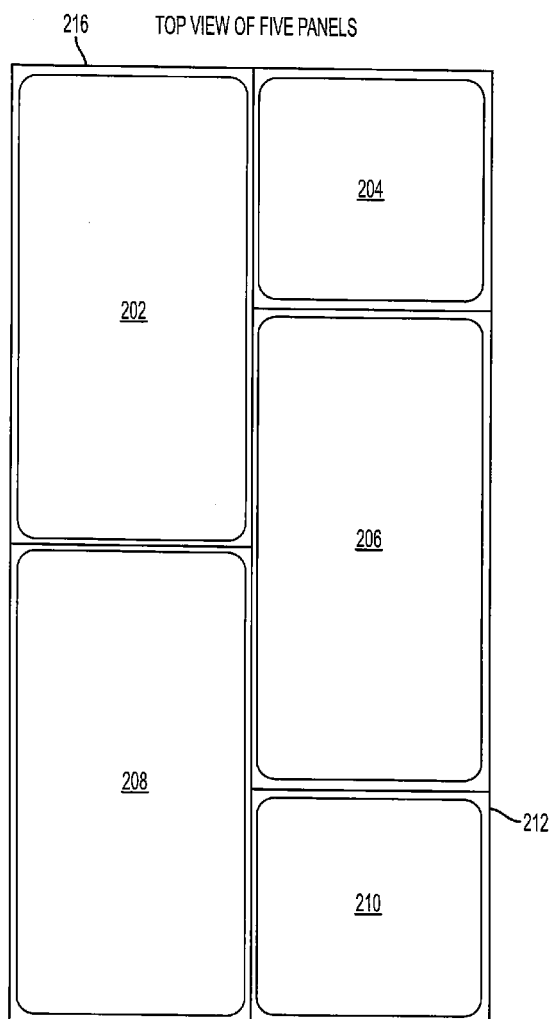




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**Bacon et al.**(10) **Pub. No.: US 2014/0109500 A1**(43) **Pub. Date: Apr. 24, 2014**(54) **MODULAR ROOF PANELS****Publication Classification**(71) Applicant: **Green Tech Products, LLC**, Rockwall,  
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Sep. 5, 2012, now Pat. No. 8,635,825.(60) Provisional application No. 61/531,672, filed on Sep.  
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CPC ... **E04D 1/10** (2013.01); **E04B 7/00** (2013.01);  
**E04B 1/66** (2013.01)USPC ..... **52/309.4**; 52/745.06; 52/741.4; 52/750(57) **ABSTRACT**

A roofing panel includes a front surface, a top surface, a bottom surface, a right-side surface, a left-side surface and a rear surface, the front surface, the top surface, the bottom surface, the right-side surface, the left-side surface and the rear surface include a waterproofing membrane. A plurality of top perimeter edges, the plurality of top perimeter edges include substantially concave bevels. A plurality of bottom perimeter edges, the plurality of bottom perimeter edges include substantially convex bevels. The bottom surface of the roofing panel includes an adhesive for adhering the roofing panel to a roof deck.



