SUMMARY

The great demand for housing in many countries in recent years has forced the construction industry to be more efficient to achieve faster time of construction and to improve the quality of products. By adapting prefabrication, the efficiency in building construction can be improved and the cost can be reduced. In prefabrication, the components are standardized so that they are uniform and regular in shape and size, and also the activities are in factory and are repetitive, simple, and independent of climatic conditions.

The critical part of precast concrete system is at the joint between precast members. It should be made simple to achieve speed on site erection and to save labor in addition to satisfying functional and performance requirements.

The main aim of this research is to study proposed joint and connection system in precast concrete for double-storey precast concrete houses. For this purpose, three alternatives of structural layouts are modeled for comparison study.

- Model A, combination two and three hinges precast structural frame system,
- Model B, three hinges precast structural frame system, and
- Model C, three hinges precast structural frame and cantilever system.

Working loads are assessed for the three models and computer structural analysis program is used for calculating the forces in the joints and members. Subsequently, joints are designed based on the analytical results. Comparative study of the three proposed models shows that Building model adopting three-hinged precast structural frame and cantilever system (Model-C) performs better in terms of:

- Having smaller size of structural member that is convenient to be cast and transported.
- Having more members with the same shape and size that lead to the efficiency of moulding and factory work.
- Performing better distribution of moment thus reducing the size of member significantly.
- Needing no special ties in foundation such as required by the other two models and so reducing the cost of lower structure.