**CLAIMS**

1. A method of applying a load to a pile, comprising:

locating a top portion below a top section of a pile, wherein the top portion is attached to the top section of the pile;

locating a bottom portion below and proximate the top portion and above a bottom section of the pile, wherein the bottom portion is attached to the bottom section of the pile, wherein at least a portion of the cross-section of the top portion and at least a portion of the cross-section of the bottom portion is open before casting the pile, and wherein the top section of the pile and the bottom section of the pile are contiguous through the open portion of the cross-section of the top portion and the open portion of the cross-section of the bottom portion;

injecting a pressurized fluid between the top portion and the bottom portion, wherein injecting the pressurized fluid between the top portion and the bottom portion causes the top portion and the bottom portion to be pushed apart, the top portion to push up on the top section of the pile with an initial upward force, the bottom portion to push down on the bottom section of the pile with an initial downward force, and at least one void to be created between the top section of the pile and the bottom section of the pile in a portion of the pile extending through the open portion of the cross-section of the top portion and the open portion of the cross-section of the bottom portion, wherein once the at least one void is created the pressurized fluid fills at least a portion of one or more of the at least one void, wherein the pressurized fluid that enters the at least a portion of one or more of the at least one void causes an additional upward force on the top section of the pile and an additional downward force on the bottom section of the pile.

2. The method according to claim 1, further comprising filling one or more of the at least one void with a structural material.

3. The method of claim 2, wherein the structural material is selected from the group consisting of: grout and concrete.

4. The method according to claim 2, wherein the top section of the pile, the top portion, the bottom portion, the bottom section of the pile, and the structural material act as a single pile.

5. The method according to claim 1, wherein when the top portion and the bottom portion are pushed apart a separation is created between the top portion and the bottom portion, wherein injecting the pressurized fluid between the top portion and the bottom portion comprises injecting the pressurized fluid into the separation between the top portion and the bottom portion, wherein one or more of at least one void is contiguous with the separation between the top portion and the bottom portion.

6. The method of claim 1, wherein when the top portion and the bottom portion are pushed apart the top portion approximately maintains a relative lateral position with respect to the bottom portion.

7. The method of claim 6, wherein before the at least one void is created the top section of the pile has the relative lateral position with respect to the bottom section of the pile and after the at least one void is created the top section of the pile approximately has the relative lateral position with respect to the bottom section of the pile.

8. The method according to claim 1, wherein at least 40% of the cross-sectional area of the top portion and at least 40% of the cross-sectional area of the bottom portion are open.

9. The method according to claim 1, wherein at least 60% of the cross-sectional area of the top portion and at least 60% of the cross-sectional area of the bottom portion are open.

10. The method according to claim 1, wherein the top portion and bottom portion are located before casting of the pile, wherein materials for casting the pile pass through the open portion of the top portion cross-section and the open portion of the bottom portion cross-section.

11. The method according to claim 1, wherein the pressurized fluid is self-sealing.

12. The method according to claim 1, wherein the top portion and the bottom portion are separated by a separation zone prior to injecting the pressurized fluid between the top portion and the bottom portion, wherein injecting the pressurized fluid between the top portion and the bottom portion comprises injecting the pressurized fluid into the separation zone.

13. The method according to claim 1, wherein the pressurized fluid completely fills the at least one void.

14. The method according to claim 1, wherein the bottom portion comprises a bottom plate, wherein the bottom plate is attached to the bottom section of the pile.

15. The method according to claim 1, further comprising:

determining a load applied to the pile.

16. The method according to claim 1, further comprising:

determining a load applied to the top section of the pile and the bottom section of the pile.

17. The method according to claim 1, further comprising:

after the pressurized fluid fills the at least a portion of one or more of the at least one void, filling one or more of the at least one void with a material capable of hardening so as to maintain the separation of the top portion and the bottom portion, wherein the top section of the pile, the top portion, the bottom portion, the bottom section of the pile, and the material, once hardened, act as a single pile.

18. The method according to claim 1, wherein the pressurized fluid is injected between the top portion and the bottom portion after casting the pile.

19. The method according to claim 1, wherein at least a portion of the open portion of the cross-section of the top portion is located at a center of the cross-section of the top portion, wherein at least a portion of the open portion of the cross-section of the

bottom portion is located at a center of the cross-section of the bottom portion, wherein the top section of the pile and the bottom section of the pile are contiguous extending through the at least a portion of the open portion of the cross-section of the top portion located at the center of the cross-section of the top portion and the at least a portion of the open portion of the cross-section of the bottom portion located at the center of the cross-section of the bottom portion, wherein after injecting pressurized fluid between the top portion and the bottom portion, one or more of the at least one void is between the top section of the pile and the bottom section of the pile in the portion of the pile extending through the at least a portion of the open portion of the cross-section of the top portion located at the center of the cross-section of the top portion and the at least a portion of the open portion of the cross-section of the bottom portion located at the center of the cross-section of the top portion.

20. The method according to claim 1, wherein the top section of the pile and the bottom section of the pile are contiguous extending around an outer perimeter of the cross-section of the top portion and an outer perimeter of the cross-section of the bottom portion, wherein after injecting fluid between the top portion and the bottom portion, one or more of the at least one void is between the first section of the pile and the second section of the pile in a portion of the pile extending around the outer perimeter of the cross-section of the top portion and an outer perimeter of the cross-section of the bottom portion.

21. The method according to claim 1, wherein the open portion of the cross-section of the top portion is located at a center of the cross-section of the top portion, wherein the open portion of the cross-section of the bottom portion is located at a center of the cross section of the bottom portion.

22. The method according to claim 1, wherein at least 20% of the cross-sectional area of the top portion and at least 20% of the cross-sectional area of the bottom portion are open.

23. A method of providing a plurality of piles for bearing a working load, comprising:

locating a plurality of piles in position in a strata for bearing a working load, wherein at least two of the piles incorporate a corresponding at least two load cells, wherein each load cell of the at least two load cells comprises:

a top portion located below a top section of a pile; and

a bottom portion located proximate the top portion, wherein injection of a pressurized fluid between the top portion and the bottom portion causes a force tending to push the top portion and the bottom portion apart, and causes the top portion to push up on the top section of the pile, wherein at least a portion of the cross-section of the top portion and at least a portion of the cross-section of the bottom portion is open before casting the pile so as to allow the passage of materials from above the top portion to below the bottom portion, wherein if separation of top portion and bottom portion occurs, the top portion and bottom portion maintain relative lateral position during separation:

applying a corresponding at least two applied loads to the at least two piles via the corresponding at least two load cells;

measuring a corresponding at least two measured effects of the at least two applied loads on the at least two piles:

determining whether the plurality of piles meets at least one design criterion for bearing the working load based on the at least two applied loads and the at least two measured effects of the at least two applied loads on the at least two piles,

wherein a resistance factor (RF) of the plurality of piles is at least 0.6.

24. The method according to claim 23, wherein one of the at least one design criterion is a factor of safety.

25. The method according to claim 23, wherein the at least two piles are at least 10% of the plurality of piles.

26. The method according to claim 23, wherein the at least two piles are at least 50% of the plurality of piles.

27. The method according to claim 23, wherein the at least two piles are at least 80% of the plurality of piles.

28. The method according to claim 23, wherein the at least two piles are at least 100% of the plurality of piles.

29. The method according to claim 23, wherein a resistance factor (RF) of the plurality of piles is at least 0.9.

30. The method according to claim 23, wherein the at least two piles are at least 90% of the plurality of piles.