

# APPENDIX E

## Energy Calculations

Construction Equipment											
Phase	Equipment	Quantity	Hours Each		Total Number of		Horse Power	Load Factor	Fuel Consumption		
			Day	Day	Days Worked	Days Worked			Rate (Gallons per Hour)	Duration (Total Hours)	Total Fuel Consumption
1. Demolition	Rubber Tired Dozers	1	8		20		247	0.4	4.94	160	790.40
	Concrete/Industrial Saws	1	8		20		247	0.4	4.94	160	790.40
	Tractors/Loaders/Backhoes	3	4		20		97	0.37	1.7945	240	430.68
2. Site Preparation	Graders	1	8		2		187	0.41	3.8335	16	61.34
	Scrapers	1	8		2		367	0.48	8.808	16	140.93
	Tractors/Loaders/Backhoes	1	7		2		97	0.37	1.7945	14	25.12
3. Grading	Graders	1	8		4		367	0.48	8.808	32	281.86
	Rubber Tired Dozers	1	8		4		247	0.4	4.94	32	158.08
	Tractors/Loaders/Backhoes	2	7		4		97	0.37	1.7945	56	100.49
4. Building Construction	Cranes	1	8		200		231	0.29	3.3495	1,600	5,359.20
	Forklifts	2	7		200		89	0.2	0.89	2,800	2,492.00
	Generator Sets	1	8		200		84	0.74	3.108	1,600	4,972.80
	Tractors/Loaders/Backhoes	1	6		200		97	0.37	1.7945	1,200	2,153.40
	Welders	3	8		200		46	0.45	1.035	4,800	4,968.00
5. Paving	Cement and Mortar Mixers	1	8		10		9	0.56	0.252	80	20.16
	Pavers	1	8		10		130	0.42	2.73	80	218.40
	Paving Equipment	1	8		10		132	0.36	2.376	80	190.08
6. Architectural Coating	Rollers	2	8		10		80	0.38	1.52	160	243.20
	Tractors/Loaders/Backhoes	1	8		10		97	0.37	1.7945	80	143.56
	Air Compressors	1	6		10		78	0.48	1.872	60	112.32
<b>Total Fuel Consumption for Construction Equipment</b>										<b>23,652.42</b>	

Vehicle Trips										
Phase	Category	Vehicle Type	Number of		Number of		VMT	Total Trips	Fuel Consumption	
			Trips	Trip Length	Days	Days			Rate (Gallons per Hour)	Total Fuel Consumption
1. Demolition	Worker Trips	Light-duty vehicle	13	14.7	20		3,822.0	260	21	182.00
	Vendor Trips	Heavy-duty vehicle	0	6.9	20		0.0	0	8	0.00
	Haul Trips	Heavy-heavy-duty vehicle	21	20	20		8,400.0	420	6.2	1,354.84
2. Site Preparation	Worker Trips	Light-duty vehicle	8	14.7	2		235.2	16	21	11.20
	Vendor Trips	Heavy-duty vehicle	0	6.9	2		0.0	0	8	0.00
	Haul Trips	Heavy-heavy-duty vehicle	0	20	2		0.0	0	6.2	0.00
3. Grading	Worker Trips	Light-duty vehicle	10	14.7	4		588.0	40	21	28.00
	Vendor Trips	Heavy-duty vehicle	0	6.9	4		0.0	0	8	0.00
	Haul Trips	Heavy-heavy-duty vehicle	0	20	4		0.0	0	6.2	0.00
4. Building Construction	Worker Trips	Light-duty vehicle	26	14.7	200		76,440.0	5,200	21	3,640.00
	Vendor Trips	Heavy-duty vehicle	6	6.9	200		8,280.0	1,200	8	1,035.00
	Haul Trips	Heavy-heavy-duty vehicle	0	20	200		0.0	0	6.2	0.00
5. Paving	Worker Trips	Light-duty vehicle	15	14.7	10		2,205.0	150	21	105.00
	Vendor Trips	Heavy-duty vehicle	0	6.9	10		0.0	0	8	0.00
	Haul Trips	Heavy-heavy-duty vehicle	0	20	10		0.0	0	6.2	0.00
6. Architectural Coating	Worker Trips	Light-duty vehicle	5	14.7	10		735.0	50	21	35.00
	Vendor Trips	Heavy-duty vehicle	0	6.9	10		0.0	0	8	0.00
	Haul Trips	Heavy-heavy-duty vehicle	0	20	10		0.0	0	6.2	0.00
<b>Total Fuel Consumption for Construction Vehicle Trips</b>										<b>6,391.04</b>

