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創辦人 李燈村先生

**creat /Deng Tsun Lee**

**創**業至今，環台水泥製品股份有限公司不斷地在技術開發、人員素質提昇上精益求精，以專業的預力基樁為軸心，從地下，至地上，替人類社會創造了最穩固的基磐。

堅持著品質第一、責任為先及榮譽至上的信念，環台以領先卓越的專業經驗技術和一流的人才設備，精心地製造出值得信賴的產品。

數十年的歷史，一路走來，我們累積了成長的結晶與經驗的傳承，也建立了內外上下一致的企業識別系統(CIS)、ISO的認證。我們以最踏實的步伐，最精準的眼光，跨出我們的每一步。

環台水泥製品，也為實現安全舒適的地球生活做了最堅強的支撐。

現在的我們以環抱台灣為己任，不遠的明日裡，我們亦將以放眼世界做為長期的目標。我們相信，未來的環台，會在全體工作同仁的用心下，走得更穩健、更卓越。

**S**ince its founding, Hwan Tai Cement Products Co., Ltd. has continuously striven for perfection in its development of technology and elevation of the quality of its personnel. With professional pretensioned concrete piles as its axis, it has created the most stable cornerstone for the human being and society from underground to aboveground.

Adhering to the spirit of "Quality, responsibility and honor", Hwan Tai has constantly insisted on giving first priority to quality and responsibility. In addition, trustworthy products have been elaborately manufactured with a conviction to put honor in the front.

Going along our history of several decades, we have accumulated crystal of growth and passed down our experiences, and has also established the application for authentication on CIS and ISO, which is consistent inside and outside as well as upside and down side.

The cement products of Hwan Tai have also given the strongest support to the fulfillment of the safe and comfortable life on the earth. We of the present have put on our shoulders the responsibility to embrace Taiwan. In the near future, we will also set a long-range goal toward the world. We are confident that the Hwan Tai of the future will walk with far stabler paces and much more outstanding performance under the utmost efforts of all our co-workers.

## 公司介紹 Company profile

用心堆積歷史的基盤，以承載千年的重量  
為豐富人類生活，做最堅強的準備

Accumulate the huge foundation of history with heart to bear the weight of thousands of years

Make fullest preparation to enrich the life of human beings

### 公司全名：環台水泥製品股份有限公司

地址：台中市大肚區王田里沙田路一段320巷50號

電話：(04)26932501-3

傳真：(04)26933373

網址：[//www.htcp.com.tw](http://www.htcp.com.tw)

電子信箱：[htcp.phc5128@msa.hinet.net](mailto:htcp.phc5128@msa.hinet.net)

成立日期：民國五十四年

資本額：新台幣一億二千萬元整

### 越南公司：環台（越南）責任有限公司

地址：越南巴地頭頓省富美市富美坊富美一工業區2B號路

電話：+84-254-3894662

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網址：[//www.htcp.com.tw](http://www.htcp.com.tw)

電子信箱：[htcp.phc5128@msa.hinet.net](mailto:htcp.phc5128@msa.hinet.net)

成立日期：民國九十六年

資本額：美金六百萬

### Company name: HWAN TAI CEMENT PRODUCTS CO., LTD.

Address: NO. 50, LN. 320, SEC. 1, SHATIAN RD., DADU DIST.,

TAICHUNG CITY 43247, TAIWAN (R.O.C.)

Tel: 886-4-26932501-3

Fax: 886-4-26933373

<http://www.htcp.com.tw>

E-mail: [htcp.phc5128@msa.hinet.net](mailto:htcp.phc5128@msa.hinet.net)

Date of establishment: 1965

Capital: NTS 120 million

### Company name: HWAN TAI VIETNAM CO., LTD

Address: 2B STREET, PHU MY INDUSTRIAL ZONE 1, PHU MY WARD,

PHU MY TOWN, BA RIA VUNG TAU PROVINCE, VIETNAM

Tel: +84-254-3894662

Fax: +84-254-3921320

<http://www.htcp.com.tw>

e-mail: [htcp.phc5128@msa.hinet.net](mailto:htcp.phc5128@msa.hinet.net)

Date of establishment: 2007

Capital: USD \$6 million

### 營業項目

預力混凝土基樁／預力混凝土版樁／基樁施工（打擊式、外掘式、中掘式）／基樁載重試驗／水泥經銷（波特蘭水泥及高爐水泥）

#### Item of business:

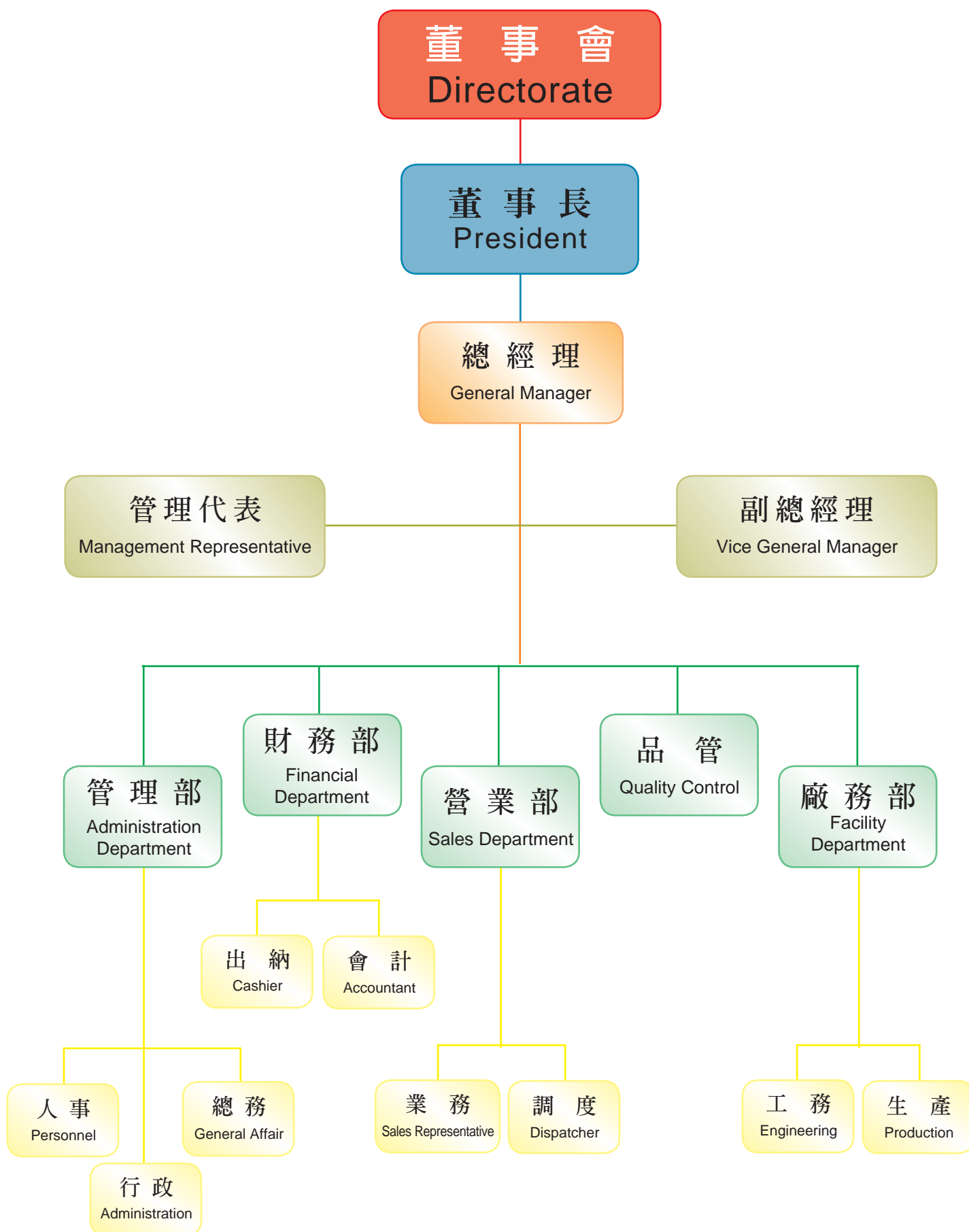
P.C. Piles / P.C. Sheet Piles / Pile Piling (Beating, Outer digging, Middle digging) / Pile load test / Cement business (Portland Cement & Portland blast-furnace slag Cement)

## 公司簡歷 Company history

- |              |                                    |
|--------------|------------------------------------|
| 民國54年(1965)  | 公司成立，設廠產銷鋼筋混凝土管                    |
| 民國58年(1969)  | 增設基樁及電桿工廠                          |
| 民國76年(1987)  | 獲經濟部中央標準局審查合格為◎製品工廠                |
| 民國85年(1996)  | 與日本平岡公司技術合作引進自動化生產設備               |
| 民國86年(1997)  | 通過ISO認證，導入CIS企業識別系統                |
| 民國87年(1998)  | 與台灣安采精機合作研發自動化生產設備，並外銷東南亞          |
| 民國89年(2000)  | 從日本引進大型預力鋼棒編網機，使本公司產品之生產口徑可達1200MM |
| 民國96年(2007)  | 赴越南成立環台(越南)責任有限公司                  |
| 民國98年(2009)  | 環台(越南)責任有限公司通過ISO認證                |
| 民國102年(2013) | 環台(越南)責任有限公司第二廠區擴建完成               |

