

FIG. 2. P. C. FRESH WATER COOLER

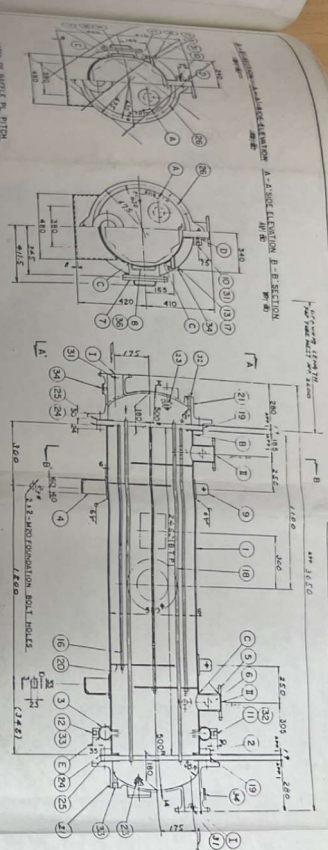
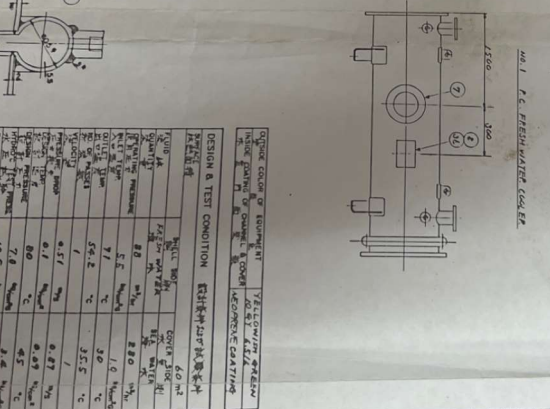
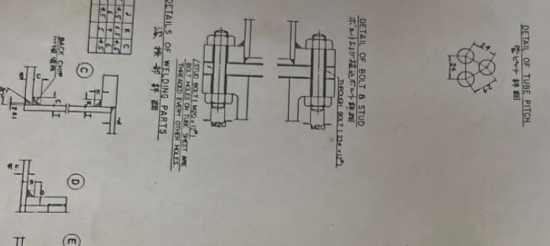
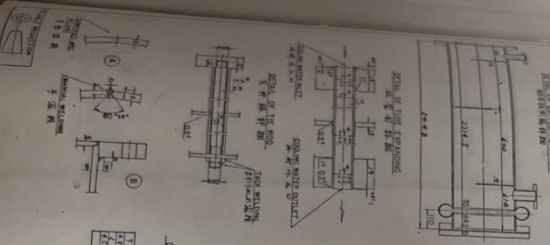
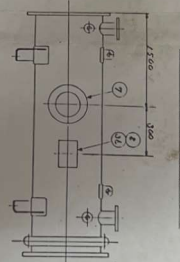


FIG. 1. P. C. FRESH WATER COOLER



REVISION		ISSUE NO.
NO.	DATE	DESCRIPTION

CONNECTION FLANGES			FIG. NO.
1	WATER	150	25
2	SEA WATER	150	25
3	SEA WATER	150	25
4	SEA WATER	150	25
5	SEA WATER	150	25

ACCESSORIES			FIG. NO.
1	WATER	150	25
2	SEA WATER	150	25
3	SEA WATER	150	25
4	SEA WATER	150	25
5	SEA WATER	150	25

NO.	PART NAME	QTY	REMARK
1	WATER	150	25
2	SEA WATER	150	25
3	SEA WATER	150	25
4	SEA WATER	150	25
5	SEA WATER	150	25
6	SEA WATER	150	25
7	SEA WATER	150	25
8	SEA WATER	150	25
9	SEA WATER	150	25
10	SEA WATER	150	25
11	SEA WATER	150	25
12	SEA WATER	150	25
13	SEA WATER	150	25
14	SEA WATER	150	25
15	SEA WATER	150	25
16	SEA WATER	150	25
17	SEA WATER	150	25
18	SEA WATER	150	25
19	SEA WATER	150	25
20	SEA WATER	150	25
21	SEA WATER	150	25
22	SEA WATER	150	25
23	SEA WATER	150	25
24	SEA WATER	150	25
25	SEA WATER	150	25
26	SEA WATER	150	25
27	SEA WATER	150	25

