BASHUNDHARA

PHC PILE

INNOVATION TRUSTED
GLOBALLY



Company Overview

Bashundhara Ready Mix and Construction Industry Ltd (BRMCIL) is a specialized industrial enterprise under the prestigious Safwan Bashundhara Global (SBG), one of the leading and most diversified business conglomerates in Bangladesh. BRMCIL is committed to deliver high-quality precast construction solutions, with a strong focus on PHC (Prestressed High-strength Concrete) Spun Piles, produced at its state-of-the-art factory located in the Special Economic Zone, Mirsharai CTG under the Bangladesh Economic Zones Authority (BEZA).

The PHC Spun Pile manufacturing facility is equipped with advanced Korean machinery and follows Japanese Industrial Standards (JIS A 5373:2016) to ensure unmatched product performance, durability and consistency. The plant is designed for large-scale automated production, ensuring timely delivery and compliance with the highest engineering and safety standards.

Backed by Safwan Bashundhara Global, decades-long experience and reputation in the construction sector, BRMCIL is positioned as a reliable partner for infrastructure development, including high-rise buildings, bridges, industrial zones and port facilities across Bangladesh.

Mission Statement

To become the leading provider of world-class PHC Spun Piles in Bangladesh by delivering innovative, durable and sustainable foundation solutions for using cutting-edge Korean technology and adhering to Japanese quality standards, while contributing to the nation's infrastructure growth and industrial advancement.



Introduction

Pre-stressed High Strength Concrete (PHC) product set the benchmark for deep foundation and utility structures that must carry heavy loads, withstand aggressive environments and provide long-term durability with minimal maintenance. PHC piles were first developed in Japan during the 1970s to provide a reliable foundation solution for rapidly expanding, earthquake-prone urban areas.

PHC Spun Piles are factory-manufactured cylindrical piles made using high-strength concrete and prestressed steel wires, spun at high speed for uniform compaction. They are widely used in deep foundation applications due to their high load-bearing capacity, durability and resistance to bending and cracking. The centrifugal spinning process removes excess water and increases concrete density, making PHC piles suitable for challenging ground conditions, including marine and soft soil environments.

PHC Spun Piles come in various diameters and lengths according to the Japan Industrial Standard (JIS A 5373 : 2016) and can be joined using mechanical or welded joints for deeper foundations. They offer fast installation with minimal site disruption and are preferred in infrastructure, industrial, and high-rise building projects.



Areas of Application

BASHUNDHARA PHC PILE

PHC Piles (Prestressed High-strength Concrete Piles) are widely used in construction due to their high load-bearing capacity, durability, efficiancy and resistance to corrosion.These precast, prestressed piles are especially beneficial in challenging soil and environmental conditions.Key areas of application include :

1. **Important Projects and Mega Structures**
   - Bridges, Flyovers and Elevated Expressway
   - Marine and Offshore Structure
   - Railway and Highway Projects
   - Power Plant and Industrial Complexes



2. **Building Foundations**
   - High-rise buildings and commercial complexes
   - Residential developments and institutional buildings
   - Foundations in soft, loose, or water-affected soils



3. **Soil Improvement and Ground Stabilization**
   - Reclamation projects and landfills
   - Ground strengthening in liquefiable or weak soils
   - Supporting embankments and retaining structures



4. **Transportation and Infrastructure**
   - Road and railway foundations
   - Airport runways and taxiways
   - Solar Panel Structure
   - Underground structures, such as tunnels and metro stations

PHC piles provide a reliable first stage of development, ensuring structural stability while reducing construction time and costs. Their proven performance in a variety of soil and environmental conditions makes them a preferred choice for modern construction projects.



Why PHC Spun Piles?

BASHUNDHARA PHC PILE

1. Superior Structural Reliability

Made from high-strength, prestressed concrete, PHC spun piles can safely withstand vertical and lateral forces, ensuring stable and durable foundations for high-rise and complex structures.

2. Outstanding Load-Bearing Performance

Prestressed reinforcement and dense concrete deliver superior axial, bending, and tensile capacity—well beyond the limits of cast in situ and precast square piles.

3. Fast & Efficient Installation

Factory-controlled production and advanced pile-driving techniques allow rapid installation, shorten project timelines, and minimize site disruption.

4. Extended Service Life & Durability

With 80 MPa steam-cured concrete, PHC piles resist cracking, chemical attack, and corrosion, ensuring a design life of over 100 years with reduced lifecycle costs.

5. Reliable Quality Assurance

Produced in controlled factory environments under strict QC standards, PHC spun piles offer uniform dimensions, strength, and durability—more consistent than site-cast alternatives.

6. Adaptability to All Ground Conditions

PHC piles can be driven through soft soils, dense strata, or even hard rock, and perform effectively in marine and aggressive environments.

Comparison of Pile Types

Criteria	PHC Spun Pile	Cast in Situ Pile	Precast Square Pile
Durability	High–dense, low-permeability concrete resists chlorides, sulphates, carbonation.	Moderate – site-dependent; prone to segregation and honeycombing.	Moderate – better than cast in situ, but less dense than spun concrete.
Load-Bearing Capacity	High–dense, low-permeability concrete resists chlorides, sulphates, carbonation.	Moderate – limited by casting quality and detailing.	High – but lower than prestressed spun piles.
Service Life	100+ years–80 MPa steam-cured concrete ensures longevity.	40–60 years – highly dependent on workmanship.	50–70 years – prone to cracking and corrosion.
Corrosion Resistance	Excellent – dense matrix and precise cover minimize rebar corrosion.	Poor to Moderate – cracks expose reinforcement.	Moderate – edges prone to cracking and corrosion.
Crack Resistance	Very High – pre-tensioning prevents cracks during handling/driving.	Low – shrinkage and thermal cracks common.	Moderate – cracks during handling and driving
Quality Control	Strict factory QC, consistent quality.	Variable, site-dependent.	Factory-made, but less advanced than spun piles.
Installation	Easy driving, withstands hard strata with low damage.	Slow – requires drilling and pouring on site.	Drivable but more damage-prone.
Cost Efficiency	High–faster construction & longer service life reduce total costs.	Low – longer schedules, inconsistent quality raise costs.	Moderate – lower upfront cost, higher maintenance later.

