

Zeitschrift: IABSE structures = Constructions AIPC = IVBH Bauwerke
Band: 13 (1989)
Heft: C-50: Recent structures

Artikel: Japan Radio Co. building no. 109 (Japan)
Autor: Ichinohe, H.
DOI: <https://doi.org/10.5169/seals-21575>

Nutzungsbedingungen

Die ETH-Bibliothek ist die Anbieterin der digitalisierten Zeitschriften auf E-Periodica. Sie besitzt keine Urheberrechte an den Zeitschriften und ist nicht verantwortlich für deren Inhalte. Die Rechte liegen in der Regel bei den Herausgebern beziehungsweise den externen Rechteinhabern. Das Veröffentlichen von Bildern in Print- und Online-Publikationen sowie auf Social Media-Kanälen oder Webseiten ist nur mit vorheriger Genehmigung der Rechteinhaber erlaubt. [Mehr erfahren](#)

Conditions d'utilisation

L'ETH Library est le fournisseur des revues numérisées. Elle ne détient aucun droit d'auteur sur les revues et n'est pas responsable de leur contenu. En règle générale, les droits sont détenus par les éditeurs ou les détenteurs de droits externes. La reproduction d'images dans des publications imprimées ou en ligne ainsi que sur des canaux de médias sociaux ou des sites web n'est autorisée qu'avec l'accord préalable des détenteurs des droits. [En savoir plus](#)

Terms of use

The ETH Library is the provider of the digitised journals. It does not own any copyrights to the journals and is not responsible for their content. The rights usually lie with the publishers or the external rights holders. Publishing images in print and online publications, as well as on social media channels or websites, is only permitted with the prior consent of the rights holders. [Find out more](#)

Download PDF: 22.01.2026

ETH-Bibliothek Zürich, E-Periodica, <https://www.e-periodica.ch>



8. Japan Radio Co. Building No. 109 (Japan)

Owner: Japan Radio Co., Ltd.
Architect: Hideo Ichinohe (Taisei Corporation)
Contractor: Taisei Corporation
Construction Period: March 1988 – November 1988 (9 months)

The building is a four storey electronic machinery assembly plant covering an area of 27 m × 42 m. It was constructed with an open space, pillar free design by means of post-tensioned beams in order to be flexible for future changes in production lines and building usage.

The sectional configuration of the building has two limiting conditions. The first is that due to the north side slant line limit (under Japanese construction standard regulations this limit is to ensure sunshine to neighbouring buildings), the floor level of the fourth storey has been kept down to GL + 13.2 m and the fourth storey has been set back to a distance of 18 m. The second limiting factor is the existence of high voltage lines in the air space above the building. These limit the total height of the building to GL + 16.9 m.

In addition to the above limitations, the total height of the girders for the second, third and fourth floors had to be less than 4 m and the roof girder height for the roof

