

图纸履历

PLAN HISTORY

日期 DATE	标记 MARKER	数量 NUMBER	版本 REV.	修改单号/说明 MODIFICATION NO./DESCRIPTION	页码 PAGE	设绘 DESIGNED	审核 EXAMINE

NOTES:

- ALL ANODES ARE AS FOLLOWS:
 INSTALLATION TYPE : BOLTED
 MATERIAL: AL-Zn-In ALLOY
 SIZE,WEIGHT : (80+100)x250x120mm,7.0Kg/PIECE
- COMPLETE UNDERWATER HULL, INCLUDING RUDDER,PROPELLER ARE TO BE PROTECTED BY I.C.C.P. SYSTEM.
- HIGH SEA CHEST AND LOWER SEA CHEST TO BE FITTED ANODES, SEE PERTINENT DRAWING OF ENGINE PART.

注:

- 对锌板要求: 安装形式: 螺栓连接
 材料: AL-Zn-In 合金
 尺寸,重量: (80+100)x250x120mm, 7.0Kg/块
- 船体水下部分(包括舵,螺旋桨等)由I.C.C.P.系统提供保护.
- 高位海水箱、低位海水箱阳极,具体位置见轮机专业图纸.

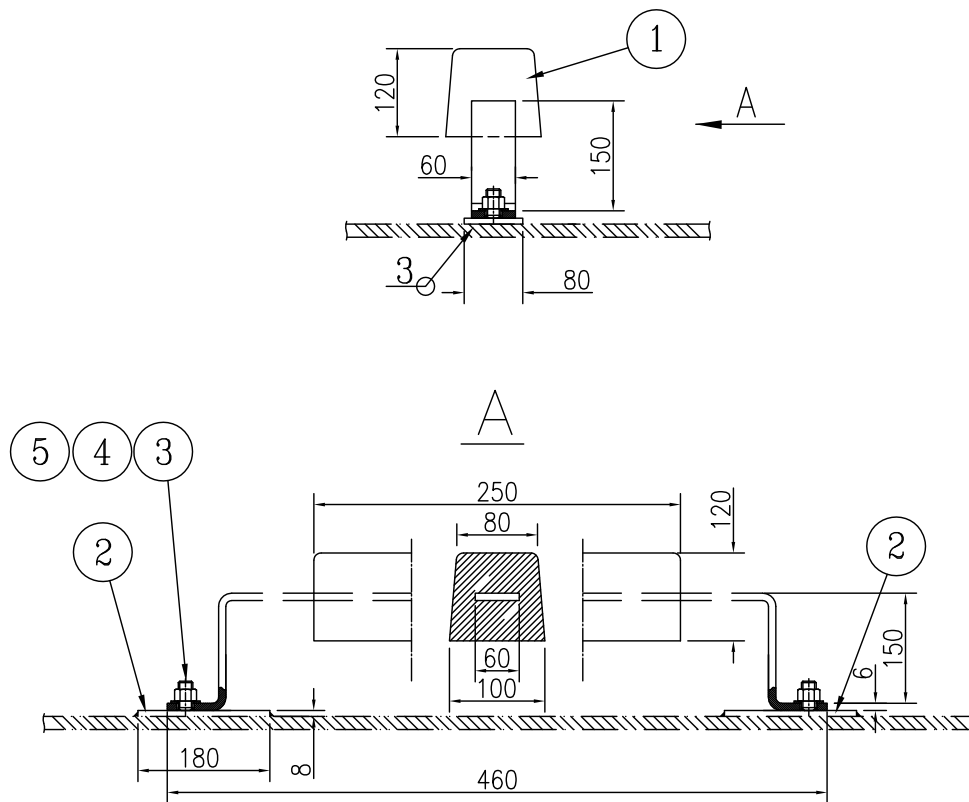
JNSD Shanghai China Tel: +86-021-53025656 Fax: +86-021-63012364 E-mail:jnsd@jnshipyard.com.cn			5,100 箱集装箱船 5,100TEU CONTAINER VESSEL			设计阶段 DES.STA.		完工设计 FINISH DESIGN			
						工程号 HULL NO.		H2431			
文件号 FILE		版本 REV.	牺牲阳极布置图 (压载舱) SACRIFICIAL ANODE ARRANGEMENT (IN BALLAST TANKS)			图号 DRAWING NO.		FO-32 72003200D			
设绘 DESIGNED		审核 EXAMINE				重量(kg) WEIGHT	1921.3	比例 SCALE	1:100	面积m ² AREA	
校对 CHECKED		复审 REVIEWED				共 1 项 TOTAL SHEETS		第 项 SHEET			
会签 COUNTERSIGN		审定 APPROVED									
标检 STANDARDIZED		批准 AGREED									
上海江南长兴重工有限责任公司 SHANGHAI JIANGNAN CHANGXING HEAVY INDUSTRY CO.,LTD.											

总面积: 1.825m² 4号 297x210=0.06m²

DETAIL OF SACRIFICIAL ANODE AZI-Sn-In

AZI-Sn-In 牺牲阳极节点

1:10



5		螺 母 M20	422	不锈钢	0.033	13.9	L316L.S31603
		NUT		STAINLESS STEEL			
4		垫 圈	422	不锈钢	0.02	8.44	L316L.S31603
		WASHER		STAINLESS STEEL			
3		螺 柱 M20x40	422	不锈钢	0.1	42.2	L316L.S31603
		STUD		STAINLESS STEEL			
2		垫 板 8X80X180	422	Q235-A	0.9	379.8	
		PLATE					
1	REF GB/T4948-2002	铝-锌-铜合金牺牲阳极	211	铝-锌-铜合金	7.0	1477	
		SACRIFICIAL ANODE OF Al-Zn-In ALLOY		Al-Zn-In ALLOY			
ITEM NO. 序号	MARK 代号	NAME & SPEC 名称及规格	QUANTITY 数量	MATERIAL 材 料	SET 每件	TOTAL 共件	REMARK 附 注
					WEIGHT 重量(kg)		

CALCULATION OF LIFE-SPAN OF ALUMINUM ANODES

尺寸,重量: 250x(80+100)x120mm, 7.0Kg/块

1. CALCULATION OF CONTACT-WATER RESISTANCE OF EACH ANODE

$$R = \frac{\rho}{2\pi L} \times \left(L_n \frac{4XL}{r} - 1 \right)$$

REMARK: ρ — RESISTANCE RATE OF SEA WATER, 25 Ω *cm

L — LENGTH OF ZINC ANODE, 25 cm

r — EQUIVALENT RADIUS OF ALUMINUM ANODE

$$r = C/2\pi$$

C — CROSS SECTION PERIMETER

$$C = 8 + 10 + (2 \times 12) = 42$$

$$\text{SO : } r = 42/2\pi = 6.68 \text{ cm}$$

$$\text{SO : } R = \frac{25}{6.28 \times 25} \left(L_n \frac{4 \times 25}{6.68} - 1 \right) = 0.27 \Omega$$

2. CALCULATION OF WORKING CURRENT (I_f) OF EACH ANODE:

$$I_f = E/R \times 1000$$

REMARK: ΔE — DRIVING VOLTAGE, 0.25V

R — CONTACT-WATER RESISTANCE,

$$\text{SO : } I_f = 0.25/0.27 \times 1000 = 926 \text{ mA}$$

3 IMPUTED LIFE-SPAN OF ALUMINUM ANODES:

$$Y = \frac{mQ \times 1000}{S \times I_m \times 8760} \times \frac{1}{K}$$

REMARK: m — NET WEIGHT OF ZINC ANODE, 7.0kg

Q — ACTUAL ELECTRIC CAPACITY OF
ZINC ANODE, 2400A.h/kg I_m — AVERAGE ACTING CURRENT OF
EACH ANODE, $I_m = 0.65 I_f$ $\frac{1}{K}$ — USAGE RATE OF SACRIFICIAL ANODE, 0.85

