

# Oregon Engineering School Design

## PACIFIC VIEW DESIGN TEAM

- Architect: Lachmi Khemlani
- Structural Engineer: Li Zhang
- Construction Manager: Li Kong
- Apprentice: Rahul Young

## PROJECT OWNER

- Laura Dwelley

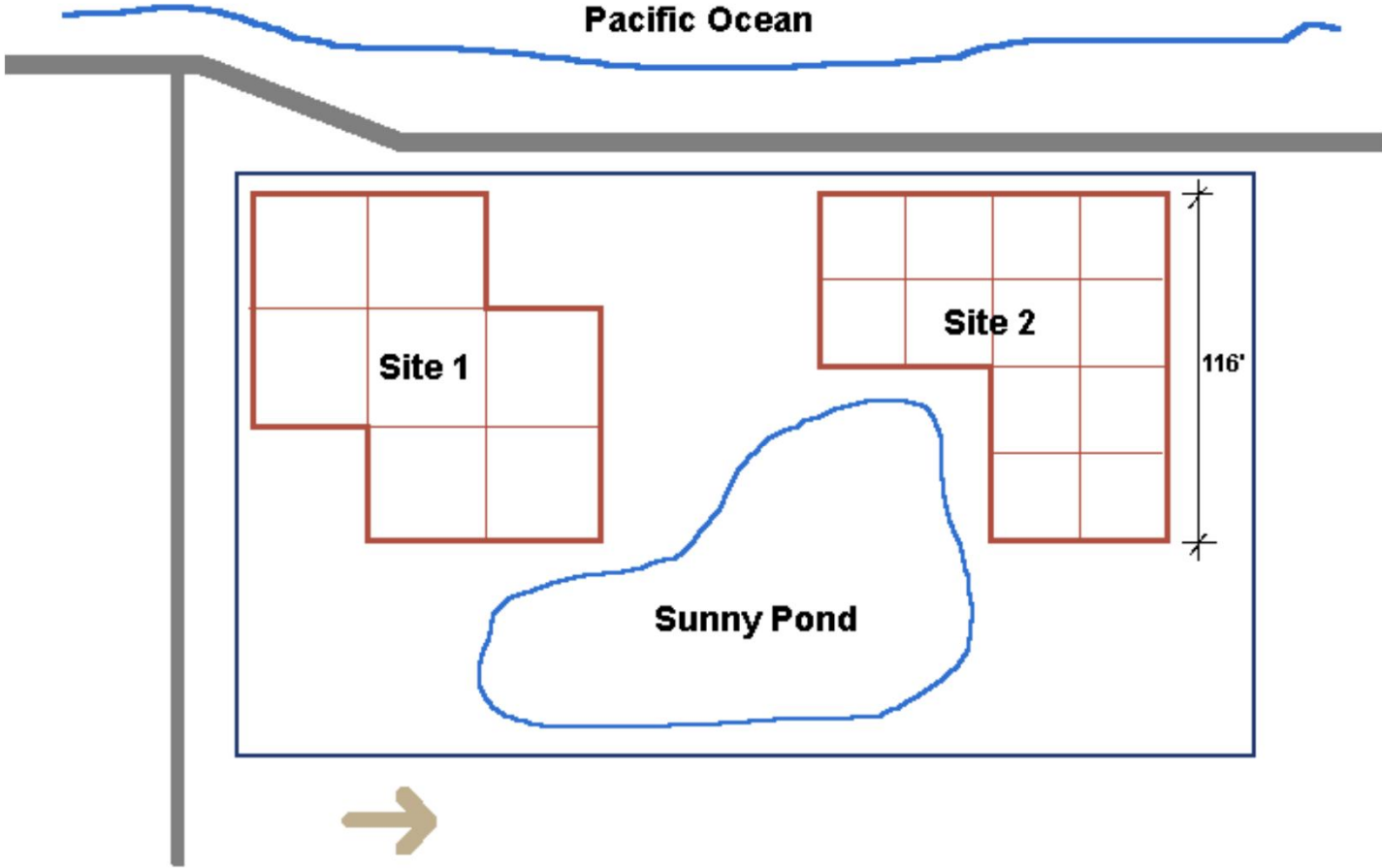
# Structure of Presentation/ Presentation of Structure

- I. Overview of the Four Concept Alternatives
- II. Final Design Solution
  - a. Iterations
  - b. Calculations
  - c. Pros and Cons
  - d. Cross-Disciplinary Issues
  - e. Models

# Structure of Presentation/ Presentation of Structure

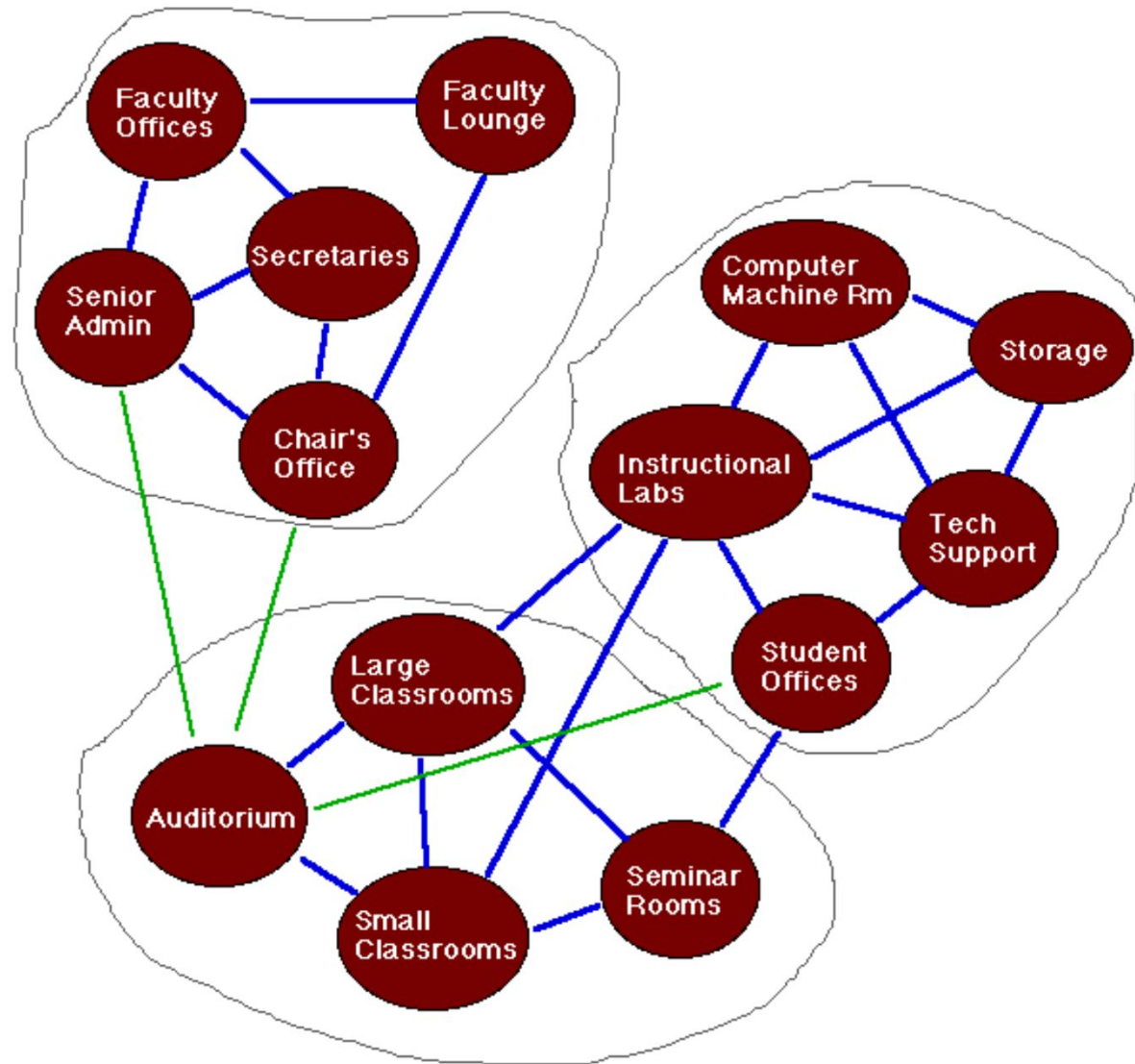
- The Big Picture
  - Team Dynamics
  - Mentor Interaction
  - Lessons Learned

# The Site





# The Program



# Vertical Distribution of Spaces

## The Rationale

- **FIRST LEVEL**

- Auditorium + Classrooms**

- Heavy Traffic , need easy access
    - Least security requirement

- **SECOND LEVEL**

- Computer Rooms + Student Offices**

- Greater security needs
    - Higher degree or privacy
    - possibility of flooding, so computer rooms should be elevated

- **THIRD LEVEL**

- Faculty block + chair**

- Greatest security needs
    - Highest degree of privacy
    - Away from student traffic

# Area Requirements

## FIRST LEVEL

<b>Space</b>	<b>Number</b>	<b>SF each</b>	<b>Total SF</b>
Auditorium	1	3000	3000
Large Classrooms	2	800	1600
Small Classrooms	4	500	2000
Seminar Rooms	2	200	400
<b>Total</b>			<b>7000</b>

## SECOND LEVEL

<b>Space</b>	<b>Number</b>	<b>SF each</b>	<b>Total SF</b>
Students' Offices	20	60	1200
Instructional Labs	2	1000	2000
Computer Machine Room	1	800	800
Technical Support	1	100	100
Seminar Rooms	2	200	400
Storage	1	1000	1000
<b>Total</b>			<b>5500</b>

## THIRD LEVEL

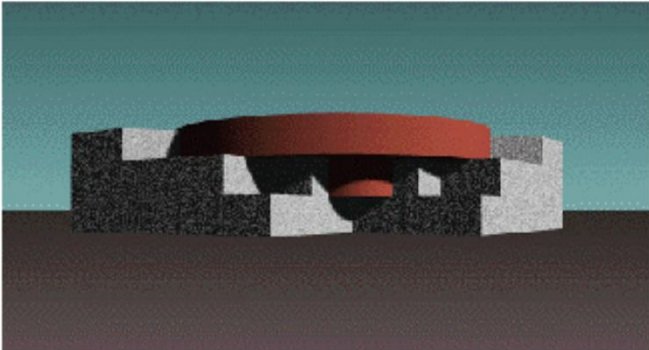
<b>Space</b>	<b>Number</b>	<b>SF each</b>	<b>Total SF</b>
Faculty Offices	20	180	3600
Chair's Office	1	300	300
Senior Admin. Office	2	150	300
Secretaries	4	75	300
Faculty Lounge	1	1000	1000
<b>Total</b>			<b>5500</b>

