Abridged version

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Elastic-Plastic Behaviour and Design of Beam-to-Column Connections Reinforced by Increased Thickness of Columns

Yukio Murakami, Tadao Kaneko

Synopsis :
With regard to connections of cold-formed square tube and beam, behavior and design of the connection reinforced by increasing thickness of column have been investigated. Sub-assemblage tests were carried out under cyclic loadings. Test results show that connection can absorb sufficient seismic energy and that yield strengths predicted by yield line theory agree well with experments. Parametric study using FE method has succeeded in obtaining empirical formulae and made it possible to estimate rotational rigidity of the connection.

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The body can be viewed from the next page.

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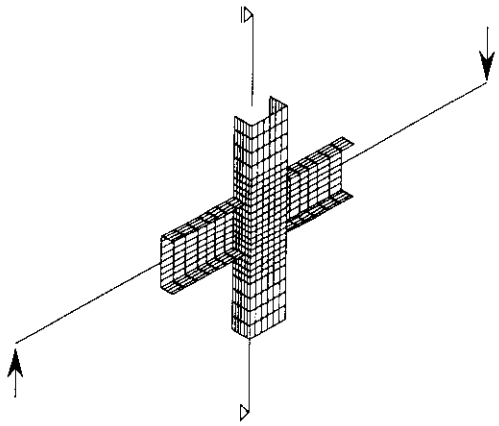
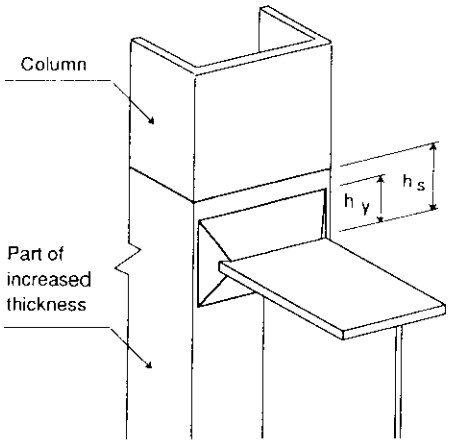
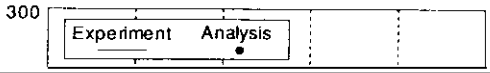
Table 3 Results of sub-assemblage test and anal

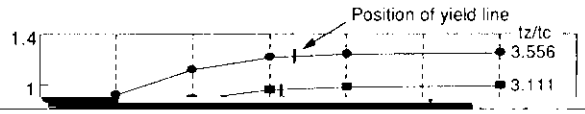


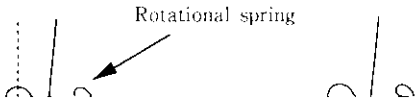


Increased thickness type	
Width of beam	150, 200, 250, 300
Thickness of increased plate	12, 16, 19, 22, 25, 28, 32
Extra length of increased plate, h_s	50, 100, 150, 200, 300

Fig. 6 Extra length h_s




Position of yield line
1.4
1
tz/tc
3.556
3.111


Rotational spring

The abscissa is the plastic moment of the beam ${}_pM_b$ made dimensionless by being divided by the local yield

5 Conclusion