KAWASAKI STEEL TECHNICAL REPORT No. 28 June 1993

Structural Behavior of Super HISLEND-H*

Synopsis:

The sufficient ductility of Super HILEND-H for practical

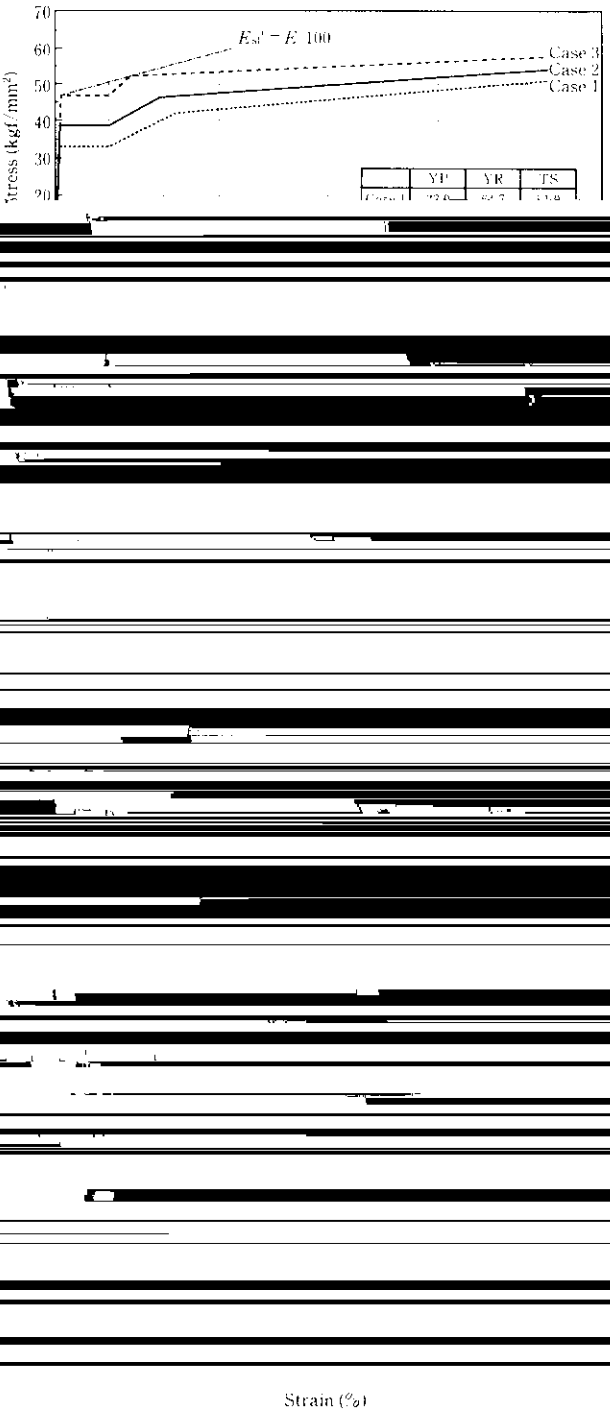


Fig. 1 Stress–strain curves for numerical analysis

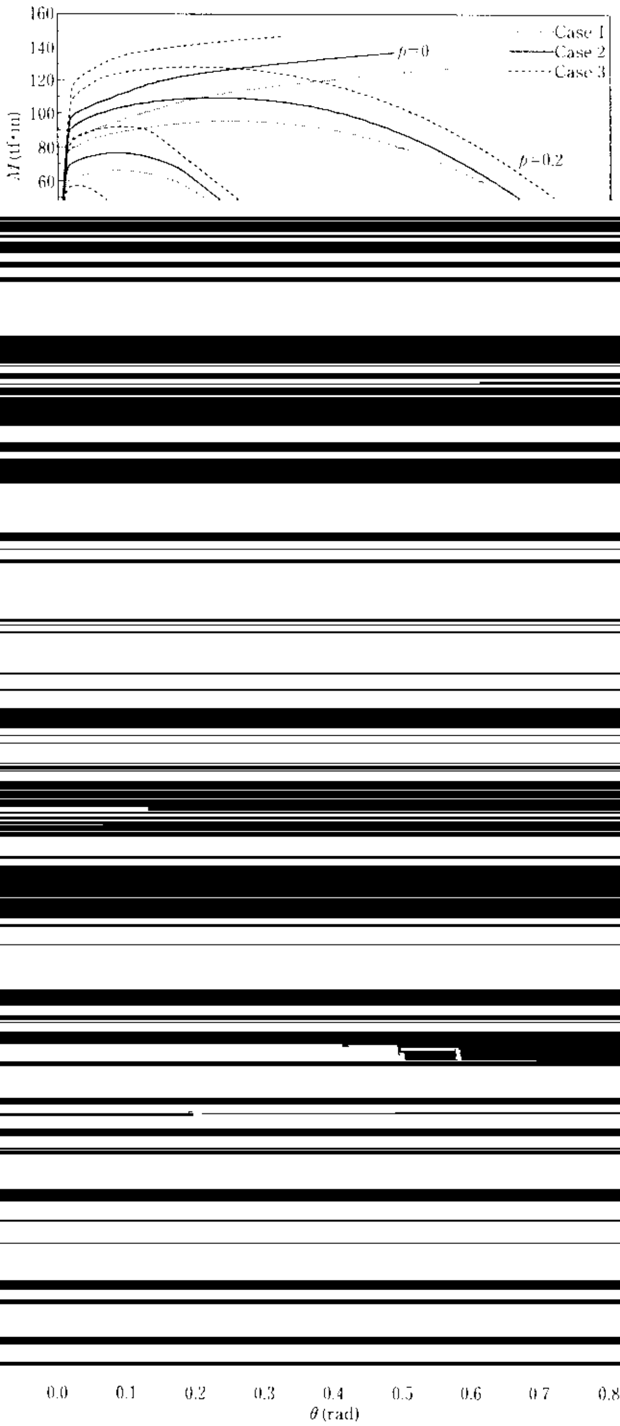
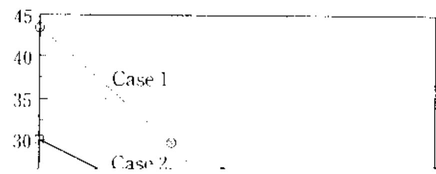