S — BALLAST RATIO, 0.5

$$Y = \frac{7.0 \times 2400 \times 0.85}{0.5 \times 0.926 \times 0.65 \times 8760}$$

$$= 5.42 \text{ YEARS} > 5 \text{ YEARS}$$

4 THE QUANTITY OF ZINC ANODES N :

$$N = \frac{A_g \times I_i}{I_f}$$

REMARK: A_g — AREA TO BE PROTECTED I_i — PROTECT CURRENT DENSITY (5mA/m²)

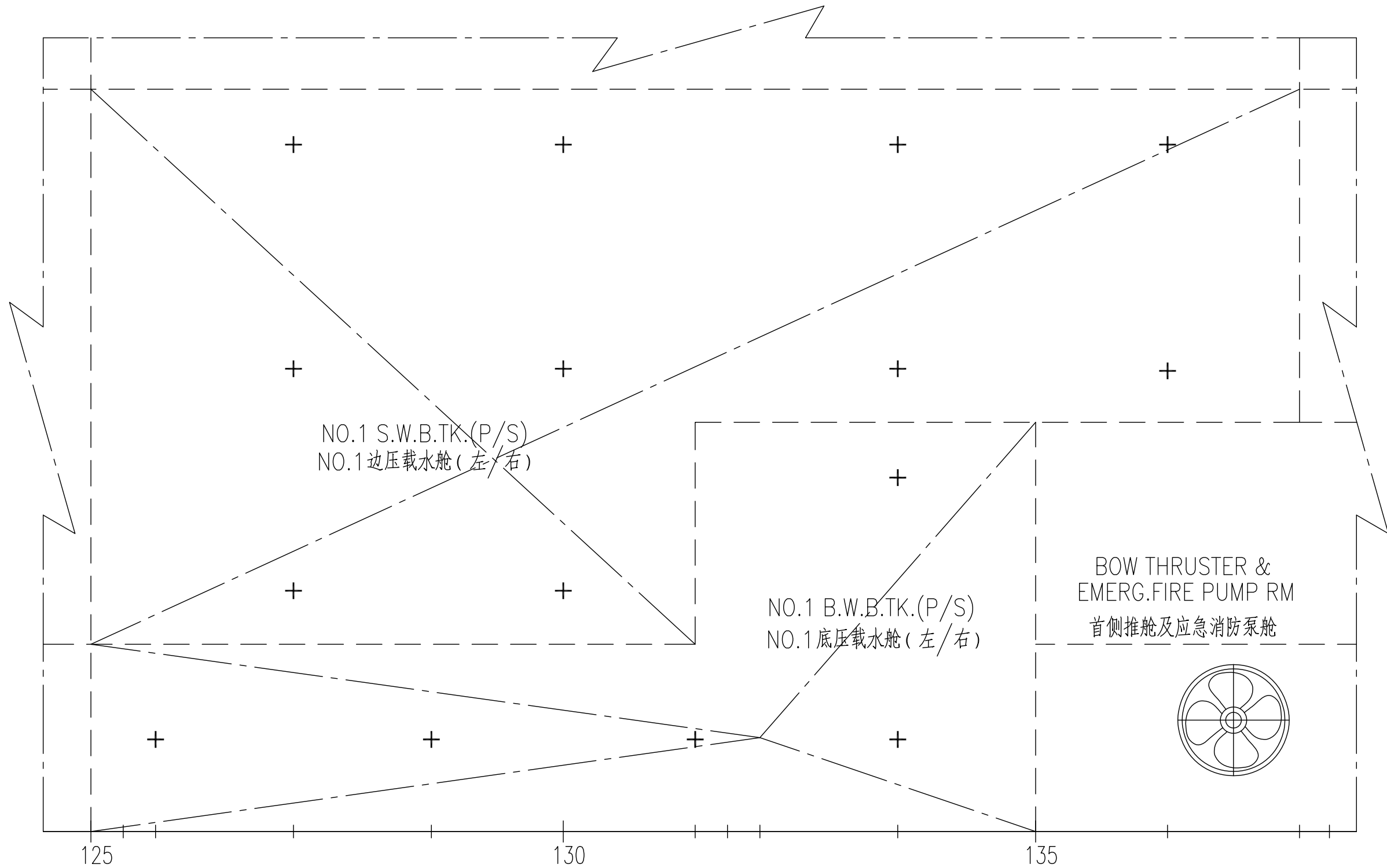
SACRIFICIAL ANODE LIST

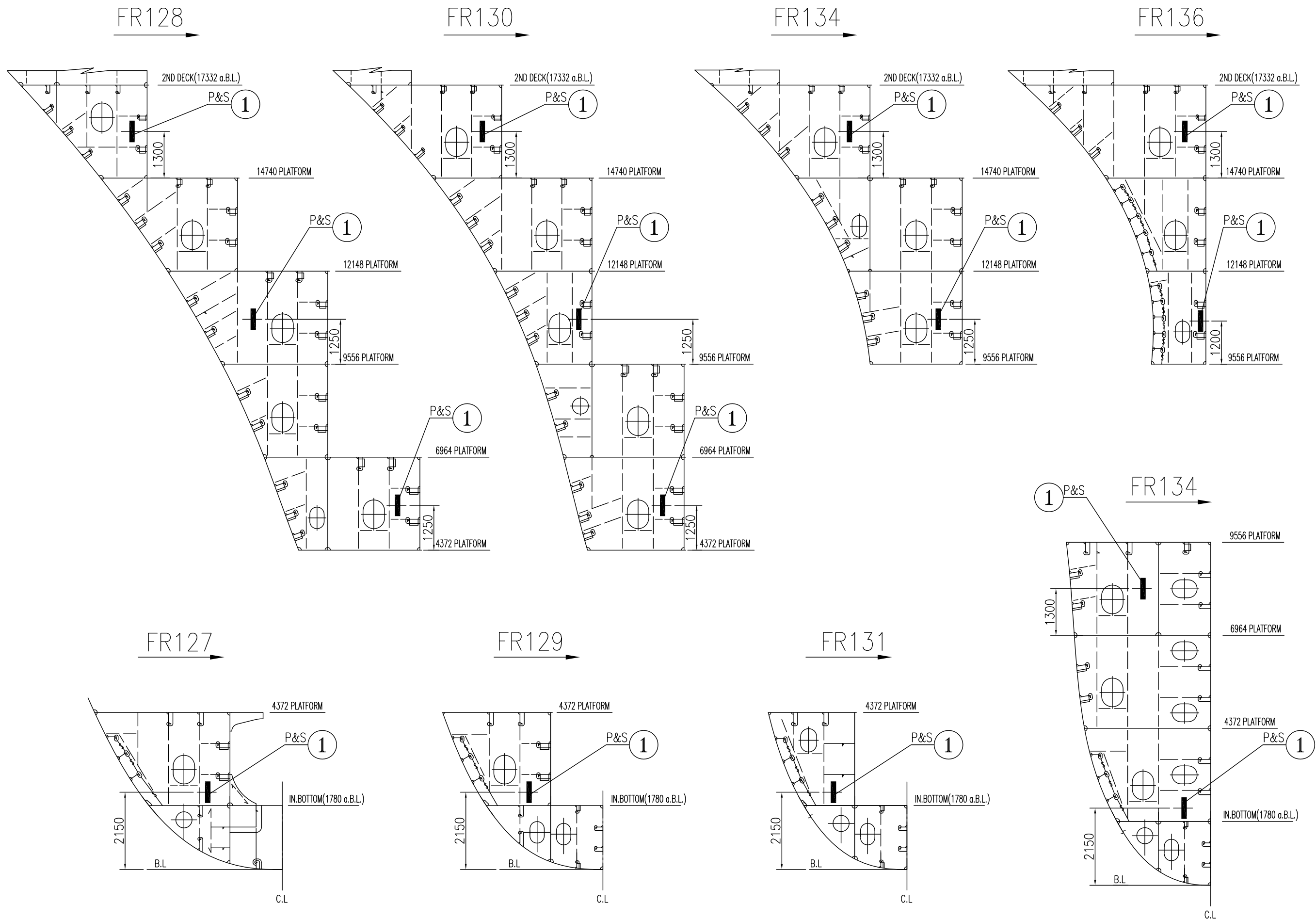
牺牲阳极块数量表

NO.	NAME OF TANKS 舱名称	AREA TO BE PROTECTED $A_g = A(\text{m}^2)$	USED WEIGHT (Kg)	REQUIRED QUANTITY (Piece)