# Primary Design Issues

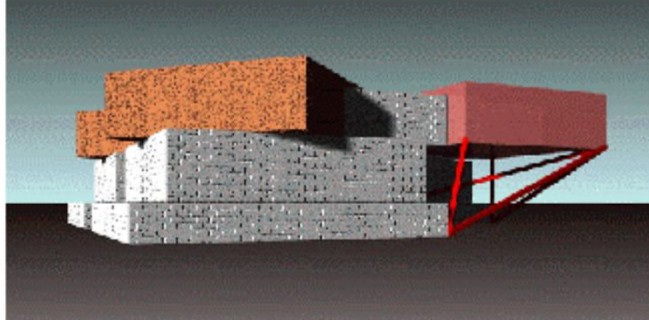
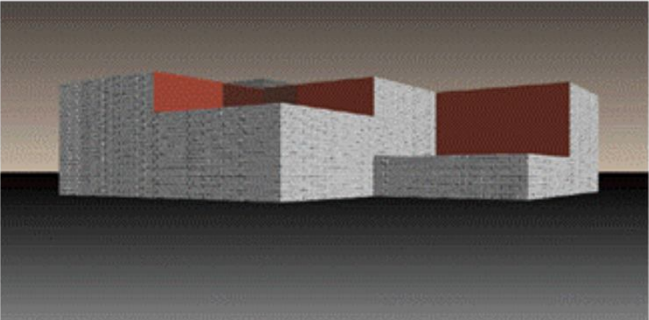
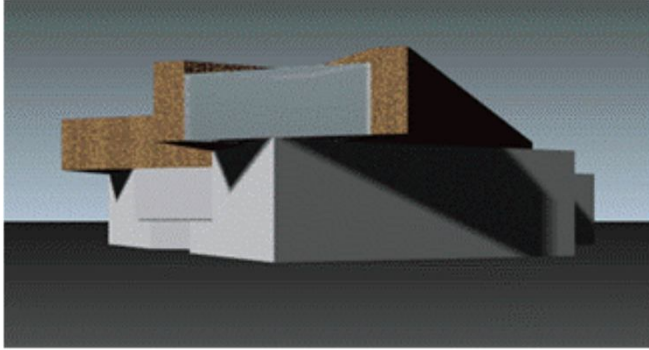
- View of the ocean or pond to all offices - faculty and students
- Natural lighting to all spaces
- Instructional labs and small classrooms had to face the pond (given requirement)
- Provision of terraces to promote social interaction
- Ease of access for disabled

# The Four at a Glance

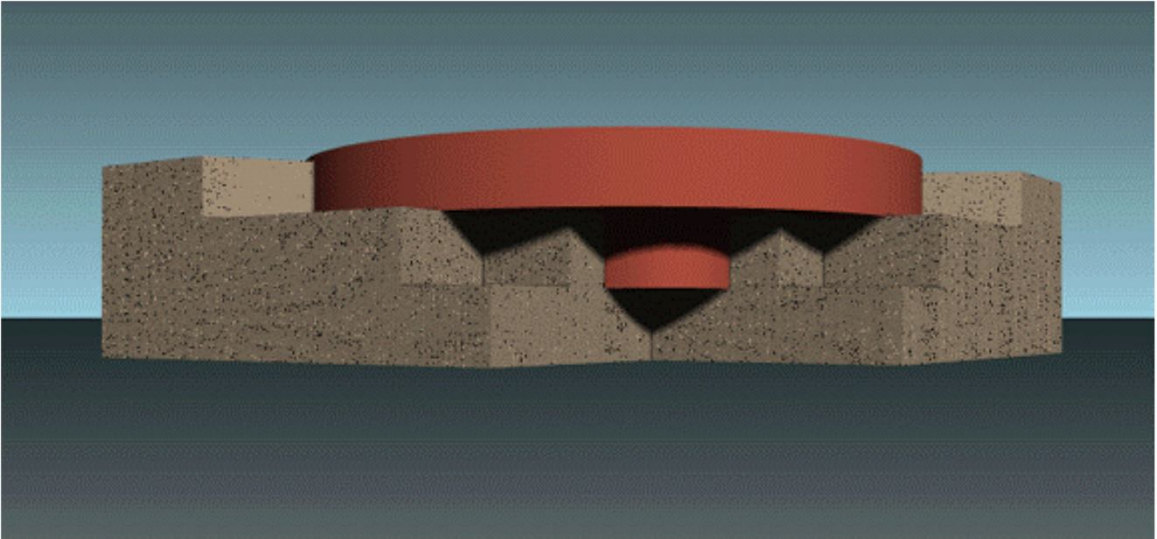
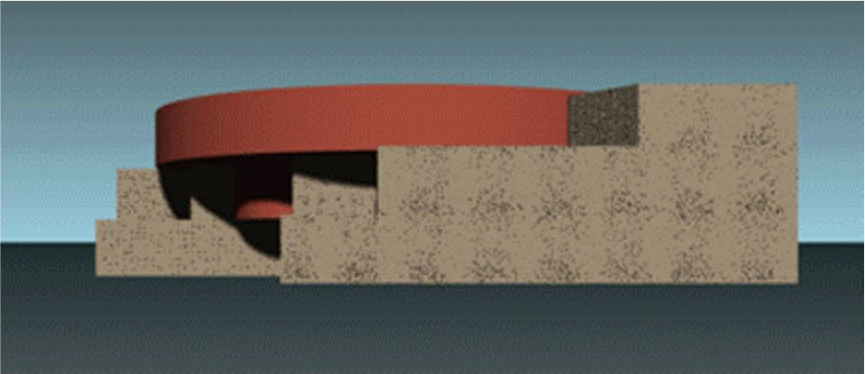
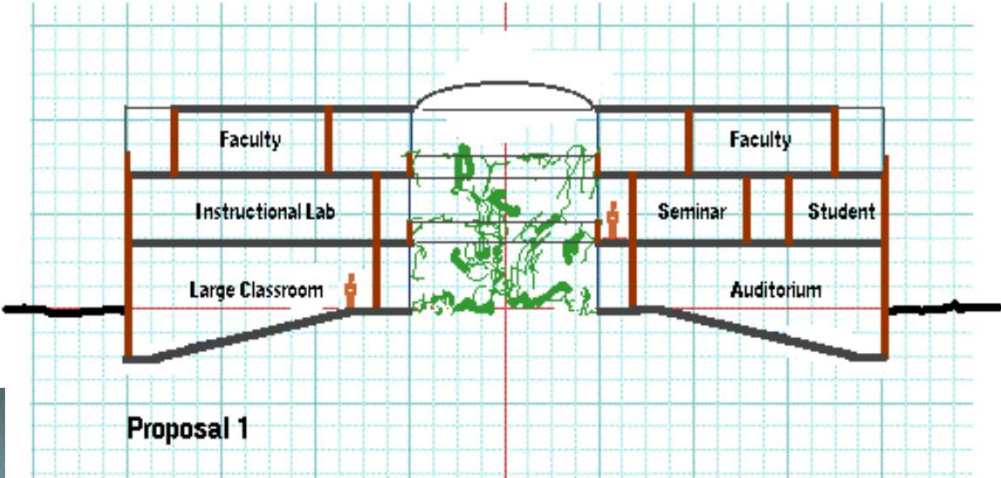
**Site 1**



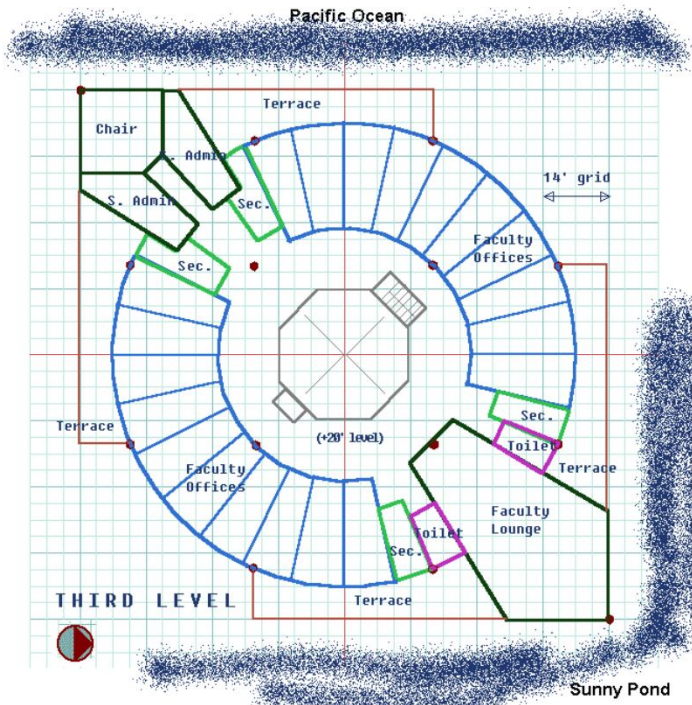
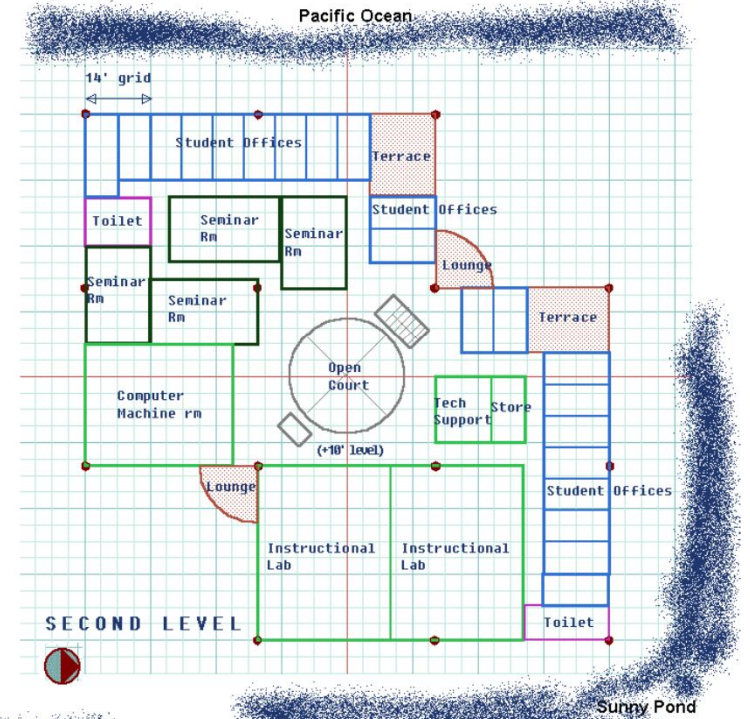
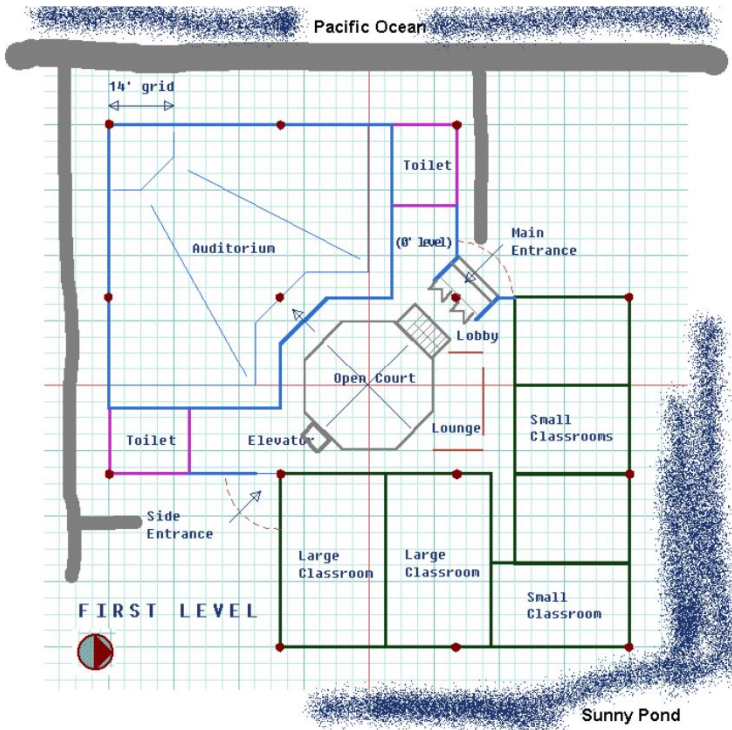
**Site 2**



