The present invention relates to a new and novel building structure and method of erecting the same which is intended primarily to solve the worldwide problem of providing adequate inexpensive housing for the masses. It, of course, will also be understood that the principles of the present invention are equally applicable to schools, offices, warehouses and other types of commercial buildings, as well as any type of building structure.

The building structure according to the present invention is formed substantially entirely from a plurality of pre-cast pre-stressed modules. This construction provides a high degree of strength and provides a permanent structure which is not subject to deterioration or any substantial degree of maintenance or repair. The structure is further fireproof and has good thermal insulation qualities.

An important aspect of the present invention is the fact that in many locations throughout the world, building materials are scarce and very expensive. This is particularly true in the case of lumber which is one of the most commonly used building materials, which is either in limited supply or for all intents and purposes unavailable in many areas of the world. On the other hand, concrete may be readily and cheaply manufactured in every populated sector of the earth, and accordingly provides the ideal building material throughout the world.

The pre-stressed pre-cast concrete module construction which serves to provide all the structural components of the building structure is highly advantageous since in addition to being cheap and readily manufactured, it also provides high tensile and compressive strength. The concept of the present invention enables mass production techniques to be utilized, and a particular feature of the invention is the fact that in certain instances, the modules may be manufactured right at the building site thereby eliminating the necessity of shipping the modules or additional personnel which would be required to erect other types of structures.

A mold is provided for manufacturing the modules in the field at any desired location, this mold being of a unique construction so as to permit the manufacture of modules of different size as may be required for any particular design.

It should be noted that the mold shown herein is for the purpose of illustration and illustrates the manner of manufacturing a single basic size module, a half size module, and a quarter size module, but the mold may be modified to be considerably larger so as to permit the manufacture of many different modules and different size modules simultaneously within practical limits.

In the structure of the present invention, the foundation, the roof, the walls, the floors and various other structural components may all be formed substantially of the modules manufactured according to the present invention, and these modules may be erected in an efficient and effective manner with a minimum of personnel and equipment requirements.

For example, it is contemplated that only two men, a lifting crane, a pump and small incidental equipment will be required to completely assemble the house in a very short period of time. It is anticipated that the construction of a building structure according to the present invention will reduce the cost of constructing a comparable building with presently utilized materials and methods by more than half.

It is accordingly evident that a very considerable savings in cost of both materials and labor is afforded according to the present invention.

The floor, roof and walls of the building structure may be formed simply by providing a plurality of modules disposing the modules in edge-to-edge relationship and then suitably securing these modules in such assembled relationship. According to the present invention, the modules are so secured in assembled relationship by bonding means preferably in the form of an adhesive substance which may be pumped between the adjacent edge portions as hereinafter described. This arrangement enables the various modules to be quickly secured in operative relationship and additionally provides a very strong finished structure.

The method of erecting a building structure according to the present invention is an especially important step forward in this art, since it permits the building structure to be erected quickly with all of the various operations being carried out at the job site. The operation of erecting the structure is a relatively simple procedure which can be carried by laborers of little skill of training, and furthermore, the building structure can be erected while employing a minimum amount of equipment and supplemental tools.

All of the foregoing factors combine to provide in the present invention a unique and revolutionary building structure and method of erecting same which affords a maximum degree of versatility and usefulness in the construction trade.

An object of the present invention is to provide a new and novel building structure formed substantially entirely of similar modules connected together in a simple and efficient manner.

Another object of the invention is the provision of a building structure which has good insulation characteristics and which is fireproof.

A further object of the invention is to provide a building structure which is permanent, which will not deteriorate with the passage of time, and which requires practically no maintenance or repair.

Still another object of the invention is to provide a building structure formed of inexpensive materials and yet which provides a sturdy and strong construction.

A still further object of the invention is the provision of a method of erecting a building structure which can be carried out quickly at a job site by relatively unskilled labor, and further which requires a minimum of equipment and tools.

Yet another object of the invention is to provide a novel mold and method of manufacturing pre-cast pre-stressed concrete modules.