Fig. 3 M–θ curves (SM490)

Fig. 2 Loading condition



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The specimen was subjected ...

loading, and the deformation and strain at various parts

(1) C-B1: Tensile yielding of the column web → tensile

3.3 Test Results

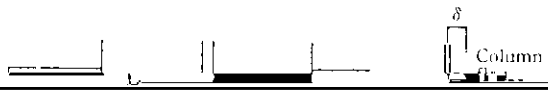
Load (P)-deformation (Δ) curves of series B and T specimens are shown in **Figs. 6** and **7**, respectively. In

plane flexural yielding of the column flange → tensile yielding of the beam flange

(2) C-B2: Tensile yielding of the column flange → tensile flexural yielding of the vertical stiffening plate

where $t = {}_{r}t + {}_{c}t_{f}$

${}_{f}M_{p}$: Yielding moment per unit length of the



$$
{}_{\mathrm{SC}}P_{\mathrm{p}} = 4\sqrt{{}_{\mathrm{f}}M_{\mathrm{p}} \cdot {}_{\mathrm{c}}b({}_{\mathrm{s1}}T_{\mathrm{y}} \cos \alpha_1 + {}_{\mathrm{s2}}T_{\mathrm{y}} \cos \alpha_2 + {}_{\mathrm{w}}T_{\mathrm{y}})} + ({}_{\mathrm{s1}}T_{\mathrm{y}} \cos \alpha_1 + {}_{\mathrm{s2}}T_{\mathrm{y}} \cos \alpha_2 + {}_{\mathrm{w}}T_{\mathrm{y}})t
$$

$$
\cdots\cdots {}_{\mathrm{s}}h \geqq 4\sqrt{\frac{{}_{\mathrm{f}}M_{\mathrm{p}} \cdot {}_{\mathrm{c}}b}{{}_{\mathrm{s1}}T_{\mathrm{y}} \cos \alpha_1 + {}_{\mathrm{s2}}T_{\mathrm{y}} \cos \alpha_2 + {}_{\mathrm{w}}T_{\mathrm{y}}}} + t
$$

$$
{}_{\mathrm{SC}}P_{\mathrm{p}} =
$$

$$
4\sqrt{\left[{}_{\mathrm{f}}M_{\mathrm{p}} \cdot {}_{\mathrm{c}}b - \frac{({}_{\mathrm{s1}}T_{\mathrm{y}} \cos \alpha_1 + {}_{\mathrm{s2}}T_{\mathrm{y}} \cos \alpha_2)({}_{\mathrm{s}}h - t)^2}{\ldots}\right] \ldots}
$$

[illegible]

Table 2 General yield strength of B-series and T-series specimens

Specimen	Experimental ${}_{\mathrm{e}}P_{\mathrm{p}}$ (tf)	Analytical ${}_{\mathrm{sc}}P_{\mathrm{p}}$ (tf)	${}_{\mathrm{e}}P_{\mathrm{p}}/{}_{\mathrm{sc}}P_{\mathrm{p}}$
C-B1	111.3	106.8	1.04
C-B2	106.7	97.0	1.10
C-B3	91.3	91.3	1.00
C-B4	74.2	72.7	1.02
C-T1	[illegible]	[illegible]	[illegible]

[illegible]