# Proposal 1



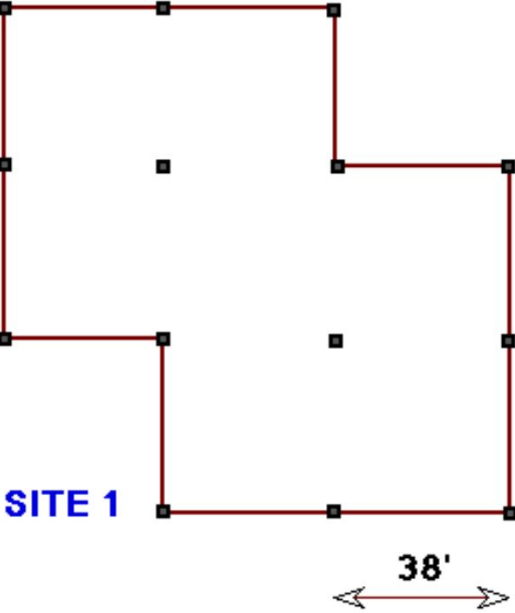




# Proposal 1

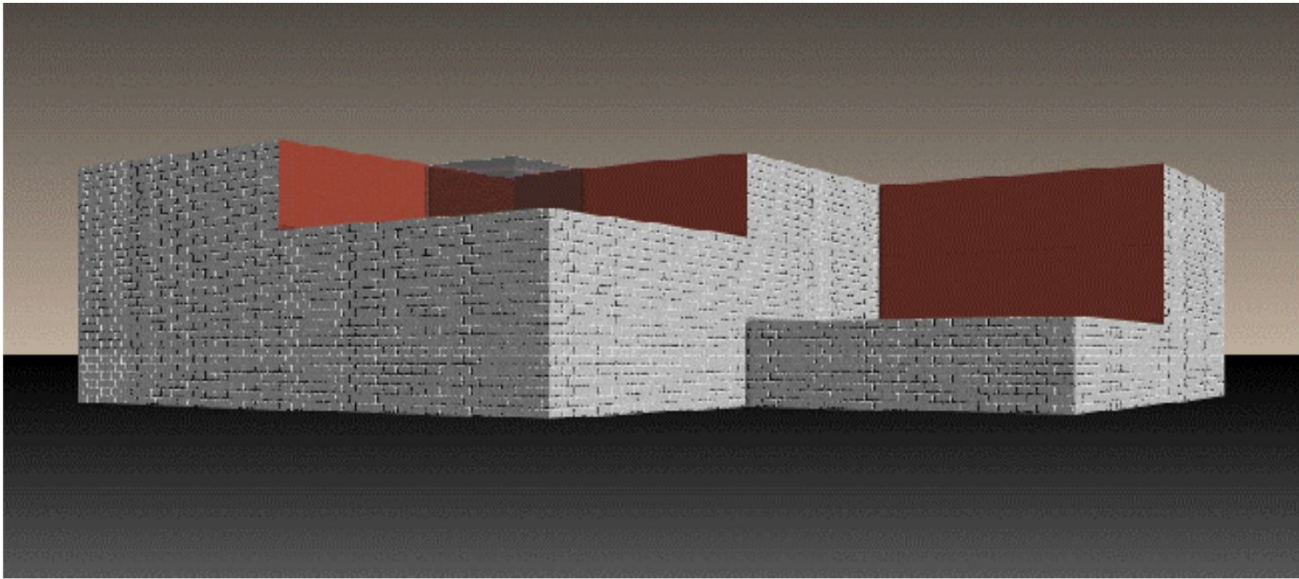
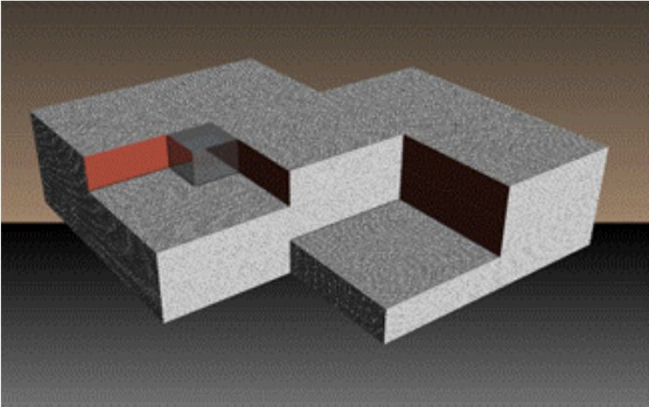
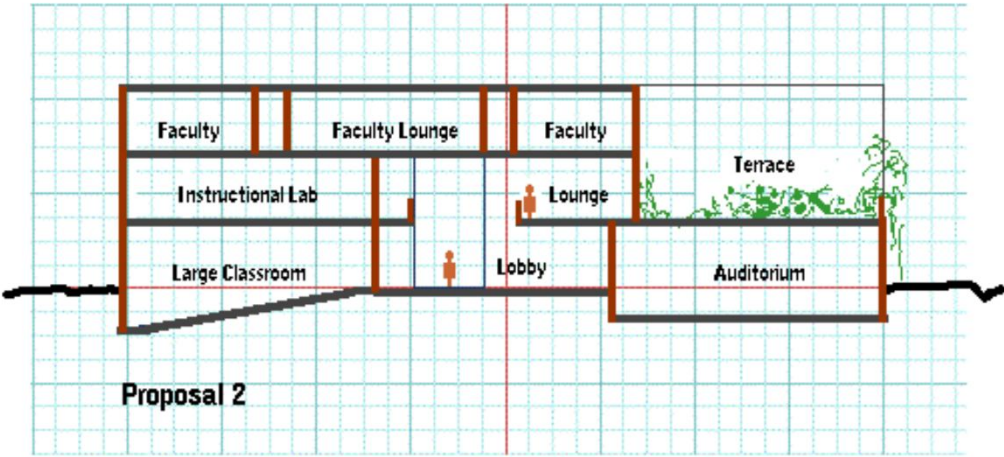
# Proposal 2

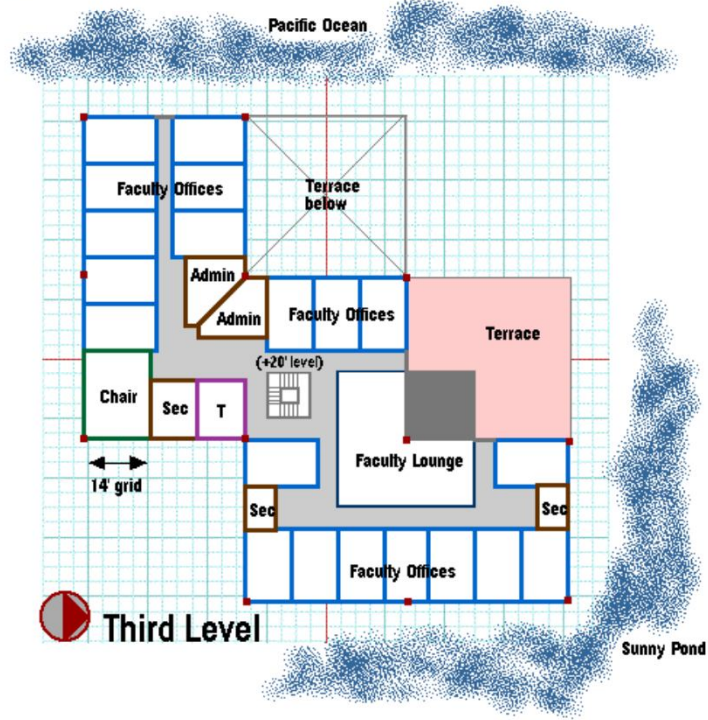
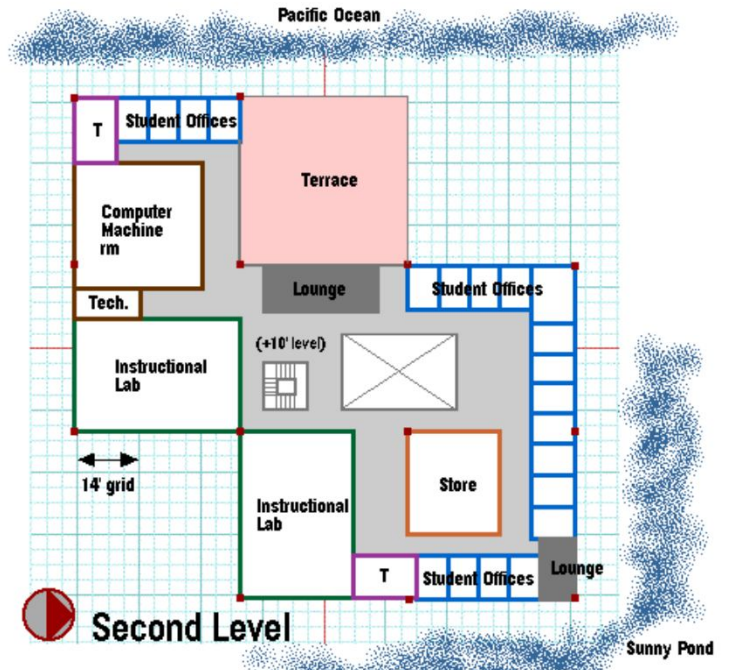
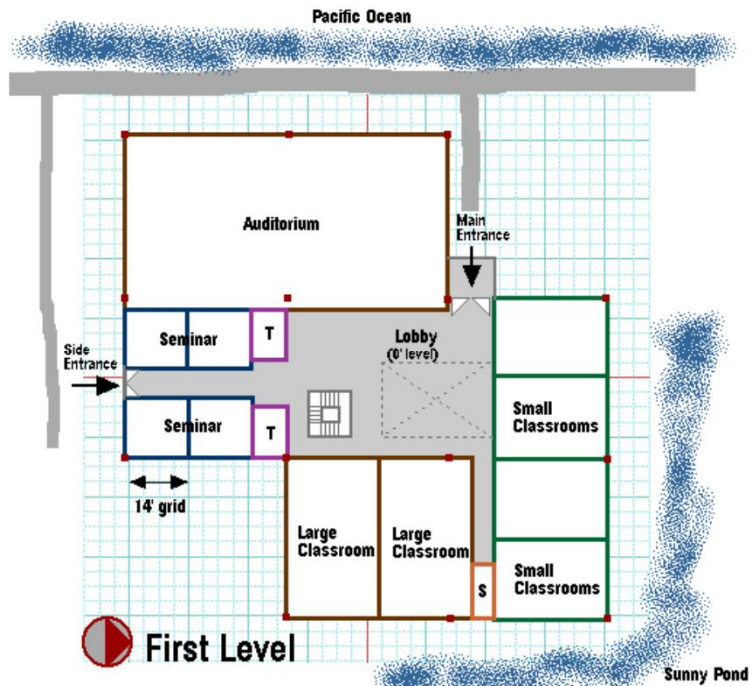
## Structural Grid