Other objects and many attendant advantages of the invention will become more apparent when considered in connection with the specification and accompanying drawings, wherein:

FIG. 1 is a front elevation of a building structure in the form of a private residence manufactured according to the present invention;

FIG. 2 is a sectional view looking downwardly within the home shown in FIG. 1 and illustrating the floor plan thereof and the manner in which the individual modules are combined to form the roof and wall portions;

FIG. 3 is a perspective view of the mold utilized for forming the modules prior to setting up the mold;

FIG. 4 is a top view of one end of the mold illustrating the position for manufacturing a basic size module;

FIG. 5 is a view similar to FIG. 4 illustrating the position of the mold for manufacturing a half size module;
FIG. 6 is a view similar to FIG. 4 illustrating the position of the mold for manufacturing a quarter size module.

FIG. 7 is a section through a basic size module according to the present invention.

FIG. 8 is a section through a half size module according to the present invention.

FIG. 9 is a section through a quarter size module according to the invention.

FIG. 10 is a top view of the mold shown in set-up position with the tensioning means disposed in operative position.

FIG. 11 is a sectional view taken substantially along line 11-11 of FIG. 10 looking in the direction of the arrows.

FIG. 12 is a sectional view illustrating a first mode of manufacturing a foundation according to the invention.

FIG. 13 is a sectional view illustrating a second mode of manufacturing a foundation according to the present invention.

FIG. 14 is a sectional view illustrating a third mode of forming a foundation according to the present invention.

FIG. 15 is a perspective view partly broken away and partly in section illustrating the manner in which the modules are bonded to one another.

FIG. 16 is a sectional view taken substantially along line 16-16 of FIG. 15 looking in the direction of the arrows.

FIG. 17 is a top view of the home shown in FIG. 1 with portions of the roof broken away to illustrate the roof joint construction.

FIG. 18 is a view illustrating one method of securing the roof joint in position.

FIG. 19 is a sectional view taken substantially along line 19-19 of FIG. 18 looking in the direction of the arrows.

FIG. 20 is a view similar to FIG. 18 illustrating a modified manner of securing the roof joint in position.

FIG. 21 illustrates a still further form of securing the roof joint in position and

FIG. 22 illustrates the manner of connecting an interior wall with a portion of the overlying roof.

Referring now to the drawings wherein like reference characters designate corresponding parts throughout the several views, there is shown in FIG. 1 a home constructed according to the present invention, the elevation of the home illustrating steps indicated generally by reference numeral 30 leading up to a small porch indicated by reference numeral 31 which provides access to the front door of the house indicated by reference numeral 32. The front wall of the house is formed of a first plurality of modules 35 which comprises the basic size modules as described hereinbelow, these modules supporting a pair of windows 34. The front wall of the house also includes a plurality of half size modules 36 extending vertically as well as additional half size modules 37 which extend horizontally along the upper portion of the wall and provide a roof joint. A plurality of full size longitudinally extending modules 38 may be provided along the base portion of the house as shown. The roof itself is indicated generally by reference numeral 39 and is formed of a plurality of full size modules 40.

Referring now to FIG. 2, the floor plan of the house may be readily ascertained, and it will be noted that the floor of the house is formed of a plurality of full size modules 42 disposed in edge-to-edge relationship. The outside walls are formed of full size modules 35 and half size modules 36 all the way around the house. The interior walls are formed of additional full size modules 35' and some half size modules 36'. It is evident that the full size and half size modules may be utilized in an infinite number of combinations to provide floor plans as will be well understood.

In the particular layout illustrated, no quarter size modules are illustrated, although it will be readily apparent that such quarter size modules may be incorporated in the structure as desired.

Referring now to FIG. 3, a mold utilized with the present invention is illustrated, this mold being of a steel construction and including a flat base member 45. A pair of side members 46 and 47 are provided as well as a pair of end members 48 and 49. Each of the side members and end members is removably supported upon the upper surface of the base member, and it will be noted that each of side members 46 and 47 has a substantially L-shaped cross-sectional configuration including horizontal legs 46' and 47' respectively and vertical legs 46" and 47" respectively.

Legs 46' and 47' are provided with a plurality of elongated slots 51 and 52 respectively which are shown as being three in number, these slots receiving bolts 53 and 54 respectively, the bolts extending through the associated slots into suitable threaded holes provided in the base member 45.

It is apparent that the bolts and the associated elongated slots in the side members permit the side members to be adjusted toward and away from one another and to be fixed in a selected position relative to the base member. It will also be noted that the inwardly facing surfaces of legs 46' and 47' of the side members include laterally extending ribs 55 and 56 respectively, the purpose of these ribs being hereinafter more fully explained.

