

Tops to Last a Lifetime

by Jack Pixley

Minnesota sweep Jack Pixley learned a lot while working with German sweeps over the summer. For one thing, Jack says, German, Austrian, and Swiss buildings feature some of the finest chimney construction in the world. The sweeps themselves are highly trained, knowledgeable—and nice folks, to boot. “We should be thankful to the chimney sweeps in Canada and in Europe for all their kindness. They are truly our colleagues and our friends,” says Jack.

How can you protect a chimney top for a lifetime—and then some? Talk to a German sweep, for starters.

“Protecting the top of a masonry chimney by using a proper concrete crown and wash with an overhang and drip ledge should extend the life of the chimney top to about 100 years,” says Sepp Zoitel.

Sepp, a professional chimney sweep and inspector near Munich for 50 years,

says he’s seen chimneys nearly 200 years old with this type of construction. Sepp’s own chimney has this weather protection and after 25 years, it’s still in excellent condition.

This doesn’t mean that all chimneys in Germany are built this way. Sepp points to his own neighbor’s improperly built chimney, looking somewhat bad after just seven years. Just as in the United States, not all Germans are willing to pay for quality. Also, not all masons know how, or care, to do it right. Chimney sweeps throughout the world see the results of good or bad construction.

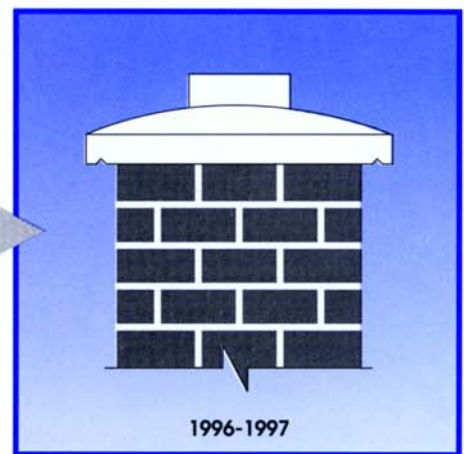
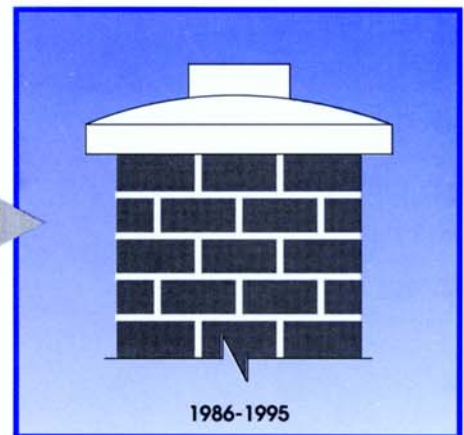
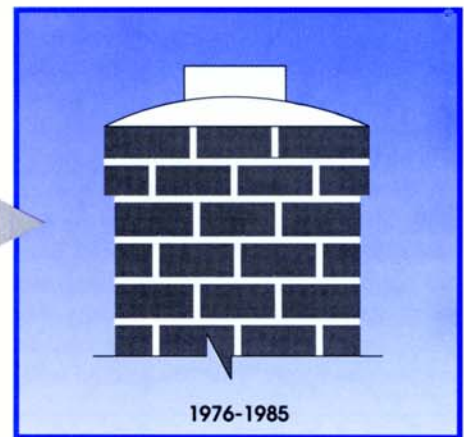
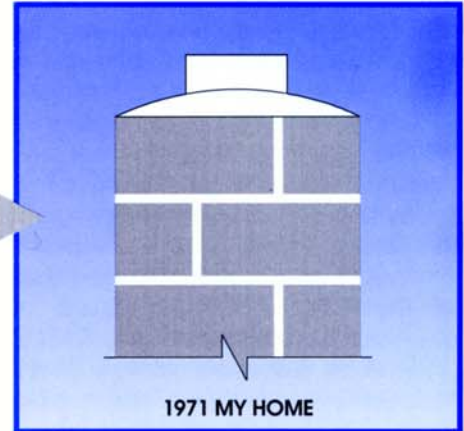
Learning from the Past

I am always embarrassed to admit my mistakes. One statement I try to include in all presentations is, “There may be something I say today that I might disagree with in a year, or maybe even tomorrow. We are constantly learning.

