BALLISTIC RESISTANT BUILDING COMPONENTS AND SYSTEM

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ABSTRACT
A ballistic resistant building component and system are disclosed. The component may comprise a panel that may be ballistic resistant, and may also be fire resistant. The panel includes a honeycomb core interposed between two ballistic resistant layers (e.g., fiberglass) which are also interposed between two decorative veneers so that the panel may be incorporated into a building, furniture or other component. The panel may form a door, a wall, free standing modular wall system, a partition, a ceiling and may also be used to form a room or countertop.
BALLISTIC RESISTANT BUILDING COMPONENTS AND SYSTEM

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] Not Applicable

STATEMENT RE: FEDERALLY SPONSORED RESEARCH/DEVELOPMENT

[0002] Not Applicable

BACKGROUND

[0003] The various aspects disclosed herein relate to a ballistic resistant building component and system which may also be fire resistant.

[0004] Safety and security are important to individuals and entities. Safe rooms have been designed to protect individuals from those who wish to harm them. Safe rooms are designed to separate the occupants of a home or commercial business from an intruder or criminal. Retail stores and bank tellers are also subject to danger by thieves. As such, security partitions and counter systems have been designed to protect the employees of retail stores and banks by retrofitting existing structures with heavy steel plates or ballistic resistant fiberglass panels. As a result, these structures (e.g., rooms, partitions, desks, retail counter tops, bank teller partitions) are substantially heavy and require extremely high labor/instal lation costs. These safe rooms and partitions also suffer from other deficiencies.

[0005] Accordingly, there is a need in the art for an improved ballistic resistant building component and system.

BRIEF SUMMARY

[0006] The various aspects described and shown herein relate to a panel that forms the partition, wall, free standing modular interior or exterior wall system or other structure. The structure is built from the panels themselves. The panel may have a honeycomb core interposed between two ballistic resistant layers which are also optionally interposed between two optional decorative veneers is disclosed. Instead of decorative veneers, it is contemplated that the exterior surface of the ballistic resistant layers be prepared to accept a wet paint or powder coating. An optional filler material for providing fire resistance may be filled within the cavities defined by the honeycomb core. The panel may be used to form a door, a ceiling, or a furniture component. The panel may also be attached to other panels for forming a wall, a ceiling, a room, a door, a doorway, furniture, etc. To attach the panels together, brackets and other joints may be used to secure the panels together either end to end or perpendicular to each other.

[0007] In an aspect, a fire rated ballistic resistant panel is disclosed. The panel may comprise a honeycomb core, first and second ballistic resistant panels and at least one decorative veneer. The first and second ballistic resistant panels may be attached to opposed sides of the honeycomb core. The at least one decorative veneer may be attached one of the first and second ballistic resistant panels.

[0008] The panel may have first and second decorative veneers. The first decorative veneer may be attached to the first ballistic resistant panel. The second decorative veneer is attached to the second ballistic resistant panel. In this manner, both sides of the panel have an appealing exterior shell.

[0009] The panel may further have an optional filler material being fire resistant disposed within the cavities of the honeycomb core.

[0010] The first and second ballistic resistant panels may be fabricated from fiberglass, Kevlar, carbon fiber, para-aramid synthetic fiber or combinations thereof. The first and second decorative veneers may be fabricated from wood.

[0011] In another aspect, a door is disclosed. The door include a panel, top and bottom rails and left and right rails. The panel may have a honeycomb core, first and second ballistic resistant panels, and first and second decorative veneers. The first and second ballistic resistant panels may be attached to opposed sides of the honeycomb core. The first decorative veneer may be attached to the first ballistic resistant panel. The second decorative veneer may be attached to the second ballistic resistant panel. Top and bottom rails may be respectively attached to the top and bottom edges of at least one of the top and bottom edges of the honeycomb core, first and second ballistic panels, and first and second decorative veneers. The left and right rails may be respectively attached to the left and right edges of at least one of the top and bottom edges of the honeycomb core, first and second ballistic panels, and first and second decorative veneers.

[0012] At least one of the left or right rails may be sufficiently thick to receive a lockset.

[0013] The top, bottom, left and right rails may have a U channel for receiving a collective thickness of the honeycomb core, first and second ballistic resistant panels and first and second decorative veneers.