# Proposal 2

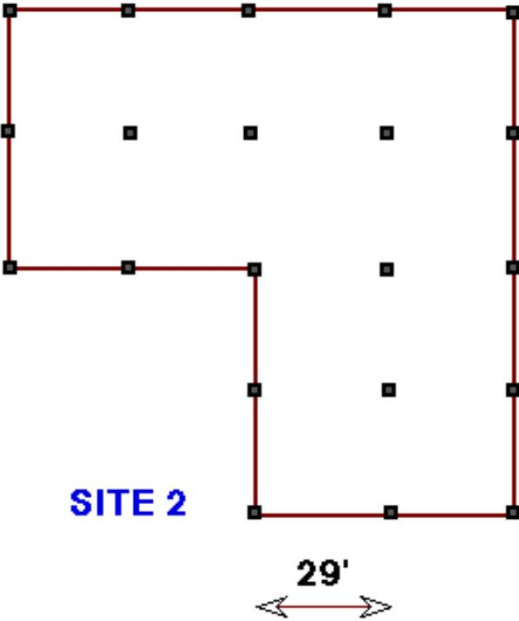




# Proposal 2

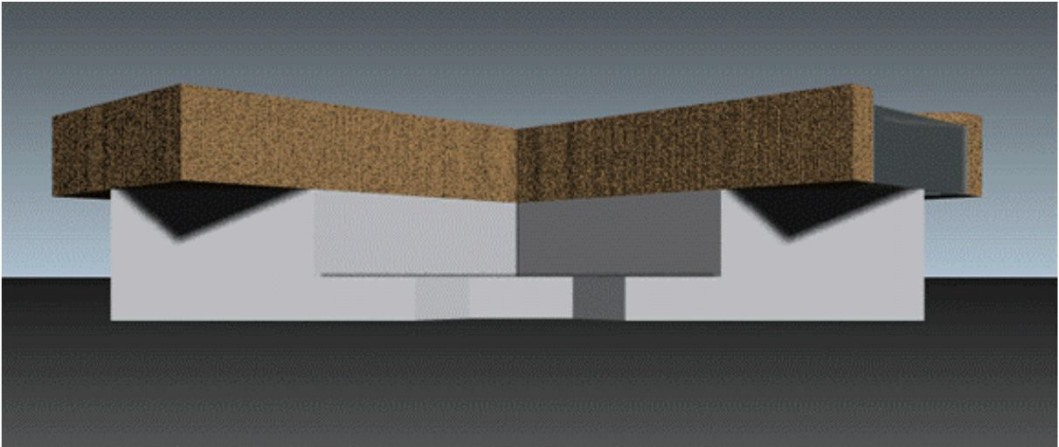
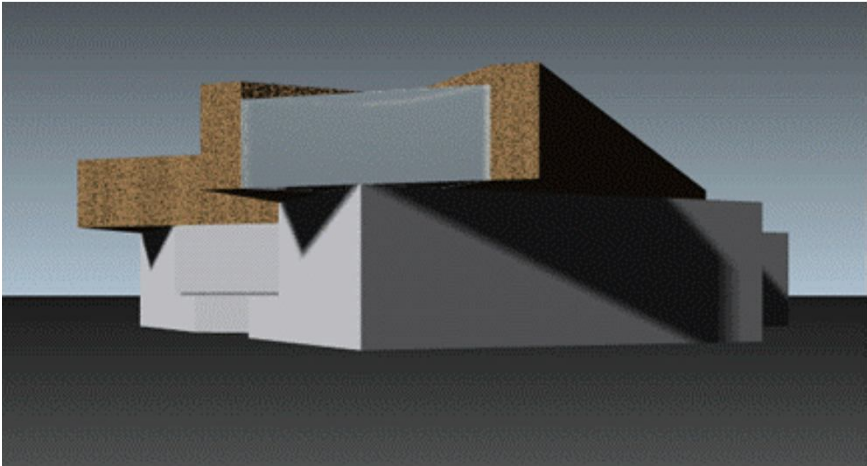
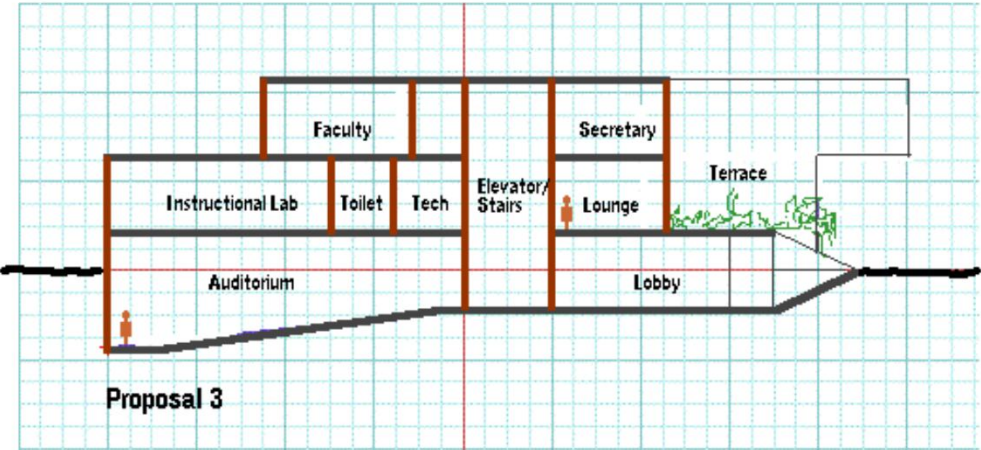
# Proposals 3 and 4

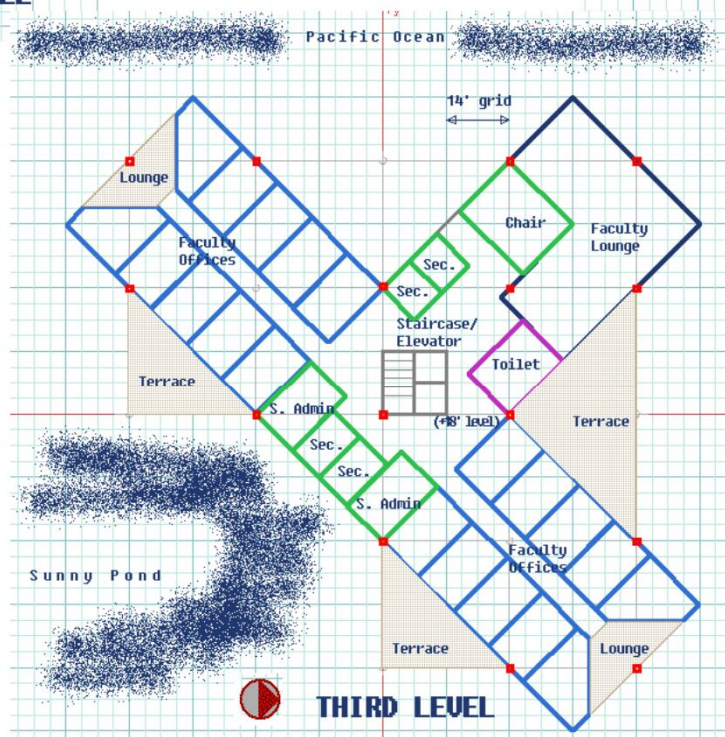
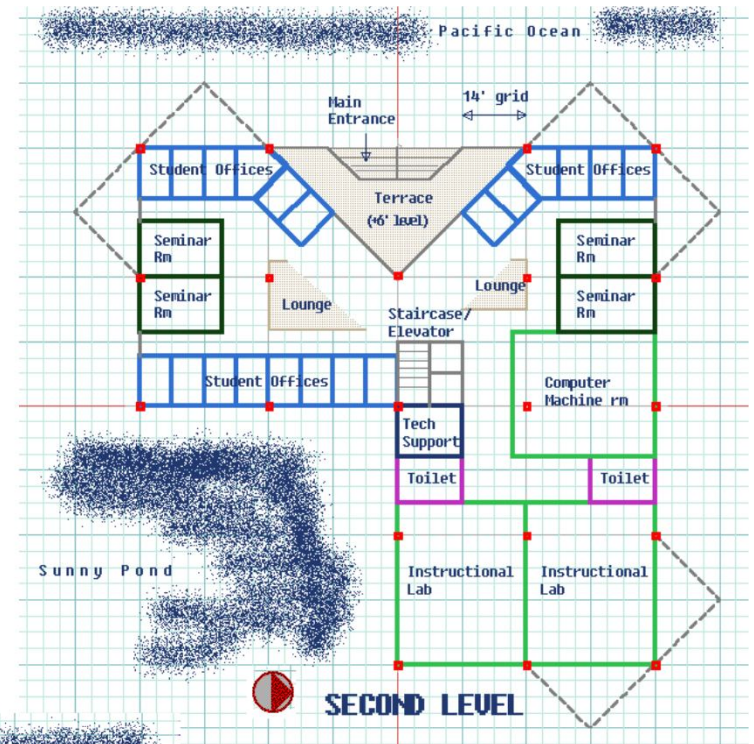
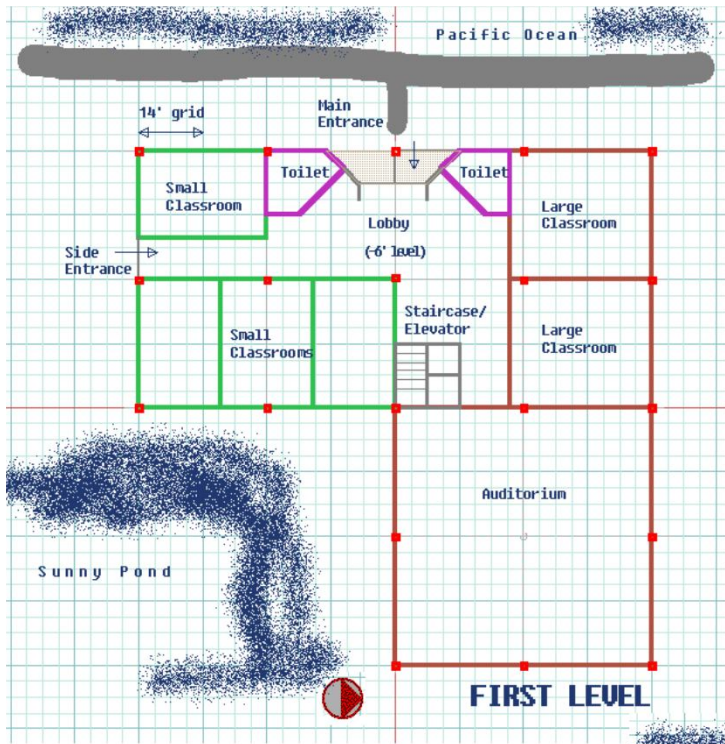
## Structural Grid





