KAWASAKI STEEL TECHNICAL REPORT No. 21 November 1989

Fabrication and Erection Techniques for Extra-Heavy Steel High-Rise Structure, Shenzhen Development Center, China*

Synopsis:

was used for girder connections at columns, where the amount of welding work is concentrated in the shop fabrication of steel frames.

Field welding procedure tests were conducted using following column to column, girder to girder, and col

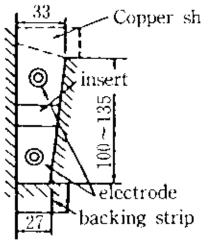
tion behavior and the incidence of internal weld defects . On the basis of these tests, an appro-

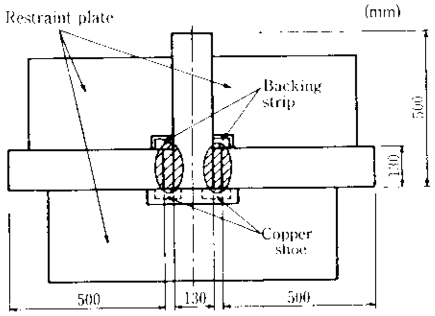
in the Shenzhen Economic Development Zone of the People's Republic of China adjacent to Hong Kong. An outline of the building statistics is given in **Table 1**. The building is large cylindrical high-rise building about 160 m tall and is the highest steel-frame structure in

typical floor plan is shown in Fig. 1. The

structure comprises reinforced concrete load-bearing walls and a steel frame. In order to provide rigidity for

Table 2 Standard procedure specification for CES welding of column-girder joint

Joint detail (mm)	
Welding condition of both	[illegible]

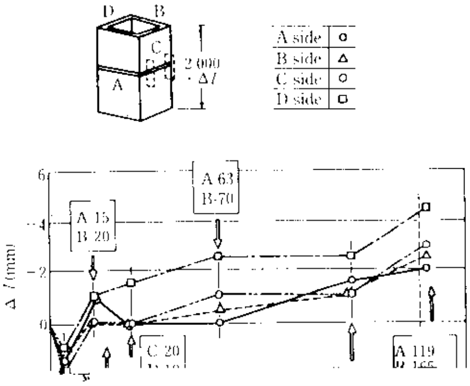


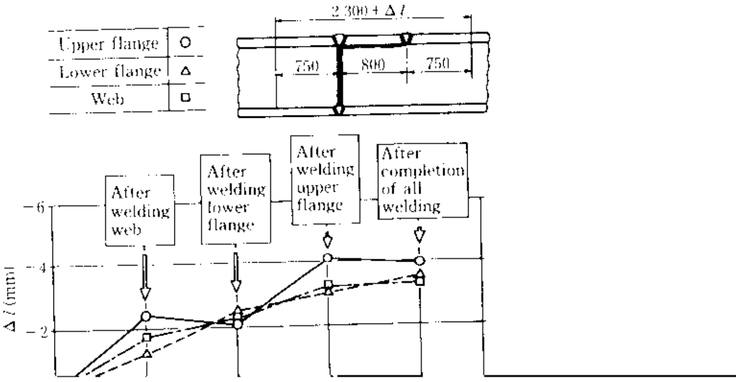
fabrication of extra-heavy steel frames is substantially

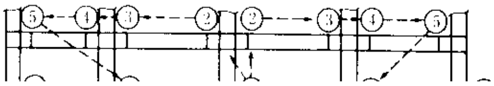
(mm)

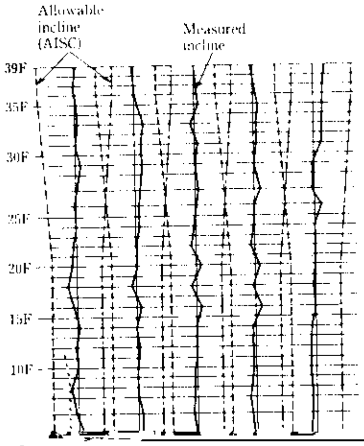
Table 5 Test results of chemical composition and mechanical properties of base metal

Specification	Plate thickness (mm)	Chemical composition (%)						Tension test			Notes
		C	Si	Mn	P	S	Nb	YS (MPa)	TS (MPa)	El (%)	
[illegible]	100	0.13	0.34	1.26	0.017	0.005	0.012	[illegible]	[illegible]	[illegible]	[illegible]


D
B
C
A
2 000
+ Δl
A side ○
B side △
C side ○
D side □
Δ l (mm)
6
4
2
0
A 15
B 20
A 63
B-70
C 20
A 119


Upper flange ○
Lower flange △
Web □
2 300 + Δ l
750
800
750
After welding web
After welding lower flange
After welding upper flange
After completion of all welding
Δ l (mm)
−6
−4
−2


⑤
④
③
②
②
③
④
⑤


Allowable incline (AISC)
Measured incline
39F
35F
30F
25F
20F
15F
10F