[0014] Opposed ends of the top and bottom rails may be fitted against opposed ends of the left and right rails.

[0015] An optional filler material being fire resistant may be disposed within the cavities of the honeycomb core.

[0016] In another aspect, a safe room for resisting fire and projectiles is disclosed. The safe room may comprise a plurality of panels and a plurality of joints. Each of the panels may have a honeycomb core, first and second ballistic resistant panels and at least one decorative veneer. The first and second ballistic resistant panels may be attached to opposed sides of the honeycomb core. The at least one decorative veneer may be attached one of the first and second ballistic resistant panels.

[0017] The plurality of joints may be attached to the plurality of panels for connecting adjacent panels in line with each other and at any angle between about 10 degrees and 180 degrees, and more particularly, at about 30, 45, 60, 90, 120 or 150 degrees with respect to each other.

[0018] At least one of the joints may have first and second channels for receiving adjacent panels wherein the first and second channels are oriented at any angle between about 10 degrees and 180 degrees, and more particularly, at about 30, 45, 60, 90, 120 or 150 degrees with respect to each other. Additionally or alternatively, at least one of the joints may have first and second channels for receiving adjacent panels wherein the first and second channels being oriented at 180 degrees with respect to each other.

[0019] At least one of the joints may be a spline and the edges of the adjacent panels may have a recess for receiving the spline. The recess is defined by a set back of the honeycomb core from the ballistic resistant layers. The spline may be fabricated from a solid wood composite, plastic composite or combinations thereof.

[0020] In the safe room, one of the panels may have a doorway with a door. The door may have a honeycomb core,
first and second ballistic resistant panels, a first decorative veneer, a second decorative veneer, top and bottom rails and left and right rails. The first and second ballistic resistant panels may be attached to opposed sides of the honeycomb core. The first decorative veneer may be attached to the first ballistic resistant panel. The second decorative veneer may be attached to the second ballistic resistant panel. The top and bottom rails may be respectively attached to top and bottom edges of at least one of the top and bottom edges of the honeycomb core, first and second ballistic panels, and first and second decorative veneers. The left and right rails may be respectively attached to left and right edges of at least one of the top and bottom edges of the honeycomb core, first and second ballistic panels, and first and second decorative veneers. It is also contemplated that the left and right rails may be respectively attached to left and right edges of at least one of the top and bottom edges of an industry qualified door selected by the customer.

At least one of the door or panel may have a filler material being fire resistant disposed within the cavities of the honeycomb core.

In another aspect, a retail counter system for servicing customers is disclosed. The counter may comprise at least one vertically oriented panel, a joint and a countertop. Each of the panels may comprise a honeycomb core, first and second ballistic resistant panels and at least one decorative veneer. The first and second ballistic resistant panels may be attached to opposed sides of the honeycomb core. The at least one decorative veneer may be attached one of the first and second ballistic resistant panels. The joint may be attached to a top edge of the panel. The countertop may be attached on top of the joint.

The top edge of the panel may have a recess for receiving a mounting protrusion of the joint. The joint may have flanges so that threaded fasteners may engage the mounting protrusion to join the vertical panel to the joint and threaded fasteners may engage the countertop to join the countertop to the joint.

Alternatively, the joint may have flanges and a channel for receiving within the channel the top edge of the vertically oriented panel so that threaded fasteners may engage the joint to join the vertical panel and the countertop to the panel.

Alternatively, the joint may be an angle bracket so that threaded fasteners may engage the joint to join the vertical panel and the countertop to the panel.

The counter may further comprise a vertical wall disposed at a 90 degree angle to a left or right side of the vertically oriented panel wherein the vertical wall and the vertical panel are attached to each other with a joint. Adjacent vertical panels may be attached to each other with a spline fabricated from a solid core.

The counter may further comprise a toe kick disposed at a lower edge of the vertical panel. The toe kick may have a level adjustment mechanism. The toe kick may be disposed within a recess formed at the lower edge of the vertical panel.

