Claims

1. A prefabricated integrated bathroom, comprising: a foam cement composite bottom board, a foam cement composite wall board, a foam cement composite top board and bathroom equipment, wherein a dovetail groove type steel frame boundary rib is respectively arranged in each of the foam cement composite bottom board, the foam cement composite wall board and the foam cement composite top board; the dovetail groove type steel frame boundary rib comprises upper and lower flanges and a dovetail groove type boundary rib groove; and an embedded wedge block is arranged in the groove;

the connection between the foam cement composite wall board and the foam cement composite bottom board is carried out by connecting bolts, a connecting piece, and the wedge blocks arranged in the grooves of the dovetail groove type boundary ribs of the boards;

the connection between the foam cement composite wall boards is carried out by connecting bolts, a connecting piece, and the wedge blocks arranged in the grooves of the dovetail groove type boundary ribs of the boards; and

the connection between the foam cement composite wall board and the foam cement composite top board is carried out by connecting bolts, a connecting piece, and the wedge blocks arranged in the grooves of the dovetail groove type boundary ribs of the boards,

the wedge block is matched in shape with the groove,

the wedge block arranged in the groove of the dovetail groove type boundary rib is slidable so that the wedge block is installed quickly at a correct position,

the wedge block includes a hole matched with a bolt and a slot in which a nut is placed,

the wedge block is pre-placed in the groove of the dovetail groove type boundary rib, or placed in the groove of the dovetail groove type boundary rib during installation,

the connecting piece is a right-angled connecting piece, and has a via hole matched with the bolt,

the foam cement composite bottom board is composited with a steel frame, a reinforcement truss, a steel wire mesh, an inorganic foam cement core material, and upper and lower cement mortar surface layers, the steel wire mesh is connected and fixed to the steel frame, and water drainage pipe fittings including a drain pipe and a floor drain are arranged in the foam cement composite bottom board,

the foam cement composite bottom board includes a dovetail groove type boundary rib with a waterproof curved edge or a flat groove type steel frame boundary rib with a waterproof curved edge for a waterproofing effect when the foam cement composite bottom board is connected to the foam cement composite wall board so as to prevent water from seeping into a joint of the wall board and the bottom board,

the foam cement composite wall board is composited with a steel frame, steel wire meshes, a reinforcement truss, an inorganic foam cement core material, and upper and lower cement mortar surface layers, and the steel wire meshes are connected and fixed to the steel frame, the steel wire mesh is entirely or partially paved according to a design requirement, and a water supply pipe, a water supply connector, a drain hole for pedestal pan, a concealed switch box and a wire pipe are arranged in the foam cement composite wall board, and

the foam cement composite top board is composited with a steel frame, a steel wire mesh, a reinforcement truss, an inorganic foam cement core material, and upper and lower cement mortar surface layers, the steel wire mesh is connected and fixed to the steel frame, a concealed lamp holder box and a pipeline are arranged in the foam cement composite top board, and the steel wire mesh is entirely or partially paved according to a design requirement.

2. A prefabricated integrated bathroom, mainly comprising: a foam cement composite bottom board, a foam cement composite wall board, a foam cement composite top board and bathroom equipment, wherein the foam cement composite bottom board or the foam cement composite top board is provided with a flat groove type steel frame boundary rib comprising upper and lower flanges and a flat groove, a hole is arranged on the flange, an opening is arranged on a vertical side of the flat groove; and a hollow chamber sealed by a steel plate or section steel is arranged in the flat groove with the opening so as to insert a bolt through the opening;

the foam cement composite wall board is provided with a dovetail groove type steel frame boundary rib; the dovetail groove type steel frame boundary rib comprises upper and lower flanges and a dovetail groove type boundary rib groove; and an embedded wedge block is arranged in the groove of the dovetail groove type boundary rib;

another foam cement composite wall board is provided with a dovetail groove type steel

frame boundary rib; the dovetail groove type steel frame boundary rib comprises upper and lower flanges and a dovetail groove type boundary rib groove; a hole is arranged on each of the upper and lower flanges; and a rectangular pipe is arranged in the dovetail groove type steel frame boundary rib;