	Total Annual		Total Annual	
	Total Fuel Consumption	Number of Developments per Year	Fuel Consumption	Number of Years
Construction Equipment	23,652.42	14	331,133.81	8
Construction Vehicle Trips	6391.03871	14	89,474.54	8
<b>Total</b>			<b>420,608.35</b>	<b>3,364,866.82</b>

Construction Equipment										
Phase	Equipment	Quantity	Hours Each Day	Total Number of		Horse Power	Load Factor	Fuel	Duration (Total Hours)	Total Fuel Consumption
				Days Worked				Consumption Rate (Gallons per Hour)		
1. Demolition	Concrete/Industrial Saws	1	8	20		81	0.73	2.9565	160	473.04
	Excavators	3	8	20		158	0.38	3.002	480	1,440.96
	Rubber Tired Dozers	2	8	20		247	0.4	4.94	320	1,580.80
2. Site Preparation	Rubber Tired Dozers	3	8	10		247	0.4	4.94	240	1,185.60
	Tractors/Loaders/Backhoes	4	8	10		97	0.37	1.7945	320	574.24
	Excavators	2	8	30		158	0.38	3.002	480	1,440.96
3. Grading	Graders	1	8	30		187	0.41	3.8335	240	920.04
	Rubber Tired Dozers	1	8	30		247	0.4	4.94	240	1,185.60
	Scrapers	2	8	30		367	0.48	8.808	480	4,227.84
	Tractors/Loaders/Backhoes	2	8	30		97	0.37	1.7945	480	861.36
	Cranes	1	7	300		231	0.29	3.3495	2,100	7,033.95
4. Building Construction	Forklifts	3	8	300		89	0.2	0.89	7,200	6,408.00
	Generator Sets	1	8	300		84	0.74	3.108	2,400	7,459.20
	Tractors/Loaders/Backhoes	3	7	300		97	0.37	1.7945	6,300	11,305.35
	Welders	1	8	300		46	0.45	1.035	2,400	2,484.00
	Pavers	2	8	20		130	0.42	2.73	320	873.60
	Paving Equipment	2	8	20		132	0.36	2.376	320	760.32
	Rollers	2	8	20		80	0.38	1.52	320	486.40
6. Architectural Coating	Air Compressors	1	6	20		78	0.48	1.872	120	224.64
<b>Total Fuel Consumption for Construction Equipment</b>										<b>50,925.90</b>

<b>Vehicle Trips</b>											
Phase	Category	Vehicle Type	Number of Trips	Trip Length	Number of Days	VMT	Total Trips	Consumption	Consumption		
1. Demolition	Worker Trips	Light-duty vehicle	15	14.7	20	4,410.0	300	21	210.00		
	Vendor Trips	Heavy-duty vehicle	0	6.9	20	0.0	0	8	0.00		
	Haul Trips	Heavy-heavy-duty vehicle	371	20	20	148,400.0	7,420	6.2	23,935.48		
2. Site Preparation	Worker Trips	Light-duty vehicle	18	14.7	2	529.2	36	21	25.20		
	Vendor Trips	Heavy-duty vehicle	0	6.9	2	0.0	0	8	0.00		
	Haul Trips	Heavy-heavy-duty vehicle	0	20	2	0.0	0	6.2	0.00		
3. Grading	Worker Trips	Light-duty vehicle	20	14.7	4	1,176.0	80	21	56.00		
	Vendor Trips	Heavy-duty vehicle	0	6.9	4	0.0	0	8	0.00		
	Haul Trips	Heavy-heavy-duty vehicle	0	20	4	0.0	0	6.2	0.00		
4. Building Construction	Worker Trips	Light-duty vehicle	405	14.7	200	1,190,700.0	81,000	21	56,700.00		
	Vendor Trips	Heavy-duty vehicle	93	6.9	200	128,340.0	18,600	8	16,042.50		
	Haul Trips	Heavy-heavy-duty vehicle	0	20	200	0.0	0	6.2	0.00		
5. Paving	Worker Trips	Light-duty vehicle	15	14.7	10	2,205.0	150	21	105.00		
	Vendor Trips	Heavy-duty vehicle	0	6.9	10	0.0	0	8	0.00		
	Haul Trips	Heavy-heavy-duty vehicle	0	20	10	0.0	0	6.2	0.00		
6. Architectural Coating	Worker Trips	Light-duty vehicle	81	14.7	10	11,907.0	810	21	567.00		
	Vendor Trips	Heavy-duty vehicle	0	6.9	10	0.0	0	8	0.00		
	Haul Trips	Heavy-heavy-duty vehicle	0	20	10	0.0	0	6.2	0.00		
<b>Total Fuel Consumption for Construction Vehicle Trips</b>											<b>97,641.18</b>

