

PREFABRICATED PREFINISHED VOLUMETRIC CONSTRUCTION MODULE

5 A novel prefabricated prefinished modular room system is proposed for low or high rise building development that incorporates prefabricated or precast volumetric system. This innovative system comprises a normal-weight or lightweight reinforced concrete base floor slab, staggered male/female concrete or steel/concrete composite columns/walls at four corners, and in-filled with lightweight panels or dry walls,
10 lightweight frame at ceiling level as bracing and to hold ceilings. The concrete base tray and integrated column/wall and ceiling bracings will form a rigid and robust structure will be a free-standing system by itself, prefabricated off-site with or without architectural finishes and building services. The modules will be transported to the construction site for installations. The prefabricated system will be installed and
15 connected at construction site between each other with floor ties and peripheral ties and connected to core walls by mechanical or cast-in-situ slab to form a final building structures.

The advantage of this unique prefabricated prefinished modular room system using dry
20 installation method and assembly at factory can eliminate most of the labour intensive elements such as formwork, scaffolding, shoring, brick wall, waterproofing, architectural finishes, fitting out, mechanical and electrical works, water supply, sanitary works, and air conditioning works. Virtually most of the components can be prefabricated off-site and pre-assembled at the fabrication yard and delivered to construction site for
25 installation. The prefabricated prefinished modular room system extensively reduces the need for various trades of skilled workers on site, save time, improve productivity, and maintain a high quality factory controlled product.

The prefabricated concrete module comprises of four columns or walls, each side are
30 staggered in a male-female manner to allow for connections with the neighbouring module without creating double column/wall scenario. This will greatly reduce the thickness of the column/wall in conventional modular system design, and create more space for the users. The system is versatile to accommodate different types of dry-wall or precast lightweight panel, aerated concrete panel, foam concrete panel, hollow core

- panel, aerated hollow core panel, sandwich panel, lightweight aggregate panel, etc. as in-filled wall. By usage of lightweight in-filled panels, the weight of the prefabricated concrete room will be reduced greatly to facilitate easier assembly, transportation, handling, lifting and installation. These non-structural walls can be dismantled to create
- 5 a larger room at the desire of the users. Thus, the system is also adaptive to home user's future renovation changes using market available conventional methods with no special skill.

[Fig. 19]