WOOD DESIGN & BUILDING

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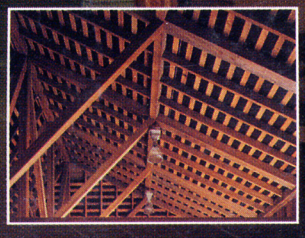
THE GLOBE THEATER

ATLANTIC HOUSES



BARNS

Straitsview Barn

Photo 5. View from the east showing western red cedar roof shakes and wall shingles, and roof angles.

Traditional craftsmanship and contemporary geometry merge in a 3,700sf equipment barn on San Juan Island, northwest of Seattle. The structure's faceted form was inspired by the island's windswept landscape. Its massing and natural materials palette – red cedar shingle exterior walls, a shake roof – also reflect indigenous northwest barns that have been added onto over time [Photo 5].

"This is an organic farm in a farming community. The owner needed to feel the barn was somehow connected to tradition," says Charles Rose of Thompson and Rose Designers.

Traditional heavy timber joinery invigorates the barn's two main volumes. More than 40 different wood-pegged joints tie the Douglas fir and larch structure together. Steel strapping, required by earthquake and hurricane codes, is largely concealed to keep expressions of wood joints as pure as possible. "We want to celebrate how the building is fastened together, to make the joinery a work of art," says Rose.

Enclosing a courtyard toward the south and west, the building varies in height, roof planes, side wall angles, and construction techniques along its L-shaped plan. Farm equipment fits within three 16x20 column bays on the long arm, covered by a continuous shed roof that dips to a diagonal hip above a storage area at the south end [Photo 6].

A farm office and veterinarian station – both angled along the north wall and framed in 2x6 studs – bracket a luminous double-height wood and metal shop. This smaller arm is covered by a shed roof on the courtyard side, a steeply pitched hip roof opposite [Figs. 2 and 3].

Resolving the barn's numerous angles required a complex series of heavy timber connections. The catalogue of wood

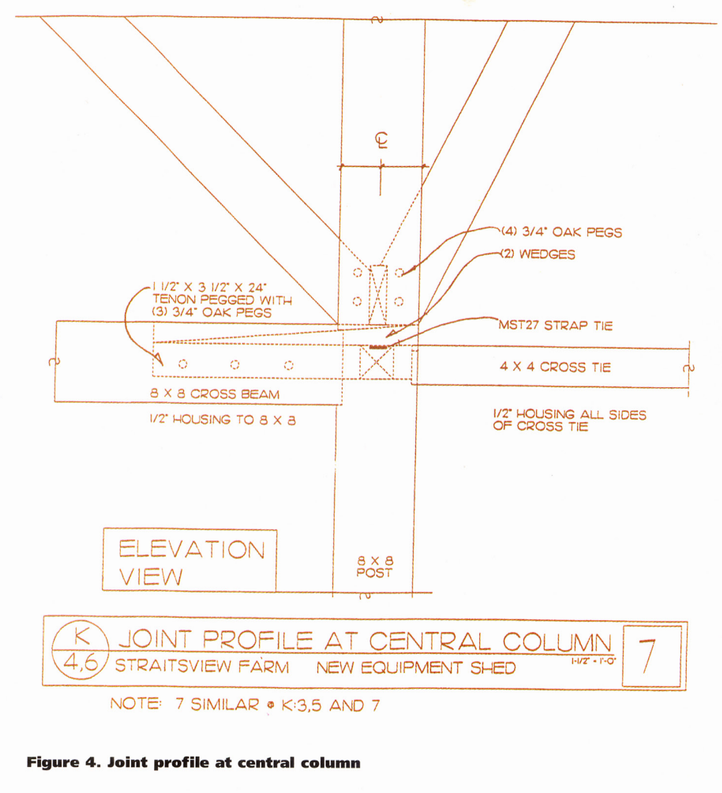


Figure 4. Joint profile at central column

joinery includes maple splines uniting columns and tie beams; mitered, mortise and tenon joints connecting top plates around corners; and scarf joints extending the length of 8x8 beams.

"The area in the shop where the hip roof intersects the folded shed over 8x8 bays is an extremely complex intersection for heavy timber," notes project designer David Martin. "Today there often is an attempt to play up intersections of steel and heavy timber, even in barns. Steel connectors are quicker and cheaper. It's much more difficult to do it this way; the precision necessary for the joinery required a master craftsman." [Photo 7 and Fig.4]

Timber frame contractor Steve Bobb generated the exact cuts and angles of each joint along with templates on a computer. To execute the joinery, he used traditional Japanese carpenter tools.

Attention to detail is apparent throughout the barn. Large rolling exterior doors on the equipment shed are custom built of 1x4 cedar slats in vertical grain fir frames [Photo 8]. The doors open 16ft. clear on both sides to permit trucks to pass through the building. A half-inch space left between slats on the doors allows ventilation and light to enter the barn's dark cavities, creating a pleasing pattern of long shadows and dappled light.

As in these abstracted barn doors, the designers interpret post and beam traditions with a free hand. Echoing the dense grove of firs that surrounds the barn, its structural columns and bracing *(Continued on p. 36)*

Photo 7. The area for the wood and metal shop with the central 8x8 columns and 8x8 cross beams extending to the right. Cross beams between columns and those extending left to the north wall are 4x4s.