1	NO.1 B.W.B.TK.(P&S)	877	35/35	5/5
	NO.1 底压载水舱(左和右)			
2	NO.1 S.W.B.TK.(P&S)	1842	70/70	10/10
	NO.1 边压载水舱(左和右)			
3	NO.2 B.W.B.TK.(P&S)	1680	70/70	10/10
	NO.2 底压载水舱(左和右)			
4	NO.3 B.W.B.TK.(P&S)	2580	98/98	14/14
	NO.3 底压载水舱(左和右)			
5	NO.3 S.W.B.TK.(P&S)	2483	98/98	14/14
	NO.3 边压载水舱(左和右)			
6	NO.4 B.W.B.TK.(P&S)	2863	112/112	16/16
	NO.4 底压载水舱(左和右)			
7	NO.4 S.W.B.TK.(P&S)	1300	56/56	8/8
	NO.4 边压载水舱(左和右)			
8	NO.5 B.W.B.TK.(P)	2860	112/112	16
	NO.5 底压载水舱(左)			
9	NO.5 B.W.B.TK.(S)	2790	112/112	16
	NO.5 底压载水舱(右)			
10	HEELING TK.(P&S)	1350	56/56	8/8
	抗横倾水舱(左和右)			
11	A.P.TK.	1550	63	9
	尾尖舱			

NO.1 B.W.B.TK.(P&S) AND NO.1 S.W.B.TK.(P&S)

NO.1 底压载水舱 (左和右) 和 NO.1 边压载水舱 (左和右)





NO.2 B.W.B.TK.(P&S)

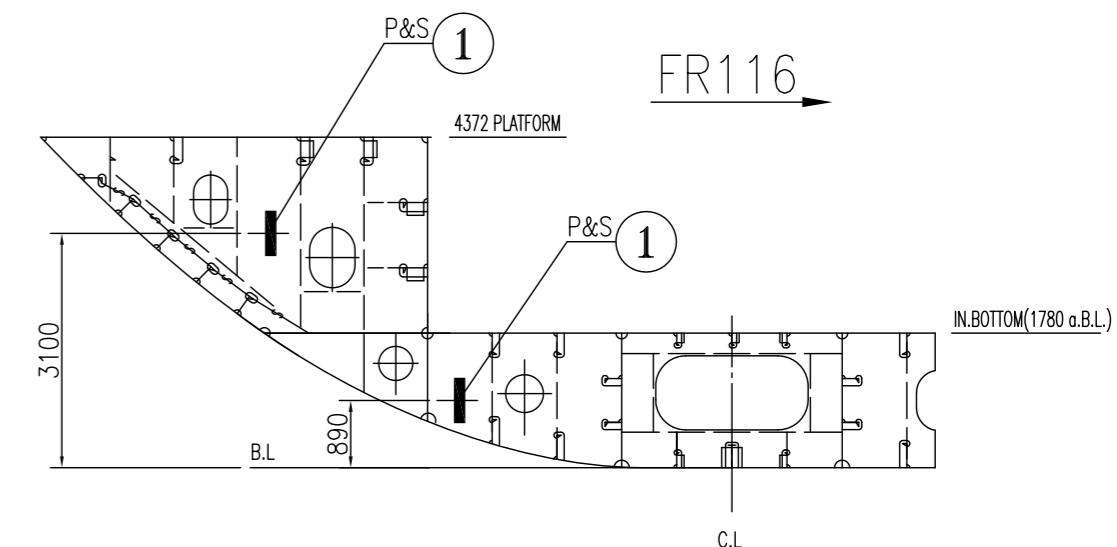
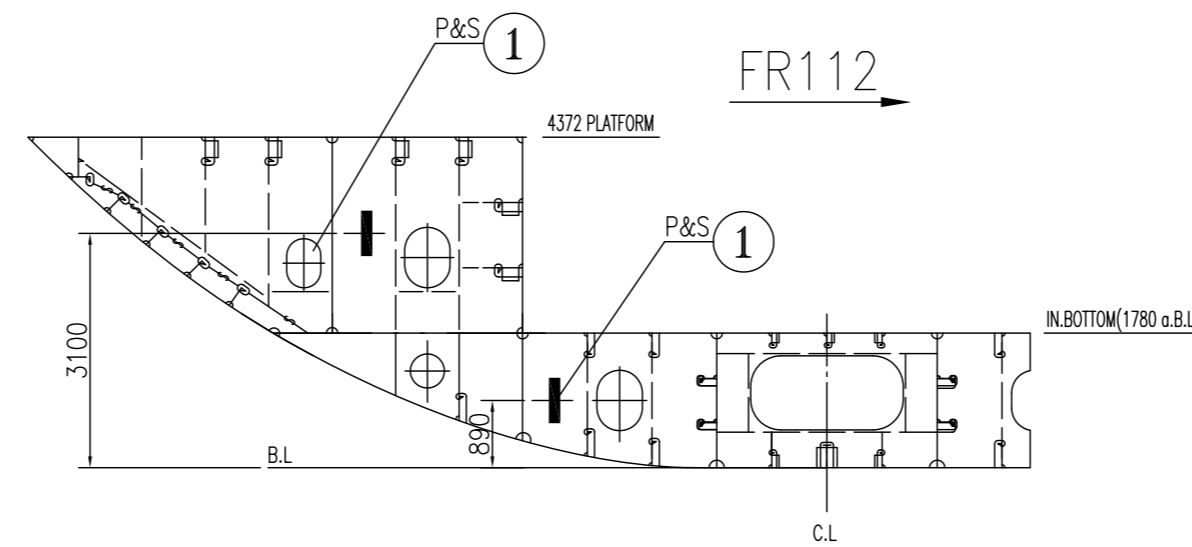
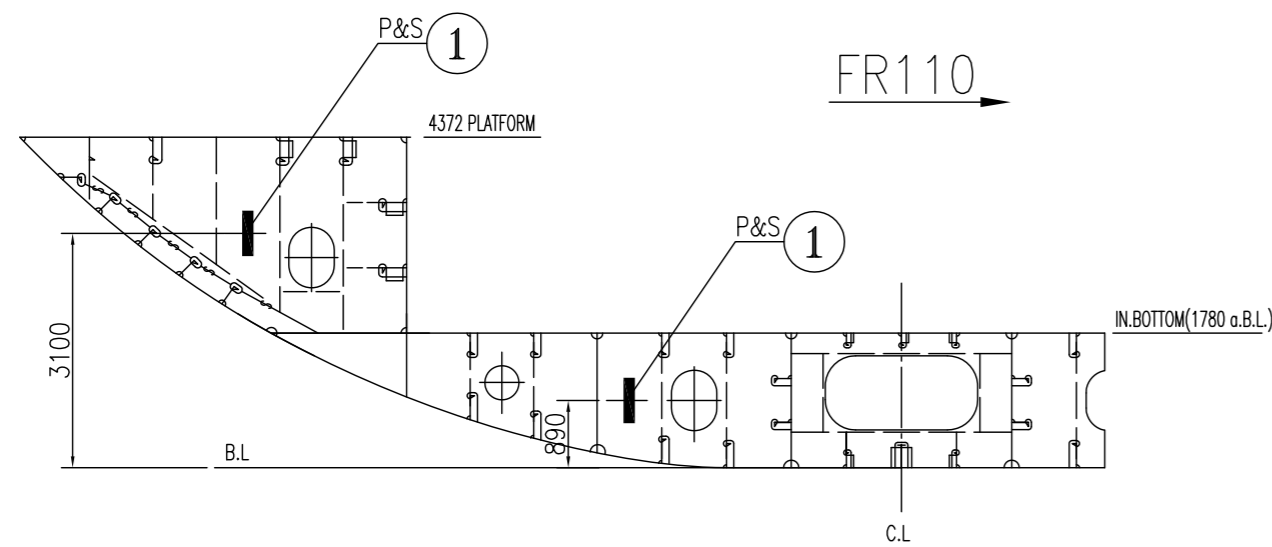
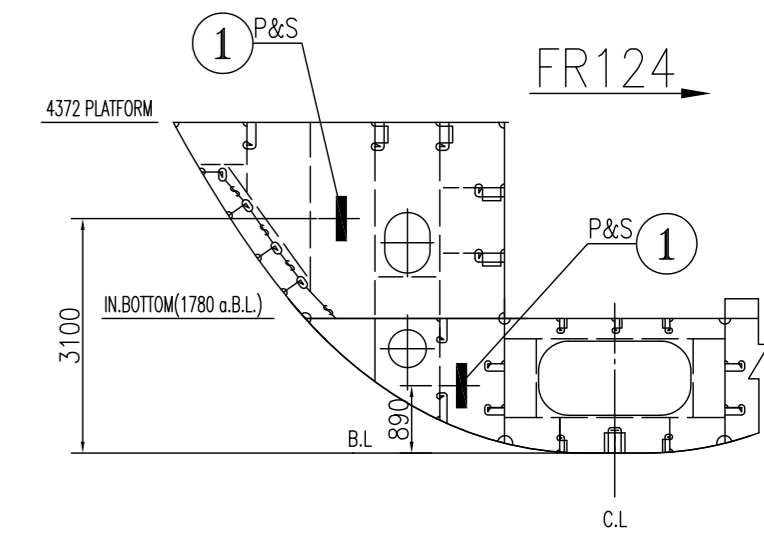
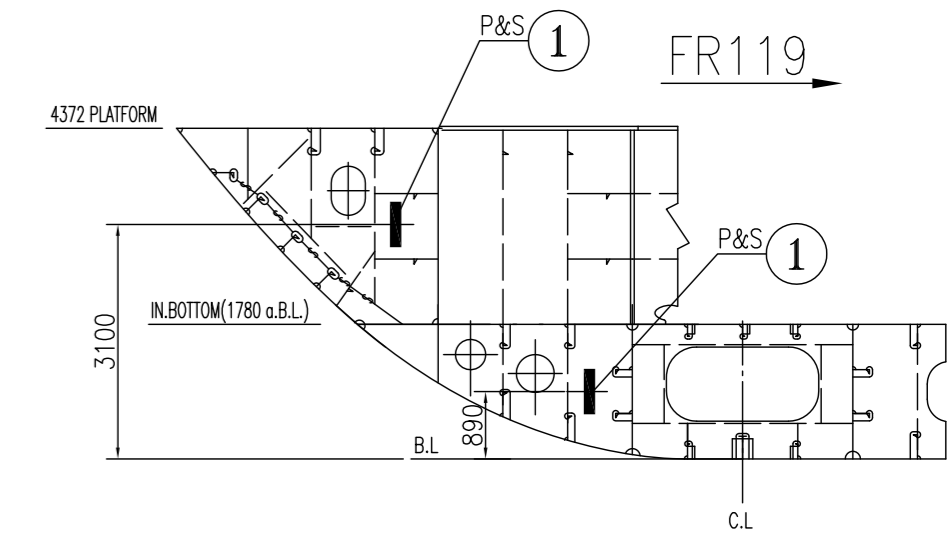
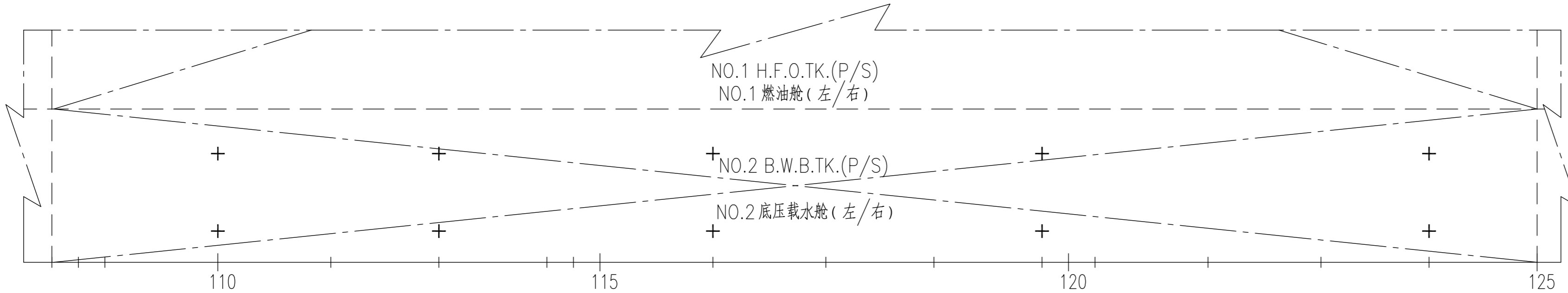
NO.2 底压载水舱 (左和右)

