



Hinokiya Resco  
Construction Vietnam Co., Ltd

# BUILD WITH CONFIDENCE



English Version

## Open letter

**HINOKIYA**



Hinokiya Group Japan

Established in 1988 as a custom housing company, since then, Hinokiya Group has grown strongly and claimed its position in Japan. We have become a multidisciplinary **group of 12 subsidiaries and 03 affiliated companies** operating in areas such as: housing, real estate, construction materials, insulation materials, education, nursing, etc. In March 2018, Hinokiya Group was listed as a class 1 stock on the Tokyo Stock Exchange.

Hinokiya Resco, which is 100% owned by the corporation, has over 50 years of experience in the field of construction of precast concrete houses in Japan. It is oriented to bring Japanese precast concrete technology to the world and Vietnam was the first destination.

We hope to bring Vietnamese people a rich, environmentally friendly living space with many smart technology solutions and green building materials which will definitely help solve internal problems in the Vietnamese construction industry.



Hinokiya Resco Co., Ltd

General Director

**Koichi Kamimura**



CJSC Chairman of the board

General Director of HRC Vietnam

**Nguyen Huu Tinh**

Construction Technology Application and Transfer Joint Stock Company (CJSC) has more than **16 years of experience as a General Contractor: Design consultant, Construction company** for many civil and industrial projects. Having a clear development policy and business philosophy, CJSC has built trust with domestic and foreign investors from Japan, Korea and China, etc.

In 2010, CJSC applied 3D wall technology from EVG company - Republic of Austria (replacing the traditional wall-building solution) into our own projects to enhance value for owners, reduce field work time and speed up construction progress.

Bringing Hinokiya Resco concrete production technology to Vietnam, we understand that there already have been different ones for precast concrete production in the country. However, the level of success obtained is very little due to the market's reservations and lack of investment from owners in term of time, money, product range and system synchronization.

Therefore, on the way to bring outstanding values of these products to the market, CJSC, Hinokiya Resco and Hinokiya Group will always strive to cooperate in all aspects from investment, technical exchange to practical operation of production. All of that is to make HRC Vietnam Joint Venture Company become a prestigious brand in the field of precast concrete.

# Introduction

In August 2018, Hinokiya Resco Construction Vietnam Co., Ltd (referred to as HRC Vietnam) was established. This is the result of long cooperation process between Hinokiya Group (Japan) and CJSC (Vietnam) – Construction Application and Transfer of Technologies Joint Stock Company.

With a modern system of workshops, specialized machinery and imported equipment following Japan standard, plus a closed production line strictly controlled by experts from Hinokiya Resco. HRC factory has been operating stably and supplying the market with high-quality precast concrete products superior to similar products in Vietnam.

Precast concrete products of HRC Vietnam have been undergoing research and development process to meet the construction standards and environmental construction condition in Vietnam. The application of these products will help the construction of industrial buildings, housing units in urban areas become faster, more sustainable, cost-saving and use less labor and minimize environmental impacts.



President. Nguyen Huu Tinh (CJSC) and  
President. Akira Kondo (Hinokiya Group)  
in the contract signing ceremony

We are convinced that HRC Vietnam's wall precast concrete products is going to contribute to the richness of current construction solutions. This will motivate new solutions, which helps change the traditional construction conception in Vietnam.



Note: Distance from the factory to the surrounding areas

## Vision and mission

### ■ Vision

To become the leading company in the field of manufacturing precast concrete components, provide outstanding assembly construction solutions for the construction industry in Vietnam and Southeast Asia.

### ■ Mission

To provide wide range of precast concrete products with outstanding features: "**Super Flat - Super fast - Super durable**", which are more environmental friendly and help to use less labour. We guarantee to bring satisfaction to our valued customers.



## HRC Factory Overview

■ **Location:** Lot CN4, Nam Cau Kien Industrial Park, Kien Bai Commune, Thuy Nguyen District, Hai Phong City, Vietnam.

### ■ Phase 1:

- + Product: PC for Industrial construction (workshop wall panels, fence panels);
- + Capacity: 50.000 m<sup>2</sup>/year.

