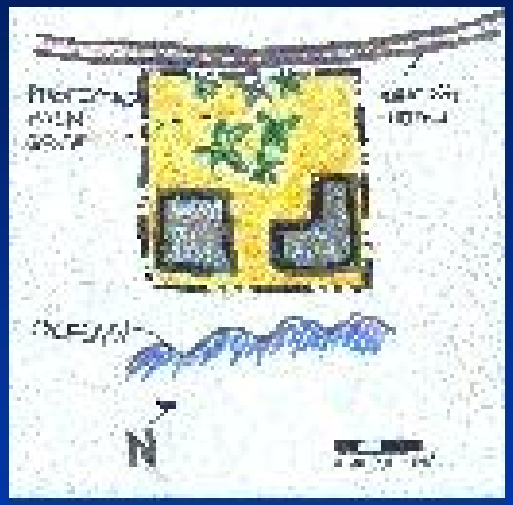
ISLAND TEAM

Ame Elliott, Architect

Eugene Chow, Engineer

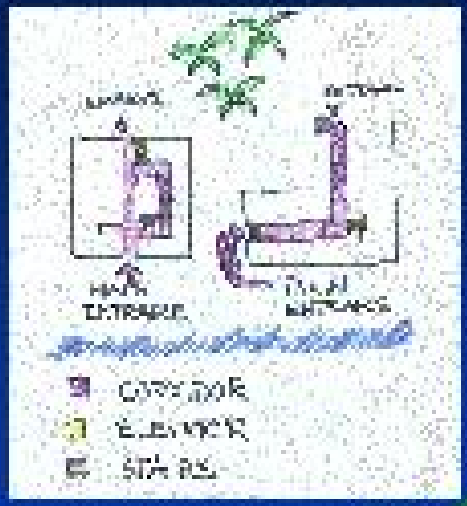
Melanie Lok, CM

Site Plan



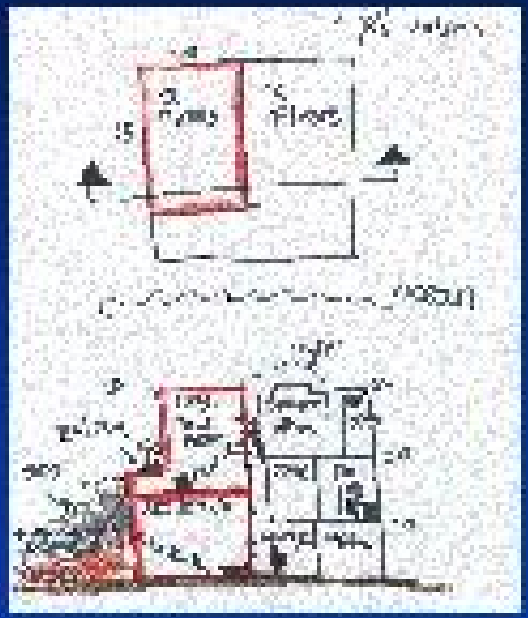
Preliminary Designs

- Square
  - Pristine Cube
  - Simple Structure
  - Meets Time/Budget
- L-Shaped
  - Dynamic
  - Articulated Structure
  - More Expensive
  - Life Safety Issues

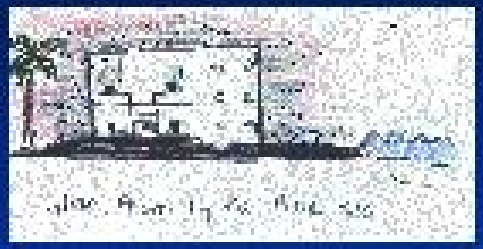


Building Section

- Auditorium and Large Classrooms Stacked in 2 Levels
- Rest of Building is 3 Levels



Why the Square Alternative?