the connection between the foam cement composite bottom board and the foam cement composite wall board is carried out by running a bolt through the hole and connecting the bolt to a nut arranged in the wedge block;

the connection between the foam cement composite wall board and the another foam cement composite wall board is carried out by running a bolt through the hole and connecting the bolt to a nut arranged in the wedge block; and

the connection between the foam cement composite wall board and the foam cement composite top board is carried out by running a bolt through the hole and connecting the bolt to a nut arranged in the wedge block,

the wedge block is matched in shape with the groove,

the wedge block arranged in the groove of the dovetail groove type boundary rib is slidable so that the wedge block is installed quickly at a correct position,

the wedge block includes a hole matched with a bolt and a slot in which a nut is placed,

the wedge block is pre-placed in the groove of the dovetail groove type boundary rib, or placed in the groove of the dovetail groove type boundary rib during installation,

the connecting piece is a right-angled connecting piece, and has a via hole matched with the bolt,

the foam cement composite bottom board is composited with a steel frame, a reinforcement truss, a steel wire mesh, an inorganic foam cement core material, and upper and lower cement mortar surface layers, the steel wire mesh is connected and fixed to the steel frame, and water drainage pipe fittings including a drain pipe and a floor drain are arranged in the foam cement composite bottom board,

the foam cement composite bottom board includes a dovetail groove type boundary rib with a waterproof curved edge or a flat groove type steel frame boundary rib with a waterproof curved edge for a waterproofing effect when the foam cement composite bottom board is connected to the foam cement composite wall board so as to prevent water from seeping into a joint of the wall board and the bottom board,

the foam cement composite wall board is composited with a steel frame, steel wire meshes, a reinforcement truss, an inorganic foam cement core material, and upper and lower cement mortar surface layers, and the steel wire meshes are connected and fixed to the steel frame, the steel wire mesh is entirely or partially paved according to a design requirement, and a water supply pipe, a water supply connector, a drain hole for pedestal pan, a concealed switch box and a wire pipe are arranged in the foam cement composite wall board, and

the foam cement composite top board is composited with a steel frame, a steel wire mesh, a reinforcement truss, an inorganic foam cement core material, and upper and lower cement mortar surface layers, the steel wire mesh is connected and fixed to the steel frame, a concealed lamp holder box and a pipeline are arranged in the foam cement composite top board, and the steel wire mesh is entirely or partially paved according to a design requirement.

3. A prefabricated integrated bathroom, mainly comprising: a foam cement composite bottom board, a foam cement composite wall board, a foam cement composite top board and bathroom equipment, wherein a dovetail groove type steel frame boundary rib is arranged in the foam cement composite wall board; the dovetail groove type steel frame boundary rib comprises upper and lower flanges and a dovetail groove type boundary rib groove; and an embedded wedge block is arranged in the groove of the dovetail groove type boundary rib;

a flat groove type steel frame boundary rib comprising upper and lower flanges and a flat groove is arranged in each of the foam cement composite wall board and the foam cement composite top board, a through hole is arranged in the flat groove; a bolt sleeve is arranged in the through hole; a cover plate having the same shape as the bolt sleeve is arranged on the upper flange of the flat groove; and a hole is arranged on the cover plate;

the foam cement composite bottom board is provided with a flat groove type steel frame boundary rib comprising upper and lower flanges and a flat groove, a hole is arranged on the flange; and a rectangular pipe is arranged in the flat groove;

the connection between the foam cement composite bottom board and the foam cement composite wall board is carried out by running a bolt through the hole and the bolt sleeve and connecting the bolt to a nut arranged in the wedge block;

the connection between the foam cement composite wall board and the another foam cement composite wall board is carried out by running a bolt through the hole and the

rectangular pipe and connecting the bolt to a nut arranged in the wedge block; and

the connection between the foam cement composite wall board and the foam cement composite top board is carried out by running a bolt through the hole and the bolt sleeve and connecting the bolt to a nut arranged in the wedge block,