Key Attributes of PHC Spun Piles

BASHUNDHARA PHC PILE

- **Durability in Harsh Environments:**
  Dense, high-strength concrete resists corrosion and chemical attack, ideal for marine and industrial use.
- **Crack Resistance:**
  Prestressed reinforcement minimizes cracks during transport, handling, and driving.
- **Penetration into Hard Strata:**
  Robust design allows driving through dense soil layers and hard rock.
- **Lightweight Hollow Section:**
  Spun hollow core reduces weight and transport costs while maintaining structural strength.
- **Flexible Construction Options:**
  Steam curing enables rapid production, with adjustable pile lengths to match ground conditions.
- **Low Shrinkage & Deformation:**
  Centrifugal compaction and steam curing reduce drying shrinkage and creep, ensuring long-term stability.
- **Superior Bending Capacity:**
  Compared with conventional piles, PHC spun piles provide higher bending resistance under combined axial loads.

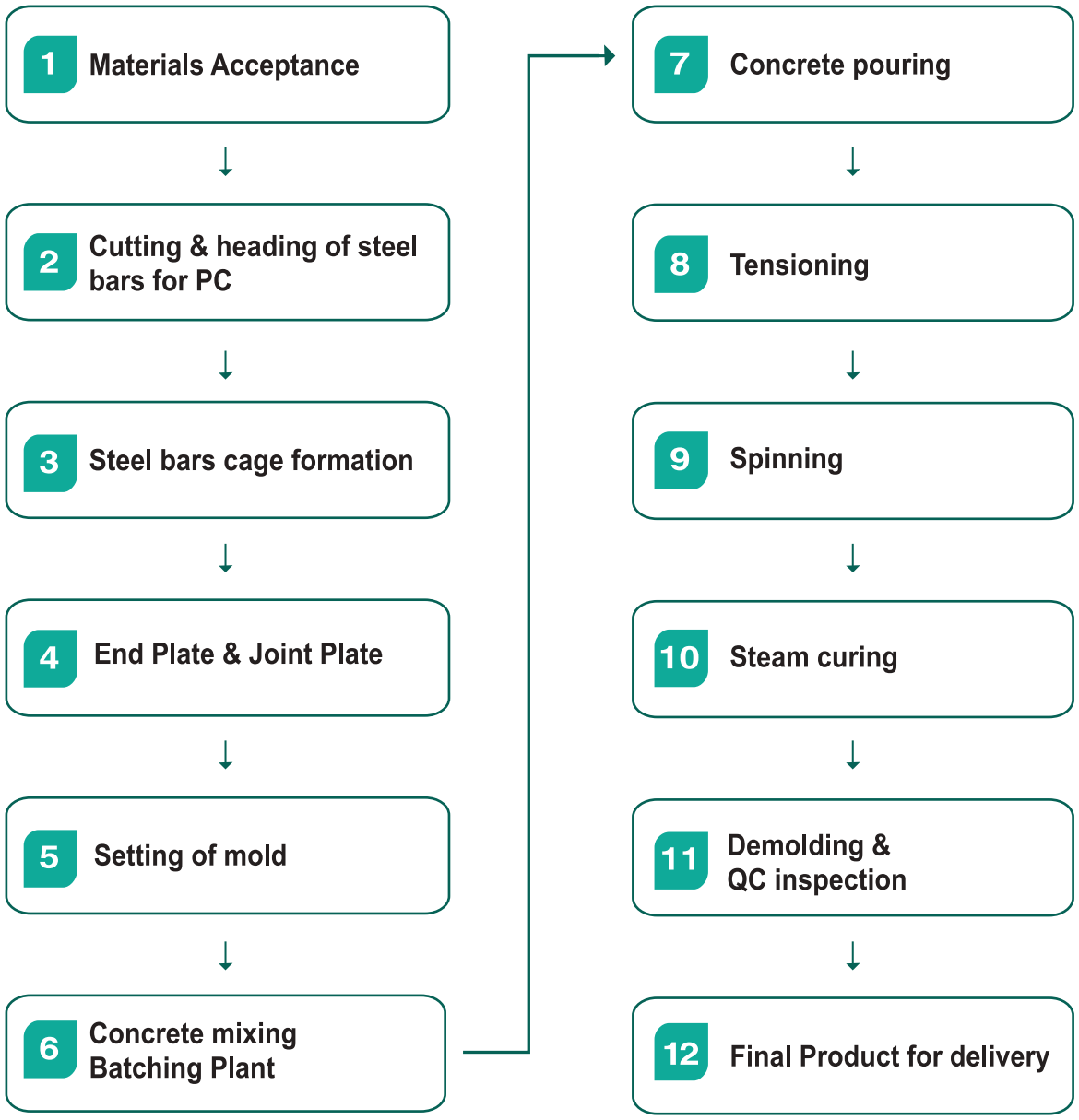


Manufacturing Process

BASHUNDHARA PHC PILE

PHC (Prestressed High-strength Concrete) spun piles are widely used as deep foundation elements designed to transfer structural loads to deeper, stronger soil or rock layers.These piles are manufactured using a combination of prestressing and centrifugal spinning techniques, which ensures high strength, durability, and uniform density.
The manufacturing process involves the following key steps:

Manufacturing Steps





1

CAGE MAKING/MOULD SETTING

PC bars in coil form are straightened and cut to correct lengths. The ends are warm-headed to form button heads. The bars are passed through the cage forming machine where spiral wire is automatically spot-welded at the correct spacings. End plates are fitted to the cage. The whole cage is then placed onto the bottom half mould.



2

POURING CONCRETE INTO THE MOULDS

High-strength concrete is poured into the moulds using a controlled pouring machine to ensure uniform distribution and compaction.



3

STRESSING

The PC bars are stressed against the mould through a central shaft and stressing plate. The stressing is being carried out in a single operation. This ensures uniformity of stress in all the PC bars and hence straightness of the pile.



4

PILE SPINNING

The pile is then compacted by the centrifugal spinning machine. Spinning process squeezes out excess water, thus increases the concrete strength.



5

STEAM CURING

The pile is sent to the steam chamber for rapid curing process in order to achieve the required transfer strength for early demoulding.



6

DEMOULDING

After demoulding, final QC inspection is carried out according to the quality manual specification.

*Note: For open concrete feeding, concrete is fed into the mould before stressing.