NO.1 H.F.O.TK.(P/S)

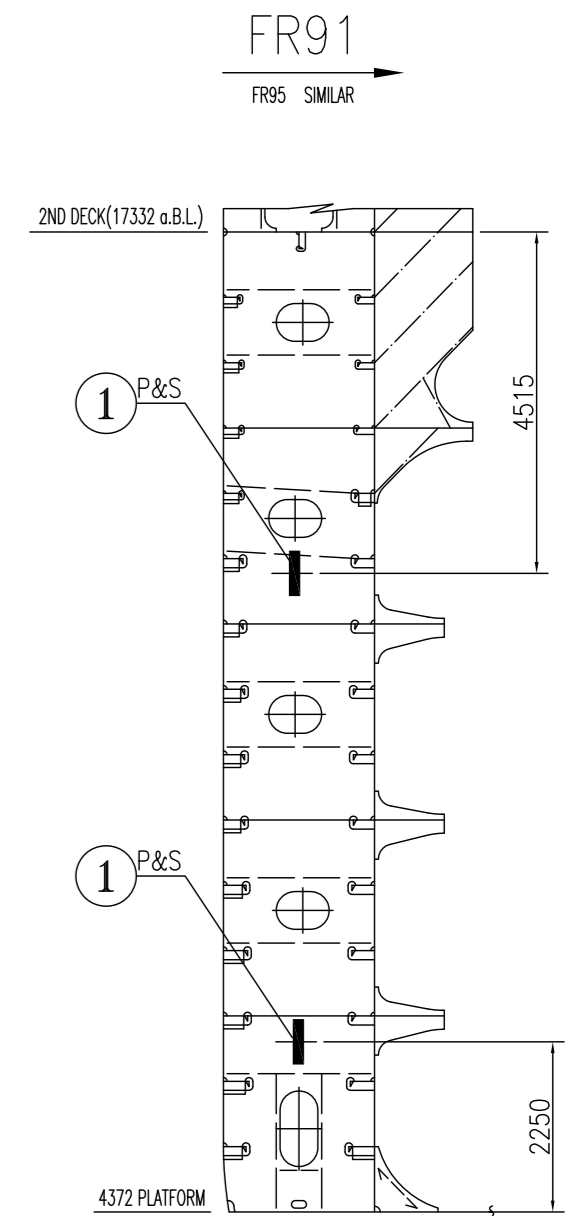
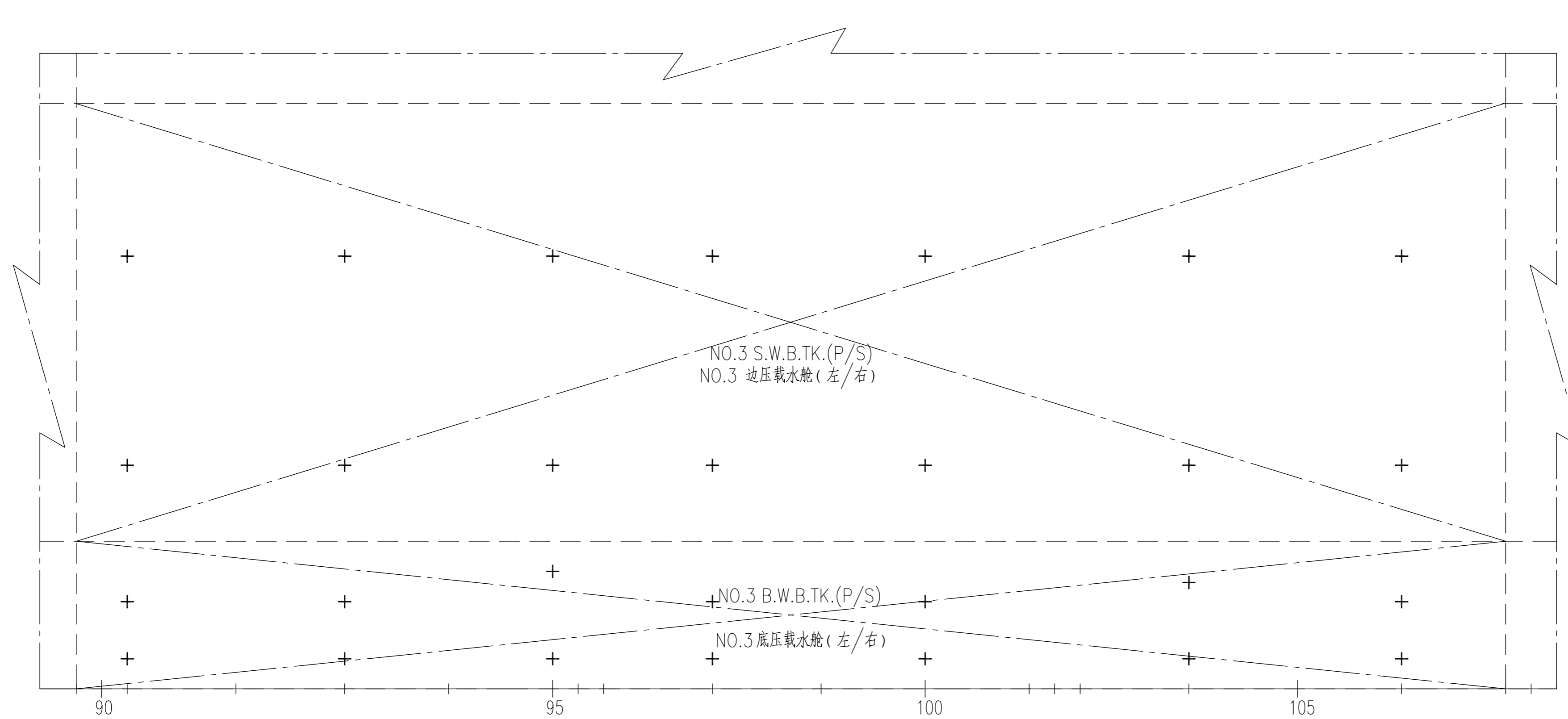
NO.1 燃油舱 (左/右)