End members 48 and 49 are also of substantially L-shaped cross-sectional configuration and respectively include horizontal leg portions 48' and 49' and vertical leg portions 48" and 49".

Leg portions 48' and 49' are provided with suitable openings for receiving bolts 60 and 61 respectively which extend through the openings in the end members and into suitable threaded holes provided in the base member. This permits the end members to be removed when desired or required for removing the manufactured modules.

It will be noted that leg portion 48' and 49' of the end members are provided with a plurality of spaced openings 64 and 65 respectively, these openings serving to receive the tensioning members therethrough for providing stresses to the concrete members.

One or more dividers may also be associated with the end and side members so as to divide the space within the house into a plurality of spaces of predetermined size. A typical divider is illustrated generally by reference numeral 57 in FIG. 3 and includes an upstanding wall portion 68 having longitudinally extending ribs 69 and 70 extending outwardly from the opposite sides thereof. In the illustrated example, three of these dividers may be formed for forming either full size modules, half size modules or quarter size modules. The end members 48 and 49 are also provided on the inwardly facing surfaces of leg portions 48' and 49' thereof with three spaced slots 72 and 73 respectively for receiving the opposite ends of the central body portion 68 of an associated divider for retaining the divider in operative position.

The mold as shown and described in connection with FIG. 3 may be mounted in a number of adjusted positions in accordance with the size module it is desired to manufacture.

For example, as shown in FIG. 4, the mold may be set up for making a full size module wherein the end and side members will be disposed in the relative positions shown. When making a full size module, it will be understood that the slots 72 may be closed by inserting snugly fitting members therewithin so as to provide a smooth end for the module. When it is desired to manufacture two half size modules with the mold, the sidemembers 46 and 47 may be adjusted as necessary as shown in FIG. 5, and a divider 67 inserted in the central slots in the opposite end members.
It will be understood that side members 46 and 47 are spaced apart a distance which is greater than the distance illustrated in FIG. 4 by the thickness of the divider 67 so as to provide two modules which are exactly half the size of the module which would be manufactured with the mold elements in the relationship shown in FIG. 4.

FIG. 6 illustrates the relationship of the end and side members of the mold when it is desired to manufacture four quarter size modules. As seen in this figure, the side members 46 and 47 have been moved still further apart so as to provide four full size modules with the three dividers 67 mounted in the three slots provided in each of the end members of the mold. It is accordingly apparent from the foregoing that the mold may be readily adjusted to provide the desired size of module as previously discussed.

While the mold has been illustrated as being provided with separate divider means for dividing the mold into a plurality of spaces, it is also possible that the dividers could be in the form of sheet metal dividers which could be pivoted to one of the end members of the mold either before or after pouring the concrete.

As seen particularly in FIG. 10, the mold is shown in its assembled position ready for pouring a full size module. The side and end members 46-49 are locked in position by the associated bolts 53, 54, 60 and 61, and suitable filler members are inserted in slots 72 and 73 formed in the opposite end members so as to provide smooth ends for the module.

A plurality of pre-stressing members 75 shown as being 8 in number in FIG. 10 are provided, these pre-stressing members being in the form of elongated steel rods or the like having opposite threaded end portions. These pre-stressing members are inserted through the holes 64 and 65 provided in end members 48 and 49 respectively. Nuts 77 are threaded onto one threaded end portion of each of the rods, and nuts 78 are threaded on the opposite end portion of each of the rods. By tightening up on these nuts the pre-stressing members can be placed under tension in an obvious manner.

Once the pre-stressing members have been tensioned, conventional ties may be placed across rods 75 in a transverse direction in a well-known manner, and the concrete can then be poured in place within the mold and about the pre-stressing members and the associated ties. This concrete may simply be poured in the top of the mold where the mold is open as shown, or as a possible modification, a top could be placed on the mold with an opening for ejecting the concrete under pressure.

Once the concrete has been placed in the mold and has set, the nuts can be removed from the pre-stressing members such that the completed module will be pre-stressed in a known manner. The module can then be removed from the mold and the ends of the pre-stressing members cut off to provide the finished pre-cast pre-stressed concrete module.

It will be understood that the half size modules as well as the quarter size modules can be manufactured in a similar manner utilizing the same mold along with the dividers as aforedescribed, the pre-stressing members in each case being mounted in position through the opposite end members of the mold, and the concrete then being subsequently poured in the spaces in the mold of the half size module.

