[0022] FIG. 1.1 is a perspective view of a lower corner block as shown in Figure 1;

[0023] FIG. 1.2 is a side view of a lower corner block, as shown in Figure 1, showing the tapered locating coring;

[0024] FIG. 1.3 is a perspective view of an upper corner block as shown in Figure 1;

[0025] FIG. 2 is a perspective view of a gusset plate as shown in Figure 1, and the gusset plate connecting four modules (FIG. 2.1) and two modules (FIG. 2.2);

[0026] FIG. 3 is a partial exploded perspective view of a module corner using the connector as shown in Figure 1;

[0027] FIG. 3.1 is a partial perspective view of the connection between two adjacent stacks of modules using the connector as shown in Figure 1;

[0028] FIG 3.2 is a vertical section through arms, gusset plate and HSS at a connection using the connector as shown in Figure 1;

[0029] FIG 3.3 is an isometric view of the connection between two modules in a single stack using the connector as shown in Figure 1;;

[0030] FIG 3.4 is a partial front view of the connection between two adjacent stacks of modules using the connector as shown in Figure 1;;

[0031] FIG. 4 is a partial side view of the connection between two modules in a single stack using the connector as shown in Figure 1;;

[0032] FIG. 5 is an exploded isometric view of a module using module connectors;

[0033] FIG. 5.1 is a partial isometric view of the inside of a module corner showing the vertical stiffeners and diagonal bracing;

[0034] FIG. 5.2A and 6 is a group of top section views showing progressive alternate embodiments of a reinforced column;

[0035] FIG. 7 is an isometric view of a group of 18 modules joined to form a building with central hallways on all floors;

[0036] FIG. 8 is a side view of a group of modules joined to form a building;

[0037] FIG. 9 is a transparent perspective view of a hallway slab and an end view of the slab installed in a building;

[0038] FIG. 10 is a partial exploded isometric view of the connection between two stacks of modules and the hallway floor at the point of connection between two consecutive hallway slabs;

[0039] FIG. 11 is an isometric view of the hoisting rig engaged to a module;

[0040] FIG. 12 is an isometric view of a typical sliding hoist point;

[0041] FIG. 13 (upper) is a top view showing the effect on the lateral centre of gravity of moving the hoist points on the hoist frame (Bottom left) the combined hoisting point (bottom right) an end view of the shift in CG from centre to one side;

[0042] FIG. 14 is a partial perspective view of one corner of the hoisting frame;

[0043]

[0044] Fig 15 is a section view through a split column;

[0045] FIG 16 is a section through an extendable mateline gasket;

[0046] FIG 17 is an exploded view of the façade system;

[0047] FIG. 18 is a partially exploded view of the connection between an upper floor module built with reinforced columns and a lower floor module built with built-up mega columns;

[0048] FIG. 19 is a horizontal section of a panelized structure constructed with panels framed by built-up mega columns;

[0049] FIG. 20 is an exploded vertical view of a stack of modules showing the use of gusset plates of varying thickness and number to maintain the correct total height and alignment of a stack of modules;

present specification can help reduce both the number and the extent of the leave-out areas which must be subsequently patched.

[00112] Eliminates gasket damage during erection

[00113] By shipping and erecting the modules with the gasket in retracted position and then extending it post-erection, the present specification can help decrease the possibility of damage to the gasket and the attendant reduction in the performance of the building envelope.

[00114] PCT application number PCT/CA2014/050110, filed February 18th, 2014, incorporated herein by reference, relates to a connector assembly 1 (as shown in Figure 1) having upper connector 10 and lower connector 20, along with a gusset plate 30.

[00115] Figure 1 discloses an embodiment of a connector assembly 1 that is made up of an upper connector 10, a lower connector 20 and a gusset plate 30 sandwiched between the upper connector 10 and lower connector 20. The terms "upper" and "lower" are relative and can be interchanged. However, for the purpose of describing the connector assembly 1, upper connector 10 refers to connector that would typically be positioned at an upper corner or upper end of a modular frame that can be lifted and positioned on a second (or lower) modular frame. While lower connectors 20 refer to connectors positioned on the lower corner or lower end of a modular frame, and that would be closer to ground or floor (than the upper connector).