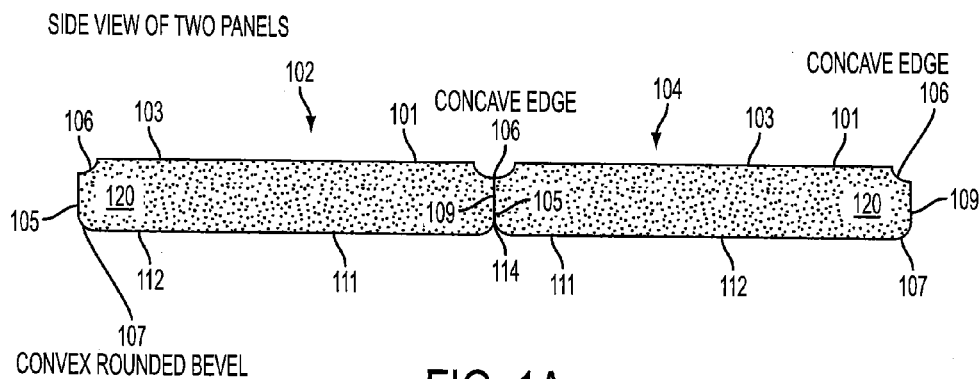


FIG. 1A

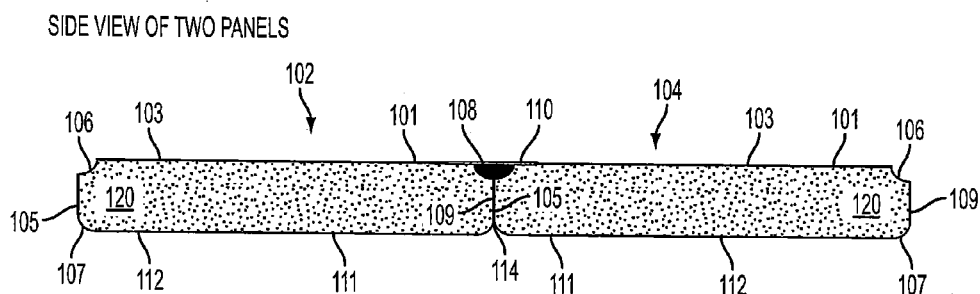


FIG. 1B

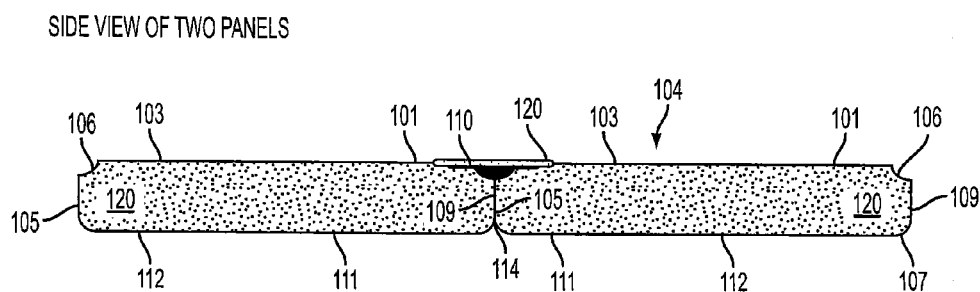


FIG. 1C

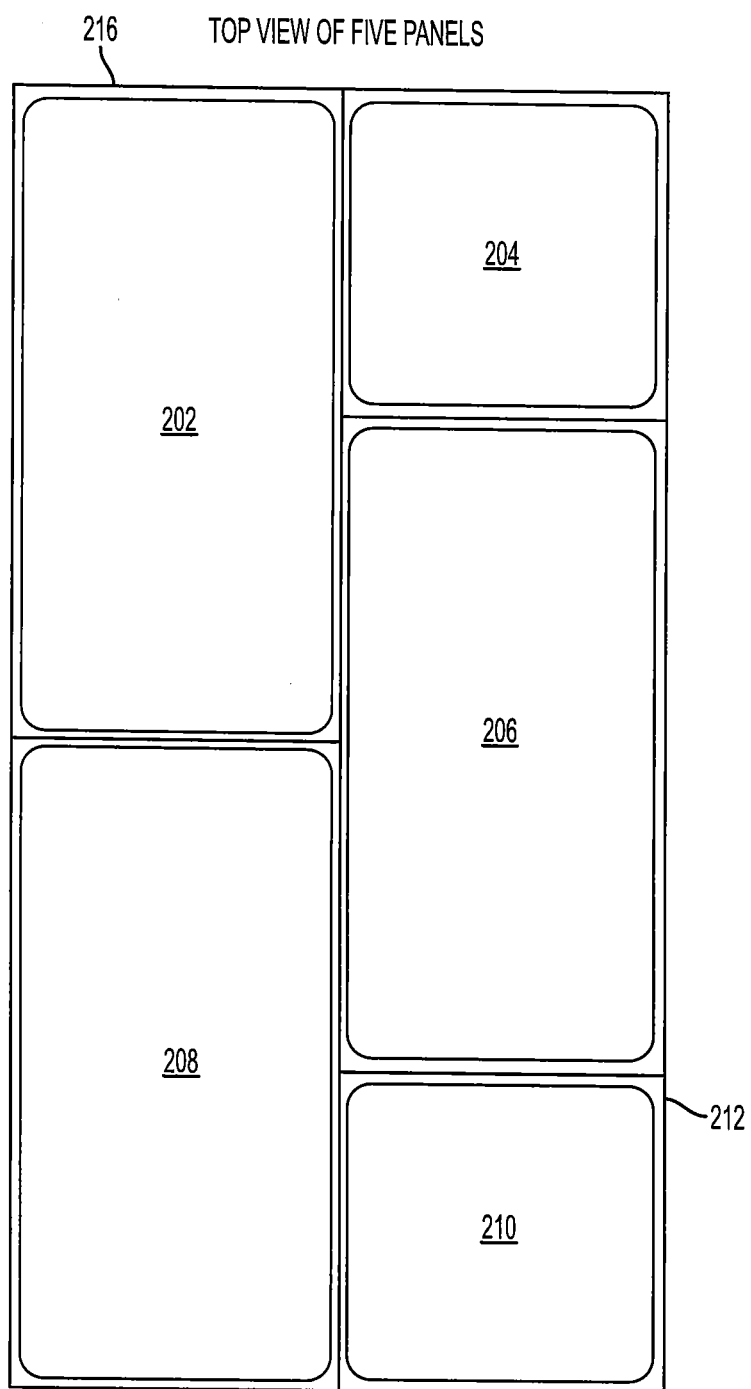


FIG. 2A

TOP VIEW OF FIVE PANELS

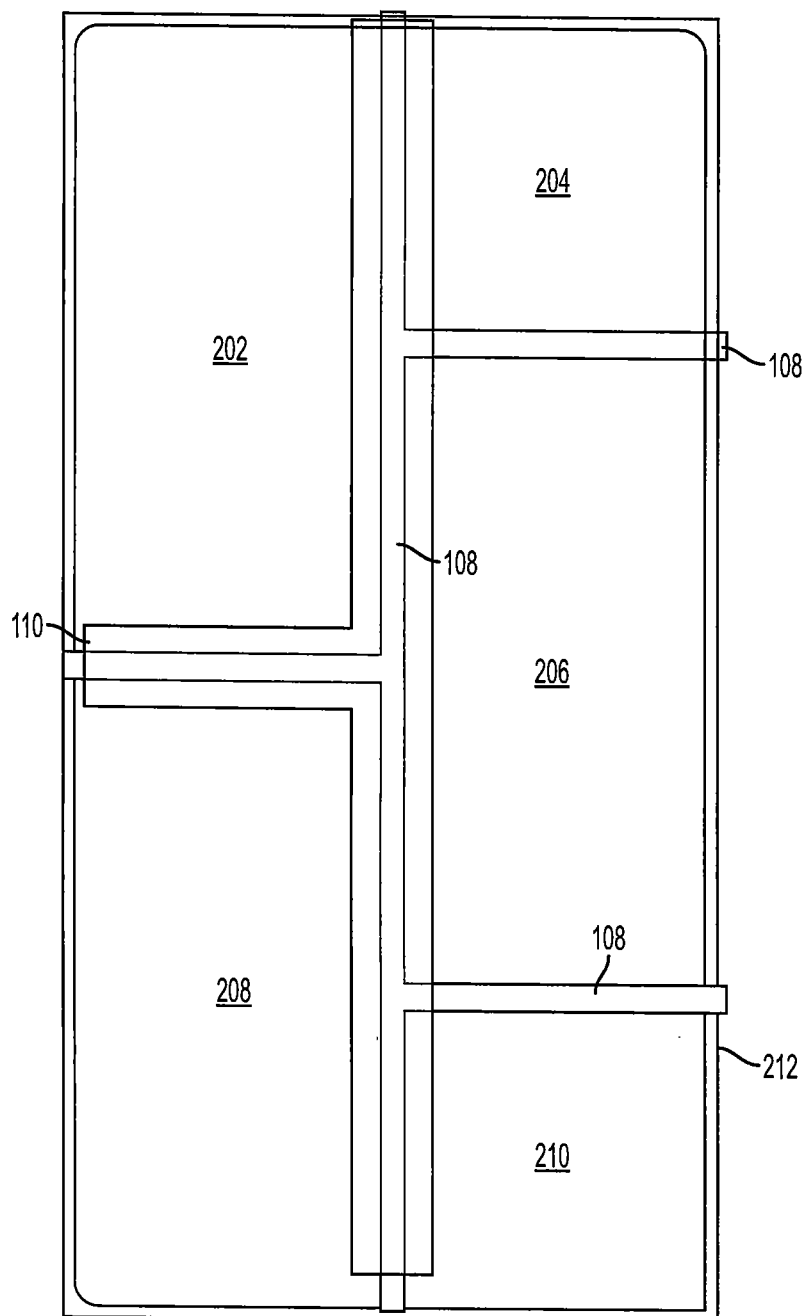


FIG. 2B

TOP VIEW OF FIVE PANELS

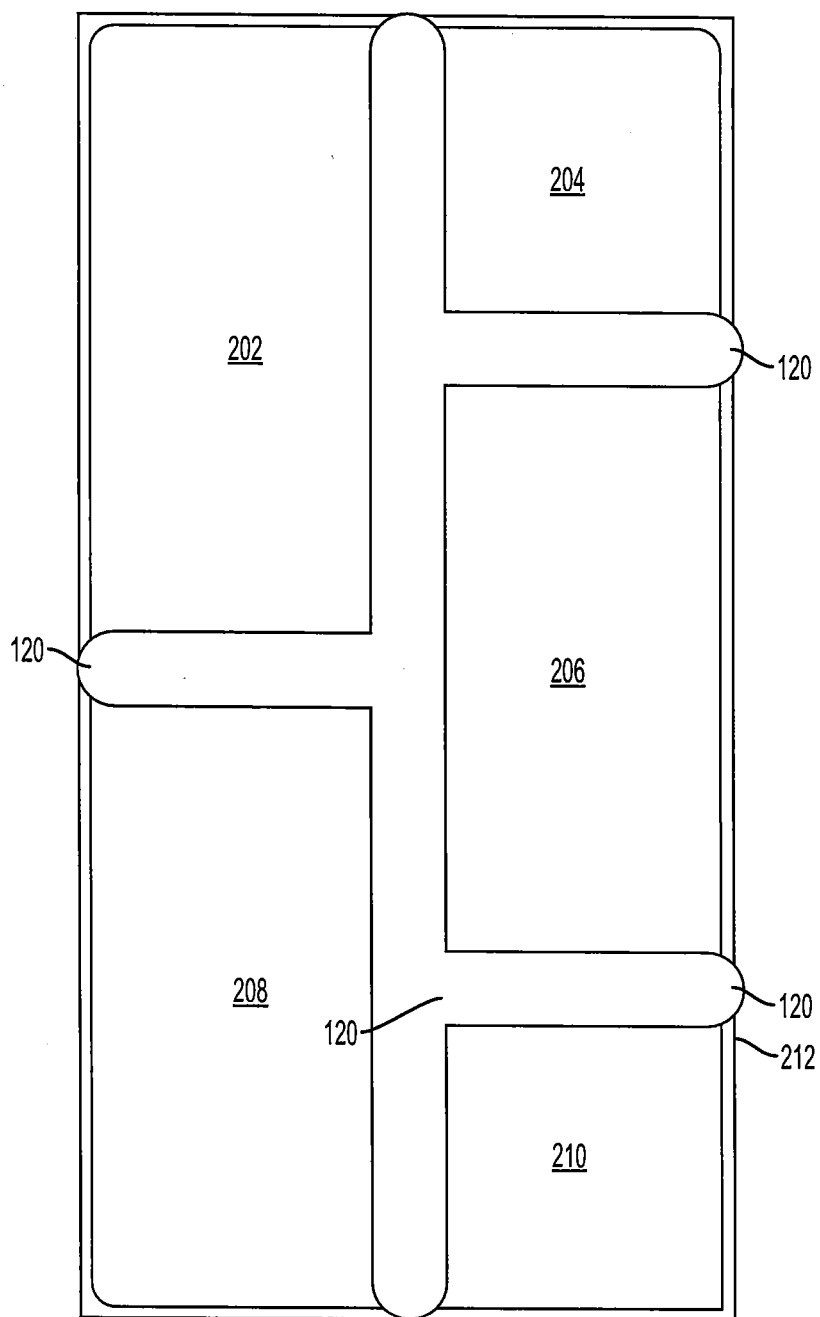


FIG. 2C

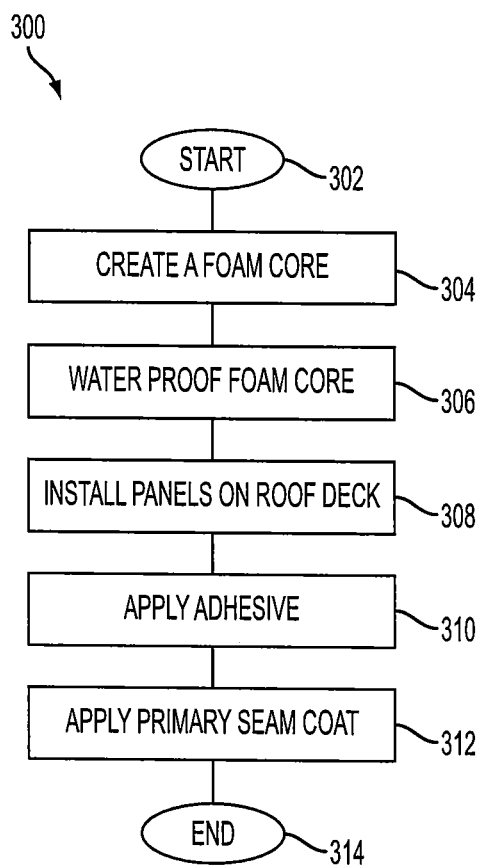


FIG. 3

## MODULAR ROOF PANELS

### CROSS-REFERENCE TO RELATED APPLICATIONS

**[0001]** This application is a continuation of U.S. patent application Ser. No. 13/603,488, filed on Sep. 5, 2012. U.S. patent application Ser. No. 13/603,488 claims priority from U.S. Provisional Patent Application No. 61/531,672, filed on Sep. 7, 2011. U.S. patent application Ser. No. 13/603,488 and U.S. Provisional Patent Application No. 61/531,672 are incorporated herein by reference.

### BACKGROUND OF THE INVENTION

**[0002]** 1. Technical Field

**[0003]** The present invention relates generally to sustainable roofing systems, and more particularly, but not by way of limitation, to a sustainable roofing system comprising, for example, modular, insulated, generally flat roofing panels that provide superior outer containment of water for drainage purposes, long life, and fast, reliable installation.

