



**CAGAYAN DE ORO CITY'S ENTRY**  
FOR THE  
LIVEABLE CITIES DESIGN CHALLENGE (LCDC)



# Oro Central

**Kaalam + Kaluwasan = Kaugmaon**

**Knowledge**

**Safety**

**Future**



**Kaalam**  
**(Knowledge)**

**Very real shortage of classrooms**

- ▶ Students endure two-shift class days (6 AM – 12 NN and 12 NN – 6 PM)
- ▶ New enrollees each year

**Neglect of school facilities**

- ▶ Ironically, during disasters, schools become evacuation centers

**The building itself educates**

- ▶ Becomes tool for educating the youth on sustainable development



## **Kaluwasan (Safety)**

### **Recent history of flooding**

- ▶ 2009, 2011 (Sendong), 2012 (Pablo), typhoon path shift
- ▶ Climate change
- ▶ Elevated temperatures in Mindanao, increased rainfall volume



## **Kaugmaon (Future)**

**Educate and safeguard our children to secure our future**

- ▶ **No children left behind**
- ▶ **During disasters, dignity for evacuees**
- ▶ **Sustainability, liveability, resilience**

# Iconic Landmark

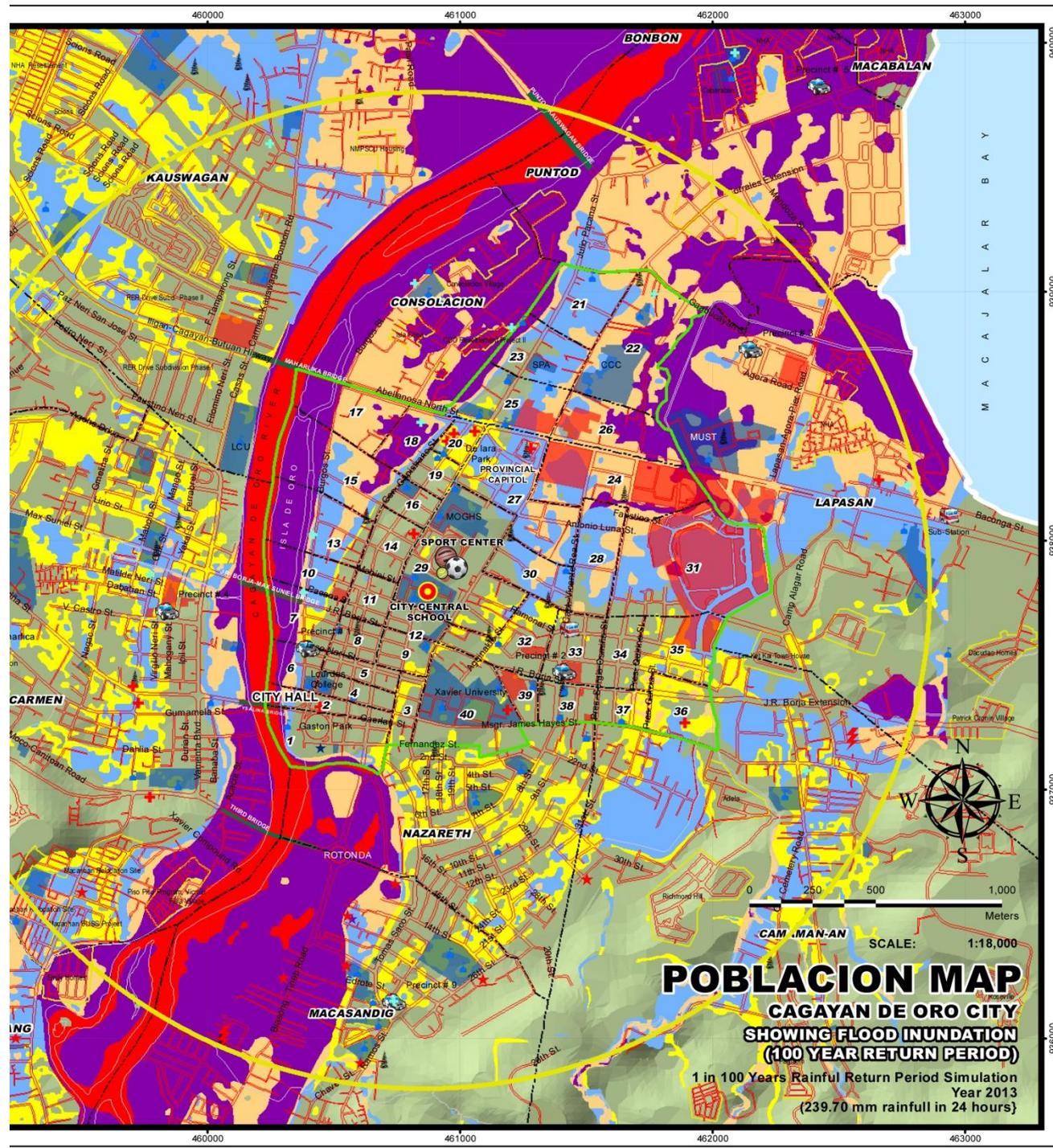
- Upturned roof
  - ▶ Open book (primary purpose: education)
  - ▶ Waves, wings (resilience and hope, secondary purpose: evacuation)