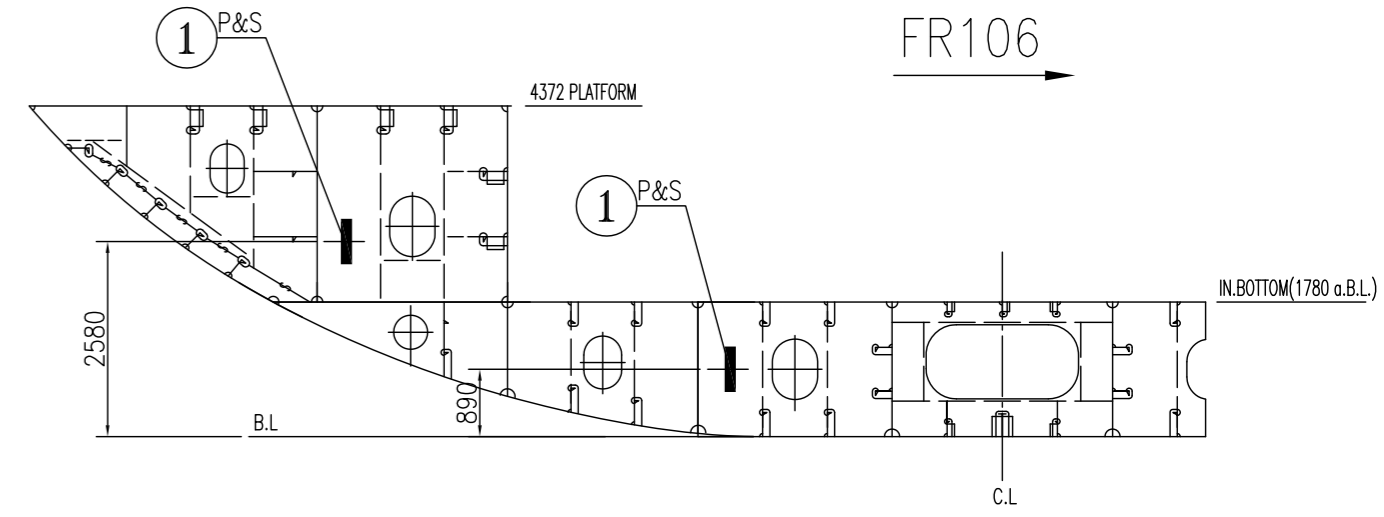
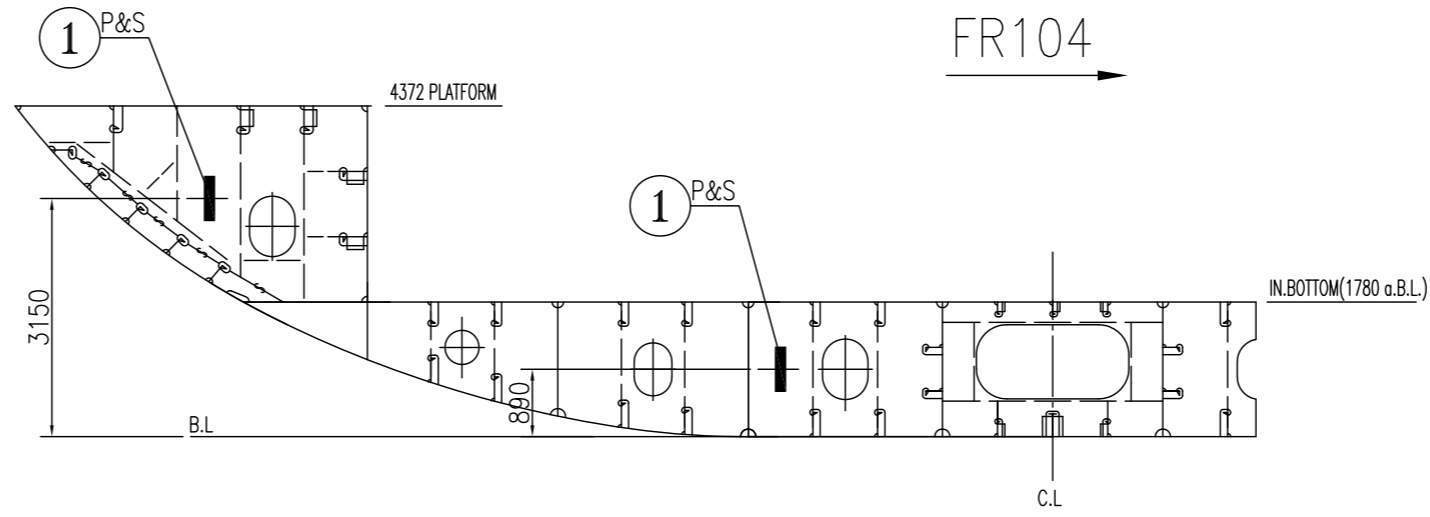
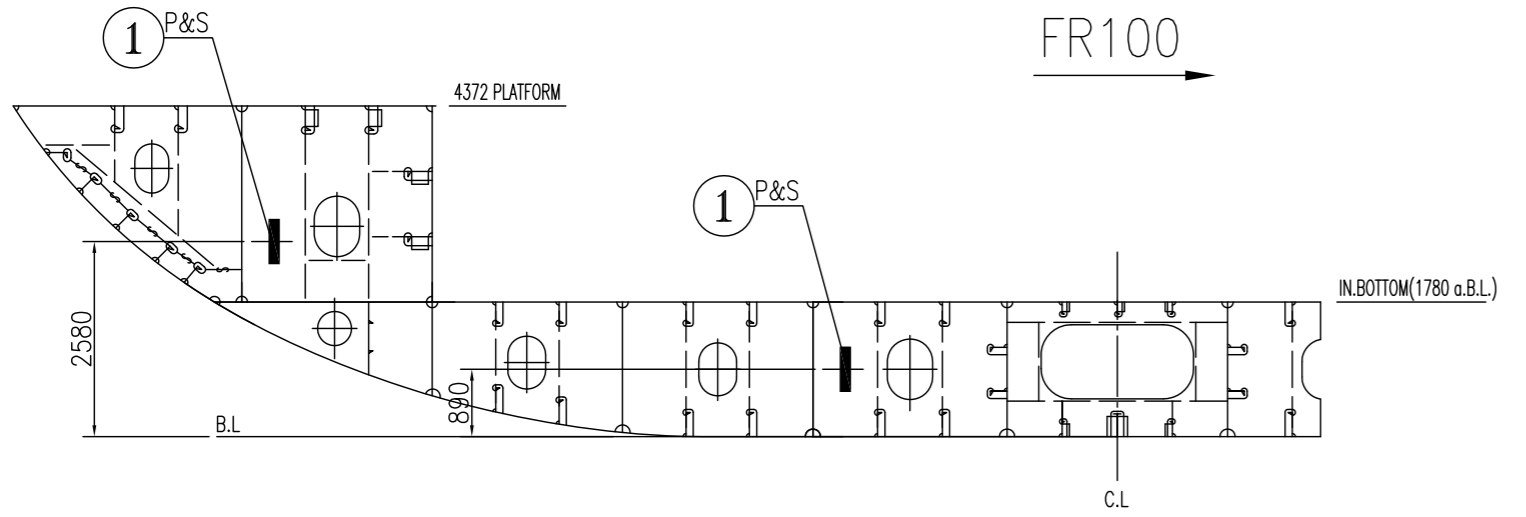
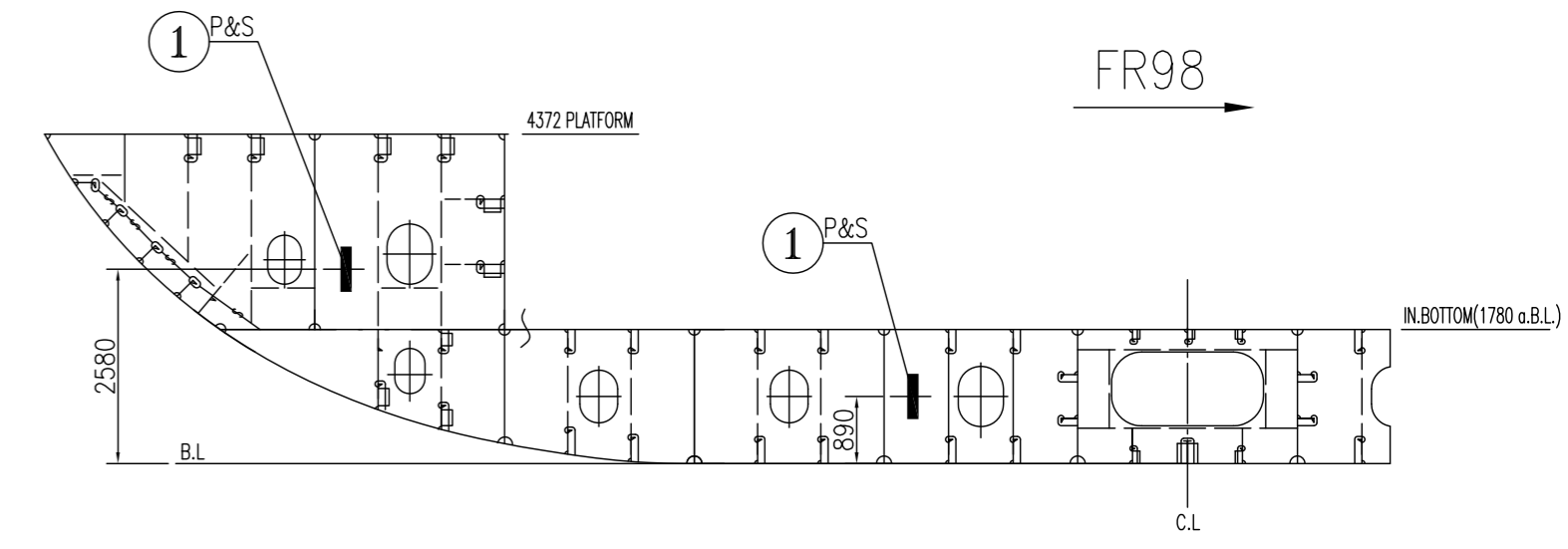
