

Appendix EN

Construction and Operational Fuel Estimations

1155 and 1185 Terra Bella Avenue

Last Updated: 1/17/2021

Compression-Ignition Engine Brake-Specific Fuel Consumption (BSFC) Factors [1]:

HP: 0 to 100	0.0588	HP: Greater than 100	0.0529
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Values above are expressed in gallons per horsepower-hour/BSFC.

CONSTRUCTION EQUIPMENT							
Construction Equipment	#	Hours per		Load		Construction Phase	Fuel Used (gallons)
		Day	Horsepower	Factor	Factor		
Graders	1	8	187	0.41	0.41	Site Preparation Phase	324
Plate Compactors	1	8	8	0.43	0.43	Site Preparation Phase	16
Scrapers	1	8	367	0.48	0.48	Site Preparation Phase	745
Graders	1	8	187	0.41	0.41	Grading Phase	648
Plate Compactors	1	8	8	0.43	0.43	Grading Phase	32
Rubber Tired Dozers	1	8	247	0.4	0.4	Grading Phase	836
Scrapers	1	8	367	0.48	0.48	Grading Phase	1,490
Aerial Lifts	4	8	63	0.31	0.31	Building Construction Phase	10,283
Air Compressors	1	8	78	0.48	0.48	Building Construction Phase	4,928
Cement and Mortar Mixers	25	8	9	0.56	0.56	Building Construction Phase	16,586
Cranes	1	8	231	0.29	0.29	Building Construction Phase	7,932
Forklifts	1	8	89	0.2	0.2	Building Construction Phase	2,343
Generator Sets	2	8	84	0.74	0.74	Building Construction Phase	16,364
Pumps	1	8	84	0.74	0.74	Building Construction Phase	8,182
Rough Terrain Forklifts	1	8	100	0.4	0.4	Building Construction Phase	5,265
Tractors/Loaders/Backhoes	1	8	97	0.37	0.37	Building Construction Phase	4,724
Welders	1	8	46	0.45	0.45	Building Construction Phase	2,725
Cement and Mortar Mixers	1	8	9	0.56	0.56	Paving Phase	426
Pavers	1	8	130	0.42	0.42	Paving Phase	4,156
Paving Equipment	1	8	132	0.36	0.36	Paving Phase	3,617
Plate Compactors	1	8	8	0.43	0.43	Paving Phase	291
Rollers	1	8	80	0.38	0.38	Paving Phase	2,572
Signal Boards	2	8	6	0.82	0.82	Paving Phase	833
Sweepers/Scrubbers	1	8	64	0.46	0.46	Paving Phase	2,491
Tractors/Loaders/Backhoes	1	8	97	0.37	0.37	Paving Phase	3,037
Aerial Lifts	4	8	63	0.31	0.31	Architectural Coating Phase	6,611
Air Compressors	4	8	78	0.48	0.48	Architectural Coating Phase	12,673
Cranes	1	8	231	0.29	0.29	Architectural Coating Phase	5,099
Forklifts	1	8	89	0.2	0.2	Architectural Coating Phase	1,506
Generator Sets	2	8	84	0.74	0.74	Architectural Coating Phase	10,520
Rough Terrain Forklifts	1	8	100	0.4	0.4	Architectural Coating Phase	3,385
Total Fuel Used							140,642
							(Gallons)

Construction Phase	Days of Operation
Site Preparation Phase	10
Grading Phase	20
Building Construction Phase	280
Paving Phase	10
Architectural Coating Phase	180
Total Days	500

WORKER TRIPS

Constuction Phase	MPG [2]	Trips	Trip Length (miles)	Fuel Used (gallons)
Site Preparation Phase	24.1	8	10.8	35.85
Grading Phase	24.1	10	10.8	89.63
Building Construction Phase	24.1	27	10.8	3387.88
Paving Phase	24.1	20	10.8	89.63
Architectural Coating Phase	24.1	5	10.8	403.32
Total				4,006.31

HAULING AND VENDOR TRIPS

Trip Class	MPG [2]	Trips	Trip Length (miles)	Fuel Used (gallons)
HAULING TRIPS				
Site Preparation Phase	7.5	0	20.0	0.00
Grading Phase	7.5	260	14.5	502.67
Building Construction Phase	7.5	0	20.0	0.00
Paving Phase	7.5	0	20.0	0.00
Architectural Coating Phase	7.5	0	20.0	0.00
Total				502.67
VENDOR TRIPS				
Site Preparation Phase	7.5	0	7.3	0.00
Grading Phase	7.5	0	7.3	0.00
Building Construction Phase	7.5	11	7.3	2997.87
Paving Phase	7.5	0	7.3	0.00
Architectural Coating Phase	7.5	0	7.3	0.00
Total				2,997.87

Total Gasoline Consumption (gallons)	4,006
Total Diesel Consumption (gallons)	144,143

Sources:

[1] United States Environmental Protection Agency. 2021. *Exhaust and Crankcase Emission Factors for Nonroad Compression-Ignition Engines in MOVES3.0.2*. September. Available at: <https://www.epa.gov/system/files/documents/2021-08/420r21021.pdf>.

[2] United States Department of Transportation, Bureau of Transportation Statistics. 2021. *National Transportation Statistics*. Available at: <https://www.bts.gov/topics/national-transportation-statistics>.