# Safe Haven

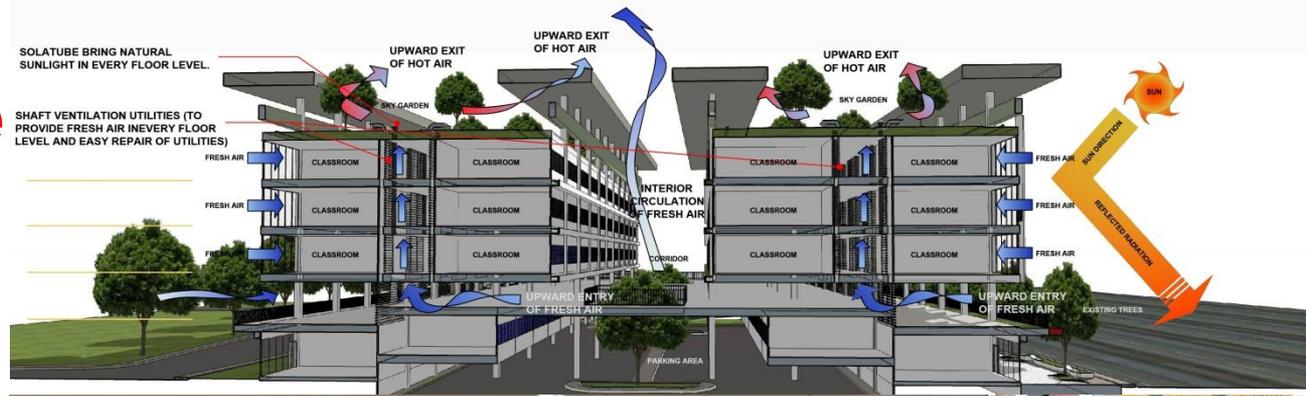
- According to XU-ERC and GIS-CPDO

- ▶ Least hazardous site
- ▶ Numerous medical facilities within 2-km radius



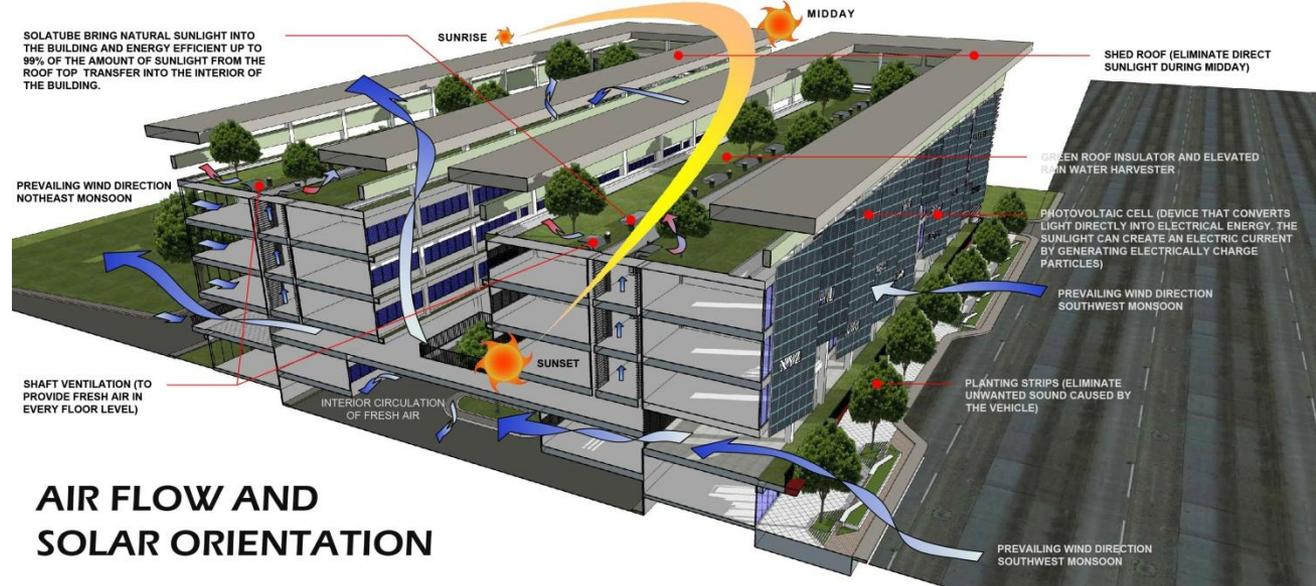
# Substantive Elements

- Green building
- Offers educational and economic opportunities
- Can serve 8,000 students
- Can house and support 10,000 evacuees



# Ecological Balance & Environment

- **Passive cooling**
  - ▶ Air shafts
  - ▶ Building gaps
- **Green roof**
  - ▶ 7,000 sqm for crops
  - ▶ Insulation
  - ▶ Greenhouse gas abatement