Isn’t it exciting to be in an industry in which we’ll always have more to learn?”

I began to build and repair chimneys in 1970. The sketches to the right show the progression of my chimney top techniques.

While in Germany in 1984, I witnessed quality construction that was almost unbelievable by United States standards. Eventually, I began to incorporate what I had seen with



A freshly poured concrete crown is set to protect this masonry chimney for years to come.

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information provided by the Brick Institute of America.

However, I was not certain how to do the drip ledge easily, and so made the mistake of omitting it from my tops, with the rationalization that what I was providing was such an improvement over normal construction that the drip ledge was probably not that important. This was unfortunate, because I've begun to see some deterioration, although it's not as severe as before.

Sepp has confirmed my observation. "Without the drip ledge," he says, "water will travel, due to surface tension, right around the side of the concrete and down to the bricks below."

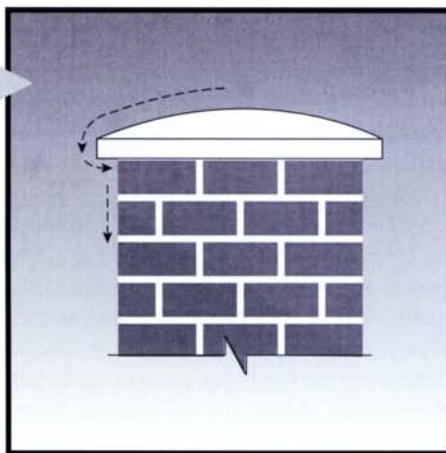
And of course, in the colder winter climates with resultant freeze-thaw cycles, and with the use of poor-quality bricks like used Chicago Common, the results will be unpleasant.

For about ten years, I have used adjustable, homemade wood forms and professional metal forms. The first ones did not incorporate a drip ledge, but two years ago, I began to make one by stapling an old 3/8-inch extension cord to my wooden forms. This has worked well.

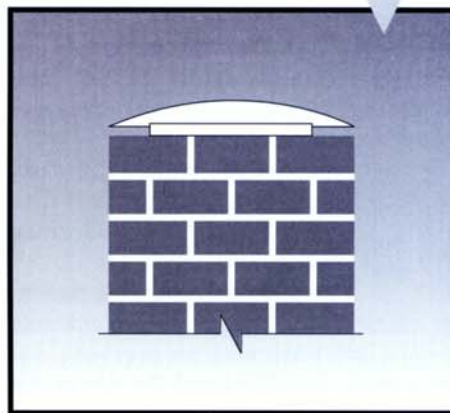
I now have a nice drip ledge, although the edges are somewhat rough after I remove the extension cord from the concrete.

Recently, I switched over almost completely to the new Ahrens forms, which incorporate a very attractive drip ledge. I use a mold-release spray on the forms before I pour the concrete, and this makes cleaning the forms a breeze.

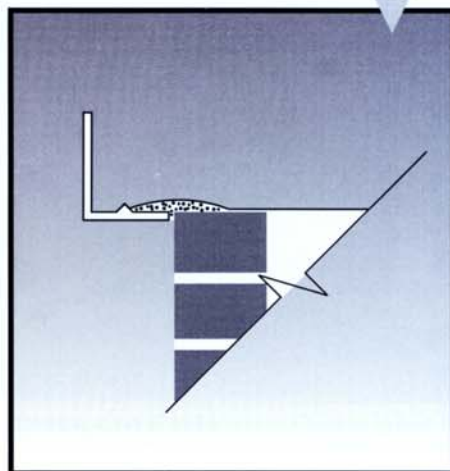
Rarely do I find a masonry chimney in my service area that does not have wood used as a support under the concrete wash. It should also be noted by chimney



sweeps that it may be unsafe to stand on the wash. In some cases, the wash may be thin and the wood below rotted. You can guess what might happen. I find the easiest—and my favorite—material for use under the wash to be the galvanized steel used for roofing. This is typically used in my part of the country in the construction of metal pole buildings. It is inexpensive, lightweight, easy to cut with aviation snips, and the corrugation makes it very strong. Often, I do not even need re-rod to support the span of the chase. I have a theory that chimney masons previously were carpenters, and still like to get a little wood in all their work. (Obviously, this is untrue, but I find that it's better to laugh at such stupidity than get mad!) Perhaps some masons are unaware that wood takes on humidity and expands, lifting the wash and allowing a crack where more moisture can seep in.