- |      |  |
|------|--|
| 1965 | Founded the company and established plant to produce and sell reinforced concrete pipe                                       |
| 1969 | Established pile and electric pole plant   |
| 1987 | The company was awarded qualified product manufacturers after checked by Central Standard Bureau of MOEA                     |
| 1996 | Cooperated with Japanese HIRAOKA & CO., LTD. in technology and introduce automatic production facilities                     |
| 1997 | Passed ISO certification, introduce CIS company identification system  |
| 1998 | Cooperated with Taiwan Ancai Machine Co. on developing automatic production facilities and import them to the Southeast Asia |
| 2000 | Introduced large-scale Pc Bar caging machine from Japan, the product caliber can reach 1200 MM                               |
| 2007 | Hwan Tai VIETNAM CO., LTD founded in 2007  |
| 2009 | Hwan Tai VIETNAM CO., LTD passed the ISO certification in 2009   |
| 2013 | Completed the second plant expansion of Hwan Tai VIETNAM CO., LTD.   |

# 公司組織 Company Organization



# 台灣廠介紹 *Taiwan Factory Introduction*

環台水泥製品工廠座落於台中市大肚區  
Hwan Tai Cement Products Factory is located in Dadu, Taichung City

土地面積：19,147m<sup>2</sup>  
Land area: 19,147 m<sup>2</sup>

廠房面積：5,719.62m<sup>2</sup>  
Factory building area: 5,719.62 m<sup>2</sup>

每年產量：60萬M  
Yearly output: 600 Thousand M



預力鋼棒自動焊接機(300-1200)  
PC bar automatic welding machine(300-1200)



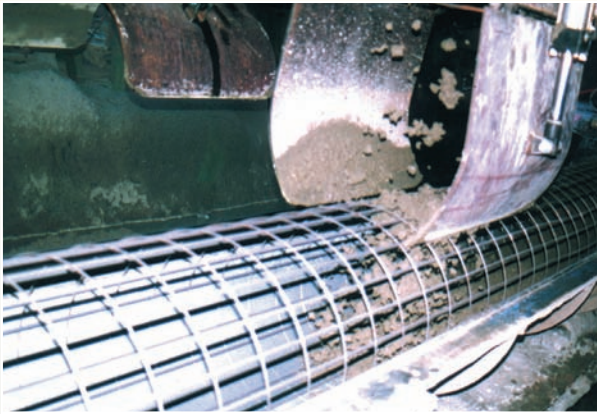
預力鋼棒自動剪線鉚頭機  
PC bar automatic wire-cutting and rivet machine



基樁投料前準備  
preparation before pouring concrete of P.C. piles



大型夾具  
Large scale clamp



基樁投料  
Pouring concrete of P.C. piles



離心機  
Spinning machine



真空吸樁機(400~1000)  
Vacuum lift for concrete pile (400-1000)