The finished module includes longitudinally extending grooves 85 and 86 along the opposite side edges of the module.

FIG. 8 illustrates a half size module indicated by reference numeral 87, this module also including longitudinally extending pre-stressing members 75 along with the tie members 82, this half size module also being provided with longitudinally extending grooves 88 and 89 along the opposite side edges thereof. It will be understood that the half size module contains four pre-stressing members as compared to the 8 pre-stressing members contained in the full-size module.

FIG. 9 illustrates a quarter size module indicated by reference numeral 99, this quarter size module being provided with two pre-stressing members 75 and a tie member 82, this module having longitudinally extending grooves 92 and 93 formed along the opposite side edges thereof.

Referring now to FIG. 12, this sectional view illustrates one manner of forming a typical exterior wall fitting for the house illustrated in FIG. 1. The ground level is indicated by reference numeral 100. The footing includes a body of concrete including a rather massive end portion 102 which extends downwardly beneath the ground level, and a portion 103 of considerably less thickness extending inwardly over a layer 104 of composite filling. End portion 102 is provided with a recess 106 of generally rectangular cross-sectional configuration, this recess being packed with epoxy resin grout 108 and receiving the lower end portion of a module 35 therein. With this construction, the recess is adapted to support one of the outer wall modules of the house whereby it is intended that such module is firmly supported in upright position.

Referring now to FIG. 13, a sectional view is illustrated of a typical interior wall fitting wherein the ground level is indicated by reference numeral 110. A composite filling 111 is provided between the footing and the ground, it being noted that a trench has been dug in the ground to receive the downwardly extending portion 112 of the concrete footing which has portions 113 and 114 extending to either side thereof of considerably less thickness.

The central thickened portion 112 is provided with a recess 116 of generally rectangular cross-sectional configuration which is packed with an epoxy resin grout indicated by reference numeral 118, the recess being adapted to receive and support the lower end portion of an interior wall module 35 to firmly support the module in position.

Referring now to FIG. 14, a modified form of footing for an exterior wall is illustrated. In this modification, a pair of full size modules 80 are placed in face-to-face relationship upon one another and suitably bonded together as with an epoxy resin, the lower ends of these modules extending within a trench dug below the ground level 120. A pre-cast floor plank 121 is provided, the floor plank being supported on the upper portions of modules 80 by a layer of epoxy resin 122 which serves to firmly secure the floor plank in position. The floor plank is also provided with a recess 124 inwardly spaced from the outer end and being packed with epoxy resin grout 125, this recess receiving the lower end portion of an outer wall module 35 for the purpose of firmly supporting this outer wall module as previously discussed. The outer end of the floor plank beyond the outer wall provides a projecting ledge, the upper surface of which is downwardly inclined.

In each of the foregoing descriptions of the various footings, it should be understood that the floor associated with the footings may be formed of a plurality of pre-stressed cast concrete modules according to the present invention, these modules being bonded together along the side edges thereof by an epoxy resin or the like.

Referring now to FIG. 15, the manner of securing adjacent modules together is illustrated, and more particularly, the manner of erecting and securing two outer wall modules is shown. The floor is indicated generally by reference numeral 130, and as aforesaid may in itself comprise a plurality of modules disposed in edge-to-edge relationship and bonded to one another. A longitudinally
extending recess 131 is provided and a pair of adjacent modules 133 and 134 are illustrated. Module 133 is provided with longitudinally extending grooves 135 and 136 along the opposite edges thereof, and module 134 is provided with a longitudinally extending groove 137. The lower end portions of the modules 133 and 134 are inserted in the recess 131 and retained in position therein by a suitable epoxy resin or the like. The side edges of the two modules are disposed in abutting relationship with the grooves 136 and 137 disposed in facing relationship to one another.

The mechanism for inserting the epoxy adhesive substance through complementary aligned grooves 136 and 137 comprises a pump 140 connected to a motor 141 and a suitable supply of the adhesive substance, the pump discharging into a flexible hose 142 which has a flexible fitting 143 at the outer end thereof which may be fitted within grooves 136 and 137 whereupon an epoxy resin adhesive substance can be pumped under pressure within aligned grooves 136 and 137. The manner in which the grooves 136 and 137 are aligned may be seen most clearly in Fig. 16 and the body of epoxy pumped therewithin is illustrated by reference numeral 144.