FIG. 1 is an exploded perspective view of a panel including a honeycomb core, ballistic resistant layers and decorative veneers;

FIG. 2 is a front view of a door fabricated with the panel shown in FIG. 1;

FIG. 3 is a cross-sectional view of the panel and a trim of the door shown in FIG. 2;

FIG. 3A is an alternate view of the panel and trim connection;

FIG. 3B is a further alternative view of the panel and trim connection;

FIG. 4 is a cross-sectional view of the room fabricated with the panel shown in FIG. 1;

FIG. 5 illustrates a structure for attaching a vertical panel to a support surface as shown in FIG. 4;

FIG. 6 is an alternate structure to the structure shown in FIG. 5 for attaching the vertical panel to the support surface;

FIG. 7 illustrates a structure for attaching a vertical panel to a horizontal panel as shown in FIG. 4;

FIG. 7A is an alternate structure for attaching the vertical panel to the horizontal panel or two vertical panels;

FIG. 8 illustrates a structure for joining two adjacent panels end to end;

FIG. 9 illustrates an alternate structure to the structure shown in FIG. 8 for joining two adjacent panels;

FIG. 10 illustrates a structure for joining a horizontal panel forming a floor and a vertical panel forming a wall;

FIG. 11 illustrates a door formed in one of the panels of the room;

FIG. 12 illustrates a counter system for a bank teller or retail store;

FIG. 13 illustrates a first embodiment of a structure for joining a first panel perpendicularly to a second panel;

FIG. 14 illustrates a second embodiment of the structure for joining the first panel perpendicularly to the second panel;

FIG. 15 illustrates a third embodiment of the structure for joining the first panel perpendicularly to the second panel;

FIG. 16 illustrates a structure for joining two adjacent panels end to end; and

FIG. 17 illustrates a toe kick formed in a vertical panel of the counter shown in FIG. 12.

DETAILED DESCRIPTION

Referring now to the drawings, a bullet resistant and fire rated panel 10 for fabricating a wall, partition, door, furniture, or a nonstructural building component is shown. The panel 10 comprises an inner core 12 with decorative veneers 14 attached to both sides of the inner core 12. The panel 10 may be utilized to fabricate a door (see FIG. 2), form a wall 18 (see FIG. 4), a partition 20 or other non-structural building or furniture component.

More particularly, referring now to FIG. 1, the panel 10 includes the inner core 12 and decorative veneers 14 attached to the opposed sides of the inner core 12. The inner core 12 provides the ballistic resistance and/or the fire resistance for the panel 10. The inner core 12 may have a honeycomb core 22. The honeycomb core 22 may be fabricated from aluminum, stainless steel, copper, steel, paper, and other materials known in the art or developed in the future. Preferably, the honeycomb core 22 is fabricated from aluminum due to its light weight and relatively high strength characteristics.

BRIEF DESCRIPTION OF THE DRAWINGS

These and other features and advantages of the various embodiments disclosed herein will be better understood with respect to the following description and drawings, in which like numbers refer to like parts throughout, and in which:
The honeycomb core 22 is preferably about 1-4 inches thick. Moreover, the honeycomb core 22 may have various cell configurations, cell sizes and densities. Preferably, the honeycomb core 22 may have a geometric cell configuration such as hexagonal, pentagonal, square, triangular, polygonal, circular, oval or those known in the art or developed in the future. The density or the number of cavities per unit area may vary but is preferably around 10 to 300 cavities per square foot.

The honeycomb core 22 defines a plurality of cavities. An optional filler material 26 may be disposed within the cavities and held in place between the ballistic resistant layers 24 attached to both sides of the honeycomb core 22. The filler material 26 may be selected from ceramic, composite, mineral or combinations thereof for providing fire resistance and/or additional ballistic resistance over and above the ballistic resistance provided by the ballistic resistant layers 24 and for providing strength to the panel 10 and above the strength provided by the honeycomb core 22. Additionally, as described below, the filler material 26 may also facilitate formation of a recess 42 between the ballistic resistant layers 24 and supporting the panels 10 or other structure at the outer edges 62 of the panel 10. The recess 42 may be formed at the outer edges 62 of the panel 10 and support the panel 10 and other structures even if the filler material 26 is not disposed within the cavities of the honeycomb core 22. Nonetheless, it is preferable to have the filler material 26 disposed within the cavities of the honeycomb core 22 when forming the recess 42 at the outer edges 62. Additionally, the filler material 26 may be sufficiently strong to receive threads of a screw to assemble the panel 10 to other components such as an adjacent panel 10 or a joint.