**[0004]** 2. History Of Related Art

**[0005]** Commercial and industrial buildings typically have roofs with low-slope roof decks. The roofing systems for these roofs with low-slope roof decks typically include one or more layers of a low-density roofing insulation, a layer of roofing cover boards that overlie the low-density roofing insulation layer(s), and a waterproofing membrane that overlies the layer of cover boards. The layer(s) of low-density insulation such as, for example, a low-density polymer-based foam insulation, if not protected, can be partially crushed or otherwise damaged from worker traffic over the insulation, the placement of heavy objects on the insulation, weather, and other causes commonly encountered in roofing construction. The layer of roofing cover boards that overlies the one or more layers of low-density insulation, protects the more fragile low density insulation from damage, acts as a fire barrier, provides a suitable substrate for the attachment of the overlying waterproofing membrane, and augments the insulating function of the low-density insulation. The uppermost waterproofing membrane layer overlying the cover board layer protects the underlying cover board and insulation layers from moisture and other adverse climatic conditions. Normally, these three components (the low-density insulation boards, the roofing cover boards, and the waterproofing membrane) of the roofing system are separately manufactured and separately and successively applied to the low-slope roof deck.

**[0006]** Currently, generally flat roof systems are installed in layers. For example, a first step in the installation of a generally flat roofing system is roof insulation, which must be protected from weather hazards. This causes a logistical problem for staging material. In addition to dry conditions prior to installation, roof insulation must also be made waterproof at an end of each work day resulting in loss of valuable time at the end of each work day. For example, waterproofing the roof insulation is achieved by making an open edge waterproof and the following morning preparing/removing newly waterproofed edge to continue work. Once the insulation is installed, a variety of waterproof materials are used. All current products are affected by weather such as, for example, a threat of rain. If it happens to rain on unprotected roof insulation, the roof insulation is required to be torn out and replaced. As a result, many roofing contractors err on the side of caution and choose not to work with even a small threat of

rain, resulting in many days of production being lost. This delay causes total project completion time to increase significantly. Many trades, including HVAC, electrical, sheetrock and flooring contractors cannot work until building is waterproof.

