# A Composite Lightweight Concrete Panel（CLC）

## Background and Field of the Invention

This invention relates to a Composite Lightweight Concrete Panel use to unit to unit over an opening in masonry walls and particularly but not exclusively, to a Composite Lightweight Concrete Panel.

Traditionally, constructional wall made of concrete are cast in situ or replaced it with ALC panel or brick wall but this is expensive and time/labours consuming. The concrete wall can be precast but they are very heavy to transport and install. Although use of ALC panel., can be save time and light, but because of its poor affinity with other wall body materials that often leads to cracks and leakage. This might mean it is already cannot to keep in pace with this era of rapid growth. So, to solve those problems, we have invented COMPOSITE LIGHTWEIGHT CONCRETE PANEL.

Major properties of the COMPOSITE LIGHTWEIGHT CONCRETE are superior to the concrete and LIGHTWEIGHT CONCRETE PANEL, it combines their advantages. The reason lies in its lightweight, easy installation, support for industrial production, excellent bond force with other building materials, crack and water leakage phenomenon is not easy to happen and to using environmentally friendly materials.

#1 aerated lightweight concrete are made from flyash and slag and added gas foaming. The panel surface Its high strength concrete role is to protect its internal aerated lightweight concrete that it can achieve the same thickness of wall, thereby reducing the problem of later wall plastering, which ties them and wall all together more efficiently.

#2 concrete surface. Its role in the structure force, can transfer wallboard loads and wind loads efficiently, which performs connection function between the wallboards.

#3 Steel Mesh. Its function is to improve bonding properties between lightweight concrete and concrete, and strengthen tensile properties of lightweight concrete.

#4 Joint mesh. Its function is to joint concrete and aerated lightweight concrete, get more strengthen of wall panel. As a whole.

## Summary of the Invention

The present invention incorporates a lightweight concrete encased in concrete.
The invention comprises:
(1) An aerated lightweight concrete inner layer made from fly-ash and slag and added gas

foam to make panel as lightweight.

(2) A concrete outer layer to give structural support and efficient transfer of wall board loads and wind loads and to provide needed connection surface between the wall boards.

(3) A steel mesh strengthen tensile properties of panel.

(4) Fibreglass mesh between inner lightweight concrete and outer concrete layer to give added bonding between the lightweight concrete and concrete and strengthen the tensile properties of the lightweight concrete.

(5) Fire-resistant materials.

**Advantages of the Invention**

The invention brings together benefits of concrete and aerated lightweight concrete in one composite product.

The advantages of this invention are;

(1) The new product is sustainable and environmentally friendly as the aerated lightweight concrete are made from recycled material.

(2) The outer concrete encasing the inner lightweight concrete, can be a finished wall by itself or if other finishes is needed, provides a good base for other material.

(3) The concrete is able to bond with the structure and other walls

(4) The inner lightweight concrete, being encased in concrete, is protected while at the same time provides the structural support for the wall.

(5) The outer concrete more strength than lightweight concrete, improved wall fire, waterproof and sound transmission.

(6) The whole assembly is lightweight to enable ease of transport and installation.

(7) The Composite lightweight concrete panel performance be superior to concrete and lightweight panel, able to replace concrete and lightweight panel.

**Brief Description of the Drawings**

An embodiment of the invention will now be described, by way of example, with reference to the accompanying drawings in which.

Figure 1 is an end view of a composite lightweight concrete panel according to a preferred embodiment of the present invention;

And Figure 2 shows internal structure of Figure 1 and structural design and excellent fire rated of present invention;

Figure 3 shows an ISO view of a variation of the preferred embodiment of Figure 1 which is adapted to support building units of a different dimension.

**Detailed Description of the Preferred Embodiment**

COMPOSITE LIGHTWEIGHT CONCRETE mainly used for the connection between internal and external building wall and upper load of door and window's opening, reflecting the stability of the building wall and systematic and integrity.

Figure 1 shows the section of the invention illustrating the installation method of the invention as a composite lightweight concrete panel to support a vertical wall between a high level reinforced concrete ("RC") beam and a RC floor slab 100.

The groove line (106) surrounding panel use install water stop materiel or flexible materiel improve wall waterproof performance. As surface shape concave (107) is connect to other panel protrude part (108) integral a full wall. The panel fix that joint should be use adhesive mortar (109) and nylon mesh (110) bond together.

Figure 2 detailed section of the composite lightweight concrete panel.

Present invention utilizes CONCRETE as the surface layer (101), the steel mesh (102) is used as the transmit structural forces, lightweight concrete (103) use as the improved wall fire, waterproof and sound transmission. Steel mesh cage with fiberglass mesh (104) can be insure lightweight concrete (103) according to the design. Steel support (105) use for surface layer (101) load transmit and insure steel mesh cage (104) there is no deformation.

Figure 3 shows that the ISO view of the As during manufacture the hosting bolt (108) should be install at position during site installation use this bold to host up and install. To achieve construction buildability.

## CLAIMS

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(1) The lightweight concrete a core, protect by steel mesh and concrete.

(2) A composite lightweight concrete according to claim 1, wherein the deformation is formed on profile.

(3) A composite lightweight concrete according to claim 1 and 2 wherein deformation concrete or lightweight concrete.

(4) A composite lightweight concrete according to claim 1 wherein any dimensions.

(5) A composite lightweight concrete according to claim 1 wherein any PPVC components.

(6) A composite lightweight concrete to claim 1, wherein the any lightweight materiel fill in concrete casing.