The ballistic resistant layers 24, the honeycomb core 22 and the optional filler material 26 provide the panel 10 with ballistic resistance and fire resistance. On opposed sides of the ballistic resistant layers 24, decorative veneers 14 may be secured to the ballistic resistant layers 24. The decorative veneers 14 provide aesthetics so that the panels 10 may be utilized in a nonindustrial setting such as in a home, retail business, etc. and so that the panels 10 blend in with the surrounding non-ballistic resistant and non-fire resistant furniture, structure and component. The decorative veneers 14 may be fabricated from wood, metal, composite material and are preferably fabricated from composite material. It is also contemplated that in lieu of the decorative veneer 14, the exterior surface of the ballistic resistant layers 24 may be prepared to accept a wet paint or a powder finish coating. Thereafter, the exterior surface may be painted or be powder coated.

The ballistic resistant layers 24 may be secured to the honeycomb core 22 by various methods known in the art or developed in the future. By way of example and not limitation, the ballistic resistant layers 24 may be adhered, sonically welded to or otherwise attached to the honeycomb core 22. Similarly, the decorative veneers 14 may be attached to the ballistic resistant layers 24 by way of adhesive, sonic welding, or other methods known in the art or developed in the future. The decorative veneers 14 are shown as being attached to both sides of the inner core 12. However, it is also contemplated that only one decorative veneer 14 may be secured to only one side of the inner core 12.

The filler material 26 which is optional may be disposed within the cavities of the honeycomb core 22 by one of a variety of methods. By way of example and not limitation, one of the ballistic resistant layers 24 may be secured to one side of the honeycomb core 22. With the cavities being exposed upward and the ballistic resistant material 24 supported by a surface so that the honeycomb core 22 and the ballistic resistant layers 24 are laying on the surface, the filler material 26 may be poured into the cavities and leveled to the upper edges of the honeycomb core 22. Once the filler material 26 has set, the other ballistic resistant layer 24 may be attached to the honeycomb core 22. Preferably, no space or gap is left in the honeycomb core 22 when the filler material 26 fills the cavities of the honeycomb core 22. The ballistic resistant layers 24 may be secured to the edges of the honeycomb core 22 and/or the filler material 26 with adhesives, screws or the layers 24 may be bolted onto the honeycomb core 22.

The outer periphery of the decorative veneers 14 is preferably coextensive in size with respect to the outer periphery of the ballistic resistant layers 24. Similarly, the outer periphery of the honeycomb core 22 may be coextensive with the outer peripheries of the ballistic resistant layers 24 and the decorative veneers 14. However, it is not necessary to have these outer peripheries be coextensive. By way of example and not limitation, the outer periphery of the honeycomb core 22 may be smaller than the outer peripheries of the ballistic resistant layers 24 and the decorative veneers 14. In this manner, a cutback or an offset is formed to form the recess 42, as further explained below.

Referring now to FIG. 2 a door 16 fabricated from the panel 10 and a trim 28 is shown. The panel 10 and trim 28 may be fabricated to a length, height and width to fit within a doorway. The trim 28 may have a U-shaped cross-sectional configuration, as shown in FIG. 3. The trim 28 may have a channel 30. The channel 30 receives the peripheral edge 62 of the panel 10. In this example, the honeycomb core 22, ballistic resistant layers 24 and the decorative veneers 14 have outer peripheries which are coextensive with each other. To secure the trim 28 to the outer peripheral edge 62 of the panel 10, the trim 28 may be adhered to the panel 10 with adhesive. Additionally or alternatively, the channel 30 is formed by walls 32 to which screws 34 may be used to secure the walls 32 to the panel 10. The screws 34 may be sufficiently long so that threads of the screws 34 engage the ballistic resistant layer 24, and preferably if filler material 26 is disposed within the cavities of the honeycomb core 22, the threads of the screws 34 will engage the filler material 26 as well.

