

HKIA 3303

AGL PILE CAP & LINK BRIDGE



CHEUNG Ho Lam Preston



CHEC GOLD Engineering Co., Limited

HKIA 3303 — AGL Pile Cap & Link Bridge

PROJECT TITLE:

HKIA C3303 - THIRD RUNWAY AND ASSOCIATED WORKS

SUB-CONTRACT WORKS:

Site Installation of Structural Steel Works For Link Bridge and Associated Works for Airfield Ground Light at East Side and West Side

SUB-CONTRACTOR:

Rich Crown Engineering Limited HK HuangShangYou Steel Industrial Limited

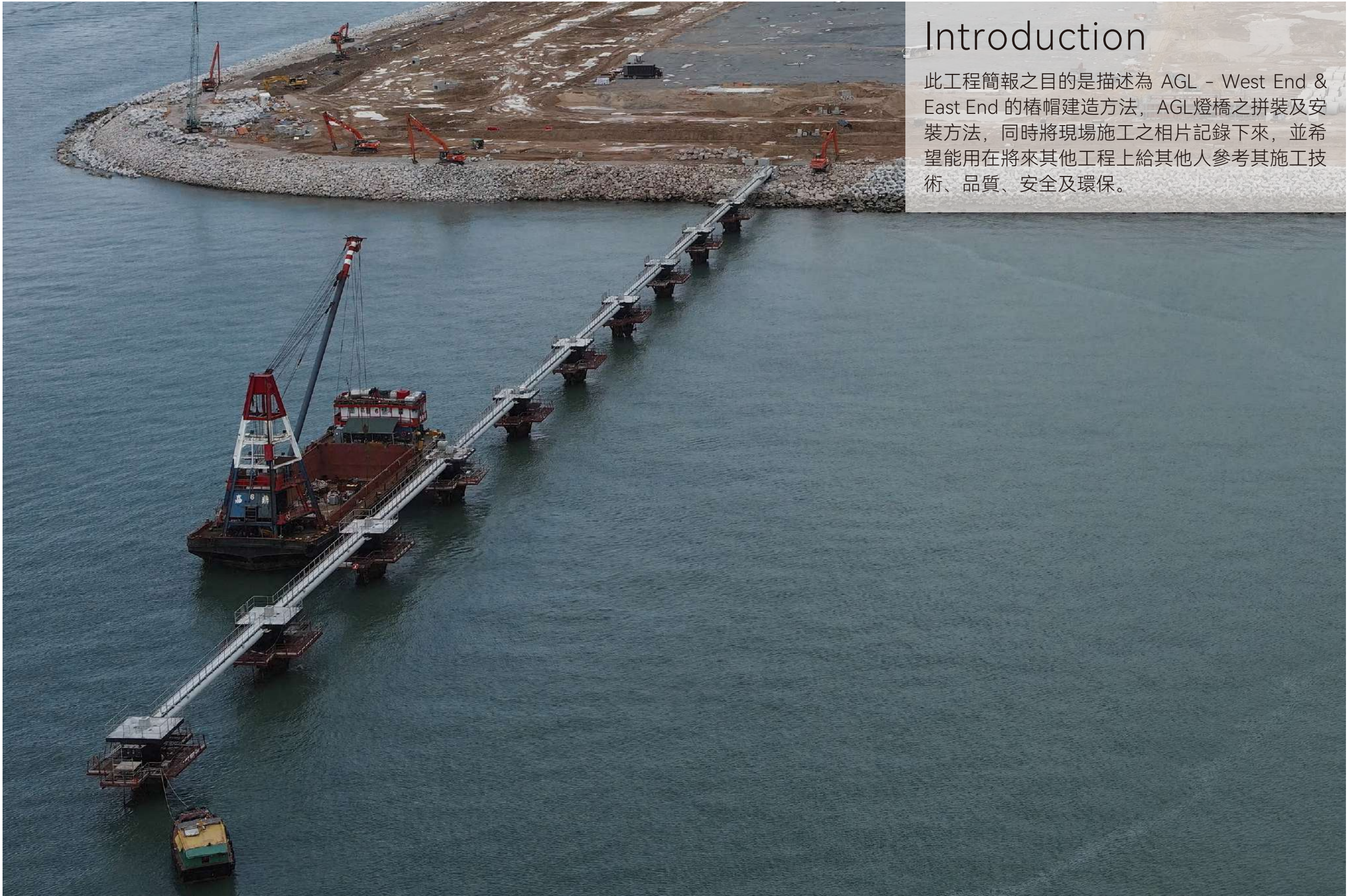
SUB-CONTRACT NO.:

3303/SC/W/016



Introduction

此工程簡報之目的是描述為 AGL - West End & East End 的樁帽建造方法，AGL燈橋之拼裝及安裝方法，同時將現場施工之相片記錄下來，並希望能用在將來其他工程上給其他人參考其施工技術、品質、安全及環保。



Plant & Equipment 機械和裝備

All plants and equipment will be inspected prior to the mobilization on site to ensure that they are in good working condition and comply with the current regulations.