ITEM	UNIT	QUANTITY	REMARK
1	kg	150	25
2	kg	150	25
3	kg	150	25
4	kg	150	25
5	kg	150	25
6	kg	150	25
7	kg	150	25
8	kg	150	25
9	kg	150	25
10	kg	150	25
11	kg	150	25
12	kg	150	25
13	kg	150	25
14	kg	150	25
15	kg	150	25
16	kg	150	25
17	kg	150	25
18	kg	150	25
19	kg	150	25
20	kg	150	25
21	kg	150	25
22	kg	150	25
23	kg	150	25
24	kg	150	25
25	kg	150	25
26	kg	150	25
27	kg	150	25

ARRANGEMENT OF PISTON COOLING FRESH WATER COOLER

SCALE: 1:50

DATE: 1980

DESIGNED BY: [Signature]

CHECKED BY: [Signature]

APPROVED BY: [Signature]

SASAKURA ENGINEERING CO. LTD.

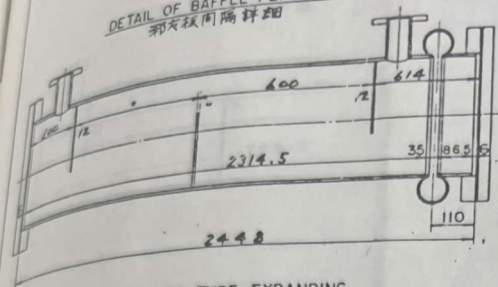
OSAKA JAPAN

TEL: 06-355-1111

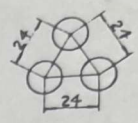
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0315

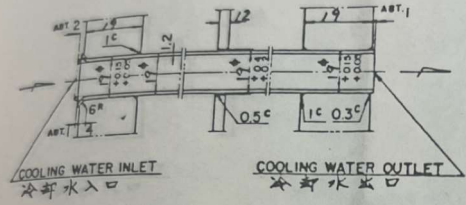
DETAIL OF BAFFLE PL. PITCH
 隔板间距详细



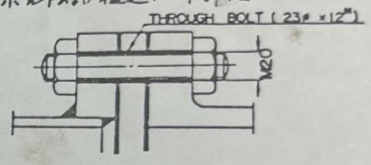
DETAIL OF TUBE PITCH
 管间距详细



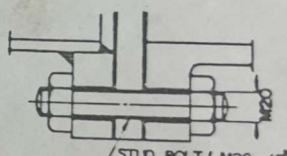
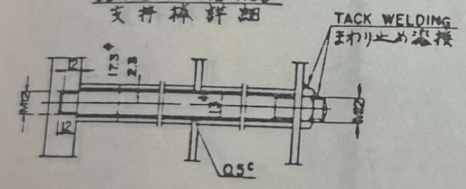
DETAIL OF TUBE EXPANDING
 扩管部详细



DETAIL OF BOLT & STUD
 螺栓与植丝螺栓详细

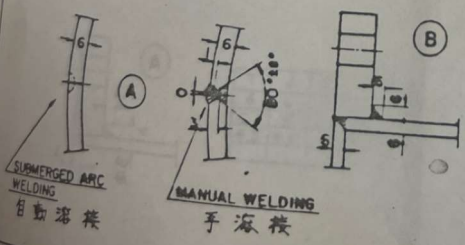


DETAIL OF TIE ROD
 支杆详细

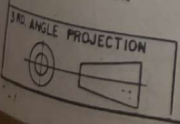
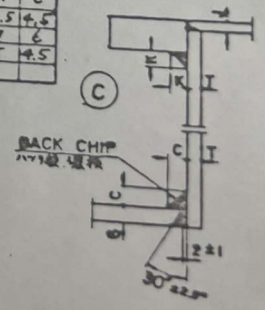


STUD BOLT (M20 x 12)
 BOLT HOLES ON TUBE SHEET ARE
 THREADED EVERY OTHER HOLES.