The trims 28 may be fitted on all four sides of the panel 10 to form the door 16, as shown in FIG. 2. The opposed ends of the trims 28 may be mitered or otherwise fitted to adjacent trims 28. The door 16 may also have a door knob 34 and hinges 36, as required. The trim 28, as shown in FIG. 3, may have a solid portion 38. The lock set and the door knob 34 may be mounted to the solid portion 38 of the door trim 28. Similarly, the hinges 36 may be mounted to the solid portion 38 of the door trim 28 on the other side of the lock set.
Referring now to FIG. 3A, an alternate door trim 28a is shown. The alternate door trim 28a is flush with the exterior surface of the decorative veneers 14 unlike the door trim 28 shown in FIG. 3 which has a lip 40. In FIG. 3A, the honeycomb core 22 is cutback so as to form the recess 42 within the outer peripheral edge 62 of the panel 10. The door trim 28a has a protrusion 44 that extends into the recess 42. The door trim 28 may be adhered to the panel 10 with adhesive and/or attached to the panel 10 with screws 34. The screws 34 may be driven reasonably long so that the threads of the screws 34 engage protrusion 44 of the door trim 28a. The hinges 36 and the lock set/door knob 34 may be mounted to the solid portion 38 of the door trim 28a.

Referring now to FIG. 3B, a further alternative door trim 28b is shown. Only the protrusion 44 is disposed in the edge portion. The external portion 38 is eliminated from the embodiment shown in FIG. 3A. The protrusion 44 acts as an internal framing member. The lockset and doorknob 34 may be mounted to the protrusion 44 or internal framing member.

Referring now to FIG. 4, a cross-sectional view of the room 50 is shown. The room 50 has vertical walls 18, a ceiling 52, drywall 54 and ground 56. One or more of the panels 10 may be used to form the walls 18 and/or ceiling 52 of the room 50.

The panels 10 forming the walls 18 may be secured to the ground 56 by way of a U-shaped channel 58. The U-shaped channel 58 may be secured to the ground 56 by way of bolt 60. The bolt 60 may be a concrete anchor, lag bolt, or other fastener 68 for use in securing the U-shaped channel 58 to the supporting surface 56. The bolt 60 may be countersunk into the bottom surface 64 of the U-shaped channel 58 so that an edge of the panel 10 may rest on lower surface 64 of the U-shaped channel 58. The recess 66 of the U-shaped channel 58 may be sized to snugly receive the panel 10. Once the panel 10 is inserted into the recess 66 of the U-shaped channel 58, fasteners 68 (e.g., bolts, screws, etc.) may be screwed into sidewalls 70 of the U-shaped channel 58 and engaged to the panel 10, and preferably to the ballistics layers 24 and/or the filler material 26 filled within the cavities of the honeycomb core 22. Adhesive may also be used to secure the panel 10 to the channel 58.

Referring now to FIG. 6, an alternate bracket 72 for mounting the vertical panel 10 to the supporting surface 56 is shown. In this example, angle brackets 72 are used to mount the vertical panel 10 to the supporting surface 56. In FIG. 6, one angle bracket 72 is attached to each side of the panel 10. The angle brackets 72 are secured to the panel 10 and the supporting surface 56 with fasteners 68.

The vertical panel 10 that forms the walls 18 may be secured to a panel(s) 10 forming the ceiling 52 with brackets 74.

The brackets 74 may have two U-shaped channels 76, 78 which are oriented 90° with respect to each other. One of the U-shaped channels 76 is oriented downward to receive the vertical panel 10 that forms the wall 18. The other U-shaped channel 78 is oriented horizontally to receive the panel 10 that forms the ceiling 52. Referring now to FIG. 7, the vertical and horizontal panels 10 may be inserted into the recesses 76, 78 and secured thereto. Initially, the horizontal panel 10 is inserted into the recess 78 and the upper and/or lower fasteners 68 are threaded into the brackets 74 and the horizontal panel 10 (i.e., into the layer 24 and preferably into the filler material 26 if used). Thereafter, the vertical panel 10 is inserted into the recess 76 and fasteners 68 are screwed through the brackets 74 and secured to the vertical panel 10 as discussed above. Adhesives may also be used to secure the panels 10 to the brackets 74.

Referring now to FIG. 7A, the panels 10 may be attached to each other at different angles 75 (e.g., between about 10 degrees and 180 degrees, and more particularly, at about 30, 45, 60, 90, 120, 150 degrees). The panels may be two vertical panels 10 or a vertical panel 10 or a ceiling panel 10.