為確保地盤安全及工作順利，所有機械及裝備都會經過檢查及出示驗機文件才會到達地盤。



Crane Barge 吊趸
安全吊重120噸



Derrick Lighter 橫雞趸
安全吊重40噸



Anchor Boat 錨船
負責起錨，放錨

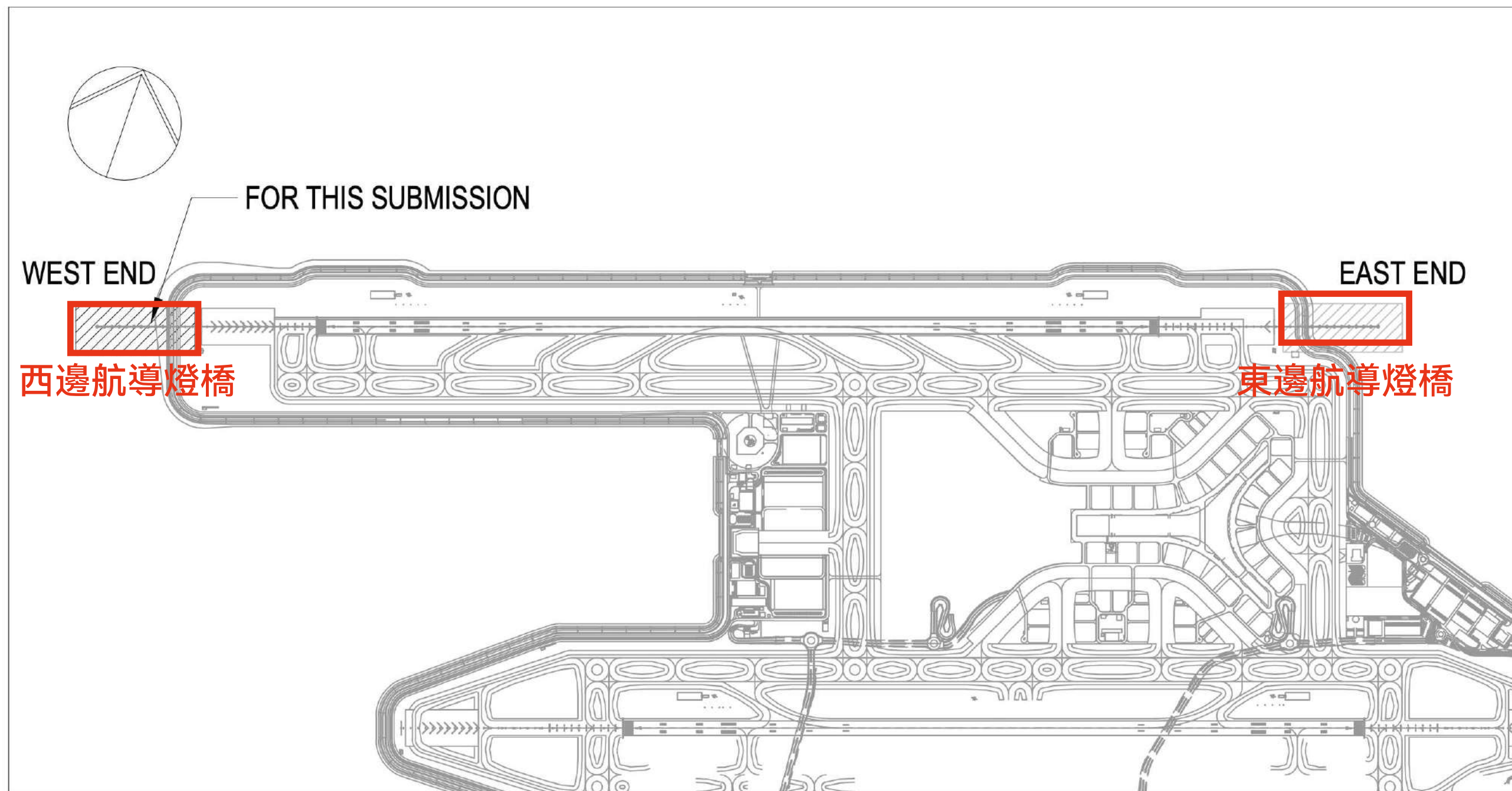


Tug 拖船
負責船隻移動擺位



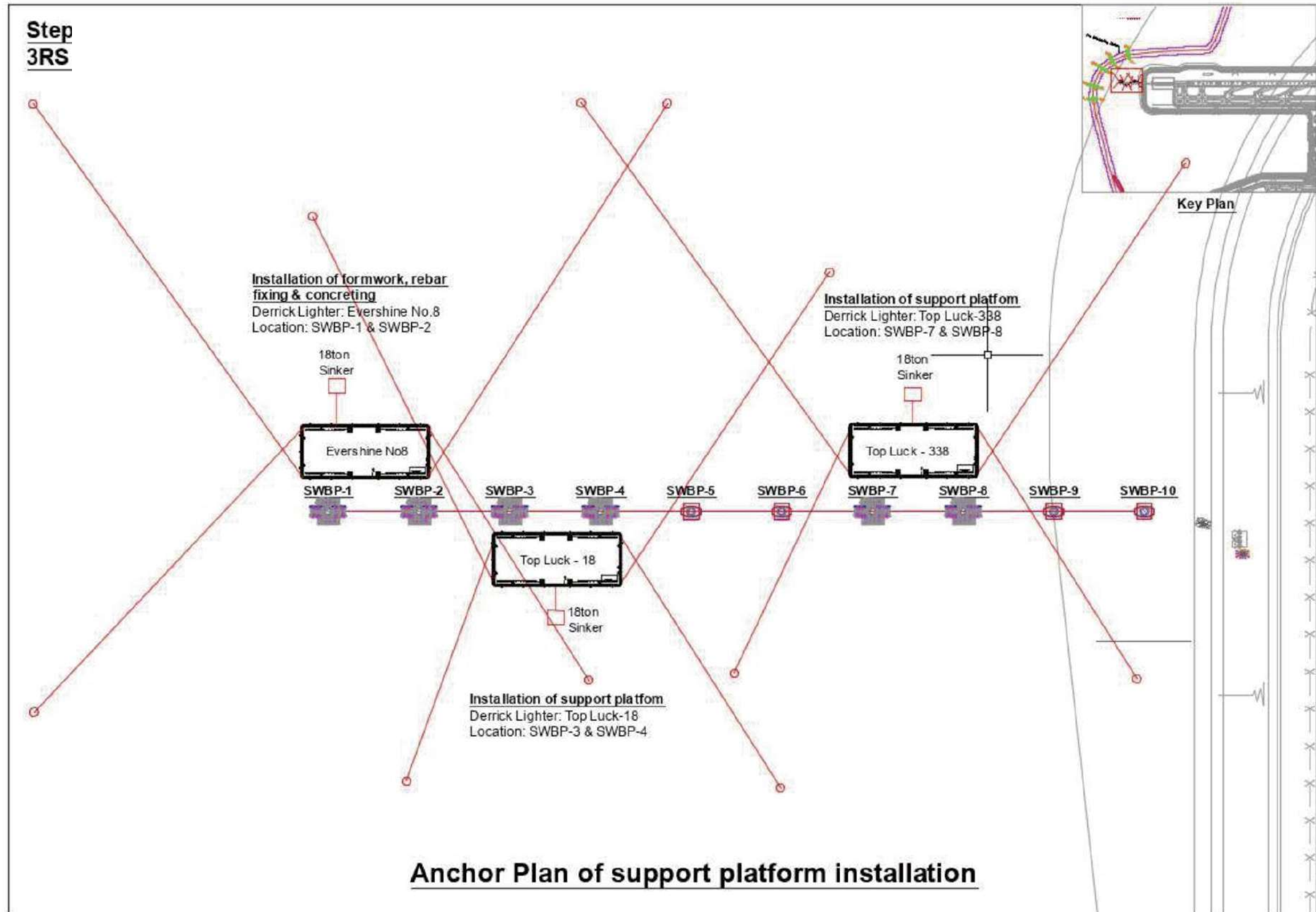
Sampan 舢舨
負責接送工人到達工地

Location Plan 工地位置



LOCATION PLAN FOR APPROACH LIGHT

Barge arrangement on 3RS site West End 船隻拋錨及擺位安排



Procedure 工序流程

Trimming Concrete Pile Head — 打樁頭

Design of Support Platform — 設計海樁工作平台

Fabrication of Support Platform — 組裝海樁工作平台

Installation of Support Platform — 安裝海樁工作平台

Design Formwork of pile cap — 板模設計

Pile Cap Form-board Erecting, Rebar fixing & Concreting — Pile Cap 釘板紮鐵落石矢

AGL PVC ducting of pile cap — 燈橋PVC喉管擺放

Pile Cap預留螺絲及Bearing安裝

AGL Link Bridge Assembly and Modification — 航導燈橋組裝及改造

AGL Link Bridge Lifting and Installation — 航導燈橋吊運及組裝

Trimming Concrete Pile Head 打樁頭

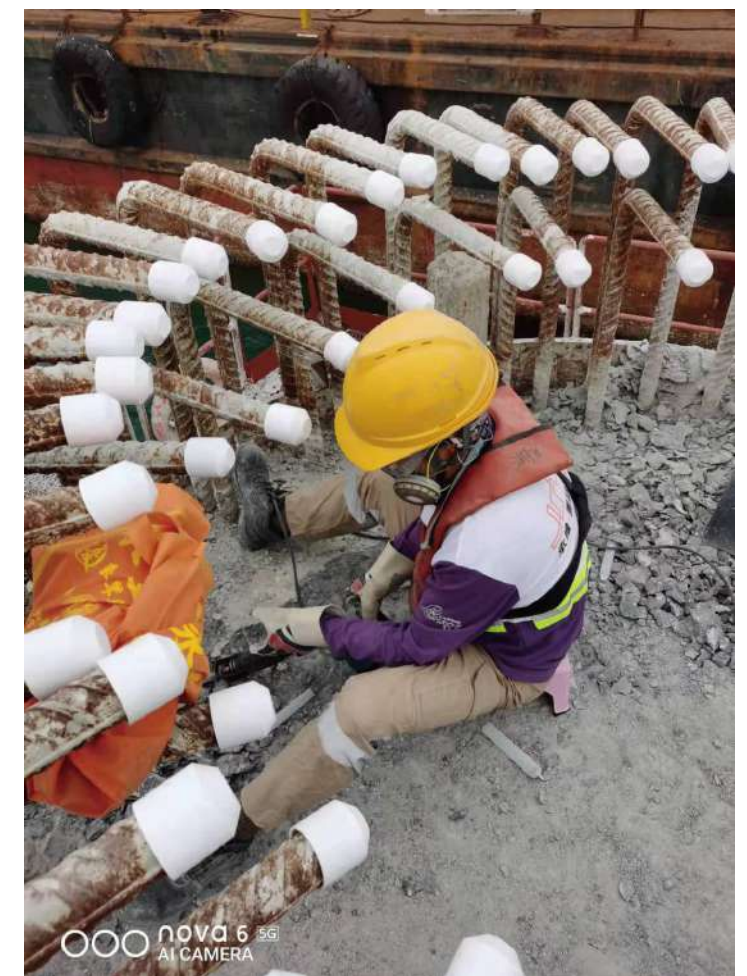
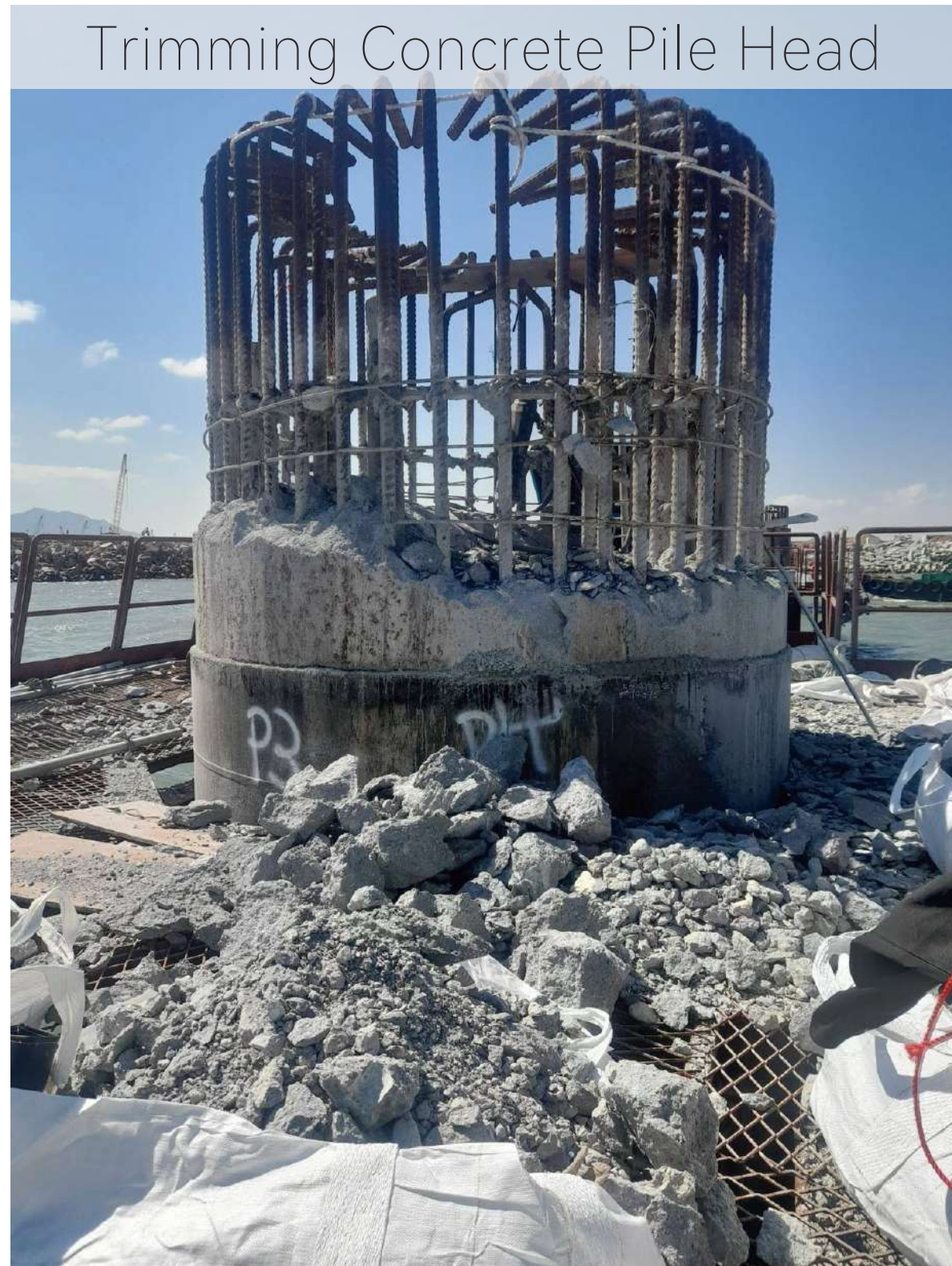
PIILING SCHEDULE – AGL APPROACH LIGHT MARINE PILE AT EAST END

PILE NO.	PILE DIAMETER	PILE SOCKET DIAMETER (D)	PILE CUT-OFF LEVEL	TENTATIVE FOUNDING LEVEL	EXISTING SEABED LEVEL	TENTATIVE ROCKHEAD LEVEL	MINIMUM LENGTH OF PILE FROM CUT-OFF TO FOUNDING LEVEL	MINIMUM SOCKET LENGTH	FOUNDING MATERIAL	AXIAL LOADS					MAXIMUM LATERAL LOADS*			TENTATIVE CASING BOTTOM LEVEL
										DEAD LOAD (DL)	SUPERIMPOSED DL (SDL)	LIVE LOAD (LL)	MAXIMUM AXIAL (DL + SDL + LL)	ALLOWABLE BEARING CAPACITY	VESSEL IMPACT (IMP)	NORMAL ENVIRONMENTAL LOAD (NL) (WIND+WAVE+CURRENT)	EXTREME ENVIRONMENTAL LOAD (EL) (WIND+WAVE+CURRENT)	
	mm	mm	mPD	mPD	mPD	mPD	m	m		kN	kN	kN	kN	kN	kN	kN	kN	mPD
3EBP1	2800	2650	+4.075	-62.16	-7.55	-56.16	66.24	6.00	CAT 1d	3116	200	300	3616	16500	950	472	789	-54.54
3EBP2	2800	2650	+4.075	-72.68	-7.55	-69.18	76.76	3.50	CAT 1d	3236	200	300	3736	16500	950	506	873	-69.18
3EBP3	2800	2650	+4.075	-50.80	-7.55	-40.30	54.88	10.50	CAT 1d	3236	200	300	3736	16500	950	506	873	-40.30
3EBP4	2800	2650	+4.075	-48.59	-7.55	-38.59	52.67	10.00	CAT 1d	3236	200	300	3736	16500	950	506	873	-38.59
3EBP5	2800	2650	+4.075	-53.27	-7.55	-43.27	57.35	10.00	CAT 1d	3236	200	300	3736	16500	950	506	873	-43.27
3EBP6	2800	2650	+4.075	-66.93	-7.55	-58.43	71.01	8.50	CAT 1d	3236	200	300	3736	16500	950	506	873	-45.49
3EBP7	2800	2650	+4.075	-58.61	-7.55	-52.61	62.69	6.00	CAT 1d	3236	200	300	3736	16500	950	506	873	-47.69
3EBP8	2800	2650	+4.075	-62.64	-7.55	-57.64	66.72	5.00	CAT 1d	3236	200	300	3736	16500	950	506	873	-56.65
3EBP9	2800	2650	+4.075	-72.64	-7.55	-72.14	76.72	0.50	CAT 1d	3236	200	300	3736	16500	950	506	873	-72.14
3EBP10	2800	2650	+4.075	-73.32	-7.55	-72.82	77.40	0.50	CAT 1d	3310	219	332	3862	16500	950	506	873	-71.77