The epoxy resin pumped through the aligned grooves in the modules have been shown as being being rectangular in cross-sectional configuration, they may also be semi-circular in certain instances, the ribs provided in the mold members being correspondingly altered to provide the desired configuration in the side edges of the finished modules.

It will be understood that once the epoxy resin has been pumped between the adjacent side edges of the modules and hardened, a very rigid sturdy structure will be provided, and no further fastening means is required in the finished structure.

Referring now to FIG. 17, the roof framing plane is illustrated of the house shown in FIG. 1. It will be noted from this figure that the floor plan is the same as discussed in connection with FIG. 1 as seen in dotted lines in this figure. In order to provide roof joist means for supporting the roof, the upper portions of certain of the walls of the house are provided with reinforcing means. For example, considering the upper wall portion indicated generally by reference numeral 150 as seen in FIG. 17, the construction of this portion may be more clearly understood from an inspection of FIG. 19. As seen in FIG. 19, an interior wall module 35', the modules 152 having their long axes extending in a substantially horizontal direction. It will be noted that the upper portions of modules 152 are also in abutting relationship with the opposite faces of wooden member 151.

A pair of reinforcing modules 152 which may be half size modules or quarter size modules depending on the particular requirements are disposed in a abutting relationship with opposite faces of the interior wall module 35', modules 152 having their long axes extending in a substantially horizontal direction. It will be noted that the upper portions of modules 152 are also in abutting relationship with the opposite faces of wooden member 151.

A roof member is indicated by reference numeral 155, and this roof member may be connected with the underlying joist means by driving nails or other suitable fasteners 157 downwardly through the roof module into the underlying wooden member 151. It will be understood that other materials may be substituted for wood in member 151, and that any suitable fastening means may be utilized for securing the roof member to the underlying joist means.

Opposite modules 152 are maintained in operative position by means of bolts 159 extending through aligned openings in the modules 152 and the interior wall module 35', nuts 160 being threaded on the outer ends of bolts 159 for maintaining the assembly together.

FIG. 18 indicates the manner in which the bolts 159 are spaced from one another when viewing the assembly from the side, it being noted that the bolts are staggered so as to minimize the stress in any one position within the associated members.

It will be understood that the construction of the roof joint portions indicated generally by reference numerals 162 and 163 is substantially identical to that discussed in connection with portion 150, in each case reinforcing modules 152 being provided along the upper edge portions of the wall modules and a nailing strip or the like 151' being provided for the same purpose as strip 151 previously discussed.

Referring now to FIG. 20, a roof joist construction is illustrated wherein the roof module member is indicated by reference numeral 170, and a reinforcing module is indicated by reference numeral 171 disposed at one side of the wall modules 35'.

A nailing strip or the like 172 is also provided. In this case, the bolts for maintaining the reinforcing modules 171 in position are indicated by reference numeral 173, and the bolt spacing is evident.

Referring now to FIG. 21, four adjacent wall panels 35' are illustrated having reinforcing modules 180 at the upper portions thereof which support the roof modules 181. In this case, a nailing strip or the like is indicated by reference numeral 182 and the bolts for maintaining the reinforcing modules in position are indicated by reference numeral 183.

The bolt spacing in this type of construction is also clearly evident.

Referring now to FIG. 22, the manner of securing an interior wall to the roof where there is no roof joint means is illustrated. Here the interior wall panel is again indicated by reference numeral 35' and the overlying roof module is indicated by reference numeral 190. A predrilled hole 191 is provided in the upper end of module 35', and is filled with epoxy resin grout. A nail or other suitable fastening means 192 is then driven into the hole for maintaining the members securely in operative position as shown.

It is apparent from the foregoing that there is provided a new and novel building structure which is formed substantially entirely of similar modules connected together in a simple and effective manner. The completed structure has good insulation characteristics and is substantially fireproof. The construction is further of a permanent nature, will not deteriorate with time, and requires practically no maintenance or repair.

The materials utilized are quite inexpensive, yet are very sturdy and strong. A unique mold and novel method are provided for manufacturing the pre-stressed pre-cast concrete module of the present invention, and the method of erecting the building structure can be carried out quickly at the job site by relatively unskilled labor while requiring a minimum of equipment and tools.