[00116] In the embodiment shown, the upper corner connector 10 and lower corner connector 20 can be made from hollow castings of steel. In addition, the upper connector 10 has an opening at one end (first end 2') that is formed for receiving a column, post or other structural unit of a modular frame, so that the upper connector can be coupled to an end of the of the first modular frame. While the second end 3 of the upper connector 10 is designed to allow coupling of the upper connector 10 to the gusset plate 30. The lower connector 20 can also be provided with an

opening on both the first end 4’ and the second end 5; with the first end 4’ adapted for coupling to the gusset plate 30, while the second end 5 allows coupling to an end or corner of the second modular frame. The connectors can have mechanical properties such as tensile strength and ductility equal to or greater than mild steel and metallurgical properties such that the connector can be welded to mild steel with standard practices such as structural metal inert gas (MIG) welding.

[00117] In a further embodiment, the upper and lower connectors (10, 20) each have a hollow body (2, 4), respectively. The upper connector hollow body 2 and the lower connector hollow body 4 can have a variety of shapes depending upon the design and application requirements. However, in the figures, the upper and lower connectors (10, 20) have a hollow body (2, 4) that has a shape having a square cross-section. Provided on the outer surface of the hollow body 2 of the upper connector 10 are bosses 6. Similar bosses 18 are also provided on the outer surface of the hollow body (4) of the lower connector 20.

[00118] The upper connector 10 is provided by at least a pair of arms 11 that extend from the bosses 18. The lower connector 20 is also provided with at least a pair of arms 11 that extend from the bosses 18. In the embodiment shown, the arms 11 extend normally from the surface of the bosses 18. In addition, the arms 11 are positioned to be perpendicular to each other, i.e., one arm extends at nearly 90° to the second arm. However, the position of the arms 11 can be varied depending upon the design and application requirements, and the arms 11 can be present at angles less than or greater than 90°. The arms 11 on the upper connector 10 can be provided with apertures 12 that can be used for coupling of the upper or lower connector to the connector assembly 1.

[00119] In one embodiment, the central hollow bodies (2, 4) are 4” square to accept a 4” x 4” Hollow Structural Section (HSS). In another embodiment, the central hollow bodies (2, 4) are 6” square to accept a 6” x 6” HSS. Connectors 10 and 20 have adequate thickness for the

both top and bottom frames capture the outer dimensions of the same fixture and are coordinated.

[00135] A suitable material 44 such as fibre-cement board, or steel sheet deck and concrete toping, or steel-composite sheet decking is applied to the top face of the floor beams of the module floor thus built, and fastened appropriately, or concrete or other material is filled between the framing so as to support occupant loads and provide the necessary diaphragm action to the module and in turn to a building composed of modules. Similarly, material such as drywall or fire-proof board and insulation of a variety of types depending on conditions is applied to the surfaces of the framing and boards and in voids in walls and ceilings to provide a variety of functions such as privacy to the occupants, to provide fireproofing to the structure and to limit the transmission of sound.

[00136] FIG 3.1, 3.2, 3.3 3.4 and 4 Vertical connection of modules to form a moment-resistant structure

[00137] As previously described, lower connector tube 41 has an oversize holes 43 which communicates with the hole in arms 22 through which pass tension bolts 25 which thread in to the threaded hole in the top face of arm 11 on upper block 10 inside upper wall framing tube 45, trapping and clamping gusset plate 30 and transferring vertical tension loads through the connection.

[00138] As tension bolts 25 are threaded to the correct torque value in to the female threads in hole 12 of the of arm 11 on upper connector 20 of the module below, the tension created pulls the upper and lower frame tubes and the gusset plate together so as to establish the continuous moment action (25.1) which passes from column to column through the connection thus formed and is prevented from rotating in the vertical plane by the adjacent frame tubes, especially the deeper members which comprise the floor frame. The racking action which is a feature of all buildings subjected to wind, earthquake and other loads is thus reduced. In a particular embodiment, bolts 25 are composed of high-

strength steel such as Grade 8 such that the combination of the tensile strength and the number of bolts is sufficient to resist the wind or seismic-induced uplift on the structure thus connected.

[00139] FIG. 5 Exploded view of typical frame

[00140] Floor frame 40 is connected to ceiling frame 47 by corner columns 50 and intermediate columns 51 which in a particular embodiment are substantially perpendicular to the floor and ceiling frames and welded in place. In another embodiment the connections between the upper and lower horizontal members and the intermediate vertical columns 48 is constructed with an intermediate connector 49 similar in form to the connectors described in FIG. 1.1 and 1.3. but having opposed arms. In another embodiment the columns are of various lengths and mitred to fit against each other or against the blocks such that a plurality of angular relationships between the ceiling and floor is realized.