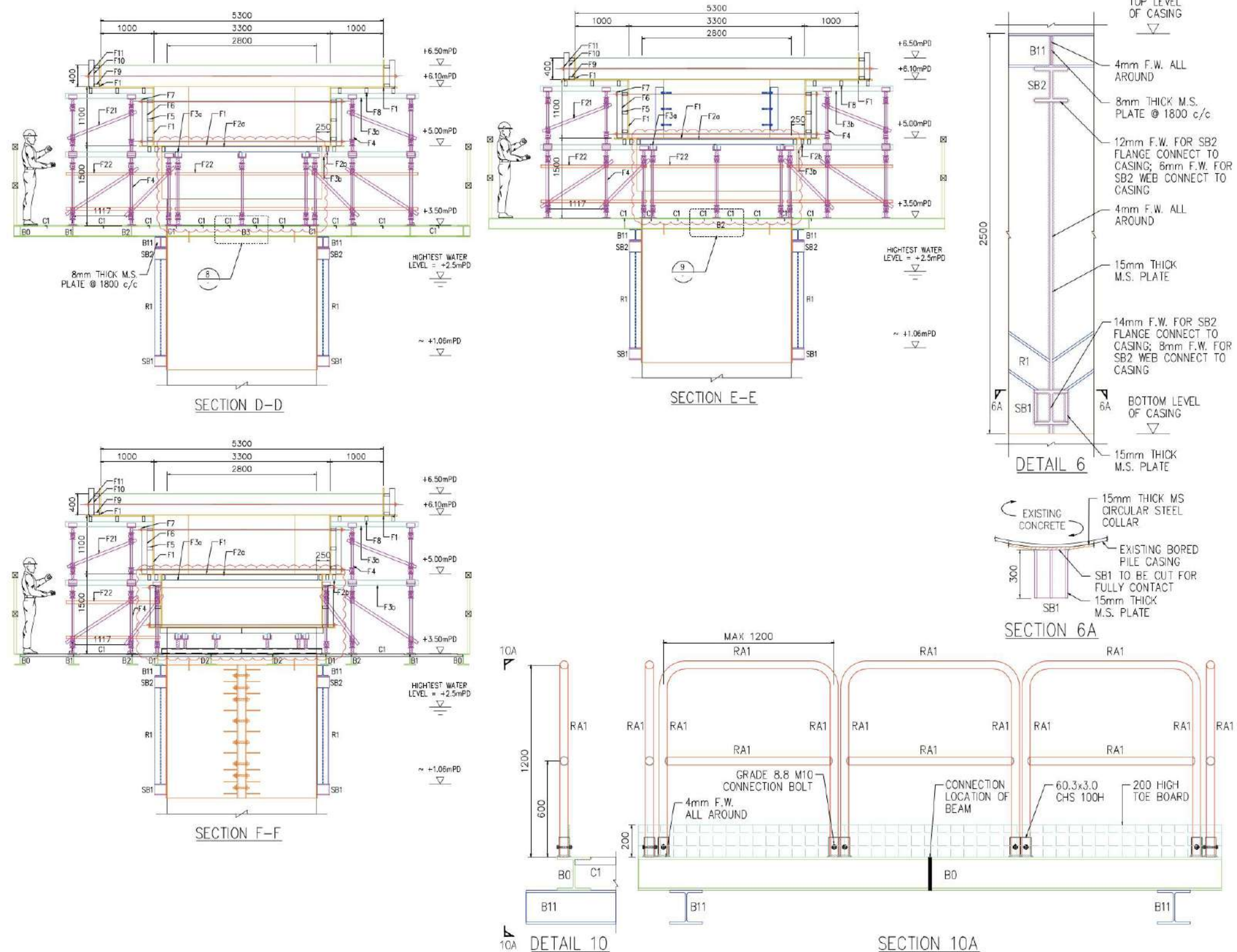
* LATERAL LOAD SHALL BE IN ALL DIRECTION



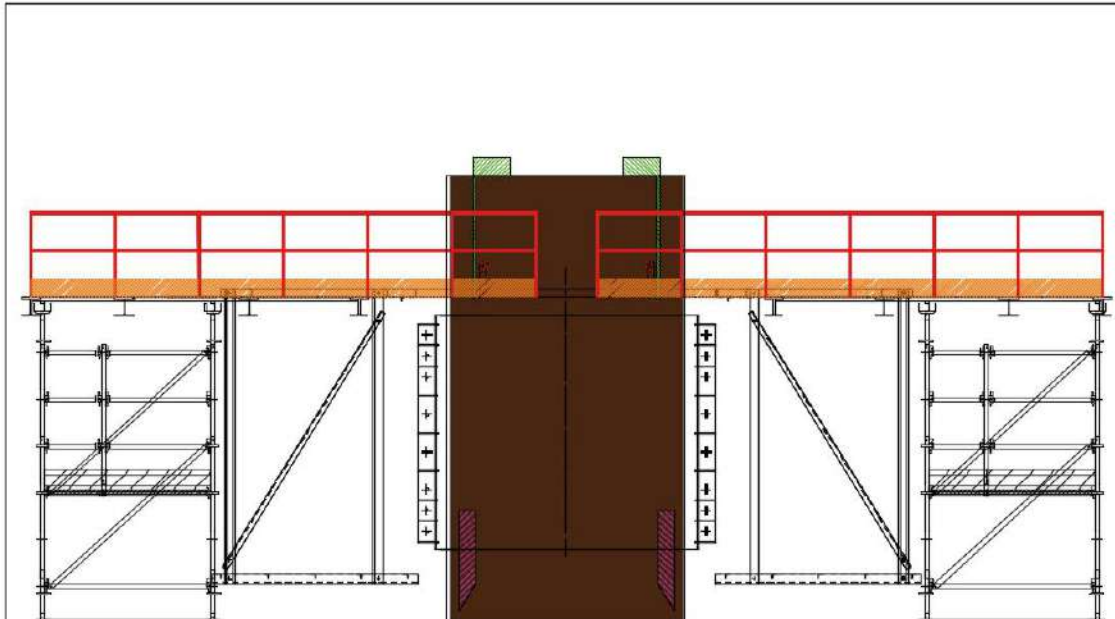
Trimming Concrete Pile Head 打樁頭



Design of Support Platform 設計海樁工作平台



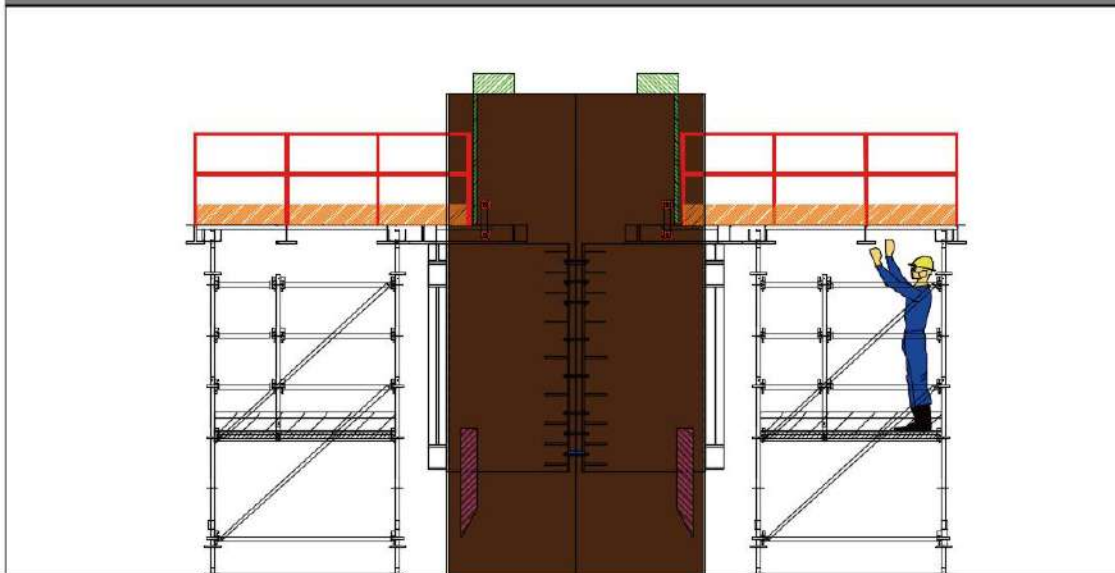
Fabrication of Support Platform 組裝海樁工作平台



Section of Support platform pre-fabrication in Derrick lighter

Pre-fabrication of Support platform in derrick

- 1) Arrange 1 nos 2550mm casing in derrick lighter for pre-fabrication
橫離臺船上會預先安放及固定一支2550mm樁作支撐平台定位用。
- 2) Arrange 4nos ringlock scaffold in derrick lighter for pre-fabrication
安排吊索工裝嵌4座3.5米高之通架作安放支撐台及工作人員上落用途。



Section of Support platform Installation by labour

- 1) Rigger assemble 6 parts of support platform in derrick lighter
吊索工會預先組裝6件支撐台組件，並拼成一件完整支撐台
- 2) Rigger must tightening all bolts and nuts between parts of support platform
吊索工會將所有螺絲系緊
- 3) The support platform will add-on a **guiding steel** for locate the platform easily
支撐平台會加上4條導向鐵，令安裝支撐台更容易到位。
- 4) The support platform will add-on a **steel plate** for demarcation of the level of support platform
支撐平台會加上4條已調教好長度之鐵板，令安裝支撐台到達適當高度。
- 5) Install all safety handrail on support platform
安裝所有圍欄及踢腳板

Fabrication of Support Platform 組裝海樁工作平台

Support Platform - Preparation of assembly procedure on derrick lighter

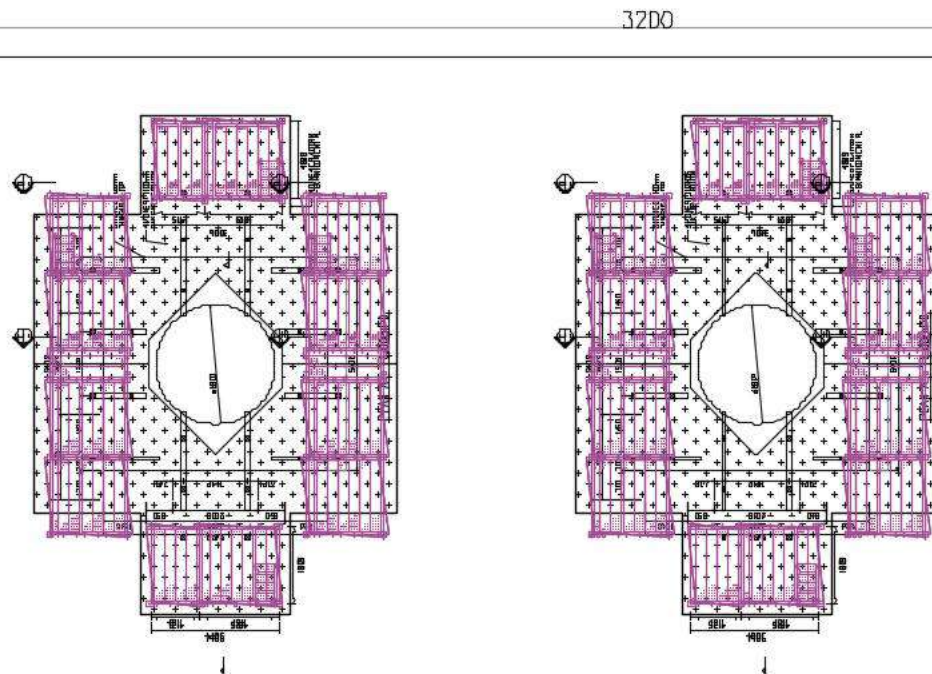
支撐台: 船上預先安裝程序

Arrangement of support platform in derrick lighter compartment

橫雞薈船上支撐鐵台擺位安排

size: 32000(L) x 15000(W)

- 1) The support platform will deliver on derrick lighter
支撐台會由工廠運送到橫雞薈船倉。
- 2) Derrick lighter compartment size: 32000(L) x 15000(W)
橫雞薈船倉：長32000 x 闊15000
- 3) Two set of support platform will set into one derrick lighter
一隻橫雞薈船會按放兩個支撐台作準備功夫。請參考左圖