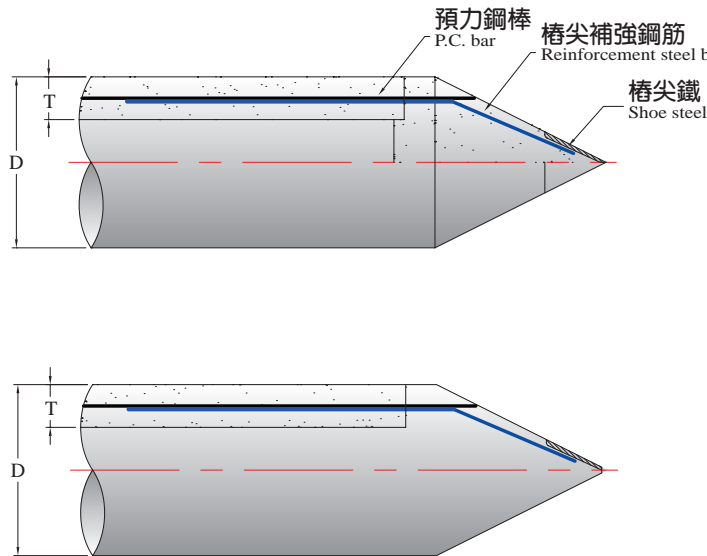
低溫養生槽  
low-temperature curing chamber

# 預力基樁標準結構(台灣) Taiwan Standard Structure of P. C. Pile

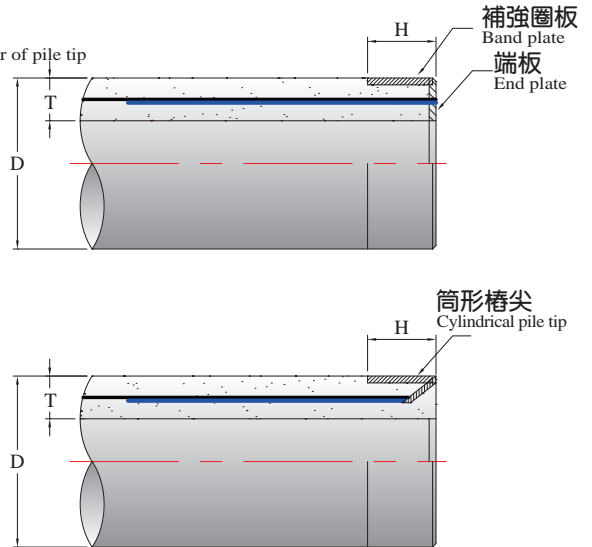
## (1) 樁尖構造圖

### Structural Diagram of Pile Tip

1. 標準型  
Standard type

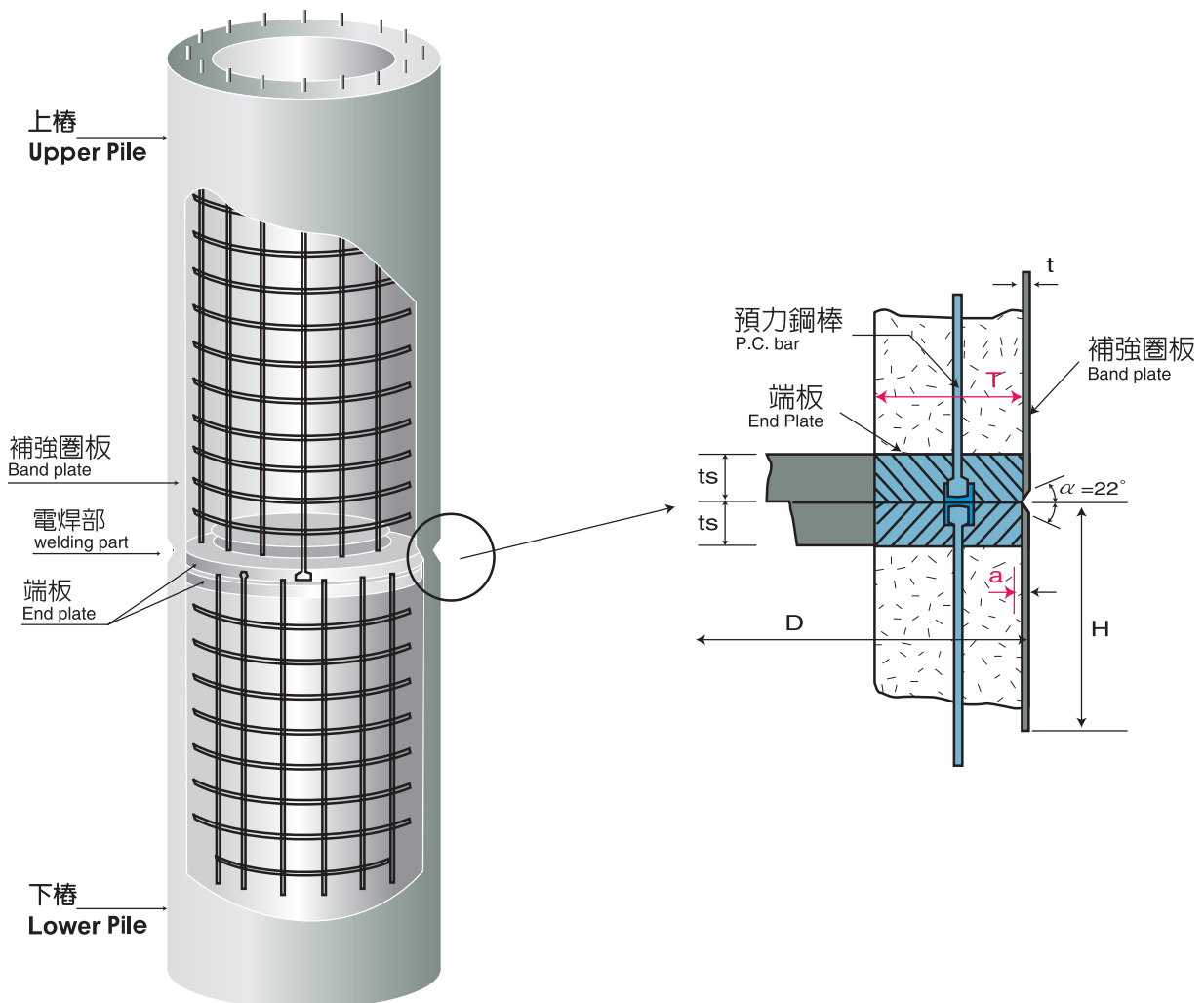


2. 開口型  
Open type



## (2) 焊接構造圖

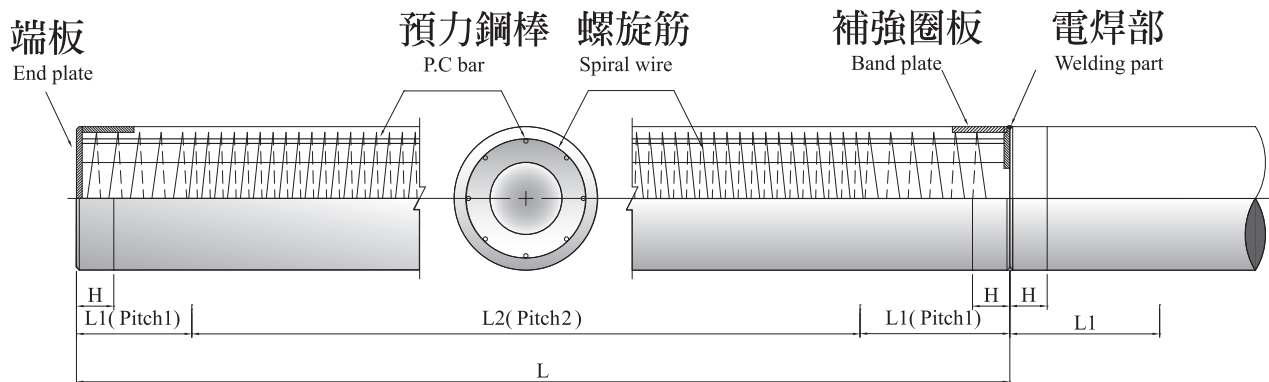
### Structural Diagram of welding



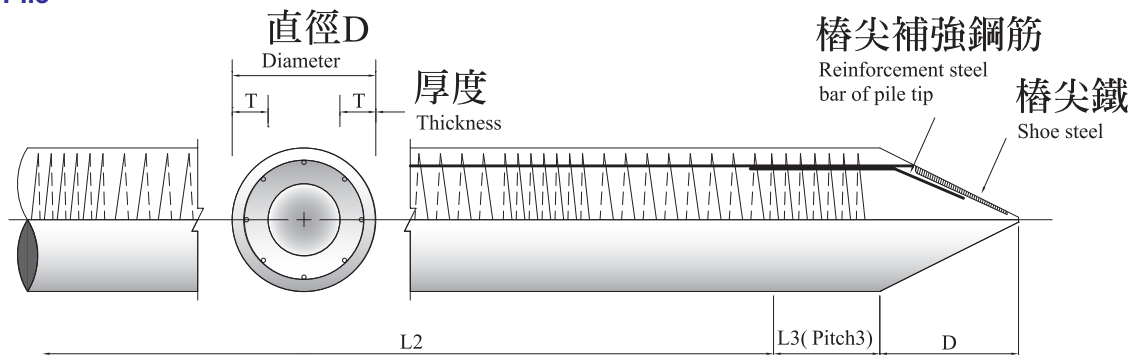
### (3) P.C. 基樁構造圖

#### Structural Diagram of P. C. Pile

##### 上樁 Upper Pile



##### 下樁 Lower Pile



### (4) 標準尺寸表

#### Standard Dimension Table

樁徑 Pile diameter D(mm)	厚度 Thickness T(mm)	端 板 End plate				L1 L3 (mm)	間距 Pitch ① ③	間距 Pitch ②
		H(mm)	t(mm)	ts(mm)	a(mm)			
300	60	150	1.6	16	8	800	50mm	100mm
350	65	150	2.3	16	8.5	800	50mm	100mm
400	75	150	2.3	16~19	9.5	1000	50mm	100mm
450	80	150	2.3	19	10	1000	50mm	100mm
500	90	150	2.3	19	11	1000	50mm	100mm
600	100	150	2.3	19	12	1000	50mm	100mm
700	110	150	2.3~3.2	22	13	1500	50mm	100mm
800	120	150	2.3~3.2	22~25	13	1500	50mm	100mm
900	130	150	2.3~5.0	22~25	15	1500	50mm	100mm
1000	140	200	2.3~5.0	22~25	15	1500	50mm	100mm



# (5)台灣HT-PHC規範表

## Taiwan Specification Table of HT-PHC

外徑 Outer Diameter D mm	厚度 Thickness T mm	種別 Type	CNS 規格彎矩 CNS Standard Bending Moment (T-M)		預力鋼棒 PC Bar			混凝土斷面積 Pile Section Area Ac cm <sup>2</sup>	混凝土斷面二次貫性矩 Secondary Moment of Section of Concrete Ic cm <sup>4</sup>	容許軸向 荷重 Allowable Axial Load Pa (T)	長度 Length L M	單位重量 Unit Weight W (kg/M)
			龜裂痕 Cracking Mc <sub>r</sub>	破壞 Breaking Mu	直徑 Diameter mm	支數 P.C.S	斷面積 Area AP cm <sup>2</sup>					
300	60	A	2.5	3.8	7.1	6	2.40	452	34608	74	6-9	118
		B	3.0	4.8	7.1	8	3.84			72	6-10	
		C	3.5	6.3	9.0	8	5.12			71	6-12	
		D	4.0	8.0	9.0	10	6.40			70	6-12	
350	65	A	3.5	5.3	7.1	7	2.80	582	62163	95	6-9	151
		B	4.2	6.8	9.0	7	4.48			93	6-10	
		C	5.0	9.0	9.0	10	6.40			92	6-12	
		D	6.0	12.0	9.0	12	7.68			90	6-12	
400	75	A	5.5	8.3	9.0	6	3.84	765	106489	125	6-9	199
		B	6.5	10.4	9.0	9	5.76			123	6-12	
		C	7.5	13.5	9.0	12	7.68			120	6-16	
		D	9.0	18.0	10.7	12	10.80			118	6-16	
450	80	A	7.5	11.3	9.0	8	5.12	930	166571	152	6-10	242
		B	9.2	14.8	9.0	10	6.40			149	6-12	
		C	11.0	19.8	9.0	16	10.24			147	6-16	
		D	12.5	25.0	10.7	14	12.60			144	6-16	
500	90	A	10.5	15.8	9.0	9	5.76	1159	255325	190	6-12	301
		B	12.5	20.0	9.0	12	7.68			186	6-14	
		C	15.0	27.0	9.0	18	11.52			183	6-18	
		D	17.0	34.0	10.7	18	15.36			179	6-18	
600	100	A	17.0	25.5	9.0	12	7.68	1571	510510	257	6-14	408
		B	21.5	34.4	9.0	18	11.52			252	6-18	
		C	25.0	45.0	9.0	24	15.36			248	6-18	
		D	29.0	58.0	10.7	24	21.60			243	6-18	
700	110	A	27.0	40.5	9.0	16	10.24	2039	918014	334	8-13	530
		B	33.0	52.8	9.0	22	14.08			328	8-18	
		C	38.0	68.4	9.0	30	19.20			322	8-18	
		D	45.0	90.0	10.7	30	27.00			316	8-18	
800	120	A	40.0	60.0	9.0	20	15.69	2564	1527873	420	8-12	666
		B	50.0	80.0	9.0	30	19.20			412	8-18	
		C	55.0	99.0	9.0	38	24.32			405	8-18	
		D	65.0	130.0	10.7	38	34.20			397	8-18	
900	130	A	55.0	82.5	9.0	27	17.28	3144	2397079	515	8-12	817
		B	66.0	105.6	9.0	35	22.40			506	8-16	
		C	75.0	135.0	10.7	35	31.50			497	8-16	
		D	85.0	170.0	12.6	32	40.00			487	8-16	
1000	140	A	75.0	112.5	9.0	30	19.20	3782	3589580	620	8-12	983
		B	90.0	144.0	10.7	30	27.00			608	8-16	
		C	105.0	189.0	12.6	32	40.50			597	8-16	
		D	120.0	240.0	12.6	44	54.00			586	8-16	

附註：

符合CNS規格標準

◆有效預力

A種：40 Kg/cm<sup>2</sup>

B種：60 Kg/cm<sup>2</sup>

C種：80 Kg/cm<sup>2</sup>

D種：100 Kg/cm<sup>2</sup>

◆單位體積重量=2600Kg/m<sup>3</sup>

◆混凝土強度符合CNS標準，D350以下：f'c≧500kg/cm<sup>2</sup>

D400以上：f'c≧800kg/cm<sup>2</sup>

Annotation:

