University of Auckland
Student Accommodation

Topics
• Introduction
• Prefab Concept
• Design & Delivery
• Managing Design Complexity
• Documentation
• Factory & On-site Works
• Conclusion
Dream vs Reality

<table>
<thead>
<tr>
<th>DREAM</th>
<th>REALITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Manufacture 5 modules per day</td>
<td></td>
</tr>
<tr>
<td>• Install 6 modules per day</td>
<td></td>
</tr>
<tr>
<td>• 0% wastage</td>
<td></td>
</tr>
<tr>
<td>• 100% completed pods</td>
<td></td>
</tr>
</tbody>
</table>

Introduction

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>May 2009</td>
<td>Initial concept proposed</td>
</tr>
<tr>
<td>Nov 2009</td>
<td>Site visit Grand Chateau,</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Feb 2010</td>
<td>Mock up produced</td>
</tr>
<tr>
<td>Aug 2010</td>
<td>Production commences</td>
</tr>
<tr>
<td>Jan 2011</td>
<td>Installation commences</td>
</tr>
<tr>
<td>Feb 2011</td>
<td>Production completed</td>
</tr>
<tr>
<td>May 2011</td>
<td>Installation completed</td>
</tr>
</tbody>
</table>
Geometry

Concept
Prefab Concept - Units

- Assembly Line Process
- Refine Every Detail
- No Nail Brackets
- Use the Ply Layer
- “Lego” Style Fabrication Drawings

Geometry
Key Details – Ceiling to Wall, Wall to Wall

Key Details – Double Pod
Topics

- Documentation

The Pod

- A Pod is a combination of given components
- Various combinations of these make various types of pods
The Pod is an integral part of completed building.
Requires Coordination with:
• Structure
• Façade System
• Fire/Acoustic Systems
• Building Services
Façade Details
Façade Isolation @ Slab-to-Pod Junction

Topics

• Prototyping and Factory Works
Prototyping & Testing.
- Computer Prototyping
- Full Scale Prototypes
- Test Rigs

Prototyping & Testing.
- Full Scale Prototypes
Prototyping & Testing.
• Façade Test

Prototyping & Testing.
• Acoustic Isolation Pad Test
Key Benefits – Factory Based Fabrication.

Quality Control

• In Built Systems of QA – Jigs
• Direct CAD Model to CNC cutting
• Consistent Tolerances

Economies of scale

• Time: Assembly Line
• Weather
• Less Material Wastage
Topics

- On-site Works

End Jan 2011
Pod set out

- The window set out will be our most critical set out point due to its relationship with the Moeding Tile. We will be using the building surveyor to set out all the window centers and use this as a QA check on completion of the stack.

Joining the pods

The pods have 2 major connection points
1) The ply shear keys at horizontal positions
2) The bolted connections to the columns
Points to Note

- Early contractor involvement (including specialist sub-contractors),
- Continued dialogue with specialist suppliers,
- Prototyping,
- Fire considerations,
- Acoustic considerations,

Points to Note

- Testing,
- Detailed design/ shop drawings,
- Skill of follow on trades,
- Integration of base build design and modular,
- Direct labour component,
- Effect on cash flow,
### Quick Facts

<table>
<thead>
<tr>
<th>Size</th>
<th>Lumens</th>
</tr>
</thead>
<tbody>
<tr>
<td>90 x 45</td>
<td>45,040 lm</td>
</tr>
<tr>
<td>70 x 45</td>
<td>55,224 lm</td>
</tr>
<tr>
<td>140 x 45</td>
<td>93,692 lm</td>
</tr>
<tr>
<td>12 mm Ply</td>
<td>51,000 m2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Material</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insulation</td>
<td>20,964 m2</td>
</tr>
<tr>
<td>Plasterboard</td>
<td>29,016 m2</td>
</tr>
<tr>
<td>RAB</td>
<td>13,273 m2</td>
</tr>
<tr>
<td>Compressed Sheet</td>
<td>11,976 m2</td>
</tr>
<tr>
<td>Screws</td>
<td>59,900 No</td>
</tr>
<tr>
<td>Sealant</td>
<td>36,036 lm</td>
</tr>
</tbody>
</table>

### Dream vs Reality

<table>
<thead>
<tr>
<th>DREAM</th>
<th>REALITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacture 5 modules per day</td>
<td>5 per day max 10</td>
</tr>
<tr>
<td>Install 6 modules per day</td>
<td>6 per day max 15 No</td>
</tr>
<tr>
<td>0% wastage</td>
<td>0.5% wastage</td>
</tr>
<tr>
<td>100% completed pods</td>
<td>bedroom pods 100% study pods stop &amp; paint on-site double pods stop &amp; paint on-site</td>
</tr>
</tbody>
</table>
Britomart

Gateway Plaza
High Noon Express

Knoll Ridge Cat Shed
Knoll Ridge Cafe

The Future

It's all about the detail!