If a single panel 10 cannot form the entire wall 18 or ceiling 52, then two panels 10 may be secured to each other and to each other as shown in FIGS. 8 and 9. In FIG. 8, a spline 80 is inserted into recess 42 formed at the edge 62 of the panel 10 in the same manner discussed above. The recess 42 cuts back through the honeycomb core 22 and the optional filler material 26. The honeycomb core 22/filler material 26 and the ballistics resistant layers 24 define the recesses 42. The spline 80 may extend the entire length of the edge 62 of the panel 10 or may consist of short intermediate lengths inserted along short segments of the edge 62 of the panel 10. The spline 80 is sized to snugly fit within the recesses 42 of the adjacent panels 10. In particular, a thickness 82 of the spline 80 may be equal to or slightly less than the width 84 of the recess 42. A length 86 of the spline 80 may equal the cumulative depths 87 of the recesses 42. Fasteners 68 may be used to secure the spline 80 to the panels 10. The spline 80 may be fabricated from a material sufficiently strong to engage the threads of the fasteners 68.

Alternatively, the panels 10 may be connected to each other with an I-beam bracket 90, as shown in FIG. 9. In this example, the edges 62 of the panels 10 are not formed with recesses 42. Rather, the honeycomb core 22 is coextensive with the ballistics resistant layers 24 and the decorative veneers 14. The I-beam bracket 90 has two U-shaped channels 92 which are oriented in 180° opposite directions. When the panels 10 are inserted into the channels 92 of the I-beam bracket 90, the panels 10 are extended so as to form larger ceilings 52 or walls 18.

Referring now to FIG. 10, it is contemplated that the same type of bracket 74 may be used to connect the vertical panel 10 and the horizontal panel 10 shown in FIG. 4 may also be used to connect a horizontal panel 10 forming a floor 94 and the wall 18.

Referring now to FIG. 11, a top cross-sectional view of a wall 18 with the door 16 is shown. The wall 18 may have a through hole defining a doorway 96. The inner periphery of the doorway 96 may have a door jam 98 that receives the door 16. The door jam 98 may have a single channel 100 that receives the inner peripheral edge of the doorway 96. The door jam 98 may extend upward along both sides of the doorway 96 as shown in FIG. 11 and may also have a top door jam 98 which is mitered or otherwise configured to match the vertical door jambs 98. The door jambs 98 may also have a flange 102 that extends inward into the doorway 96 and prevents the door 16 from swinging inward. Rather, the door 16 butts up against the flanges 102 so that the door 16 may only be open in the direction of arrow 104. The door 16 may be attached to one of the door jambs 98 with the hinge 36 so that the door 16 can be traversed between the open and closed positions. The door jambs 98 may be secured to the inner periphery of the doorway 96 with fasteners 68 and/or adhesives in a similar fashion as described above in relation to the other brackets 74 and joints. The door 16 may be a ballistic...
resistant and/or fire rated door as described above or may be a non-ballistic resistant/non-fire rated door.

[0071] Referring now to FIGS. 12-17, the panels 10 may also be utilized to fabricate partitions 20. The partitions 20 may be an individual countertop 112 such as those utilized at a bank or a cash register of a retail store. One or more of these partitions 20 may be laid adjacent to each other to form a bank of partitions 20, as needed or desired. The partitions 20 may each have a front foot well wall 108 in the middle of two privacy walls 110. The partitions 20 may also have a countertop 112. The countertop 112, front foot wall 108 and the privacy wall 110 are all oriented perpendicular to each other. This means that an edge 62 of one panel 10 will butt up against an exterior surface of an adjacent panel 10. In order to connect or secure the edge 62 of one panel 10 to the flat surface of the second panel 10, FIGS. 13-15 illustrate three different structures for attaching the edge 62 of one panel 10 to the flat surface of the second panel 10.

[0072] In FIG. 13, the edge 62 of one panel 10 is formed with a recess 42. The recess 42 receives a member 114 defined by two walls 116. The ballistic resistant layers 24 are secured to the wall 116. Preferably, the head of the fastener 68 is countersunk or countersink to the ballistic resistant layers 24 so that the decorative veneers 14 do not support a head of the fastener 68 in a significant manner. Alternatively, the head of the fastener 68 may rest and be supported by the veneer 14 of the panel 10.

[0073] In FIG. 14, the walls 116 of the protrusion 114 extend or are positioned externally to the edge portion 62 of the panel 10. The fastener 68 may be secured to the wall 116 and the ballistic resistant layers 24. Additionally, the fastener 68 may be sufficiently long so that the threads also engage the filler material 26 if present.

