

## **TITLE: NON-A/C MARKET BRIDGE NETWORK: ROOF AS SHELTER AND WIND CATCHER**

### **LAU CHUNG MING**

CHU HAI COLLEGE OF HIGHER EDUCATION

#### **STUDIO BRIEF:**

#### **NON-A/C MARKET BRIDGE NETWORK**

1. Programme:

- The network shall well incorporate different uses on different levels and connect different surrounding areas.
- Mobility of users frequently using trolleys and carts shall be considered.
- Different modes of operation and different users in the network with hourly, daily and seasonal changes shall be considered.
- The whole network shall be managed by a social enterprise.

#### **SCHEDULE OF ACCOMMODATION**

<b>Accommodation</b>	<b>Min. Floor Area (sq. m.)</b>
<b>Market:</b>	
- Fixed stalls / shops of long-term tenancy for retailing of poultry, seafood, meat, vegetable, fruit, flowers, packaged food, dry goods	4,000
- Stalls in any form of short-term tenancy for retailing during special events	--
- Itinerant hawkers of free occupancy for retailing at non-peak hours, similar with the Night Bazaar and Dawn Bazaar in Sham Shui Po	--
<b>Cooked food pavilion:</b>	
- Fixed stalls / restaurants of long-term tenancy	1,000
- Stalls in any form of short-term tenancy for food preparation	--
- Seating areas assigned for each fixed stall / restaurant	--
- Free seating area	--
<b>Management office and storage</b>	--
<b>Necessary ancillary facilities, e.g. unloading area, carpark, refuse collection chamber, wet goods washing space, toilets, E&amp;M rooms, etc.</b>	--
<b>Multi-purpose covered space</b>	--
<b>Landscape garden / terrace</b>	--
<b>Existing public transport terminus on G/F</b>	--
<b>Total:</b>	<b>5,000</b>

2. Natural ventilation:

- Rather than instinct comfort, the network emphasizes energy saving and avoidance of disease spread. Therefore, no air-conditioning shall be used in the whole network. However, the hot and wet summer and the cold and dry winter in Hong Kong shall also be considered.

3. Parameter for massing:

- Maximum Building Bulk Volume = Site Area X 11m.
- It is measured from the ground level (+6m P.D.) to the uppermost fixed elements (roof, canopy, or top level of barrier or trellis on open floor) of each part of the network.
- It shall include all free public spaces, vehicular roads, indoor and covered outdoor spaces, but exclude all open internal courtyards. Any proposed structure outside the site boundary is excluded from the accountable volume.
- No height restriction to any part within the site boundary.

4. Site:

- The existing layout of Sham Mong Road and Nam Cheong Station Public Transport Terminus shall be generally kept.
- The maximum vehicular height in Hong Kong is 4.6m. Thus, as required by Highways Department, any bridge crossing over another road shall be designed to minimum 5.1m headroom to allow for 0.5m free clearance and to enable erection of temporary works underneath the bridges without closing the road underneath during maintenance and repair.
- Connection to the bridge at Fu Cheong Estate Shopping Centre shall be considered. The bridge and glass canopy can be rebuilt, but justification is required. All other structures within the site boundary can be demolished or altered.
- Any elevated footbridge to other nearby area outside the site boundary is allowed, but justification is required.

5. Air ventilation assessment (AVA):

- Each student shall carry out and record an AVA on the site with his design based on same assumptions of the AVA on the existing site condition (Stage 1).
- After the simulation, you are encouraged to modify your design to enhance porosity of the market and further

minimize the impact on the surroundings during the summer.

## **DESIGN CONCEPT: ROOF AS SHELTER AND WIND CATCHER**

### **The New Market Type – Bridge Network**

Improving the traditional open street markets and the conventional air-conditioned market buildings in Hong Kong, the bridge network is a new type of market form. It allows a rainproof environment with natural ventilation on the one hand, and multilevel use of spaces above other existing programmes such as a public transport terminal on ground level on the other hand. The design emphasizes the linearity of market bridges facilitating cross ventilation, and intends to extend such market to connect with the surrounding site such as the shopping mall, railway station (MTR), green park, etc., forming a network for pedestrians.

### **Roof as Wind Catcher**

Independent from the structure of market bridges mostly at the inner part, the roof is designed as a series of fabric canopies supported by column and cable structures at the outer part, which allow flexibility in planning and for the ease of future spatial alteration. Located close to the sea at its southwest, the site originally enjoyed the summer sea breeze. However, the bulky structure of railway station next to the site forms an obstruction of sea wind. Therefore, the roof is designed in a sloping form with the seaside raised above the roof level of its neighbouring station structure, so that it can act as a wind catcher for the market and bus terminal underneath, resulting in even cooler environment than the original open bus terminus. The roof geometry is adjusted according to the testing of air ventilation simulation by computer softwares.

### **Rainwater Recycling**

The large fabric roof is designed to facilitate the collection of rainwater by gutters at the edges and storage tanks. The water is recycled for the uses of cleansing and irrigation.

### **Organic Farm**

Organic farm in two modes is provided in the network. The community farm is rented for community's leisure use. Vegetables from the farm can be consigned to the restaurants in food pavilion for cooking. The commercial farm is rented to herb, vegetable shops and restaurants for sale or cooking. Food waste from the restaurants is used as fertilizer for the organic farm.