	Total Fuel Consumption	Number of Developments per Year	Total Annual Fuel		Total Fuel Consumption
			Consumption	Number of Years	
Construction Equipment	50,925.90	3	152,777.70	8	1,222,221.60
Construction Vehicle Trips	97641.18387	3	292,923.55	8	2,343,388.41
<b>Total</b>			<b>445,701.25</b>		<b>3,565,610.01</b>

## Construction Equipment

Phase	Equipment	Quantity	Hours Each Day	Total Number of Days Worked	Horse Power	Load Factor	Fuel Consump tion Rate (Gallons per Hour)	Duration (Total Hours)	Total Fuel Consumption
1. Demolition	Concrete/Industrial Saws	1	8	20	81	0.73	2.9565	160	473.04
	Excavators	3	8	20	158	0.38	3.002	480	1,440.96
	Rubber Tired Dozers	2	8	20	247	0.4	4.94	320	1,580.80
2. Site Preparation	Rubber Tired Dozers	3	8	2	247	0.4	4.94	48	237.12
	Tractors/Loaders/Backhoes	4	8	2	97	0.37	1.7945	64	114.85
	Excavators	2	8	4	158	0.38	3.002	64	192.13
3. Grading	Graders	1	8	4	187	0.41	3.8335	32	122.67
	Rubber Tired Dozers	1	8	4	247	0.4	4.94	32	158.08
	Scrapers	2	8	4	367	0.48	8.808	64	563.71
4. Building Construction	Tractors/Loaders/Backhoes	2	8	4	97	0.37	1.7945	64	114.85
	Cranes	1	7	200	231	0.29	3.3495	1,400	4,689.30
	Forklifts	3	8	200	89	0.2	0.89	4,800	4,272.00
	Generator Sets	1	8	200	84	0.74	3.108	1,600	4,972.80
	Tractors/Loaders/Backhoes	3	7	200	97	0.37	1.7945	4,200	7,536.90
	Welders	1	8	200	46	0.45	1.035	1,600	1,656.00
	Pavers	2	8	10	130	0.42	2.73	160	436.80
	Paving Equipment	2	8	10	132	0.36	2.376	160	380.16
	Rollers	2	8	10	80	0.38	1.52	160	243.20
	6. Architectural Coating	Air Compressors	1	6	10	78	0.48	1.872	60
<b>Total Fuel Consumption for Construction Equipment</b>									<b>29,297.69</b>

Vehicle Trips									
Phase	Category	Vehicle Type	Number of Trips	Trip Length	Number of Days	VMT	Total Trips	Fuel Consumption	
								Rate (Gallons per Hour)	Total Fuel Consumption
1. Demolition	Worker Trips	Light-duty vehicle	15	14.7	20	4,410.0	300	21	210.00
	Vendor Trips	Heavy-duty vehicle	0	6.9	20	0.0	0	8	0.00
	Haul Trips	Heavy-heavy-duty vehicle	1,298	20	20	#####	25,960	6.2	83,741.94
2. Site Preparation	Worker Trips	Light-duty vehicle	18	14.7	2	529.2	36	21	25.20
	Vendor Trips	Heavy-duty vehicle	0	6.9	2	0.0	0	8	0.00
	Haul Trips	Heavy-heavy-duty vehicle	0	20	2	0.0	0	6.2	0.00
3. Grading	Worker Trips	Light-duty vehicle	20	14.7	4	1,176.0	80	21	56.00
	Vendor Trips	Heavy-duty vehicle	0	6.9	4	0.0	0	8	0.00
	Haul Trips	Heavy-heavy-duty vehicle	0	20	4	0.0	0	6.2	0.00
4. Building Construction	Worker Trips	Light-duty vehicle	1,563	14.7	200	#####	312,600	21	218,820.00
	Vendor Trips	Heavy-duty vehicle	355	6.9	200	#####	71,000	8	61,237.50
	Haul Trips	Heavy-heavy-duty vehicle	0	20	200	0.0	0	6.2	0.00
5. Paving	Worker Trips	Light-duty vehicle	15	14.7	10	2,205.0	150	21	105.00
	Vendor Trips	Heavy-duty vehicle	0	6.9	10	0.0	0	8	0.00
	Haul Trips	Heavy-heavy-duty vehicle	0	20	10	0.0	0	6.2	0.00
6. Architectural Coating	Worker Trips	Light-duty vehicle	313	14.7	10	46,011.0	3,130	21	2,191.00
	Vendor Trips	Heavy-duty vehicle	0	6.9	10	0.0	0	8	0.00
	Haul Trips	Heavy-heavy-duty vehicle	0	20	10	0.0	0	6.2	0.00
<b>Total Fuel Consumption for Construction Vehicle Trips</b>									<b>366,386.64</b>