# Proposal 3

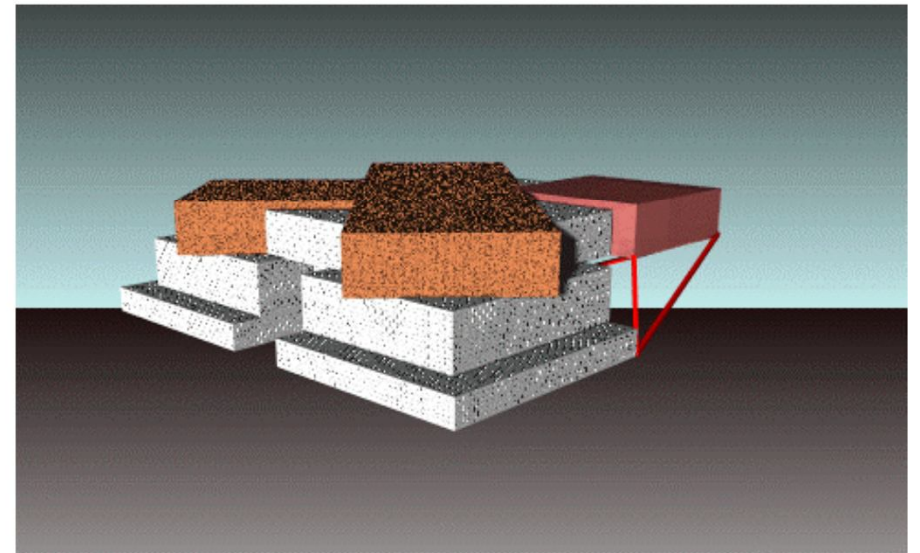
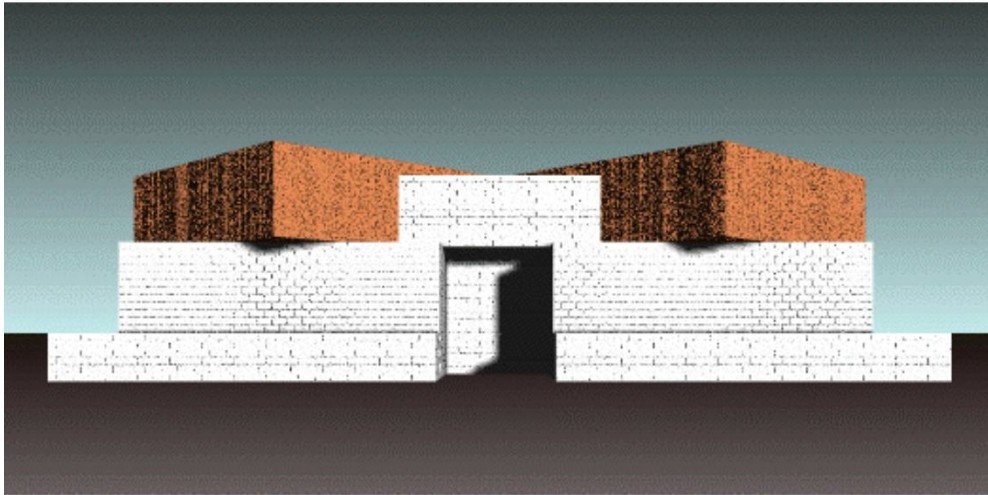
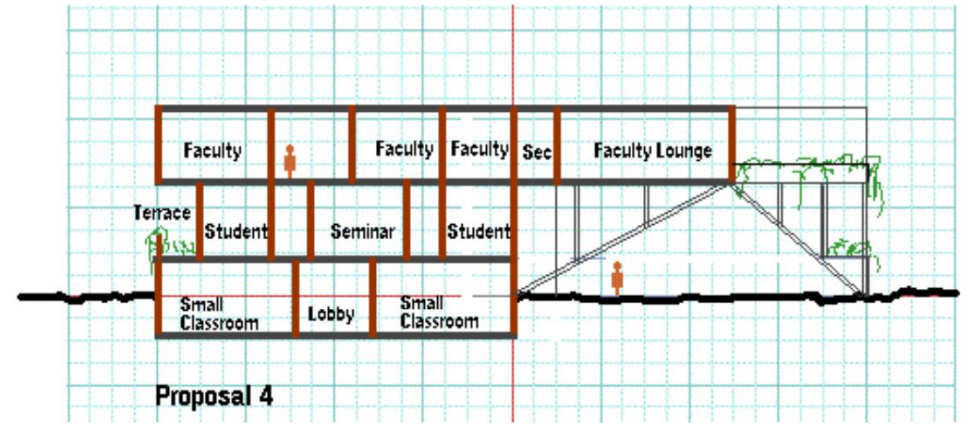


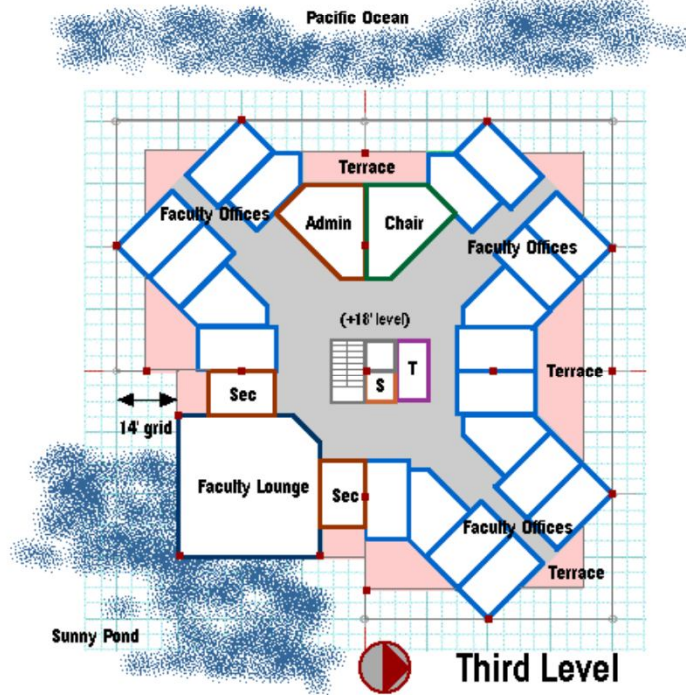
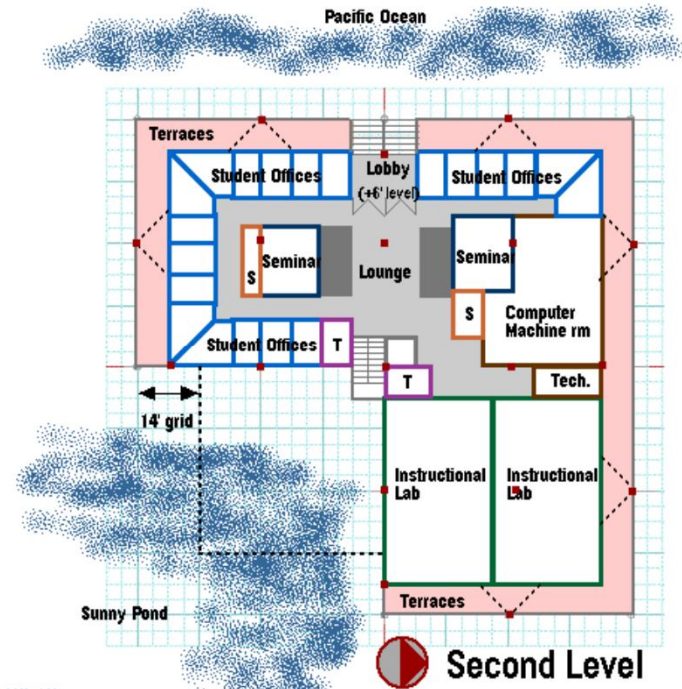
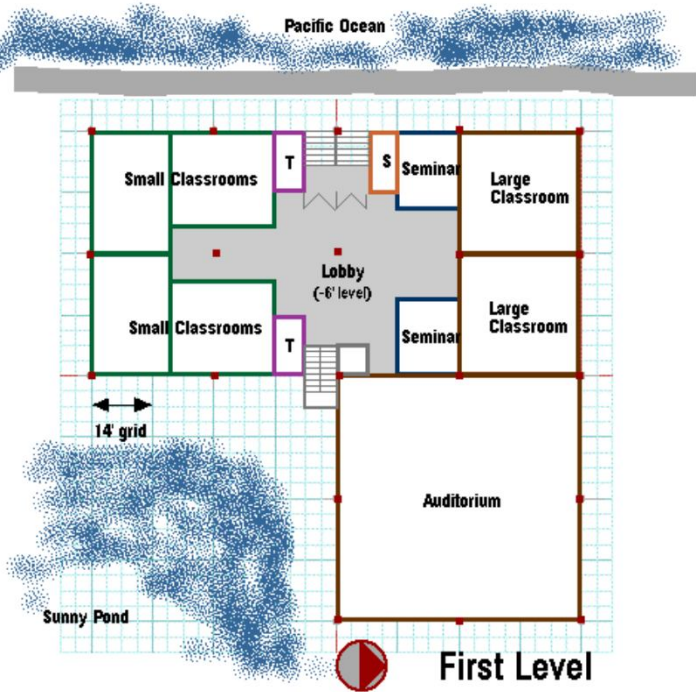


