[0010] Another problem with known art examples is that none of these patent records for structural strengthening systems includes a means to provide a secondary sealing system for the structure in the event the primary sealing system of shingles and/or siding of the structure are compromised.

[0011] Another problem with the known art examples is that none of these patent records for structural strengthening systems includes a means to provide anti-torsion and seismic resistance to the construction system by unitizing the basic frame-type construction elements.

[0012] There are some references of known art in the patent records related to systems that minimize water influent damage from wind storms but, once again, none of these examples lend themselves to our do-it-yourself culture and do not lend themselves to be cost effective for the mass consumption public at large. In addition, none of the known examples provide any strengthening enhancements to improve the structural integrity of frame-type construction to resist the destructive torsion forces imposed by wind storms or the destructive seismic forces imposed by wind storms and other seismic events. Furthermore, none of these prior art sealing systems provides a secondary sealing system in the event that the primary sealing system is compromised.

SUMMARY

[0013] This section provides a general summary of the disclosure, and is not a comprehensive disclosure of its full scope or all of its features.

[0013a] According to a first aspect of the present invention, there is provided a construction system providing structural integrity for a building structure to resist the destructive forces of storm winds, torsion forces, and seismic forces, and to minimize or prevent the influent of associated wind-driven blowing rain, comprising:

multiple subsystems connected to the building structure, the building structure including a wall structure having multiple studs and a roof structure including at least one from a group of trusses, joists and rafters, the multiple subsystems including:

an anchoring system connected to a foundation;

a wall reinforcement system having multiple structural columns individually positioned between proximate ones of the studs;

a lateral corner brace reinforcement system having subassemblies positioned along intersecting walls and fastened together at a building structure intersecting corner;

a diaphragm reinforcement system having multiple members fastened to gable-ends of the roof structure, fastened to at least one from the group of trusses, joists and rafters of the building structure, and connected to the anchoring system;

a line of compression blocking in the building structure;

a rafter/joist tie-down system having multiple members individually coupling each of the structural columns to the roof structure such that the wall reinforcement system ties together the roof structure and the wall structure to the foundation using the structural columns; and the diaphragm reinforcement system including at least one horizontal support beam fastened across one of the gable-ends of the roof structure, the diaphragm reinforcement system being supported by at least one angled brace connected to at least one lateral brace fastened to at least one from the group of trusses, joists and rafters, and the diaphragm reinforcement system including an anti-hinge bracket fastened to at least one of the structural columns and to a foundational element of the anchoring system.

[0013b] According to a second aspect of the present invention, there is provided a construction system providing structural integrity for a building structure including a wall structure having multiple studs, a foundation, and a roof structure including gabled ends and at least one from a group of trusses, joists and rafters, the construction system comprising:

an anchoring system including a foundational element that is connected to the foundation of the building structure;

a wall reinforcement system having multiple structural columns individually positioned between proximate ones of the multiple studs of the building structure; and

a diaphragm reinforcement system that is substantially transverse to at least one from the group of trusses, joists and rafters, the diaphragm reinforcement system having multiple members fastened to at least one of the gable-ends of the roof structure, at least one from the group of trusses, joists and rafters of the building structure, and the anchoring system;

wherein the diaphragm reinforcement system includes at least one horizontal support beam fastened to at least one of the gabled-ends of the roof structure, the diaphragm reinforcement system being supported by at least one angled brace connected to at least one lateral brace fastened to at least one from the group of trusses, joists and rafters, the diaphragm reinforcement system including an anti-hinge bracket fastened to the at least one of the gabled-ends of the roof structure and to at least one structural column of the multiple structural columns such that the anti-hinge bracket directly ties the diaphgragm reinforcement system and the at least one of the gabled-ends of the roof structure to the foundational element of the anchoring system via the at least one structural column.

[0014] ~~The~~ Embodiments of the subject invention can ~~overcomes~~ overcome well-known problems in such a way that those skilled in the art will readily recognize and appreciate. Furthermore, the present disclosure provides features and capabilities for many other applications beyond the preferred embodiments disclosed, which those skilled in the art will readily recognize also embody the spirit of the subject invention.

[0015] One preferred embodiment of the subject invention relates to a typical residential stick-built or prefabricated home construction which is enhanced and substantially strengthened in specific areas of the structure to better withstand the destructive wind forces of hurricanes and tornados, as

CLAIMS

What is claimed is:

1. A construction system providing structural integrity for a building structure to resist the destructive forces of storm winds, torsion forces, and seismic forces, and to minimize or prevent the influent of associated wind-driven blowing rain, comprising:

multiple subsystems connected to the building structure, the building structure including a wall structure having multiple studs and a roof structure having multiple components including trusses or a combination of joists and rafters, the multiple subsystems including:

an anchoring system connected to a foundation;

a wall reinforcement system having multiple structural columns individually positioned between proximate ones of the studs;

a lateral corner brace reinforcement system having subassemblies positioned along intersecting walls and fastened together at a building structure intersecting corner;

a diaphragm reinforcement system having multiple members fastened to gable-ends of the roof structure, fastened to joists of the building structure, and connected to the anchoring system;

a line of compression blocking in the building structure; and

a rafter/joist tie-down system having multiple members individually coupling each of the structural columns to the roof structure such that the wall reinforcement system ties together the roof components and the wall structure to the foundation using the structural columns.