### ■ Phase 2:

- + Product: PC for Industrial, Civil and Infrastructure construction (workshop wall panels, fence panels, residential wall panels, slab panels, precast concrete columns, precast concrete beams,etc.)

## Feature of HRC precast construction

- Workshop wall and fence panels are designed and prefabricated at factory before being transported to construction position.
- Wall panels are kept stable by using bolt connections to supporting frame.
- Using mobile cranes or suitable available machine on site.
- Closed cell foam strip acts as rod backer and flexible sealant are inserted for waterproofing.



## Outstanding advantages

### 1. High quality:

- Use high-strength reinforced concrete materials (concrete grade 40 MPa);
- Have closed production system, which operates under strict control.

### 2. Speed construction:

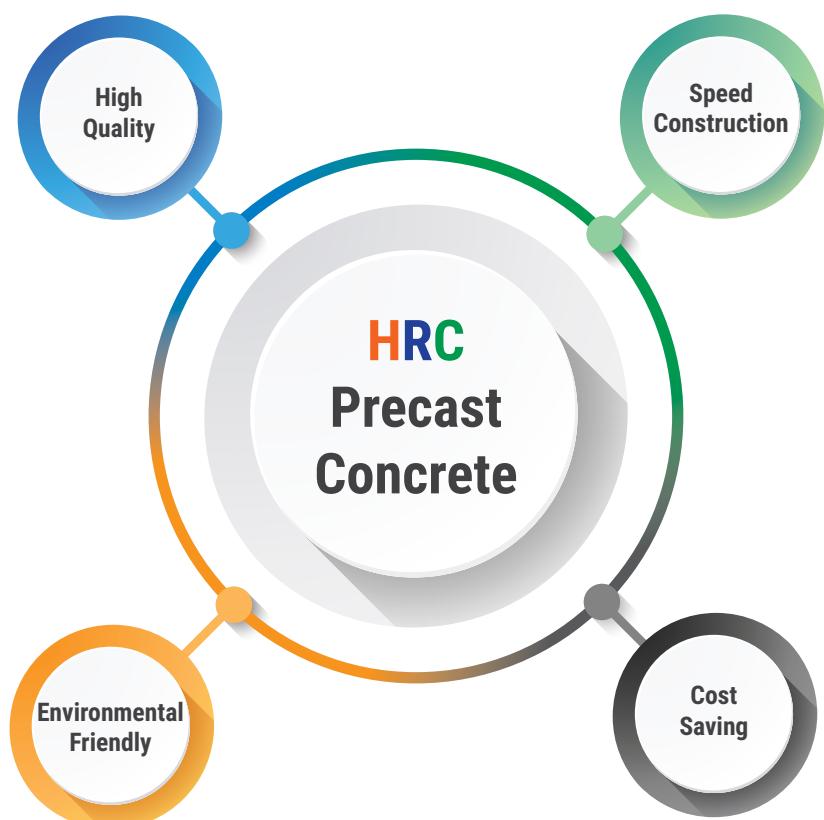
- Wall construction time is shortened since 3 consecutive steps of building, internal plastering, external plastering are removed.

### 3. Cost saving:

- Fewer workers required, site management cost reduced.

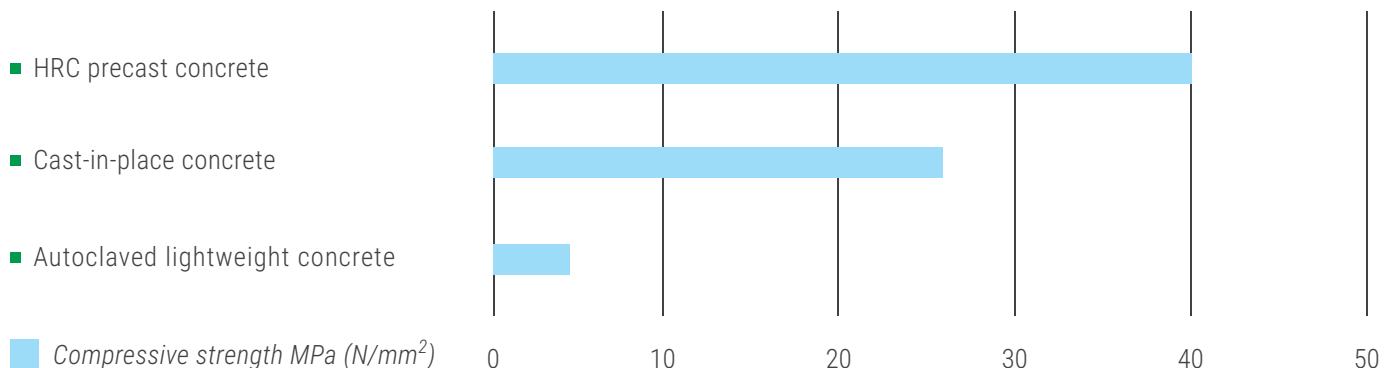
### 4. Environmental friendly:

