Claims

1. A method for constructing a composite structural wall, the method comprises:

adjacently arranging a first pair of wall panels, wherein each wall panel of the first pair of wall panels includes a first panel body , and at least one first guide attached thereto and protruding from a first groove formed in the first panel body, wherein adjacently arranging a first pair of wall panels includes overlapping the first guides of the first pair of wall panels to form a first channel;

inserting a first linking rod into the first channel;

dispensing a first grout into a first gap between the first pair of wall panels, wherein dispensing a first grout into a first gap includes dispensing the first grout into the first channel;

curing the first grout to join the first pair of wall panels;

vertically-stacking a second pair of adjacently arranged wall panels on the first pair of wall panels, wherein each wall panel of the second pair of wall panels includes a second panel body, and at least one second guide attached thereto and protruding from a second groove formed in the second panel body, wherein vertically-stacking a second pair of adjacently arranged wall panels on the first pair of wall panels includes overlapping the second guides of the second pair of wall panels to form a second channel;

inserting a vertical securement rod into the first and the second channel such that the vertical securement rod have opposite end portions at least partially inserted into the first and the second channel respectively;

dispensing a second grout into a second gap between the second pair of wall panels, wherein dispensing a second grout into a second gap includes dispensing the second grout into the second channel; and

curing the second grout to join the second pair of wall panels,

wherein each wall panel of the first and the second pair of wall panels is provided by separate prefabricated construction modules,

wherein adjacently arranging a first pair of wall panels includes adjacently arranging a first pair of prefabricated construction modules,

wherein vertically stacking a second pair of adjacently arranged wall panels on the first pair of wall panels includes vertically stacking a second pair of adjacently arranged prefabricated construction modules on the first pair of prefabricated construction modules,

wherein each wall panel of the first and the second pair of wall panels includes a top end portion attached to a ceiling slab and a bottom end portion attached to a floor slab,

the method further comprising:

inserting a plurality of backing rods between the ceiling slabs of the first pair of prefabricated construction modules and the floor slabs of the second pair of prefabricated construction modules to provide a third gap which intersects the first and the second channel,

wherein dispensing a second grout into a second gap includes dispensing the second grout into the third gap,

wherein curing the second grout to join the second pair of wall panels includes curing the second grout to join the second pair of prefabricated construction modules to the first pair of prefabricated construction modules.

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

inserting a second linking rod into the second channel.

3. The method according to claim 2, wherein the vertical securement rod is integral with the first and/or the second linking rod.

4. The method according to any of claims 1 to 3, wherein dispensing the first grout includes dispensing the first grout to a level below where the vertical securement rod is to be inserted to.

5. The method according to any of claims 1 to 4,

wherein each floor slab of the second pair of prefabricated construction modules includes at least one floor slab guide attached to each respective floor slab and protruding from each respective floor slab,

wherein overlapping the second guides of the second pair of wall panels to form a second channel includes overlapping the floor slab guides of the second pair of prefabricated construction modules to provide the second channel.

6. The method according to any preceding claim, wherein the at least one first guide includes a wire attached to a reinforcement structure embedded in each wall panel.

7. A building structure comprising:

at least one first composite structural wall which comprises:

a first pair of wall panels arranged adjacent to each other, wherein each wall panel of the first pair of wall panels includes a first panel body and at least one first guide attached thereto and protruding from a first groove formed in the first panel body, wherein the first guides of the first pair of wall panels overlap to provide a first channel;

a first linking rod disposed within the first channel;

a first grouting disposed in a first gap, including the first channel, between the first pair of wall panels, wherein the first grouting joins the first pair of wall panels;

at least one second composite structural wall which is vertically stacked on the first composite structural wall and comprises:

a second pair of wall panels arranged adjacent to each other, wherein each wall panel of the second pair of wall panels includes a second panel body and at least one second guide attached thereto and protruding from a second groove formed in the second panel body, wherein the second guides of the second pair of wall panels overlap to provide a second channel;

a second linking rod disposed within the second channel;

a vertical securement rod having opposite end portions at least partially inserted into the first and the second channel respectively;

a second grouting disposed in a second gap, including the second channel, between the second pair of wall panels, wherein the second grouting joins the second pair of wall panels;

wherein each wall panel of the first and the second pair of wall panels is provided by separate prefabricated construction modules,

wherein each wall panel of the first and the second pair of wall panels includes a top end portion attached to a ceiling slab and a bottom end portion attached to a floor slab,

the building structure further comprising:

a plurality of backing rods interposed between ceiling slabs of the first pair of prefabricated construction modules and floor slabs of the second pair of prefabricated construction modules to provide a third gap,

wherein the second grout is further disposed in the third gap and joins the second pair of prefabricated construction modules to the first pair of prefabricated construction modules.

8. The building structure according to claim 7,
wherein each floor slab of the second pair of prefabricated construction modules includes at least one floor slab guide attached to each respective floor slab and protruding from each respective floor slab, and
wherein the floor slab guides of the second pair of prefabricated construction modules overlap to provide the second channel.

9. The building structure according to any of claims 7 to 8, wherein the vertical securement rod is integral with the first and/or the second linking rod.

10. The building structure according to any of claims 7 to 9 further comprising:
a reinforcement structure embedded in each of the first and the second panel body, wherein the first and the second guide is attached to the respective reinforcement structure.

11. The building structure according to claim 10, wherein the reinforcement structure is any one selected from the group consisting of a plurality of steel bars, a plurality of corrugated pipes each adapted to receive a steel bar of a vertically stacked wall panel, a mesh of steel bars, a mesh of steel wires, and a plurality of steel bars each attached to a splice connector adapted to receive a steel bar of a vertically stacked wall panel.