
Design of Precast Concrete Cover Slab for Pedestrian Walk Ways

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Abstract

Pedestrians need to experience safety, comfort, accessibility, and efficient mobility. Walkways are often needed in rural and suburban areas to provide access to schools, parks, community centres, local businesses, employment centres, transit stops and stations, and residential areas. In some areas, when no sidewalks, walkways, or shared use paths are available, pedestrians might be seen walking on roadside shoulders. Sidewalks and walkways separated from the roadway contribute greatly to pedestrian safety. So whenever possible, it is necessary to furnish a sidewalk or walkway for the safety and convenience of the pedestrians.

In most of the urban areas in Sri Lanka, drain area also has used as a part of the side walk. Sidewalks have constructed with tactiles and interlocking blocks along with precast concrete cover slabs as to cover the drain and for the mobility of pedestrians. This is mainly due to the lack of land. The existing precast concrete cover slab is designed with a hollow at the edge of the slab as to make a lengthy void when two slab panels are interconnected together. So, it helps for surface drainage as well as to carry or handle the slab panel. But the problem is these holes may be a disturbance for the pedestrians as some valuable things may fall through this. After having some reviews from Municipal councils and RDA, it was confirmed that they get about more than 10 inquiries weekly. So, people tend to cover these holes using gunny bags or some other material to avoid these disturbances. Then the storm water will get collected on the roads and the sidewalks and will lead to a flood. So, in this research, my aim is to modify the existing cover slab so as to give a safe and convenient mobility to the pedestrians.

The research presented in this thesis is aimed at designing of cover slab combined with reinforced concrete and porous concrete. Then the problem of draining out storm water and the inconvenient mobility will be solved. A cover slab model is designed using SAP2000 and checked the stress development. Then the sample is casted and tested for strength and permeability at the lab.

Keywords: Community centres, Local businesses, Employment centres, Transit stops, Residential areas, Sidewalks, Walkways, Tactiles, Interlocking blocks, Precast concrete cover slabs, Gunny bags, Reinforced concrete, Porous concrete.

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