# Construction Example of Long-span Timber Structure

In recent years, because of the increased interest in conserving forested land, there are more long-span structures, such as domes and gymnasiums, being constructed. These structures mainly use wood materials, such as large-section glued laminated timber and laminated veneer lumber (LVL) in place of conventional steel frames.

Timber as a building material has pleasing sensory qualities and thus is very good for creating a pleasant interior atmosphere. On the other hand, it has a number of disadvantages in terms of uniformity of strength, dimensional accuracy due to dry shrinkage, resistance to cracking, creep limits, durability, fire resistance, etc. As a result, it is virtually impossible to build a large structure using wooden materials alone. Namely, in the design of the joints between members, the tensile members, etc. of such a structure, it is necessary to use steel or metallic materials to ensure the structural parts or members retain stable quality.

The Building Construction Division of Nippon Steel is positively involved in the construction of long-span timber structures utilizing its advanced design, fabrication and work management techniques related to large-span steel structures.

## 1. "Ehime Budokan"

Construction site: Ichitsubonishi-machi, Matsuyama-shi, Ehime-ken

Site area: 26,485 $m^2$
Building area: 12,040 $m^2$
Floor area: 15,894 $m^2$
Structure: Timber + reinforced concrete
Roof: Timber reinforced with steel
Number of stories: 1 underground, 2 above ground
Maximum height: 39.89 m
Timber structure construction period: From July to December, 2002

## 2. "Kinohana Dome"

Construction site: Oaza Kumano, Miyazaki-shi, Miyazaki-ken
Building area: 10,966 $m^2$
Floor area: 11,463 $m^2$
Base structure: Reinforced concrete
Roof: Timber (steel for joints and braces)
Number of stories: 2 underground (no basements)
Dome size: 122 m (major axis) × 102.5 m (minor axis) × 38 m (rise)
Dome construction period: From June to September, 2003

For further information, contact
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