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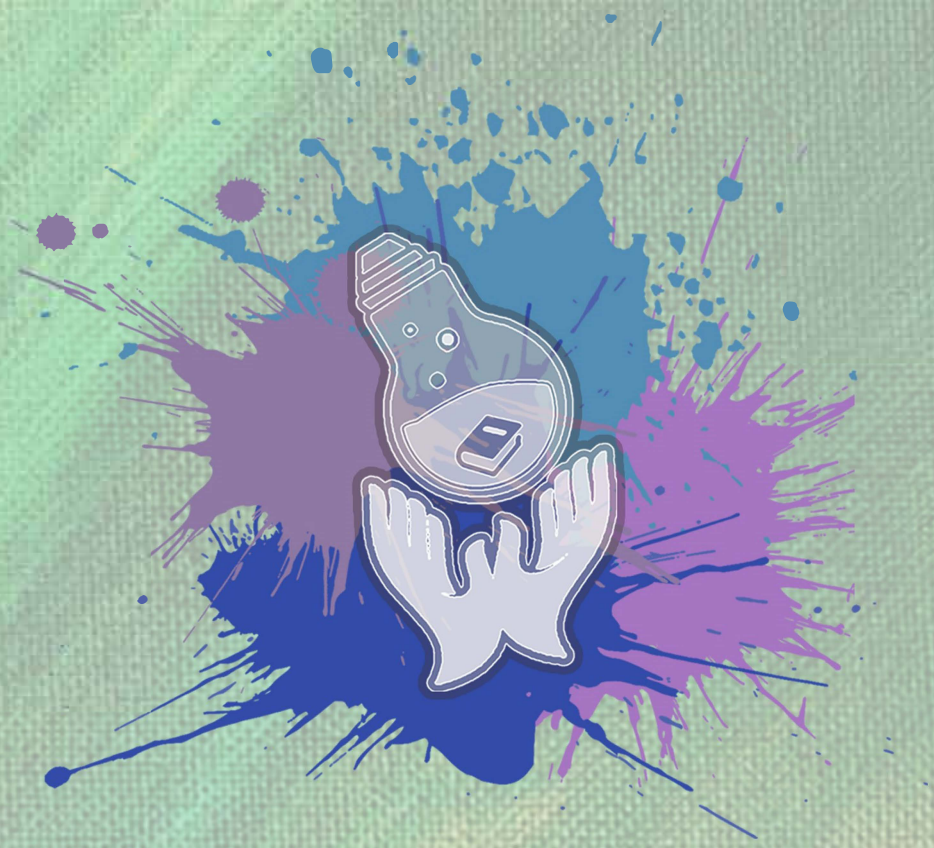

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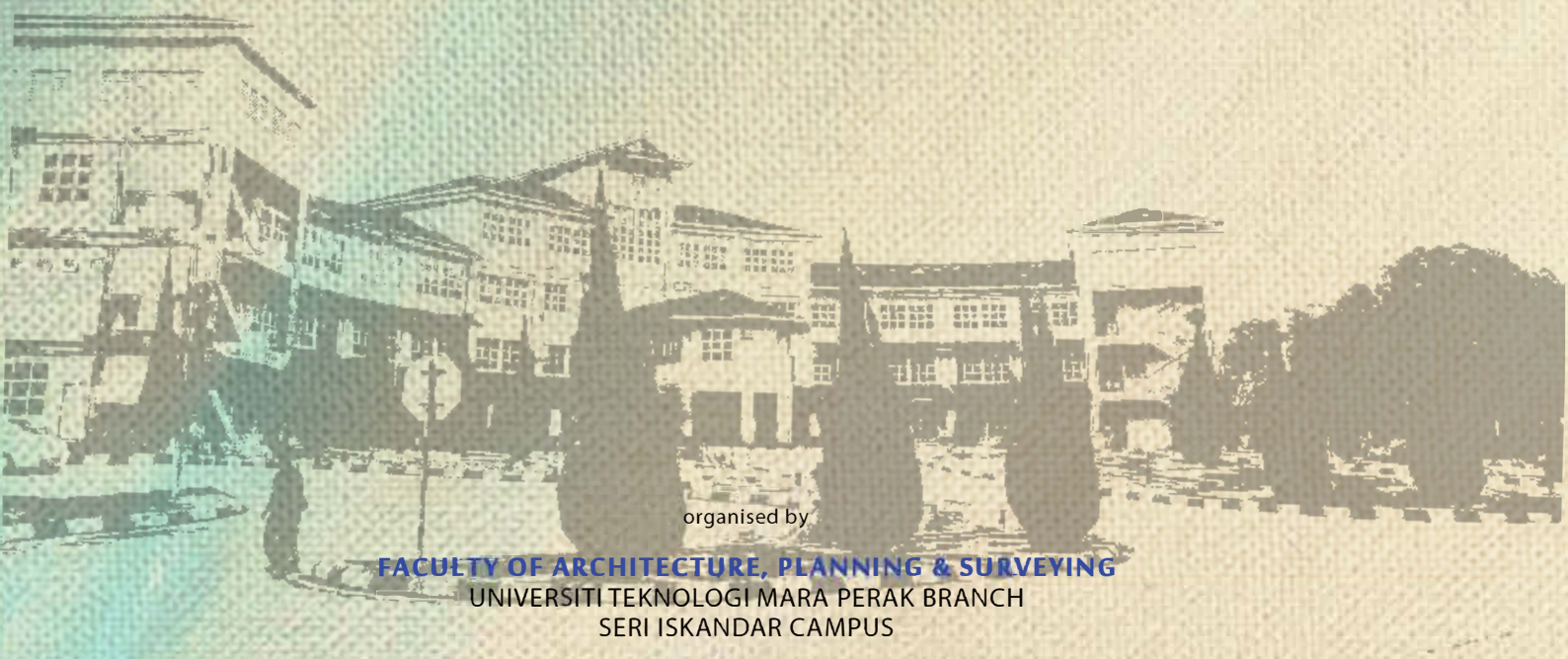