**[0007]** In the case of a roof already in place, a small leak or section damaged by a storm results in water to enter the roofing system. The water travels under and through other pieces of insulation to other parts of the roofing system. In many instances, the only remedy is to tear off and replace the entire roof. Multiple areas on an inside of a building sustain water damage from one leak source. The migrating nature of flat roof leaks can be extremely difficult to pinpoint, specially if the roofing system comprises a top layer of rock.

**[0008]** In addition, many flat roofs are replaced within 20 years. This process typically involves removing the waterproof material as well as the insulation. This process is costly and opens the building up to the risk of water damage. When roofing insulation on a flat roof becomes wet it must be removed. During installation, this condition slows the overall speed at which a traditional flat roof can be installed (due to threats of rain and the preventative measures at the end of each work day). After installation, a small leak can make it necessary to replace the entire roof.

### BRIEF SUMMARY OF THE INVENTION

**[0009]** A roofing panel includes a front surface, a top surface, a bottom surface, a right-side surface, a left-side surface and a rear surface, the front surface, the top surface, the bottom surface, the right-side surface, the left-side surface and the rear surface include a waterproofing membrane. A plurality of top perimeter edges, the plurality of top perimeter edges include substantially concave bevels. A plurality of bottom perimeter edges, the plurality of bottom perimeter edges include substantially convex bevels. The bottom surface of the roofing panel includes an adhesive for adhering the roofing panel to a roof deck.

**[0010]** A roofing system for a generally flat roof. The roofing system includes a generally flat roof deck and a plurality of roofing panels, each roofing panel of the plurality of roofing panels include a front surface, a top surface, a bottom surface, a right-side surface, a left-side surface and a rear surface. The front surface, the top surface, the bottom surface, the right-side surface, the left-side surface and the rear surface include a waterproofing membrane. A plurality of top perimeter edges of the roofing panel include substantially concave bevels while a plurality of bottom perimeter edges of the roofing panels include substantially convex bevels. The bottom surface of the roofing panel includes an adhesive for adhering each roofing panel to the generally flat roof deck.

**[0011]** A method of installing a generally flat roof, the method includes providing a plurality of roofing panels, each roofing panel of the plurality of roofing panels includes a front surface, a top surface, a bottom surface, a right-side surface, a left-side surface and a rear surface. The method further includes applying to the bottom surface of each roofing panel of the plurality of roofing panels, an adhesive, adhering the plurality of roofing panel to the generally flat roof via the adhesive, and sealing a plurality of seams formed by adjoining the plurality of roofing panels to form an effective barrier against water infiltration.

### BRIEF DESCRIPTION OF THE DRAWINGS

**[0012]** A more complete understanding of the method and system of the present invention may be obtained by reference

to the following Detailed Description when taken in conjunction with the accompanying drawings wherein:

**[0013]** FIG. 1A is a side view of two exemplary roof panels according to an exemplary embodiment;

**[0014]** FIG. 1B is a side view of two exemplary roof panels adjoined via an adhesive according to an exemplary embodiment;

**[0015]** FIG. 1C is a side view of two exemplary roof panels adjoined via an adhesive and a primary seam coat according to an exemplary embodiment;

**[0016]** FIG. 2A is a top view illustrating five exemplary roof panels attached to a roof deck according to an exemplary embodiment;

**[0017]** FIG. 2B is a top view illustrating five exemplary roof panels adjoined via an adhesive and attached to a roof deck according to an exemplary embodiment;

**[0018]** FIG. 2C is a top view illustrating five exemplary roof panels adjoined via an adhesive and a primary seam coat and attached to a roof deck according to an exemplary embodiment; and

**[0019]** FIG. 3 is a flow diagram illustrating a process in conjunction with FIGS. 2A-2C of manufacturing exemplary roof panels and installation of the exemplary roof panels on a roof deck according to exemplary embodiments.

#### DETAILED DESCRIPTION OF ILLUSTRATIVE EMBODIMENTS OF THE INVENTION

**[0020]** Various embodiments of the present invention will now be described more fully with reference to the accompanying drawings. The invention may, however, be embodied in many different forms and should not be construed as limited to the embodiments set forth herein; rather, the embodiments are provided so that this disclosure will be thorough and complete, and will fully convey the scope of the invention to those skilled in the art.

**[0021]** Exemplary embodiments provide a waterproof sustainable roofing system comprising, for example, modular, insulated, generally flat roofing panels that greatly reduce damage from leaks and provides superior outer containment of water for drainage purposes, long life, and fast installation.

**[0022]** FIG. 1A is a side view of two exemplary roof panels according to an exemplary embodiment. FIG. 1B is a side view of two exemplary roof panels adjoined via an adhesive according to an exemplary embodiment. FIG. 1C is a side view of two exemplary roof panels adjoined via an adhesive and a primary seam coat according to an exemplary embodiment. Referring now to FIGS. 1A-1C, in a typical embodiment, each roof panel **102**, **104** is made of, for example, insulated foam. Each roof panel **102**, **104** may be, for example, waterproofed on all sides with waterproof membranes **103** such as, for example, a polyurea membrane. For exemplary purposes, a polyurea membrane is disclosed for waterproofing which is durable, chemical resistant, and is available in a variety of colors; however, in alternate embodiments, any waterproof membrane, waterproof liquid or waterproofing technique may be utilized for waterproofing the exemplary roof panels **102**, **104**. For example, the waterproof membrane **103** may be any waterproofing roofing membrane such as, but not limited to, silicone based waterproofing membrane, polyurethane waterproofing membrane, bituminous waterproofing membrane, modified bituminous roofing membrane, self-adhering roofing membrane, or single ply waterproofing roofing membrane (e.g. EPDM waterproofing

roofing membrane, PVC waterproofing roofing membrane, TPO waterproofing roofing membrane).