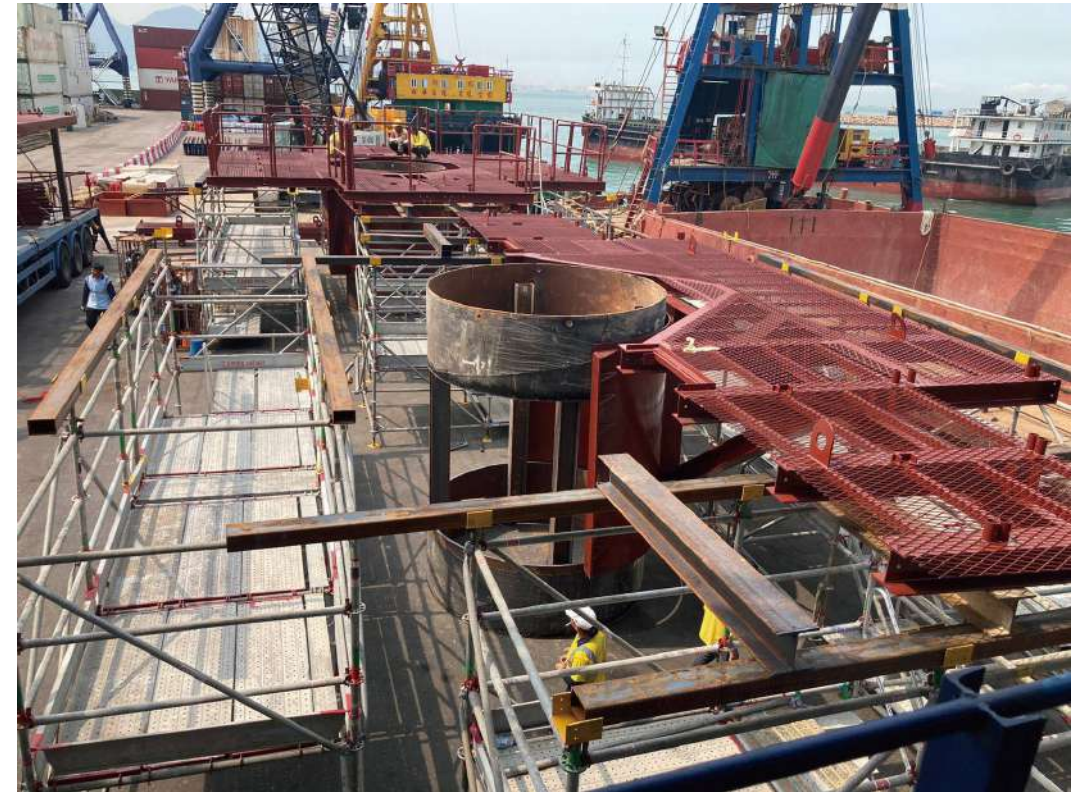


Arrangement of support platform in derrick lighter compartment

橫雞薈船上支撐鐵台擺位安排

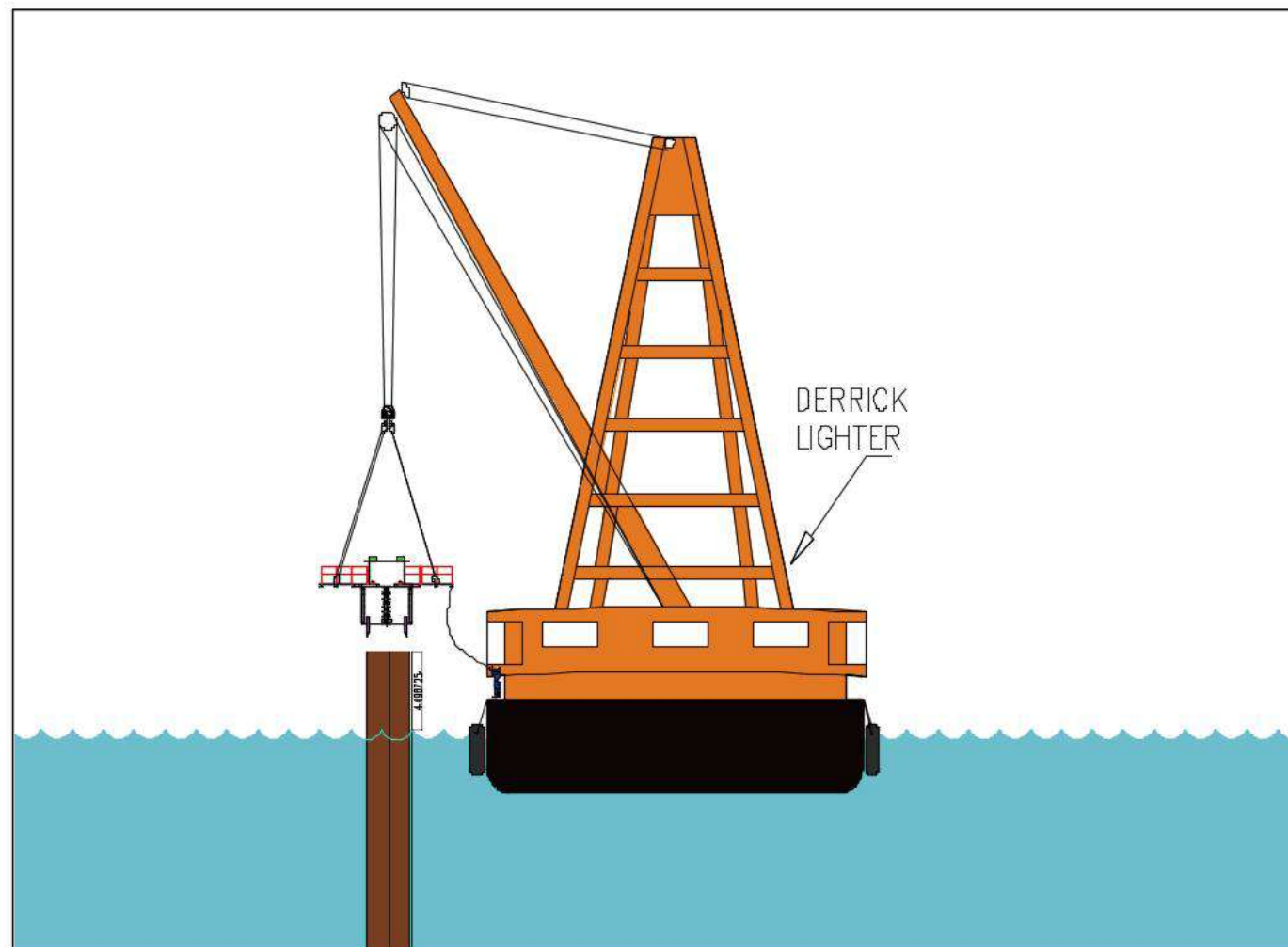
size: 32000(L) x 15000(W)

Fabrication of Support Platform 組裝海樁工作平台



Installation of Support Platform 安裝海樁工作平台

Support Platform - Procedure of assembly procedure 支撐台: 安裝程序

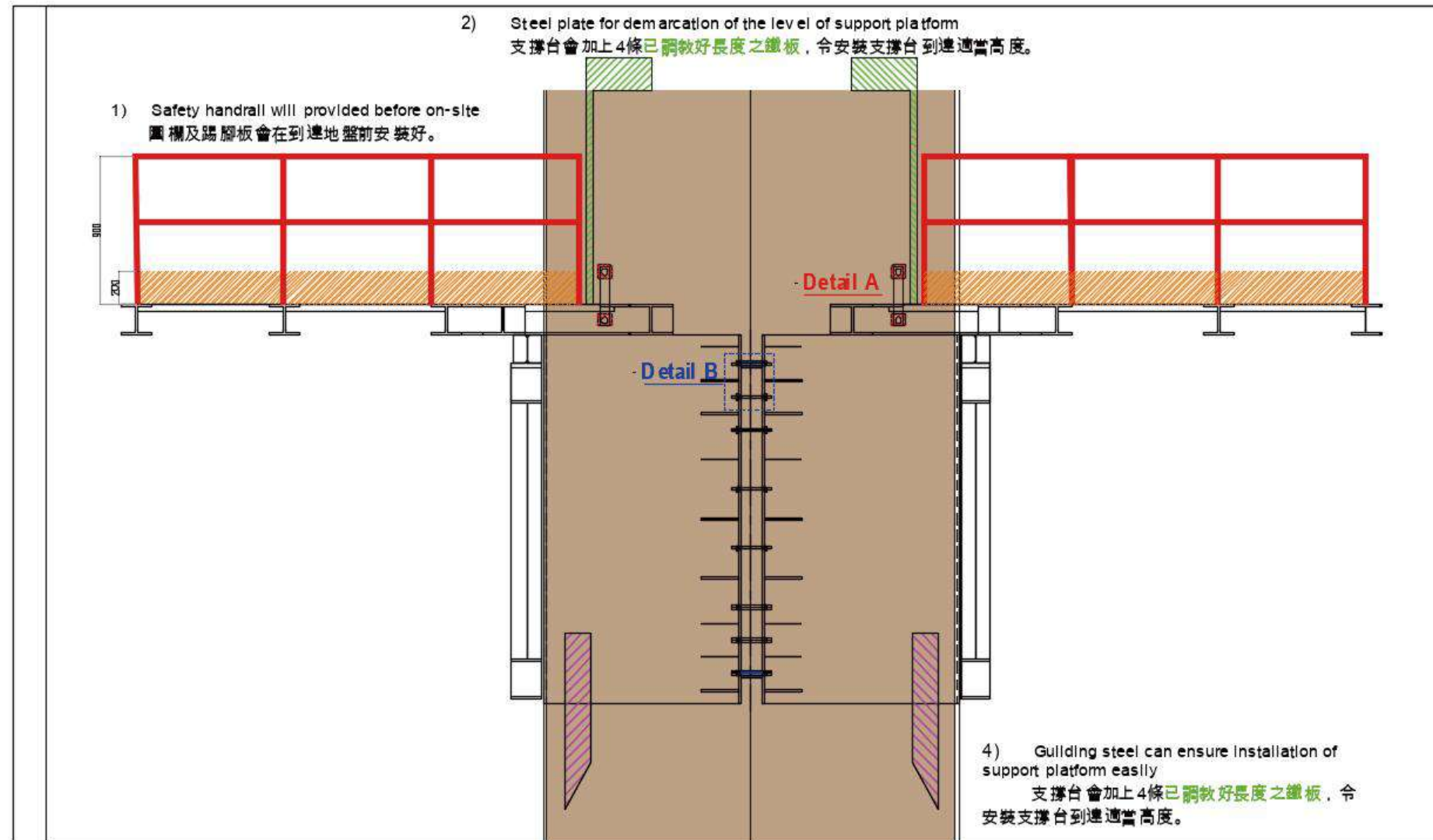


Section of Support platform Installation by Derrick lighter
at 3RS west side

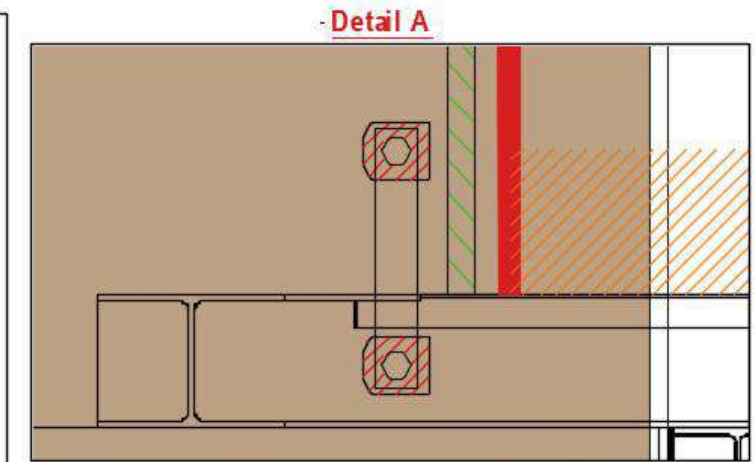
Installation by derrick

- 1) Support platform to be delivered on the derrick lighter from supplier
支撐台會由橫雞薹船運送到地盤
- 2) The derrick lighter will shift to west side of AGL pile and anchoring near the pile
橫雞薹船會到達西邊海樁位置，安放並固定4門錨。
- 3) The derrick lighter will install the support platform by 4 wire sling
橫雞薹船配合4條威也及塞古吊起及安裝支撐台。
- 4) Two riggers will control the horizontal position of platform by two ropes on derrick lighter
船上吊索工會利用尾繩控制支撐台之水平位移。
- 5) The support platform will add-on a **guiding steel** for locate the platform easily
支撐台會加上4條**導向鐵**，令安裝支撐台更容易到位。
- 6) The support platform will add-on a **steel plate** for demarcation of the level of support platform
支撐台會加上4條**已調教好長度之鐵板**，令安裝支撐台到達適當高度。

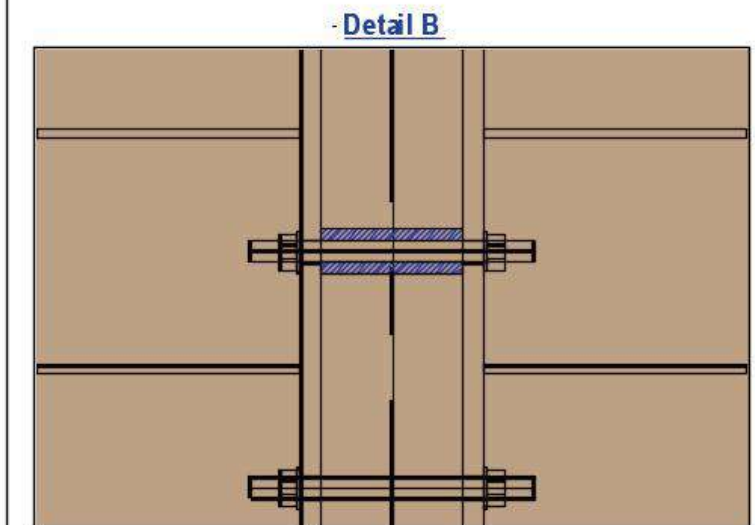
Installation of Support Platform 安裝海樁工作平台