DETAILS OF WELDING PARTS
 焊接部详细

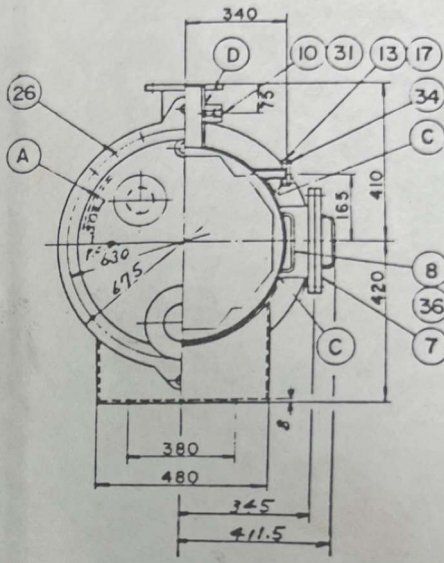
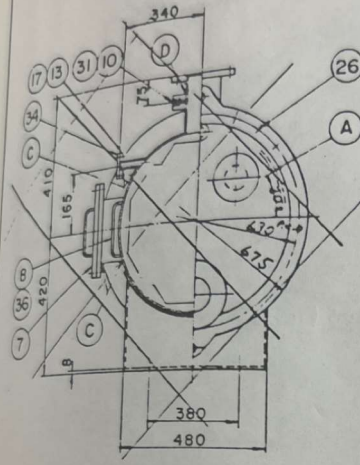


T	J	K	C
4.5	4.5	6.5	4.5
6	4	7	6
4.5	4.5	5	4.5

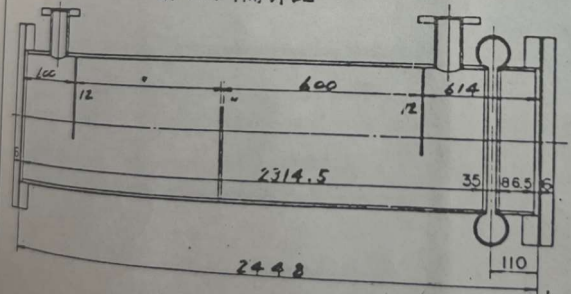


DRAWING LENGTH FOR TUBE NEST

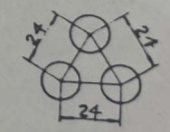
B-B SECTION A-A SIDE ELEVATION
断面 侧面
A-A SIDE ELEVATION B-B SECTION
侧面 断面



