CLAIMS

1. A modular building apparatus for pharmaceutical cleanroom manufacturing comprising:

a controlled air, sealable cleanroom having a ceiling;

a mechanical room;

a unitary frame for a modular building, the frame surrounding the cleanroom and the mechanical room and projecting above the cleanroom ceiling;

joists suspended by the frame above the ceiling of the sealable cleanroom and forming an interstitial volume above the ceiling and below the joists;

a utility service component mounted within the interstitial volume;

a duct, a pipe, or an electrical conduit running from the mechanical room, through the interstitial volume, and to the utility service component; and

walkable floor panels supported by the joists and over the utility service component, at least some of the floor panels being removable in order to provide personnel access to the utility service component.

2. The apparatus of claim 1 wherein the walkable floor panels are grating sections, each grating section being independently removable from the joists.

3. The apparatus of claim 2 wherein the grating sections comprise a smooth bar grating or a serrated bar grating.

4. The apparatus of claim 1 wherein each joist includes a lateral support ledge, and the floor panels are configured to rest between the joists.

5. The apparatus of claim 4 wherein each internal joist of the joists includes lateral support ledges on opposite sides of said internal joist, and multiple floor panels are supported on either side of said internal joist.

6. The apparatus of claim 1 wherein each joist includes a lateral support ledge at a depth equal to a height of the floor panels, the floor panels being configured to rest between the joists and have a top that is flush with a top of the joists.

7. The apparatus of claim 1 wherein each joist comprises extruded metal and is welded to a metal wall plate, each extruded metal joist comprising a 5 cm (2 inch)

depth between a bottom of a lateral support ledge and a bottom of the joist, the depth being suitable for a 5 cm thick solid panel.

8. The apparatus of claim 1 wherein the floor panels extend an entire width and length of the cleanroom below.

9. The apparatus of claim 8 wherein the floor panels extend an entire length of the unitary frame.

10. The apparatus of claim 1 wherein the mechanical room is above the ceiling of the cleanroom.

11. The apparatus of claim 1 wherein the mechanical room has a personnel entry point separate from an entry point of the cleanroom.

12. The apparatus of claim 1 wherein a height of the mechanical room extends to a height of the floor panels.

13. The apparatus of claim 1 wherein the utility service component comprises a damper, a valve, or a junction box.

14. The apparatus of claim 1, further comprising:

a deployable stand connected with at least one of the joists, the deployable stand supporting an electrical panelboard connected with conduit running to the cleanroom, the deployable stand being repositionable from i) a horizontal configuration laying down over the joists and ii) an upright configuration.

15. The apparatus of claim 14 wherein there exists a clear working space over the floor panels in front of the electrical panelboard at least 750 millimeters (mm) wide and at least 900 mm deep when the deployable stand is in the upright configuration.

16. The apparatus of claim 14 wherein at least some of the conduit connected with the electrical panelboard is flexible conduit that does not require withdrawing internal wires when the deployable stand is repositioned between the horizontal and upright configurations.

17. The apparatus of claim 14 wherein the deployable stand is connected through a pivot to at least one of the joists, the deployable stand configured to rotate around the pivot from the horizontal configuration to the upright configuration.

18. The apparatus of claim 14 wherein the floor panels are set between the joists, and tops of the floor panels are flush with tops of the joists.

19. The apparatus of claim 14 wherein the floor panels are solid or see-though bar grating.

20. A method of assembling a modular cleanroom apparatus for pharmaceutical cleanroom manufacturing, the method comprising:

providing a controlled air, sealable cleanroom having a ceiling;

providing a mechanical room;

installing a unitary frame for a modular building, the frame surrounding the cleanroom and the mechanical room and projecting above the cleanroom ceiling;

suspending joists by the frame above the ceiling of the sealable cleanroom to form an interstitial volume above the ceiling and below the joists;

mounting a utility service component within the interstitial volume;

running a duct, a pipe, or an electrical conduit from the mechanical room, through the interstitial volume, and to the utility service component; and

supporting walkable floor panels by the joists and over the utility service component, at least some of the floor panels being removable in order to provide personnel access to the utility service component.

21. The method of claim 20, the method further comprising:

attaching a deployable stand to at least one of the joists, the deployable stand being repositionable from i) a horizontal configuration laying down over the joists and ii) an upright configuration;

wiring an electrical panelboard mounted on the deployable stand to the cleanroom through flexible conduit;

positioning the deployable stand to the horizontal configuration after the wiring;

transporting, to a destination, the cleanroom with the unitary frame and horizontally configured deployable stand; and

deploying, at the destination, the deployable stand with the electrical panelboard to the upright configuration.

22. The method of claim 21 wherein a portion of the deployable stand rests between at least two of the joists when in the horizontal configuration.

23. The method of claim 21 wherein the deployable stand is connected through a pivot to at least one of the joists, the positioning including rotating the deployable stand around the pivot from the horizontal configuration to the upright configuration.