Structural Design of the Japan pavilion in Shanghai Expo

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Summary

The Japanese pavilion at the 2010 World Expo in Shanghai is a large space structure 100m in the longitudinal direction and 50m in the transverse direction. The shape is not a regular geometric shape, but is a special shape. This structure with its special shape was planned to have a high structural performance, taking into consideration economics, the short construction period, and ease of construction. The following is a description of the structural design.

Keywords: special shape; pin joints; stability of the structure; shallow mixing ground improvement; method of correcting for differential settlement

1. Summary of the Japanese Pavilion

Table 1: Construction Details

Client:	JETRO
Basic design:	Nihon Sekkei, Inc.
Detailed design:	Takenaka Corporation
Construction:	Takenaka Corporation
Construction period:	March-December 2009 (9.5 months)
Building area:	About 3,750m^2
Total floor area:	7,200m^2
No. stories:	3 floors above ground
Structure:	Structural steel frame
Foundation type:	Mat foundation
Ground work:	Shallow mixing ground improvement
External finishes:	ETFE membrane with thin solar panels

Fig. 1: Overall view of the building

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