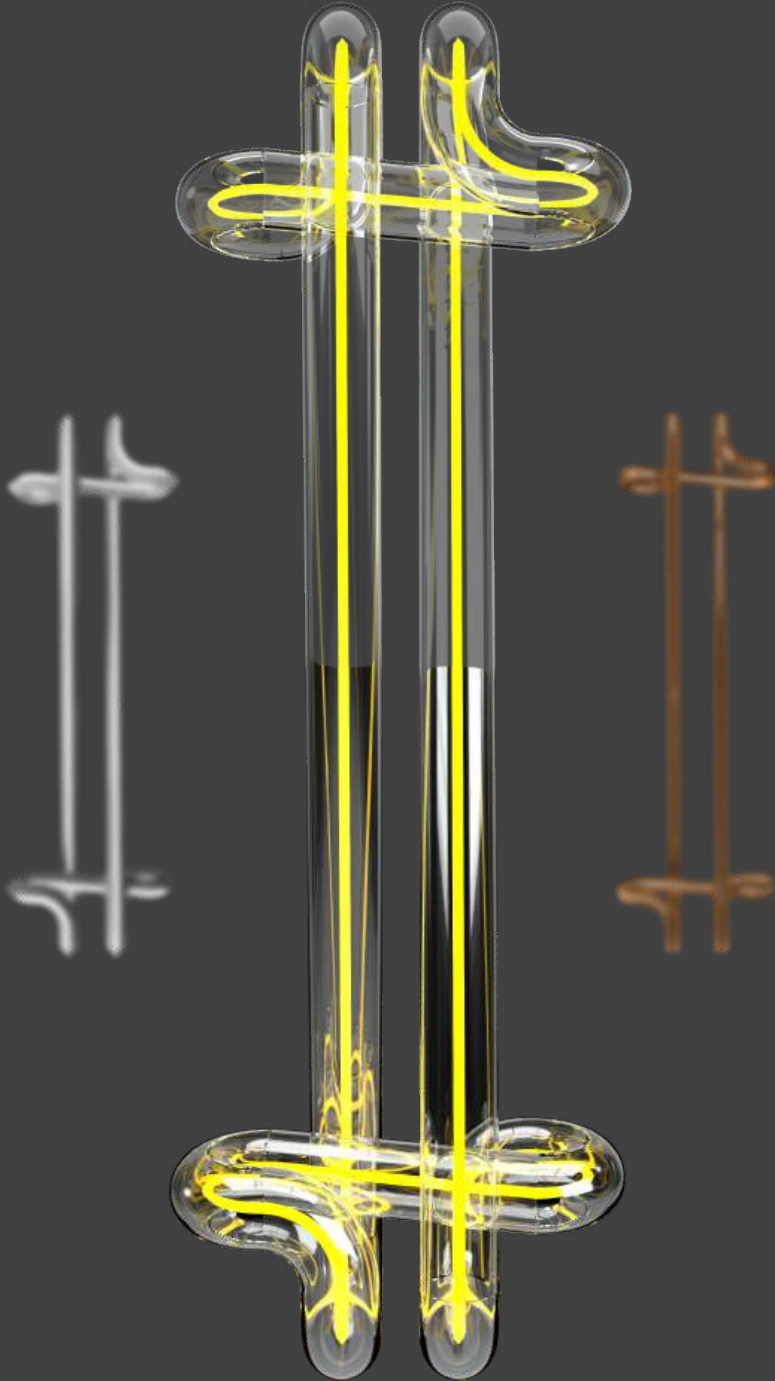


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by Council of Arts and Design Deans of Thailand (CADDT) and The Association of Siamese Architects under the Royal Patronage (ASA) together with the Faculty of Digital Arts, College of Design and the Faculty of Architecture Rangsit University.



