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Aseismic Design of High- Rise Thin Shell Structure >+the Goddess-of-Mercy Statue in Mórica (Hirokazu Y

(Yasufumi Kuroki)

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@ b*•7È0¿0£ b s0[_ X 8 Z3Ù m>*+¬#ä d8 ? } ^ •9× ™ S4 "@ b Ô ¹ Ý ì m 2 \ Q b0Ž

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Synopsis :

The statue of the •Goddess of Mercy (Tendo -Hakui -Kannon)" is a reinforced concrete structure with a height of 100 meters. To predict the elastic and plastic behavior of this statue in a major earthquake, a basic design model was adopted in which a series of ellipsoids approximates the configuration of the statue. Aseismic safety was also examined with respect to the complex surfaces unique to the statue using structural analysis models. As reported here, the aseismic design of the statue involved analysis methods applicable to high- rise >*free-form thin shell structures.

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自由曲面からなる高層構造物—天道白衣大観音像—の耐震設計*

Aseismic Design of High-Rise Thin Shell Structure—the Goddess-of-Mercy Statue in Sendai

要旨

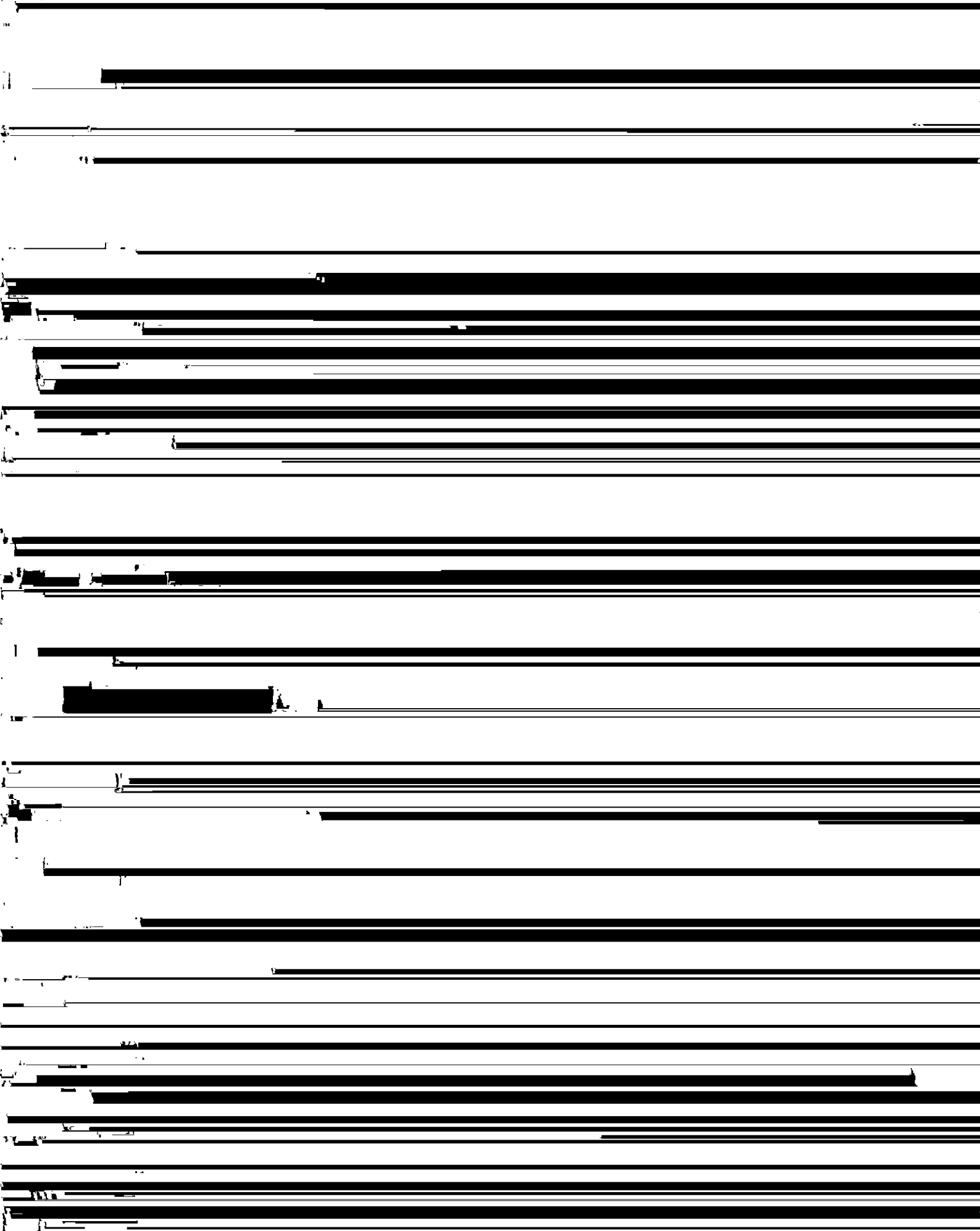天道白衣大観音像は100mの高さをもつ鉄筋コンクリート構造の観音像である。この観音像の設計において，大地震を想定した弾塑性地震応答解析を行うため観音像を楕円筒の集合体に近似した設計

Table 1　Seismic waves and maximum accelerations used in earthquake response analysis

5.0 m　　5.0 m　　0　　Shear force (t)　　9 000

SENDAI 501   NS
EL CENTRO   NS
TAFT   EW

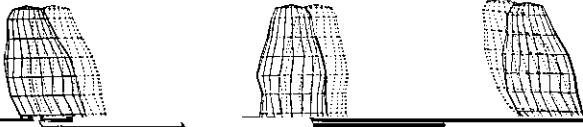Table 2   List of structural analyses in aseismic design of the statue

Table 3 Comparison between bending stiffness of design model and bending stiffness equivalent to FEM model

Location in	Bending stiffness (m⁴)		Ratio

Table 4　Maximum response to SENDAI 501 earthquake at the lowest layer of the statue[*4]

	Response to NS wave[*1]	Response to UD wave[*2]	SRSS methods[*3]	Response to NS & UD