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Making and Fabricating of Steel Components for Jack-up Rig Legs

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Synopsis :

Kawasaki Steel's 80 kgf/mm² high-strength plates are widely used in the fabrication of legs for jack-up rigs to build the lightweight and yet strong offshore structures. This paper introduces various features of Kawasaki Steel's plates and other products used for the rigs, including seamless pipes. It also outlines the process of manufacture and fabrication of various components of the legs. Special welding jigs were devised to meet critical design specifications for welded structures, and careful quality control was performed by setting up important check points.

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The body can be viewed from the next page.

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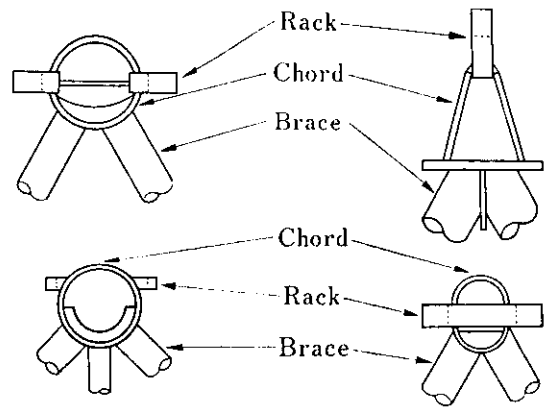
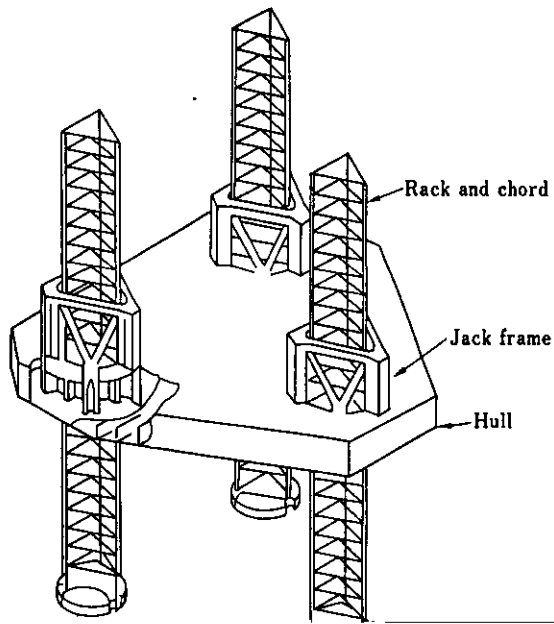


Fig. 2 Typical sections of racks and chords

costly, an excessive addition of Ni raises unnecessarily the production cost of steel materials. Fig. 5 shows the results of the weld bead tough

Fig. 1 Outline of legs and jack frame

ous welding conditions by the synthetic heat affected zone test. The content of Ni addition is

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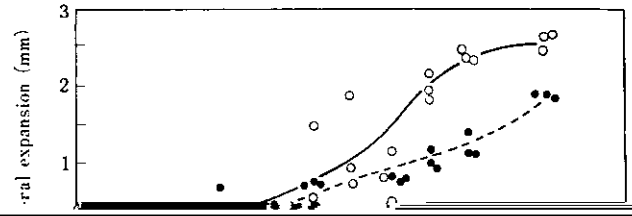
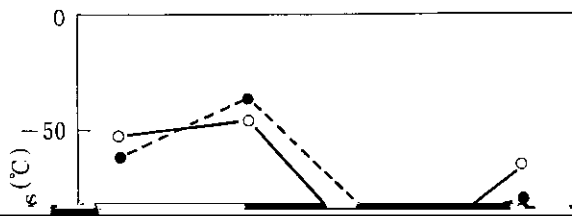
The image shows a document page with a table structure. The table has multiple rows and columns. The content is almost entirely obscured by thick black redaction bars. Only faint horizontal lines and some small, illegible text fragments are visible. The text '1/900 500.' is present in the top right header area.