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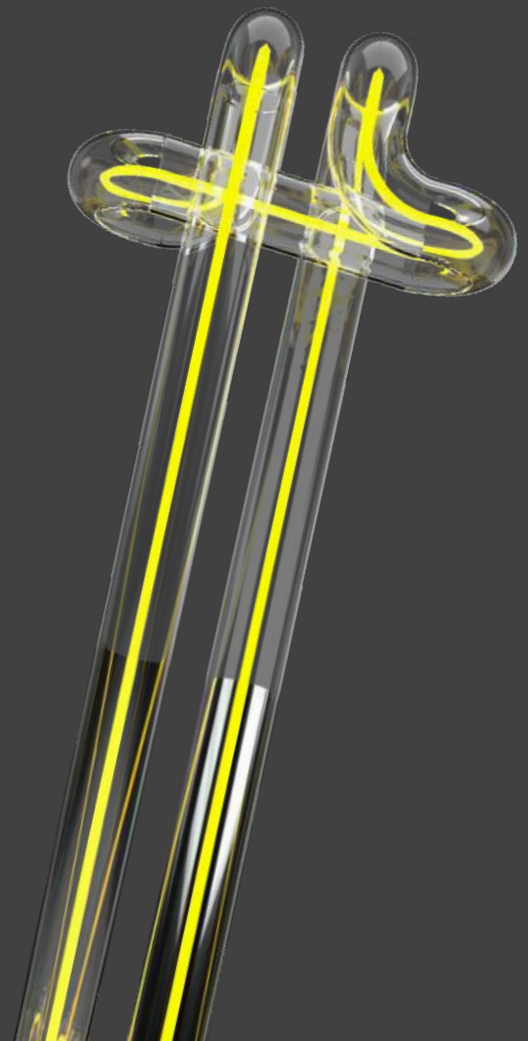
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# “Sustainable Design Guidelines for Low Income Housing. A Case Study of the National Housing Authority’s Public Private Partnership Model”

Assist. Prof.Mrs. Mallika Jongsiri

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## Introduction :

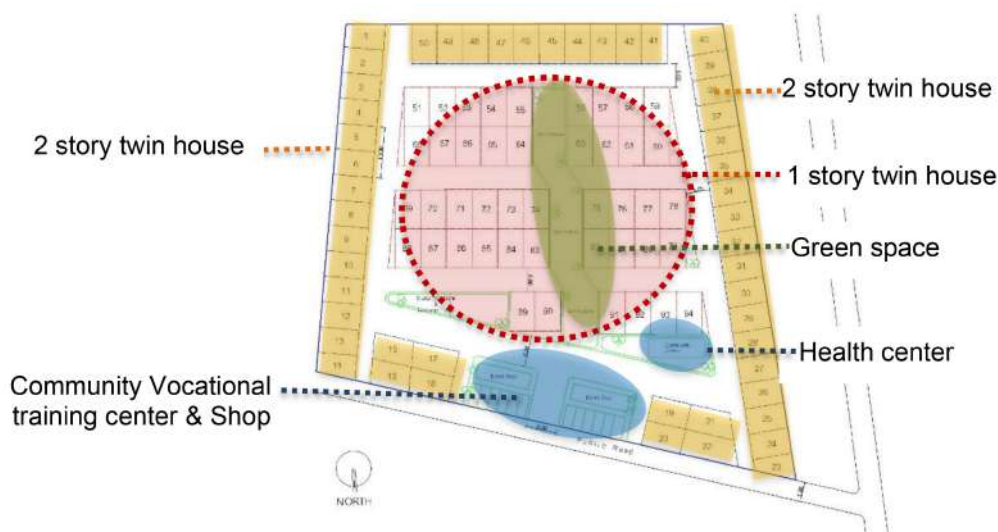
The National Housing Authority (NHA) is a government agency whose duty is to directly develop housing for low-income people with the goals of an improving quality of life. and increasing self-reliant. During the COVID19 epidemic the housing development strategy of The National Housing Authority shifted from focusing on building houses for sale to building houses for rent by establishing the Keha Suk Pracha Public Company Ltd., a subsidiary company that allowed the NHA to adapt the PPP (Public Private Partnership) model under the Public-Private Partnership Act B.E. 2562.This allowed the NHA the mechanism for real estate and housing development as well as for economic boosters for low-income households in communities by developing real estate businesses under the concept of “to have a house , to have a career and to have an income”. To carry out the " Suk Pracha Housing Project" rental housing developments for low-income people were initiated that encouraged the private sector to join with small scale industries in order to build careers and create jobs within the community and neighboring areas.