Accord with CNS specification standard

◆Effective Prestress

A TYPE：40 Kg/cm<sup>2</sup>

B TYPE：60 Kg/cm<sup>2</sup>

C TYPE：80 Kg/cm<sup>2</sup>

D TYPE：100 Kg/cm<sup>2</sup>

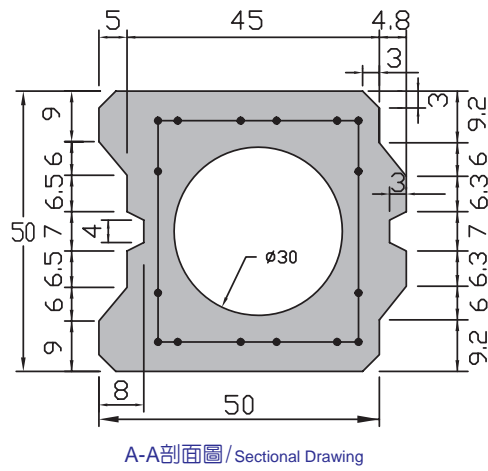
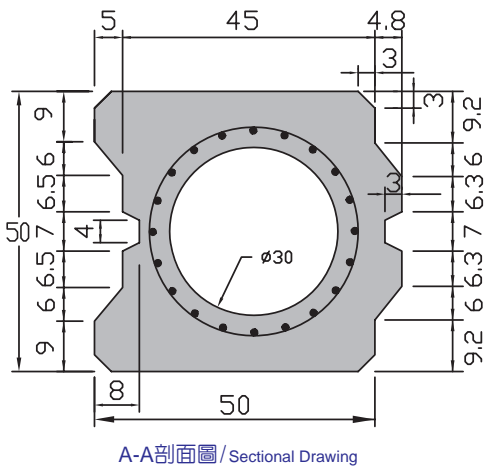
◆Unit Weight=2600Kg/m<sup>3</sup>

◆D300~D350：f'c≧500kg/cm<sup>2</sup>

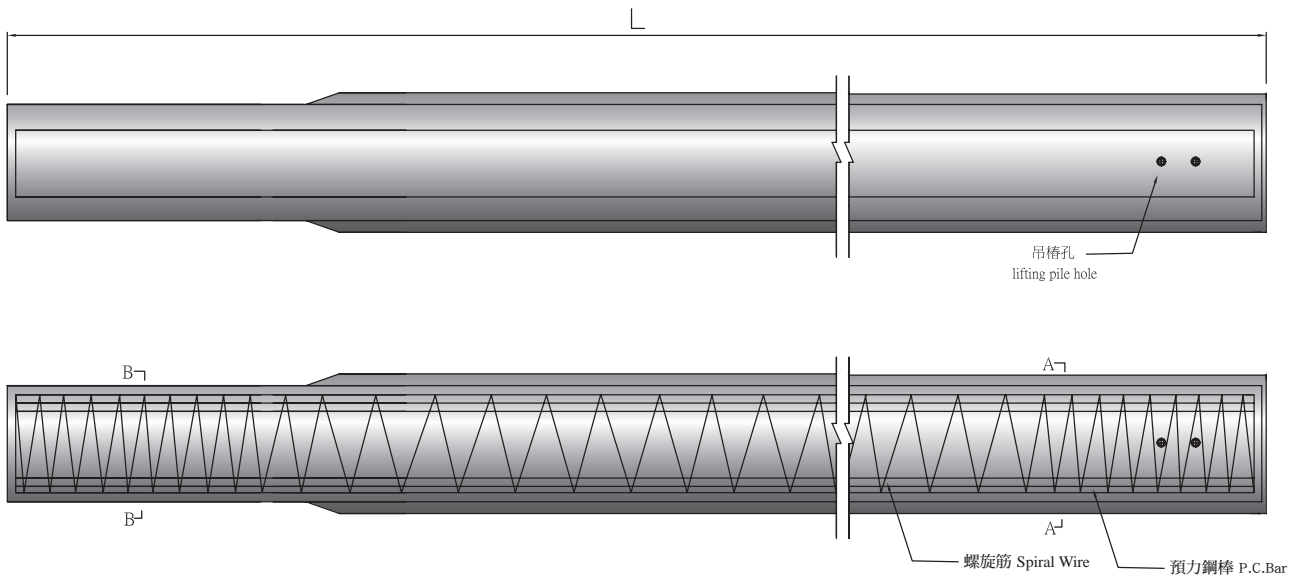
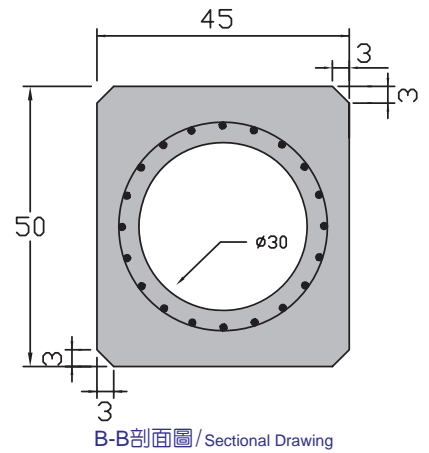
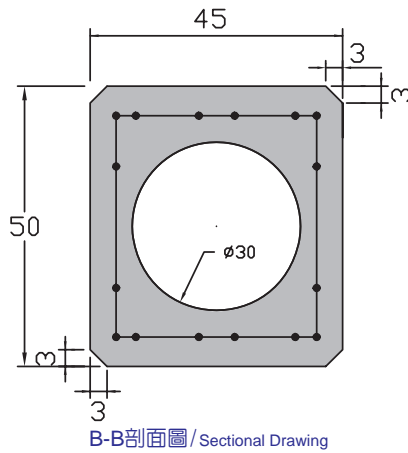
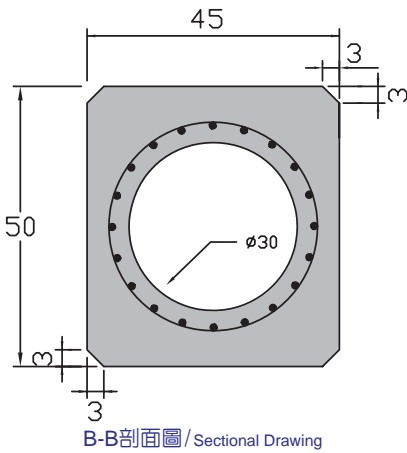
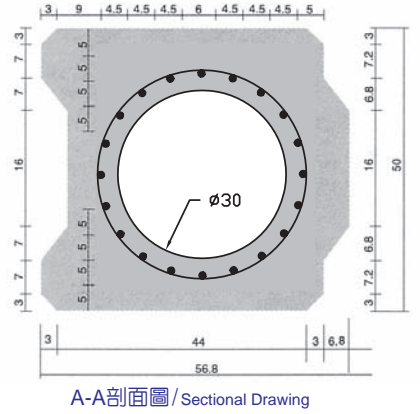
D400~D1000：f'c≧800kg/cm<sup>2</sup>

# (6) 預力混凝土版樁構造圖 Structural Diagram of P. C. Sheet Pile

1. 500(mm)x500(mm) 剖面圖 Sectional Drawing



2. 500(mm)x500(mm) 剖面圖 Sectional Drawing  
(無注漿孔 Without infill hole)



附註 Annotation :

- ◆ 斷面、長度及開裂彎矩可依設計要求製造  
The section, length and bending moment can be manufactured according to the design requirement.
- ◆ 混凝土強度使用  $f'c \geq 600 \text{ kg/cm}^2$   
The concrete strength uses  $f'c \geq 600 \text{ kg/cm}^2$ .

# 越南廠介紹 Vietnam Factory Introduction

環台越南廠座落於巴地頭頓省  
Hwan Tai Vietnam Factory is located in BRVT Province

土地面積：50000m<sup>2</sup>  
Land area: 50,000 m<sup>2</sup>

廠房面積：35000m<sup>2</sup>  
Factory building area: 35,000 m<sup>2</sup>

年產量：200萬米  
Yearly output: 2 Million M



電動天車  
Automatic crane



真空吸樁機 (300-800)  
Vacuum lift for concrete pile (300-800)



自動剪線鉚頭機  
Automatic wire-cutting and rivet machine



預力鋼棒自動焊接機  
PC bar automatic welding machine(300~800)



基樁投料  
Pouring concrete of P.C. piles



大型夾具  
Large scale clamp



真空吸樁機(300-800)  
Vacuum lift for concrete pile (300~800)