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FACULTY OF ARCHITECTURE, PLANNING & SURVEYING
UNIVERSITI TEKNOLOGI MARA PERAK BRANCH
SERI ISKANDAR CAMPUS

THE PROPOSED DESIGNS MODULAR OF LOW-COST WORKERS CAMP HOUSED BY USING RECYCLING CONTAINER AT THE CONSTRUCTION SITE

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Abstract:
The project's research is to produce a modular design of low-cost shared houses from recycling containers at a built-in seat. The workers camp is a temporary home provided by the developer or contractor to facilitate the construction worker for the resting place. But the existing Malaysian Houses are often fired and there are also shared houses that are poorly supplied and do not comply with the Minimum Housing and Facilities Standard Act 1990. Apart from that, the placement provided is very narrow and the structure workers camp builds with wood and boards. Therefore, the objective of this project is to identify the types of containers to replace the structure of the shared houses, to produce suitable container designs for worker's camp, and to recommend the foundation and the calculation of gross pricing for the entire project proposal. There are five major processes which are data collection processes, design processes, analysis processes, basic preparation processes and the process of calculating the total gross cost of the project. Throughout the analysis process the total weight-loss, for the worker's camp is 37,220.22 KN/m^2. With the proposed site area of 24000mm x 2400mm x 7650mm there are 13 foundations available.

Keywords:
Workers camp; container; architectural design; foundation design

1.0 INTRODUCTION

The workers camp built by the developer, is to provide temporary shelter to site workers during construction. The existence of worker's camp at construction sites is the practice of construction industry in the country over the past decades because it is considered to be efficient and cost savings. Workers camp found in Malaysia, often constructed using wood and boards with that in the event that the site construction work has been completed, the shared house is forced to be demolished and demolished. Poor and unsystematic management can also cause delays in building any construction within the site and can also result in high cost production. Container use is mostly used to store and transport materials and products efficiently and safely in the global container intermodal freight transport system. These containers have different types, container shipping, dry storage containers, overhead containers, tunnel containers, open side storage containers and two open door containers. At present, the use of containers is not only to transport domestic and foreign raw materials and materials. But this container has been innovated in the construction of such housing, shelter, military structure, hospital, shop, as well as mobile restaurant

Problem Statement

There are have some problem statement for this worker camp housed which is;

(i). The developer does not care and does not fully follow the Minimum Housing and Facilities Standard Act 1990 when build the workers camp

(ii). developers not provide residences in comfortable and orderly conditions and adequate electricity supply and mostly workers camp built in imperfect condition and sometimes it only uses wasted materials.

(iii). In terms of safety for example, workers living in the project area are exposed to danger because sitting near the structure of the building is not yet ready and at the same time aspects of hygiene and health can also be affected

(iv). most of the worker's camp in Malaysia, often built with wood and boards, so it will aggravate the beauty of surrounding construction sites.

OBJECTIVES

(i). Identify the types of containers available on the market and determine the current price specifications.

(ii). Provide suitable container designs to be used as worker's camp at construction sites.