Detail of support platform
(refer to shop drawing: C3303/TW/01B)

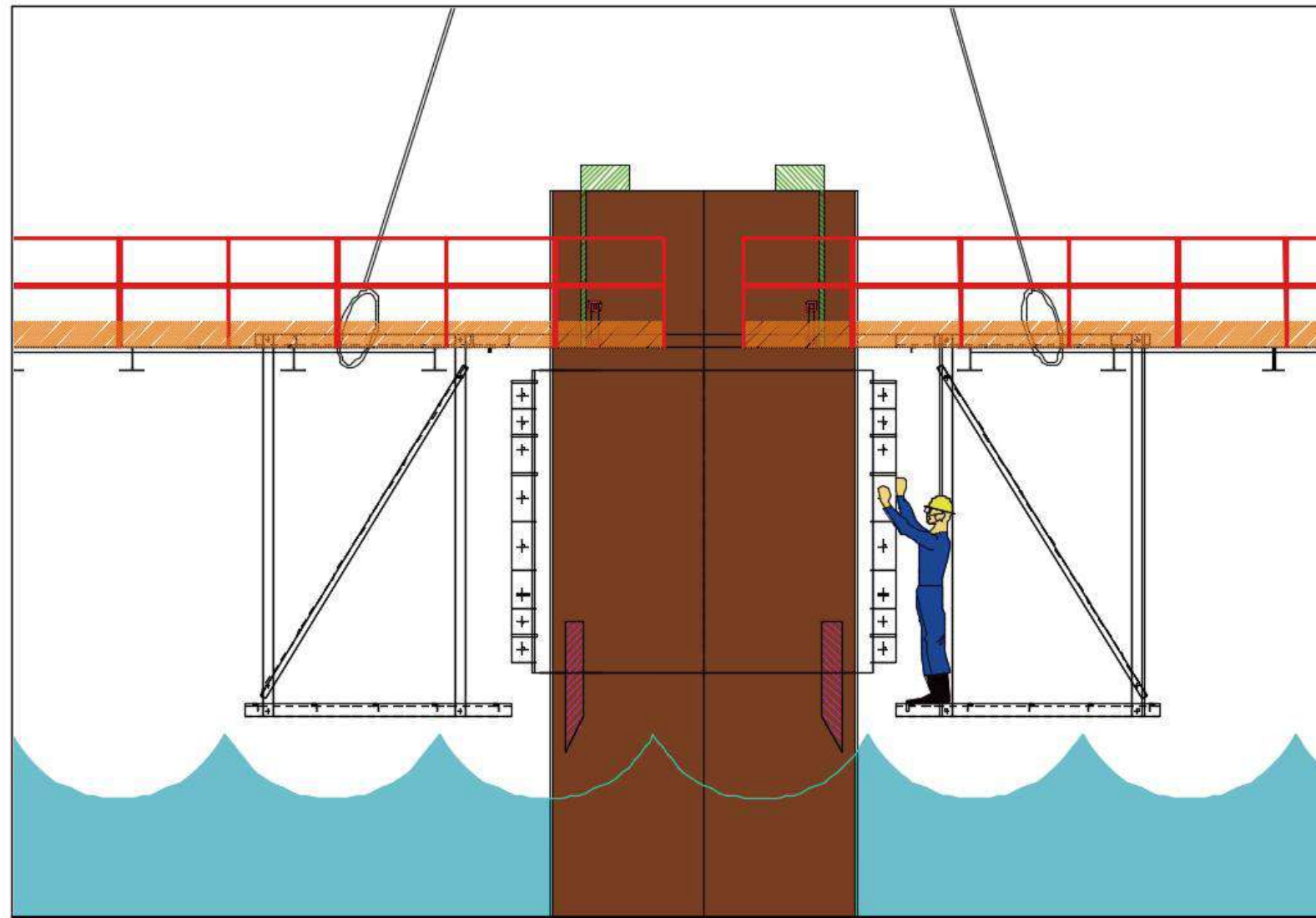


3) 支撐台與樁通會燒上吊眼及用鐵板用絲帽及絲柱收緊，雙重保險



5) PVC pipe/ GI pipe for keep the gap for installation
PVC膠管會令夾樁之間保持一定空間，使其能套入樁通

Installation of Support Platform 安裝海樁工作平台

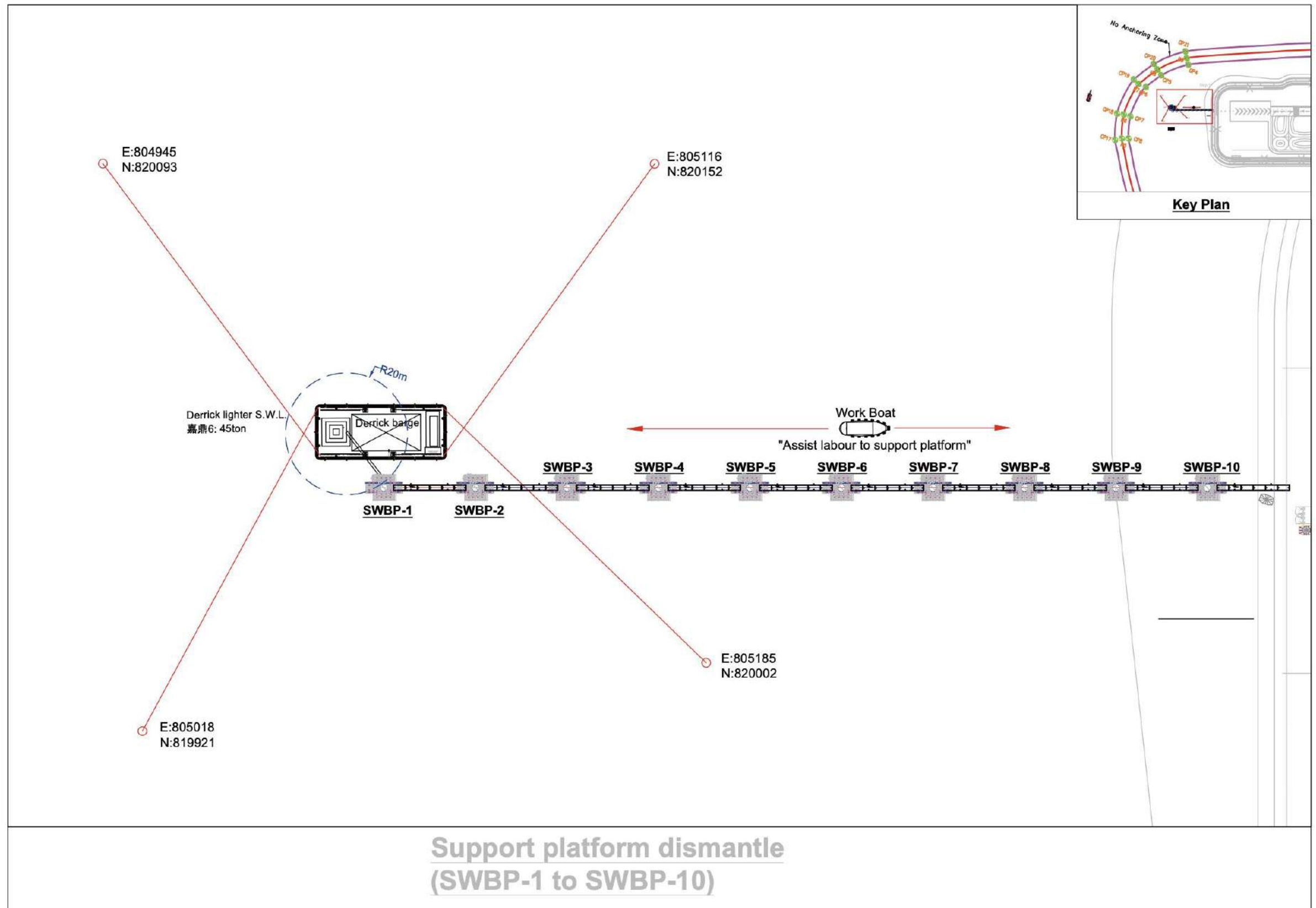


Section of Support platform Installation by labour

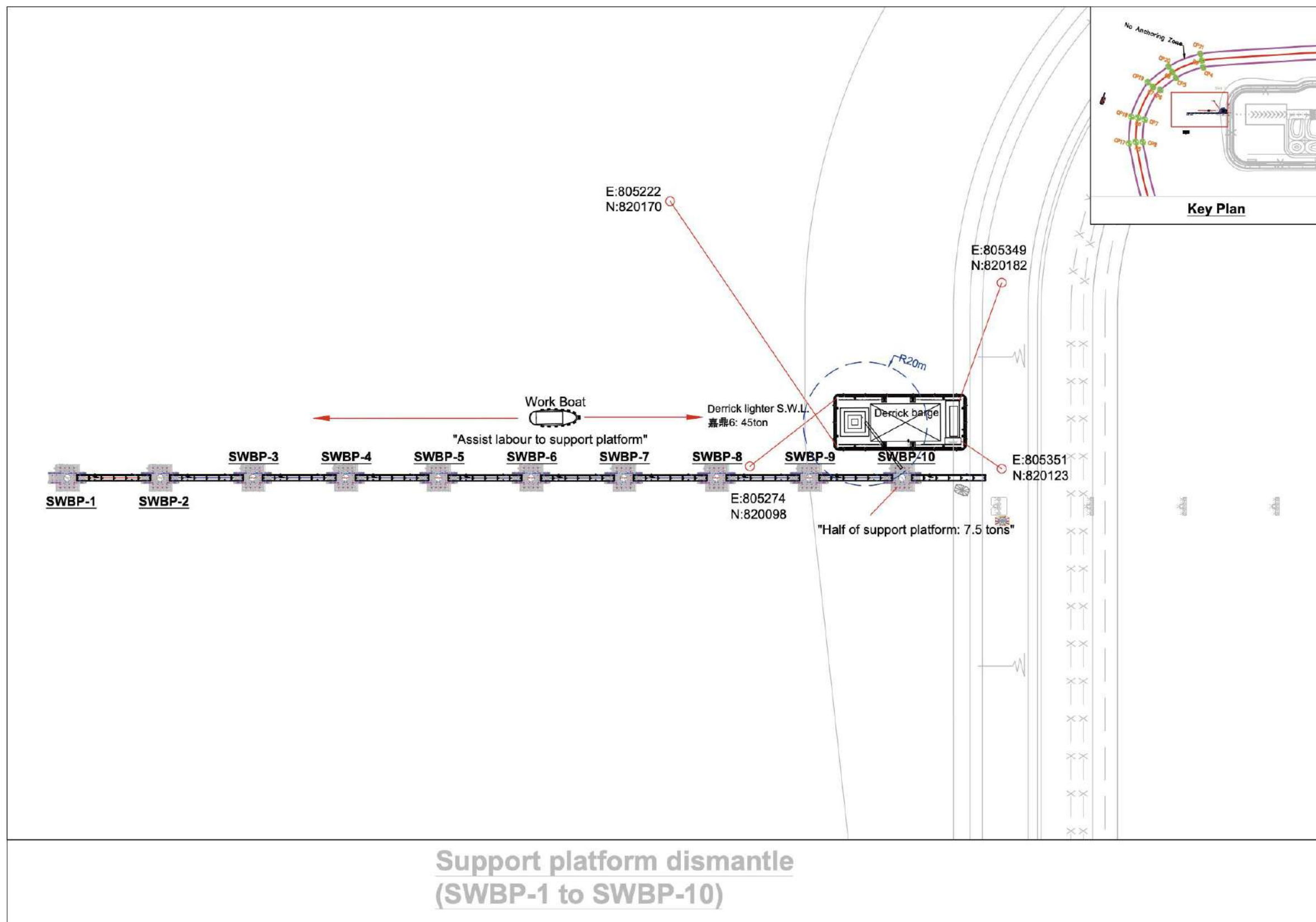
Installation by labour

- 1) Rigger step on the support platform by work boat
吊索工會經工作艇到達支撐台中。
- 2) Rigger wear safety jacket during works
吊索工工作時會穿上救生衣。
- 3) Rigger will tightening all nuts and bolts for installation of support platform
吊索工會將所有絲帽及絲栓收緊。
- 4) Derrick lighter will full time support this operation
橫雞躉船會全程協助安裝。

