CLAIMS

We claim:

1. A reinforced panel configured for use with a reconfigurable wall, wherein the reinforced panel is touch-responsive, the reinforced panel comprising:

a first layer formed from a material;

a substrate coupled to the first layer, the substrate being formed from a second material;

an intermediate layer disposed between the first layer and the substrate, the intermediate layer being formed at least in part from a material that is elastically deformable;

wherein the intermediate layer has sufficient elastic deformability so as to enable the reinforced panel to tolerate differences in thermal expansion between the substrate and the first layer without resulting in cracking of the first layer;

wherein the intermediate layer comprises at least one of: (i) at least one flexible adhesive layer, (ii) at least one flexible ceramic, and (iii)a flexible porcelain layer;

one or more connectors coupled to the substrate on a side of the substrate opposite the first layer, the one or more connectors configured to allow the panel to be integrated with a reconfigurable wall;

a conductive material at least partially covering a surface of the substrate, the conductive material being disposed between the first layer and a delineating material disposed on the substrate; and

a controller in electrical communication with the conductive material;

wherein:

the conductive material forms at least one touch-responsive section; and

the delineating material defines a boundary of the at least one touch-responsive section.

2. The reinforced panel as recited in claim 1, wherein the at least one touch-responsive section comprises a plurality of separate touch-responsive sections.

3. The reinforced panel as recited in claim 1, wherein:

the at least one touch-responsive section comprises a plurality of separate touch-responsive sections; and

the delineating material provides the boundaries of each of the separate touch-responsive sections;

wherein the delineating material comprises a tape that is removed after application of the conductive material.

4. The reinforced panel as recited in claim 1, wherein the material of the first layer comprises at least one of a glass, a thermofoil, a resin, or a thermoplastic material.

5. The reinforced panel of claim 1, wherein the intermediate layer further comprises at least one polymer layer.

6. The reinforced panel of claim 1, wherein:

the intermediate layer comprises a porcelain material; and

wherein the substrate is formed at least in part from a metal.

7. The reinforced panel of claim 1, wherein the first layer, the intermediate layer, and the substrate are joined by adhesion.

8. The reinforced panel of claim 1, wherein:

the reinforced panel is configured to withstand different levels of thermal expansion of the first layer and the substrate without resulting in breakage of the first layer or the substrate;

the first layer and the substrate have coefficients of thermal expansion that are substantially similar, or that are about 75%; and

the second material is a high pressure laminate.

9. The reinforced panel of claim 1, wherein the conductive material includes a graphite dry lubricant.

10. The reinforced panel of claim 1, further comprising:

a connector joining the controller to the conductive material;

wherein the connector comprises a copper tape, or a conductive ink.

11. The reinforced panel of claim 1, wherein the first layer comprises a painted surface on a side of the first layer facing the substrate.

12. The reinforced panel of claim 1, wherein the one or more connectors are joined to the substrate by adhesion.

13. The reinforced panel of claim 1, wherein the one or more connectors are joined to the substrate by mechanical fastening.

14. The reinforced panel of claim 1, further comprising:

a film at least partially disposed between the first layer and the substrate;

wherein the substrate has a thickness of about 0.5 inches.

15. The reinforced panel of claim 1, wherein the substrate and the first layer are substantially the same shape.

16. A touch-responsive reinforced panel configured for use with a reconfigurable wall, the panel comprising:

a first layer formed from a first material, the first material comprising a thermofoil material;

a substrate coupled to the first layer, the substrate being formed from a second material;

a conductive material at least partially covering a surface of the substrate, the conductive material being disposed between the first layer and the substrate and forming a touch-responsive section; and

a controller in electrical communication with the conductive material;

wherein:

the conductive material is disposed on the substrate so as to form a plurality of separate touch-responsive sections;

and a tape disposed on the substrate defines boundaries of the separate touch-responsive sections.

17. The touch-responsive reinforced panel of claim 16, wherein the conductive material includes a graphite dry lubricant.

18. The touch-responsive reinforced panel of claim 16, further comprising:

a connector joining the controller to the conductive material;

wherein the connector is formed from a copper tape.

19. The panel of claim 16, further comprising:

a connector joining the controller to the conductive material;

wherein the connector is formed of conductive ink.

20. The panel of claim 16, wherein the controller is configured to control one or more devices in response to a touch signal received at the touch-responsive section.

21. The panel of claim 16, further comprising:

an intermediate layer disposed between the first layer and the substrate, the intermediate layer being formed of an elastically deformable material that allows for different levels of thermal expansion between the substrate and the first layer without resulting in cracking of the first layer.

22. The touch-responsive reinforced panel as recited in claim 21, wherein the intermediate layer comprises at least one of: (i) at least one flexible adhesive layer, (ii) at least one flexible ceramic layer, (iii) a flexible porcelain layer; and (iii) a polymer layer.

23. The touch-responsive reinforced panel as recited in claim 22, wherein:

the intermediate layer comprises a porcelain material; and

wherein the substrate is formed at least in part from a metal.

24. The touch-responsive reinforced panel as recited in claim 21, wherein the first layer, the intermediate layer, and the substrate are joined by adhesion.

25. The touch-responsive reinforced panel as recited in claim 16, wherein:

the tape is removed after application of the conductive material.

26. The touch-responsive reinforced panel as recited in claim 16, wherein the material of the first layer further comprises one or more of a glass, a resin, or a thermoplastic material.

27. The touch-responsive reinforced panel as recited in claim 16, wherein:

the first layer and the substrate have coefficients of thermal expansion that are substantially similar, or that are about 75%; and

the second material comprises a high pressure laminate.

28. The touch-responsive reinforced panel as recited in claim 16, wherein the first layer comprises a painted surface on a side of the first layer facing the substrate.

29. The touch-responsive reinforced panel as recited in claim 16, further comprising:

a film at least partially disposed between the first layer and the substrate;

wherein the substrate has a thickness of about 0.5 inches.

30. The touch-responsive reinforced panel as recited in claim 16, wherein the substrate and the first layer are substantially the same shape.

31. The touch-responsive reinforced panel as recited in claim 16, further comprising one or more connectors coupled to the substrate on a side of the substrate opposite the first layer, the one or more connectors configured to allow the touch-responsive reinforced panel to be integrated with a reconfigurable wall.

32. The touch-responsive reinforced panel as recited in claim 31, wherein the one or more connectors are joined to the substrate by adhesion.

33. The touch-responsive reinforced panel as recited in claim 31, wherein the one or more connectors are joined to the substrate by mechanical fastening.