WHAT IS CLAIMED IS:

1. A multilayer integral geogrid for interlocking with, stabilizing, and strengthening aggregate, said integral geogrid comprising:

a plurality of layers each of a polymeric material,

with at least a first outer layer and a second outer layer of said plurality of layers having a cellular structure to improve the initial interaction between and compatibility of a soil or aggregate and the integral geogrid to maximize soil or aggregate density and properties after compaction, and

each of the polymeric layers comprising a plurality of interconnected oriented strands and partially oriented junctions forming a repeating pattern of outer hexagons having an array of openings therein,

supporting ribs extending inwardly from each of said outer hexagons to support inside each of said outer hexagons a smaller inner hexagon having an unobstructed, open center and oriented strands and tri-nodes, each of said tri-nodes interconnecting only one of said supporting ribs and two of said oriented strands of the inner hexagon,

said outer hexagons, said supporting ribs and said inner hexagons defining three different geometric configurations which are repeating throughout an entirety of the integral geogrid, and

said oriented strands and said partially oriented junctions of said outer hexagons defining a plurality of linear strands that extend continuously throughout the entirety of the integral geogrid.

2. The multilayer integral geogrid according to claim 1, wherein the first cellular outer layer and the second cellular outer layer have a void volume of from 20% to 70%.

3. The multilayer integral geogrid according to claim 1 or claim 2, wherein the first cellular outer layer and the second cellular outer layer have a compressibility factor of from 20% to 60%.

4. The multilayer integral geogrid according to any one of claims 1 to 3, wherein the first cellular outer layer and the second cellular outer layer have a foam construction.

5. The multilayer integral geogrid according to claim 4, wherein the foam is associated with a foaming agent or gas injection.

6. The multilayer integral geogrid according to any one of claims 1 to 3, wherein the first cellular outer layer and the second cellular outer layer have a construction that includes a particulate filler.

7. The multilayer integral geogrid according to claim 6, wherein the particulate filler is calcium carbonate.

8. The multilayer integral geogrid according to any one of claims 1 to 7, wherein the multilayer integral geogrid is produced from a coextruded multilayer polymer sheet.

9. The multilayer integral geogrid according to any one of claims 1 to 7, wherein the multilayer integral geogrid is produced from a laminated multilayer polymer sheet.

10. The multilayer integral geogrid according to any one of claims 1 to 9, wherein the oriented strands have been biaxially stretched.

11. The multilayer integral geogrid according to any one of claims 1 to 10, wherein the multilayer integral geogrid has the first cellular outer layer, a non-cellular inner layer, and the second cellular outer layer, with the first cellular outer layer and the second cellular outer layer being arranged on opposite planar surfaces of the non-cellular inner layer.

12. A soil construction comprising a mass of particulate material strengthened by embedding therein a multilayer integral geogrid as claimed in any one of claims 1 to 11.

13. A method of strengthening a mass of particulate material, comprising embedding in the mass of particulate material the multilayer integral geogrid as claimed in any one of claims 1 to 11.

14. A method of making a multilayer integral geogrid for interlocking with, stabilizing, and strengthening a soil or aggregate, said method comprising:

providing a multilayer polymer sheet having a plurality of layers each of a polymeric material, with at least a first outer layer and a second outer layer of the plurality of layers having an expansion structure capable of forming a cellular structure in the first and second outer layers of the multilayer integral geogrid;

providing a patterned plurality of holes or depressions in the multilayer polymer sheet; and

biaxially orienting the multilayer polymer sheet having the patterned plurality of holes or depressions therein to provide a plurality of interconnected oriented strands and partially oriented junctions forming a repeating pattern of outer hexagons having an array of openings therein,

supporting ribs extending inwardly from each of the outer hexagons to support inside each of the outer hexagons a smaller inner hexagon having an open center and oriented strands and tri-nodes, each of said tri-nodes interconnecting only one of the supporting ribs and two of the oriented strands of the inner hexagon,

the outer hexagons, the supporting ribs and the inner hexagons defining three different geometric configurations which are repeating throughout an entirety of the integral geogrid, and

the oriented strands and the partially oriented junctions of the outer hexagons defining a plurality of linear strands that extend continuously throughout the entirety of the integral geogrid,

so as to provide the biaxially oriented integral geogrid with at least a first cellular outer layer and a second cellular outer layer configured to improve an initial interaction between, and compatibility of the soil or aggregate with, the integral geogrid, so as to maximize soil or aggregate density and properties after compaction.

15. The method according to claim 14, wherein the first cellular outer layer and the second cellular outer layer of the multilayer integral geogrid have a foam construction.

16. The method according to claim 14, wherein the first cellular outer layer and the second cellular outer layer of the multilayer integral geogrid include a particulate filler.

17. The method according to any one of claims 14 to 16, wherein the step of providing the multilayer polymer sheet is a coextrusion.

18. The method according to any one of claims 14 to 16, wherein the step of providing the multilayer polymer sheet is a lamination.

19. The method according to any one of claims 14 to 18, wherein the multilayer integral geogrid includes the first cellular outer layer, a non-cellular inner layer, and the second cellular outer layer, with the first cellular outer layer and the second cellular outer layer being arranged on opposite planar surfaces of the non-cellular inner layer.

20. The method according to claim 19, wherein the first cellular outer layer has a material of construction of a broad specification polymer, the non-cellular inner layer has a material of construction of a high molecular weight polyolefin, and the second cellular outer layer has a material of construction of a broad specification polymer.

21. The method according to any one of claims 14 to 20, wherein the multilayer polymer sheet has an initial thickness of at least 2 mm.

22. A method of strengthening a mass of particulate material, said method comprising:

providing a multilayer integral geogrid having

a plurality of layers each of a polymeric material,

with at least a first outer layer and a second outer layer of said plurality of layers having a cellular structure to improve the initial interaction between and compatibility of a soil or aggregate and the integral geogrid to maximize soil or aggregate density and properties after compaction, and

each of the polymeric layers comprising a plurality of interconnected oriented strands and partially oriented junctions forming a repeating pattern of outer hexagons having an array of openings therein,

supporting ribs extending inwardly from each of said outer hexagons to support inside each of said outer hexagons a smaller inner hexagon having an unobstructed, open center and oriented strands and tri-nodes, each of said tri-nodes interconnecting only one of said supporting ribs and two of said oriented strands of the inner hexagon,

said outer hexagons, said supporting ribs and said inner hexagons defining three different geometric configurations which are repeating throughout an entirety of the integral geogrid, and

said oriented strands and said partially oriented junctions of said outer hexagons defining a plurality of linear strands that extend continuously throughout the entirety of the integral geogrid; and

embedding the multilayer integral geogrid in a mass of particulate material.

23. A multilayer integral geogrid comprising:

a plurality of interconnected oriented first strands and partially oriented junctions forming a repeating pattern of outer hexagons having an array of openings therein;

supporting ribs extending inwardly from each of said outer hexagons to support inside each of said outer hexagons a smaller inner hexagon having an open

center and oriented second strands and tri-nodes, each of said tri-nodes interconnecting only one of said supporting ribs and two of said oriented strands of the inner hexagon,

said oriented first strands and said partially oriented junctions of said outer hexagon forming a plurality of linear strands that extend continuously throughout the entirety of the multilayer integral geogrid,

said integral geogrid having a plurality of layers each of a polymeric material extending throughout said geogrid, and

at least one layer of said plurality of layers having a cellular structure.