**AIR FLOW AND SOLAR ORIENTATION**

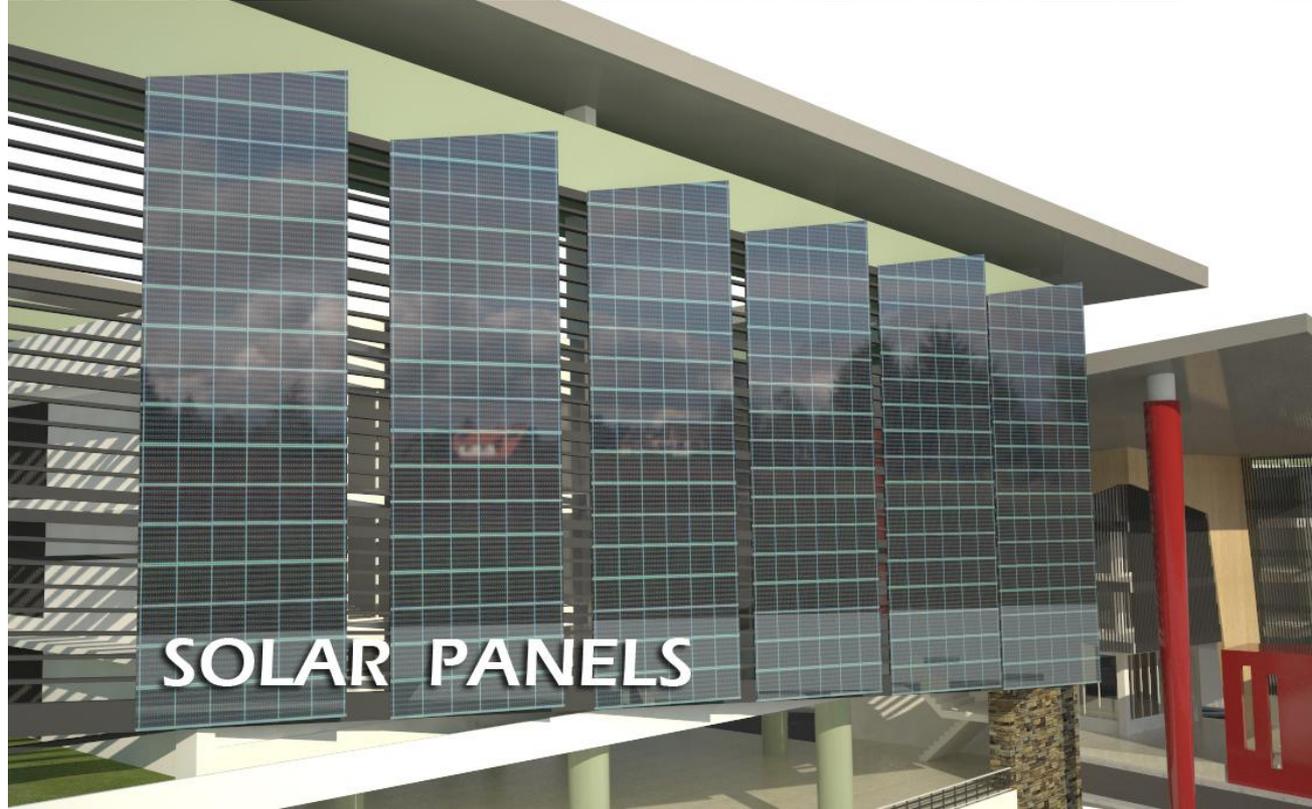


**HALLWAY WITH NATURAL VENTILATION**



# Ecological Balance & Environment

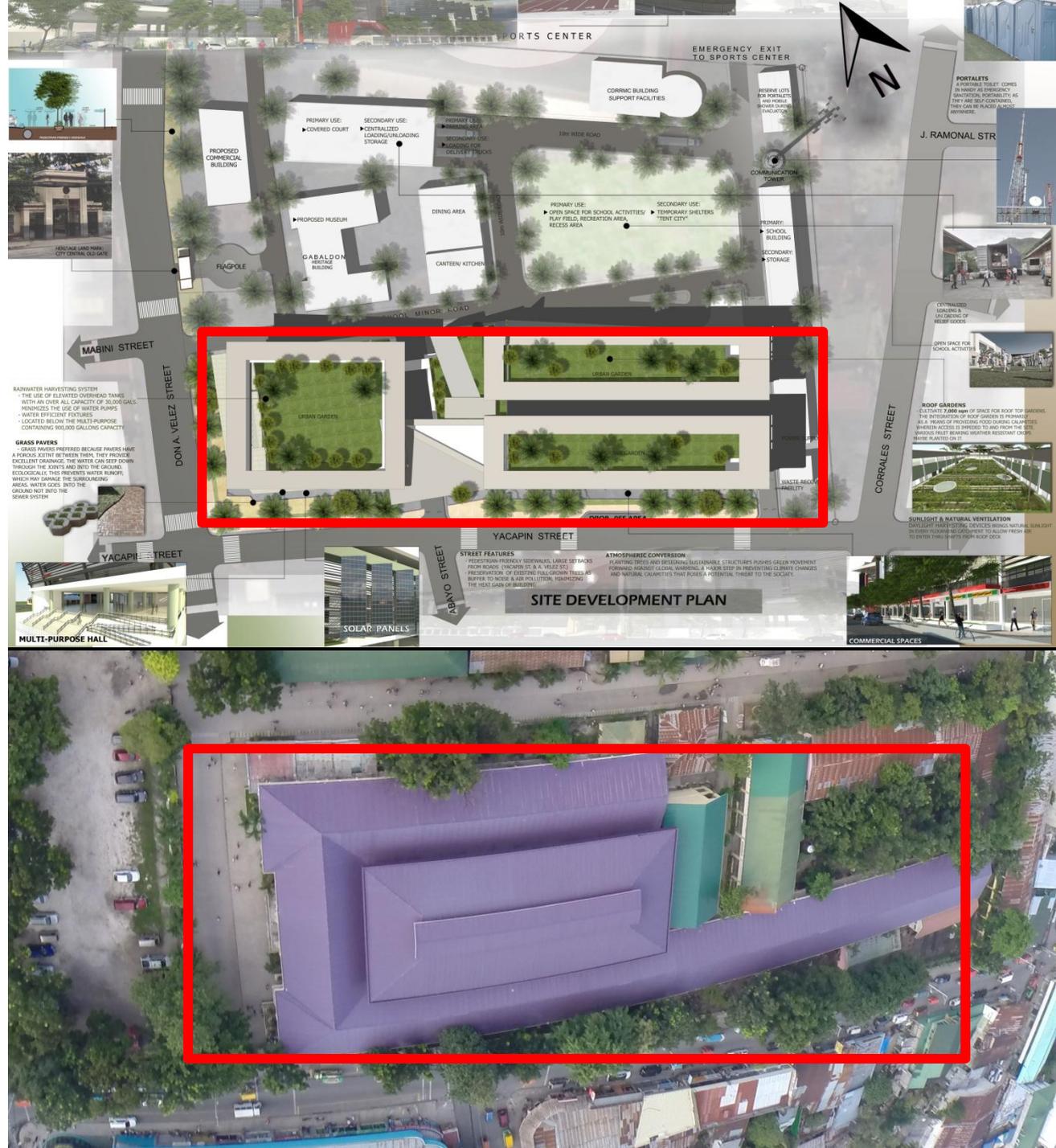
- Daylight harvesting light wells
  - ▶ Provide natural light