One of the problems with using forms to provide the overhang is that some concrete can slip down between the form and the chase, resulting in more cleanup time the next day when you remove the forms. One good technique is to mix a small amount of mason's mortar and trowel this over the joint.



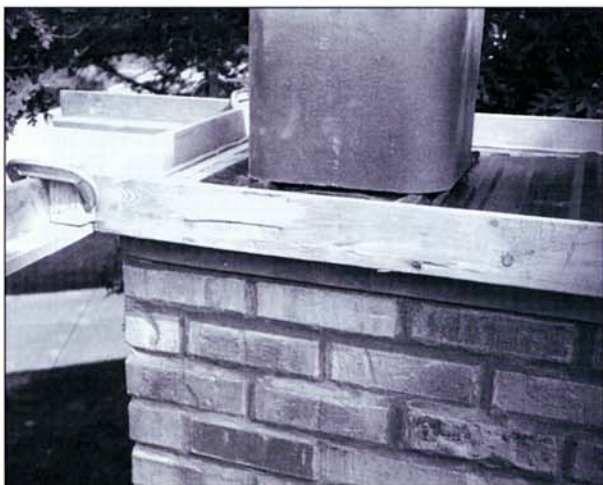
The German Way

I wrote this article while studying chimney sweeping in Germany, where standards are far more encompassing and advanced than ours. But before we get too critical, remember that we are a relatively young country, and our Guild just celebrated 20 years at our national convention in Portland, Oregon. In Germany, official recognition of the chimney sweeps' importance dates back hundreds of years.

Today's *Bezirkskaminkehrermeister*, or district chimney sweep master, is far more than a brush pusher. In order to get this designation, you must spend three years as a helper while attending school to become a chimney sweep, and then pass a test. The next five years are spent as an apprentice, with one week per year of advanced training at a special chimney sweep school. Finally, you have to pass a week of testing: practical, theory, codes and law, and procedures for training helpers and apprentices. Then you have to wait—perhaps ten or more years—for a territory to become available. Only then are you recognized by the government as that area's official chimney sweep master.

In your position, you are the building inspector, appliance emissions and efficiency tester and cleaning expert in your designated area.

— Jack Pixley



Crown and wash forms prepare a new chimney top.

By the time you have mixed the concrete for the crown and wash, the mortar will have set long enough to result in very little—if any—spilling.

Remember Expansion

I've inspected thousands of chimney tops. Only once have I seen an expansion joint between the top flue tile liner and the concrete wash. So is it any surprise that I rarely see a chimney top where the concrete wash or the top flue tile liner is not cracked? In some cases, they are both cracked. There is one truism regarding thermal expansion: You can allow for it, but you can't stop it. If the flue gases leaving the chimney are hot, the flue tile liners will expand slightly. That's why it's important to allow for that expansion, both horizontally and vertically.

Over the years, I have experimented with numerous materials to use temporarily between the flue tile and wash. My favorite material, one I've used for eight years, is sillseal, which is a foam-poly product that I buy at a lumberyard in 1/4 inch by 6-inch by 50-foot rolls. I wrap a 6-inch width of this seal around the flue tile and join the two ends with duct tape. After bedding in the concrete for the crown and wash, I let it sit while I clean my cement mixer, then go back to the rooftop or scaffold and carefully lift out the sillseal to be washed and reused on a future repair job. I now have my 1/4-inch air space. When I return the next day to remove my crown and wash forms, I seal this airspace at the top with concrete silicone, using a caulk gun.