the wedge block is matched in shape with the groove,

the wedge block arranged in the groove of the dovetail groove type boundary rib is slidable so that the wedge block is installed quickly at a correct position,

the wedge block includes a hole matched with a bolt and a slot in which a nut is placed,

the wedge block is pre-placed in the groove of the dovetail groove type boundary rib, or placed in the groove of the dovetail groove type boundary rib during installation,

the connecting piece is a right-angled connecting piece, and has a via hole matched with the bolt,

the foam cement composite bottom board is composited with a steel frame, a reinforcement truss, a steel wire mesh, an inorganic foam cement core material, and upper and lower cement mortar surface layers, the steel wire mesh is connected and fixed to the steel frame, and water drainage pipe fittings including a drain pipe and a floor drain are arranged in the foam cement composite bottom board,

the foam cement composite bottom board includes a dovetail groove type boundary rib with a waterproof curved edge or a flat groove type steel frame boundary rib with a waterproof curved edge for a waterproofing effect when the foam cement composite bottom board is connected to the foam cement composite wall board so as to prevent water from seeping into a joint of the wall board and the bottom board,

the foam cement composite wall board is composited with a steel frame, steel wire meshes, a reinforcement truss, an inorganic foam cement core material, and upper and lower cement mortar surface layers, and the steel wire meshes are connected and fixed to the steel frame, the steel wire mesh is entirely or partially paved according to a design requirement, and a water supply pipe, a water supply connector, a drain hole for pedestal pan, a concealed switch box and a wire pipe are arranged in the foam cement composite wall board, and

the foam cement composite top board is composited with a steel frame, a steel wire mesh, a reinforcement truss, an inorganic foam cement core material, and upper and lower cement

mortar surface layers, the steel wire mesh is connected and fixed to the steel frame, a concealed lamp holder box and a pipeline are arranged in the foam cement composite top board, and the steel wire mesh is entirely or partially paved according to a design requirement.

4. The prefabricated integrated bathroom according to claim 1, 2, or 3, wherein a door hole and a window hole are arranged in the composite wall board.

5. The prefabricated integrated bathroom according to claim 1, 2, or 3, wherein a ventilation hole and an access hole are arranged in the foam cement composite top board.

6. The prefabricated integrated bathroom according to claim 1, 2, or 3, wherein the foam cement composite bottom board, the foam cement composite wall board and the foam cement composite top board are pre-decorated with ornaments and decoration materials used for an internal surface and an external surface of the prefabricated integrated bathroom before the bathroom is assembled so that ornaments and decorations are completed after the bathroom is assembled.

7. The prefabricated integrated bathroom according to claim 1, 2, or 3, wherein bathroom waterproofing is performed in the prefabricated integrated bathroom by using different coating-type or roll-type waterproof materials, and the waterproofing is performed for the foam cement composite bottom board before the bathroom is assembled or performed after the bathroom is assembled so as to meet different bathroom waterproofing requirements.

8. A construction method of a prefabricated integrated bathroom, comprising the steps of:

step A: manufacturing a foam cement composite bottom board, a foam cement composite wall board and a foam cement composite top board according to a design requirement, wherein a dovetail groove type frame boundary rib is respectively arranged in each of the foam cement composite bottom board, the foam cement composite wall board and the foam cement composite top board; the dovetail groove type steel frame boundary rib comprises upper and lower flanges and a dovetail groove type boundary rib groove; and an embedded wedge block is arranged in the groove;

step B: connecting the foam cement composite bottom board with the foam cement

composite wall board;

first, placing the foam cement composite bottom board on a horizontal base plane, vertically placing the foam cement composite wall board at a corresponding position of the foam cement composite bottom board according to a design requirement; respectively placing a wedge block, in which a nut is placed, in each of the grooves of the dovetail groove type boundary ribs arranged in the foam cement composite bottom board and the foam cement composite wall board; running bolts through a connecting piece respectively and connecting and fixing the bolts to the nuts in the wedge blocks so as to connect and fix the foam cement composite bottom board with the foam cement composite wall board by fastening the wedge blocks with the dovetail groove type steel frame boundary ribs respectively; and sequentially connecting and fixing the remaining foam cement composite wall boards with the foam cement composite bottom board in the same way;