  - ▶ 90% ↓ power consumption
- BIPVs
  - ▶ 1,069 PV panels
  - ▶ 390,185 kWhr/year





# Land Reuse and Multi-use

- To replace burned school building
  - ▶ 4.8-ha. floor area
  - ▶ Classrooms, office space, laboratories, multimedia libraries, parks, rentable spaces, multipurpose areas, rental parking



# Land Reuse and Multi-use

- **Parking Lots**

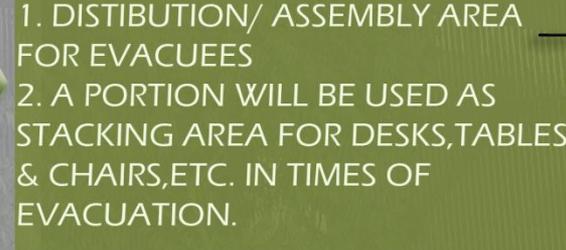
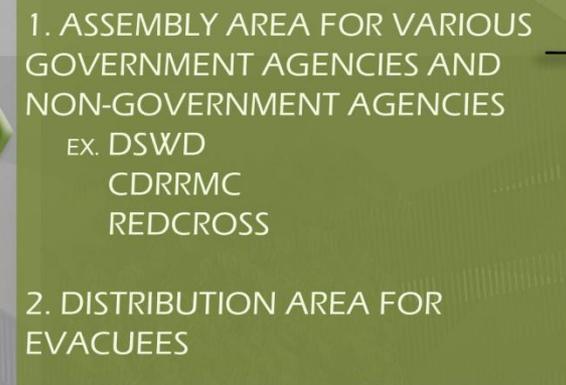
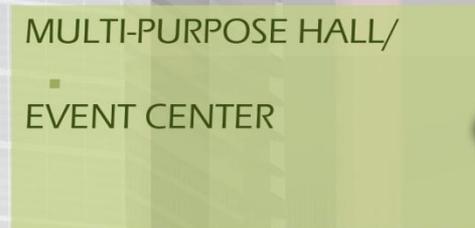
- ▶ For mobile clinics, standby rafts, mobile showers, kennels

