IPRO 311: Delta Shelter

Renovating, Rethinking, and Greening Greek Housing at IIT
History of Greek Living at IIT

- Greeks on Armour’s Campus since 1900
- Fraternity Row on Michigan 1910-1960
- On-campus Fraternity Quad Construction 1950’s
Where we are now

- Current ΔΤΔ Shelter is approaching 50 years old
- House maintained by Delt Alumni House Corporation
- Inconsistent House Corporation turnover causes breakdown in facility planning and shelter maintenance
- All chapter houses in similar condition
Original Project Objectives

- Renovation(s) Proposals
- Facility Planning
- Sustainable Fraternity Living
- Long Term Goal – Planning for the next 50 yrs
Project Phases

PHASE 1
- Research: Identify problems with existing structure
- Programming: Investigate the current program

PHASE 2
- Research: Generating solutions to problems discovered
- Programming: Evaluate questionnaires, compile data, and begin initial design options

PHASE 3
- Creating Final Proposals
- Looking Forward
Team Breakdown

Programming Team

Creating a program that better fits the needs of the chapter

<table>
<thead>
<tr>
<th>Name</th>
<th>Major</th>
<th>Year</th>
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<tbody>
<tr>
<td>Jake Dohm</td>
<td>Architecture, 4th</td>
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<tr>
<td>Jeff Hallenbeck</td>
<td>Architecture, 4th</td>
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<tr>
<td>Davyd Jordan</td>
<td>Architecture, 3rd</td>
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<tr>
<td>Brad Strandquist</td>
<td>Civil E., 3rd</td>
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Research Team

Assessment of all problems of the existing building

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<thead>
<tr>
<th>Name</th>
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<tbody>
<tr>
<td>Joshua Bradley</td>
<td>Civil E., 4th</td>
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<tr>
<td>Noah Cahan</td>
<td>Architecture, 5th</td>
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<tr>
<td>Daniel Dobbin</td>
<td>Applied Math, 4th</td>
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<tr>
<td>Kent Hoffman</td>
<td>Architecture, 4th</td>
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<tr>
<td>Woong-Kyo Lee</td>
<td>Aerospace E., 4th</td>
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<tr>
<td>Nathan Waisath</td>
<td>Architecture, 5th</td>
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Research Phase 1: Identifying Problems

- Mechanical
- Envelope
- Plumbing
- Electrical
- Fire Safety
- Occupancy Habits
Research Phase 1: Identifying Problems

**Issues**

- Inefficient Boilers
- Poor Control System
- Un-insulated Pipe and Water Tanks
- Problems w/Radiant Fin Tubes
Research Phase 1: Identifying Problems

Issues

• Windows
• Roof
• Walls
• Doors
• Total R-Value: 3.45
Research Phase 1: Identifying Problems

Mechanical | Envelope | Plumbing | Electrical | Fire Safety | Occupancy Habits

Issues

• Excessive Water Usage
  – Toilets
  – Urinals

• Shower Controls
Research Phase 1: Identifying Problems

Mechanical | Envelope | Plumbing | **Electrical** | Fire Safety | Occupancy Habits

Issues

• Lighting
• Appliances
• Wiring
Research Phase 1: Identifying Problems

Issues

• No centralized alert system

• Minimal Fire Safety
Research Phase 1: Identifying Problems

Issues

- Electricity
- Recycling
- Heat Distribution
Research Phase 2: Finding Solutions

- Mechanical
- Envelope
- Plumbing
- Electrical
- Fire Safety
- Occupancy Habits
Research Phase 2: Finding Solutions

Mechanical | Envelope | Plumbing | Electrical | Fire Safety | Occupancy Habits

- Replace Boiler
- Preventative Maintenance
- Insulate Pipe
- Improve Control Systems
- Solar Thermal Alternative
- Service Day
Research Phase 2: Finding Solutions

Mechanical | **Envelope** | Plumbing | Electrical | Fire Safety | Occupancy Habits

- Replace Windows
- Weather stripping
- Better Insulate Roof
- Provide Insulation for Ext. Walls
- Service Day
Research Phase 2: Finding Solutions

- Introduce Water Saving Technology
- Improve Shower Controls
Research Phase 2: Finding Solutions

• Lighting Plan
• Occupancy Sensors
• Energy Saving Appliances
• Photovoltaic Cells
Research Phase 2: Finding Solutions

- Hard Wired Detection and Alert System
- New, up-to-code Exit Signage
- Emergency Lighting

Mechanical | Envelope | Plumbing | Electrical | Fire Safety | Occupancy Habits
Research Phase 2: Finding Solutions

- Education of Building Residents
- Recycling Program
Programming Phase 1: Study of Current Program
Programming Phase 1: Study of Current Program

- Questionnaires
- Diagrams
- Study of Current Trends
Programming Phase 2: Redesign Program
Programming Phase 2: Redesign Program

- Design Charette
- Redistribution of Space
- Tiered Proposals
Programming Phase 2: Redesign Program

Proposal One: Minor Renovation

• Second Floor
  – Additional Private Bedrooms
  – More open space
Programming Phase 2: Redesign Program

Proposal Two: Intermediate Renovation

- Basement
  - Excavation Plan
- Quad-side Entrance
Proposal Three: Major Renovation

- Third Floor Addition
- Central Atrium
Phase 3: Looking Forward
Phase 3: Looking Forward

Service Day

• Clean Refrigerator Coils
• Weather Strip Operable First Floor Windows
• Insulate Hot Water Piping
• Insulate Hot Water Storage Tanks
Next Steps

• House Corporation Proposals
• Complete Unfinished Initiatives
• Education
Questions

Thank You!