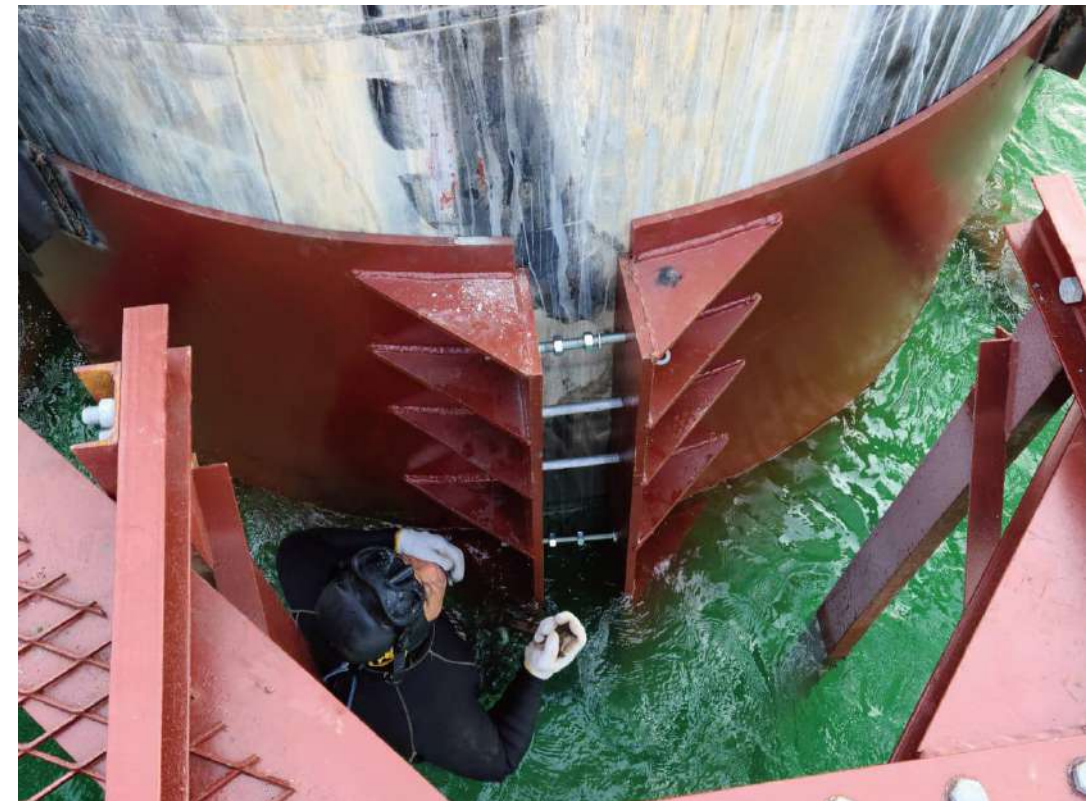
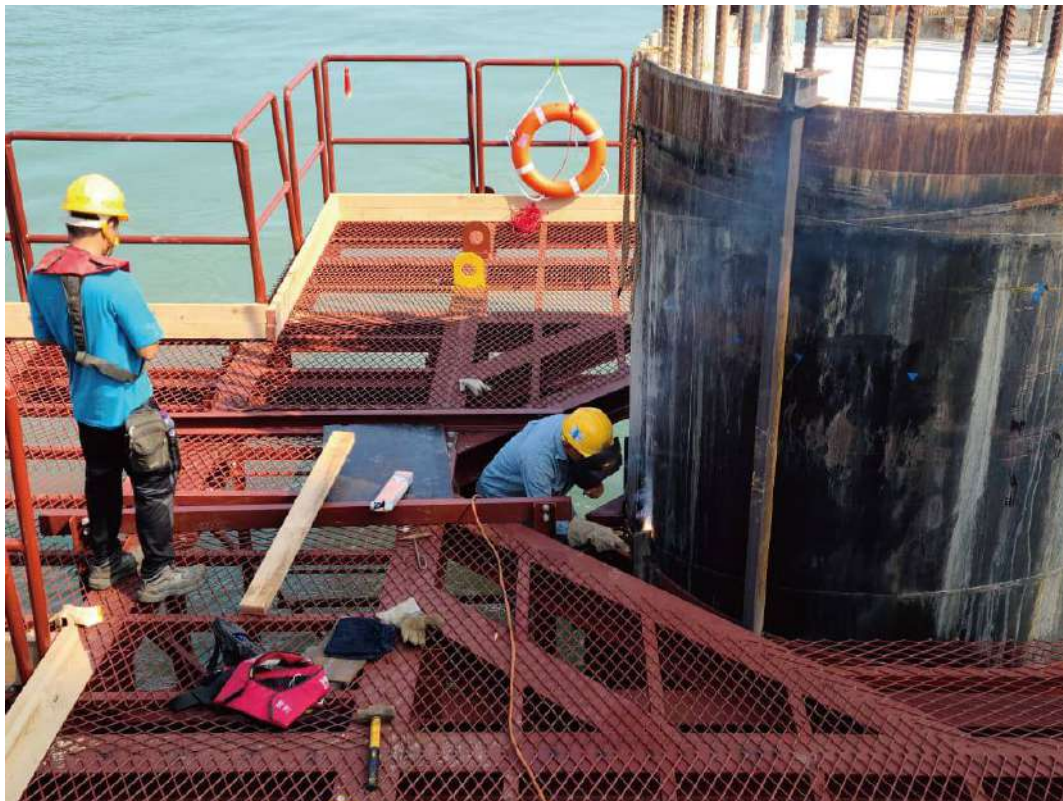
Anchor Plan of Support Platform Installation 躉船錨位



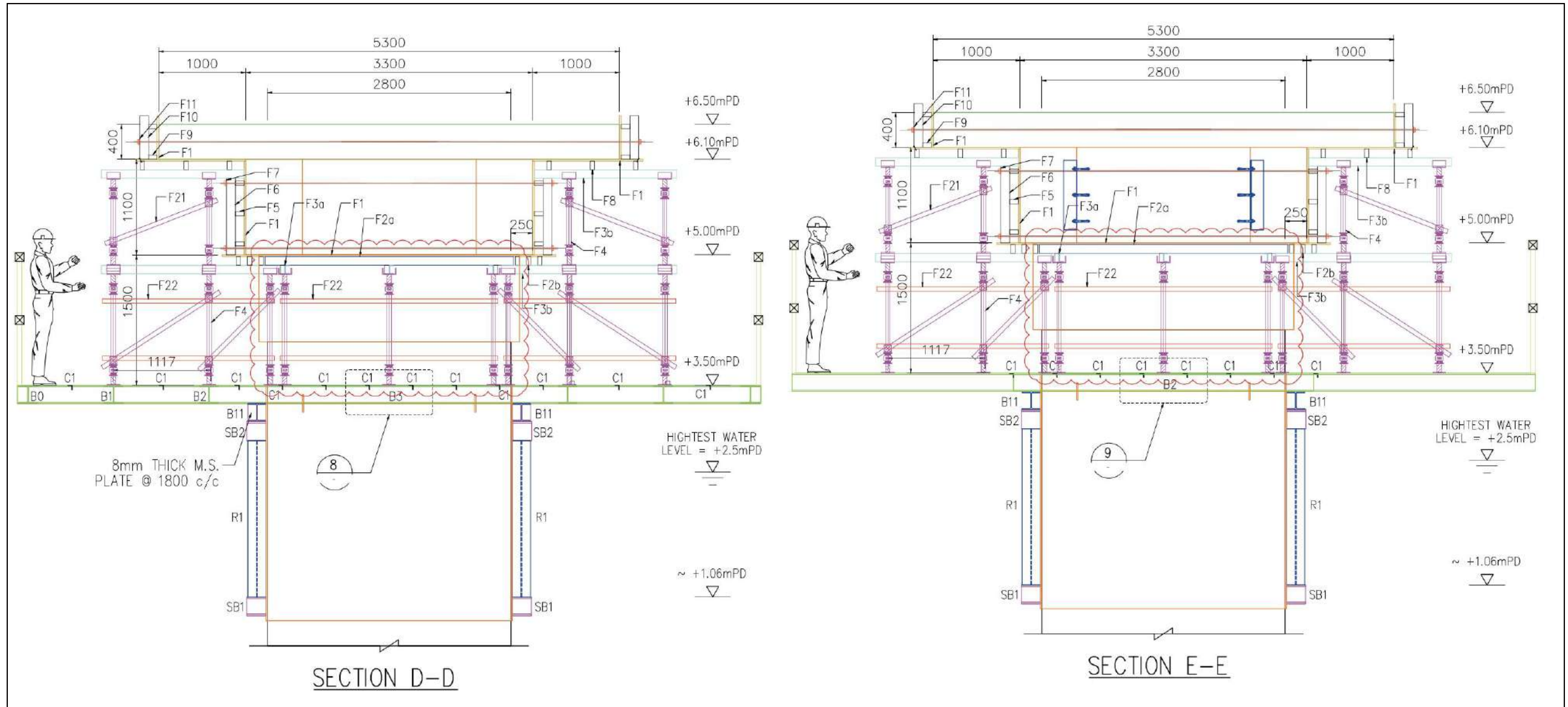
Anchor Plan of Support Platform Installation 躉船錨位



