Don't Ask This Guy to Design an Unsafe Building...

Architect Bill Schoen Takes the High Ground on Disaster Prevention

In 1997, the city of Grand Forks, North Dakota, was inundated by floodwaters from the Red River of the North. For local architect Bill Schoen, himself a disaster victim, the damage wrought by the river's power and fury has permanently changed his personal and professional outlook.

Schoen, 47, has been designing buildings for 18 years and is president of the North Dakota State Board of Architecture. His mark is all over this town – from the University of North Dakota campus to the downtown to the city's new events center, scheduled to be completed in spring 2001.

Now, Schoen is setting out to prevent damage before disaster strikes. He is incorporating disaster damage-prevention measures in every building he designs. Building by building, Bill Schoen is changing the face of Grand Forks. In a recent interview, Schoen talks about his new design philosophy and the lessons he learned from Grand Forks' Flood of the Century.

FEMA: **What impact did the Flood of 1997 have on you?**
Schoen: It's unforgettable. I'll remember it for my entire life. It was disastrous... all the bad adjectives you can think of. But it was also a time where neighbors worked with neighbors and friends, everyone helped each other. I saw people's stuff, virtually their lives, out on their front berms. In my home and in every building we own (four commercial properties), the basements were full of water. I'll be making my last SBA disaster loan payment when I'm 75 years old.

FEMA: **How has your experience with that flood changed the way you work as an architect?**
Schoen: I look at the river differently. I have greater respect for the river. It certainly affects the way

we design buildings. Any client we design a building for in Grand Forks from here on is going to have to talk pretty convincingly in order for us to even consider putting in a basement. If I had to do it all over again I would fill in every basement in every building I own. Floodplain or not, I wouldn't put expensive mechanical and electrical systems in the basement.

FEMA: **Has the flood impacted the way you design other buildings?**
Schoen: Yes. It is certainly a question you'd ask the client. I would want to know what kind of flooding potential exists where the building might be. The other thing we'll be looking at now, just in terms of disaster prevention, is incorporating reinforced rooms or safe areas in our designs so that people have some protection from tornadoes. We're at risk for those, too, in North Dakota.

FEMA: **Let's talk about some of the buildings you've designed in Grand Forks since the flood. What changes have you put in place because of your experience?**
Schoen: The first project we received within a month of the flood itself was the new building for the *Grand Forks Herald* newspaper. As you know, the bulk of their building was either burned to the ground or flooded to the point that it was unusable. But their core building, their original historic building shell, survived the fire. That shell was already above the base flood elevation but we added extra protection by locating their mechanical systems at the top of the building. One major challenge was providing handicapped accessibility because the building took up virtually the whole lot. But we worked with the city and ended up sloping the public sidewalk in front of the building to make it accessible. It was a good joint solution.

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We designed the new Grand Forks County Office Building, which is now across the street from the old county building and elevated 4 feet. The elevation, which isn't really even noticeable, puts it higher than the 1997 flood mark. That was important to the county. The old county building was seriously damaged and is located below the base flood elevation. Also in the new building, all the mechanical and electrical systems are on the top level so they are basically out of the way forever.

The First National Bank building downtown was amid some of the buildings that burned. The outside of it was scarred from the fire-retardant chemicals. Because it's historic, we couldn't elevate the building but we did relocate the mechanical systems to the top level of the building and virtually abandoned the basement.

FEMA: **You mentioned that you recently began a renovation project of your own downtown. Can you tell us more about that?**
Schoen: In December 1999, my business partner and I purchased from the city, three historic buildings and an empty lot that sits between the first and second buildings, because we wanted to make an investment downtown.

We went through a very extensive coordination process with city hall to come up with a plan that would minimize the risk to these properties in the future. One thing we're doing is filling in the basements of two of the buildings to eliminate that flood potential. We're about a foot-and-a-half below the base flood elevation and the last thing I want is a basement full of water. So we're going to get rid of the basements altogether, fill them in with clay, rip out the wood floor structure, and pour a concrete slab. In the third building, which is poured-in-place concrete and very

solid, we'll still have a basement but we're not putting a single thing in it… no elevator and no mechanicals… just the basic sprinkler system and basic lighting system. It'll be available for incidental storage and as a storm shelter.

On the empty lot, we're building a parking garage that will have a small commercial area in the front. When we're done with the project, we'll have four buildings, all with historic fronts. There will be some commercial space on the first floors, apartment units on the upper floors and about 10,000 square feet of parking throughout the garage and the back 70 feet of two of the buildings. In the commercial spaces, we are not putting any furnaces or mechanical equipment on grade. Everything's going to be hung from the ceiling so everything will be at least 12 feet up—all our circuit panels, everything, will be elevated to the point where we will definitely be above the '97 flood levels and hopefully never exposed to that kind of disaster again.

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FEMA: **Did going through the flood influence those design decisions?**
Schoen: Yes. Originally the common thought pattern in this area was that basements are relatively inexpensive and great places to stuff boilers, air handlers, all those systems nobody wants to see. Well, you won't see us doing that anymore. Basically, in all our buildings nowadays, the mechanical and electrical systems will be at the top of the building. It costs a little more, but nobody wants to take a flood risk. Basements are obviously very cheap space, so for many years you didn't really question putting furnaces and water heaters down there. But we sure question it now. We sure wouldn't do it now.

FEMA: Based on your experiences with the Grand Forks flood, what advice would you give to people in other parts of the country?
Schoen: First of all, don't build in the floodplain. Number two, protect your investment by elevating all the mechanical and electrical systems. Also, coordinate closely with city officials. Explore options together and try to figure out the right thing to do. This is the first time we all went through this sort of thing and we're all learning together. Over time, I think we've all learned lessons in terms of reducing the risk and reducing the exposure.

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FEMA: **Would you encourage people to look at their own situation before disaster strikes?**
Schoen: Absolutely. We didn't really consider flood-prevention measures beforehand. This experience certainly opened my eyes in terms of what the river can do, my gosh. Now, I've even made changes in my own home. I co-located my furnace and water heater on a slab that's on top of the original slab. The new slab elevated the furnace 3½ inches. Even this can make a big difference, especially if you have a proper sump pump or drain tile system. That elevation didn't cost much... one hundred dollars maybe. I also rewired my furnace and put a connection in my garage for an emergency generator so that I'm able to run my furnace and my sump pump, even if the main power goes out. Electrically, all I have to do is plug in an extension cord and start up the generator to keep my house and family warm.

FEMA: **What about buildings that are *not* in a floodplain? Do you still recommend taking measures in that case?**

Schoen: Yes. We did that with the Alerus, the city's new events center. At the time of the flood, we were in the contract document stage with the city for this facility, which is a 447,000-square-foot building. The city took a good hard look at the design of the Alerus and decided there shouldn't be any below-grade space in the building. Originally, we had an enormous event space in the middle of the building that was recessed 14 feet into the ground. Because of the flood, the city turned around and drastically changed the design of the building so that all this space is now above grade. I think the building ended up being better. I am really proud of the decision the city made. It's a proactive decision. It's a decision that hopefully will take that building out of harm's way for good.

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