Product Specs

Structure: Hem-Fir Standard & Better 2x6 studs and rafters, reclaimed Douglas fir 8x8 beams and columns, 3/4in. exterior plywood on office and vet station walls, 1x4 Douglas fir exterior between studs and columns in shop, storage and equipment bays. Connectors – mortise and tenon with maple splines and oak pegs, scarf joints in beams

Roofing: No.1, 24in. Blue Label Resawn Handsplit western red cedar shakes over 3/4in. exterior plywood in office and vet station, and over 1x4 Douglas fir in shop, storage and equipment bays

Siding: No.1 western red cedar shingles

Windows and Doors: custom-built Douglas fir casement windows; Rolling Doors: 1x4 clear cedar slats framed by Douglas fir rails and stiles, Swing Doors: 1x4 clear cedar shiplap on solid core

Finishes: Cabot cedar-colored stain

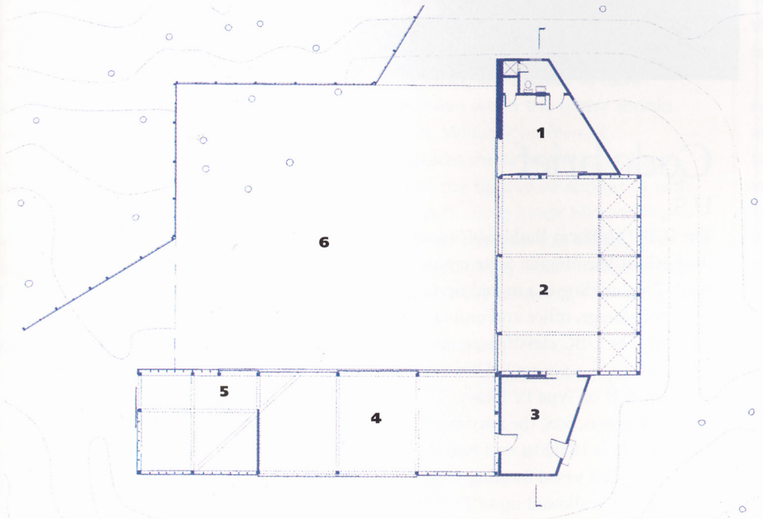


Figure 2.
Floor Plan

1. Farm Office

2. Wood and Metal Shop

3. Veterinarian Station

4. Equipment Barn

5. Storage

6. Courtyard

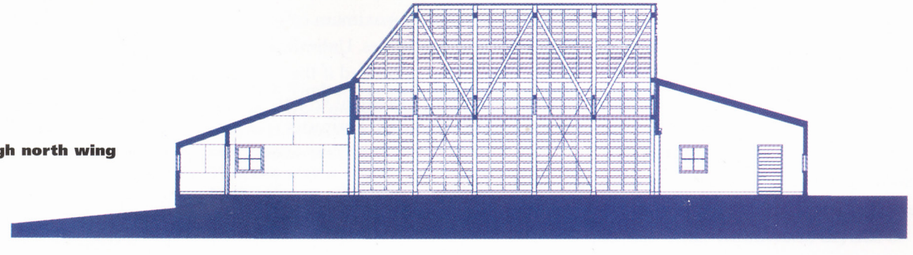


Figure 3.
Section through north wing

suggest trees with branches extending upward. "Historic post and beam construction is very rational. Our application is a bit more fun – expressive and sculptural," says Rose.

Carl Darrow is former president of the American Wood Council and associate editor of Wood Design & Building.

Project Designer: Thompson and Rose Designers
Engineer: B&B Engineers Timber
Construction: S.S. Inc.
Craftsman: Giovanni Giustina
Landscape Designer: Michael Van Valkenburgh Associates
Photos: Art Grice
Cost: withheld at owners's request Area: 3,700sf

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Photo 6. Looking south to the courtyard with the equipment bays on the left. The roof ends in a hip above the storage area.

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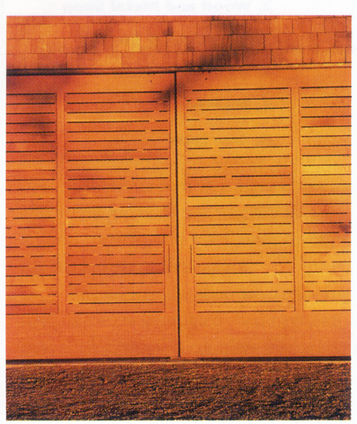
Photo 8. The rolling doors of Douglas fir frames and cedar slats glow warmly in the setting sun.



Code brief

U.S.

The ICBO Uniform Building Code is the basis of Washington State regulations. The building is a mixed occupancy of storage, office and animal hospital. The UBC classifies equipment storage as a Group S, Division 1 occupancy. If of Type IV Heavy Timber construction, the maximum allowed area is 18,000sf and four stories. Regular wood framing with one-hour frr is allowed up to 21,000sf and three stories. Unprotected wood frame is allowed a maximum of 8,000sf and two stories. Unlimited building area is permitted if the building is sprinklered, up to two stories high, and open perimeter access of at least 60ft. on four sides.

The UBC generally classifies an animal hospital as a Group B occupancy, as it does the farm office. As such, the maximum allowable area and height of the building is identical to that noted above for the Group S Division 1 occupancy.

Canada

There are generally no requirements in the National Building Code of Canada [NBCC] that regulate type or size of construction materials for fire safety as long as no one section of the barn exceeds 50,000sf in building area. For the office and veterinary spaces, the occupant load must be less than 10 to classify them as a farm building. Failing this, the general provisions of the NBCC would apply. Like Canada, many states have no limits on the use of wood-frame construction for farm buildings.