



Carbon Footprint Analysis: Conventional Slab vs. Wafflemat Slab Duplex built in Honolulu, Hawaii

Date: October, 2011

Location: Oahu, Hawaii

Size of footprint: 2,744 sf (duplex)

Yards of concrete: Slab as drawn, 103; Wafflemat, 79

<u>Project Specific Data</u>	<u>Conventional</u>	<u>Wafflemat</u>	<u>Difference</u>	<u>Where Used</u>
Lbs CO2 related to production of:				
- Cement	61200	47000	14,200	Manufacture of product
- Diesel fuel	2600	1040	1,560	Excavation/Trench/Fill
- Iron rebar	692	852	-160	Manufacture of product
- Steel cable	1150	924	233	Manufacture of product
- W/Boxes	0	40	-40	Manufacture of product
Lbs CO2 related to transport of:				
- Cement	12200	9400	2,800	Container Ship (China)
- Sand	337	258	78	Truck (Local)
- Aggregate	337	258	78	Truck (Local)
- Iron rebar	131	161	-30	Container Ship (China)
- Steel cable	218	174	44	Container Ship (China)
- W/Boxes	0	89	-89	Container Ship (Calif.)
Total Tons CO2:	39	30	9	23%

<u>Engineering Factors</u>	<u>Item</u>	<u>Unit</u>	<u>Factor</u>	<u>Source</u>
For CO2 Produced:	Cement	lbs CO2/pound	1	EPA, AP42
	Concrete	Lbs per yard	3861	ASTM
	Iron rebar	Lbs CO2/pound	1.06	IPCC
	Steel Cable	Lbs CO2/pound	1.06	IPCC
	Diesel truck	Lbs CO2/lb-mile	0.0001	Estimate
	Diesel Ship	Lbs CO2/lb-mile	0.00002	Maresk
	Electricity	CO2 lbs/kw per hour	0.45	PG&E
	Natural Gas	CO2 lbs/therm	13.5	PG&E
	Diesel Emsns.	Lbs/gal.	26	GREET Model
	W/Box Volume	Ft.3	1.68	Measured
	W/Box Weight	Lbs	3	Measured
	Energy used			
	Per W/Box	Kw-hr	0.15	Estimate