Product Standard and Quality Control

BASHUNDHARA PHC PILE

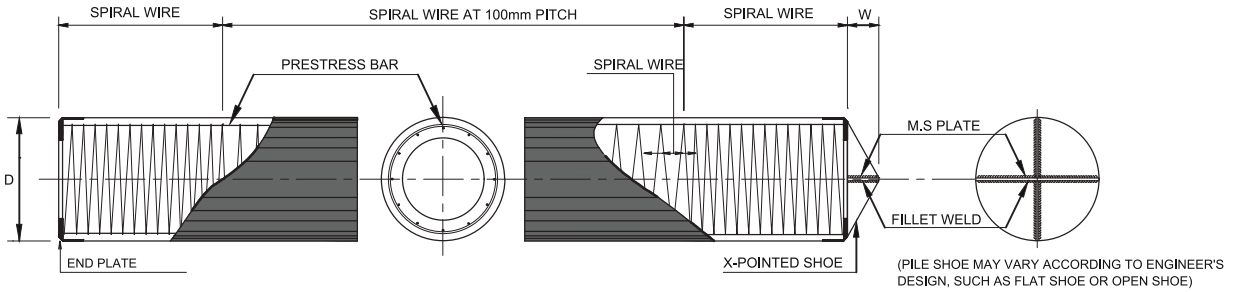
The quality of PHC spun piles is critical for structural safety, long-term performance, and compliance with engineering standards.

Dimension/Grade		Thickness (mm)	Product Section (mm^2)	Product Length (m)	PC Bar Size (mm)	PC Bar Quantity (Nos)	PC Bar Ultimate Strength (MPa)
D300	A	65	47990	6~12	8.3	6	1460
D400	A	80	80425	6~15	8.3	8	1460
	B	80	80425		8.3	16	1460
D450	A	85	97430		9.2	8	1460
D500	A	90	115925		9.2	9	1460
	B	90	115925		9.2	18	1460
D600	A	100	157080		9.2	12	1460
	B	100	157080		9.2	24	1460

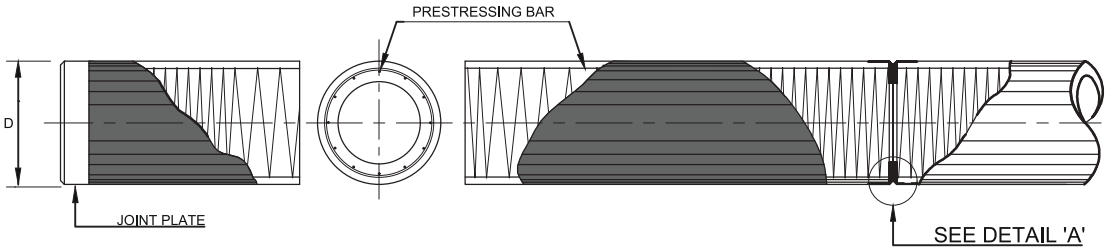
Dimension/ Grade		Effective Prestress (N/mm2)	Crack Bending Moment (KN.m)	Ultimate Bending Moment (KN.m)	Maximum Driving Load (Ton)	Shearing Strength (KN)		Recomended Structural Allowable Load (Ton)
		JIS A 5373:2016	JIS A 5373:2016	JIS A 5373:2016	Bashundhara PHC Pile	Shearing Cracking Strength	Ultimate Flexural Strength	
D300	A	5	24.5	37.3	184	99	125	92
D400	A	5	54.0	81.4	296	148	187	148
	B	8	73.6	132.4	280	187	234	140
D450	A	5	73.6	110.8	372	181	225	186
D500	A	5	103.0	155.0	448	229	276	224
	B	8	147.2	264.9	424	288	359	212
D600	A	5	166.8	250.2	608	311	388	304
	B	8	245	441.4	576	392	506	288

Dimension/Grade		Spiral Wire: Diameter (mm)	Spacing	Ultimate Strength (MPa)
D300	A	3.2	1st 1m @50mm Rest @100mm	700
D400	A & B	3.2	1st 1m @50mm Rest @100mm	700
D450	A	4.0	1st 1m @50mm Rest @100mm	700
D500	A & B	4.0	1st 1m @50mm Rest @100mm	700
D600	A & B	4.0	1st 1m @50mm Rest @100mm	700

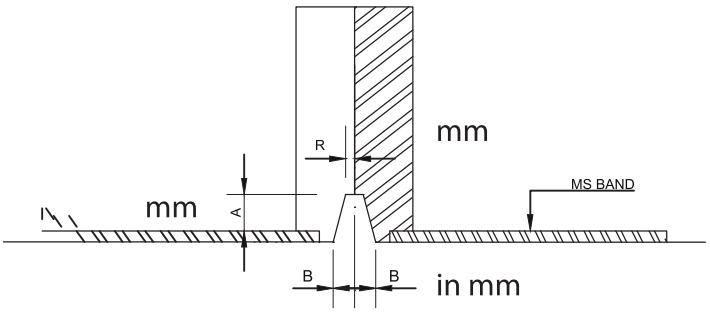
STARTER PILE



EXTENSION PILE



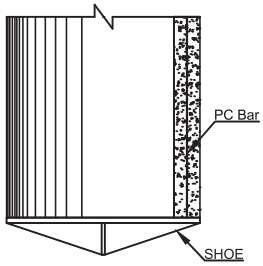
JOINT WELDING DETAILS



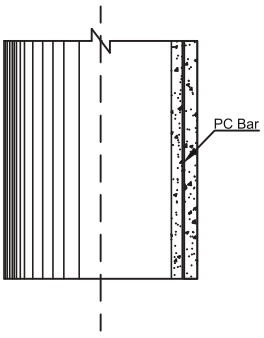
DETAIL 'A'

Dia of Pile D	Throat Thickness A	B	Root R
mm	mm	mm	mm
300	10	5.0	2.0
400	10	5.0	2.0
450	10	5.0	2.0
500	12	5.0	2.0
600	12	5.0	2.0

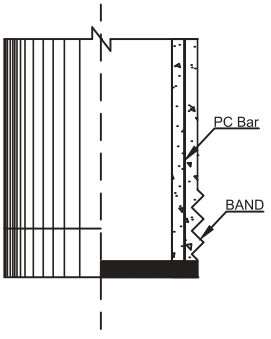
SHOE STRUCTURE DIAGRAM



X POINTED SHOE
(DIA 300mm ~ 600mm)



