An insulated concrete wall includes a first form board, a second form board, a plurality of spacers, a plurality of rebar rods, a quantity of poured concrete and at least one insulation sheet. Each spacer includes at least one vertical passage for receiving a vertical rebar rod and a horizontal passage for receiving a horizontal rebar rod. The plurality of spacers are attached between the first and second form boards to create a concrete cavity. The quantity of concrete is poured into the cavity. The sheet of insulation may be attached to one or both form boards. The at least one insulating sheet may be replaced by an additional form board and the plurality of spacers. The additional form board would create an additional cavity, which would be filled with an insulating material. Alternatively, the two outer cavities may be filled with concrete and the center cavity filled with insulation.
FIG. 3
INSULATED CONCRETE WALLS

BACKGROUND OF THE INVENTION

[0001] Field of the Invention

The present invention relates generally to concrete walls and more specifically to an insulated concrete wall, which includes at least one layer of insulation.

[0002] Discussion of the Prior Art

Philippines utility model registration no. 2-2009-00000170 to Taylor discloses a plastic wall stud spacer. Philippines design patent registration no. 3-2009-000287 to Taylor discloses a plastic wall stud spacer. Both the Taylor utility model no. 2-2009-0000170 and the Taylor design patent registration no. 3-2009-000287 are hereby incorporated by reference in their entirety. However, the Taylor documents do not teach or suggest concrete walls with at least one layer of insulation or multiple concrete sections.

Accordingly, there is a clearly felt need in the art for insulated concrete walls, which include at least one layer of insulation multiple concrete sections.

SUMMARY OF THE INVENTION

The present invention provides insulated concrete walls, which include at least one layer of insulation section. The insulated concrete wall includes a first form board, a second form board, a plurality of spacers, a plurality of rebar rods, a quantity of poured concrete and at least one insulation sheet. Each spacer includes at least one vertical passage for receiving a vertical rebar rod and a horizontal passage for receiving a horizontal rebar rod. The plurality of spacers are attached between the first and second form boards to create a concrete cavity. The quantity of concrete is poured between the first and second form boards. A sheet of insulation is attached to the first form board, the second form board or both the first and second form boards. One side of a plurality of insulation spacers may be attached to either the first form board or the second form board. A third form board is attached to the opposing side of the plurality of insulation spacers to form an insulation cavity. The quantity of concrete is poured into the concrete cavity and the insulation cavity is filled with an insulation material. The insulation cavity may also be formed on both sides of the concrete wall. An insulation cavity may also be formed between two concrete cavities.

Accordingly, it is an object of the present invention to provide insulated concrete walls, which include at least one layer of insulation or multiple concrete sections.

These and additional objects, advantages, features and benefits of the present invention will become apparent from the following specification.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of a portion of an insulated concrete wall with a layer of insulation attached to one of the two form boards in accordance with the present invention.

FIG. 2 is a cross-sectional view of a portion of an insulated concrete wall with a layer of insulation attached to one of the two form boards in accordance with the present invention.

FIG. 3 is a cross-sectional view of a portion of an insulated concrete wall with a first insulation cavity, a concrete cavity and a second insulation cavity in accordance with the present invention.

FIG. 4 is a cross-sectional view of a portion of an insulated concrete wall with a first concrete cavity, an insulation cavity and a second concrete cavity in accordance with the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

With reference now to the drawings, and particularly to FIG. 1, there is shown a perspective view of an insulated concrete wall 1 with an insulation sheet attached to at least one side thereof. With reference to FIG. 2, the insulated concrete wall 1 includes a first form board 10, a second form board 12, a plurality of spacers 14, a plurality of horizontal rebar rods 18, a plurality of vertical rebar rods 20, a quantity of poured concrete 23 and at least one insulation sheet 25. The form boards 10, 12 are preferably James Hardie fiber cement boards, but other suitable form boards may also be used. Each spacer 14 includes at least one vertical passage 22 for receiving the vertical rebar rod 20 and a horizontal passage (not shown) for receiving the horizontal rebar rod 18. Each spacer 14 is preferably fabricated from a 100% recycled plastic material, but other materials may also be used.

A first side of the plurality of spacers 14 are attached to an inside surface of the first form board 10 and a second side of the plurality of spacers are attached to an inside surface of the second form board 12. A concrete cavity 26 is created between the inside surfaces of the first and second form boards. When the first and second form boards are secured to a foundation, the quantity of concrete 23 is poured between the first and second form boards. The plurality of rebar rods 18, 20 are inserted into the plurality of spacers 14, before pouring the quantity of concrete 23. The sheet insulation 25 may be attached to the first form board 10, the second form board 12 or both the first and second form boards.

With reference to FIG. 3, an insulated concrete wall 2 preferably includes a first form board 30, a second form board 32, a third form board 34, a fourth form board 36, the plurality of spacers 14, the plurality of horizontal rebar rods 18, the plurality of vertical rebar rods 20, a quantity of insulation 35 and a quantity of poured concrete 38. The form boards 30, 32, 34 and 36 are preferably James Hardie fiber cement boards, but other suitable form boards may also be used. The first side of the plurality of spacers 14 are attached to an inside surface of the first form board 30 and the second side of the plurality of spacers 14 are attached to an inside surface of the second form board 32. The first side of the plurality of spacers 14 are attached to an inside surface of the second form board 32 and the second side of the plurality of spacers 14 are attached to an inside surface of the third form board 34. The first side of the plurality of spacers 14 are further attached to an outside surface of the third form board 34 and the second side of the plurality of spacers 14 are attached to an inside surface of the fourth form board 36.