**[0023]** In a typical embodiment, each exemplary roof panel **102**, **104** is illustrated as being generally rectangular shaped; however, in alternate embodiments, the exemplary roof panels **102**, **104** may be of varying shapes such as, for example, square, wedge shaped, elongated triangles, and the like. In a typical embodiment, the exemplary roof panels **102**, **104** may be of varying size and thickness such as, for example, 8ft by 4ft, 4ft by 4ft, 3ft by 3ft and the like depending on design requirements. Each exemplary roof panel **102**, **104**, on top perimeter edges, comprise substantially concave bevels **106** while bottom and side perimeter edges comprise substantially convex bevels **107**. The substantially concave bevels **106** prevent the formation of 90° angles at the top perimeter edges of the exemplary roof panels **102** thereby promoting optimal waterproofing. The substantially concave bevels **106** allow the top perimeter edges of the exemplary roof panels **102** to receive a more consistent waterproof coating. In addition, the substantially concave bevels **106** provide a wider joint space when the two exemplary roof panels **102**, **104** are adjoined, thus forming a tighter waterproof bond. The substantially convex bevels **107** prevent the formation of 90° angles at the bottom and side perimeter edges of the exemplary roof panels **102** thereby promoting optimal waterproofing. The substantially convex bevels **107** allow the bottom and side perimeter edges of the exemplary roof panels **102** to receive a more consistent waterproof coating. In addition, the substantially convex bevels **107** allow the exemplary roof panels **102**, **104** to function as a reservoir to mitigate water intrusion. In alternate embodiments, the top perimeter edges, bottom perimeter edges and side perimeter edges may be of varying shapes and sizes depending on design requirements.

**[0024]** Each roof panel **102**, **104** includes a front surface **120**, a top surface **101**, a bottom surface **111**, a left-side surface **105**, a right-side surface **109**, and a rear surface **216** (illustrated in FIG. 2A). In a typical embodiment, the front surface **120**, the top surface **101**, the bottom surface **111**, the left-side surface **105**, the right-side surface **109**, and the rear surface **216** form each of the exemplary roof panels **102**, **104**. The exemplary roof panels **102**, **104** are waterproofed and attached to a roof deck. In a typical embodiment, the bottom surface **111** of each of the exemplary roof panels **102**, **104** has a self-adhering adhesive **112** thereon for adhering the exemplary roof panels **102**, **104** to the roof deck. The self-adhering adhesives **112** may be, for example, water-based adhesives, solvent-based adhesives, or other commonly available self-adhering adhesives that stick and bond the exemplary roof panels **102**, **104** to a surface of an underlying roofing layer of the roof deck. According to alternate embodiments, the self-adhering adhesive **112** may be in the form of a plurality of spaced-apart self-adhering adhesive strips for adhering the exemplary roof panels **102**, **104** to the roof deck. The self-adhering adhesive **112** for adhering the exemplary roof panels **102**, **104** to the roof deck has sufficient holding power to exceed current code guidelines and provide several advantages over conventional methods of adhering the exemplary roof panels **102**, **104** to the roof deck. For example, the self-adhering adhesives **112** provide more points of contact with the roofing layer of the roof deck resulting in more stability and minimizes possible damage to roof deck due to conventional methodology utilizing screws for attachment.

**[0025]** Conventional roof systems use, for example, hot asphalt, screws or a combination. Hot asphalt is being used



less often as building owners are migrating to more energy efficient roof systems. Although adhesives are available, most other systems use screws. Putting thousands of screws (and holes) into the roof deck is not the most prudent choice. Over time, screws back out and puncture the roof deck from the bottom resulting in water damage.

**[0026]** In a typical embodiment, the two exemplary roof panels **102**, **104** may be adjoined via, for example, an adhesive **108**. In a typical embodiment, the adhesive **108** may be, for example, any bonding agent for adjoining the exemplary roof panels **102**, **104**. In addition, the adhesive **108** is operable to waterproof a seam **114** that adjoins the exemplary roof panels **102**, **104**. In a typical embodiment, the adhesive **108** may be similar to the self-adhering adhesive **112** disclosed above. After applying the adhesive **108**, waterproof reinforcement strips and/or mesh **110** are applied on top of the adhesive **108**. Next, a primary seam coat **120** is applied. In a typical embodiment, the primary seam coat **120** comprises a petroleum-based liquid that is applied to the seams for adjoining the exemplary roof panels **102**, **104** to protect them from oxidation and damage caused by winter cracking and Ultra Violet (UV) rays. According to alternate embodiments, non-petroleum-based primary seam coat **120** may be utilized. In a typical embodiment, the application of the adhesive **108** and the primary seam coat **120** is performed after the exemplary roof panels **102**, **104** are attached to the roof deck.