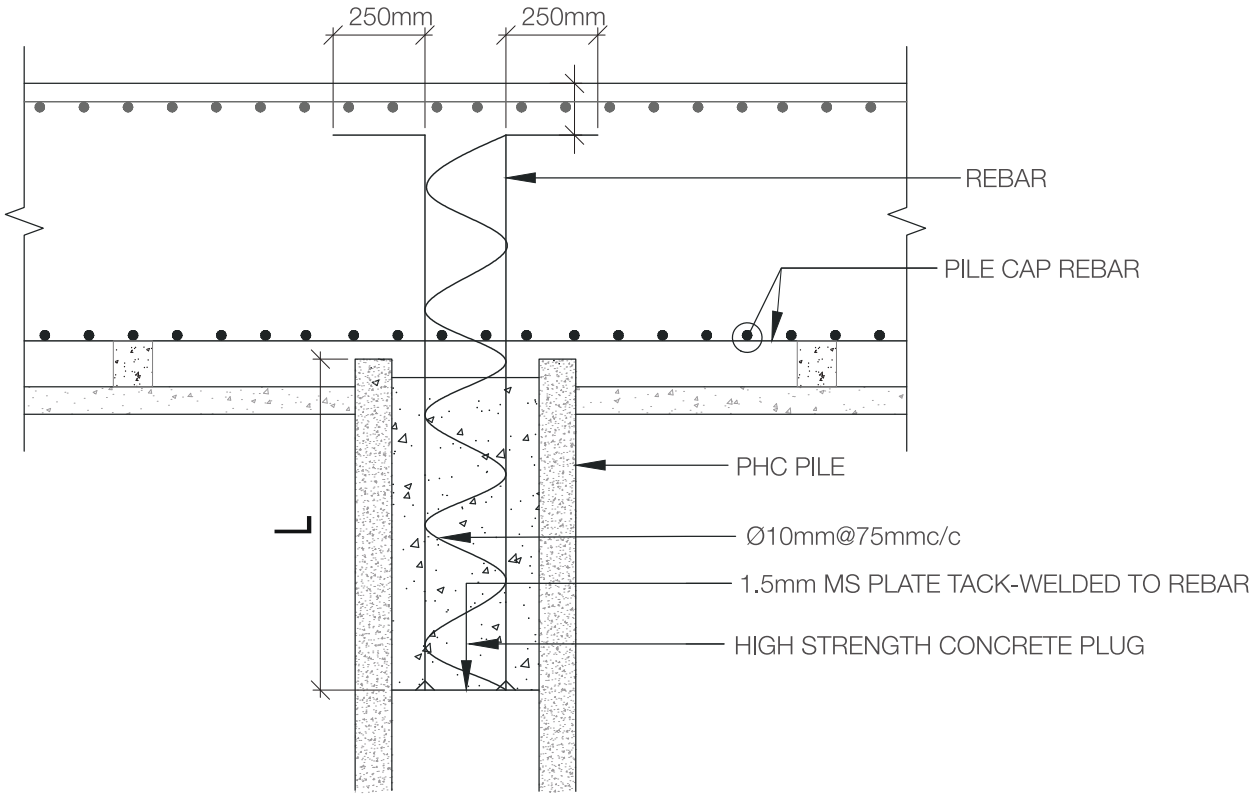
OPEN SHOE
(DIA 300mm ~ 600mm)



FLAT SHOE
(DIA 300mm ~ 600mm)

BONDING PHC PILES INTO PILE CAP

Dia of Pile	Minimum Rebars		
	Quantity	Dia	L
mm	no.	mm	mm
300	5	12	700
400	5	12	700
450	6	16	900
500	6	16	900
600	8	16	1000



As the PC bars are bonded with concrete, PHC Piles may be cut off at any point. The piles need not be stripped down to expose the bars and can be bonded to the pile cap as shown in the above sketch. Generally, if the piles are not subjected to tensile loads, the recommended Rebars are considered adequate.The structural design engineer will take appropriate decision considering load and safety of proposed structure.

Standards:
PHC piles comply with JIS A 5373:2016. PHC piles are modified to suit BS 8004:1986 – Foundations and BS 8110:1997 – Structural Use of Concrete. Concrete complies with SS EN 206-1:2009 – Specification of Concrete.

Material:

- Aggregates: Coarse aggregates shall be 20 mm stone. Fine aggregate shall be clean river sand or washed mining sand.
- Cement: Portland Cement (CEM1-52.5N) complies with BDS EN 197-1: 2003
- Prestressing Steel: High-frequency induction heat-treated bars manufactured to JIS G 3137:1994 or equivalent.
- Spiral Wire: JIS G 3538

Concrete Strength:

- At 28 days: Grade 80 Mpa (80 N/mm²)

Joint:
The joint is designed to have the same performance as the main body, particularly in respect of bending strength.

Lifting Points:
For piles up to 12 m in length, piles shall be lifted using steel hooks at both ends. For piles exceeding 12 m, piles shall be lifted by wrapping wire ropes around the piles at the marked lifting points.

Pile Shoe:
PHC piles will be supplied either open-ended, with a flat shoe, or with an X-pointed shoe.

Curing:
After casting, the piles are steam cured. When the concrete reaches the specified transfer strength, the piles are demoulded, marked, and checked for quality. The piles can be shifted or transported after gaining cube strength 70 Mpa.

Identification: All PHC piles have the following typical markings:

- Company Name
- Pile Size and Type
- Date of Casting (yy/mm/dd)
- Serial Number & Factory Code

Standard Lengths: PHC piles are available in lengths of 6 m to 15 m (can be jointed up to 46 m) subject to certain limitations.

Delivery: Within approximately 15 days from the date of production.

Quality Control Lab Facilities

To ensure the highest standards of product integrity and performance, BRMCIL operates a dedicated Quality Control Laboratory equipped with advanced testing machinery.
Key facilities include:



Digital Pile Bending Test Machine- Evaluates maximum bending moment for piles up to 15 meters.



Compressive Strength Testing Machine- Assess concrete strength and durability.



Universal Testing Machine-Measures mechanical properties of PC bars and spiral wires.



Test Spinning Machine- Enables prototype pile production and supports experimental R&D initiatives.