2. The construction system of Claim 1, wherein the subsystems further include a line of compression blocking in the roof structure having aligned bolted connections straddling individual blocking braces.

3. The construction system of Claim 2, wherein a roof decking is fastened to the blocking braces.

4. The construction system of Claim 1, wherein the subsystems further include a line of compression blocking in the wall system having aligned bolted connections straddling multiple individual blocking braces.

5. The construction system of Claim 4, wherein a wall sheeting is fastened to the blocking braces.

6. The construction system of Claim 1, wherein the subsystems further include an enhanced diaphragm reinforcement system including at least one horizontal support beam fastened across a gable-end of the roof structure, and supported by at least one angled brace connected to at least one lateral brace fastened to joist elements, and including an anti-hinge bracket fastened to a structural column and to a foundational element of the anchoring system.

7. The construction system of Claim 6, wherein the at least one angled brace is attached to at least one lateral brace using a double-clevis bracket.

8. The construction system of Claim 7, wherein the double-clevis bracket includes a predrilled hole providing a drill guide for field installation and attachment.

9. The construction system of Claim 6, wherein the lateral brace is attached to a joist element using a single-clevis bracket.

10. The construction system of Claim 6, wherein the anti-hinge bracket includes mounting holes for attachment to a gable-end construction positioned straddling a lateral brace and fastened to the anti-hinge bracket.

11. The construction system of Claim 6, wherein the anti-hinge bracket is fastened directly to the gable-end, fastened directly to a double top plate of the wall structure, and fastened directly to the lateral brace of the diaphragm

reinforcement system, and further connected to a foundation element of the anchoring system through a structural column in the wall construction.

12. The construction system of Claim 1, wherein the subsystems further include a lateral corner brace reinforcement assembly including at least one structural column, at least one lateral spanning beam, and at least one corner connecting bracket.

13. The construction system of Claim 12, further including multiple structural columns individually predrilled as fastening points for a wall sheeting.

14. The construction system of Claim 12, further including multiple lateral beams individually predrilled as fastening points for a wall sheeting.

15. The construction system of Claim 12, wherein the lateral corner brace reinforcement assembly includes at least one corner connecting bracket predrilled to fasten to a corner construction element.

16. The construction system of Claim 12, wherein the lateral corner brace reinforcement assembly is fastened directly to multiple corner construction elements, fastened directly to a roof reinforcement element through a double top plate, connected to a foundational element, and fastened directly to a wall sheeting.

17. The construction system of Claim 16, wherein the lateral corner brace reinforcement assembly is also fastened to the diaphragm reinforcement system.

18. The construction system of Claim 1, wherein the anchoring system includes anchor fasteners connected to and partially extending from the foundation, each structural column connected to two of the anchor fasteners.

19. A construction system providing structural integrity for a building structure to resist the destructive forces of storm winds, torsion forces, and seismic forces, and to minimize or prevent the influent of associated wind-driven blowing rain, comprising:

multiple subsystems connected to the building structure, the building structure including a wall structure having multiple studs, and a roof structure having multiple components including trusses or a combination of joists and rafters, the multiple subsystems including:

a lateral corner brace reinforcement system having subassemblies positioned along intersecting walls of the wall structure and fastened together at a building structure intersecting corner;

a diaphragm reinforcement system having multiple members fastened to gable-ends of the roof structure, fastened to joists of the building structure and fastened to an anchor system of the building structure;

a line of compression blocking in the building structure; and

a rafter/joist tie-down system having multiple members individually coupling each of the structural columns to the roof structure such that the wall reinforcement system ties together the roof components and the wall structure to the foundation using the structural columns.

20. The construction system of Claim 19, wherein the subsystems further include:

anchor fasteners of the anchoring system connected to and partially extending from a foundation; and

a wall reinforcement system having multiple structural columns individually positioned between proximate ones of the studs, each structural column connected to two of the anchor fasteners.

