

## Introduction

ULTRA PHC Pile was developed and applied widely overseas such as in Korea and Japan. It has more advantages to saving the cost and time of the project by increasing pile strength and reducing the materials used.

In Vietnam, VGSI Pile is the 1st Pile Manufacturer which can launch this new brand product with very high requirements for the production process.

Producing ULTRA PHC Pile requires a strictly high-quality control system and new technology in production management to assure the high and stable quality of the product.

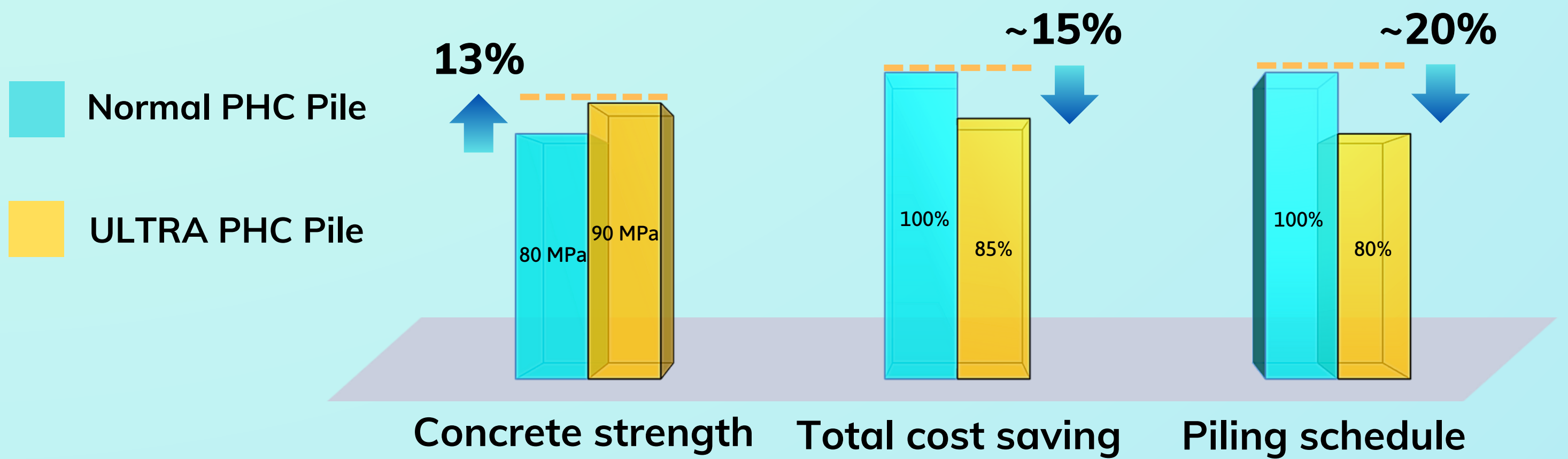
With the strength and experiences gained from the parent company and strong capacity in applying new technology in manufacturing and quality management, VGSI Pile is the 1st Pile Manufacturer in Vietnam which ULTRA PHC Pile to save cost and time on the project.

VGSI Pile always tries to bring more value and benefits to our clients.

## Pile strength comparison table

| Diameter | Item               | Unit | Normal PHC Pile | ULTRA PHC Pile | Increase |
|----------|--------------------|------|-----------------|----------------|----------|
| mm       | Conc' strength     | Mpa  | 80              | 90             | 13%      |
| 300      | Max. Pressing load | Tonf | 125             | 142            | 13%      |
| 350      |                    |      | 161             | 182            |          |
| 400      |                    |      | 224             | 254            |          |
| 500      |                    |      | 347             | 393            |          |
| 600      |                    |      | 475             | 538            |          |
| 300      | Cracking moment    | kN.m | 25.3            | 25.9           | 2%       |
| 350      |                    |      | 37.2            | 38.1           |          |
| 400      |                    |      | 56.8            | 58.2           |          |
| 500      |                    |      | 106.9           | 109.5          |          |
| 600      |                    |      | 176.9           | 181.2          |          |
| 300      | Ultimate moment    | kN.m | 37.95           | 38.85          | 2%       |
| 350      |                    |      | 55.8            | 57.15          |          |
| 400      |                    |      | 85.2            | 87.3           |          |
| 500      |                    |      | 160.35          | 164.25         |          |
| 600      |                    |      | 265.35          | 271.8          |          |

## Anticipated benefits using ULTRA PHC PILE



## CASE STUDY : Design Optimization

| Typical design  | Normal PHC Pile            | Ultra PHC Pile             | Effectiveness   |
|---|----------------------------|----------------------------|---|
| <b>#1 - Piles support slab</b><br>Increasing pile spacing<br><ul style="list-style-type: none"> <li>• Reduce pile</li> <li>• Reduce pile cap</li> </ul> | <p>Pile spacing ~ 3x4m</p> | <p>Pile spacing ~ 4x5m</p> | <ul style="list-style-type: none"> <li>➤ <b>Piling schedule</b><br/>Saving 20~30%</li> <li>➤ <b>Cost saving</b><br/>Saving 15~20%</li> <li>• Pile material</li> <li>• Piling cost</li> <li>• Pile cap cost</li> </ul> |
| <b>#2 - Piles support column</b><br><ul style="list-style-type: none"> <li>• Reduce pile quantity</li> <li>• Reduce pile cap size</li> </ul>            | <p>5 piles/ column</p>     | <p>4 piles/ column</p>     |   |