BASHUNDHARA PHC PILE

ROYALCERT

CERTIFICATE

Certification No	**: 07209/BAS09U**
Initial Certification Date	**: 29.04.2024**
Recertification Date	**: --**
Issue Date	**: 03.09.2025**
Expiration Date	**: 28.04.2027**
Revision Date / No	**: 03.09.2025/01**

For details of sites covered under this certificate, refer to appendix no. 7209/A

This is to certify that the Management System of:

BASHUNDHARA READY MIX & CONSTRUCTION INDUSTRIES LTD.

SBG Headquarter, Tower#1, Plot#844, Road#12, Block # I,Bashundhara R/A, Dhaka-1229, Bangladesh.

has been assessed and found to be in accordance with the requirements of:

ISO 9001:2015
Quality Management System

Scope: *Design, Production and Supply of Ready-Mix Concrete, PHC Spun Pile, Precast Building, PC U-Drain and PC Wall Panel.*

General Manager
Chris Markopolo

MEMBER OF MULTILATERAL RECOGNITION ARRANGEMENT IAF

UNITED ACCREDITATION FOUNDATION UAF

CB-MS-0935

THIS CERTIFICATION WAS CONDUCTED IN ACCORDANCE WITH THE ROYALCERT AUDITING AND CERTIFICATION PROCEDURES AND IS SUBJECT TO REGULAR AUDITS.
CERTIFICATION PERIOD IS 3 YEARS. VERIFABLE WITH QR CODE AND AT: WWW.ROYALCERT.COM

ROYALCERT INTERNATIONAL REGISTRARS LLC
555 NORTH MICHIGAN AVENUE
KENILWORTH, NEW JERSEY 07033, USA
Form 50 /02.01.2024/ Rev: No H

BUET Test Report

BASHUNDHARA PHC PILE

Grade: 400A

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY (BUET)

DEPARTMENT OF CIVIL ENGINEERING

GEOTECHNICAL ENGINEERING LABORATORY

No. CEB/5956/18676

Pile Driving Test Result

BRTC No. : 1103-65356/CE/25-26 Dt. 04/11/2025 **Date:** 04/11/2025
Client : Bashundhara ReadyMix and Construction Industries Ltd.
Brand : Bashundhara PHC Pile **Type:** 400A
Ref. No. : CEB/5995/18676 **Date:** 24/09/2025
Location : National Special Economic Zone, Mirsharai, Feni, Chattogram
Test : **Driving Capacity of PHC Pile (According to JIS A 5373:2016)**
Date of Test : 13/11/2025

Pile Driving Test Result

Pile Geometry and Type	Performance Property	Maximum Applied Load (MT)	Allowable Driving Load (MT)	FOS
Diameter: 400 mm and Length: 15m+15m = 30 m Type: 400A	Static Driving Load	384.47	300.00	> 1.28

Mode of Failure: Pile broken at 1m below EGL

Special Note: Failure load during static driving represents the ultimate structural axial load capacity of the pile. Because, in the test site, the geotechnical ultimate axial load capacity was more than the structural ultimate axial load capacity. The design axial load capacity of the pile shall be determined by the consultant, considering the pile's geotechnical capacity under axial and lateral loads together.

Disclaimer: Samples as supplied to us has been tested on the location mentioned on this report. BRTC does not have any responsibility as to the representative character of the samples required to be tested.

Details of the Test Pile

Pile Type	Pre-tensioned High Performance Concrete Spun Pile
Pile Diameter (mm)	400 mm
Pile Length (m)	15m+15m = 30 m
Pile Wall Thickness (mm)	82 mm
Pile Casting Date*	24-06-2025
Pile Curing Method*	Steam Curing
Concrete Compressive Strength (Cylinder) in MPa*	87.7
Concrete Compressive Strength (spun hollow cylinder) in MPa*	82.96
Pre-stressing Bar*	8 nos 8.3 mm
Yield Strength of Pre-stressing Bars in MPa*	1400
Tensile Strength of Pre-stressing Bars in MPa*	1460
Yield Strength of Spiral Wire in MPa*	710
Pre-stress in Concrete in MPa*	4

**Information provided by client*

Test Performed by :

Dr. Tahmeed Malik Al-Hussaini, Professor
Dr. Md. Jahangir Alam, Professor
Sk. Rakibul Islam, Assistant Professor

Grade: 400B

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY (BUET)

DEPARTMENT OF CIVIL ENGINEERING

GEOTECHNICAL ENGINEERING LABORATORY

No. CEB/5956/18676

Pile Driving Test Result

BRTC No. : 1103-65356/CE/25-26 Dt. 04/11/2025 **Date:** 04/11/2025
Client : Bashundhara ReadyMix and Construction Industries Ltd.
Brand : Bashundhara PHC Pile **Type:** 400B
Ref. No. : CEB/5995/18676 **Date:** 24/09/2025
Location : National Special Economic Zone, Mirsharai, Feni, Chattogram
Test : **Driving Capacity of PHC Pile (According to JIS A 5373:2016)**
Date of Test : 13/11/2025

Pile Driving Test Result

Pile Geometry and Type	Performance Property	Maximum Applied Load (MT)	Allowable Driving Load (MT)	FOS
Diameter: 400 mm and Length: 15m+15m = 30 m Type: 400B	Static Driving Load	358.98	300.00	> 1.20

Mode of Failure: Pile broken at 1m below EGL

Special Note: Failure load during static driving represents the ultimate structural axial load capacity of the pile. Because, in the test site, the geotechnical ultimate axial load capacity was more than the structural ultimate axial load capacity. The design axial load capacity of the pile shall be determined by the consultant, considering the pile's geotechnical capacity under axial and lateral loads together.

Disclaimer: Samples as supplied to us has been tested on the location mentioned on this report. BRTC does not have any responsibility as to the representative character of the samples required to be tested.