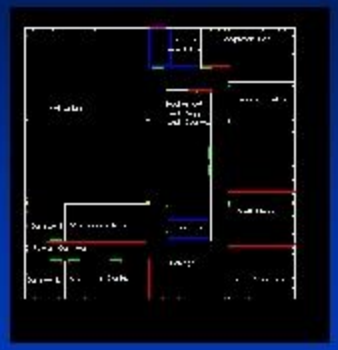
- Spatial Layout
- Life Safety
- Structurally Simpler
- Reasonable Cost
- Shorter Construction Schedule

Revision Strategy

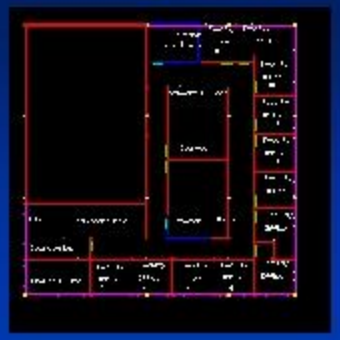
- Problems
  - Wasted Balcony Space
  - Lack of Student Work Space
  - Awkward Room Proportions
  - Storage on Single Floor
- Pluses
  - Under Budget
  - Ahead of Schedule
  - Desirable Space Adjacencies
  - Views

Design Solution

First Floor



Second Floor



Third Floor

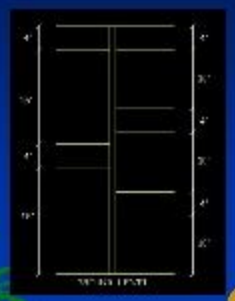
Space and Structure

- Relationship to Structure
  - Columns
  - Height Increase

Structural Design

- Winter Framing Plan
- New Height Limitation (14' floor height)
- Preliminary Sizing
- Slabs: Cast-in-Place or Precast?

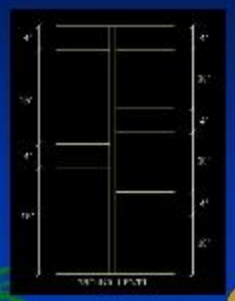
Structural Design: Height



42' Total Height

14' Floor-to-Floor
- 10' Floor-to-Ceiling
= 4' Structure/HVAC

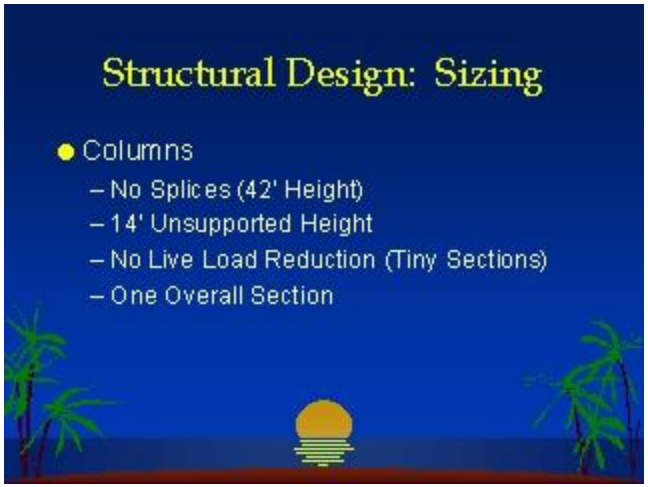
Structural Design: Height



42' Total Height

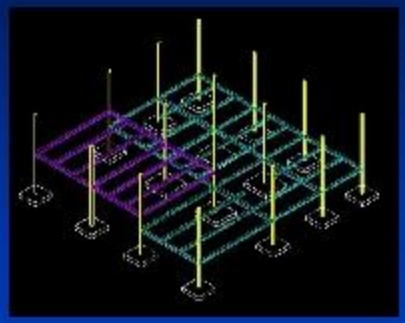
14' Floor-to-Floor
- 10' Floor-to-Ceiling
= 4' Structure/HVAC


Structural Design: Sizing
Beam Bays: 45'-30'-25'
– 5 sections
Girder Bays: 35'-30'-35'
– 6 sections
11 Total Sections Reduced to 5


Structural Design: Sizing
Columns
– No Splices (42' Height)
– 14' Unsupported Height
– No Live Load Reduction (Tiny Sections)
– One Overall Section


Structural Design: Sizing
Foundation
– Slab on Grade for Ground Floor
– Tied Spread Footings Designed for Sand
– Provision for Piles if Necessary

Structural Design




Structural Design: Slabs
Transfers Lateral Loads
Connectivity with Shear Walls Critical
– Pour with Shear Walls
– Precast Connections?

