

COSTA RICA EDITION 2012

CONCRETE

FOR
DUMMIES



The
Pondorosi
Landscaping Plan



The cement comes from five miles away. We can see the open limestone mine from the house, where haul trucks whisk the stone to a nearby cement plant. There it is superheated into quicklime, combined with bonding agents, and bagged as Holcim brand Portland cement.



What we would call crushed stone or coarse aggregate is produced right in the Orosi Valley from rocks tumbling down the fast-rushing river from the mountains upstream. This size is called cuartilla.

This load is 7 cubic meters



Arena, or sand, is produced and delivered by the same local company, Grupo Orosi. I am grateful that they are fearless in dispatching their heavy trucks over roads as poor as ours.

Our driveway is narrow, but at least there is no danger of driving off a cliff, as there is on Calle Gavilán, the public road up the hill to our house.



Ready-Mix cement trucks are not common in Costa Rica, so all of our concrete had to be mixed by hand, sometimes with an electric mixer, but usually without.





One labor-saving technique the crew used was to heave a 50 kg bag full of cement into the mixer on top of the tumbling aggregate, and then pluck out the torn, empty bag thirty seconds later.

The mixed concrete is wheelbarrowed to the driveway and dumped on top of the steel reinforcing bars tied in place within carefully placed wooden forms.



The next morning, after the concrete is partially dried, the wooden forms between patches of concrete are removed. This is sometimes a difficult process. More concrete is used to fill the gap left behind and apply another coat to the surface.





The more common concrete mixing technique in rural Costa Rica, and probably the world, is one long forgotten in the United States. For the massive amount of concrete work accomplished downslope, a rustic chute was improvised, reminiscent the old west.



Rock and sand are dumped at the top of the chute and then shoveled into it in the necessary proportions.





First down the chute is the arena, which is covered with cement and mixed by shovel.



Cuartilla is then loaded into the chute and added to the mix. The mason at the bottom of the chute calls out the number of shovelful needed.

The mixture is then shaped into a doughnut and water is poured into the hole and mixed until the consistency is perfect. No measurements are necessary.



The mixed concrete is moved to the side in this case.



Rebar is laid and tied, and then the concrete mix is shoveled back on top and evened until flat with anything available, such as a two-by-four.

A trowel is then used to smooth out the surface of the cement before it dries.



153 tons of concrete

	Units	Sold by the...	Kilograms per unit	Total Weight in Kilograms	Total Weight in Pounds	Total Weight in Tons
Bloques	920	Block	10.7	9,844	21,702	10.9
Cemento	205	Sack	50	10,250	22,597	11.3
Cuartilla	39	Cubic meter	1,550	60,450	133,269	66.6
Arena	39	Cubic meter	1,500	58,500	128,970	64.5
Total				139,040	306,539	153.3

Not included: Cunetas, vara, varilla, agua (precast drainage, rebar, water)