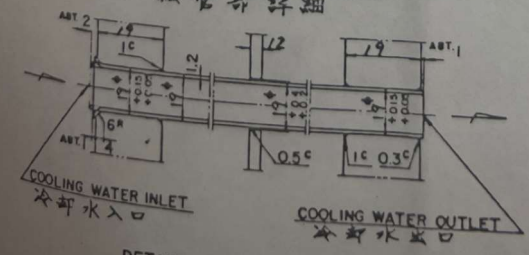
DETAIL OF BAFFLE PL. PITCH
隔板间距详细



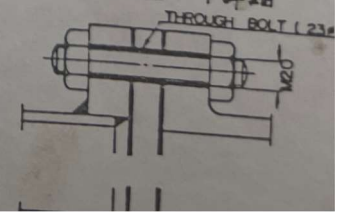
DETAIL OF TUBE PITCH
管间距详细



DETAIL OF TUBE EXPANDING
拉管部详细



DETAIL OF BOLT & STUD
螺栓对植达木叶详细

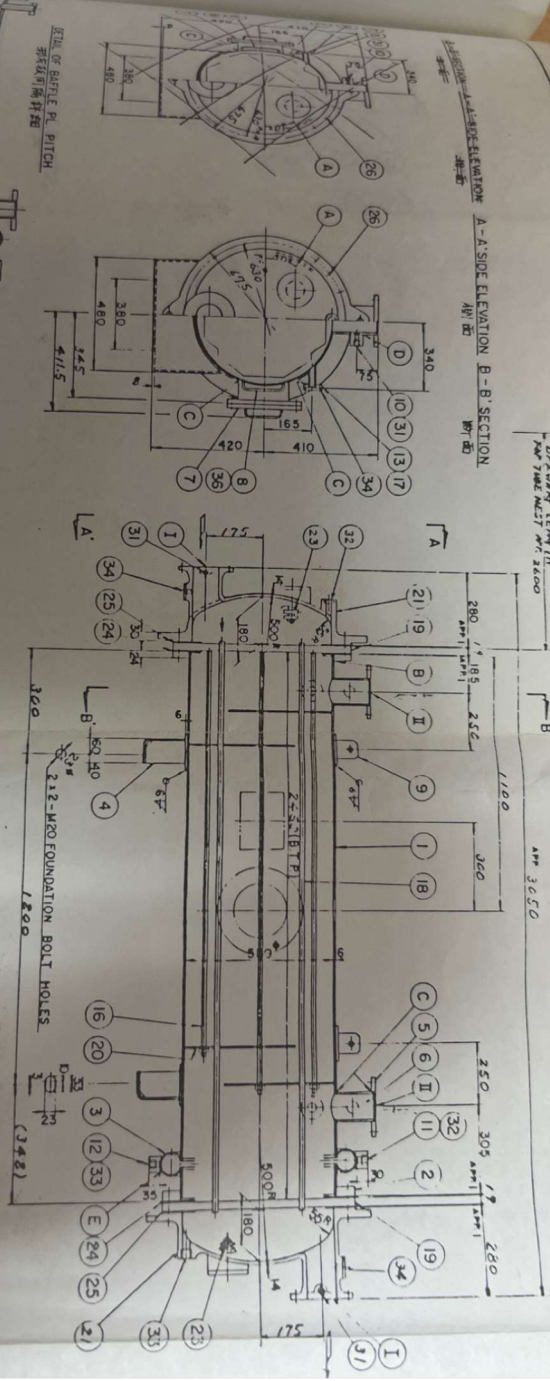


DETAIL OF TIE ROD
支杆详细

TACK WELDING
点焊

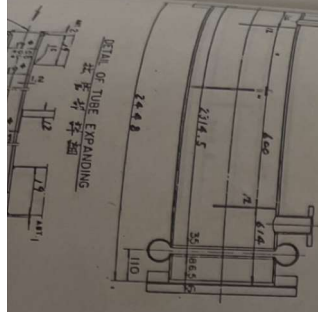
COPPING LENGTH IN APP. 2500
FOR TUBE MATCH AT 2000

NO. 2 P. C. FRESH WATER COOLER
APP. 3050

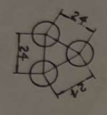


SECTION A-A SIDE ELEVATION B-B SECTION
APP. 2000
FOR TUBE MATCH AT 2000

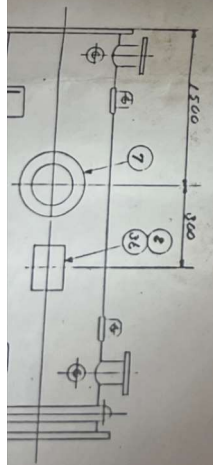
DETAIL OF BATTLE PITCH
管板間隔詳細

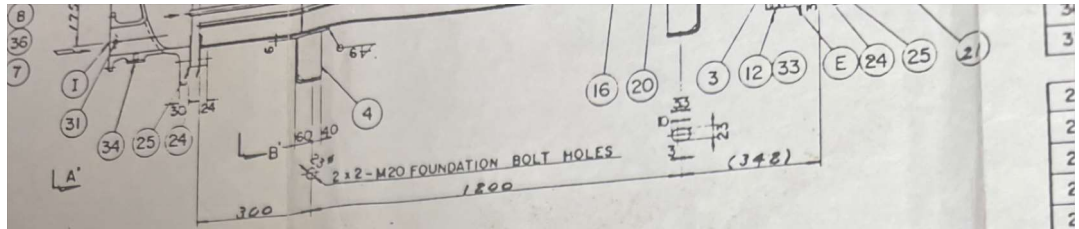


DETAIL OF TUBE PITCH
管 pitch 詳細

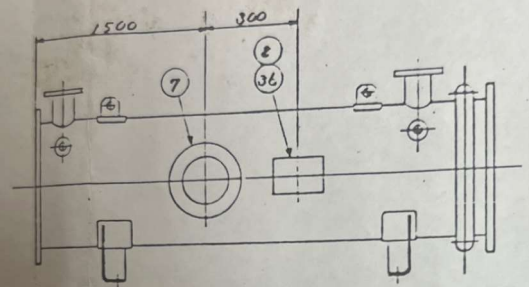


NO. 1 P. C. FRESH WATER COOLER





NO. 1 P.C. FRESH WATER COOLER

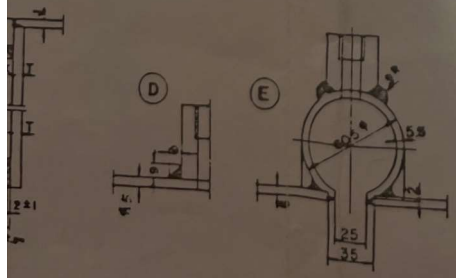


ITCH

STUD
BOLT (230 x 12)

