

# DAY'S END

Focus on good design and clever construction



## Fence Made of Glass

By Ryan Lieuallen

Our customer, who lives on a tranquil river flowing through Washington's Spokane Valley, decided to remove a 6-foot-tall hedgerow that was blocking his river views and replace it with a retaining wall topped with a frameless glass railing system. A landscaper was contracted to build the retaining wall, while our job was to install the glass fence.

We considered pouring a continuous concrete footing to create a solid and level mounting surface for the brackets, or spigots, that support the 34-inch-high-by-1/2-inch-thick glass panels, but the narrow concrete top surface would be at increased risk of spalling from the anchor attachments. Instead, we decided to support the spigots with individual concrete footings, which would be easier to hide and require significantly less concrete and labor to form and pour.

Creating 44 individual footings that are perfectly level with each other on a

sloping site was a challenge. While the landscapers were building the retaining wall, I worked with them to place compacted gravel in the line of the footings, then they backfilled to finish grade (A). We dug each footing by hand to set the 44 12-inch-diameter cardboard footing forms 24 inches deep, relying heavily on a laser level as we took a full day setting, bracing, leveling, and double-checking the forms before pouring concrete (B).

We mixed the concrete by hand and carefully shoveled each scoop of concrete into the forms so as not to disturb them. We used a concrete vibrator to eliminate air pockets, then rechecked with the laser before finishing the pour. Mixing concrete by hand sometimes creates slightly different slumps from batch to batch, so we let the footings set for two weeks in case there was uneven curing.

We used 1/2-inch-thick wood strips cut to the length of the panels to align the spigots, dry-setting the spigots on

the footings to get our lines. Then we drilled holes for the anchor bolts and set the spigots, knowing they would probably need adjustment after we set all the glass loosely to check the fit.

I would like to say all the footings were perfectly level, but that was not the case. But they were within 1/8 inch of each other, so only needed a slight bit of shimming inside the spigot. We also started by setting the glass panels over the footings that were a little low, knowing that we could grind the concrete down a bit on the higher ones. Once the straight line was created, we also did minimal shimming of some of the spigots from front to back. The final process was getting each glass panel to flow level into the next, which required very fine shimming and minor adjustments for equal spacing (C). ❖

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PHOTOS BY RYAN LIEUALLEN