be produced in one day. With truck capacity averaging 6 to 8 cubic yards, the number of truckloads of concrete would be approximately 7, or 14 total truck trips per day.¹ As discussed earlier, the production of 8,000 cubic yards of concrete would require approximately 1,300 cubic yards of cement, 3,000 cubic yards of sand, and 3,700 cubic yards of coarse aggregate. Since most of the aggregate would come from the quarry on the project site, it is assumed that the number of truck trips required to haul aggregate to the site is negligible. The holding capacity for trucks carrying the raw materials would be 25 tons. Using a conversion factor of 1.5 cubic yards per ton, as provided by the project applicant, delivery of raw materials would generate the following:

Cement: 1,300 cubic yards x 1.5 tons per cubic yard/25 tons/210 days = 0.37 trips per day.
Sand: 3,000 cubic yards x 1.5 tons per cubic yard/25 tons/210 days = 0.86 trips per day.

Thus, one additional truckload, or 2 total daily truck trips, would be generated by the delivery of raw materials to the concrete batch plant.

¹ It is assumed that a truck trip is a one-way trip, and that a truckload is equal to two truck trips (one coming onto the project site, one leaving the project site).

The maximum annual production capacity of the concrete plant would be 25,000 cubic yards. Assuming that all other conditions are the same as under average operating conditions, the number of daily truckloads generated by maximum production would be 20, which equals the estimate made by the project applicant. This means that 40 total truck trips would be made. If the amount of raw material required increases proportionately with the increase in end product, then 25,000 cubic yards of concrete would require approximately 4,063 cubic yards of cement, 9,375 cubic yards of sand, and 11,563 cubic yards of coarse aggregate. These amounts of raw materials would generate approximately 4 truckloads daily, or 8 total truck trips per day. Heavier truck traffic would likely occur only during limited times of the year, generally during the busiest time of the construction season.

Asphalt Plant Traffic

The asphalt plant would produce approximately 10,000 cubic yards per year on average. Since the plant would operate for only seven months in a year, it is assumed that the plant would operate for approximately 160 days per year, subtracting Sundays, holidays and some Saturdays. Therefore, average daily production at the asphalt plant would be approximately 62.5 cubic yards. Since the typical measure of asphalt production is in tons, the daily production is equivalent to 93.8 tons. This is based upon a compacted density of 145 pounds per cubic foot, by which one cubic yard would weigh 1.98 tons (Kent Hansen, pers. comm., 2000). Because the asphalt mix in the trucks would be loose rather than compacted, one cubic yard would weigh less. A conservative estimate of 1.5 tons per cubic yard is used for this analysis.

The project applicant has indicated that the trucks that would be used to haul the asphalt would be transfers and belly dumps with 25-ton capacities. For short hauls, 10-wheel dump trucks with 12-ton capacities would be used. It is not known what proportion of truck hauls would be short hauls. For this analysis, the number of hauls using 25-ton capacity trucks is first determined, then the remainder is divided among the 12-ton capacity trucks.

Using this methodology, the number of truckloads that would be generated by average daily production at the asphalt plant would be 5, or 10 total truck trips per day (3 truckloads with the 25-ton trucks, 2 truckloads with the 12-ton trucks). A given amount of asphalt requires approximately the same amount of raw material. As with the concrete plant, most of the material would be supplied by the quarry. However, some sand would be imported. Based upon mixtures used at other asphalt plants, the sand to be used would constitute no more than 8 percent of the total raw material used (Pacific Municipal Consultants, 1999). Thus, it is assumed that 800 cubic yards of sand would be required for the asphalt plant. Assuming that the trucks used to haul the sand are the same as those used to supply sand to the concrete plant, this amount of sand would generate 1 truckload daily, or 2 total truck trips per day.

The maximum production capacity of the asphalt plant, including operation of a portable drum mix plant, would be 100,000 cubic yards annually, or an additional 90,000 cubic yards. This extra

demand would be generated by a large paving project. Typically, such a project is anticipated to result in a higher level of activity for a time period of approximately six weeks (Pacific Municipal Consultants, 1999). Assuming the asphalt plant operates six days per week during this six-week period, the daily production rate would be approximately 2,500 cubic yards, or 3,750 tons. Therefore, the number of daily truckloads generated by maximum production would be 150, or 300 truck trips per day. If the plant operated 12 hours per day, this would mean one truckload every five minutes. If the amount of raw material required increases proportionately with the increase in end product, then an additional 7,200 cubic yards of sand would be required. These amounts of raw materials would generate approximately 12 truckloads daily, or 24 total truck trips per day.

Other Vehicle Trips

The total number of vehicle trips to be generated by the project also includes the number of trips made by vehicles used by employees to travel to and from the site. The project applicant estimates that the average number of people to be employed on the site would be 25. No figure was given for the number of employees on the site at maximum production. For the purposes of this analysis, it is assumed that the total number of employees needed for maximum production at all facilities proposed on the project site is 37, or two additional employees for each of the six activities proposed by the project.

The estimated average vehicle trips generated by the activities within the proposed C-M zone was based upon a factor of 23.4 trips generated per employee at a wholesale nursery, as set forth in the fifth edition of the *Trip Generation Manual* by the Institute of Transportation Engineers. This factor is based upon a small sample size, but it is the best available. For the worst case scenario, the average number of trips was increased by 50 percent. Because the truck repair shop is to be used only for vehicles owned by Hat Creek Construction, the number of trips generated by this facility was not considered in this analysis.

Miscellaneous vehicle trips associated with activities on the project, such as those for offsite business meetings, are more difficult to estimate. While some of these trips can be regularly scheduled, generally such trips are made whenever the need arises for them. For one proposed asphalt batch plant, an estimate of 20 miscellaneous daily trips was made (Pacific Municipal Consultants, 1999). However, some of the trips may be used to conduct business for several activities on the site, rather than just one. Therefore, for this analysis, the estimated average number of daily miscellaneous trips associated with the proposed activities is 30. As with the C-M zone, the worst case figure was obtained by increasing the average figure by 50 percent.

Table A-1 below presents estimates for daily traffic volumes generated by the activities proposed by the project, based upon the methodology described above.

TABLE A-1
ESTIMATED DAILY TRAFFIC VOLUMES GENERATED BY PROJECT

Project Activity and Traffic Type	Daily Traffic Volumes	
	Average	Worst Case
Concrete batch plant truck	16	48
Asphalt plant truck	12	324
Other industrial activities truck	15	60
Commercial-Light Industrial Zone vehicle	47	70
Employee commute vehicle	50	74
Miscellaneous vehicle	30	45
Total	170	621

REFERENCES

Kent Hansen, National Asphalt Pavement Association. Electronic mail, April 5, 2000.

Pacific Municipal Consultants. *Shasta Valley Asphalt and Aggregate Project, Draft Environmental Impact Report*. Sacramento, Calif., January 1999.