- **Event Center**

- ▶ Staging, distribution area
- ▶ Evacuee assembly
- ▶ Storage

## Primary Use

## Secondary Use

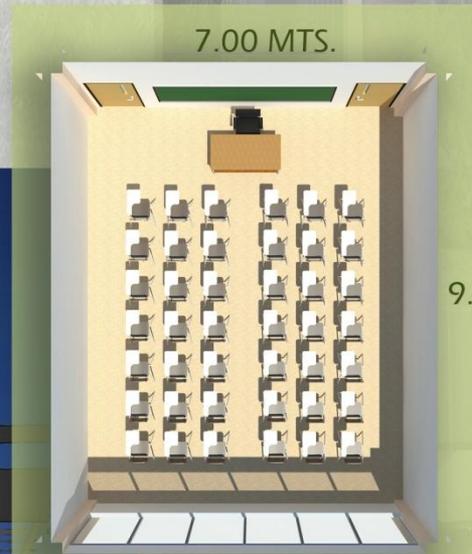


# Land Reuse and Multi-use

- Extreme cases
  - ▶ Toilet-equipped classrooms can accommodate 3 families per classroom
  - ▶ Wide corridors have multiple uses

## Primary Use

## Secondary Use



# Land Reuse and Multi-use

- **Extreme cases**

- ▶ **Roof garden can serve as debriefing area**
- ▶ **Wide corridors have multiple uses**

- **Command and Control Center**

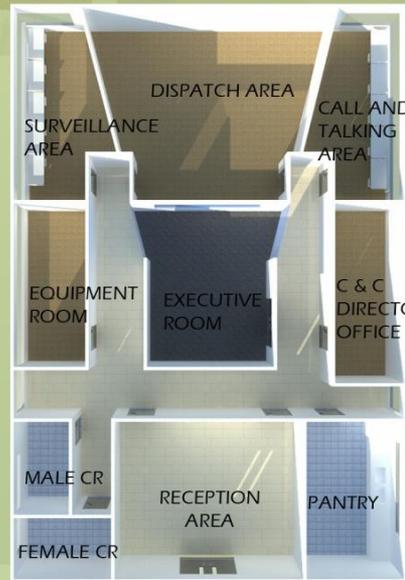
- ▶ **Strategies developed by MUST (C3, DIRECS, ARKFIS, ISDB)**

# Primary Use

# Secondary Use

GREEN ROOFS  
>VEGETABLE GARDEN

>DEBRIEFING AREA FOR EVACUEES  
>WELLNESS AREA



COMMAND AND CONTROL CENTER (C3) PLAN

Project Special Features:

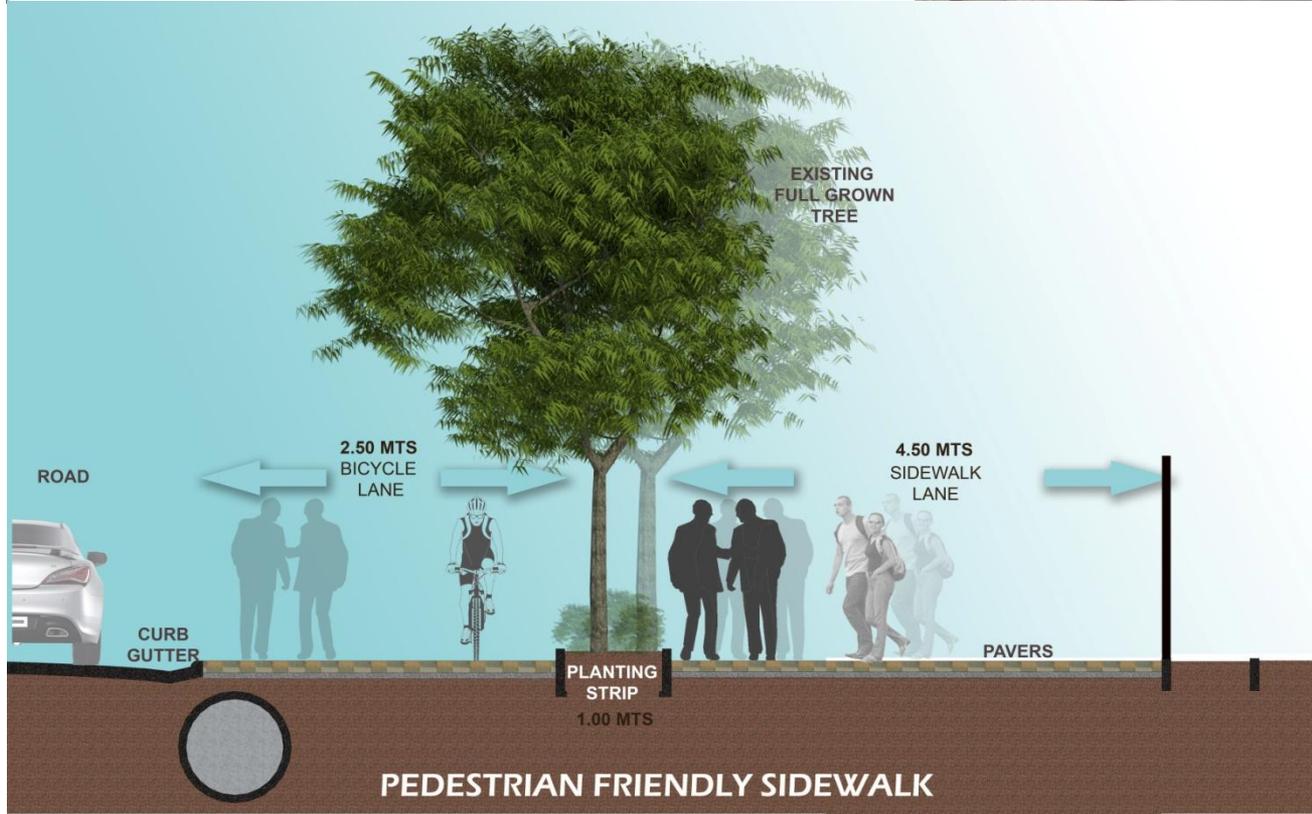
1. Command and Control Center (C3)
2. Disaster Response through Emergency Communication System (DiRECS)
3. ARKFIS- local NOAH System
4. ISDB-T Transmission System

The Command & Control Center Information System is a fully integrated system that provides automation and centralization of emergency management.

- Automated Call Taking featuring ANI
- Automated Resource Identification (GIS).
- Automated Resource Dispatch and Management.
- Automated Voice and Data Integration.
- Automated Record Management
- Real time data processing and information sharing.
- Automated Executive Monitoring System

# Land Reuse and Multi-use

- Center for culture
  - ▶ Historic Gabaldon Building to be preserved and enhanced as “The Sendong Museum”
- Neighborhood hangout
  - ▶ Walkways, bike lanes, open spaces, green gardens



# Collaborative Design Process

- Design Team
  - ▶ Composed of actual stakeholders
  - ▶ Dedicated local practitioners in respective fields: Academe, Architecture, Engineering, Environmental Science, ICT
  - ▶ Public sector professionals



# Feasibility

- **Cost**
  - ▶ P980.1-M
- **Fund Sources**
  - ▶ Special Education Fund: P400-M
  - ▶ CDRRM Fund: P100-M
  - ▶ PPP, BOT: P400-M
  - ▶ Grants from DOE, CEPALCO, DOST, COWD: P240-M
- **Current land value: P1.5-B**



**Thank** you.