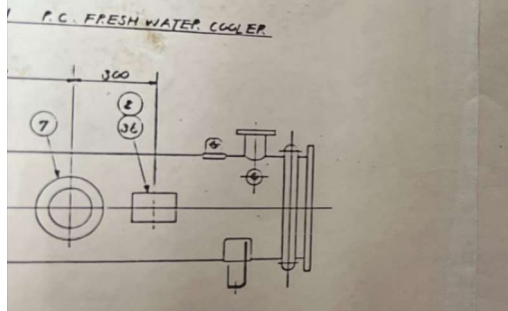
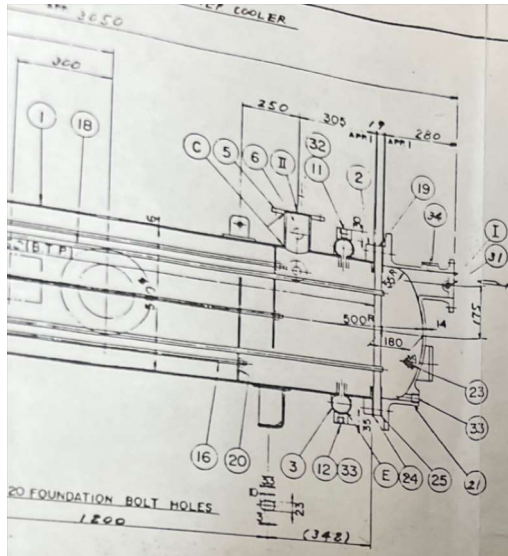
M20 x 12
IN TUBE SHEET ARE
VERY OTHER HOLES.

PARTS



OUTSIDE COLOR OF EQUIPMENT	YELLOWISH GREEN
INSIDE COATING OF CHANNEL & COVER	NEOPRENE COATING

DESIGN & TEST CONDITION 設計條件及試驗條件			
SURFACE 表面面積		60 m ²	
FLUID 流體		SHELL SIDE 殼側	COVER SIDE 蓋側
QUANTITY 數量		FRESH WATER 淡水	SEA WATER 海水
OPERATING PRESSURE 操作壓力	88 m ² /hr	280 m ² /hr	
INLET TEMP. 入口溫度	5.5 °C	1.9 °C	
OUTLET TEMP. 出口溫度	91 °C	30 °C	
NO. OF PASSES 折流次數	54.2 °C	35.5 °C	
VELOCITY 流速	1	1	
PRESSURE DROP 壓力損失	0.51 m/s	0.87 m/s	
DESIGN TEMP. 設計溫度	0.1 m ² /cm ²	0.09 m ² /cm ²	
DESIGN PRESSURE 設計壓力	80 °C	45 °C	
HYDRO. TEST PRESS. 水壓試驗	7.0 m ² /cm ²	3.4 m ² /cm ²	
FOULING FACTOR 污垢係數	10.5 m ² /cm ²	5.1 m ² /cm ²	
JOINT EFFICIENCY 焊接效率		80 %	
WEIGHT 重量		70 %	
	EMPTY 空殼 1260	SEA WATER 海水 295	F.W. FULL OF WATER 淡水滿殼 325
			1880



OUTSIDE COLOR OF EQUIPMENT	YELLOWISH GREEN 10.97 6.516
INSIDE COATING OF CHANNEL & COVER	NEOPRENE COATING

DESIGN & TEST CONDITION			
SURFACE	SHELL SIDE	COVER SIDE	
FLUID	FRESH WATER	SEA WATER	
QUANTITY	88 m ³ /hr	280 m ³ /hr	
OPERATING PRESSURE	5.5 kg/cm ² G	1.9 kg/cm ² G	
INLET TEMP.	91 °C	35.5 °C	
OUTLET TEMP.	54.2 °C	1	
NO. OF PASSES	1	0.87	m/s
VELOCITY	0.51 m/s	0.09 m/s	
PRESSURE DROP	80 °C	1.6 kg/cm ² G	
DESIGN PRESSURE	7.0 kg/cm ² G	5.1 kg/cm ² G	
HYDRO. TEST PRESS.	10.5 kg/cm ² G	7.0 kg/cm ² G	
POUING FACTOR		70 %	
SEA WATER	F.W. INLET	MULLUP INLET	
22.5			