Proposal 3



# Proposal 4

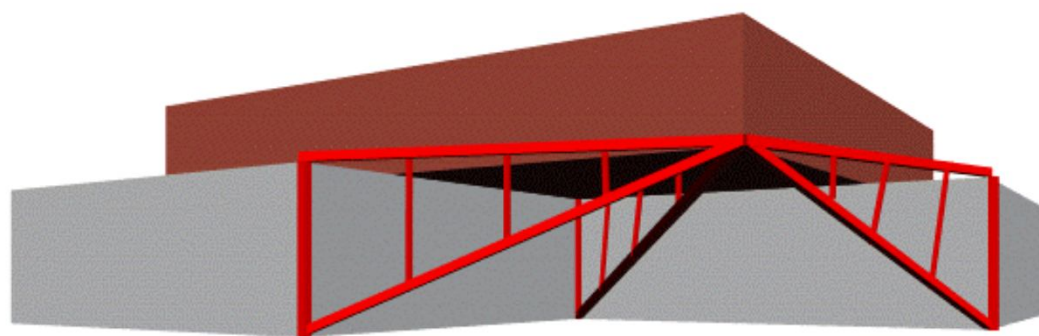
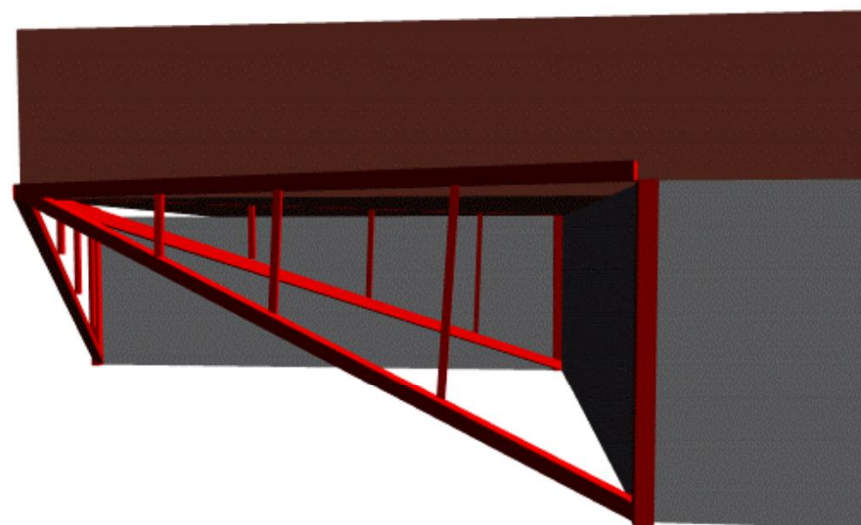
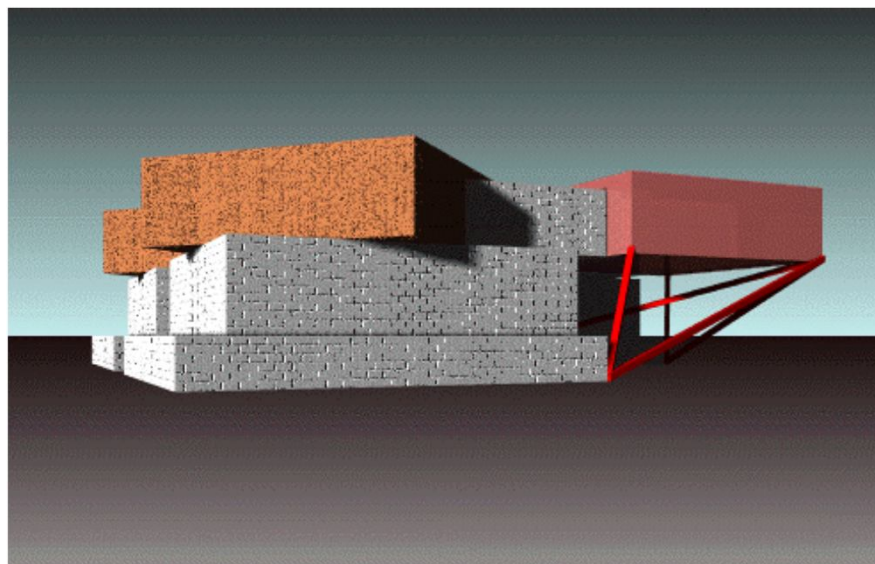




# Proposal 4



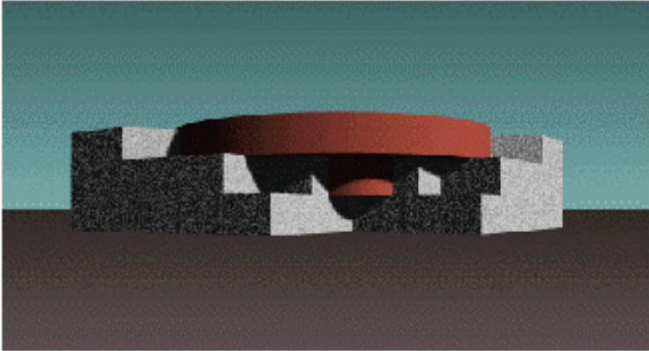
# Proposal 4



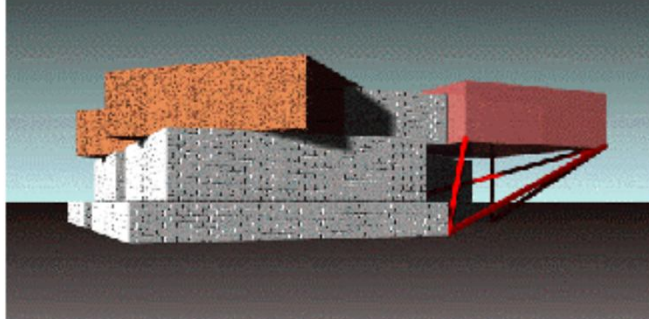
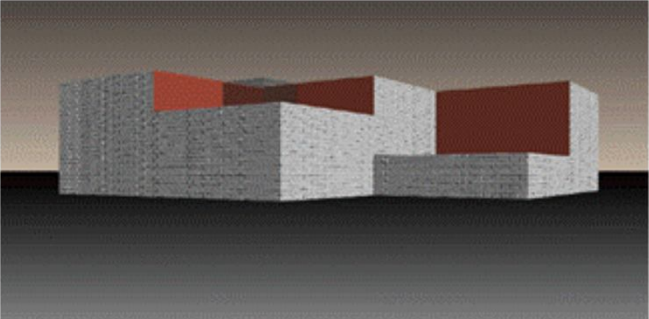
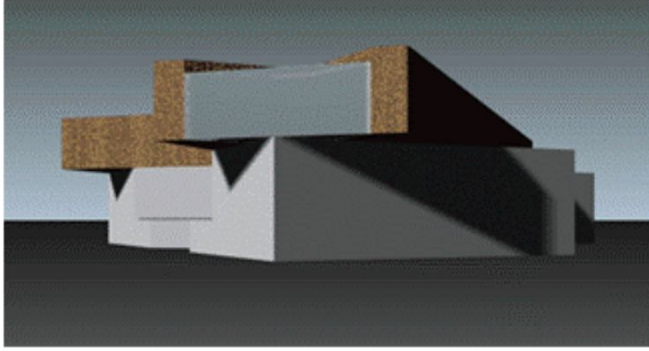


# Which One to Select?

**Site 1**

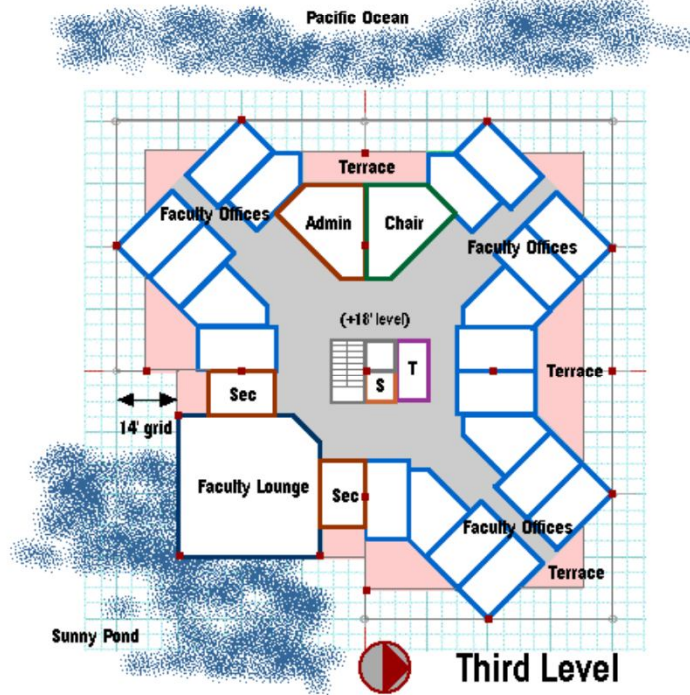
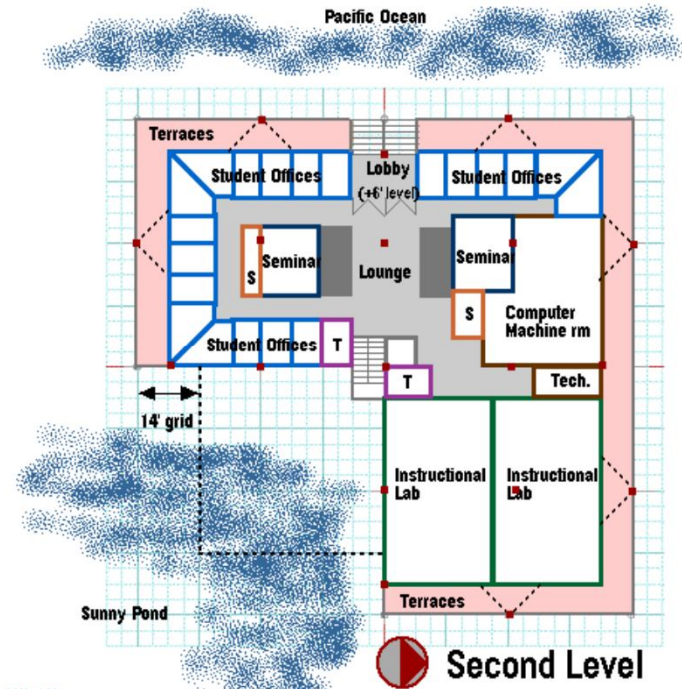
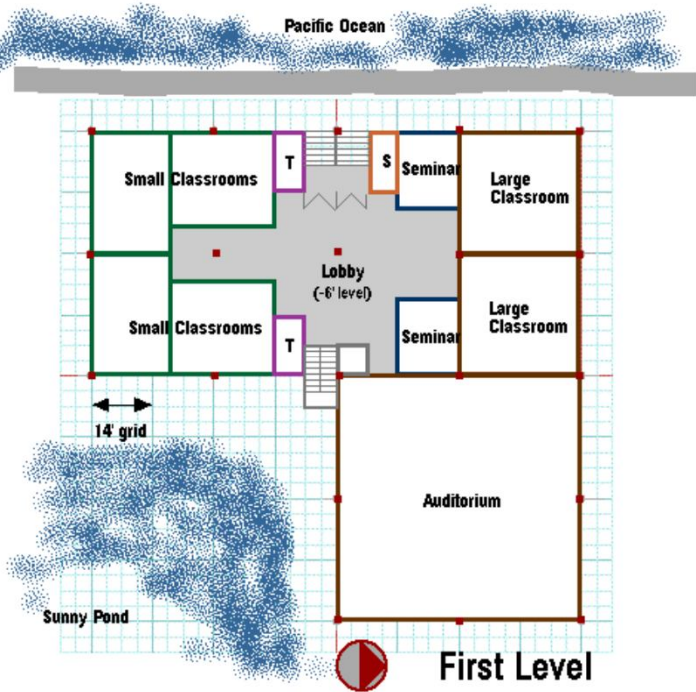


**Site 2**



# Reasons for selecting Proposal 4

- Best spatial planning
- Most interesting (and intriguing) building form
- Cantilevered faculty lounge over the pond at the third level would be a good challenge for the engineer and construction manager.
- Overall consensus - the most “exciting” solution!

