

Appendix B

Energy Consumption Calculations

Cambrian Tank Project

Last Updated: 6/16/2023

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 Phase	Fuel Used (gallons)
Construction Equipment	#	Hours per Day	Horsepower	Load Factor		
Concrete/Industrial Saws	1	8	81	0.73	Demolition Phase	2,085
Excavators	1	8	158	0.38	Demolition Phase	1,904
Aerial Lifts	1	8	63	0.31	Demolition Phase	689
Cranes	1	8	231	0.29	Demolition Phase	2,125
Dumpers/Tenders	1	8	16	0.38	Demolition Phase	214
Generator Sets	1	8	84	0.74	Demolition Phase	2,192
Rough Terrain Forklifts	1	8	100	0.4	Demolition Phase	1,410
Skid Steer Loaders	1	8	65	0.37	Demolition Phase	848
Sweepers/Scrubbers	1	4	64	0.46	Demolition Phase	519
Tractors/Loaders/Backhoes	2	8	97	0.37	Demolition Phase	2,531
Rubber Tired Dozers	1	8	247	0.4	Site Preparation Phase	3,133
Tractors/Loaders/Backhoes	2	8	97	0.37	Site Preparation Phase	2,531
Excavators	1	8	158	0.38	Site Preparation Phase	1,904
Rough Terrain Forklifts	1	8	100	0.4	Site Preparation Phase	1,410
Excavators	1	8	158	0.38	Grading Phase	1,143
Graders	1	8	187	0.41	Grading Phase	1,459
Rubber Tired Dozers	1	8	247	0.4	Grading Phase	1,880
Tractors/Loaders/Backhoes	2	8	97	0.37	Grading Phase	1,519
Dumpers/Tenders	1	8	16	0.38	Grading Phase	129
Rollers	1	8	80	0.38	Grading Phase	643
Scrapers	1	8	367	0.48	Grading Phase	3,352
Sweepers/Scrubbers	1	4	64	0.46	Grading Phase	311
Rough Terrain Forklifts	1	8	100	0.4	Grading Phase	846
Cranes	1	7	231	0.29	Building Construction Phase	1,859
Forklifts	1	8	89	0.2	Building Construction Phase	628
Generator Sets	1	8	84	0.74	Building Construction Phase	2,192
Tractors/Loaders/Backhoes	1	8	97	0.37	Building Construction Phase	1,265
Aerial Lifts	1	8	63	0.31	Building Construction Phase	689
Cement and Mortar Mixers	1	8	9	0.56	Building Construction Phase	178
Air Compressors	1	8	78	0.48	Building Construction Phase	1,320
Pressure Washers	1	8	13	0.3	Building Construction Phase	138
Rough Terrain Forklifts	1	8	100	0.4	Building Construction Phase	1,410
Sweepers/Scrubbers	1	4	64	0.46	Building Construction Phase	519
Air Compressors	1	6	78	0.48	Architectural Coating Phase	449
Aerial Lifts	1	6	63	0.31	Architectural Coating Phase	234
Generator Sets	1	6	84	0.74	Architectural Coating Phase	745
Pressure Washers	1	6	13	0.3	Architectural Coating Phase	47
Rough Terrain Forklifts	1	6	100	0.4	Architectural Coating Phase	480
Paving Equipment	1	8	132	0.36	Paving Phase	422
Rollers	1	8	80	0.38	Paving Phase	300
Tractors/Loaders/Backhoes	1	8	97	0.37	Paving Phase	354
Crushing/Proc. Equipment	1	8	85	0.78	Paving Phase	655
Rough Terrain Forklifts	1	8	100	0.4	Paving Phase	395
Surfacing Equipment	1	8	263	0.3	Paving Phase	701
Sweepers/Scrubbers	1	4	64	0.46	Paving Phase	145
Total Fuel Used						49,900
						(Gallons)

Construction Phase	Days of Operation
Demolition Phase	75
Site Preparation Phase	75
Grading Phase	45
Building Construction Phase	75

Paving Phase	21
Architectural Coating Phase	34
Total Days	325

WORKER TRIPS

Construction Phase	MPG [2]	Trips	Trip Length (miles)	Fuel Used (gallons)
Demolition Phase	24.1	30	11.7	1092.32
Site Preparation Phase	24.1	12.5	11.7	455.13
Grading Phase	24.1	22.5	11.7	491.55
Building Construction Phase	24.1	1.26	11.7	45.88
Paving Phase	24.1	15	11.7	152.93
Architectural Coating Phase	24.1	10	11.7	165.06
Total				2,402.87

HAULING AND VENDOR TRIPS

Trip Class	MPG [2]	Trips	Trip Length (miles)	Fuel Used (gallons)
HAULING TRIPS				
Demolition Phase	7.5	20	8.4	22.40
Site Preparation Phase	7.5	0	20.0	0.00
Grading Phase	7.5	28	20.0	74.67
Building Construction Phase	7.5	1	20.0	2.67
Paving Phase	7.5	0	20.0	0.00
Architectural Coating Phase	7.5	0	20.0	0.00
Total				99.73

VENDOR TRIPS

Demolition Phase	7.5	0	14.7	0.00
Site Preparation Phase	7.5	0	14.7	0.00
Grading Phase	7.5	0	14.7	0.00
Building Construction Phase	7.5	2	8.4	168.00
Paving Phase	7.5	0	14.7	0.00
Architectural Coating Phase	7.5	0	14.7	0.00
Total				168.00

Total Gasoline Consumption (gallons)	2,403
Total Diesel Consumption (gallons)	50,168

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>.