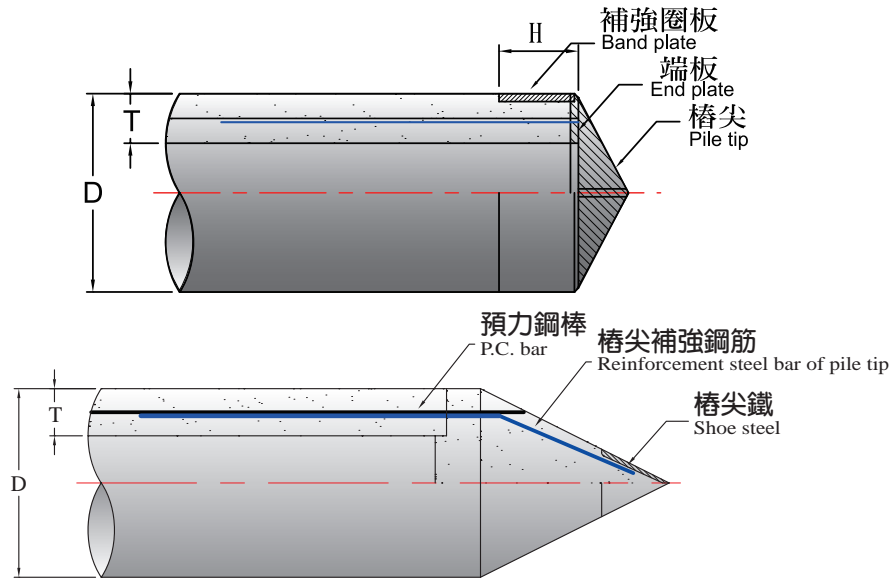


高溫高壓養生爐  
Autoclave curing stove

# 預力基樁標準結構(越南) Vietnam Standard Structure of P. C. Pile

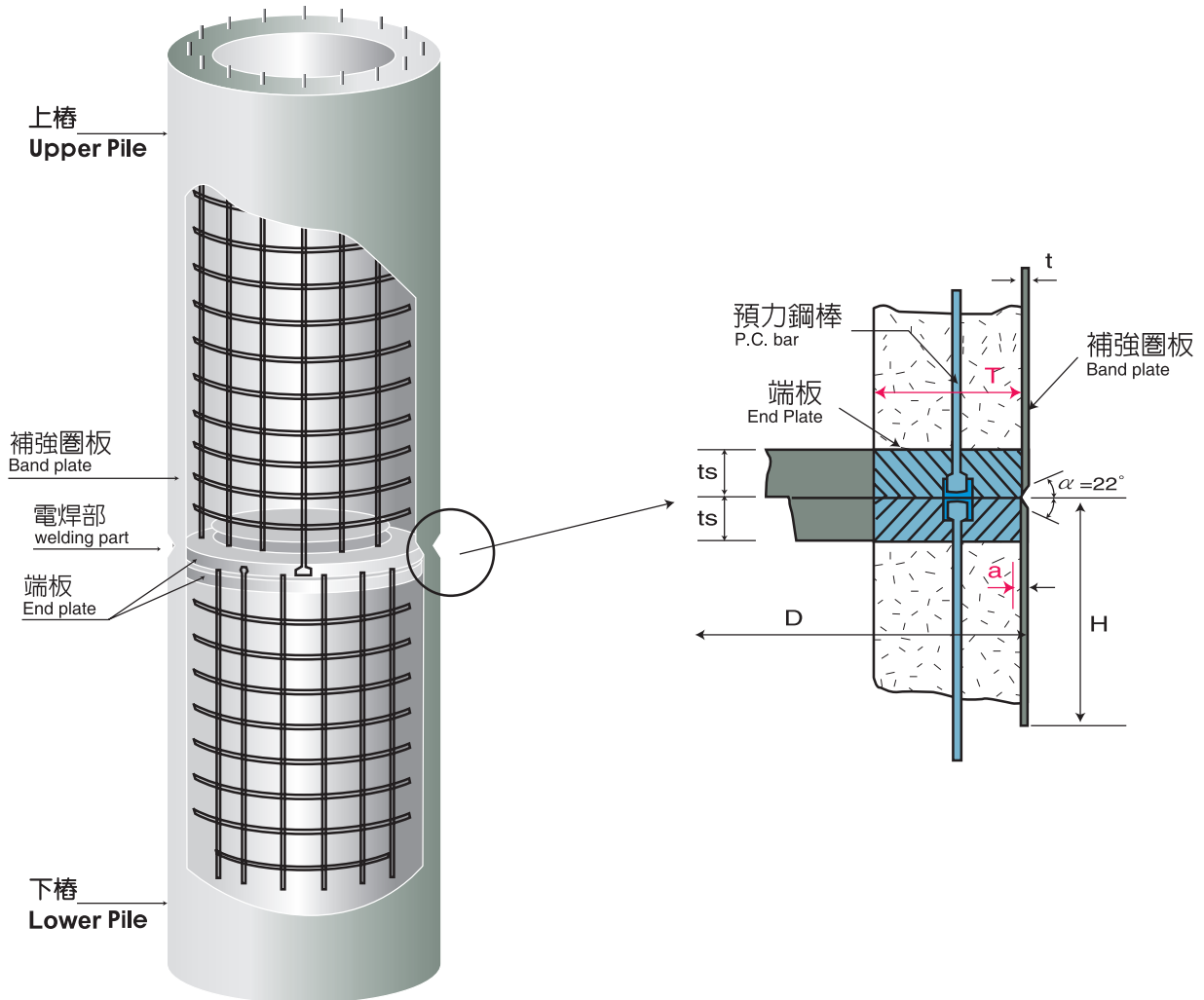
## (1) 樁尖構造圖

Structural Diagram of Pile Tip



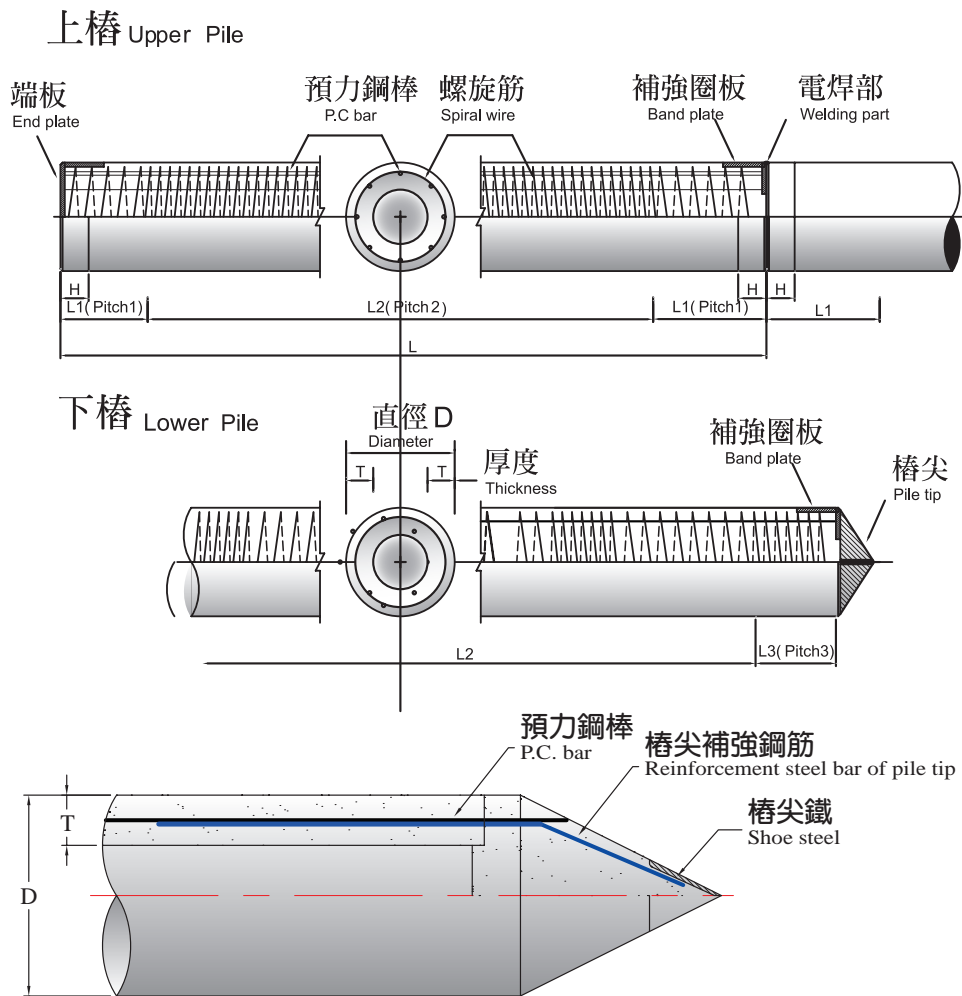
## (2) 焊接構造圖

Structural Diagram of welding



### (3) P.C.基樁構造圖

Structural Diagram of P. C. Pile



### (4) 標準尺寸表

Standard Dimension Table

樁徑 Pile diameter D(mm)	厚度 Thickness T(mm)	端 板 End plate				L1 L3 (mm)	間距 Pitch ① ③	間距 Pitch ②
		H(mm)	t(mm)	ts(mm)	a(mm)			
300	60	60	1.5	12	8	800	50mm	100mm
350	65	80	1.5	12	8	800	50mm	100mm
400	75	80	1.5	12-14	10	1000	50mm	100mm
450	80	100	1.5	12-14	10	1000	50mm	100mm
500	90	100	1.5	14-16	12	1000	50mm	100mm
600	100	100	1.5	16-18	15	1000	50mm	100mm
700	110	100	1.5	22	15	1500	50mm	100mm
800	120	100	1.5	22	15	1500	50mm	100mm

