APPENDIX I

TRIP GENERATION RATES AND TRUCK PERCENTAGES FOR INDUSTRIAL AND WAREHOUSE USES

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Trip generation rates for industrial and warehouse uses are to be drawn from either the latest edition of ITE's Trip Generation report or from the City of Fontana's *Truck Trip Generation Study,* dated August 2003, depending on the land use type. The Fontana *Truck Trip Generation Study* is a useful supplement to ITE data. The primary objective of the study was to develop large truck trip generation rates and equations for nine land uses. However, it also provides the following:

- Total vehicle trip generation rates and equations
- Large truck mix (percentages for four classifications of vehicles)
- Entering/exiting vehicle splits stratified for a.m. and p.m. peak hours for total vehicles and large trucks

The guidelines below indicate the recommended source of trip generation rates depending on the type of land use. The source for each type of use was recommended by the City of Fontana's consultant for the study and agreed upon by consensus of the local jurisdiction members of the Comprehensive Transportation Plan Technical Advisory Committee in January, 2004. The recommendations were based primarily on the sample sizes available for each classification of industrial/warehouse use.

1) The Fontana Truck Trip Generation Study should be used for three uses that are not addressed by ITE: truck stops, truck sales, and used truck sales. The Fontana study is also to be used for the purpose of calculating total and large truck trip generation for these uses.
2) The Fontana Truck Trip Generation Study should also be used for two land uses (heavy industrial and truck terminals) that are also covered by ITE. The Fontana study includes a larger sample set than ITE for these two uses. Truck generation rates from the Fontana study are also to be used.
3) The latest edition of ITE's Trip Generation report should be used for three land uses (light industrial, industrial parks, and warehouse). The ITE data is preferred over the Fontana study for calculation of total vehicle trip generation due to the large sample size and good statistical correlation of the ITE data. However, the Fontana study can be used to calculate the large truck mix for these three land uses using the percentages contained in the Fontana report.

Table I-1 provides the total vehicle trip generation rates to be used for industrial and warehousing land uses, based on the above guidelines. Table I-2 provides the truck trip percentages

Table I–1

SANBAG Recommended Trip Generation Rates for Large Truck Trip Generators

Warehouse		ITE Code: 150		Source:	ITE - 7th Edition												
Independent variable:		Number of employees				Independent variable:		Gross building area (KSF)				Independent variable:		Acres			
Total Vehicle			Large Truck			Total Vehicle			Large Truck			Total Vehicle			Large Truck		
Daily	a.m.	p.m.	Daily	a.m.	p.m.	Daily	a.m.	p.m.	Daily	a.m.	p.m.	Daily	a.m.	p.m.	Daily	a.m.	p.m.
3.89	**0.51**	**0.59**				**4.96**	0.45	0.47				**57.23**	**10.05**	**8.86**			
Light Industrial		ITE Code: 110		Source:	ITE - 7th Edition												
Independent variable:		Number of employees				Independent variable:		Gross building area (KSF)				Independent variable:		Acres			
Total Vehicle			Large Truck			Total Vehicle			Large Truck			Total Vehicle			Large Truck		
Daily	a.m.	p.m.	Daily	a.m.	p.m.	Daily	a.m.	p.m.	Daily	a.m.	p.m.	Daily	a.m.	p.m.	Daily	a.m.	p.m.
3.02	0.44	**0.42**				**6.97**	**0.92**	**0.98**				51.8	7.51	7.26			
Heavy Industrial		ITE Code: 120		Source:	Fontana Study												
Independent variable:		Number of employees				Independent variable:		Gross building area (KSF)				Independent variable:		Acres			
Total Vehicle			Large Truck			Total Vehicle			Large Truck			Total Vehicle			Large Truck		
Daily	a.m.	p.m.	Daily	a.m.	p.m.	Daily	a.m.	p.m.	Daily	a.m.	p.m.	Daily	a.m.	p.m.	Daily	a.m.	p.m.
3.787	0.237	0.158		0.105	0.058	7.541	0.473	0.315		0.209	0.116	71.607	4.49	2.993		1.985	1.1
Industrial Park		ITE Code: 130		Source:	ITE - 7th Edition												
Independent variable:		Number of employees				Independent variable:		Gross building area (KSF)				Independent variable:		Acres			
Total Vehicle			Large Truck			Total Vehicle			Large Truck			Total Vehicle			Large Truck		
Daily	a.m.	p.m.	Daily	a.m.	p.m.	Daily	a.m.	p.m.	Daily	a.m.	p.m.	Daily	a.m.	p.m.	Daily	a.m.	p.m.
3.34	**0.47**	**0.46**				6.96	0.84	0.86				63.11	8.55	8.84			
Truck Sales/Leasing		ITE Code: n.a.		Source:	Fontana Study												
Independent variable:		Number of employees				Independent variable:		Gross building area (KSF)				Independent variable:		Acres			
Total Vehicle			Large Truck			Total Vehicle			Large Truck			Total Vehicle			Large Truck		
Daily	a.m.	p.m.	Daily	a.m.	p.m.	Daily	a.m.	p.m.	Daily	a.m.	p.m.	Daily	a.m.	p.m.	Daily	a.m.	p.m.
10.38	**0.605**	**0.556**		**0.056**	0.098	23.517	**1.371**	**1.261**		0.128	0.221	**129.691**	7.562	6.952		**0.705**	1.221
Used Truck Sales		ITE Code: n.a.		Source:	Fontana Study												
Independent variable:		Number of employees				Independent variable:		Gross building area (KSF)				Independent variable:		Acres			
Total Vehicle			Large Truck			Total Vehicle			Large Truck			Total Vehicle			Large Truck		
Daily	a.m.	p.m.	Daily	a.m.	p.m.	Daily	a.m.	p.m.	Daily	a.m.	p.m.	Daily	a.m.	p.m.	Daily	a.m.	p.m.
20.874	1.179	1.481		0.358	0.226	**20.039**	**1.132**	**1.422**		**0.344**	0.217	**67.996**	**3.841**	**4.825**		**1.168**	0.738
Truck Terminals		ITE Code: 030		Source:	Fontana Study												
Independent variable:		Number of employees				Independent variable:		Gross building area (KSF)				Independent variable:		Acres			
Total Vehicle			Large Truck			Total Vehicle			Large Truck			Total Vehicle			Large Truck		
Daily	a.m.	p.m.	Daily	a.m.	p.m.	Daily	a.m.	p.m.	Daily	a.m.	p.m.	Daily	a.m.	p.m.	Daily	a.m.	p.m.
3.428	0.104	0.122		0.047	0.062	16.857	0.511	0.6		0.231	0.304	**42.582**	1.29	1.516		0.584	**0.768**
Truck Stops		ITE Code: n.a.		Source:	Fontana Study												
Independent variable:		Number of fueling positions										Independent variable:		Acres			
Total Vehicle			Large Truck									Total Vehicle			Large Truck		
Daily	a.m.	p.m.	Daily	a.m.	p.m.							Daily	a.m.	p.m.	Daily	a.m.	p.m.
34.565	2.257	8.216		1.189	4.811							319.73	20.875	76		11	44.5

