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## **A Sales/Marketing Comparison & Positioning Statement of the WAFFLEMAT System to Post-Tensioned Slabs**

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### **BACKGROUND**

With most “good lots” gone, residential homebuilders are, on a regular basis, faced with a major challenge: expanding construction activities into areas before considered less than desirable: i.e., hillsides, areas of high water tables, expansive, hydro collapsible and/or rocky soils.

In these environments, builders cannot utilize the standard/common 4” - 6” concrete slab foundation, and instead must substitute one that can withstand the rigors accompanying an installation where marginal soil exists. Traditionally, one of the following three approaches has been incorporated by homebuilders in this situation:

- post tensioned slabs
- pier and grade beam
- driven pile foundations

Unfortunately, each of these approaches brings a series of individual and combined limitations that include, but are not limited to:

- the factors/costs involved in doubling the size of a standard foundation and utilizing high tension cables
- dealing with drilling hazards, additional curing time/rebar/concrete and spoils
- an increased risk of future liability costs resulting from slab breakage/failure and mold

Pacific Housing Systems has developed, through its own efforts over a period of 12 years, as well as through the exclusive licensing of world class products from one of the largest concrete providers in the United States, a series of “Systems” designed for low, moderate, high and critical soil conditions with proven product designs, rigorous engineering reviews, installation, test and measurement processes.

These patented Systems provide residential homebuilders with significant savings in material costs and building cycle time when compared to current approaches, and mitigate present/future risk, liability, and warranty issues.

In particular, the PHS WAFFLEMAT™ System designed for expansive soils has proven to be of great interest to homebuilders as an alternative, specifically, to the post-tensioned slab used in “marginal soil” environments. In addition, soil and structure engineers, concrete companies, and municipalities want to know how the WAFFLEMAT System compares to the post-tensioned slabs they are familiar with. The homebuilder wants price comparisons, the engineers want calculations and data on performance comparisons, the concrete companies want installation and usage comparisons, and the municipalities want some or all of the above.

## **THE WAFFLEMAT SYSTEM AND P/T SLABS | *Similarities and Differences***

The WAFFLEMAT System is, in some ways, similar to the P/T Slab, and valid comparisons can be made. For example, the WAFFLEMAT System can carry a certain load with certain performance, and can, with structural calculations, show the similarities to a P/T Slab in these areas, making the translations to similar/ comparable thicknesses, load capability, etc.

However, in many ways the WAFFLEMAT System is entirely different from a P/T Slab, and must be presented/viewed in a dramatically different light. For example, some municipalities require that a P/T Slab have “cut-off walls” (a 12” - 24” deep barrier usually made of thick plastic or, in some cases, even concrete) so water cannot seep under the slab and make it crack or turn up at the edges as a result of expansive soil heaving and contracting over time.

This commonly (although not in all municipalities) required engineering component of a P/T Slab foundation is not needed with the WAFFLEMAT System, for three reasons:

- 1] The WAFFLEMAT System has voids underneath (formed with the 8.5” high WAFFLEBOX) allowing the expansive soil to move, as opposed to the P/T Slab that rests entirely on the grade. Even if water was to seep underneath, the voids provide space for the soil to expand and contract without causing the uplift stresses that make P/T slabs crack and fail.
- 2] The WAFFLEBOXES are made of plastic (note: “recycled” plastic - part of the WAFFLEMAT System is a “green” product, as opposed to the P/T Slab, which is 100% non-environmentally friendly), providing a natural moisture barrier built into the foundation. The P/T Slab is, on the other hand, made entirely of concrete, and thus subject to water penetration that promotes cracking as well as the most feared foundation-repair issue today: mold.
- 3] The spaces between the WAFFLEBOXES create natural beams in the poured concrete, forming a “ribbed” foundation which anchors the WAFFLEMAT System against movement when the soil expands upwards into the void areas.