The objective of this study focuses on the design concept of a housing project aimed to raise the standards of living and to be a prototype of residential design applied utilizing from the PPP development model for low-income people , the underprivileged, the disabled and the elderly .The process of preparation for housing, community, and town development plans requires that provincial and local administrative organizations as well as related parties have knowledge, understanding, and experience in housing, community, and town development in accordance with the contexts of the areas and the housing demands of target groups. The selected project of this study was developed on land of the Treasury Department of Singburi Province which signed an MOU with the National Housing Authority in Phra Ngam Sub-district, Phrom Buri District that was consistent with the contexts of the area that contains a large population of elderly people and a high demand for public activity areas from both villagers and the elderly people. In addition, the project location is near religious attractions and industrial plants, and therefore has many workers in the industrial and tourism/service sectors who are also likely to contribute to housing demands.

The result of this study is design guidelines for sustainable housing design for low-income groups. These design guidelines emphasize the principles of Universal Design to support an aging society, so that the elderly can live with quality and safety. Public health and career opportunities are promoted with provided vocational training areas and commercial areas that generate income for the residents. There is also a health center in cooperation with government agencies. The project therefore not only meets housing demands but also creates an improved quality of life for the community and society.

#### Objectives:

1. To study the concept of housing design that elevates the living standards of low-income people, the disadvantaged, the disabled and the elderly
2. To be an alternative solution to the housing problems for the target groups of low-income and underprivileged people through cooperation with government agencies
3. To be a model for sustainable housing design applied via the The PPP (Public Private Partnership) development model





### Methodology:

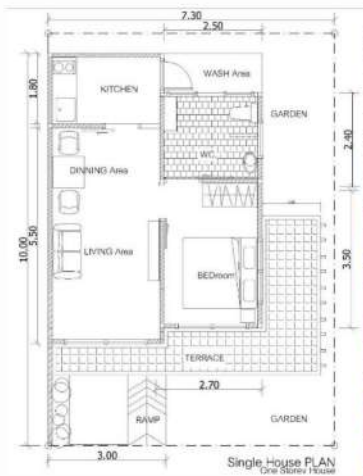
The residential design project Baan Kheha Kasem Suk, Singburi Province, is a prototype project. According to the memorandum of cooperation between the National Housing Authority and the Treasury Department to request rental land of state property that is not used to develop as a residence from the preparation of

The Competency Promotion Project for Local Administrative Organizations under Housing Development and Slum Prevention / Solution Plan Fiscal Year 2020 – 2021. NHA developed the concept of sustainable housing design that focused on the lifestyle of target groups and the context of the project area through the process of workshops with relevant local agencies, communities, and the public sector. to more fully understand the needs of the target users. This project will have approximately 95 units and is expected to pay back in approximately 18 years.



## Areas of Creative Works:

Phra Ngam Sub-district, Phrom Buri District contains a large population of elderly people and a high demand for public activity areas from both villagers and the elderly people. In addition, the project location is near religious attractions and industrial plants, and therefore has many workers in the industrial and tourism/service sectors who are also likely to contribute to housing demands. The most in-demand low-income families with elderly who have regularly participate in activities together. Therefore, the design concept determines the common area that corresponds to the target groups lifestyle. Including commercial buildings supporting for the vocational training to promote careers and income for this community as well.



## Design Concept principals of project layout

1. Elderly buildings should be taken care of by surrounding communities and universal design.
2. Relaxing garden connected to the central project from the entrance reach the last house
3. Vocational Training Zone and Shop located in front
4. Emphasis on building a strong community and adding land value to the project sustainably.