Construction Materials

- Precast vs Cast-in-Place Concrete Slabs
- Precast GFRC Exterior Panels
  - White Limestone Color
  - Lighter
  - Stronger

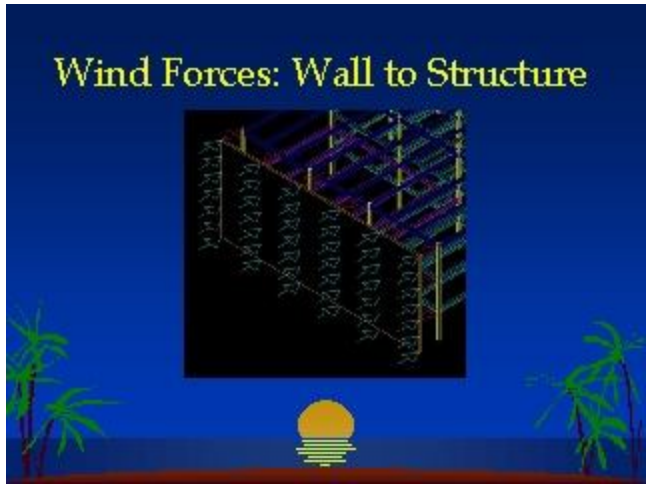
Façade Materials

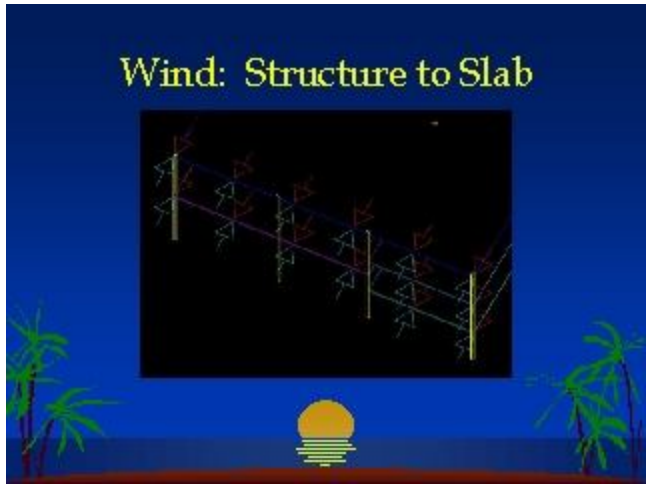
- White Pre-cast Panels
- Fenestration
  - Storefront System
  - Windows

Structural Design: Hurricanes

- Penetration Damage
- Wind Forces

Enclosure: Jan 2012

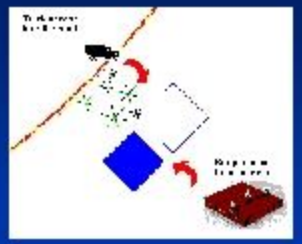

Wind Forces: Wall to Structure


Wind: Structure to Slab


Wind: Slab to Shear Walls

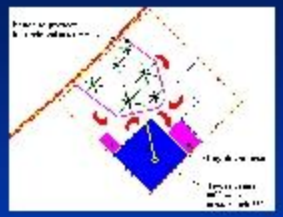
Construction Considerations

- Single Slab Pour
- Site Access
- Use of Lab before May
- Budget of $7.0 Million