(iii). recommends the foundation base for worker's camp on construction sites and gross pricing calculations for the entire project proposal

2.0 LITERATURE REVIEW

Container shipping architecture can be defined as a type of architecture that is usually characterized by the re-use of the delivery steel container as a structural element or into a human activity space. Usually this type of architectural is called cargotecture. In recent years, the combined architectural and conventional composition in cargotecture have grown a lot. It is notable that recently many people have built their homes using ex-shipment to foster a low environmental impact compared to traditional construction method made with brick and reinforced concrete structure. With construction using a container, it can also take a short time to erect a building. In this way, it's probably easier if you want to move the building to another location or want to add additional space in the future.

2.1 Worker Camp

Workers camp are temporarily temporary shelter for construction site workers or inside and outside construction sites, shared houses should be blocked with slabs if the location of the shared house is outside the area or within a shared housing area where the number of working labourers shall have water supply clean, electrical and sewage reservoirs that are suitable and perfect.

2.2 Shipping Container

Container building industry has emerged as one of the easy and practical ways to meet the needs of the people in the effort to get a home quickly close to the workplace and leisure facilities. Using only small footprint, low cost of construction, can be completed in a short time and has strong structural strength (Mazran et al, 2015). In general, containers supplied or manufactured by any country have the appropriate strengths of three aspects - transmission, storage and handling. Transmission containers are made up of skeletons (cuboid) with great strength to support large cargo transit.

3.0 MATERIALS AND METHODS

In this study, the method used and the work carried out in collecting information or data required for the study. From the collection of data, designing modular workers camp will be made using the details stated in the objectives of this project and will analyze the footing for worker's camp with using STAAD Pro V8i SS6 and Esteem 10 Total Integrated Solution. Lastly will do a calculation taking-off for the whole project workers camp. The workers camp housed will design by used 40 feet high standard steel shipment.

4.0 ANALYSIS AND FINDINGS

From the results of the information obtained through book reading and online research. The shared body structure will be using a 40-foot container. Before proceeding in the load analyzer work on the foundation structure and preparation of the site. The proposed modular design of the worker's camp should be made first because to know the size site of the worker's camp and the amount of container used to play a very important role in making this design proposal.

4.1 Proposed 2D and 3D layout plans

The proposed layout plan proposed for the 2D worker's camps structure was presented in the form of AutoCAD drawings for site plan home share on construction sites. 2D layout plan will provide information on external and internal container measurements as well as an area and number of rooms in a 40-foot container size. 3D plans were presented in the form of Google SketchUp drawing software.

The 2D home layout plan using AutoCAD software has been done and the building will use with 40-feeth and each container is divided into two rooms with a size of 5875mm x 2320mm per room.

Figure 1: the 3D workers camp for the side view

Figure 2: 3D workers camp for the front view

Figure 4.1 and 4.2 is a 3D worker's camps shared by using Google SketchUp software. The plan is made up of 6 containers of 40-foot size and the size site of one workers camp is 24000mm long x 2400mm wide x 7650mm high.

4.2 Analyse Base Sites for Workers Camp

The selection of a basis for this study are analyzed using the software STAAD. Pro v8i to get loads of live and dead load for each footing. After that ESTEEM software is used to create the base site for this Project

Self-weight of container =12406.74 KN/m^2	Total self-weight = 37220.22 KN/m^2

4.3 Total Project Cost

From the results of the project design and analysis the total cost of the project for this project is estimated;

Total price cost project

Concrete + formwork + excavation + containers + reinforcement

= RM 8573.36 + RM 6517.01 + RM 680.67 + RM 46200 + RM 7780.42

= RM 69751.46

5.0 CONCLUSION

The shipping container design is designed using AutoCAD and Google Sketchup computer programs while proposals for providing site bases for this worker's camp are analysed using STAAD.Pro V8i and Esteem 10 Total Integrated Solution. The idea of building a container-based building can be suggested to construction companies who want to upgrade and comfort for shared or intermediate accommodation to construction workers. It can also shorten the construction period. Recycled shipping container accommodation proposed is based on the 40-foot-high cube type. With an area of home share 24000mm long, 4400mm wide and 7650mm high is appropriate container 40 feet is used. With the availability of 6 containers are already able to make a House share with design specifications that have been produced. Additionally, with this worker's camp design we can supply 12 rooms and can accommodate 2-4 people in one room. Results obtained from the analysis that have been made, (self-weight) for one storey is 12406.74 KN\/m2 and for a shared house was full 37220.22 KN\/m2 by 13 basic pads built to accommodate the entire proposed project the share House. For the gross cost for this project is valued at 69751.46 does not include wages and the cost of delivery. Recommendation for this project are need to make a more detailed model. Improved designs in the future need to consider wind loads and thermal levels on shipping container structure to be analyzed using engineering software.

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