A first insulation cavity 40 is created between the inside surfaces of the first and second form boards. A concrete cavity 42 is created between the outside surface of the second form board 32 and the inside surface of the third form board 34. A second insulation cavity 44 is formed between an outside surface of the third form board 34 and an inside surface of the fourth form board 36. When the form boards 30, 32, 34, 36 are secured to a foundation, the quantity of concrete 38 is poured into the concrete cavity 42. The plurality of rebar rods 18, 20 are inserted into the plurality of spacers 14, before pouring the quantity of concrete 38.
tion 35 is foamed, filled or poured into the first insulation cavity 40 and into the second insulation cavity 44. The first insulation cavity 40 or second insulation cavity 44 may be eliminated, such that only one side of the concrete 38 is insulated.

[0017] With reference to FIG. 4, an insulated concrete wall 3 preferably includes the first form board 30, the second form board 32, the third form board 34, the fourth form board 36, the plurality of spacers 14, the plurality of horizontal rebar rods 18, the plurality of vertical rebar rods 20, the quantity of insulation 35 and the quantity of poured concrete 38. The first side of the plurality of spacers 14 are attached to an inside surface of the first form board 30 and the second side of the plurality of spacers 14 are attached to an inside surface of the second form board 32. The first side of the plurality of spacers 14 are also attached to an outside surface of the second form board 32 and the second side of the plurality of spacers 14 are attached to an inside surface of the third form board 34. The first side of the plurality of spacers 14 are further attached to an outside surface of the third form board 34 and the second side of the plurality of spacers 14 are attached to an inside surface of the fourth form board 36.

[0018] A first concrete cavity 46 is created between the inside surfaces of the first and second form boards. An insulation cavity 48 is created between the outside surface of the second form board 32 and the inside surface of the third form board 34. A second concrete cavity 50 is formed between an outside surface of the third form board 34 and an inside surface of the fourth form board 36. When the form boards 30, 32, 34, 36 are secured to a foundation, the quantity of concrete 38 is poured into the first concrete cavity 46 and the second concrete cavity 50. The rebar rods 18, 20 are inserted into the plurality of spacers 14, before pouring the quantity of concrete 38. The quantity of insulation 35 is foamed, filled or poured in the insulation cavity 48.

[0019] While particular embodiments of the invention have been shown and described, it will be obvious to those skilled in the art that changes and modifications may be made without departing from the invention in its broader aspects, and therefore, the aim in the appended claims is to cover all such changes and modifications as fall within the true spirit and scope of the invention.

1 claim:

1. An insulated concrete wall comprising:
   a first form board and a second form board;
   a plurality of rebar rods;
   a plurality of spacers, each one of said plurality spacers having a horizontal passage and a vertical passage, said horizontal passage is sized to receive at least one rebar rod of said plurality of rebar rods, said vertical passage is sized to receive at least one rebar rod of said plurality of rebar rods, one side of said plurality of spacers are attached to an inside surface of said first form board and an opposing side of said plurality of spacers are attached to an inside surface of said second form board to create a concrete cavity, said plurality of rebar rods are inserted horizontally and vertically into said plurality of spacers; a quantity of concrete is poured into said concrete cavity; and an insulation sheet is attached to at least one of said first and second form boards.

2. The insulated concrete wall of claim 1 wherein:
   said first and second form boards are fiber cement boards sourced from James Hardie company.

3. An insulated concrete wall comprising:
   a first form board, a second form board and a third form board;
   a plurality of rebar rods;
   a plurality of spacers, each one of said plurality spacers having a horizontal passage and a vertical passage, said horizontal passage is sized to receive at least one rebar rod of said plurality of rebar rods, said vertical passage is sized to receive at least one rebar rod of said plurality of rebar rods, one side of said plurality of spacers are attached to an inside surface of said first form board and an opposing side of said plurality of spacers are attached to an inside surface of said second form board to create a concrete cavity, one side of said plurality of spacers are attached to an outside surface of said second form board and an opposing side of said plurality of spacers are attached to an inside surface of said third form board to create an insulation cavity, said plurality of rebar rods are inserted horizontally and vertically into said plurality of spacers in said concrete cavity; said concrete cavity is filled with a quantity of concrete; and
   said insulation cavity is filled with a quantity of insulation.

4. The insulated concrete wall of claim 3, further comprising:
   a fourth form board, one side of said plurality of spacers are attached to an outside surface of said third form board and an opposing side of said plurality of spacers are attached to an inside surface of said fourth form board to create a second concrete cavity, said plurality of rebar rods are inserted into said plurality of spacers in said second concrete cavity, said second concrete cavity is filled with said quantity of cement.

5. The insulated concrete wall of claim 3, further comprising:
   a fourth form board, one side of said plurality of spacers are attached to an outside surface of said first form board and an opposing side of said plurality of spacers are attached to an inside surface of said fourth form board to create a second insulation cavity, said second insulation cavity is filled with said quantity of insulation.

6. The insulated concrete wall of claim 3 wherein:
   said first, second and third form boards are fiber cement boards sourced from James Hardie company.

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