## (5)越南HT-PHC規範表

### Vietnam Specification Table of HT-PHC

外徑 Outer Diameter D mm	厚度 Thickness T mm	種別 Type	JIS 規格彎矩 JIS Standard Bending Moment		混凝土斷面積 Pile Section Area Ac cm <sup>2</sup>	混凝土斷面二次貫性矩 Secondary Moment of Concrete Section Ic cm <sup>4</sup>	容許軸向荷 重 Allowable Load Pa T	長度 Length L M	單位重量 Unit Weight W (KG/M)
			開裂 Cracking Mc(T-M)	破壞 Breaking Mc(T-M)					
300	60	A	2.5	3.8	452	34608	74	6-9	118
		B	3.5	6.3			71	6-12	
		C	4	8			70	6-12	
350	65	A	3.5	5.3	582	62163	95	6-9	151
		B	5	9			92	6-12	
		C	6	12			90	6-12	
400	75	A	5.5	8.3	765	106489	125	6-9	199
		B	7.5	13.5			120	6-15	
		C	9	18			118	6-15	
450	80	A	7.5	11.3	930	166571	152	6-10	242
		B	11	19.8			147	6-16	
		C	12.5	25			144	6-16	
500	90	A	10.5	15.8	1159	255325	190	6-12	301
		B	15	27			183	6-16	
		C	17	34			179	6-16	
600	100	A	17	25.5	1571	510510	257	6-14	408
		B	25	45			248	6-18	
		C	29	58			243	6-18	
700	110	A	27	40.5	2039	918014	334	6-13	530
		B	38	68.4			322	6-18	
		C	45	90			316	6-18	
800	120	A	40	60	2564	1527873	420	6-12	666
		B	55	99			405	6-18	
		C	65	130			397	6-18	

附註：

符合TCVN7888-2014規格標準

◆有效預力

A種：40 kg/cm<sup>2</sup>

B種：80 kg/cm<sup>2</sup>

C種：100 kg/cm<sup>2</sup>

◆單位體積重量 = 2600 kg/m<sup>3</sup>

◆混凝土強度D350以下：f'c ≥ 500kg/cm<sup>2</sup>

D400以上：f'c ≥ 800kg/cm<sup>2</sup>

Annotation：

Accord with TCVN7888-2014 specification standard

◆Effective Prestress

A TYPE：40 kg/cm<sup>2</sup>

B TYPE：80 kg/cm<sup>2</sup>

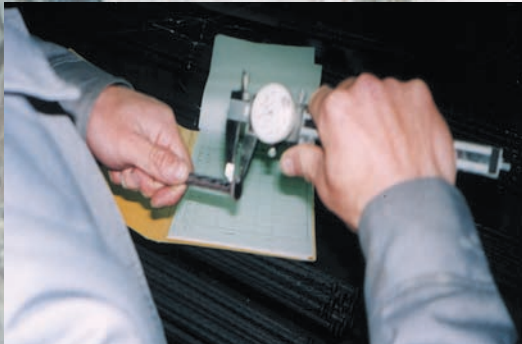
C TYPE：100 kg/cm<sup>2</sup>

◆Unit Weight = 2600 kg/m<sup>3</sup>

◆D300~D350：f'c ≥ 500kg/cm<sup>2</sup>

D400~D800：f'c ≥ 800kg/cm<sup>2</sup>

品質 · 責任 · 榮譽 Quality, Responsibility and Honor



檢查鉚頭  
Check rivet



萬能試驗機  
Tension and compressing machine



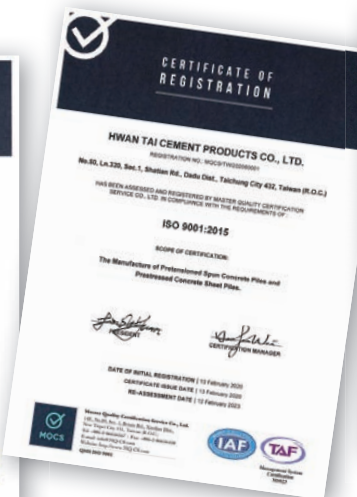
篩分析  
Sieve analysis machine



抗壓機 (200噸)  
Compression machine (200 ton)



檢驗端板  
Check end plate

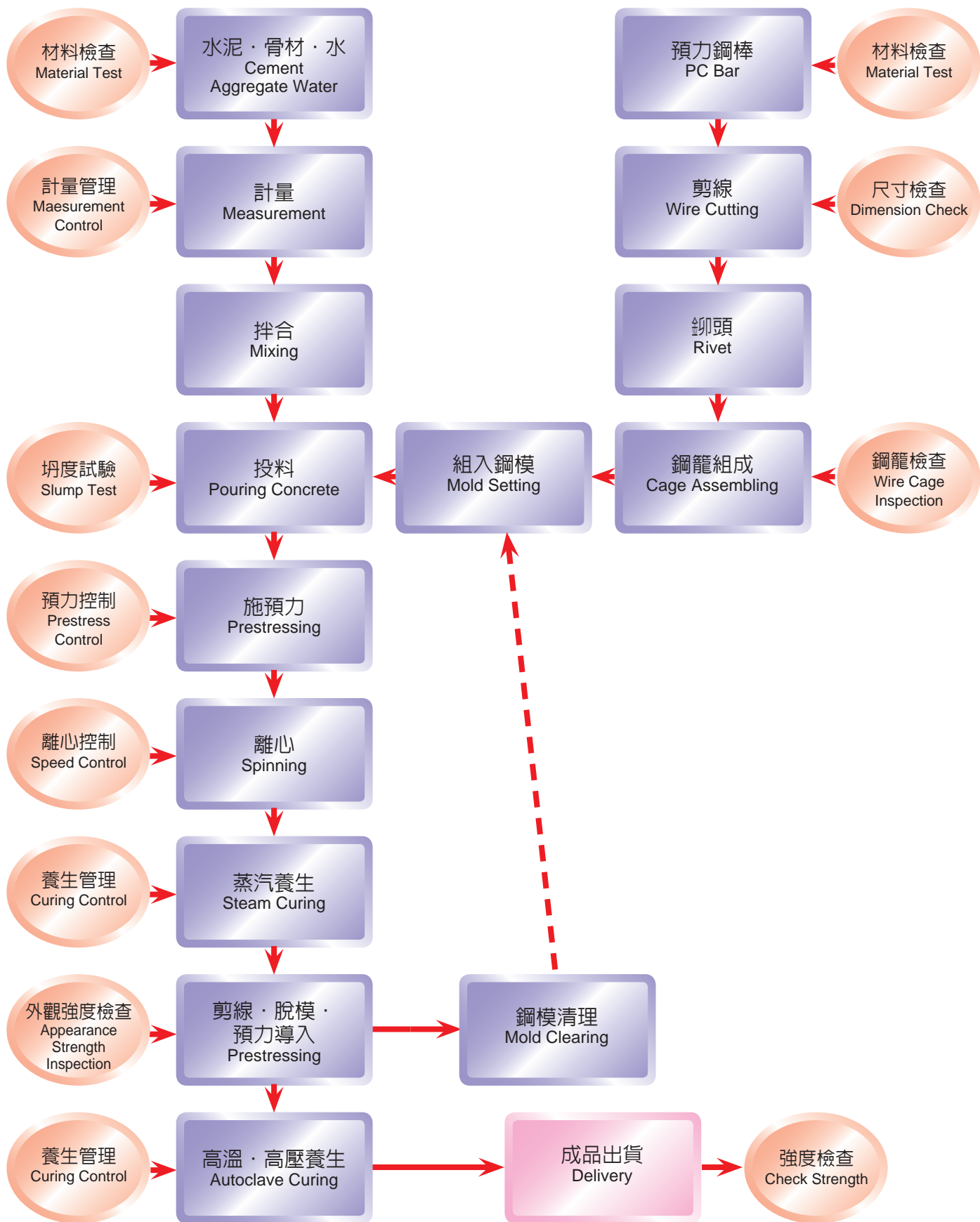


ISO9001品質管理系統認可登錄證明書 (越南)  
ISO9001 Quality Management System Certificate (Vietnam)

ISO9001品質管理系統認可登錄證明書 (台灣)  
ISO9001 Quality Management System Certificate (Taiwan)



# 基樁製作過程 *Process For P.C. Pile Manufacturing*



# 材料性能 *Material performance*

## (1)PHC&PC基樁混凝土容許壓力度

### Allowable Pressure of PHC & PC Pile Concrete

項目 Item	記號 Item	單位 Unit	PHC		PC		公式 Expression
			常時 Normal	地震時 Earthquake	常時 Normal	地震時 Earthquake	
混凝土圓柱試體抗壓強度 Compressive Strength of Concrete Cylindrical test piece	$\sigma_{ck}$	kg/cm <sup>2</sup>	≥ 800		≥ 500		
混凝土容許拉應力 Allowable Tension of Concrete	$\sigma'_{ck}$	kg/cm <sup>2</sup>	45		36		$\sigma'_{ck}=1.59\sqrt{\sigma_{ck}}$
混凝土彎曲時容許拉應力 Allowable Tension of Bending Concrete	$\sigma_{bu}$	kg/cm <sup>2</sup>	60		50		
設計用軸向容許壓縮應力 Design Axial Allowable Compression	$\sigma_{ca}$	kg/cm <sup>2</sup>	224	336	140	210	註一 Annotation 1
設計用彎曲時容許壓縮應力 Design Bending Allowable Compression	$\sigma_{ca}$	kg/cm <sup>2</sup>	264	396	165	248	註二 Annotation 2
受設計載重時容許拉應力 Allowable Tension Bearing Design Load	40< $\sigma_{ce}$ <70	$\sigma'_{ca}$	0	-30	0	-30	$\sigma_{ce}$ 為有效預力 ca is effective prestress
	70< $\sigma_{ce}$	$\sigma'_{ca}$	0	-50	0	-50	
壓縮破壞時變形量 Compression Failure Deformation	$\epsilon_{cu}$		2.5x10 <sup>-3</sup>		2.5x10 <sup>-3</sup>		
張力破壞時變形量 Tension Failure Deformation	$\epsilon_{tu}$		1.8x10 <sup>-4</sup>		1.8x10 <sup>-4</sup>		
彈性係數 Elastic Coefficient	$E_c$	kg/cm <sup>2</sup>	5.0x10 <sup>5</sup>		4.0x10 <sup>5</sup>		註三 Annotation 3
彈性係數比 Elastic Coefficient Ratio	n		4		5		
潛變係數 Potential Deformation Coefficient	$\psi$		1.0		1.0		
乾縮係數 Dry Shrinkage Coefficient	$\epsilon_s$		2x10 <sup>-4</sup>		2x10 <sup>-4</sup>		