**[0027]** FIG. 2A is a top view illustrating five exemplary roof panels attached to a roof deck **212** according to an exemplary embodiment. FIG. 2B is a top view illustrating five exemplary roof panels adjoined via an adhesive and attached to the roof deck **212** according to an exemplary embodiment. FIG. 2C is a top view illustrating five exemplary roof panels adjoined via an adhesive and a primary seam coat and attached to the roof deck **212** according to an exemplary embodiment. Referring now to FIGS. 2A-2C, in a typical embodiment, the exemplary roof panels **202**, **204**, **206**, **208**, **210** are adjoined via, for example, an adhesive **108** and a primary seam coat **120** and attached to the roof deck **212** according to exemplary embodiments described above relative to FIGS. 1A-1C. In the embodiment illustrated in FIGS. 2A-2C, the exemplary roof panels **202**, **206**, and **208** are rectangular shaped while the exemplary roof panels **204** and **210** are square shaped.

**[0028]** FIG. 3 is a flow diagram illustrating a process in conjunction with FIGS. 2A-2C of manufacturing exemplary roof panels and installation of the exemplary roof panels on a roof deck according to exemplary embodiments. In a typical embodiment, a process **300** begins at step **302**. At step **304**, a foam core is created. For example, the foam core is created by pouring/spraying foam into a mold or taking a foam board and preferably, but not necessarily, shaping top and bottom edges. In a typical embodiment, the foam core forms the exemplary roof panels **202**, **204**, **206**, **208**, **210**. At step **306**, the exemplary roof panels **202**, **204**, **206**, **208**, **210** are covered, on all sides, with a durable waterproof material, preferably (but not necessarily) a liquid that cures quickly. For exemplary purposes, a polyurea membrane is disclosed for waterproofing the exemplary roof panels **202**, **204**, **206**, **208**, **210**. The polyurea membrane is durable, chemical resistant, and is available in a variety of colors; however, in alternate embodiments, any waterproof membrane may be utilized for waterproofing the exemplary roof panels **202**, **204**, **206**, **208**, **210**.

**[0029]** In a typical embodiment, corners of polyurea membrane are shaped to avoid 90° angles; however, in alternate

embodiments, corners of the polyurea membrane may be shaped to form 90° angles. At step **308**, the exemplary roof panels **202**, **204**, **206**, **208**, **210** are installed on the roof deck **212** using, for example, an adhesive **112**. In a typical embodiment, a bottom layer **111** of the exemplary roof panels **102**, **104** has a self-adhering adhesive **112** thereon for adhering the exemplary roof panels **102**, **104** to the roof deck **212**. The self-adhering adhesives **112** may be, for example, water-based adhesives, solvent-based adhesives, or other commonly available self-adhering adhesives that will stick and bond the exemplary roof panels **102**, **104** to the surface of the underlying roofing layer. According to alternate embodiment, the self-adhering adhesive **112** may be in the form of a plurality of spaced-apart self-adhering adhesive strips for adhering the exemplary roof panels **102**, **104** to the roof deck **212**.

**[0030]** In a typical embodiment, the adhesive **112** may be, for example, any bonding agent for installing the exemplary roof panels **202**, **204**, **206**, **208**, **210** on the roof deck **212**. At step **310**, the adhesive **108** is applied to waterproof seams that adjoin the exemplary roof panels **202**, **204**, **206**, **208**, **210** along with smoothening and leveling adjoining exemplary roof panels **202**, **204**, **206**, **208**, **210** with, for example, a trowel. At step **312**, after applying the adhesive **108**, a primary seam coat **120** is applied. In a typical embodiment, the primary seam coat **120** comprises a petroleum-based liquid that is applied to seams of the adjoining exemplary roof panels **202**, **204**, **206**, **208**, **210** to protect them from oxidation and the damage caused by winter cracking and Ultra Violet (UV) rays. In a typical embodiment, the application of the adhesive **108** and the primary seam coat **120** is performed after the exemplary roof panels **202**, **204**, **206**, **208**, **210** are attached to the roof deck. In a typical embodiment, the primary seam coat **120** may be applied via, for example, a brush roller, a spray equipment and the like. At step **314**, the process **300** ends.

**[0031]** In a typical embodiment, each modular, insulated, generally flat roofing panel **102**, **104**, **202**, **204**, **206**, **208**, **210** is waterproofed on all sides before it arrives for installation on the roof deck **212**. This simple departure from conventional roofing systems provides several advantages. For example, the exemplary roof panels **102**, **104**, **202**, **204**, **206**, **208**, **210** may be exposed to weather at any point without risk of damage. In conventional roof systems, insulation is required to be wrapped and kept out of the weather. A wet insulation panel must be thrown away. Frequently insulation is damaged before reaching a job site. The exemplary roof panels **102**, **104**, **202**, **204**, **206**, **208**, **210** arrive at a job site complete. A majority of the exemplary sustainable roof system using the exemplary roof panels **102**, **104**, **202**, **204**, **206**, **208**, **210** is installed in the same amount of time as required for traditional roof insulation. Once the exemplary roof panels **102**, **104**, **202**, **204**, **206**, **208**, **210** are installed on the roof deck **212** and the seams are sealed, the roof is waterproof. Furthermore, a threat of rain does not inhibit installation of the exemplary roof panels **102**, **104**, **202**, **204**, **206**, **208**, **210**. Conventional roof systems require dry weather and time to install multiple layers. The reduced installation time is extremely valuable on a new commercial projects since interior work cannot begin until a building envelope is complete. Typically, according to conventional roof systems, entire projects are put on hold until the weather pattern allows for the installation of traditional roof systems.

