West Virginia House
The Industrial Revolution came late to much of West Virginia, arriving with the railroads after the Civil War. Families who had for generations worked the same land and who had been largely self-sufficient, whose lives had been measured by the advance of the sun and the seasons, were within a few generations, converted to living in coal camps, buying everything from the company store, being paid in scrip and working shifts in places where the sun never shines.

To augment the local work force, huge numbers of immigrants, mostly from Eastern Europe, were brought in to work in the mills and the mines. Industrial accidents were common and horrific.

Coal operators fiercely resisted attempts by the United Mine Workers to organize the West Virginia coalfields, leading to two mine wars, one in 1911-12 and one in 1920-21. The latter was the largest armed insurrection since the Civil War, with thousands of miners taking up arms.

Not all the changes brought by industrialization were bad. Families in the better coal camps enjoyed modern luxuries such as indoor plumbing and electricity long before their rural brethren. But on balance, the changes wrought by the timber and coal industries were sudden and wrenching.

I wanted to give some indication of the violence of these changes in my design. This house is based on the barn. In homage to the traditional drive-through barn, the center, analogous to a nave in a church, is open with the ends being 16-foot-square windows.

The nave is framed in steel and flanked by a timber-framed aisle on each side. The steel portion is recessed at one gable end and protrudes from the other, seeming to have penetrated the timber structure. The appearance is of a traditional, timber-framed building through which another building, this one framed in industrial steel, has been pushed — a reference to the sudden and powerful nature of the changes the industrial era wrought in West Virginia.

The recessed part of the nave makes a sheltered front porch, while the glazed and steel-framed back cantilevers out of the back wall.

From the front porch one can look through the house to Bowman Ridge in the distance.
winter, looking northwest
summer, looking southwest
second-floor plan
On the previous pages, note that the center-to-center distance between the timbers changes with the last bay. I had planned a column spacing of 8 feet on center along the long axis. But because the walls are applied to the outside of the timber frame, rather than containing the frame, the timber post, steel column and wall will not line up on the south side of the house.

My choices were to: a. hide the post within the wall, b. have the wall not meet up with the steel column, or c. alter the distance between the posts.

Hiding the post would compromise the look of the aisles and having the wall not meet the steel column would look sloppy.

I chose to move the last two posts 6 inches (the thickness of the wall) closer together. In three of the four instances, the shift in grid is hidden by either being in a bathroom or by the insertion of the fireplace.
Above, detail of second-floor stair. Balusters are steel tees with steel rod infill just outside the edge of the stair. The handrail hangs from the opposite side of the tees, inside the edge of the stair.

At left, detail of sunshades and their attachment to mullions.
The posts are machined smooth, to invite touch. Where they are joined to metal, a steel connector, based on the floor plan of the house, is used.

The next page shows how the walls and windows are constructed over the timber frame. The walls are structural insulated panels, 4½ inches thick, a sandwich of expanded polystyrene foam between two sheets of oriented strand board. On the inside, the panels are covered with drywall, cut to fit between timbers and given a skim coat of plaster.

On the exterior, the panels are covered with wood lap siding.

From the earliest days of the project, I wanted to use multipane, steel framed windows I associate with coal tipples and other early 20th-century industrial buildings (see page ii).

Late in the project, I had decided to use triple-hung steel windows, which with the top sash down and the bottom sash up, would make the most of natural ventilation.

But an Internet search failed to find any makers of triple-hung steel windows. A further consideration is wall thickness. If each sash is 2 inches thick, a triple-hung window would require a wall at least 6 inches thick.

The top sash of a triple-hung window would be close to being flush with the wall exterior. I want windows that are recessed into the wall, to show that the wall has some thickness to it.

For all these reasons, I went back to an earlier (and more historically accurate) plan to use projected, awning-style steel windows.
probable construction sequence