Details of the Test Pile

Pile Type	Pre-tensioned High Performance Concrete Spun Pile
Pile Diameter (mm)	400 mm
Pile Length (m)	15m+15m = 30 m
Pile Wall Thickness (mm)	83 mm
Pile Casting Date*	24-06-2025
Pile Curing Method*	Steam Curing
Concrete Compressive Strength (Cylinder) in MPa*	87.7
Concrete Compressive Strength (spun hollow cylinder) in MPa*	82.96
Pre-stressing Bar*	16 nos 8.3 mm
Yield Strength of Pre-stressing Bars in MPa*	1400
Tensile Strength of Pre-stressing Bars in MPa*	1460
Yield Strength of Spiral Wire in MPa*	710
Pre-stress in Concrete in MPa*	8

**Information provided by client*

Test Performed by :

Dr. Tahmeed Malik Al-Hussaini, Professor
Dr. Md. Jahangir Alam, Professor
Sk. Rakibul Islam, Assistant Professor

Grade: 500A

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY (BUET)

DEPARTMENT OF CIVIL ENGINEERING

GEOTECHNICAL ENGINEERING LABORATORY

No. CEB/5956/18676

Pile Driving Test Result

BRTC No. : 1103-65356/CE/25-26 Dt. 04/11/2025 **Date:** 04/11/2025
Client : Bashundhara ReadyMix and Construction Industries Ltd.
Brand : Bashundhara PHC Pile **Type:** 500A
Ref. No. : CEB/5995/18676 **Date:** 24/09/2025
Location : National Special Economic Zone, Mirsharai, Feni, Chattogram
Test : **Driving Capacity of PHC Pile (According to JIS A 5373:2016)**
Date of Test : 13/11/2025

Pile Driving Test Result

Pile Geometry and Type	Performance Property	Maximum Applied Load (MT)	Allowable Driving Load (MT)	FOS
Diameter: 500 mm and Length: 15m+15m = 30 m Type: 500A	Static Driving Load	511.93	450.00	> 1.14

Mode of Failure: Did not fail. Could not increase load due to the driving machine capacity limitation.

Special Note: Failure load during static driving represents the ultimate structural axial load capacity of the pile. Because, in the test site, the geotechnical ultimate axial load capacity was more than the structural ultimate axial load capacity. The design axial load capacity of the pile shall be determined by the consultant, considering the pile's geotechnical capacity under axial and lateral loads together.

Disclaimer: Samples as supplied to us has been tested on the location mentioned on this report. BRTC does not have any responsibility as to the representative character of the samples required to be tested.

Details of the Test Pile

Pile Type	Pre-tensioned High Performance Concrete Spun Pile
Pile Diameter (mm)	500 mm
Pile Length (m)	15m+15m = 30 m
Pile Wall Thickness (mm)	95 mm
Pile Casting Date*	24-06-2025
Pile Curing Method*	Steam Curing
Concrete Compressive Strength (Cylinder) in MPa*	87.7
Concrete Compressive Strength (spun hollow cylinder) in MPa*	82.96
Pre-stressing Bar*	9 nos 9.2 mm
Yield Strength of Pre-stressing Bars in MPa*	1400
Tensile Strength of Pre-stressing Bars in MPa*	1460
Yield Strength of Spiral Wire in MPa*	710
Pre-stress in Concrete in MPa*	4

**Information provided by client*

Test Performed by :

Dr. Tahmeed Malik Al-Hussaini, Professor
Dr. Md. Jahangir Alam, Professor
Sk. Rakibul Islam, Assistant Professor

Grade: 500B

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY (BUET)

DEPARTMENT OF CIVIL ENGINEERING

GEOTECHNICAL ENGINEERING LABORATORY

No. CEB/5956/18676

Pile Driving Test Result

BRTC No. : 1103-65356/CE/25-26 Dt. 04/11/2025 **Date:** 04/11/2025
Client : Bashundhara ReadyMix and Construction Industries Ltd.
Brand : Bashundhara PHC Pile **Type:** 500B
Ref. No. : CEB/5995/18676 **Date:** 24/09/2025
Location : National Special Economic Zone, Mirsharai, Feni, Chattogram
Test : **Driving Capacity of PHC Pile (According to JIS A 5373:2016)**
Date of Test : 13/11/2025

Pile Driving Test Result

Pile Geometry and Type	Performance Property	Maximum Applied Load (MT)	Allowable Driving Load (MT)	FOS
Diameter: 500 mm and Length: 15m+15m = 30 m Type: 500B	Static Driving Load	511.93	425.00	> 1.20

Mode of Failure: Did not fail. Could not increase load due to the driving machine capacity limitation.

Special Note: Failure load during static driving represents the ultimate structural axial load capacity of the pile. Because, in the test site, the geotechnical ultimate axial load capacity was more than the structural ultimate axial load capacity. The design axial load capacity of the pile shall be determined by the consultant, considering the pile's geotechnical capacity under axial and lateral loads together.

Disclaimer: Samples as supplied to us has been tested on the location mentioned on this report. BRTC does not have any responsibility as to the representative character of the samples required to be tested.

Details of the Test Pile

Pile Type	Pre-tensioned High Performance Concrete Spun Pile
Pile Diameter (mm)	500 mm
Pile Length (m)	15m+15m = 30 m
Pile Wall Thickness (mm)	92 mm
Pile Casting Date*	24-06-2025
Pile Curing Method*	Steam Curing
Concrete Compressive Strength (Cylinder) in MPa*	87.7
Concrete Compressive Strength (spun hollow cylinder) in MPa*	82.96
Pre-stressing Bar*	18 nos 9.2 mm
Yield Strength of Pre-stressing Bars in MPa*	1400
Tensile Strength of Pre-stressing Bars in MPa*	1460
Yield Strength of Spiral Wire in MPa*	710
Pre-stress in Concrete in MPa*	8

**Information provided by client*

Test Performed by :

Dr. Tahmeed Malik Al-Hussaini, Professor
Dr. Md. Jahangir Alam, Professor
Sk. Rakibul Islam, Assistant Professor

BUET Test Report

BASHUNDHARA PHC PILE

Grade: 600A

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY (BUET)

DEPARTMENT OF CIVIL ENGINEERING

Mobile: 01819 557 964, PABX: 966 5650-60 Ext. 7226; www.buet.ac.bd/ce/

GEOTECHNICAL ENGINEERING LABORATORY

BRTC Bureau of Research, Testing & Consultation

No. CEB/5956/18676

Pile Driving Test Result

BRTC No. : 1103-65356/CE/25-26 Dt. 04/11/2025 **Date:** 04/11/2025
Client : Bashundhara ReadyMix and Construction Industries Ltd.
Brand : Bashundhara PHC Pile Type: 600A
Ref. No. : CEB/5995/18676 **Date:** 24/09/2025
Location : National Special Economic Zone, Mirsharai, Feni, Chattogram
Test : **Driving Capacity of PHC Pile (According to JIS A 5373:2016)**
Date of Test : 13/11/2025

Pile Driving Test Result

Pile Geometry and Type	Performance Property	Maximum Applied Load (MT)	Allowable Driving Load (MT)	FOS
Diameter: 600 mm and Length: 15m+15m = 30 m Type: 600A	Static Driving Load	511.93	600.00	> 0.85

Mode of Failure: Did not fail. Could not increase load due to the driving machine capacity limitation

Special Note: Failure load during static driving represents the ultimate structural axial load capacity of the pile. Because, in the test site, the geotechnical ultimate axial load capacity was more than the structural ultimate axial load capacity. The design axial load capacity of the pile shall be determined by the consultant, considering the pile's geotechnical capacity under axial and lateral loads together.