CLAIMS

What is claimed is:

1. A construction system providing structural integrity for a building structure to resist the destructive forces of storm winds, torsion forces, and seismic forces, and to minimize or prevent the influent of associated wind-driven blowing rain, comprising:

multiple subsystems connected to the building structure, the building structure including a wall structure having multiple studs and a roof structure including at least one from a group of trusses, joists and rafters, the multiple subsystems including:

an anchoring system connected to a foundation;

a wall reinforcement system having multiple structural columns individually positioned between proximate ones of the studs;

a lateral corner brace reinforcement system having subassemblies positioned along intersecting walls and fastened together at a building structure intersecting corner;

a diaphragm reinforcement system having multiple members fastened to gable-ends of the roof structure, fastened to at least one from the group of trusses, joists and rafters of the building structure, and connected to the anchoring system;

a line of compression blocking in the building structure;

a rafter/joist tie-down system having multiple members individually coupling each of the structural columns to the roof structure such that the wall reinforcement system ties together the roof structure and the wall structure to the foundation using the structural columns; and

the diaphragm reinforcement system including at least one horizontal support beam fastened across one of the gable-ends of the roof structure, the diaphragm reinforcement system being supported by at least one angled brace connected to at least one lateral brace fastened to at least one from the group of trusses, joists and rafters, and the diaphragm reinforcement system including an anti-hinge bracket fastened to at least one of the structural columns and to a foundational element of the anchoring system.

2. The construction system of claim 1, wherein the subsystems further include a line of compression blocking in the roof structure having aligned bolted connections straddling individual blocking braces.

3. The construction system of claim 2, wherein a roof decking is fastened to the blocking braces.

4. The construction system of claim 1, wherein the subsystems further include a line of compression blocking in the wall system having aligned bolted connections straddling multiple individual blocking braces.

5. The construction system of claim 4, wherein a wall sheeting is fastened to the blocking braces.

6. The construction system of claim 1, wherein the at least one angled brace is attached to at least one lateral brace using a double-clevis bracket.

7. The construction system of claim 6, wherein the double-clevis bracket includes a predrilled hole providing a drill guide for field installation and attachment.

8. The construction system of claim 1, wherein the lateral brace is attached to a joist using a single-clevis bracket.

9. The construction system of claim 1, wherein the anti-hinge bracket includes mounting holes for attachment to a gable-end construction positioned straddling a lateral brace and fastened to the anti-hinge bracket.

10. The construction system of claim 1, wherein the anti-hinge bracket is fastened directly to the gable-end, fastened directly to a double top plate of the wall structure, and fastened directly to the lateral brace of the diaphragm reinforcement system, and further connected to a foundation element of the anchoring system through a structural column in the wall construction.

11. The construction system of claim 1, wherein the subsystems further include a lateral corner brace reinforcement assembly including at least one structural column, at least one lateral spanning beam, and at least one corner connecting bracket.

12. The construction system of claim 11, further including multiple structural columns individually predrilled as fastening points for a wall sheeting.

13. The construction system of claim 11, further including multiple lateral beams individually predrilled as fastening points for a wall sheeting.

14. The construction system of claim 11, wherein the lateral corner brace reinforcement assembly includes at least one corner connecting bracket predrilled to fasten to a corner construction element.

15. The construction system of claim 11, wherein the lateral corner brace reinforcement assembly is fastened directly to multiple corner construction elements, fastened directly to a roof reinforcement element through a double top plate, connected to a foundational element, and fastened directly to a wall sheeting.

16. The construction system of claim 15, wherein the lateral corner brace reinforcement assembly is also fastened to the diaphragm reinforcement system.

17. The construction system of claim 1, wherein the anchoring system includes anchor fasteners connected to and partially extending from the foundation, each structural column connected to two of the anchor fasteners.

18. A construction system providing structural integrity for a building structure including a wall structure having multiple studs, a foundation, and a roof structure including gabled ends and at least one from a group of trusses, joists and rafters, the construction system comprising:

an anchoring system including a foundational element that is connected to the foundation of the building structure;

a wall reinforcement system having multiple structural columns individually positioned between proximate ones of the multiple studs of the building structure; and

a diaphragm reinforcement system that is substantially transverse to at least one from the group of trusses, joists and rafters, the diaphragm reinforcement system having multiple members fastened to at least one of the gable-ends of the roof structure, at least one from the group of trusses, joists and rafters of the building structure, and the anchoring system;

wherein the diaphragm reinforcement system includes at least one horizontal support beam fastened to at least one of the gabled-ends of the roof structure, the diaphragm reinforcement system being supported by at least one angled brace connected to at least one lateral brace fastened to at least one from the group of trusses, joists and rafters, the diaphragm reinforcement system including an anti-hinge bracket fastened to the at least one of the gabled-ends of the roof structure and to at least one structural column of the multiple structural columns such that the anti-hinge bracket directly ties the diaphgragm reinforcement system and the at least one of the gabled-ends of the roof structure to the foundational element of the anchoring system via the at least one structural column.

19. The construction system of claim 18, wherein

the foundational element of the anchoring system includes anchor fasteners that are connected to and partially extend from the foundation and

wherein each structural column of the multiple structural columns is connected to two of the anchor fasteners.