The Design of Baan Kheha Kasem Suk, Phra Ngam Sub-district Project is housing project for long-term rental on the land of the Treasury Department, designed for the following target groups:

- . The elderly group: One-story twin houses 65 sq.m./ area 32 sq.m per unit, on 44 plots at a size of 6.5 x 10 meters = 65 sq.m. or 16.25 sq.wa per plot , with rental rate of 1,500 baht per month
- The family group: Two-story twin houses 65 sq.m./area 70 sq.m per unit, on 50 plots at a size of 6.5 x 10 meters = 65 sq.m. or 16.25 sq.wa per plot , with a rental rate of 3,500 baht per month

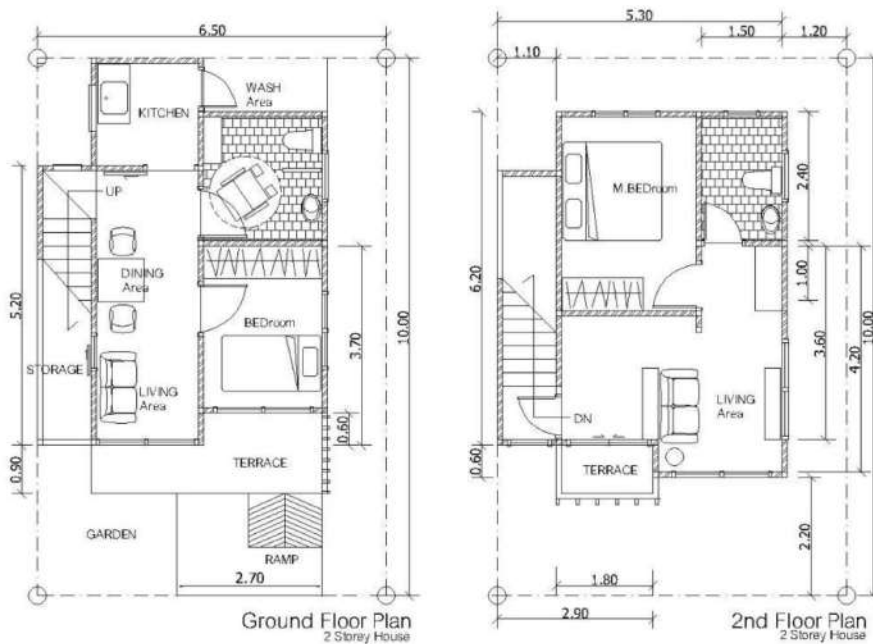
Utilities and facilities in the project include a main road of 8.00 meters in width and internal roads of 6.00 meters in width, with standard electrical, water supply, drainage, and treatment systems as well as a garbage collection point of the municipality. There are also common areas, including a health center and a community vocational training center to support community development activities in order to generate income and health care for residents in the community and nearby areas. Additionally there are commercial, recreational, and green spaces, including a community shop building for rent, activity and exercise areas, parks, playgrounds, and parking lots.

## Design Concept for Sustainable Building

The design of the buildings in the project takes into account sustainable design principles for the comfort of residents. Using these principles air circulation and natural ventilation are key considerations in the design of the buildings, with openings that allow wind to enter throughout building to increase comfort and decrease heat gain. Natural lighting is as used as much as possible in the design, while at the same time the design allows for roof eaves and balconies to block sunlight so that solar heat gain is reduced. Finally, the careful selection of materials further reduces heat accumulation in the building walls. and trees are planted to provide shade for the building.

## Conclusion:

The result of this study is design guidelines for sustainable housing design for the "Baan Kheha Kasem Suk Project" a rental housing project for low- to middle-income people, families, and single people, civil servants, state enterprise employees, and the general public without an occupational limit who are over 55 years of age and/or in retirement age. The design emphasizes the principles of Universal Design to support an aging society so that the elderly can live with quality and safety. Public health and career opportunities are promoted with provided vocational training areas and commercial areas that can generate income for residents. There is also a health center in cooperation with government agencies, such as the Phra Ngam Sub-district Administrative Organization, the Provincial Social Development and Human Security Department, the Provincial Community Development Department, and the Provincial Public Health Office, to continuously provide services. Moreover, community recreational areas are provided various communal activities. The project therefore not only meets housing demands but also improves the quality of life for the community and society as a whole.







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