1) Welding conditions

SMAW

Electrode

KS-116



150 mm) were used to investigate their various characteristics including the low-temperature toughness of

mentioned δ_C ; this figure clearly indicates that the steel plates have excellent low-temperature

the base metal. Tables 4 and 5 show their chemical compositions and mechanical properties, respectively.

$$K = \sqrt{E \cdot \sigma \cdot \delta} \quad (1)$$

To investigate their toughness, they were submitted to

Seamless pipes made into brace materials cover

3.2.1 Mechanical properties and welded joint performance

17 and 25 kJ/cm, respectively. This table indicates that KHP80 and 60 have sufficient strength and toughness at both the heat-inputs.

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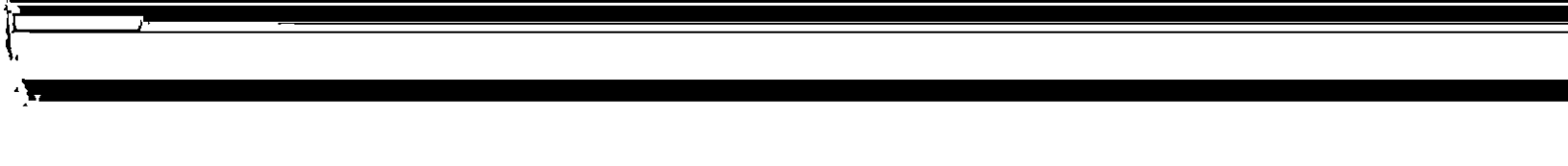
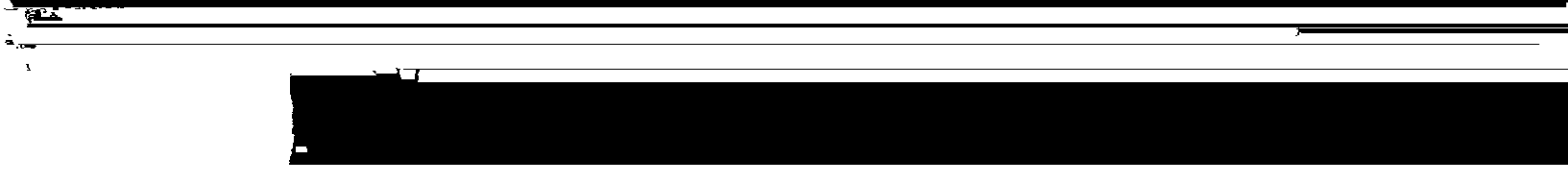