[0074] In FIG. 15, two angled brackets 72 are disposed on opposed sides of the panel 10 and secured thereto with fasteners 68, which engage the ballistic resistant layers 24 and preferably also the filler material 26. The brackets 72 shown in FIGS. 13-15 are secured to the flat surface of the other panel 10 with fasteners 68. The threads of the fasteners 68 engage the brackets 72 and the ballistic resistant layers 24 and are preferably sufficiently long to also engage the filler material 26 in the other panel 10.

[0075] Referring now to FIG. 16, in the event that two adjacent partitions 20 do not have privacy walls 110, countertops 112 and front foot well walls 108 of the adjacent partitions 20 may be secured to each other with the spline 80. The spline 80 is used to connect adjacent panels 10 as shown and described in relation to FIG. 8. Alternatively, adjacent countertops 112 and front foot well walls 108 may be secured to each other with L-beam brackets 90 as shown and described in relation to FIG. 9.

[0076] Referring now to FIG. 17, a toe kick 118 may be formed at the lower end portions of the front foot well walls 108 and the privacy walls 110. These walls 108, 110 are formed by vertically oriented panels 10. At the bottom of the walls 108, 110, a recess 42 is formed by cutting back the honeycomb core 22 from the ballistic resistant layers 24 and the decorative veneers 14. The toe kicks 118 extend along the entire length of the panel 10 and may have adjustable levelers 120 (e.g., levelers sold by Peter Meier, Inc.). The toe kicks 118 may be secured to the supporting surface 56 with an L-bracket 122. A first portion 124 of the L-bracket 122 may be secured to the supporting surface 56 with a fastener 68. The fastener 68 may be a concrete anchor or lag bolt. A second portion 126 may be secured to the toe kicks 118 with the fastener 68 as well. The adjustable levelers 120 allow the user to raise or lower one side of the walls 108, 110 so that the countertop level and the partitions do not rock back and forth.

[0077] The above description is given by way of example, and not limitation. Given the above disclosure, one skilled in the art could devise variations that are within the scope and spirit of the invention disclosed herein, including various ways of assembling the panels 10 or incorporating the panel 10 into furniture and buildings. Further, the various features of the embodiments disclosed herein can be used alone, or in varying combinations with each other and are not intended to be limited to the specific combination described herein. Thus, the scope of the claims is not to be limited by the illustrated embodiments.

What is claimed is:

1. A fire rated ballistic resistant panel, the panel comprising:
   a. a honey comb core;
   b. first and second ballistic resistant panels attached to opposed sides of the honey comb core;
   c. at least one decorative veneer attached one of the first and second ballistic resistant panels.

2. The panel of claim 1 wherein a first decorative veneer is attached to the first ballistic resistant panel and a second decorative veneer is attached to the second ballistic resistant panel.

3. The panel of claim 1 wherein exterior surfaces of the first and second ballistic resistant panels are prepared to receive either wet paint or a powder finish coating, and the panel further comprises the wet paint or the power finish coating adhered to the exterior surfaces of the first and second ballistic resistant panels.

4. The panel of claim 1 further comprising a filler material being fire resistant disposed within the cavities of the honeycomb core.

5. The panel of claim 1 wherein the first and second ballistic resistant panels are fabricated from fiberglass, Kevlar, aramid fiber, carbon fiber or combinations thereof.

6. The panel of claim 1 wherein the first and second decorative veneers are fabricated from wood.

7. A door comprising:
   a. a honey comb core;
   b. first and second ballistic resistant panels attached to opposed sides of the honey comb core;
   c. top and bottom rails respectively attached to top and bottom edges of at least one of the top and bottom edges of the honeycomb core and first and second ballistic panels;
   d. left and right rails respectively attached to left and right edges of at least one of the top and bottom edges of the honeycomb core and first and second ballistic panels.

8. The door of claim 7 further comprising:
   a. a first decorative veneer attached to the first ballistic resistant panel;
   b. a second decorative veneer attached to the second ballistic resistant panel; wherein the top and bottom rails are respectively attached to top and bottom edges of at least one of the top and bottom edges of the honeycomb core, first and second ballistic panels, and first and second decorative veneers; left and right rails respectively attached to left and right edges of at least one of the top and bottom edges of the
honeycomb core, first and second ballistic panels, and first and second decorative veneers.