- Clean construction site;
- Minimize the usage of scaffolding system;
- Less material wastage, less dirt.



# Quality of HRC precast concrete

## Compressive Strength Comparison Chart



- Two key factors making HRC concrete standout:

### Using commercial concrete with high strength, strict slump control before production

One of the key factors which decides the strength of concrete is the ratio of water to cement. The lower ratio, the higher the strength. While cast - in - place concrete usually has water cement ratio of about 65%, HRC concrete has the ratio of 38% only.

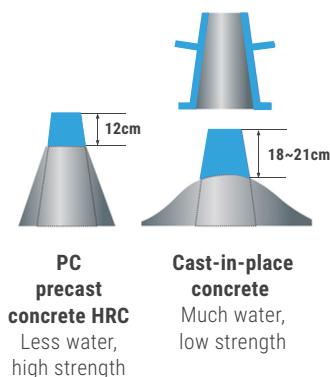
### Steam accelerated curing

Concrete after being poured into molds and polished will undergo a curing step with steam at a temperature from 40-60 degrees Celsius.

### Slump Test Chart

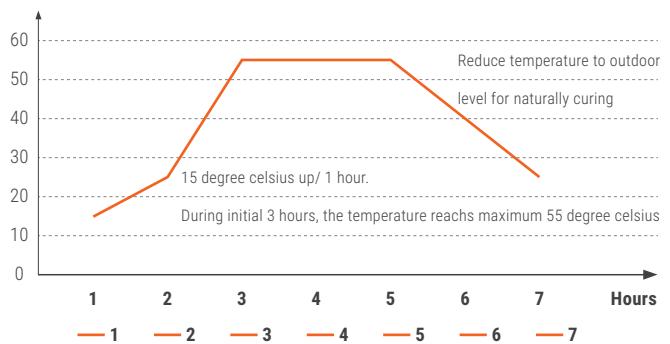
#### Slump Test

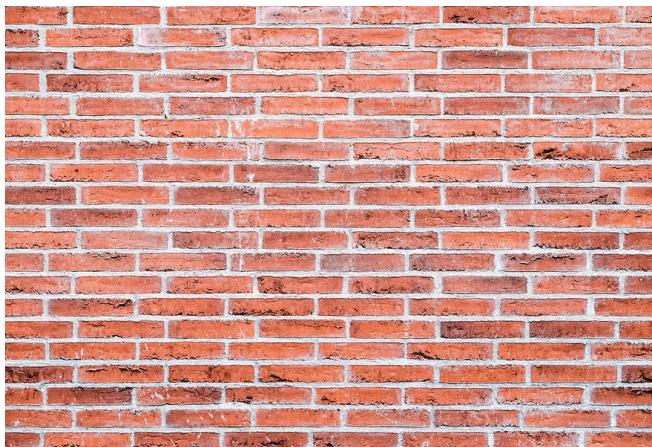
The standard concrete slump used at HRC factory is  $12 \pm 2$ cm. Slump test is the compulsory work in daily producing process to ensure the strength of HRC concrete.