Disclaimer: Samples as supplied to us has been tested on the location mentioned on this report. BRTC does not have any responsibility as to the representative character of the samples required to be tested.

Details of the Test Pile

Pile Type	Pre-tensioned High Performance Concrete Spun Pile
Pile Diameter (mm)	600 mm
Pile Length (m)	15m+15m = 30 m
Pile Wall Thickness (mm)	100 mm
Pile Casting Date*	24-06-2025
Pile Curing Method*	Steam Curing
Concrete Compressive Strength (Cylinder) in MPa*	87.7
Concrete Compressive Strength (spun hollow cylinder) in MPa*	82.96
Pre-stressing Bar*	12 nos 9.2 mm
Yield Strength of Pre-stressing Bars in MPa*	1400
Tensile Strength of Pre-stressing Bars in MPa*	1460
Yield Strength of Spiral Wire in MPa*	710
Pre-stress in Concrete in MPa*	4

**Information provided by client*

Test Performed by :

Dr. Tahmeed Malik Al-Hussaini, Professor
Dr. Md. Jahangir Alam, Professor — 02/12/25
Sk. Rakibul Islam, Assistant Professor

Grade: 600B

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY (BUET)

DEPARTMENT OF CIVIL ENGINEERING

Mobile: 01819 557 964, PABX: 966 5650-60 Ext. 7226; www.buet.ac.bd/ce/

GEOTECHNICAL ENGINEERING LABORATORY

BRTC Bureau of Research, Testing & Consultation

No. CEB/5956/18676

Pile Driving Test Result

BRTC No. : 1103-65356/CE/25-26 Dt. 04/11/2025 **Date:** 04/11/2025
Client : Bashundhara ReadyMix and Construction Industries Ltd.
Brand : Bashundhara PHC Pile Type: 600B
Ref. No. : CEB/5995/18676 **Date:** 24/09/2025
Location : National Special Economic Zone, Mirsharai, Feni, Chattogram
Test : **Driving Capacity of PHC Pile (According to JIS A 5373:2016)**
Date of Test : 13/11/2025

Pile Driving Test Result

Pile Geometry and Type	Performance Property	Maximum Applied Load (MT)	Allowable Driving Load (MT)	FOS
Diameter: 600 mm and Length: 15m+15m = 30 m Type: 600B	Static Driving Load	511.93	576.00	> 0.89

Mode of Failure: Did not fail. Could not increase load due to the driving machine capacity limitation.

Special Note: Failure load during static driving represents the ultimate structural axial load capacity of the pile. Because, in the test site, the geotechnical ultimate axial load capacity was more than the structural ultimate axial load capacity. The design axial load capacity of the pile shall be determined by the consultant, considering the pile's geotechnical capacity under axial and lateral loads together.

Disclaimer: Samples as supplied to us has been tested on the location mentioned on this report. BRTC does not have any responsibility as to the representative character of the samples required to be tested.

Details of the Test Pile

Pile Type	Pre-tensioned High Performance Concrete Spun Pile
Pile Diameter (mm)	600 mm
Pile Length (m)	15m+15m = 30 m
Pile Wall Thickness (mm)	100 mm
Pile Casting Date*	24-06-2025
Pile Curing Method*	Steam Curing
Concrete Compressive Strength (Cylinder) in MPa*	87.7
Concrete Compressive Strength (spun hollow cylinder) in MPa*	82.96
Pre-stressing Bar*	24 nos 9.2 mm
Yield Strength of Pre-stressing Bars in MPa*	1400
Tensile Strength of Pre-stressing Bars in MPa*	1460
Yield Strength of Spiral Wire in MPa*	710
Pre-stress in Concrete in MPa*	8

**Information provided by client*

Test Performed by :

Dr. Tahmeed Malik Al-Hussaini, Professor
Dr. Md. Jahangir Alam, Professor — 02/12/25
Sk. Rakibul Islam, Assistant Professor

Concrete Compressive Strength Test

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY (BUET)

DEPARTMENT OF CIVIL ENGINEERING

Mobile: 01819557964; PABX: 55666000-2 Ext. 7226

http://brtctest.ce.buet.ac.bd, https://verify.ce.buet.ac.bd

BRTC Bureau of Research, Testing & Consultation

CONCRETE LABORATORY

BRTC No. : **1103-64683/CE /25-26/; Dt: 27/10/2025**
Sent by : Abul Khayer Rana, Senior Engineer (QC), Bashundhara Ready Mix and Construction Industries Ltd.
Zone 15, National Special Economic Zone, Mirsharai, Chattogram.
Ref. No. : BRMCIL-BRTC/QC/PHC Pile Unit/2025/01; Dt: 26/10/2025
Project : Bashundhara PHC Pile Plant, Zone-15, National Special Economic Zone, Mirsharai, Chattogram.
Sample : **Concrete Cylinder** (Aggregate type: Stone chips, Mix proportion (as quoted): Ready Mix) (Admixture added (as per letter): FOSROC Auramix 270)
Location : PHC Spun Pile
Test : **Compressive Strength Test of Concrete Cylinder (ASTM C39/C39M - 21)**
Date of Test : 28/10/2025

TEST REPORT

SL No.	Date of Casting as per the letter	Specimen Designation/ Frog Mark	Specimen Area (sq. in)	Maximum Load (lb)	Crushing Strength (psi)	Average Crushing Strength	Type of Fracture* (Mode of Failure)
1	30/9/2025 (28 days test)	PHC 01	12.17	155,583	12,784	**12720 psi** (87.7 MPa)	Type 3 (Combined **)
2		PHC 01	12.30	163,340	13,280		Type 3 (Combined **)
3		PHC 01	12.30	148,736	12,093	(894 kg/cm²)	Type 2 (Combined **)

Note: Samples were received in unsealed condition. ** Combined = Mortar and Aggregate Failure.