step C: connecting the foam cement composite wall boards;

first, vertically placing a second foam cement composite wall board at a corresponding position of the foam cement composite bottom board, adjusting the position of the second wall board relative to a first wall board, and connecting the second foam cement composite wall board with the foam cement composite bottom board in the way described in step B;

then, connecting the first wall board with the second wall board: placing a wedge block, in which a nut is placed, in the groove of each of the dovetail groove type boundary ribs arranged in the foam cement composite wall boards, running bolts through a connecting piece respectively, and connecting and fixing the bolts to the nuts in the wedge blocks so as to connect the foam cement composite wall boards by fastening the wedge blocks with the dovetail groove type steel frame boundary ribs respectively; and sequentially connecting and fixing the remaining foam cement composite wall boards in the same way;

step D: connecting the foam cement composite wall board with the foam cement composite top board;

first, placing the foam cement composite top board on the foam cement composite wall board, respectively placing a wedge block, in which a nut is placed, in each of the grooves of the dovetail groove type boundary ribs arranged in the foam cement composite top board and the foam cement composite wall board, running bolts through a connecting piece respectively, and connecting and fixing the bolts to the nuts in the wedge blocks so as to connect and fix the foam cement composite wall board with the foam cement composite top board by fastening the wedge blocks with the dovetail groove type steel frame boundary ribs respectively; and sequentially connecting and fixing the remaining foam cement composite

wall boards with the foam cement composite top board in the same way, thereby completing an overall assembly;

step E: carrying out a waterproofing procedure according to a design requirement;

step F: carrying out interior decoration according to a design requirement; and

step G: installing bathroom equipment, and installing a bathroom door,

wherein the steps E, F and G are completed at a construction site, or the steps E and F are completed prior to assembling the foam cement composite bottom plate, the foam cement composite wall plate and the foam cement composite top plate together

the wedge block is slidable in the groove of the dovetail groove type boundary rib so that the wedge block is installed quickly at a correct position and the wedge block includes a thread hole matched with a bolt, and a slot in which a nut is placed,

the connecting piece is a right-angled connecting piece, and has a via hole matched with the bolt, and

the foam cement composite bottom board includes a dovetail groove type boundary rib with a waterproof curved edge or a flat groove type steel frame boundary rib with a waterproof curved edge for a waterproofing effect when the foam cement composite bottom board is connected to the foam cement composite wall board so as to prevent water from seeping into a joint of the wall board and the bottom board.

9. A construction method of a prefabricated integrated bathroom, comprising the steps of:

step A: manufacturing a foam cement composite bottom board, a foam cement composite wall board and a foam cement composite top board according to a design requirement;

step B: connecting the foam cement composite bottom board with the foam cement composite wall board:

first, placing the foam cement composite bottom board on a horizontal base plane, vertically placing the foam cement composite wall board at a corresponding position of the foam cement composite bottom board according to a design requirement; placing a wedge block, in which a nut, is placed in a groove of a dovetail groove type boundary rib arranged in the foam cement composite wall board; running a bolt through a hole from an opening and connecting and fixing the bolt to the nut arranged in the wedge block; and sequentially connecting and fixing the remaining foam cement composite wall boards with the foam cement composite bottom board in the same way;

step C: connecting the foam cement composite wall board with a second foam cement

composite wall board;

first, vertically placing the second foam cement composite wall board at a corresponding position of the foam cement composite bottom board, adjusting the position of the second wall board relative to a first wall board, and connecting the second foam cement composite wall board with the foam cement composite bottom board in the way described in step B;