◆註一：承受載重設計時軸向容許壓縮力  
常時： $\sigma_{ca}=0.33\sigma_{ck}\times 0.85$   
地震時： $\sigma_{ca}=1.5\times(0.33\sigma_{ck}\times 0.85)$

◆Annotation 1: Design Axial Allowable Compression  
Normal:  $\sigma_{ca}=0.33\sigma_{ck}\times 0.85$   
Earthquake:  $\sigma_{ca}=1.5\times(0.33\sigma_{ck}\times 0.85)$

◆註二：承受設計載重時彎曲容許應力  
常時： $\sigma_{ca}=0.33\sigma_{ck}$   
地震時： $\sigma_{ca}=1.5\times(0.33\sigma_{ck})$

◆Annotation 2: Design Bending Allowable Compression  
Normal:  $\sigma_{ca}=0.33\sigma_{ck}$   
Earthquake:  $\sigma_{ca}=1.5\times(0.33\sigma_{ck})$

◆註三：混凝土彈 係數

◆Annotation 3: Concrete Elastic Coefficient

混凝土強度 Concrete Strength	250	300	400	500	600	800
$E_c$	2.75x10 <sup>5</sup>	3x10 <sup>5</sup>	3.5x10 <sup>5</sup>	4.0x10 <sup>5</sup>	4.5x10 <sup>5</sup>	5.0x10 <sup>5</sup>

## (2)PC Bar 之機械性質規範 CNS15898 (JIS G3137)

### The Mechanics Properties CNS15898 (JIS G3137) of PC Bar

公稱直徑 Nominal Diameter	公稱斷面積 Nominal Sectional Area	$\sigma_{pu}$ 極限抗拉強度 Ultimate Tensile Strength	$\sigma_{py}$ 降伏抗拉強度 Yield Tensile Strength	伸長率 Elongation
mm	mm <sup>2</sup>	kg/cm <sup>2</sup>	kg/cm <sup>2</sup>	%
7.1	40	≥ 14500	≥ 13000	≥ 5
9.0	64	≥ 14500	≥ 13000	≥ 5
10.7	90	≥ 14500	≥ 13000	≥ 5
12.6	125	≥ 14500	≥ 13000	≥ 5

◆PC鋼棒彈性係數 $E_p=2\times 10^6$  kg/cm<sup>2</sup>

◆Elastic coefficient of P.C. Bar  $E_p=2\times 10^6$  kg/cm<sup>2</sup>

◆PC鋼棒鬆弛應力縮減率 $K=0.05$

◆Relaxation stress shrinkage rate P.C. Bar  $K=0.05$

◆鋼棒起始拉應力 $\sigma_{pl}$   $0.8\sigma_{py}\leq\sigma_{pl}\leq\sigma_{pu}$

◆Bar start tension  $\sigma_{pl}$   $0.8\sigma_{py}\leq\sigma_{pl}\leq\sigma_{pu}$

# 施工方法 Construction Method



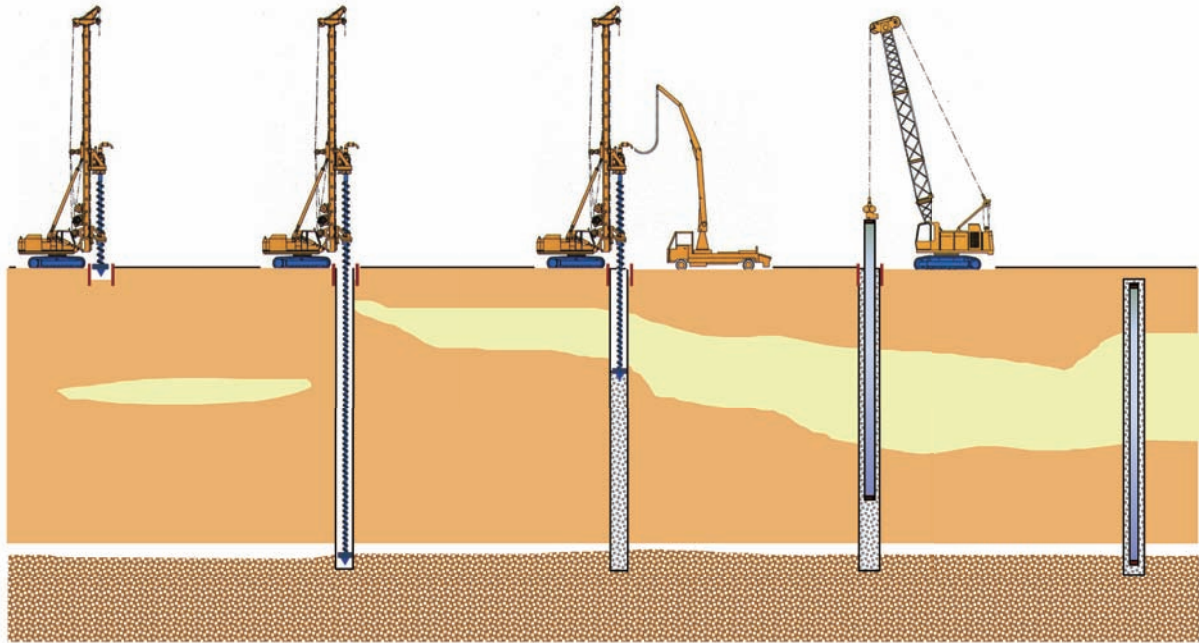
## (一) 低公害外掘法施工步驟 Digging Construction Steps with Low Public Hazards

施工程序：

- 一. 放樣及套管打設
- 二. 鑽孔至設計深度
- 三. 注入固定液充分攪拌並拔出鑽桿
- 四. 將預力混凝土基樁植入
- 五. 補助固定液、套管拔除與養護

Construction Procedures:

1. Set out and install the steel sleeve
2. Drill to the design depth
3. Infill fixing liquid and mix it, at the same time put out drill pipe
4. Imbed the pile
5. Infill fixing liquid, put out the steel sleeve and make curing



## (二) 打擊式施工法 Pile Driver Construction

施工程序：

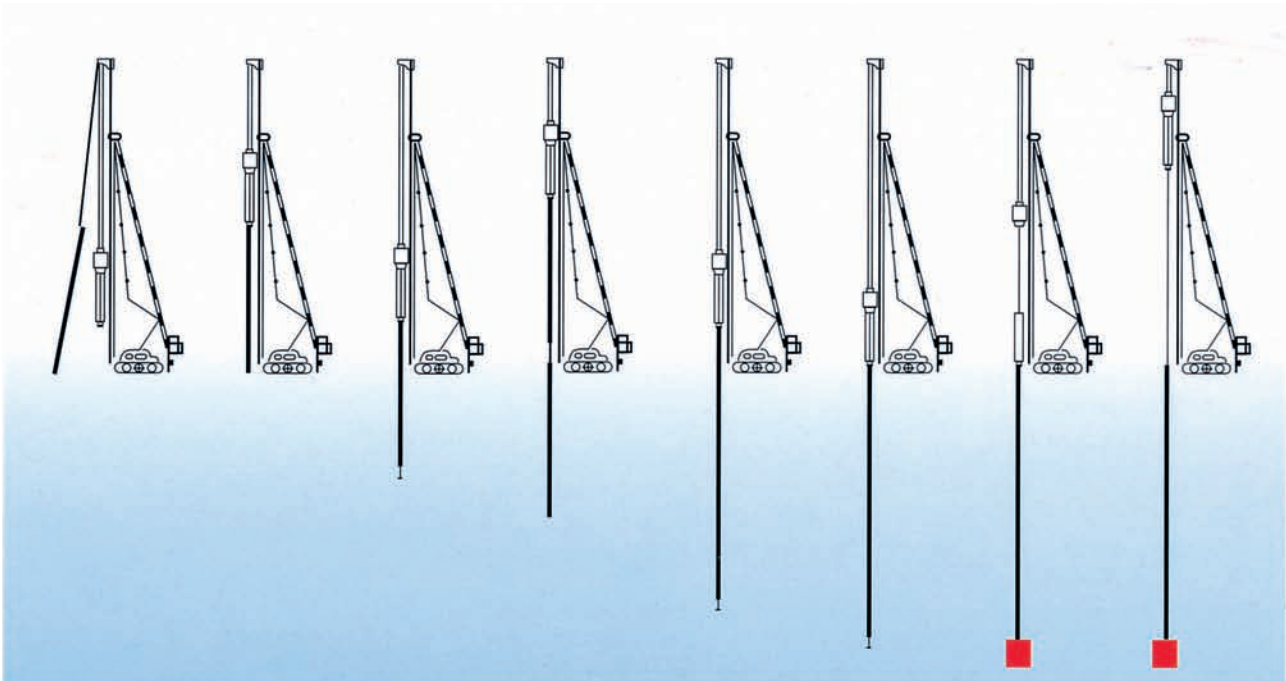
- 一. 利用吊車吊升基樁至規定位置並垂直站立
- 二. 打樁機升起樁錘，以樁帽套上基樁，對準基樁中心後開始進行打設

Construction Procedures:

1. Utilize the crane to hoist the pile to the fixed position and stand vertically.
2. The pile driver raises a hammer, put the pile in with a cap, begin to pile after aiming at a center of pile.