Weighted average trip rates. Rates shown in bold indicate that trip generation equations are available that are highly correlated to the independent variable. See reference source.

Table I-2

Typical Vehicle Mixes by Land Use Categories

Light Warehouse	ITE Code: 150							
Without Passenger Vehicles				With Passenger Vehicles				
Lge 2 Ax	3 Axle	4+ Axle	Total	Pass Veh	Lge 2 Ax	3 Axle	4+ Axle	Total
24.7	20.6	54.6	100	81.3	4.6	3.9	10.2	100
Heavy Warehouse (Greater than 100,000 gross square feet floor space) - ITE Code 150								
Without Passenger Vehicles				With Passenger Vehicles				
Lge 2 Ax	3 Axle	4+ Axle	Total	Pass Veh	Lge 2 Ax	3 Axle	4+ Axle	Total
43.9	32	24.1	100	71.4	12.5	9.1	6.9	100
Light Industrial	ITE Code: 110							
Without Passenger Vehicles				With Passenger Vehicles				
Lge 2 Ax	3 Axle	4+ Axle	Total	Pass Veh	Lge 2 Ax	3 Axle	4+ Axle	Total
32.7	17.9	49.4	100	74.4	8.4	4.6	12.6	100
Heavy Industrial	ITE Code: 120							
Without Passenger Vehicles				With Passenger Vehicles				
Lge 2 Ax	3 Axle	4+ Axle	Total	Pass Veh	Lge 2 Ax	3 Axle	4+ Axle	Total
11.1	36	53	100	62	4.2	13.7	20.1	100
Industrial Park	ITE Code: 130							
Without Passenger Vehicles				With Passenger Vehicles				
Lge 2 Ax	3 Axle	4+ Axle	Total	Pass Veh	Lge 2 Ax	3 Axle	4+ Axle	Total
7.9	7.1	85	100	54.6	3.6	3.2	38.6	100
Truck Sales/Leasing	ITE Code: n.a.							
Without Passenger Vehicles				With Passenger Vehicles				
Lge 2 Ax	3 Axle	4+ Axle	Total	Pass Veh	Lge 2 Ax	3 Axle	4+ Axle	Total
42.8	33	24.2	100	72.7	11.7	9	6.6	100
Used Truck Sales	ITE Code: n.a.							
Without Passenger Vehicles				With Passenger Vehicles				
Lge 2 Ax	3 Axle	4+ Axle	Total	Pass Veh	Lge 2 Ax	3 Axle	4+ Axle	Total
26.3	42.9	30.8	100	71.3	7.5	12.3	8.8	100
Truck Terminals	ITE Code: 030							
Without Passenger Vehicles				With Passenger Vehicles				
Lge 2 Ax	3 Axle	4+ Axle	Total	Pass Veh	Lge 2 Ax	3 Axle	4+ Axle	Total
11.9	24.4	63.7	100	52.3	5.7	11.6	30.4	100
Truck Stops	ITE Code: n.a.							
Without Passenger Vehicles				With Passenger Vehicles				
Lge 2 Ax	3 Axle	4+ Axle	Total	Pass Veh	Lge 2 Ax	3 Axle	4+ Axle	Total
4.9	16.2	78.9	100	43.4	2.8	9.2	44.7	100

Source: Fontana Truck Trip Generation Study