then, connecting the first foam cement composite wall board with the second foam cement composite wall board: placing a wedge block, in which a nut, is placed in a groove of a dovetail groove type boundary rib arranged in each of the foam cement composite wall boards, running bolts through holes respectively, and connecting and fixing the bolts to the nuts in the wedge blocks; and sequentially connecting and fixing the remaining foam cement composite wall boards in the same way;

step D: connecting the foam cement composite wall board with the foam cement composite top board;

placing the foam cement composite top board on the foam cement composite wall board, placing a wedge block, in which a nut is placed, in a groove of a dovetail groove type boundary rib arranged in the foam cement composite wall board, running a bolt through a hole from an opening and connecting and fixing the bolt to the nut in the wedge block; and sequentially connecting and fixing the remaining wall boards with the top board in the same way, thereby completing an overall assembly;

step E: carrying out a waterproofing procedure according to a design requirement;

step F: carrying out interior decoration according to a design requirement; and

step G: installing bathroom equipment, and installing a bathroom door;

wherein the steps E, F and G are completed at a construction site; or the steps E and F are completed prior to assembling the foam cement composite bottom plate, the foam cement composite wall plate and the foam cement composite top plate, and

the foam cement composite bottom board includes a dovetail groove type boundary rib with a waterproof curved edge or a flat groove type steel frame boundary rib with a waterproof curved edge for a waterproofing effect when the foam cement composite bottom board is connected to the foam cement composite wall board so as to prevent water from seeping into a joint of the wall board and the bottom board.

10. A construction method of a prefabricated integrated bathroom, comprising the steps of:

step A: manufacturing a foam cement composite bottom board, a foam cement composite wall board and a foam cement composite top board according to a design requirement;

step B: connecting the foam cement composite bottom board with the foam cement composite wall board;

first, placing the foam cement composite bottom board on a horizontal base plane, vertically placing the foam cement composite wall board at a corresponding position of the foam cement composite bottom board according to a design requirement; placing a wedge block, in which a nut is placed, in a groove of a dovetail groove type boundary rib arranged in the foam cement composite wall board; running a bolt through a hole and a rectangular pipe and connecting and fixing the bolt to the nut arranged in the wedge block; and sequentially connecting and fixing the remaining foam cement composite wall boards with the foam cement composite bottom board in the same way;

step C: connecting the foam cement composite wall board with a second foam cement composite wall board;

first, vertically placing the second foam cement composite wall board at a corresponding position of the foam cement composite bottom board, adjusting the position of the second wall board relative to a first wall board, and connecting the second foam cement composite wall board with the foam cement composite bottom board in the way described in step B;

then, connecting the first foam cement composite wall board with a second foam cement composite wall board: placing a wedge block, in which a nut is placed, in a groove of a dovetail groove type boundary rib arranged in each of the foam cement composite wall boards, running bolts through holes and bolt sleeves respectively and connecting and fixing the bolts to the nuts arranged in the wedge blocks; and sequentially connecting and fixing the remaining foam cement composite wall boards in the same way;

step D: connecting the foam cement composite wall board with the foam cement composite top board;

placing the foam cement composite top board on the foam cement composite wall board, placing a wedge block, in which a nut, is placed in a groove of a dovetail groove type boundary rib arranged in the foam cement composite wall board, running a bolt through a hole and a bolt sleeve from an opening and connecting and fixing the bolt to the nut in the wedge block; and sequentially connecting and fixing the remaining wall boards with the top board in the same way, thereby completing an overall assembly;

step E: carrying out a waterproofing procedure according to a design requirement;

step F: carrying out interior decoration according to a design requirement; and

step G: installing bathroom equipment, and installing a bathroom door,

wherein the steps E, F and G are completed at a construction site; or the steps E and F are completed prior to assembling the foam cement composite bottom plate, the foam cement composite wall plate and the foam cement composite top plate, and

the foam cement composite bottom board includes a dovetail groove type boundary rib with a waterproof curved edge or a flat groove type steel frame boundary rib with a waterproof curved edge for a waterproofing effect when the foam cement composite bottom board is connected to the foam cement composite wall board so as to prevent water from seeping into a joint of the wall board and the bottom board.