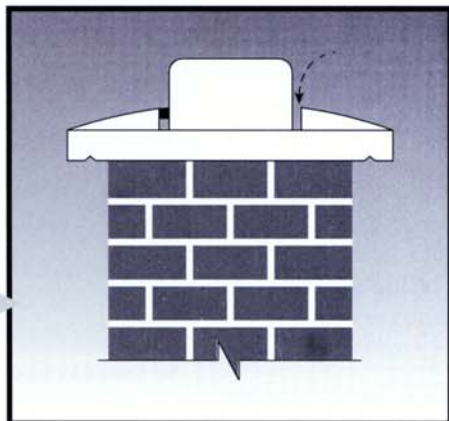
Contractors are fond of saying that in time, all concrete and masonry construction will crack. There is much truth to

this, so it's imperative that we provide a reinforcement bond in the concrete wash. Many concrete and masonry contractors use wire mesh and re-rod. I find it simpler—and better—to use polypropylene monofilaments. These short fibers add three-dimensional reinforcement. I merely take a handful of the 1-inch strands and throw them into my cement mixer. It provides tremendous strength, so even though the concrete wash or crown may eventually crack, it will be no more than a hairline fissure.

A properly designed crown and wash will provide excellent protection for the top few courses of bricks, but it's no substitute for proper mortar joints and a good exterior brick, which will shed wind-driven rain. Many chimneys built in my service area in the last 35 years were constructed with used Chicago Common brick. People like the rustic look, but these very soft bricks soak up water like a sponge. In cold climates, when exposed to repeated freezing and thawing, this brick is a disaster. In this and in other extreme cases, it's almost imperative that you use a professional water repellent that breathes. There are many products commonly sold as water protection for masonry construction, but you need to be careful to choose one that has maximum breathability or you can ruin the whole chimney. I've seen chimneys literally rot from the inside out after being sprayed or painted with the wrong product. My favorite, and what I use, is Saver Systems.

Chimneys for a Lifetime

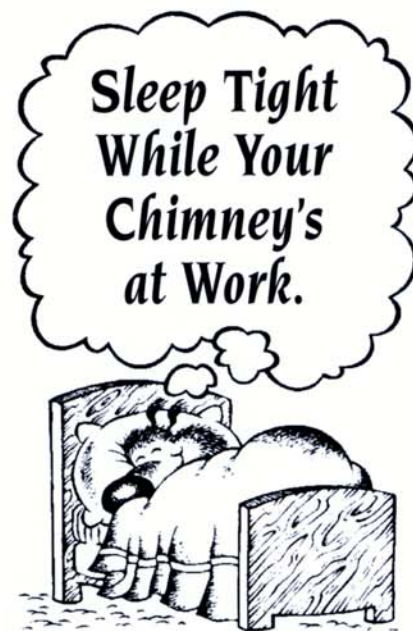
I would love to be around in 100 years, if only to see how long my chim-



ney tops do last. Given my age, 30 years is more realistic. Unfortunately, this is one reason why we see such poor quality construction—we have a throw away mentality and often couldn't care less if the chimney top lasts 100 years. In addition, the average family in the United States moves every five to seven years. Many homeowners are content if the chimney lasts long enough to pass the home inspection done at point of sale.

It's different in Germany, where my friend Sepp lives. A German family may live in the same house their whole lives, and then pass it down to one of their children. Sepp lives in the home his parents built in 1937. While it's a modest house, it's built with excellent construction. I had to laugh when Sepp shook his head smiled, and said, "In America, you can fly a man to the moon, but have difficulty building a quality chimney."

As I consider my time left to work here on this earth, I would prefer it to be of lasting quality. It gives me great pleasure to drive down the road and see work that I've done and that will stand the test of time. ■



All day, every day, your chimney works hard.

Even when you're not using your fireplace or furnace, your water heater may be venting through the chimney, keeping dangerous carbon monoxide gases from seeping into your home.

Avoid the unseen hazards of a damaged or blocked chimney by getting an annual inspection by a professional chimney sweep.

It's one way to guarantee a good night's sleep.