REVISION			
NO.	DATE	DESCRIPTION	DESIGNER/CHK'D/APP'D

CONNECTION FLANGES					
PART NO.	PART NAME	BORE	FLANGE	PILE	REMARK
I	COOLING WATER IN & OUTLET FLG	200	5K	JIS O.D. 220	M-MAC 24
II	FRESH WATER IN & OUTLET FLG	125	5K	235	200 10-M16 16

ACCESSORIES			
PART NO.	PART NAME	QUANTITY	REMARK
31	THERMOMETER & POCKET	4 SETS	STRAIGHT TYPE
32	AIR COCK VALVE	2	6A (M20x15)
33	DRAIN COCK VALVE	2	10A (M24x21)
34	BLIND FLANGE FOR CLEANING	4	25A (JIS-FK)
35	PLUG	1	M30x2
36	NAME PLATE	1	ENGLISH
37			

27	BOLT & STUD	STEEL BAR S541	48	M20
25	GASKET	ASBESTOS SHEET	2	10 C-PS-55-1
24	GASKET	ASBESTOS SHEET	2	C-PS-55-1
23	PROJECTING PL.	PURE ZINC C.P.R.	2	40 P-G-CPZ-50
22	REVERSING COVER	CAST IRON	1	20NC-CR-55
21	CHANNEL	CAST IRON FC20	2	P-HC-CR-55-1-200
20	BAFFLE PLATE	STEEL PL S541	3	P-HC-B-55-19-1-12-2
19	TUBE SHEET	MANUAL BRASS C8621P	2	P-HC-TG-55-19-1-19
18	TUBE	19x1.2x2473	411	11
17	RIB	STEEL PL S541	2	13100032
16	TIE ROD & NUT	STEEL BAR S541	6	P-G-TR-12
15	SODA HOPPER CONN.	STEEL BAR S541	1	P-G-S-M15-C
14	BOILING STEAM CONN.	STEEL PIPE S541	1	P-G-E-110-50 EF
13	CHEMICAL CLEANING SEAT	STEEL PIPE S541	2	P-G-F-2-25 FF 25A-M30
12	DRAIN CONN.	STEEL BAR S541	1	P-G-S-M10-C L=35
11	AIR VENT CONN.	STEEL BAR S541	1	P-G-S-M6-C L=30
10	THERMOMETER CONN.	STEEL BAR S541	2	P-G-S-M10-T
9	EYE PLATE	STEEL PL S541	2	P-G-EP-2-C
8	NAME PLATE	STEEL PL S541	1	P-G-NS-2
7	KEEP HOLE	STEEL PIPE S541	1	P-HC-SH-SK-100
6	IN & OUTLET NOZZLE	STEEL PIPE S541	2	125 A
5	IN & OUTLET FLANGE	STEEL PL S541	2	P-G-F-J5-225 FF
4	SUPPORT BIDDLE	STEEL PL S541	2	P-HC-AU-55
3	EXPANSION JOINT	STEEL PIPE STPC3E-H	1	C-E-35
2	SHELL FLANGE	STEEL PL S541	2	P-HC-FK-55
1	SHELL	STEEL PL S541	1	

PART NO.	PART NAME	MAT'L	WORK INSPARE QUANT/SET	REMARK
CUSTOMER	MITSUBISHI HEAVY-IND. LTD.			
USED FOR	KDAE SHIPYARD & ENGINE WORKS YAMAGUCHI PUBLIC CO. LTD. 60MW FLOATING DIESEL GENERATING PLANT			