Installation of Support Platform 安裝海樁工作平台



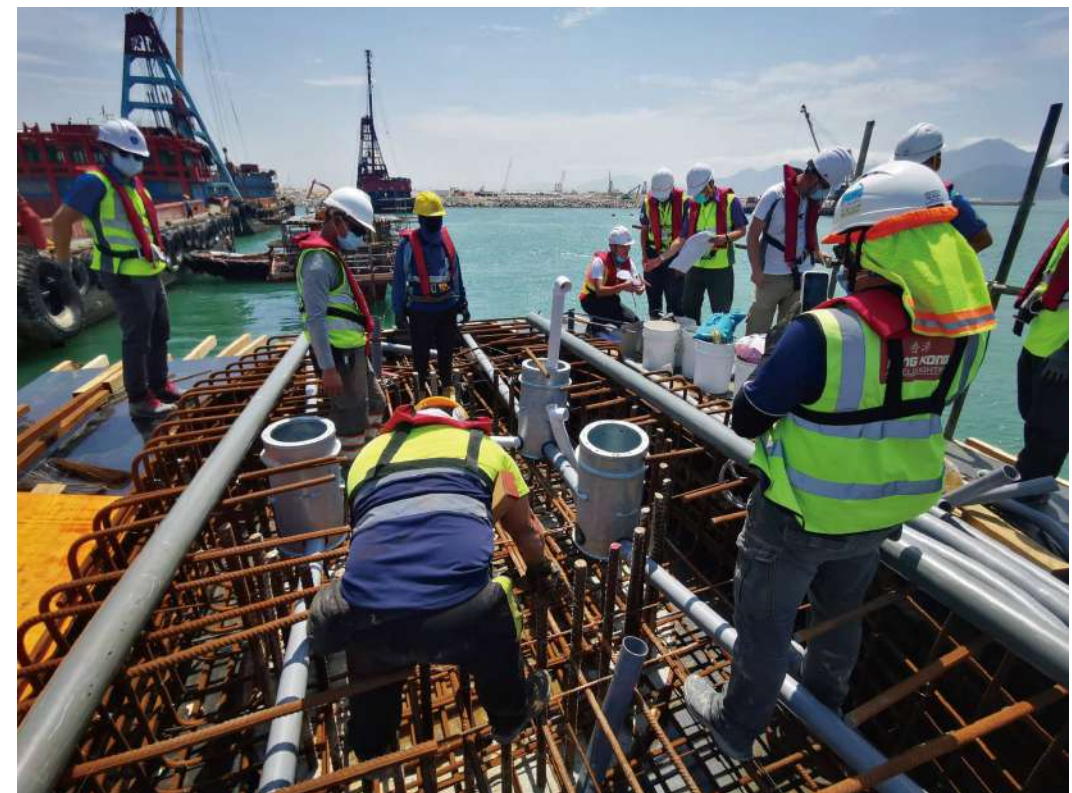
Design Formwork of Pile Cap 板模設計



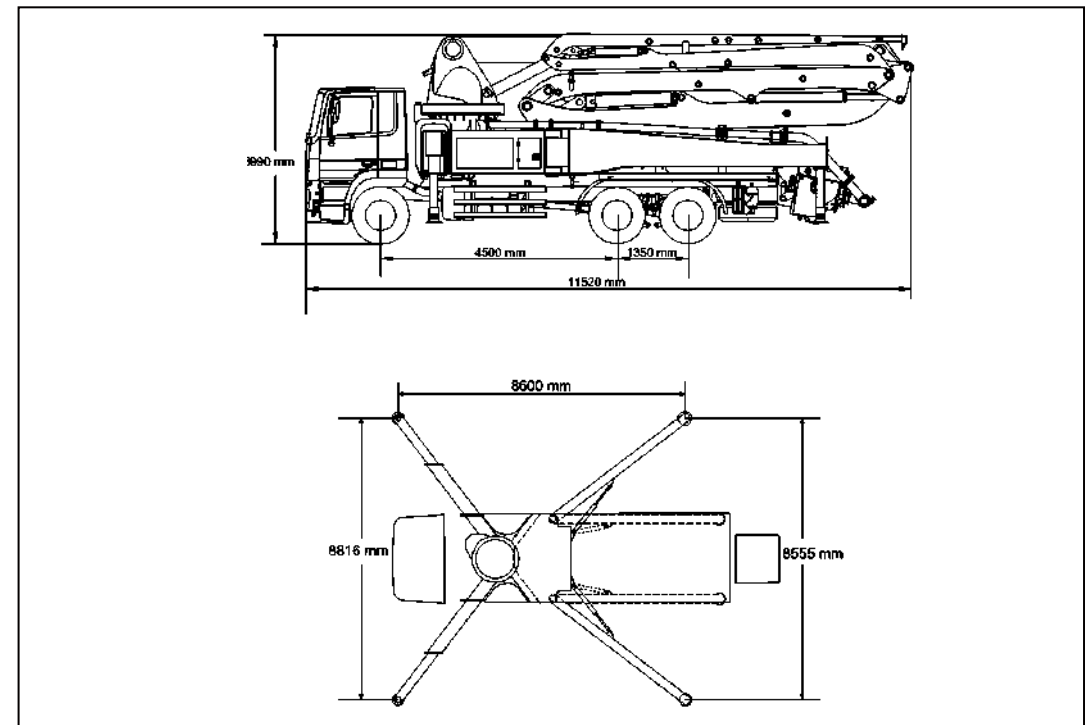
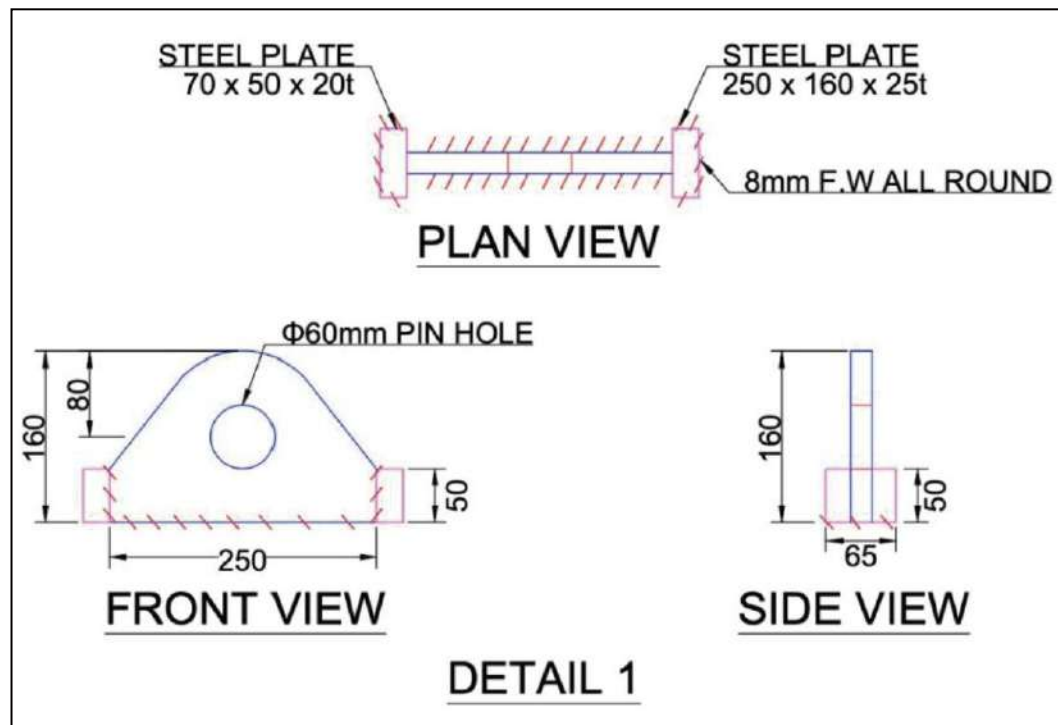
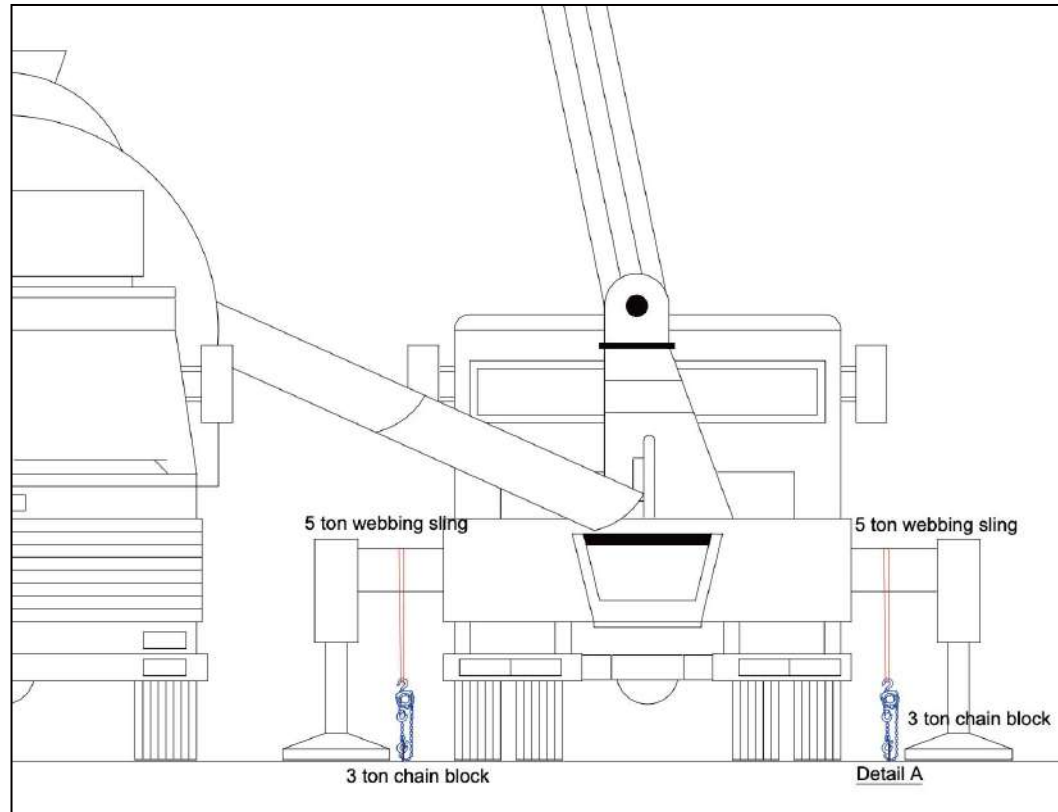
Design Formwork of Pile Cap 板模設計



AGL PVC Ducting of Pile Cap 燈橋PVC喉管擺放



Concreting Pump Truck on Flat Top Barge 平頂駁船上的混凝土泵車



Concreting Pump Truck on Flat Top Barge 平頂駁船上的混凝土泵車



Vehicle parked on deck with outrigger fully extended. Outrigger top to be connected secured to 4 number of lashing plate 12 mm thickness mounted to deck by 8 mm fillet weld attached in line wide bulkhead 9 m spacing. The lashing line to be tensioned by means of SWI. 3 tonnes chain block, puller or turnbuckle.

Pile Cap Concreting 混凝土澆築



AGL Link Bridge Construction AGL連接橋施工

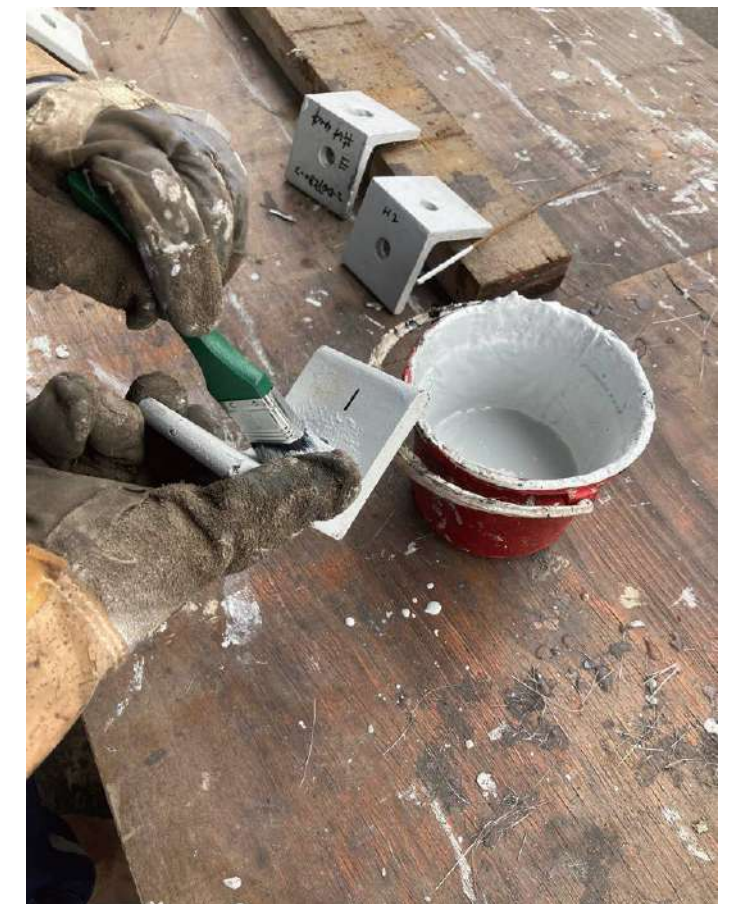
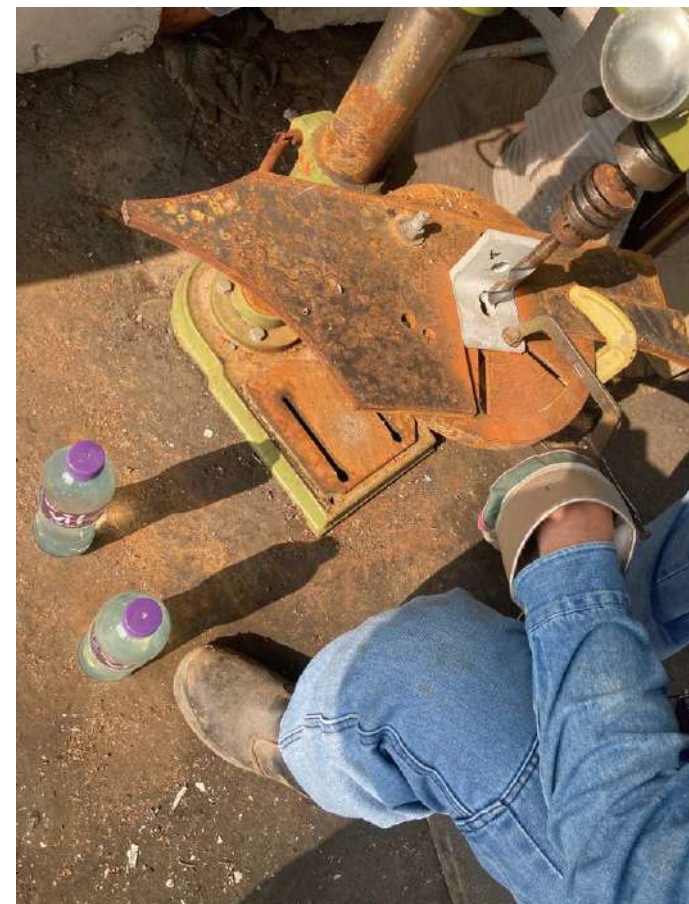