Site Circulation

- Equipment
- Lay Down Area
- Crane Location




Earthwork: Sept 2011


Foundation: Oct 2011

Structural Steel: Nov 2011

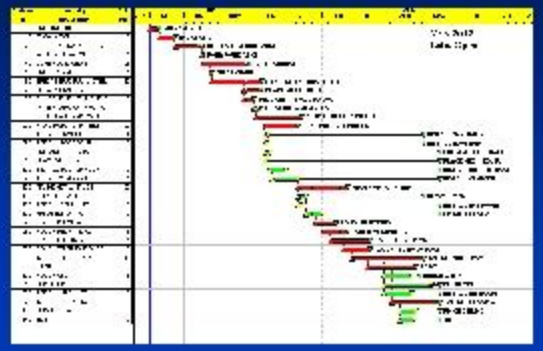
Slabs & Shear Walls: Dec 2011

Enclosure: Jan 2012

Rough In: Apr 2012

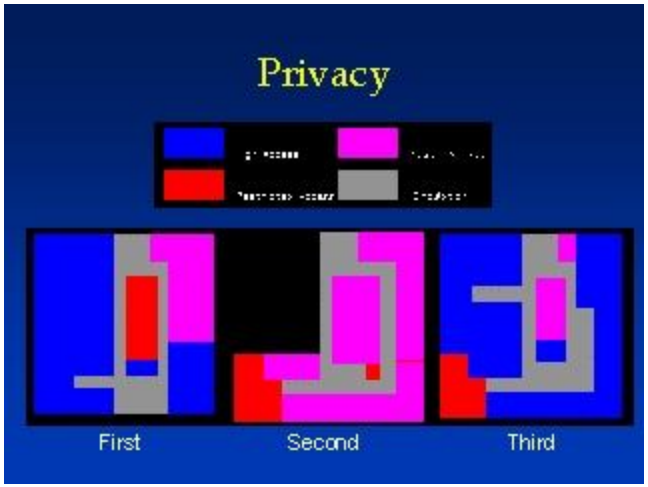
Finishes: May 2012

CPM Schedule



Architectural Evaluations

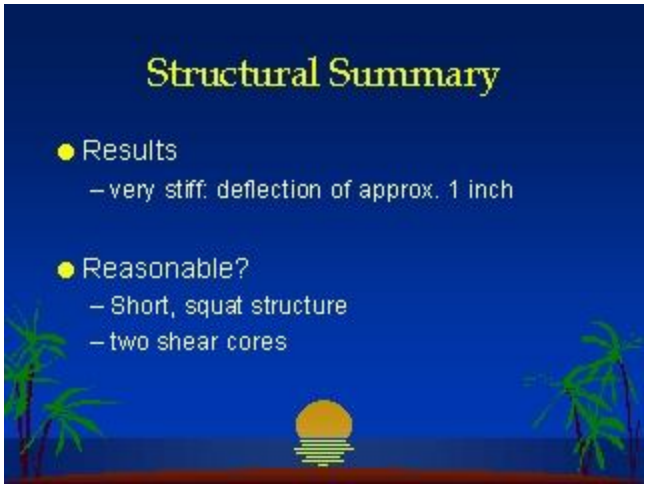
- Habitability


Privacy
First
Second
Third


Structural Summary
ETABS
– static wind-load analysis
– worst case from UBC
130 mph
maximum exposure

Structural Summary

- Modeling Issue
  - loads
  - exposure
  - floors
  - shear walls

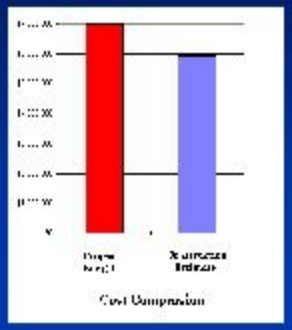

Structural Summary
Results
– very stiff: deflection of approx. 1 inch
Reasonable?
– Short, squat structure
– two shear cores

Cost Estimate

Total Budget: $7.0 million

The Bottom Line

- Under Budget
- Ahead of Schedule
- Labs on Time
- Structural Integrity




AEC Summary
Pros
– Responds to Site
– Habitability
– Strong Structure
– Easier to Build
– Under Budget
– Ahead of Schedule
Cons
– Square Syndrome
– Double - Loaded Corridors
– Over Structural Budget
– Danger to Historic Palm Grove


Project Community
Mentors
Team Dynamics
– Architectural Background
– Risk of Leaving --> Trust
– Face-to-Face Bond


Collaboration
Interaction thru Technology
– Telephone, Fax
– Email, Web Site
Working Together
– Group Hugs
Helping each other with computer tools
– Using the Computer Together


Lessons Learned
Working Together
Importance of Personal Rapport
Opportunity for Technology Exploration
Ready for Next Time

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