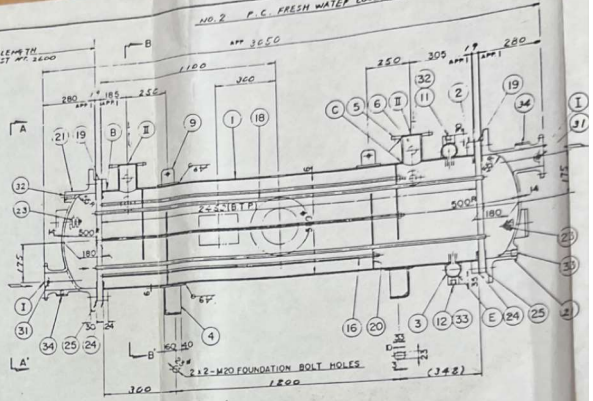
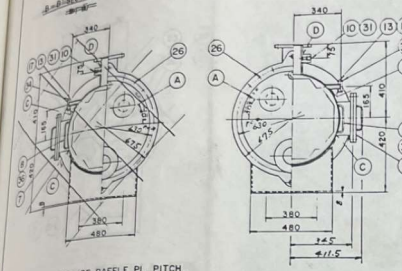
ARRANGEMENT OF
60MW NO.15 NO.2
PISTON COOLING
FRESH WATER COOLER

CODE	J15	NO. REQUIRED	2 SETS
SASAKURA ENGINEERING CO., LTD. OSAKA JAPAN			

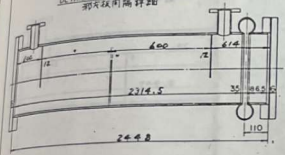
APP'D	CHK'D	DESIGN
DATE	DATE	DATE
SCALE	BIG. NO.	DRAWN
JOB NO.	03113143	REV

NO. 2 P. C. FRESH WATER COOLER

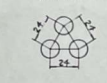
B-B SECTION A-A SIDE ELEVATION A-A SIDE ELEVATION B-B SECTION



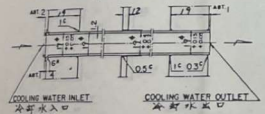
DETAIL OF BAFFLE PL. PITCH



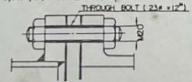
DETAIL OF TUBE PITCH



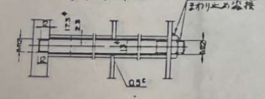
DETAIL OF TUBE EXPANDING



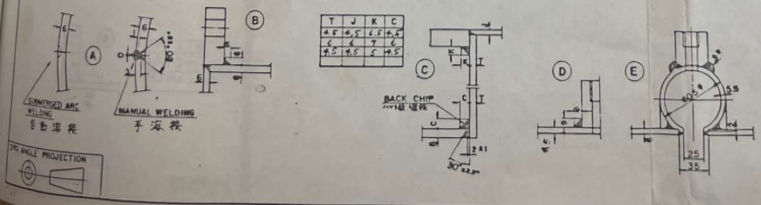
DETAIL OF BOLT & STUD



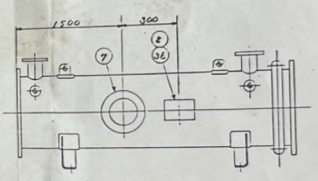
DETAIL OF THE ROD



DETAILS OF WELDING PARTS



NO. 1 P. C. FRESH WATER COOLER



OUTSIDE COLOR OF EQUIPMENT YELLOWISH GRAY
 INSIDE COATING OF CHANNEL & COVER NEOPRENE COATING

DESIGN & TEST CONDITION

DESIGN	TEST CONDITION	DESIGN	TEST CONDITION
SPACE	60	SPACE	60
FLUID	FRESH WATER	FLUID	FRESH WATER
QUANTITY	88 m ³ /hr	QUANTITY	88 m ³ /hr
OPERATING PRESSURE	5.5 MPa	OPERATING PRESSURE	5.5 MPa
INLET TEMP	71 °C	INLET TEMP	71 °C
OUTLET TEMP	56.2 °C	OUTLET TEMP	56.2 °C
NO. OF PASSES	1	NO. OF PASSES	1
VELOCITY	0.57 m/s	VELOCITY	0.57 m/s
PRESSURE DROP	0.1 MPa	PRESSURE DROP	0.1 MPa
COOLING TIME	80 min	COOLING TIME	80 min
DESIGN PRESSURE	7.8 MPa	DESIGN PRESSURE	7.8 MPa
HYDRO-TEST PRESSURE	10.5 MPa	HYDRO-TEST PRESSURE	10.5 MPa
FOULING FACTOR	1.0	FOULING FACTOR	1.0
JOINT EFFICIENCY	0.85	JOINT EFFICIENCY	0.85
WEIGHT	1260 kg	WEIGHT	1260 kg
	EMPTY	SEA WATER	F.W. WATER
	1260	275	325