9. The door of claim 7 wherein exterior surfaces of the first and second ballistic resistant panels are prepared to receive either wet paint or a power finish coating, and the door further comprises the wet paint or the power finish coating adhered to the exterior surfaces of the first and second ballistic resistant panels.

10. The door of claim 7 wherein at least one of the left or right rails is sufficiently thick to receive a lock set.

11. The door of claim 7 wherein the top, bottom, left and right rails have a U channel for receiving a collective thickness of the honeycomb core, first and second ballistic resistant panels and first and second decorative veneers.

12. The door of claim 7 wherein opposed ends of the top and bottom rails butt up against opposed ends of the left and right rails.

13. The door of claim 7 further comprising a filler material being fire resistant disposed within the cavities of the honeycomb core.

14. A safe room for resisting fire and projectiles, the room comprising:
   a plurality of panels, each panel comprising:
      a honeycomb core;
     first and second ballistic resistant panels attached to opposed sides of the honeycomb core;
     at least one decorative veneer attached one of the first and second ballistic resistant panels;
     a plurality of joints attached to the plurality of panels for connecting adjacent panels in line with each other and at 90 degrees with respect to each other.

15. The safe room of claim 14 wherein at least one of the joints has first and second channels for receiving adjacent panels, the first and second channels being oriented 90 degrees with respect to each other.

16. The safe room of claim 14 wherein at least one of the joints has first and second channels for receiving adjacent panels, the first and second channels being oriented at 180 degrees with respect to each other.

17. The safe room of claim 14 wherein at least one of the joints is a spline and edges of the adjacent panels has a recess for receiving the spline wherein the recess is defined by a set back of the honeycomb core.

18. The safe room of claim 17 wherein the spline is fabricated from a solid wood composite or plastic composite.

19. The safe room of claim 14 wherein one of the panels has a doorway with a door, the door comprising:
   a honeycomb core;
   first and second ballistic resistant panels attached to opposed sides of the honeycomb core;
   a first decorative veneer attached to the first ballistic resistant panel;
   a second decorative veneer attached to the second ballistic resistant panel;
   top and bottom rails respectively attached to top and bottom edges of at least one of the top and bottom edges of the honeycomb core, first and second ballistic panels, and first and second decorative veneers;
   left and right rails respectively attached to left and right edges of at least one of the top and bottom edges of the honeycomb core, first and second ballistic panels, and first and second decorative veneers.

20. The safe room of claim 18 wherein at least one of the door or panel has a filler material being fire resistant disposed within the cavities of the honeycomb core.

21. A retail counter for servicing customers, the counter comprising:
   at least one vertically oriented panel, the panel comprising:
      a honeycomb core;
      first and second ballistic resistant panels attached to opposed sides of the honeycomb core;
      at least one decorative veneer attached one of the first and second ballistic resistant panels;
      a joint attached to a top edge of the panel;
      a countertop attached on top of the joint.

22. The counter of claim 21 wherein the top edge of the panel has a recess for receiving a mounting protrusion of the joint, and the joint has flanges so that threaded fasteners may engage the mounting protrusion to join the vertical panel to the joint and threaded fasteners may engage the countertop to join the countertop to the joint.

23. The counter of claim 21 wherein the joint has flanges and a channel for receiving within the channel the top edge of the vertically oriented panel so that threaded fasteners may engage the joint to join the vertical panel and the countertop to the panel.

24. The counter of claim 21 wherein the joint is an angle bracket so that threaded fasteners may engage the joint to join the vertical panel and the countertop to the panel.

25. The counter of claim 21 further comprising a vertical wall disposed at a 90 degree angle to a left or right side of the vertically oriented panel wherein the vertical wall and the vertical panel are attached to each other with a joint.

26. The counter of claim 21 wherein adjacent vertical panels are attached to each other with a spline fabricated from a solid core.

27. The counter of claim 21 further comprising a toe kick disposed at a lower edge of the vertical panel.

28. The counter of claim 27 wherein the toe kick has a level adjustment mechanism.

29. The counter of claim 27 wherein the toe kick is disposed within a recess formed at the lower edge of the vertical panel.