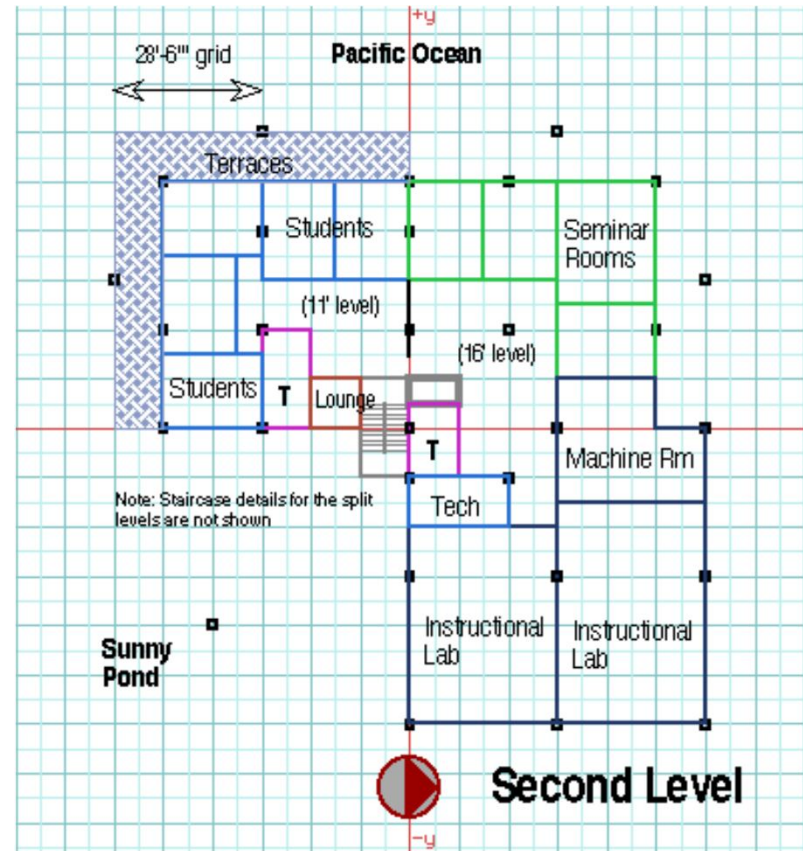
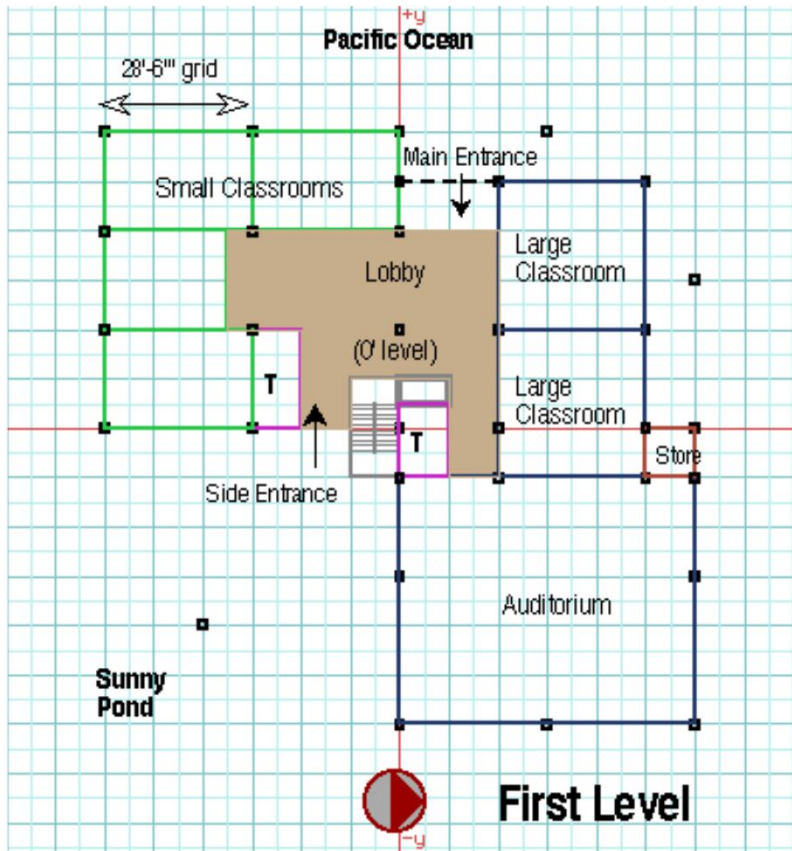


# Proposal 4

# Mentor feedback on Proposal 4

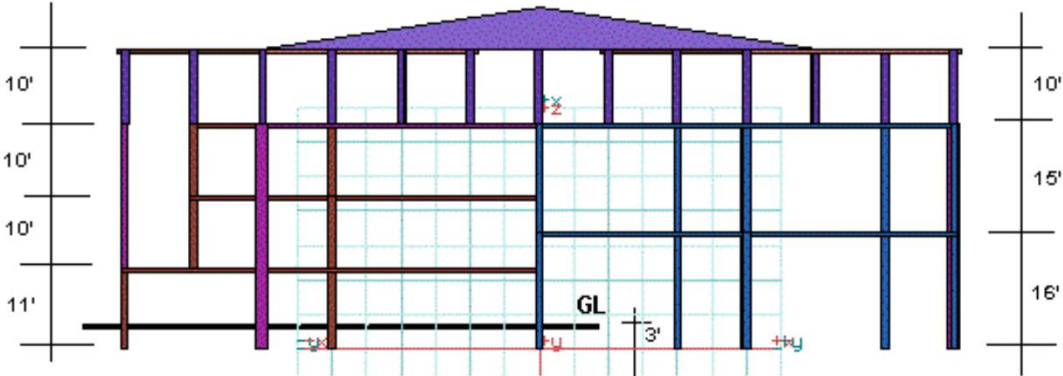
- Circulation pattern was not well defined
- Overabundance of terraces
- Three seminar rooms had no natural lighting
- Toilets did not align vertically
- Too many wall offsets at third level
- Support the third floor cantilever by a vertical column going into the pond.
- Have some variation in the building section



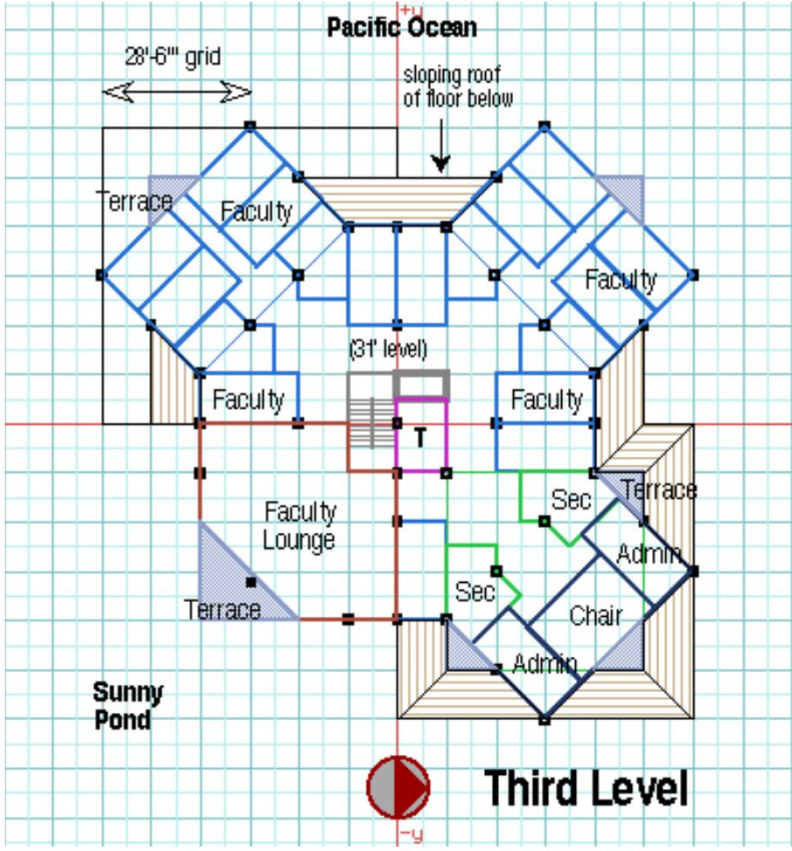
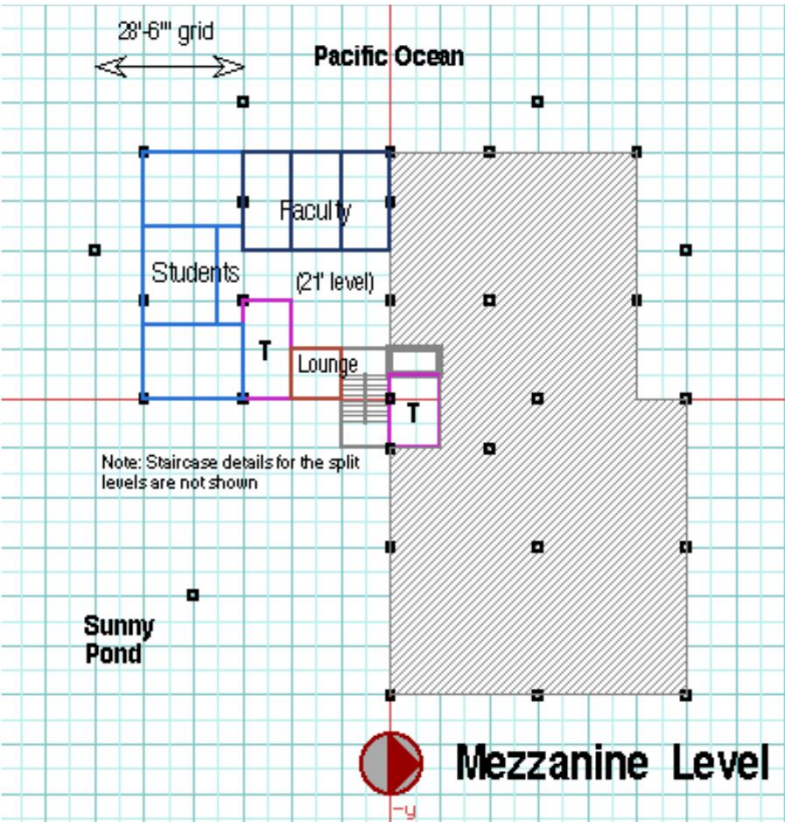