## SUPERIOR CHARACTERISTICS

Although there are areas that need to be compared - like load calculations - between the WAFFLEMAT System and P/T Slab, there are also areas where, plain and simple, the WAFFLEMAT System is superior, and some requirements that municipalities and engineers include with P/T Slabs in expansive soils are not necessary or applicable.

## ILLUSTRATING THE DIFFERENCES | *An Analogy*

The following analogy illustrates the difference between the WAFFLEMAT System and P/T Slab:

Compare, for a moment, the Boeing 737 and 747 airplanes. Each has a specific purpose and, more importantly, specific mission that leverages its design specifications. You would not attempt to fly a standard 737 on international routes, nor is a 747 appropriate for short commutes. However, you could, with extensive modifications, indeed make the 737 long-haul capable, just as you could also use the 747 - albeit not cost effectively - for commuter flights.

The same is true for the WAFFLEMAT System. It is not intended for good soil, but, instead, with its voids and ribbed contour, designed specifically for expansive soils. The P/T Slab works perfectly well on good soils, but is not built - without extensive modifications - to be naturally placed in expansive soils.

## SUMMARY

One last point of distinction should be made. Throughout this paper, there has been a careful and deliberate use of the terms "WAFFLEMAT System" and "P/T Slab." Pacific Housing Systems core competency is providing foundation systems/solutions for residential homebuilders developing projects on expansive, rocky, or hydro-collapsible soils. We are not a provider of slabs. Inherently, that sends a message of differentiation that the design specifications, components, and implementation processes of our products provide a targeted solution to homebuilders that a post-tensioned slab does not.

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## APPENDIX 1 | *Where the WAFFLEMAT System Fits*

Expansive soils

Rocky soils

Hydro-collapsible soils

## APPENDIX 2 | **"MUST HAVE"** *Advertisement Body Copy*

Secure homes start with strong foundations, and that's why it's SMART to ask if your homebuilder uses the WAFFLEMAT System.

**SECURE** | The WAFFLEMAT is a proven foundation system with over 6.5 million sq. ft. of residential living space poured since 1995 and not one structural callback.

**STRONG** | The WAFFLEMAT possesses superior floor stiffness, with sufficient strength to resist swelling from over-watering, surface drainage, and flooding.

**SMART** | The WAFFLEMAT is made of environmentally friendly materials that act as a built-in vapor barrier which can help shield moisture and prevent mold.

Do you have the WAFFLEMAT Foundation System in your home?

## APPENDIX 3 | *WAFFLEMAT System Brochure Copy*

The WAFFLEMAT is the most innovative - and proven - foundation forming system for residential construction in expansive soils. It possesses the greatest floor stiffness of any system in its class, possessing sufficient strength to resist differential swelling resulting from landscaping practices, surface drainage, or flooding from any source.

Offering many other advantages, the WAFFLEMAT does not require presoaking underlying pads and there is no need for footings - meaning no trenching or spoils. And, since the WAFFLEMAT System is typically 12" above grade, it requires no gravel, sand or moisture barrier.

Easily implemented in both rebar and post-tension applications, over 6.5 million sq. ft. of residential living space has been poured with the WAFFLEMAT System since 1995 without one callback! As can be seen in thousands of residential projects, the WAFFLEMAT presents the best of both worlds to contractors faced with the need to deliver maximum productivity - with the highest possible reliability and lowest cost.

## APPENDIX 4 | *"About Pacific Housing Systems" Press Release Boilerplate*

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Pacific Housing Systems, Inc. is a leading provider of next generation foundation solutions for residential homebuilders developing projects on marginal soil. The company's WAFFLEMAT, Elevated Slab, and Raised Wood Floor systems are specially designed and engineered where these conditions (hillsides, areas with high water tables, firm clays/organics, expansive, rocky, and hydro-collapsible soils) are prevalent, and include the Winslow Geo Anchor and Lateral Resistance Device components. PHS products and systems enable developers to increase the speed, quality and quantity of construction, providing savings in material costs, building cycle-time and future warranty issues. For additional information, visit [www.pacifichousingsystems.com](http://www.pacifichousingsystems.com).