### Curing Chart

#### Temperature





*Solid brick wall 220*



*HRC assembled reinforced concrete (RC) wall*

- Table of comparision between Solid brick wall 220 and HRC assembled RC wall:

Content	Solid brick wall 220	HRC assembled RC wall
<b>Compressive strength</b>	7.5 - 10 MPa	> 40 MPa
<b>Load (kg/m<sup>2</sup>)</b>	~385	~225 (70% Lighter)
<b>Surface</b>	Rough, putty work needed before painting	Flat, no putty work needed paint directly on to wall surface
<b>Construction progress</b>	Normal	5 - 10 times faster (increase with wall height)
<b>Space</b>	Normal (250 mm total thickness including two-side plaster)	Increase 0,13 m <sup>2</sup> per metre long compared to SBW 220
<b>Threat of cracks</b>	High risk of cracks	No cracks
<b>Mildew, plaster falling</b>	High risk of mildew, plaster falling especially when finishing work is not good	Very low risk of mildew, no plaster falling
<b>Material loss</b>	3 - 10%	0%
<b>Environmental friendliness</b>	A lot of dirt due to process of mixing and using mortar, environment damage when using baked clay bricks	Almost no dirt, environmental friendly
<b>Construction safety</b>	Average scaffolding, great number of workers needed	Very good less scaffolding needed, small number of workers