(三) 低公害中掘法施工順序  
Middle Digging Construction Procedures with Low Public Hazards



預防鑽桿卡住  
Prevent the drill pipe from locking and infill water

第二根樁掘削、植入  
Digging cut and imbed the second pile

接樁焊接  
Weld the connecting pile

吊第二根樁及鑽桿  
Suspend the second pile and drill pipe

第一根樁掘削、植入  
Digging cut and imbed the first pile

植樁之鉛直度測定  
Test the verticality of the imbedding pile

吊第一根樁及鑽桿  
Suspend the first pile and drill pipe

支持層掘削及植入  
Digging cut and imbed the supporting layer

高壓噴入根固注漿  
Inject basis fixing grout with high pressure

鑽桿輕提球根築造  
Construct bulb by taking drill pipe

植樁之加緊作業  
Imbed the pile hurriedly

抽出鑽桿  
Pull out the drill pipe

完成  
Finished

樁  
Pile

噴出壓縮空氣  
Eiffuse compressed air

鑽桿插入第二根樁中  
Insert the drill pipe into the second pile

鑽桿插入第一根樁中  
Insert the drill pipe into the first pile

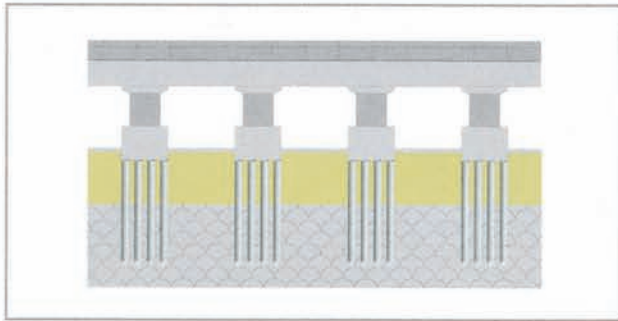
根固之混合注漿  
Infill basis fixing mixing paste

水  
Water

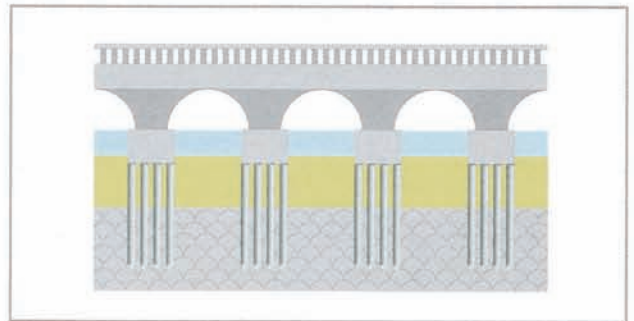
注水  
Infill water

# 基樁之適用範圍

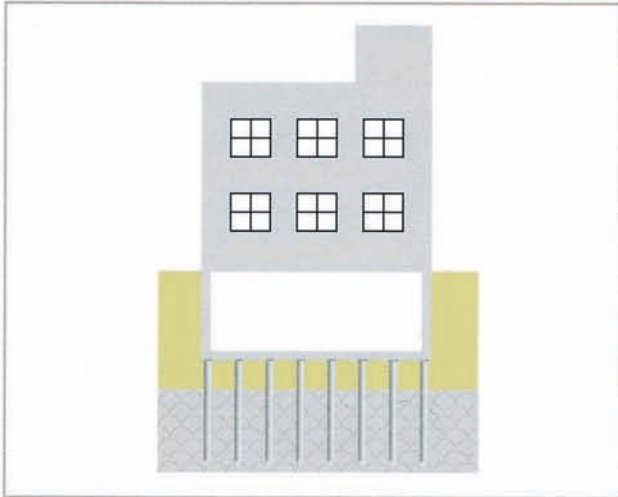
## Application Range of Pile



高架道路 Trestle



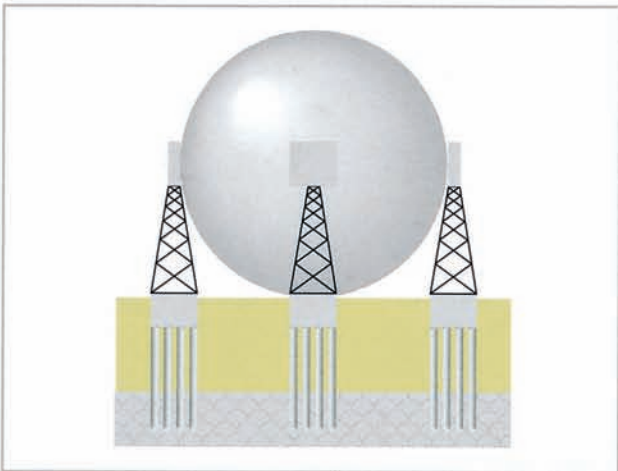
橋樑 Bridge



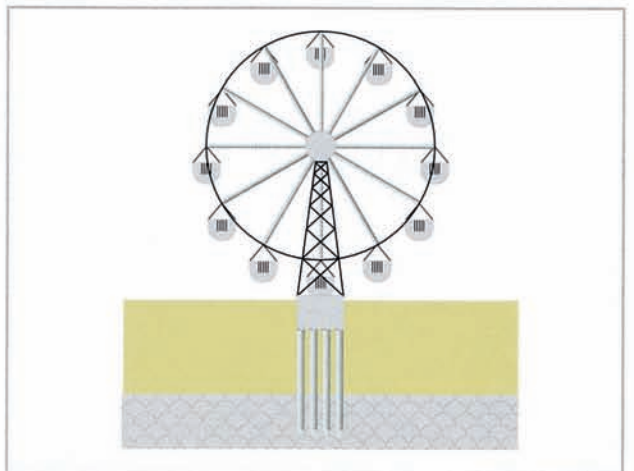
房屋 House



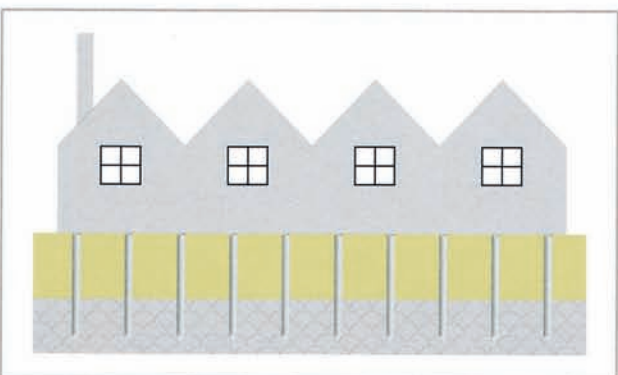
擋土牆 Retaining Wall



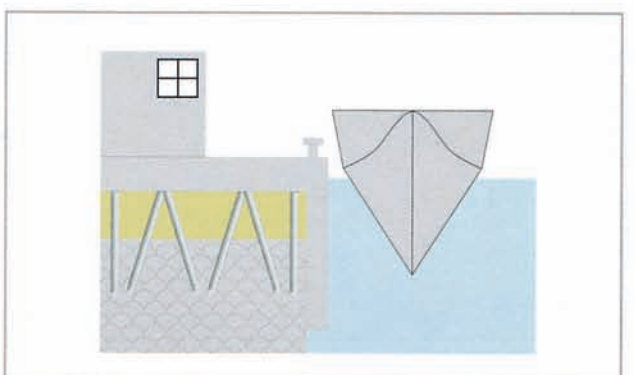
鋼槽 Steel bay



遊樂場 Amusement park



廠房 Factory building



碼頭 Pier





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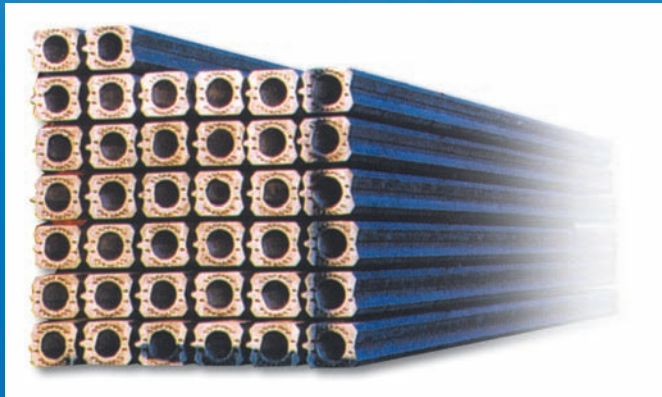
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