As this invention may be embodied in several forms without departing from the spirit or essential characteristics thereof, the present embodiment is therefore illustrative and not restrictive, and since the scope of the invention is defined by the appended claims, all changes that fall within the metes and bounds of the claims or that form their functional as well as conjointly cooperative equivalents are therefore intended to be embraced by those claims.

I claim:

1. A building structure, the floor, roof and wall portions of which are formed substantially entirely of a plurality of pre-cast, pre-stressed concrete modules, said modules being bonded to adjacent modules by adhesive means for retaining the modules in operative relationship.
with respect to one another, and roof joist means for supporting said roof, said roof joist means comprising a member disposed on the upper edge of certain of the wall modules, said member being of substantially the same thickness as said wall modules and being formed of a material substantially softer than concrete, a pair of reinforcing modules being of construction similar to said wall modules and comprising pre-cast, pre-stressed concrete, said reinforcing modules being disposed in abutting relationship with opposite faces of said member supported on said wall modules, a roof member supported by said roof joist means, fastening means extending downwardly through said roof member and into the member supported at the upper edge of said wall modules, and additional fastening means extending through said wall modules and said reinforcing modules for maintaining the reinforcing modules in proper position.

2. The method of erecting a building structure comprising a plurality of pre-cast, pre-stressed concrete modules of substantially solid cross section, each of said modules being of similar construction and having groove means formed along opposite sides thereof and opening through the end edges thereof, erecting a foundation, forming a generally horizontal floor by supporting a plurality of said modules directly on said foundation with the modules disposed in edge-to-edge relationship with one another and with the grooves thereof aligned, then pumping in an adhesive substance through the open ends of said aligned grooves in adjacent modules to fill said grooves with adhesive substance and allowing the adhesive substance to spread out under pressure between the adjacent edges of the modules to bond the modules together to form a rigid floor structure, then forming a wall by placing a plurality of said modules in edge-to-edge relationship and supported on said floor and extending upwardly therefrom with the modules of the wall having the grooves in adjacent modules aligned with one another, then pumping an adhesive substance through the open ends of the grooves in the wall modules and substantially filling said grooves and allowing the adhesive substance to spread out under pressure between adjacent edges of the modules to bond the modules together to form a rigid wall structure, and then forming a roof by providing a further plurality of modules disposed in edge-to-edge relationship with one another with the grooves of adjacent modules aligned and with the roof modules supported on the upper ends of said wall modules, and then pumping in an adhesive substance through the open ends of aligned grooves in the roof modules and allowing the adhesive substance to spread out under pressure between adjacent edges of the roof modules to bond the roof modules together and form a rigid roof structure supported on the upper portions of said wall structure, and including the additional step prior to supporting the roof structure on the wall structure of forming roof joists by providing an elongated member along the upper edges of certain of said wall modules and being of substantially the same thickness as the wall modules and of a material substantially softer than concrete, providing a pair of reinforcing modules which are also formed of pre-cast pre-stressed concrete, disposing said reinforcing modules such that they are in abutting relationship with opposite faces of said wall modules and also in abutting relationship with opposite faces of said elongated member, fastening said reinforcing modules in place by extending fastener means through said reinforcing modules and the upper portion of said wall modules, and securing a roof module to said roof joist by placing the roof module on the upper portion of at least one of said reinforcing modules and on said elongated member, and then extending fastening means through said roof module and into said elongated member for holding the roof module in operative position.

3. A building structure including generally horizontally extending floor portions supported on footings and generally horizontally extending roof portions joined by generally vertically extending wall portions with upper and lower portions of said wall portions being in engagement with said roof and floor portions respectively, each of said floor, roof, wall portions and footings being formed substantially entirely of a plurality of modules, each of said modules being of similar construction and being formed of pre-cast, pre-stressed concrete and having a substantially solid cross section, the modules of said floor, roof and wall portions being in edge-to-edge relationship with one another and being secured to one another solely by adhesive means disposed between adjacent modules, the modules of the footings being in face contacting relation with their upper edges adhesively joined to said floor modules, the outer end portions of said floor modules having upwardly facing transversely extending recesses therein receiving the lower edge of the wall modules, said recesses being inwardly spaced from the outer end of the floor module and forming an outwardly projecting ledge and the upper surface of said ledge between the outer edge of said recess and the outer end of the module being inclined outwardly and downwardly and the outer face of the footings being inwardly spaced from said outer end of said floor modules whereby the said ledge overhangs the footings and provides a border about said building structure.

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