[00141] FIG. 5.1 View of sidewall bracing

[00142] If the loads acting on the module are sufficiently large to warrant the addition of diagonal reinforcement, the rigidifying and diagonal bracing system shown in FIG 5.1 is installed. The diagonal reinforcing system consists of vertical reinforcing bars 60, which in a particular embodiment are of the form and installed in the location shown in FIG. 5.1 or of the forms and locations of other particular embodiments as shown in FIG 5.2a or 6. Diagonal bars 61 are welded or bolted to these members or in the case of lighter structures having smaller loads they are welded directly to the vertical or horizontal frame members or both. The module thus formed when connected to other modules by the moment-resistant corner connection and can help create a moment and tension resistant structure which transmits the loads throughout itself in all axes. In a particular embodiment, the bars are diagonally opposed, ¾” in section and function in tension. In another they are diagonally opposed, of 1” x 3” in section and function in tension. In another they are single, of

3” x 4” HSS or other dimension and function in both tension and compression as suited to the loads they are to resist.

[00143] FIG. 5.2a and 6 Vertical stiffeners

[00144] Figure 5.2a and 6 are sequentially arranged figures showing progressive means of reinforcing columns against buckling and uplift starting with the weakest at the top and ending with the strongest at the bottom.

[00145] As shown in FIG 5.2a and FIG 6 vertical stiffening and increasing of the cross section of the columns so as to increase load-bearing capacity and resistance to buckling and bending without increasing the thickness of the wall or introducing a separate brace frame is achieved by any of the means shown and applied in a progressive manner as warranted by loads and cost: Increasing wall thickness, filling the columns with grout, adding fins to the corners, grouping sections, using larger sections and grouping those sections. The particular embodiment is the approach which adds least to the thickness of the walls, especially where columns are grouped or are located in the centres of walls or where useful space would be obstructed.

[00146] FIG. 7 View of a small building

[00147] Modules fabricated as described in FIG. 3 are typically connected to form larger structures as shown. In a particular embodiment, a central hallway 90 is present and can provide access to the module ends for fastening, for completing the interconnection of mechanical services and for the use of the occupants in accessing their units.

[00148] FIG. 8 Side view of a small building

[00149] A side view of a typical structure with a centrally-located hallway 76 is shown, together with the diagonal bracing 61 described in FIG. 5.1.

[00150] FIG. 9 View of hallway floor system

[00151] A section of floor is shown consisting of concrete slab 70, with reinforcing bars 71 and supported by pedestals 72 which are prevented from rotating by being bolted to connector blocks 10 and 20 by means of holes 74 creating a moment connection; and prevented from pulling out of the concrete by shear studs 73 which engage the concrete and the reinforcing bars. In a particular embodiment, the pedestals span vertically over upper and lower corner connectors and are bolted to them adding to the fixity of the vertical connection between columns. In another particular embodiment the slab is long enough that the pedestals span over two or more adjacent modules, adding to the fixity of the horizontal diaphragm action.

[00152] In another particular embodiment, the hallway slab is composed of formed plate, or any other suitable material such as wood or steel–urethane sandwich plate or composites.

[00153] In a particular embodiment the hallway is used as a convenient support and carrier for common services such as electrical or liquid supply lines 75 which are typically found in buildings and thus provides a means to pre-fabricate these elements, transport them to the building site and hoist them in to place without additional handling.

[00154] In an embodiment shown in Fig. 9, the pedestal 72 are in contact and positioned on the gusset plate 30. The gusset plate 30 used extends beyond the module frame to provide a surface for placing the pedestals 72 for supporting the slab.

[00155] FIG. 10 Exploded isometric view of connections to hallway floor system

[00171] Fig 15 discloses a particular embodiment of a shared structural column. A built-up "C" section 152 spanning the height of the module is bolted in multiple locations with bolts 153 to a similar section 151 forming a column which is twice as wide thus providing greater resistance to buckling forces. Baseplate 156 which occurs at both the top and bottom forms a transition to lighter columns 154 or heavier columns as appropriate depending on the loads. Diagonal braces 150 as required are connected to the extended web of column 151. A removeable section of fire-proof wall board 155 is provided for access to the bolts during erection of the structure.