*Type of Fracture (as per ASTM C39/C39M - 21):
Type 1: Well-formed cone
Type 2: Well-formed cone with vertical crack
Type 3: Columnar vertical cracks
Type 4: Diagonal cracks
Type 5: Side fractures at top or bottom
Type 6: Side fractures at top or bottom but end of cylinder is pointed

Countersigned by:
Prof. Dr. Moazzem Hossain
Test-In-Charge
Department of Civil Engineering
BUET, Dhaka-1000, Bangladesh

t:En7r8C92

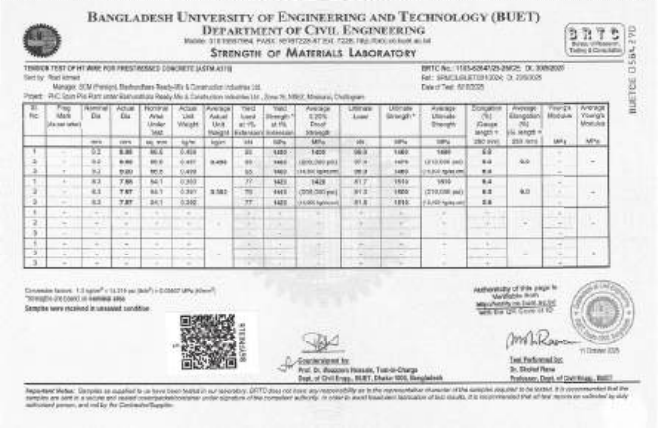
Authenticity of this page is verifiable from http://verify.ce.buet.ac.bd with the QR Code or ID

Test Performed by
Dr. Tanvir Manzur
Professor
Department of Civil Engineering
BUET, Dhaka-1000, Bangladesh
11/11/2025

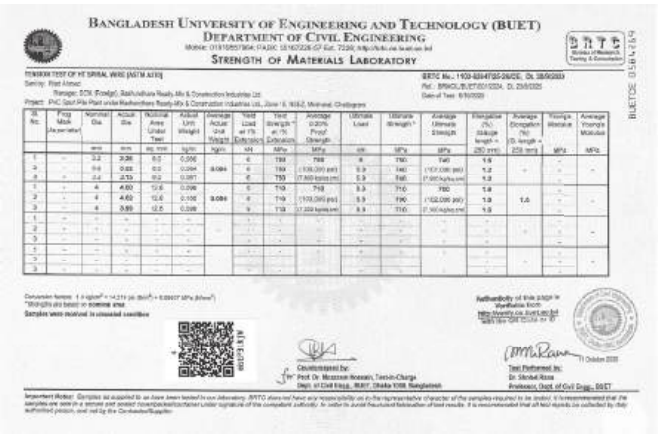
Important Notes: Samples as supplied to us have been tested in our laboratory. BRTC does not have any responsibility as to the representative character of the samples required to be tested. It is recommended that samples are sent in a secure and sealed cover/packet/container under signature of the competent authority. In order to avoid fraudulent fabrication of test results, it is recommended that all test reports are collected by duly authorized person, and not by the Contractor/Supplier.

BUETCE 059 1644

PC Bar and HT Spiral Wire Test



BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY (BUET)
DEPARTMENT OF CIVIL ENGINEERING
STRENGTH OF MATERIALS LABORATORY
BUETCE 059 1 270



BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY (BUET)
DEPARTMENT OF CIVIL ENGINEERING
STRENGTH OF MATERIALS LABORATORY
BUETCE 059 1 644

Client : **Bashundhara City Development Ltd.**
Project : Water Park Project
Project Location : Bashundhara R/A

Client : **Akij Bashir Group**
Project : Akij Ceramic & Tableware Factory
Project Location : Trishal, Mymensingh

Client : **Edison Real Estate Ltd.**
Project : ● Edison Macbeth ● Edison Benvolio ● Edison Aemilius ● Edison Elenor
Project Location : Bashundhara R/A

Client : **Nova Intima Ltd.**
Project : Factory Construction Project
Project Location : BEPZA at Mirsharai Economic Zone

Client : **McDonald Steel Building Products Limited**
Project : Factory Construction Project
Project Location : BEZA at Mirsharai Economic Zone

Client : **Inbuild Magnolia**
Project : Inbuild Real Estate Ltd.
Project Location : Bashundhara R/A

Client : **United Group**
Project : United Chattogram Power Plant
Project Location : Chattogram

Client : **Bridge Holding Ltd.**
Project : Bridge Gardenia Project
Project Location : Bashundhara R/A

Client : **Star City Builders Ltd.**
Project : ● Hedayet Tower ● May Flower
Project Location : Bashundhara R/A

Client : **JCX Properties Ltd.**
Project : Condominium Apartment Project
Project Location : Bashundhara R/A

Client : **Property Development Ltd. (Pran RFL)**
Project : Anika Kutir
Project Location : Jolshiri Abason

Client : **Bashundhara City Development Ltd.**
Project : Bashundhara Shopping Mall
Project Location : Bashundhara R/A

Client : **Doctors Properties Ltd.**
Project : Tepantor
Project Location : Jolshiri Abason

Client : **Prime Engineers Ltd.**
Project : Prime Sowhardya
Project Location : Jolshiri Abason

Client : **MND Construction Ltd.**
Project : MND Lake Castle
Project Location : Jolshiri Abason

Client : **Fortress Construction Ltd.**
Project : ● Skylark ● Violet ● Venus
Project Location : Bashundhara R/A



BASHUNDHARA
PHC PILE
INNOVATION TRUSTED
GLOBALLY

Contact & Order:
Mobile No : + 8801958-200380, +8801704-165189, +8801335-166234
Email Address : enamul.islam@bgc-bd.com

Inspired by life

SAFWAN
BASHUNDHARA
GLOBAL

Head Office:
Bashundhara PHC Pile
SBG Headquarter Tower # 1,
Plot#844, Road # 12, Block # I
Bashundhara R/A, Dhaka-1229
Phone: 0966443310-19

Factory Address:
Bashundhara PHC Pile unit
Zone: 15, BIEZL
National Special Economic Zone
Mirsharai, Chattogram