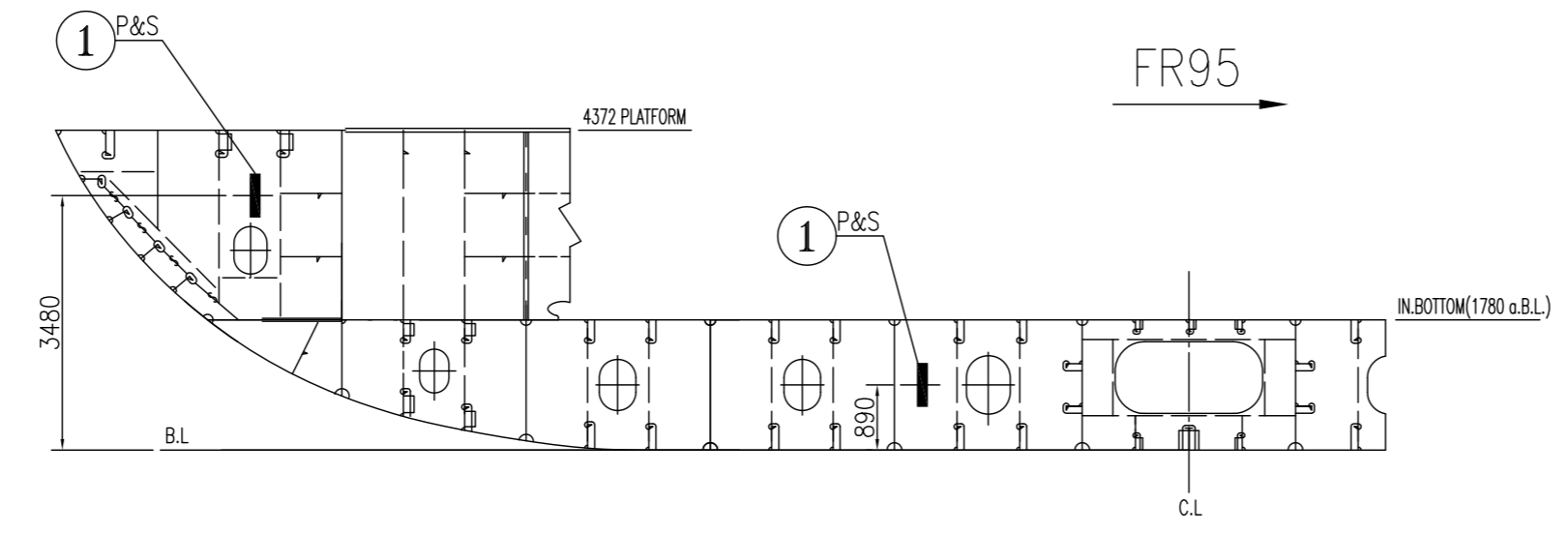
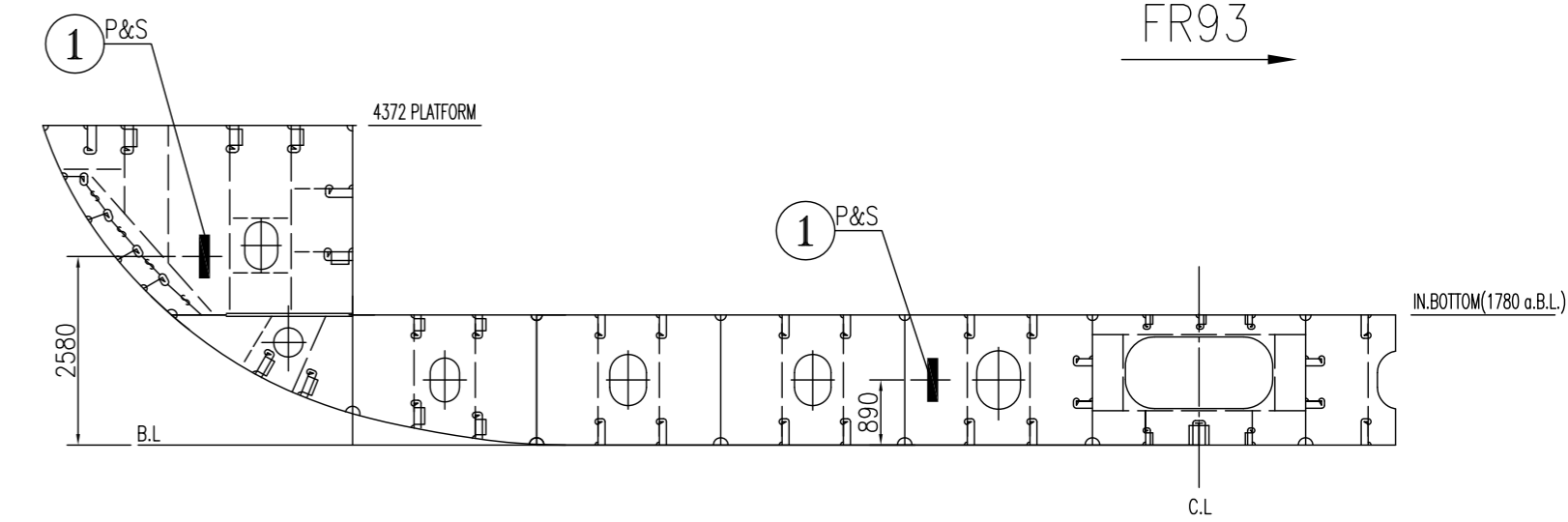
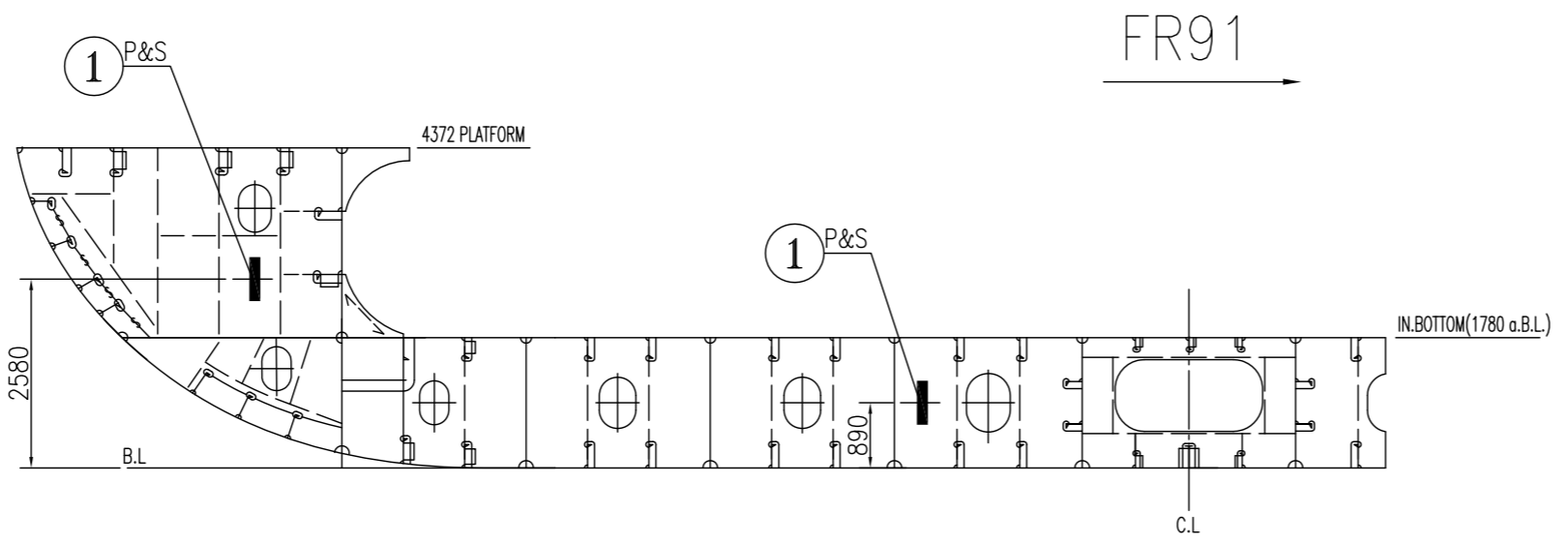
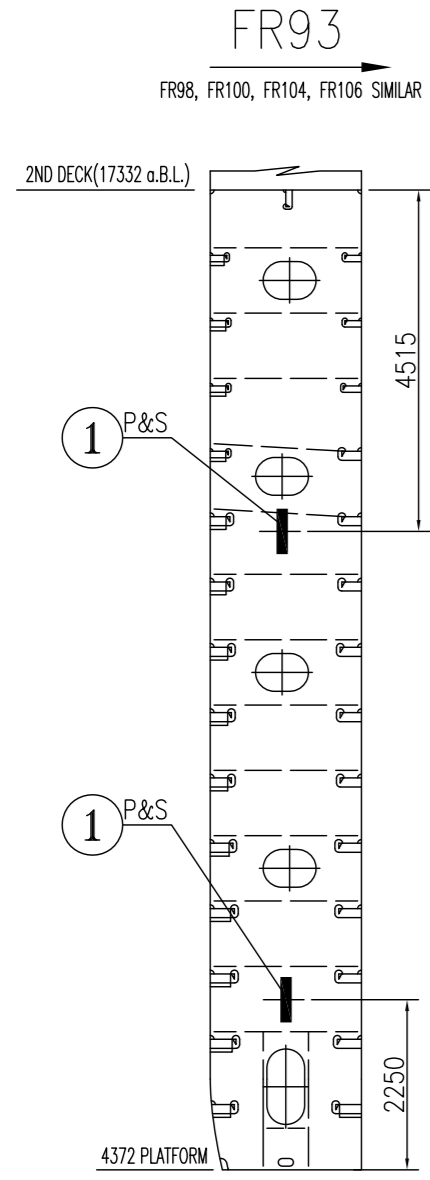
NO.2 B.W.B.TK.(P/S)