[00172] FIG 16 is a section through an extendable mateline gasket

[00173] A particular embodiment of an extendable mateline gasket is shown. Molded or extruded elastic material 168 with multiple sealing features is fastened to channel 166, which slides in gasket 167 which is fastened to the inner surface of channel 169 and is extended by captive screw 164 travelling in threaded socket 165 and actuated by rotating head 163. The assembly is mounted to support channel 160 which can be of any convenient depth to which is fastened acoustic and fire-resistant material 170. Access to operate the gasket advancing screw is through cover 161 which can, in a particular embodiment, be decorative and fastened in a removable manner.

[00174] To form a seal between a first modular unit with a second modular unit, the modular units are each provided with a channel 166. In the embodiment shown, a gasket 167 is present in the channel 160, along with a toothed connector 168'. The toothed connector has a profile that is complementary to the toothed profile in the channel in the second modular unit. In a particular embodiment, the gasket 167 allows movement of the toothed connector 168 in one direction only, which is away from the modular frame. This can be achieved by, for instance, providing angled tabs that extend from a surface of the toothed connector and corresponding receptacles in the gasket 167 for receiving the tabs. Once the tabs are inserted into the receptacles, the gasket is locked in

sections 152 are bolted to one another to form an "I" section. The members of structural frame 171 are welded to the "C" channels in lieu of the moment blocks in the frames where the "C" sections are used. Moment block 181 rests on combined shiming and gusset plate 30 (greater detail can be found in figure 2) which is in turn fastened to the top end of columns 152. Façade framing 173 is fastened to the face of the assembly in a manner similar to Fig. 17.

[00180] Figure 19 is a horizontal section of a structural panelized façade system

[00181] A particular embodiment of a structural façade system for a modular building is shown. Built up sections 152 are joined in the manner previously described by headers top and bottom to form assemblies with window units 190, but unlike the volumetric modules previously described, the façade units are shipped and erected separate from the floors and interior walls. Beams 191 support floor slabs 178'. Fireproof covering 178" insulates the steel structure. Façade panel 50' provides insulation and appearance. As someone skilled in the art will appreciate, 45 degree split corner column 192 performs a similar function at a 90 degree outside corner. In another particular embodiment the angle of the split corner column is greater than or less than 45 degrees so as to facilitate the construction of structures with variable geometry.

[00182] Figure 20 is a simplified exploded view of a vertical stack of modules

[00183] As previously described, upper corner connector 10 is joined to lower corner connector 20 by bolts passing through gusset plate 30. In a particular embodiment, gusset plate 30 is provided in a variety of thicknesses which can be selected during assembly of the building and interposed in the connection as required to compensate for variations in the dimensions of the modules, such that the total dimension of the stack of modules conforms to the correct value as measured at 195. In another particular embodiment, a partial plate 192 is provided with the

corresponding hole pattern and in a variety of thicknesses to compensate for differences in the dimensions of adjacent modules.

[00184] Figure 21 is a simplified exploded view of a horizontal row of modules

[00185] As previously described, built up "C" section columns composed of two halves 152 are bolted together to join adjacent modules and to form a larger section. In a particular embodiment, shim 178* is provided in a variety of thicknesses and with pre-cut holes for the passage of connecting bolts. During assembly of the building the appropriate shim can be selected and interposed in the connection as required to compensate for variations in the accumulated horizontal dimension of the modules as measured at 196.

[00186] PCT/CA2015/050369, filed April 30th, 2015, incorporated herein by reference, discloses another embodiment of a connector and connector assembly for use in the construction of modular units and buildings. The improvements disclosed herein can be used with the connectors disclosed in the earlier PCT applications noted herein.

[00187] In accordance with the specification Figure 22 (a) shows an embodiment of a connector assembly (1) having a first (upper) connector (10), a second (lower) connector (20), a pin (216) and a gusset plate (30) sandwiched between the first (upper) connector (10) and the second (lower) connector (20). The making and use of the connector assembly (1) as disclosed herein, in particular, the second (lower) connector (20) and the gusset plate (30), is similar to that disclosed in n PCT application numbers PCT/CA2014/050110, filed February 18th, 2014, and PCT/CA2015/050369, filed April 30th, 2015, both incorporated herein by reference. Moreover, a person of ordinary skill in the art should be able to use the connector assembly (1) disclosed in the subject application and adapt it accordingly, based on the teaching of the above-noted patent documents, common general knowledge and/or non-inventive routine experimentation.

