2nd Largest Airport in Philippines

Terminal 1

Terminal 2

65,000 SQM

7 Contact Stands

4.1 Millions Passenger Per Annum Opening Day
Masterplan

- Airport hotel
- Retail village with roof garden
- Multi-level car park
- Airport office and administration building
Expansion for Growth – 9 MAP

Phase 1

Modular Expansion
Tropical Pavilion – Light, Airy, Sustainable, Contextual, Friendly…
Small Carbon Footprint

Local Skills

Local Industries

Human Experience

Well-being

Design Life
Climatic and Locality Considerations

Risk of earthquake

Risk of typhoons

Risk of heavy rainfall
Learning from a Tropical Vernacular

High pitched roof / Low eaves / Light weight / Locally sourced material
Passive Design Approach

- Diffused natural light through skylights
- High ceiling to create thermal stratification for energy efficient air-conditioning
- Vaulted roof for fast run-off during heavy rain fall
- Low eave to mitigate solar heat penetration & glare along East & West facades
- Glazing Shading Coefficient 0.3
- Wall / Window ratio 0.6
### MEP Design

<table>
<thead>
<tr>
<th>Baseline ASHRAE 90.1-2007</th>
<th>254 kWh/m²/yr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design Target</td>
<td>176 kWh/m²/yr</td>
</tr>
<tr>
<td>Measured Results (SCADA)</td>
<td>160 kWh/m²/yr</td>
</tr>
</tbody>
</table>

### Solar Power Generation

<table>
<thead>
<tr>
<th>Terminal 1 (55,000m²)</th>
<th>165 kWh/m²</th>
<th>1.64 MW</th>
<th>70% (peak hours)</th>
<th>130 tons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Terminal 2 (65,000m²)</td>
<td>160 kWh/m²</td>
<td>5 MW</td>
<td>3 – 5% (target annual reduction)</td>
<td>TBC</td>
</tr>
</tbody>
</table>
An Encompassing Sustainability Strategy

- Zero waste
- Low embodied energy
- Locally sourced material
- Local industries involvement
- Local employment
- Long term maintenance
- Create Civic Pride
Modular Design to Maximize Repetitions & Prefabrication
Staging to facilitate geometric setting out and site welding

Lightweight structure requires less on-site fabrication and no need for formwork
Roof Design with Steel Structure

<table>
<thead>
<tr>
<th>Total Weight (Tons)</th>
<th>Carbon Emission at manufacturing (CO₂ Tons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,591</td>
<td>4,923</td>
</tr>
</tbody>
</table>

Segmented steel arch

Metal cladding with timber veneer

Roof Design with Glulam Structure

<table>
<thead>
<tr>
<th>Total Volume (M³)</th>
<th>Carbon Emission at manufacturing (CO₂ Tons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4,550</td>
<td>728</td>
</tr>
</tbody>
</table>

Self-finished glulam primary arch
Terminal Roof Area  25,000 sq.m

Construction Period  6 months *

Major Cost / Time Savings & Risk Mitigation
Sustainable Development Principles

Clean Energy

Local Resource Base

Responsible Consumption & Production

Small Scale Industry
A Simple, Modest & Easy to Build Solution
Extensive use of Prefabrication to Minimize Waste
Choice of Material with Natural Self-finish
An Architecture devoid of Decoration
Mactan Cebu International Airport Terminal 2

“The World’s Friendliest Airport”

MCIA Airport Authority, 2019
Performance beyond Expectations:

“Simplicity, Add Lightness”
Colin Chapman of Lotus Car