

40 Years After -Development and Possibility of Beam String Structures

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Abstract

How to obtain column-free space rationally and beautifully has been a dream of mankind throughout past ages. The history of large-span structures for over 2000 years has been a technological challenge of humankind.

Forty years ago, in 1979, at the 20th Anniversary of IASS in Madrid, the author presented the paper titled “Principle of Beam String Structures (BSS)”. BSS is one of the represented systems of so called Hybrid Tension Structures. The principle of this system is very simple, and the ideas are not so new from the viewpoint of historical meaning, but as for the role of the strings, the active possibilities for both the adjustment of stress distribution and deflection have been evaluated.

Starting from Faraday Hall (1978) of which the span is about 20 meters, so many BSS with large span and various features have been realized during the last 40 years including the new projects of Tokyo 2020 Olympic Games. In this paper, the diversity of BSS will be presented from both viewpoints as follows.

- 1) Architectural expression of the external and internal appearance.
- 2) Structural technology of the system, details and construction.

References

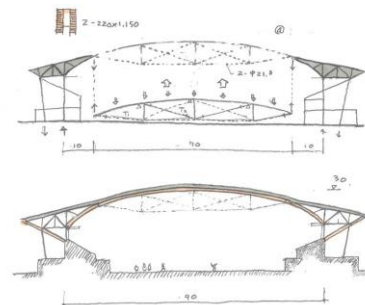
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Faraday Hall (1978)



Anou Dome (1994)



Ariake Gymnastics Arena (2019)