**[0032]** The exemplary roof panels **102**, **104**, **202**, **204**, **206**, **208**, **210** are completely waterproofed on all sides. Water that happens to enter the exemplary roof panels **102**, **104**, **202**,

**204, 206, 208, 210** is not allowed to leave the exemplary roof panels **102, 104, 202, 204, 206, 208, 210** thereby substantially reducing interior damage and preventing adjoining exemplary roof panels **102, 104, 202, 204, 206, 208, 210** from being damaged. Individual damaged roof panels may be replaced on an individual basis. This results in reducing insurance in areas of interior damage liability and exterior repair or replacement of the roof. According to conventional roof systems, a small leak or minor storm damage can easily lead to complete roof replacement while causing major interior damage as water runs through and under the conventional roof system.

**[0033]** Job site accidents from bumps and fire are nonexistent with the exemplary sustainable roof system resulting in substantial reduction in strain related workers compensation claims. The weight of the exemplary sustainable roof system is dispersed in each exemplary roof panel **102, 104, 202, 204, 206, 208, 210** which can be easily carried by an individual. Conventional roofing products come in heavy rolls (some weighing hundreds of pounds) and/or large (up to 100 lb.) kegs of asphalt. Some current systems use hot tar kettles (heating material to 450 degrees) or torches.

**[0034]** The exemplary roof panels **102, 104, 202, 204, 206, 208, 210** are expected to last approximately 40 years. Polyurea and other possible top coat materials age from top down instead of breaking down like asphalt. When the base coat on the exemplary roof panels **102, 104, 202, 204, 206, 208, 210** begins to show through the top wear coat (contrasting color) it can be cleaned and re-coated. Re-coating costs less than replacement and provide minimal interruption to business. In conventional roof systems, the roof is required to be completely replaced several times in the initial 40 year period. The exemplary sustainable roof system utilizing the exemplary roof panels **102, 104, 202, 204, 206, 208, 210** conservatively estimates saving users the cost of at least two complete roof replacements if a twenty year system was installed.

**[0035]** The exemplary sustainable roof system utilizing the exemplary roof panels **102, 104, 202, 204, 206, 208, 210** do not contribute to chemical pollution (before or after installation). Polyurea and other possible materials have no V.O.C.s. Rain water runoff will be completely safe and free of debris (many roofing products loose granules and chemicals throughout life of roof). Building owners could harvest rain-water, store in underground cisterns and use the free water to water landscaping and other gray water applications. One possible use of water may be, for example, to recycle it over and over to cool solar panels for maximum efficiency.

**[0036]** Solar cells could be inserted on top of the exemplary sustainable roof system during production. Installation on the roof would require minimal additional labor. The exemplary roof panels **102, 104, 202, 204, 206, 208, 210** can be linked on the roof deck and connected to a power source by an electrician. Solar panels work best when they are cool. In white, the

exemplary sustainable roof system offers a cooler substrate. In addition, constant water does not reduce life expectancy of the exemplary sustainable roof system. Recycled water may be used to cool the solar panels over and over. At the end of the 30 to 40 years, new solar panels may be inserted into the existing frames or mounted directly on top of the frames. This process could be done independently of cleaning and re-coating the roof

**[0037]** The exemplary roof panels **102, 104, 202, 204, 206, 208, 210** are expected to last approximately 40 years. Polyurea and other possible top coat materials age from top down instead of breaking down like asphalt. When the base coat on the exemplary roof panels **102, 104, 202, 204, 206, 208, 210** begins to show through the top wear coat (contrasting color) it can be cleaned and re-coated. Re-coating costs less than replacement and provide minimal interruption to business. In conventional roof systems, the roof would have to be completely replaced several times in the initial 40 year period.

**[0038]** Although various embodiments of the method and apparatus of the present invention have been illustrated in the accompanying Drawings and described in the foregoing Detailed Description, it will be understood that the invention is not limited to the embodiments disclosed, but is capable of numerous rearrangements, modifications and substitutions without departing from the spirit of the invention as set forth herein.

What is claimed is:

1. A method of installing a generally flat roof, the method comprising:
  - providing a plurality of roofing panels, wherein each roofing panel of the plurality of roofing panels comprises a front surface, a top surface, a bottom surface, a right-side surface, a left-side surface and a rear surface;
  - applying to the bottom surface of each roofing panel of the plurality of roofing panels, an adhesive;
  - adhering the plurality of roofing panel to the generally flat roof via the adhesive; and
  - sealing a plurality of seams formed by adjoining the plurality of roofing panels.
2. The method of claim 1, wherein said sealing the plurality of seams comprises:
  - applying the adhesive on the plurality of seams;
  - applying a waterproof reinforcement strips on the plurality of seams; and
  - applying a primary seam coat on the plurality of seams.
3. The roofing panel of claim 1, wherein at least one of the plurality of roofing panels is rectangular shaped.
4. The roofing panel of claim 1, wherein at least one of the plurality of roofing panels is square shaped.
5. The roofing panel of claim 1, wherein the plurality of roofing panels comprise insulated foam.

\* \* \* \* \*