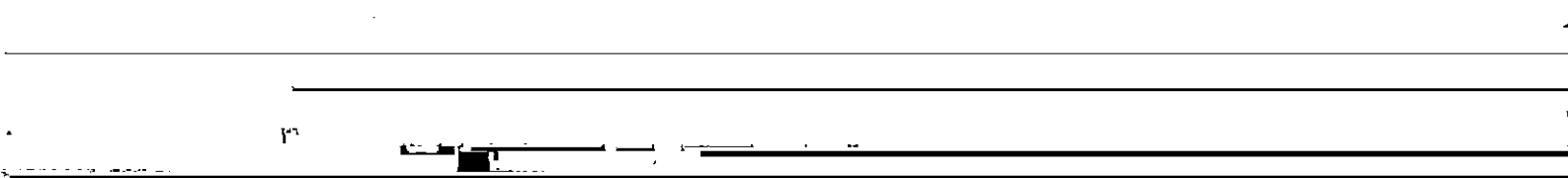
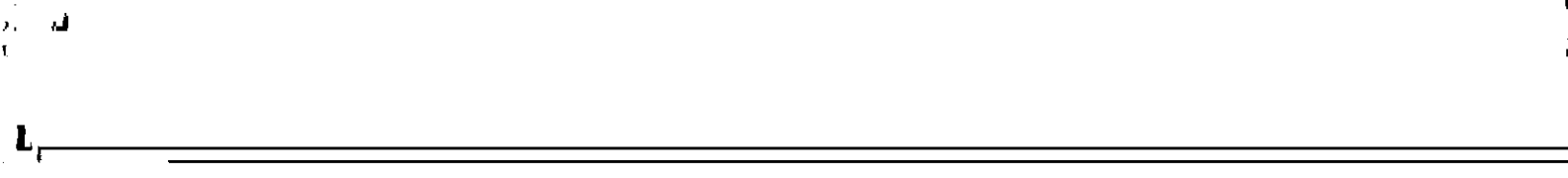
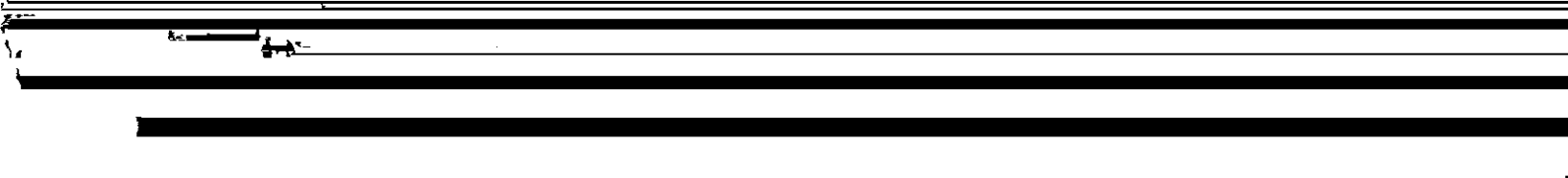
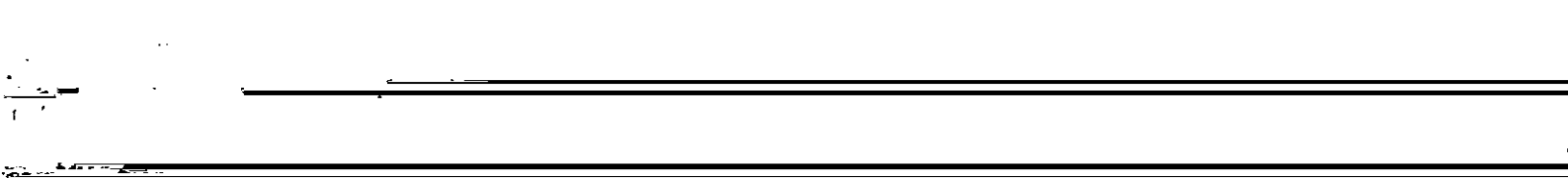
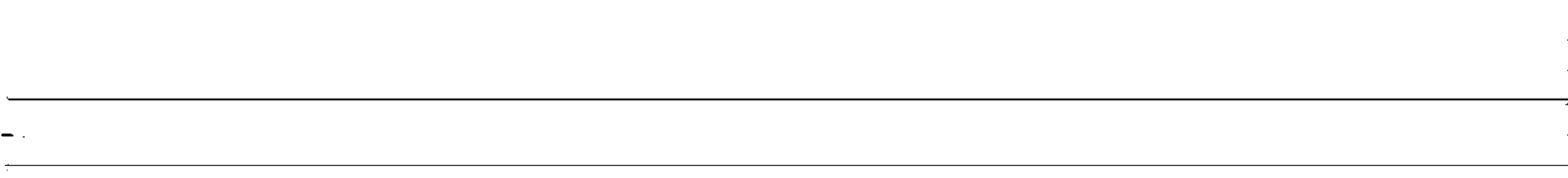
Table 11 Chemical composition of all-deposited metal

(%)

Electrode brand	C	Si	Mn	P	S	Ni	Mo	Ti	Al	O
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trode before the root pass welding. As a result, elec-
trode control has been regained. Fig. 14 shows that



4 Fabrication of Leg

4.1 Gas-cutting of Rack

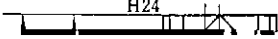
for jack-up rigs Nos. 7 and 8 "HAKURYU" were

the leg and is an important component which is

☞: Customer's erection joint

☞: Kawasaki's erection joint

H24



First, joints necessary for fabrication were extracted by ABS, but no problem occurred.

Upper 10 (movable)

(2a) Panel unit

(2b) Panel unit

(2c) Panel unit



