Claims

1. A frame structure comprising a plurality of PC (precast) columns arranged in a first direction and a second direction crossing the first direction in plan view, at least one first PC beam incorporated with first main beam rebars including an upper rebar and a lower rebar each extending in a longitudinal direction of the at least one first PC beam, each first PC beam being supported by a pair of the PC columns adjoining each other in the first direction, and at least one second PC beam incorporated with second main beam rebars including an upper rebar and a lower rebar each extending in a longitudinal direction of the at least one second PC beam, each second PC beam being supported by a pair of the PC columns adjoining each other in the second direction;

wherein each first PC beam is formed with first blind holes opening out from each longitudinal end surface thereof so as to each form a first joint for a corresponding end of the corresponding first main beam rebar, and each of the adjoining PC columns is formed with first through holes opening out opposite to the first blind holes;

wherein each longitudinal end of the first PC beam is rigidly connected to the corresponding PC column by a first rebar inserted in each first blind hole and the corresponding first through hole, the first rebar being connected to the corresponding first main beam rebar via the first joint, and a gap defined around the first rebar in the first through hole being filled with grout;

wherein each second PC beam is formed with second blind holes opening out from each longitudinal end surface thereof so as to each form a second joint for a corresponding end of the corresponding second main beam rebar, and each of the

adjoining PC columns is formed with second through holes opening out opposite to the respective second blind holes; and

wherein each longitudinal end of the second PC beam is rigidly connected to the corresponding PC column by a second rebar inserted in each second blind hole and the corresponding second through hole, the second rebar being connected to the corresponding second main beam rebar via the second joint, and a gap defined around the second rebar in the second through hole being filled with grout.

2. The frame structure according to claim 1, wherein each first blind hole extends along and adjacent to the corresponding first main beam rebar, and the first main beam rebar overlaps with the first rebar over a prescribed joint length, the first joint consisting of an overlap joint formed by mutually overlapping parts of the first rebar and the first main beam rebar in the first blind hole and the grout filled in the gap around the first rebar in the first blind hole.

3. The frame structure according to claim 1, wherein each first blind hole is formed by a tubular member retaining a longitudinal end part of the first main beam rebar, and each first joint consists of a mechanical joint configured to retain the longitudinal end part of the first rebar with the tubular member.

4. The frame structure according to any one of claims 1 to 3, wherein each first rebar is provided with a radially projecting anchoring part positioned inside the corresponding first through hole.

5. The frame structure according to any one of claims 1 to 4, wherein each PC

column is provided with a support portion for supporting the corresponding first PC beam.

6. The frame structure according to any one of claims 1 to 5, wherein the first PC beams are rigidly connected to the associated PC columns at a different height from the second PC beams.

7. The frame structure according to any one of claims 1 to 5 and 6, wherein at least three of the PC columns are arranged in the first direction, and the first PC beams are positioned between corresponding adjoining pairs of the PC columns in such a manner that a simply supported beam having two ends pivotally connected to the corresponding PC columns and a fixedly supported beam having two ends fixedly connected to the corresponding PC columns alternate one next to the other in the first direction.

8. The frame structure according to any one of claims 1 to 5, 6, and 7, wherein a plurality of first PC beams are supported by a pair of the PC columns adjoining in the first direction at different elevations, the PC columns being formed by sections whose lengths are adapted to the elevations of the first PC beams.

9. The frame structure according to any one of claims 1 to 5 and 6 to 8, wherein a plurality of first PC beams are supported by a pair of the PC columns adjoining in the first direction at different elevations, in such a manner that a simply supported beam having two ends pivotally connected to the corresponding PC columns and a fixedly supported beam having two ends fixedly connected to the

corresponding PC columns alternate one next to the other in a vertical direction.

10. A method of constructing a frame structure including a plurality of PC columns arranged in a first direction and a second direction crossing the first direction in plan view, at least one first PC beam rigidly supported by pair of the PC columns adjoining in the first direction, and at least one second PC beam rigidly supported by a pair of the PC columns adjoining in the second direction, the method comprising the steps of:

preparing the first PC beam incorporated with first main beam rebars including an upper rebar and a lower rebar each extending in a longitudinal direction of the first PC beam, the first PC beam being formed with first blind holes opening out from each longitudinal end surface thereof so as to form first joints in end parts of the respective first main beam rebar, respectively;

preparing the second PC beam incorporated with second main beam rebars including an upper rebar and a lower rebar each extending in a longitudinal direction of the second PC beam, the second PC beam being formed with second blind holes opening out from each longitudinal end surface thereof so as to form second joints in end parts of the respective second main beam rebar, respectively;

preparing the PC columns each having first through holes and second through holes opening out at mutually different side surfaces thereof;

placing a pair of the PC columns along the first direction and the second direction in plan view;

placing the first PC beam between the two PC columns so that the first blind holes oppose the corresponding first through holes;

inserting a first rebar into each first through hole and the corresponding first

blind hole, and connecting the first rebar with the corresponding first main beam rebar via the corresponding first joint;

filling each first through hole with grout to fixedly secure the first rebar to the corresponding PC column;

placing the second PC beam between the two PC columns so that the second blind holes oppose the corresponding second through holes;

inserting a second rebar into each second through hole and the corresponding second blind hole, and connecting the second rebar with the corresponding second main beam rebar via the corresponding second joint; and

filling each second through hole with grout to fixedly secure the second rebar to the corresponding PC column.