Assemble on RTT

因內地供應商只負責生產燈橋組件，並將燈橋組件運送到香港組裝。

故當組件到港，需安排一組裝工場並選址屯門內河碼頭，方便內地船隻上貨及有一大空間將燈橋組件拼裝及修整。

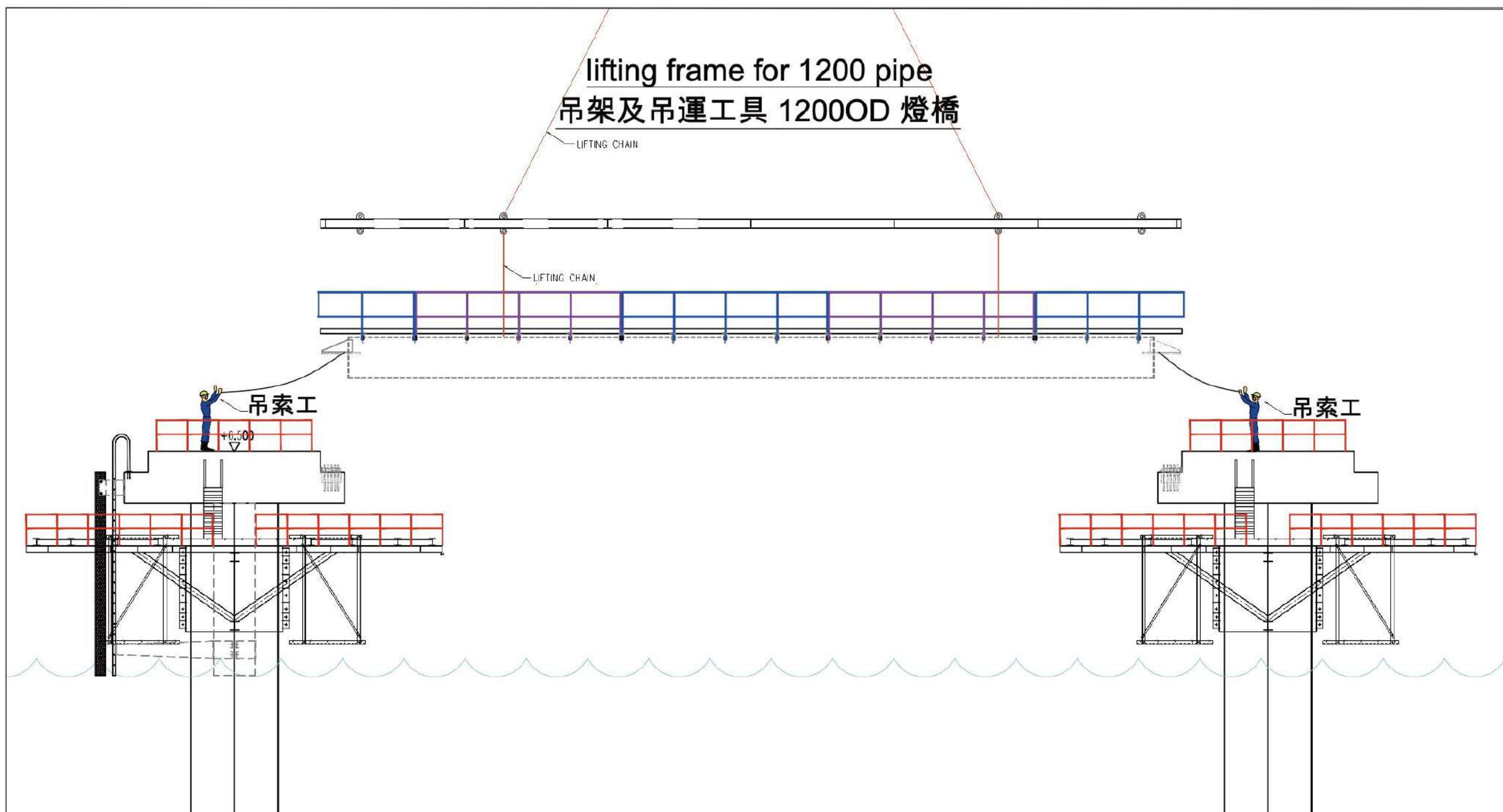
AGL Link Bridge Construction: Assembly Process AGL連接橋施工：拼裝過程



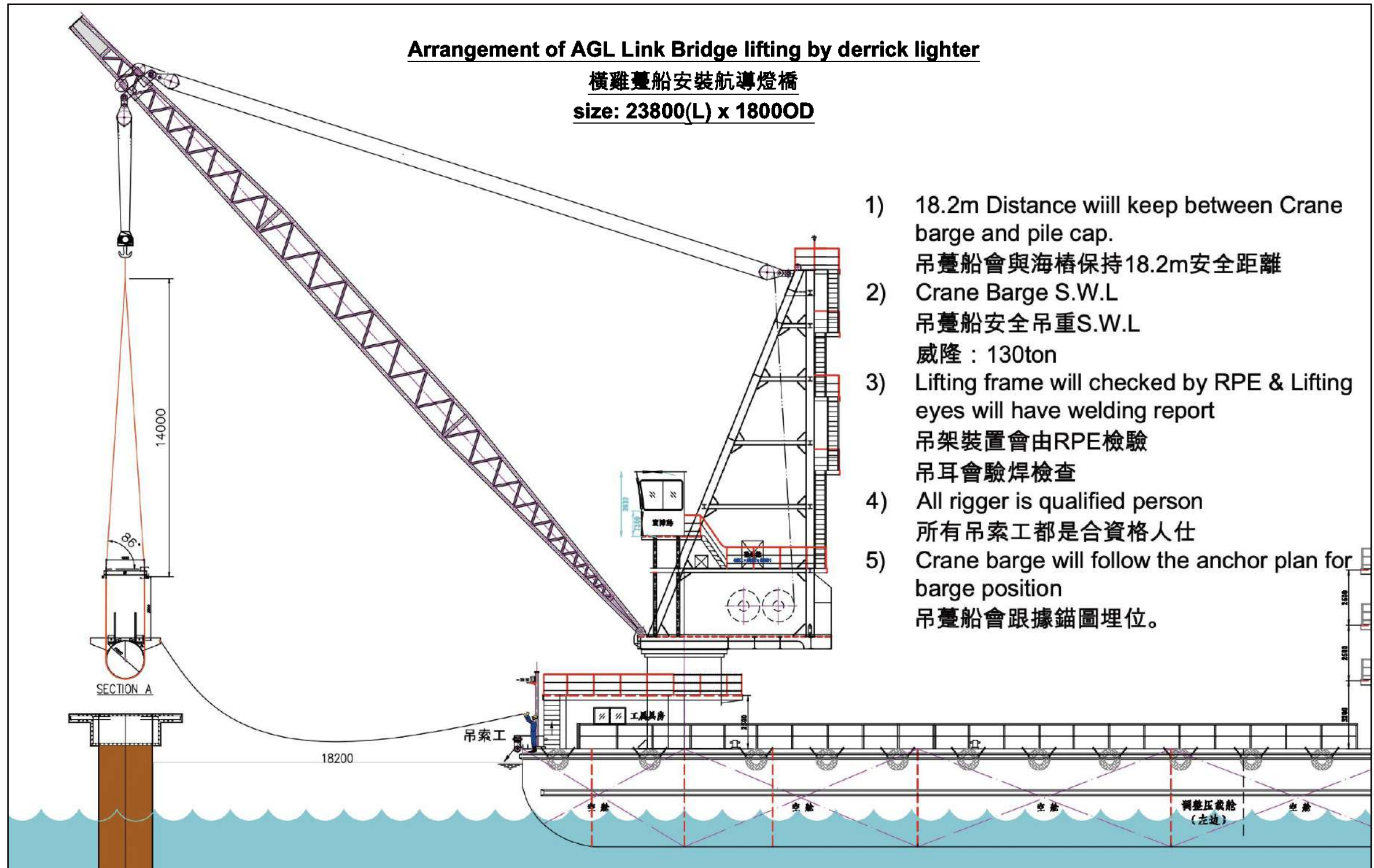
AGL Link Bridge Construction AGL連接橋施工

Lifting plan of AGL Link Bridge lifting by Crane barge

吊躉船吊橋(1200mm OD)安排



AGL Link Bridge Construction AGL連接橋施工



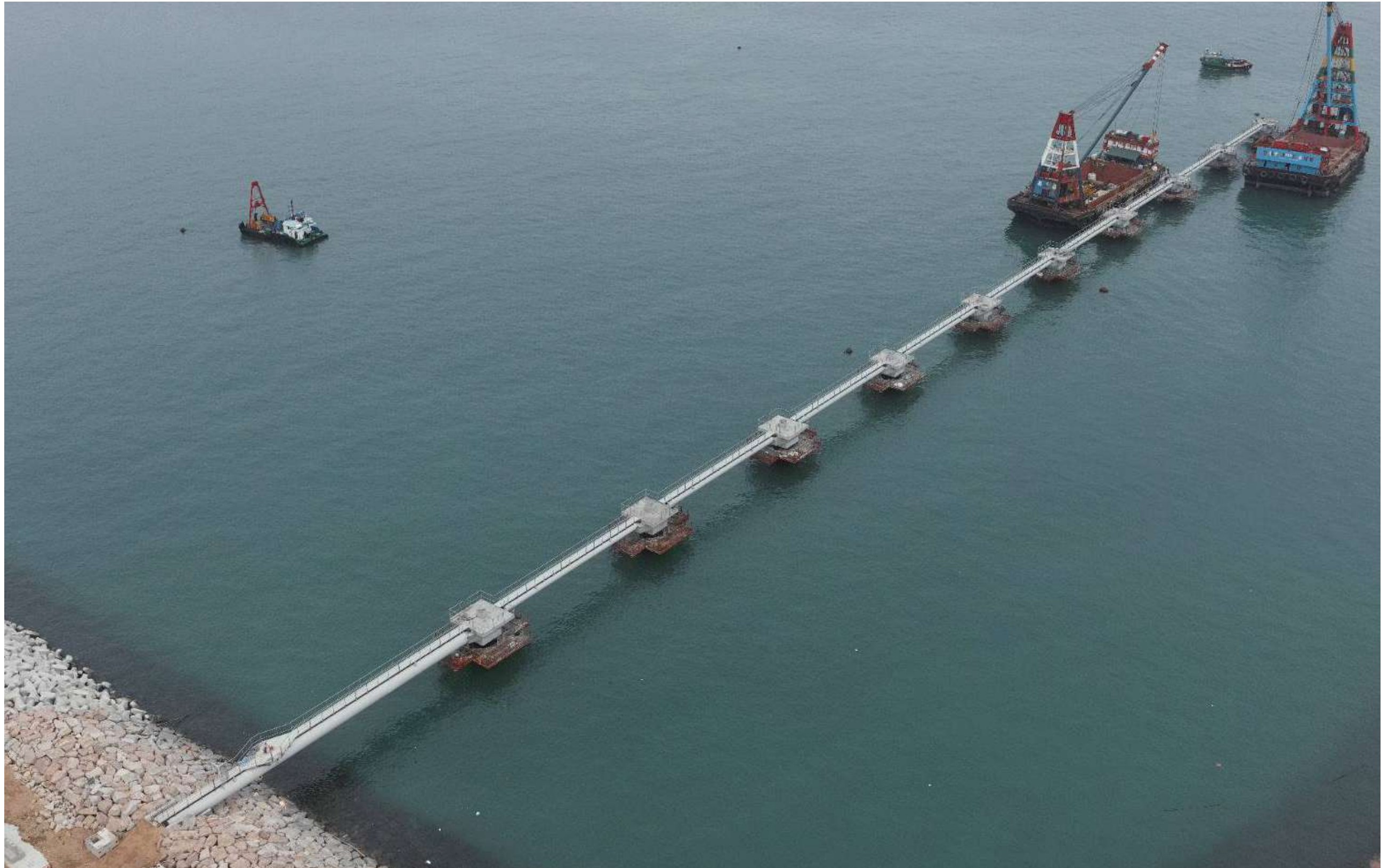
AGL Link Bridge Construction AGL連接橋施工



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