[00188] Figure 22 (b) discloses a pin (216) for use in coupling the first (upper) connector (10) to a second (lower) connector (20). The pin (216) has body (244), which in the embodiment disclosed herein is cylindrical in shape, however, other shapes may be made or used depending upon the design and application requirements. In one embodiment, as disclosed herein, the pin-body (244) at one end is threaded (246), while the other opposed end is conical-shaped (248). The threaded end (246) of the pin (216) is cylindrical in shape and can be screwed into the first (upper) connector (10), as described herein, for connecting the pin (216) to the first (upper) connector (10).

[00189] The conical-shaped end (248) of the pin (216) can be inserted into an opening (240) (circled in Figure 22) in the second (lower) connector. The conical-shaped end (248) of the pin can help with coupling of the first (upper) connector (10) with the second (lower) connector, while also helping with alignment of the two connectors (10 and 20) to form the connector assembly.

[00190] Although the pin disclosed and described herein is threaded at one end while the other end is conical, a person of ordinary skill in the art should recognize that there is no absolute requirement to do so and the shape of the pin can be varied depending upon design and application requirements. For example and without limitation, rather than having a threaded end, one end of the pin can be smooth such that it can be fixed to the first (upper) connector by welding or other affixing means, such as a screw, bolt or pin, or any other means that allow the pin to be held in place. Further, the opposing end of the pin (described herein as the conical-shaped end) can be flat, such as being more cylindrical-shaped similar to the shape of the body of the pin. The opposing end of cylindrical pin, in one embodiment, can be provided with beveled edges.

[00191] In one embodiment, the pin (216) can be provided with a hole (252), which can used for help with hoisting of a modular frame assembly, as described further herein.

[00192] Figures 23 and 24 disclose embodiments of a first (upper) connector (10), a pin (216) for coupling and a gusset plate used for forming a connector assembly (1). The first (upper) connector has a first (upper) connector body (2) and first (upper) connector arm (11) extending from the first (upper) connector body (2).

[00193] The first (upper) connector body (2) at one end (the first (upper) connector body column receiving end (2')) is adapted for receiving a column of a modular structure for connecting the first (upper) connector to a modular structure. At an opposed end, the first (upper) connector body has a first (upper) connector body gusset contact end (3) and a first (upper) connector body gusset contact face (226) at the first (upper) connector body gusset contact end (3). When forming the connector assembly (1), the first (upper) connector body gusset contact face (226) contacts the gusset plate (30).

[00194] The first (upper) connector body (2) at the first (upper) connector body gusset contact face is also provided with a threaded aperture (228) for receiving the threaded end (246) of the pin (216). The threaded end (246) of the pin (216) can be screwed into the threaded aperture (228) for coupling the pin (216) and the first (upper) connector (10) (as shown in Figure 25).

[00195] Also shown in Figures 23 and 24 are embodiments of a gusset plate (30) that can be used for forming the connector assembly (1). The gusset plate (30) as shown herein is provided with a passage (250) that can allow the pin (216) to pass through the gusset plate (30) when coupling the first (upper) connector (10) with the second (lower) connector (30). The presence of the passage (250) in the gusset plate (30), along with the conical shape of the pin (216) can assist with installation for forming the connector assembly (1) and for proper alignment of the gusset plate (30).

[00196] Additional holes (32) can be provided on the gusset plate (30) that align with holes (12) in the first (upper) connector arms (11) on

the first (upper) connector gusset contact face (226). Bolts (25) or other fastening means can be used for affixing the gusset plate (30) to the first (upper) connector (10).

[00197] Once the first (upper) connector (10), pin (216) and the gusset plate (30) are coupled together, the assembly than be connected to the second (lower) connector (20) to form the connector assembly.

[00198] The second (lower) connector (20), analogous to the first (upper) connector (10) has a second (lower) connector body (4) that has a second (lower) connector body column receiving end (5), a second (lower) connector body gusset contact end (4') and a second (lower) connector body gusset contact face (38) at the second (lower) connector body gusset contact end. The second (lower) connector body column receiving end (5) is adapted for coupling to a beam or other structure of a module; while the second (lower) connector body gusset contact face (38) at the second (lower) connector body gusset contact end (4') is adapted for contacting the gusset plate (30) (as shown in Figure 22).

[00199] The second (lower) connector body (4) at the second (lower) connector body gusset contact face is provided with an opening (240) (circled in Figure 22) for receiving the conical end of the pin (216). During coupling to form the connector assembly (1), the conical end (248) of the pin (216) can help with assembly to form the connector assembly (1) and also with proper alignment of the modules.

