

The judges were immediately attracted to the apparently free-form structural mesh that produces this small gymnasium building in a town in Kumamoto Prefecture whose chief industry is forestry – the building had to make use of timber as a symbol of its area. On closer inspection there was more to this building than immediately met the eye. The structure is in fact a hybrid of glulam and steel; light gauge steel columns are placed at 1m intervals along the exterior wall, with load transferred to a

grid of 120mm x 120mm cedar members on their inside. A 2m grid of light gauge steel supports the roof, while below, a grid of cedar members is 'sifted' at a 45 degree angle, connected to form trusses with a 22m span.

Angling the lower parts of the trusses allowed the designers to produce height where required by transferring load to trusses where a high ceiling was not needed, ie, the two rooms that accompany the gymnasium itself, which house mini-volleyball courts.

While the structure works in a simple and effective way, its design is sophisticated. Despite the apparent free-form nature of the structural timber grid, in fact each element is part of an orthogonal grid in both plan and elevation. However, only one out of every four members in the timber grid line act as trusses; the remaining 75 per cent simply span between the eight main truss lines. By contrast, the shift of the timber and steel grids results in the steel members working as a plane,

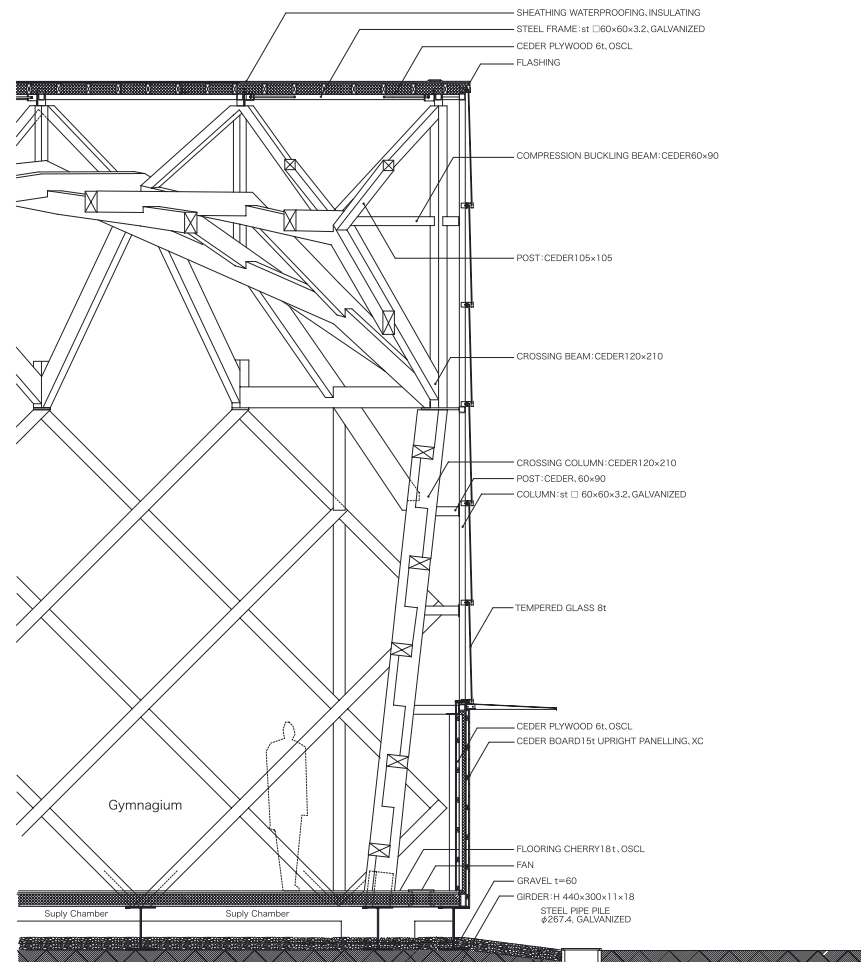
| The building sits on a man-made hill in a mountain context.

SPACE FRAMED

Sophisticated structural design informed a gymnasium building in Tomochi, Japan, symbolising its region.

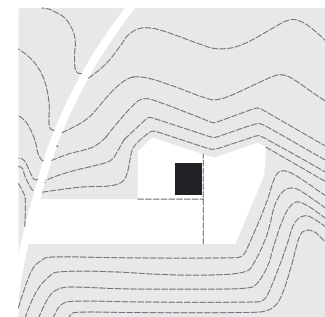
PRIZEWINNER
FORESTRY HALL,
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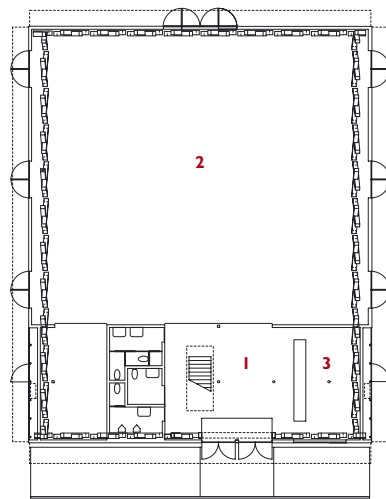


detailed wall section: grids of steel and glulam support a glazed box

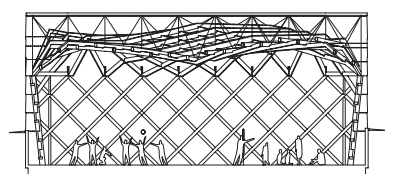
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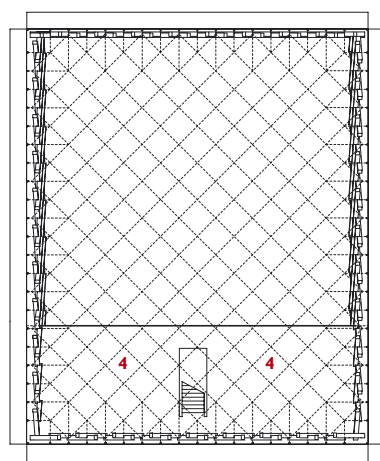
site plan



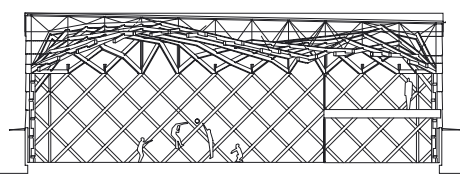
ground floor plan (scale approx 1:500)



cross section



upper level plan



long section

each stressed uniformly, and thus minimising use of material.

The lower parts of the wall are in cedar, but the project is essentially a glazed box (no concrete has been used), located on a man-made hill planned to accommodate a baseball field, parking and a grass park. Of course, the site is surrounded by entirely natural mountains; the architects responded to this hybrid context with a bush-like hybrid of their own.

PAUL FINCH

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2, 3
Intersecting grids produce differential heights for different spaces.

- 1 entrance
- 2 gymnasium
- 3 council room
- 4 meeting room



2



3