NO.2 底压载水舱 (左/右)



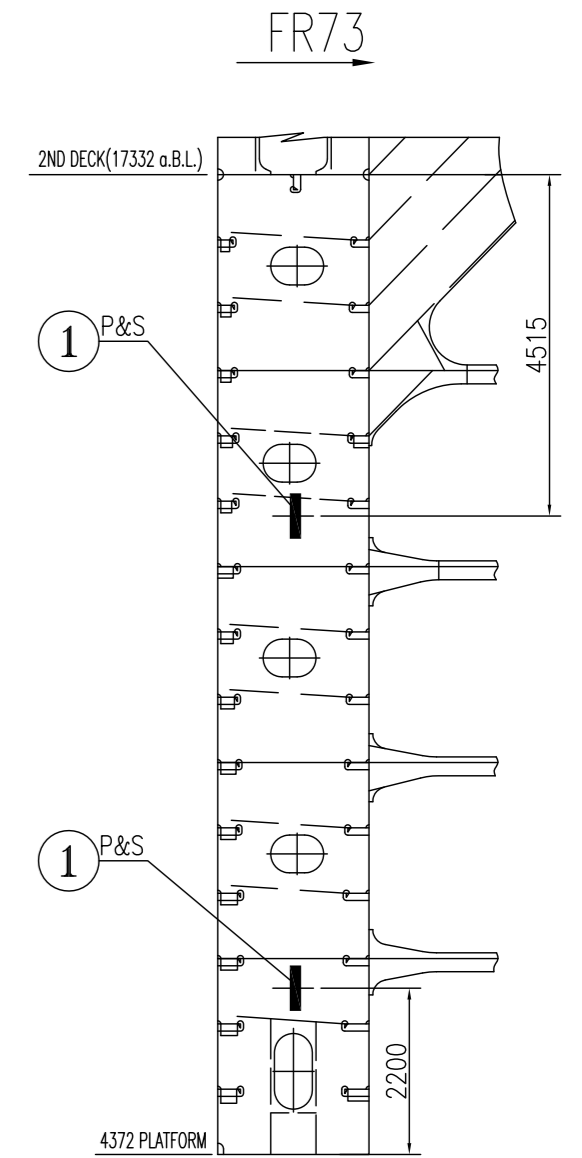
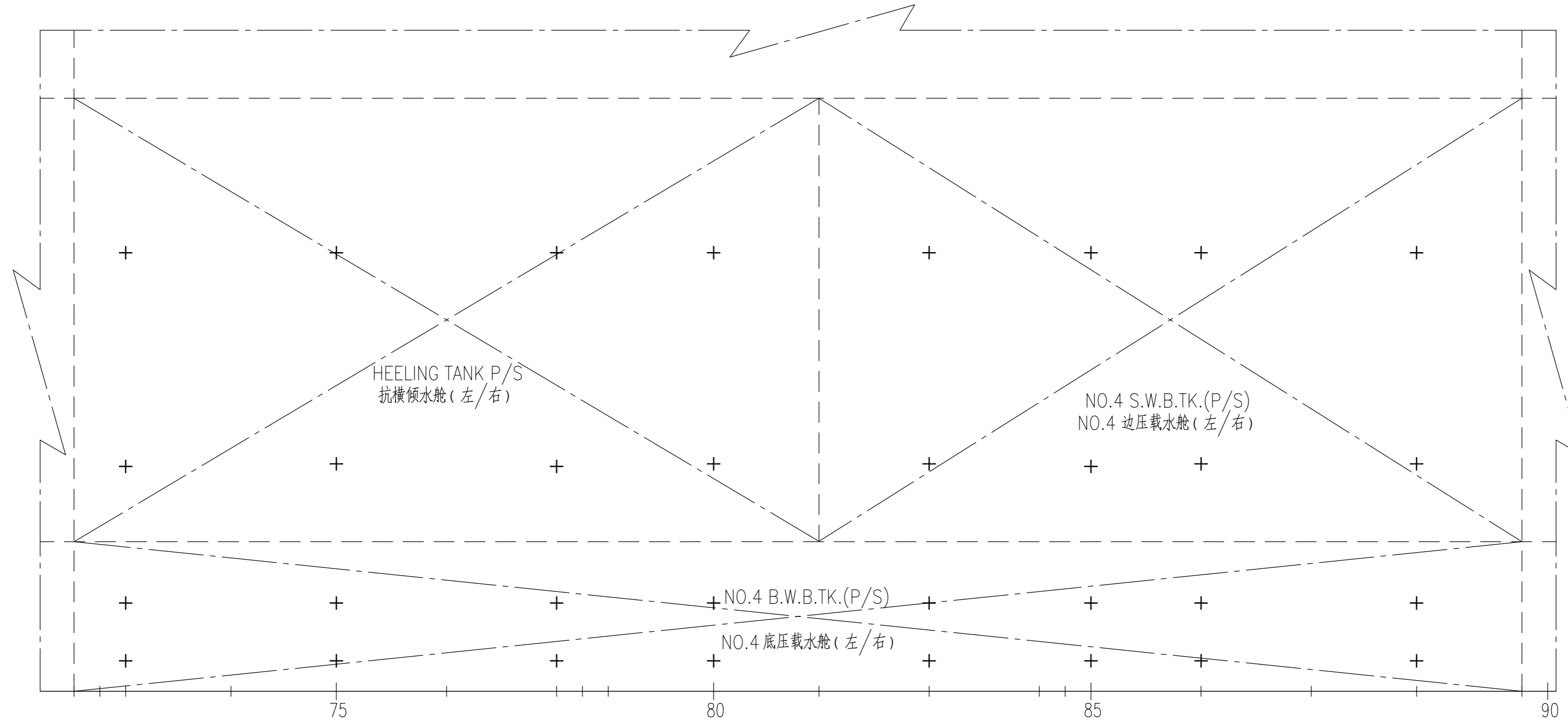
NO.3 B.W.B.TK.(P&S) AND NO.3 S.W.B.TK.(P&S)
 NO.3 底压载水舱 (左和右) 和 NO.3 边压载水舱 (左和右)



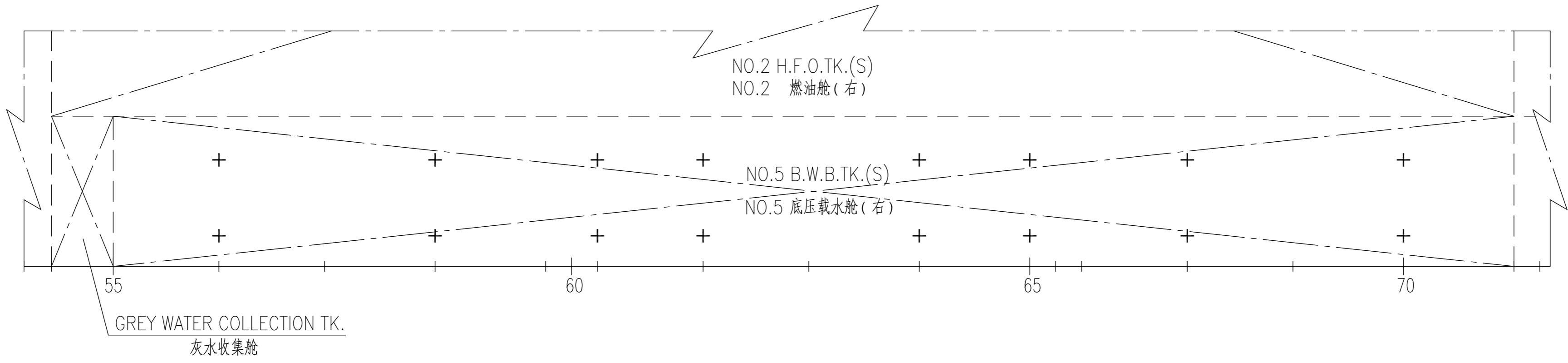


NO.4 B.W.B.TK.(P&S) AND NO.4 S.W.B.TK.(P&S)

NO.4 底压载水舱 (左和右) 和 NO.4 边压载水舱 (左和右)



NO.5 B.W.B.TK.(S)
NO.5 底压载水舱 (右)



NO.5 B.W.B.TK.(P)
NO.5 底压载水舱 (左)