**Super Flat**

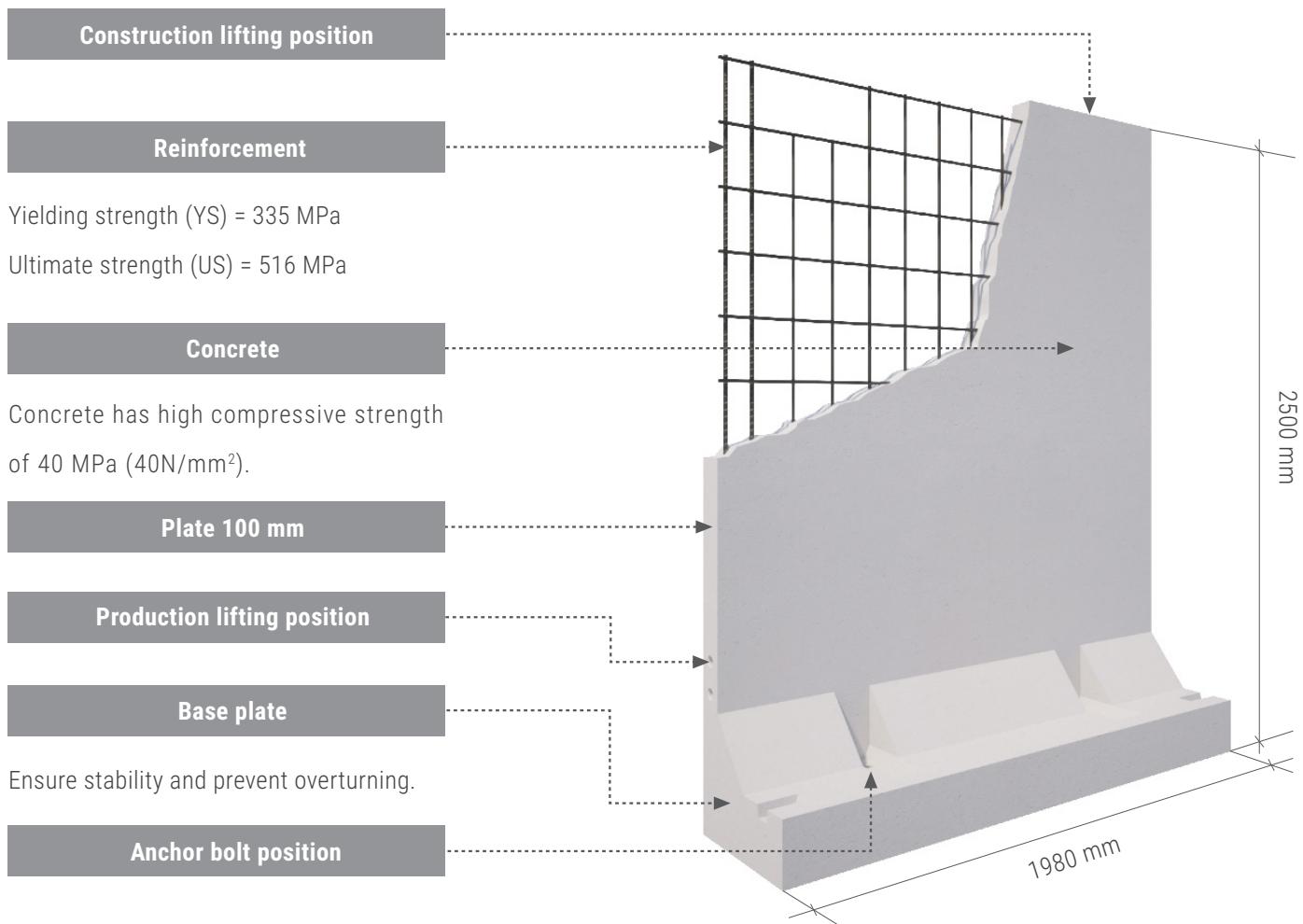
**Super Fast**

**Super Durable**

- Current product range:

## FENCE CONCRETE PANEL FE20025

### GENERAL STRUCTURE



Inside surface



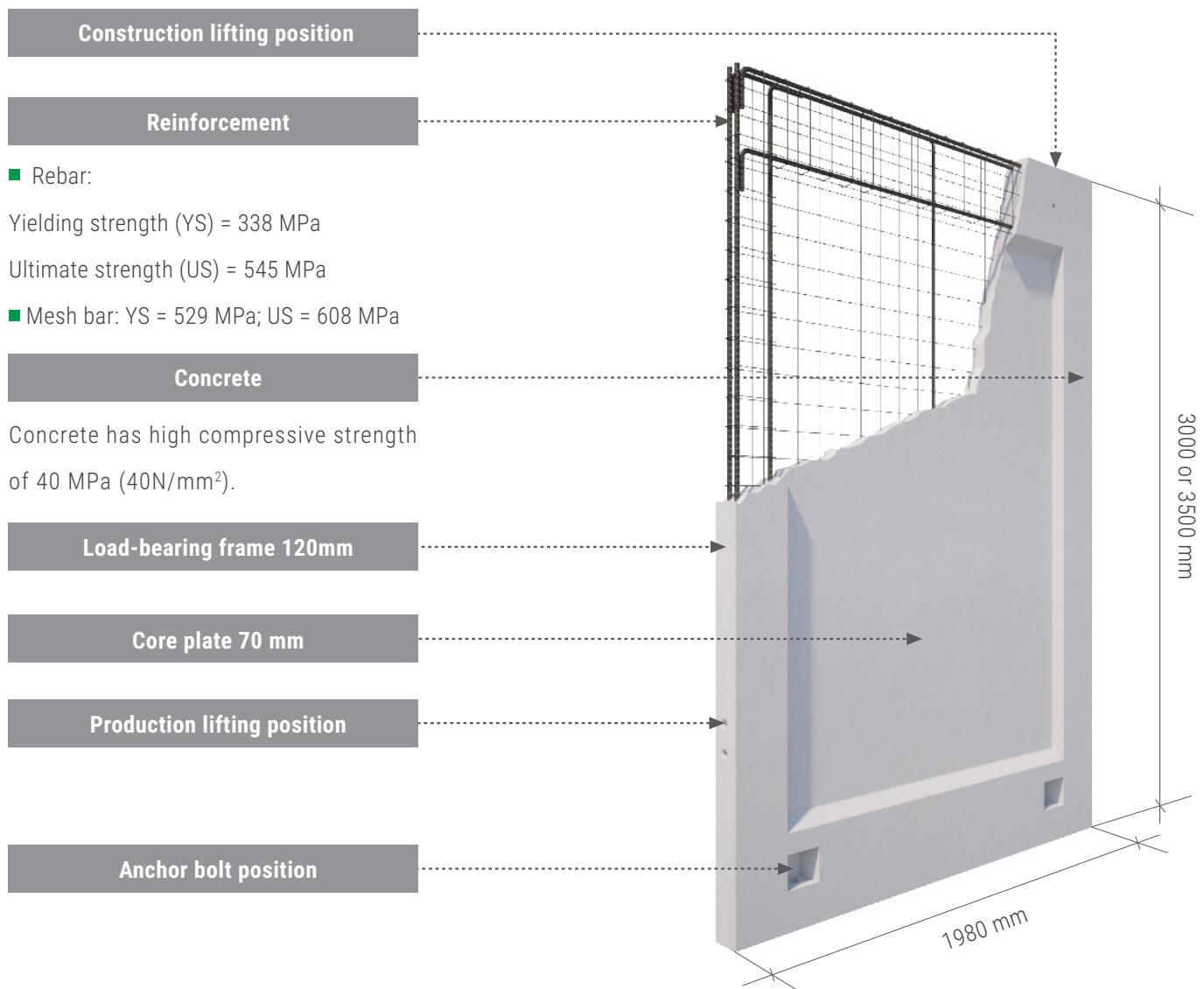
Side surface

### SPECIFICATIONS

- **Area:** 1980x2500 mm (4.95 m<sup>2</sup>)
- **Weight:** 1700 kg
- **Plate thickness:** 100 mm
- **Dimension of base plate:** 500x200 mm
- **Bolt connection:** M16x150: 4 units; M12x120: 4 units
- **Concrete grade:** 40 MPa (40N/mm<sup>2</sup>)
- **Assembly time:** 10÷15 minutes/panel - 2 m
- **Machinery and labor:** 1 crane ≥ 5 tons, 4 workers
- **Scope of use:** Fence

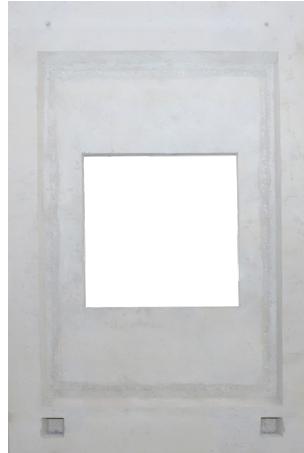
## CONCRETE WALL PANEL W20030 AND W20035

### GENERAL STRUCTURE

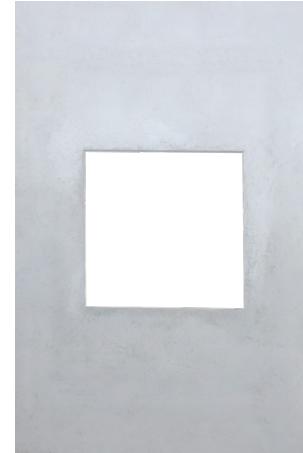




Type without window



Type with a window



## **SPECIFICATIONS**

### **W20030**

**Area:** 5.94 m<sup>2</sup>

**Width:** 1980 mm

**Length:** 3000 mm

**Weight:**

- Type without window: 1370 kg

- Type with a window: 1220 kg

### **W20035**

**Area:** 6.93 m<sup>2</sup>

**Width:** 1980 mm

**Length:** 3500 mm

**Weight:**

- Type without window: 1555 kg

- Type with a window: 1455 kg

## **GENERAL STANDARD**

- **Core thickness:** 70 mm
- **Boundary rigid frame:** 120 mm
- **Bolt connection:** M16x150 - 2 units; M16x100 - 2 units
- **Concrete grade:** 40 MPa (40N/mm<sup>2</sup>)
- **Assembly time:** 15 minutes/panel
- **Machinery and labor:** 1 crane ≥ 5 tons, 4 workers
- **Scope of use:** Interior and exterior walls, bearing wall, fire protection wall

## ■ Accessories:

### TOP CONCRETE BAR FEK100 AND FEK200



### SPECIFICATIONS

#### TOP CONCRETE BAR FEK100

- **Length:** 1003 mm
- **Weight:** 31 kg
- **Bolt connection:** Durability level 8.8, M16x80: 1 unit

#### TOP CONCRETE BAR FEK200

- **Length:** 1980 mm
- **Weight:** 60 kg
- **Bolt connection:** Durability level 8.8, M16x80: 2 units

### GENERAL SPECIFICATIONS

- **Concrete grade:** 40 MPa (40N/mm<sup>2</sup>)
- **Assembly time:** 5 minutes/bar
- **Machinery and labor:** 1 crane, 2 workers