[00200] The second (lower) connector (20), similar to the first (upper) connector, is also provided with at least a pair of second (lower) connector arms (11) coupled to and extending from the second (lower) connector body. Other than the features disclosed herein, features of the first (upper) connector (10), the second (lower) connector (20) and gusset plate (30) can be similar to that disclosed in PCT application numbers PCT/CA2014/050110, filed February 18th, 2014, and PCT/CA2015/050369, filed April 30th, 2015, both incorporated herein by reference.

[00201] Although the specification has been described with the use of a first (upper) connector and a second (lower) connector, the first connector could be lower connector of a modular frame and the second connector can be upper connector of a modular frame unit. Alternatively, both the first and second connectors could be upper or lower connectors.

[00202] Figure 26 shows a hoistable assembly (260) formed by the first (upper) connector (10), the pin (216) and a shackle (formed by a U-shaped member (262) and a shackle-pin (264)). Once the first (upper) connector has been attached to a first (upper) end of a module and the pin has connected to the first (upper) connector (as described herein), a shackle-pin (264) connected to the U-shaped member (262) of a shackle can be inserted into the pin-hole (252) of the pin (216). This allows a module frame to be lifted and moved from one location to another, while keeping the module intact. Once the module has been positioned, the shackle-pin (264) can be removed and module frame separated from the shackles. The hoistable assembly can be used with the hoistable means disclosed herein above.

[00203] Figures 27-30 show embodiments of assembled corner connector assembly formed by the upper connector, gusset plate, pin and lower connector, disclosed herein. During assembly, the threaded end of the pin is screwed to the upper connector that has a threaded opening on the gusset contact face of the upper connector. Once coupled to the upper connector, the conical end of the pin is passed through the opening in the gusset plate and is inserted into the opening in the gusset plate contact face of the lower connector. This allows for proper alignment of the connector assembly and can avoid use of the pins as disclosed in the gusset plate of the previous PCT applications, disclosed herein.

[00204] For coupling the upper connector, lower connector and gusset plate together to form the connector assembly, screws (Figs. 27 and 29) or bolts (Figs. 28 and 30) can be used. A first set of screws or bolts can pass through holes in the gusset plate and engage the upper connector. While a second set of screws or bolts can pass through opening in the arms of the lower connector, and then pass through holes

CLAIMS

1. A connector assembly comprising a first connector, a second connector, a pin coupling the first connector to the second connector and a gusset plate sandwiched between the first connector and the second connector, the gusset plate having a passage adapted for receiving the pin,

the first connector comprising:

a first connector body having a first connector body column receiving end, a first connector body gusset contact end and a first connector body gusset contact face at the first connector body gusset contact end, in which the first connector body gusset contact face has an aperture; and

at least a pair of first connector arms, each first connector arm being coupled to and extending from the first connector body;

the second connector comprising:

a second connector body having a second connector body column receiving end, a second connector body gusset contact end and a second connector body gusset contact face at the second connector body gusset contact end, in which the second connector body gusset contact face has an opening ; and

at least a pair of second connector arms, each second connector arm being coupled to and extending from the second connector body;

the pin comprising:

a pin-body having a first end and an opposed second end, the first end adapted for coupling the aperture on the first connector body gusset contact face, and the second end adapted for engaging the opening on the second connector body gusset contact face.

2. A connector assembly according to Claim 1, in which the first end of the pin-body is threaded and engages the aperture in the first connector body gusset contact face, in which the aperture is threaded.

3. A connector assembly according to Claim 1 or 2, in which the opposed second end of the pin is conical.

4. A connector assembly according to Claim 1, 2 or 3, in which the pin further comprises a pin-hole positioned on the pin body.

5. A system of modular frame units for forming a modular building, comprising:

- a first module frame unit having a first module frame first end coupled to a first connector;

- a second module frame unit having a second module frame first end coupled to a second connector; and

- the first connector and the second connected coupled by a pin and sandwiching a gusset plate,

in which the first connector, the second connector, the pin and the gusset plate are as defined in any preceding claim.

6. A method for coupling modular frame units for forming a modular building, comprising:

- coupling a first connector to a first connector end of a first module frame unit;

- coupling a second connector to a second connector end of a second module frame unit; and

- sandwiching a gusset plate and coupling the first connector and the second connector using a pin to form modular frame units, in which the first connector, the second connector, the pin and the gusset plate are as defined in any of Claims 1 to 4.

7. A modular building comprising the connector assembly as defined in any of Claims 1 to 4.