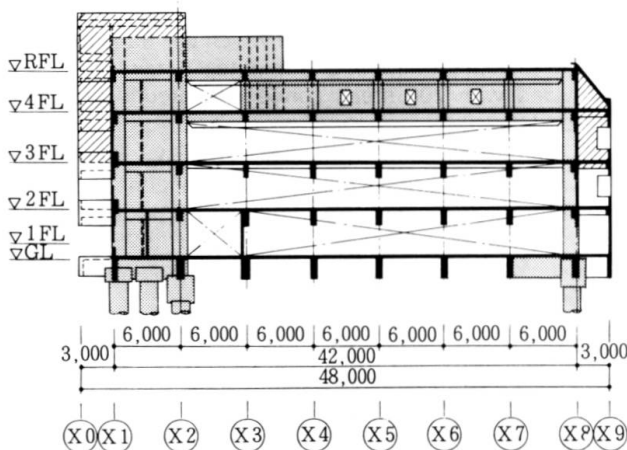


Fig. 1 Framing elevation of Y axis

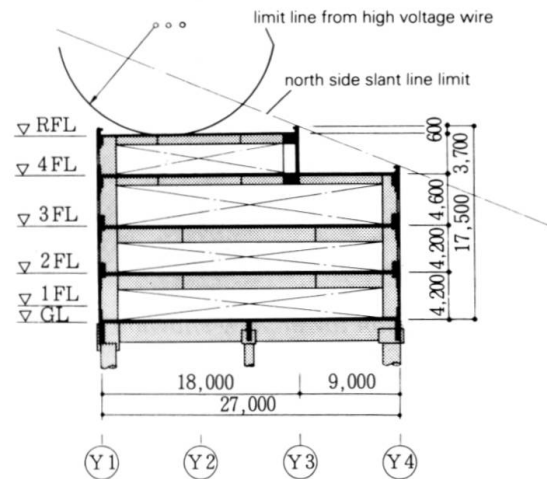


Fig. 2 Framing elevation of X axis

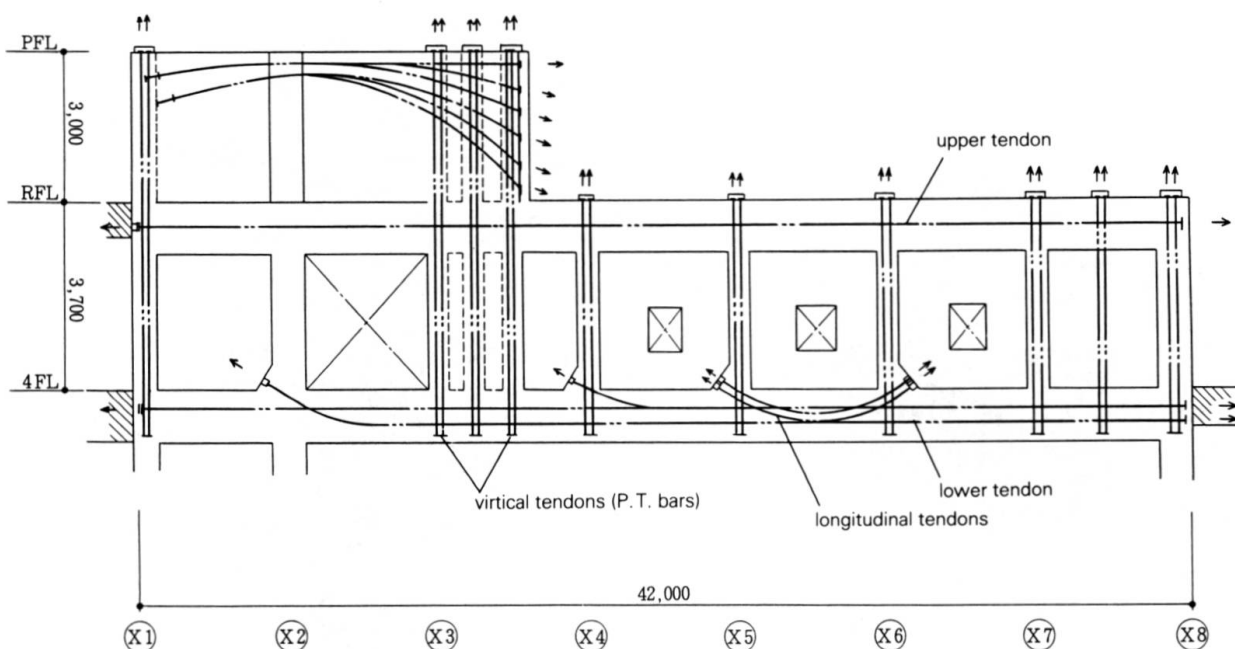


Fig. 3 Megastructure beam



Fig. 4 Inside room at 3rd floor

floor less than 1.0 m, due to the requirement of clear height for each floor. These were essential conditions in the planning of the building.

With ordinary structural design, the girder height of the second and third floors would be 1.5 m each and the fourth floor girder height would be more than 1.5 m, making the total girder height of those three floors exceed 4 m. In order to clear these limits, the exterior wall was utilized as shown in Fig. 1 and beams were put up with a height of one storey over a span of 36 m at

right angles to the short cross-beams to form a cubic lattice work of beams with the fourth storey and roof spanning beams to take up the weight and resist gravity.

The 36 m span beam (hereafter referred to as the mega-structure beam) is shaped as shown in Fig. 3. A large hole has been constructed in the left end to make a passage way and because of this, the left end is fastened to the wall above, which is utilized as a girder, and suspended by means of post-tensioning tendons. The structural analysis was three-dimensional and the stress at the particular points was calculated according to the load conditions during the execution and final construction stage, to determine the tendon arrangements and stress force of the tendons.

For the structural design of the building, utmost care was taken with the analysis and during the procedure involving the introduction of prestress force to the structure and in matching the given stress corresponding to the variable stress in accordance with the construction phase. However minute the analysis, the anticipated stress cannot be obtained unless the actual stress is adequately given according to the procedure mentioned above.

Prestress was introduced in the following order: vertical tendons (P.T. bars), the upper and the lower strand cables in the megastructure, the right angle roof floor spanning girder and the fourth floor girder.

Prestress was applied to the structure in three steps and one third of the stress was applied during each step. No cracking at all was observed, and the result was good.

(H. Ichinohe)



Fig. 5 General view of the building