## ■ List of accessories:

Name of accessories	Species	Durable, steel grade	Size (mm)	Note	Image
Hexagon bolts	M16 Hot dip zinc code	Durable level 8.8	L=50	Wall	
Guzong	M16 Hot dip zinc code	Durable level 8.8	L=250	Wall	
L steel code used for mounting	L steel Hot dip zinc code	Steel SS400		Wall	
Adjustable liner	Thickness 2mm, 6mm Hot dip galvanized steel code 18	Steel SS400		Wall Fence	
Hexagon bolts	M12 Hot dip zinc code	Durable level 8.8	L=50	Wall	
Hexagon bolts	M16 Hot dip zinc code	Durable level 8.8	L=80	Wall	
Black long	Hot dip zinc code	Steel SS400	Hole Ø 13.5 M12	Wall Fence	
Black long	Hot dip zinc code	Steel SS400	Hole Ø 17.5 M14	Wall Fence	
Steel Plate	Hot dip zinc code	Steel SS400	Thick 6mT	Fence	

# Production process

At HRC factory – The concrete production process is fully complied with Japanese technologies. All phases are strictly implemented and controlled to create high-strength concrete wall panels which is the key difference from other methods.



1. Reinforcement work



6. Mold removal



2. Laying reinforcement into mold



5. Curing



3. Concrete placement



4. Surface finishing

# Construction Process



## 1. DELIVERY TO CONSTRUCTION SITE

Qualified products will be lifted and delivered to job site by specialized truck.



## 2. DISCUSS AND SAFETY GUIDANCE BEFORE CONSTRUCTION PROCESS

Before assembling, site engineer will have a discussion with workers on what they need to pay attention to during the process such as technical issues, drawings, working tools, accessories, uniforms, etc...



## 3. MEASURE AND CHECK BEFORE CONSTRUCTION

Site engineers will check and re-measure all dimensions, distance, height and stiffness of anchored bolt system, wall purlins, which are already constructed in advance.



## 4. ASSEMBLING

Precast concrete panels will be lifted by crane and put into right positions. After hinge connections between WPC panels and purlin system are done, workers will tighten bolts to the foundation.



## 5. FINISHING WORK

The gap between two consecutive panel is filled with plastic foam and 2 layers of silicone sealant. After that, special mortar is grouted into bolt sockets.

## Typical projects using HRC products



### ARTPRESTO VIETNAM FACTORY

**Investor:** ARTPRESTO VIETNAM COMPANY LIMITED

**Origin:** Japan

**Location:** Lot D8, D5 Street, Chau Son I.Z, Phu Ly City, Ha Nam Province

**Item:** 6-metre factory wall, facility rooms (pump room, transformer room, garbage room, etc), fence, sign board



### G FOOD FACTORY

**Investor:** G FOOD COMPANY LIMITED

**Origin:** Korea

**Location:** Lot CN1G, Deep C2A I.Z, Dinh Vu, Hai Phong

**Item:** Facility rooms (pumproom, transformer room, garbage room, etc), fence, sign board



### HANKOOK FLEX VINA FACTORY

**Investor:** HANKOOK FLEX VINA COMPANY LIMITED

**Origin:** Korea

**Location:** Van Trung I.Z, Viet Yen, Bac Giang

**Item:** Pump room, fence



### HRC VIETNAM FACTORY

**Investor:** HINOKIYA RESCO VIETNAM CONSTRUCTION CO., LTD

**Origin:** Vietnam

**Location:** Lot CN4, Nam Cau Kien I.Z, Kien Bai, Thuy Nguyen, Hai Phong

**Item:** 6-metre factory wall, sign board



### NAM CAU KIEN I.P SIGN BOARD

**Investor:** NAM CAU KIEN I.P AUTHORITY

**Origin:** Vietnam

**Location:** Nam Cau Kien Industrial Park, Thuy Nguyen Dist, Hai Phong City

**Item:** Industrial park sign board



## Hinokiya Resco Construction Vietnam Co., Ltd

### **Head office/Factory**

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