Iteration 1

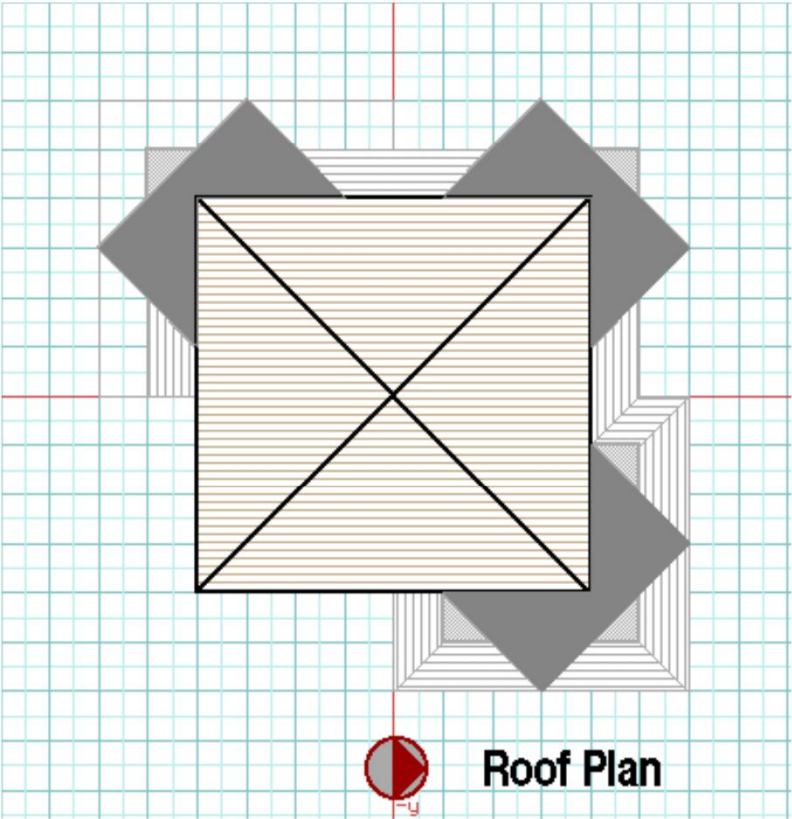
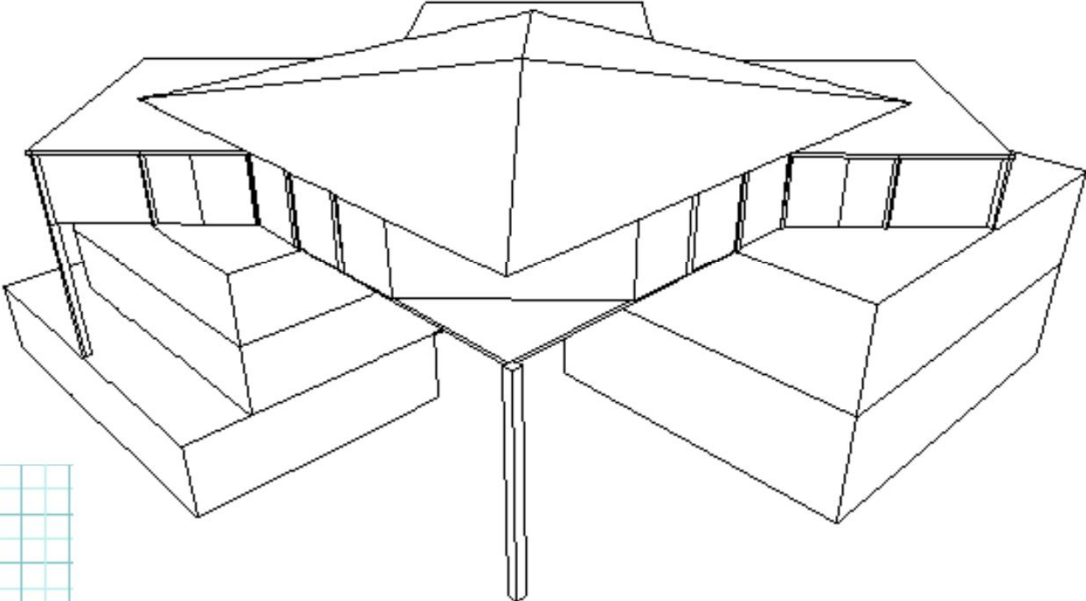
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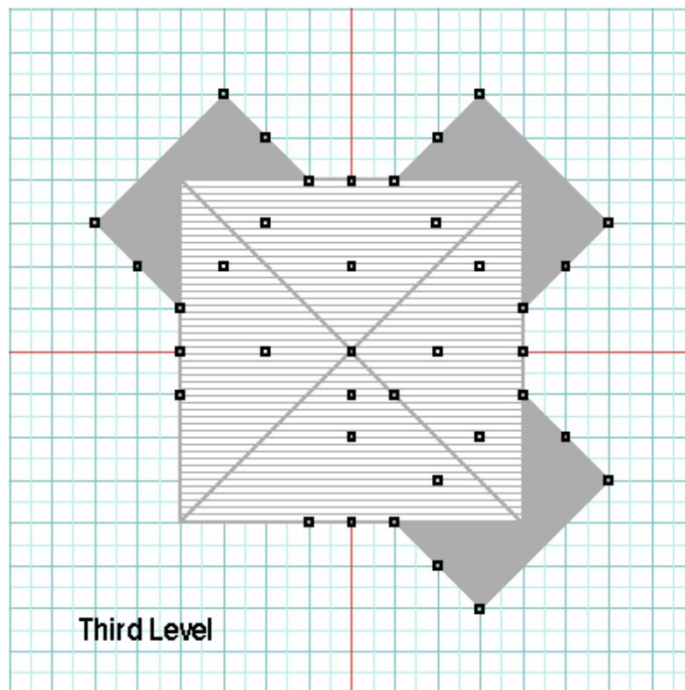
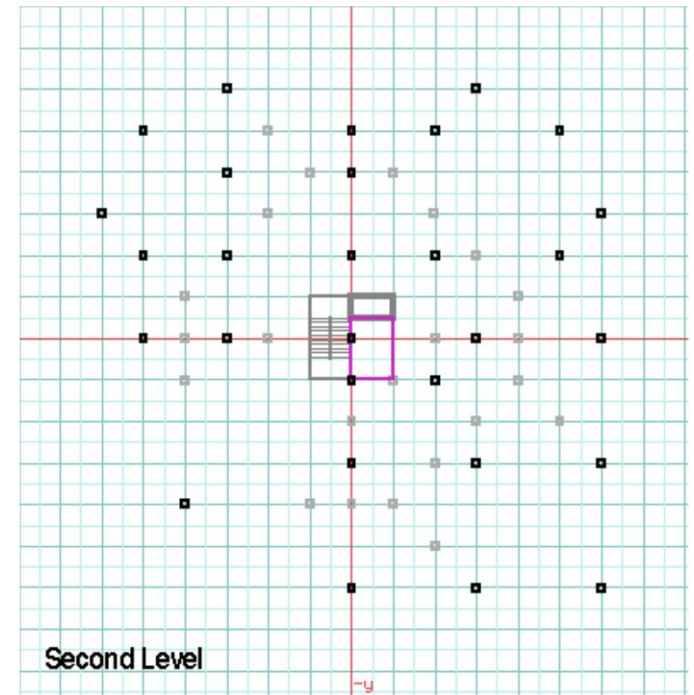
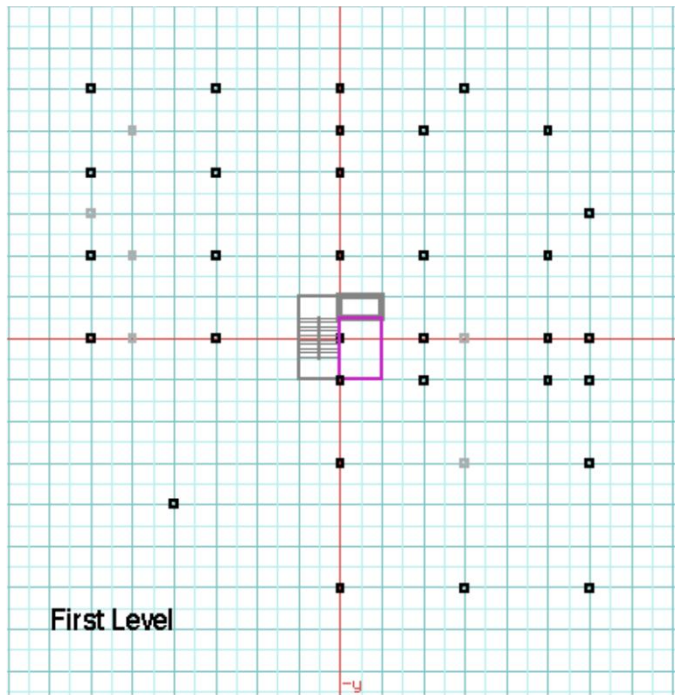
Section



# Iteration 1





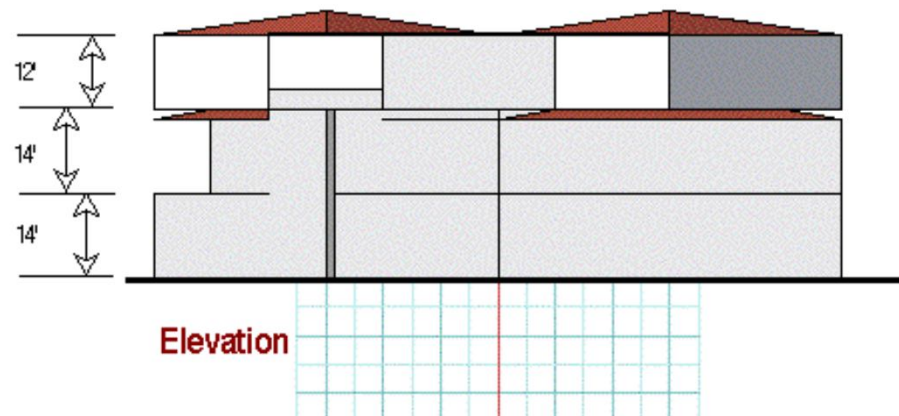
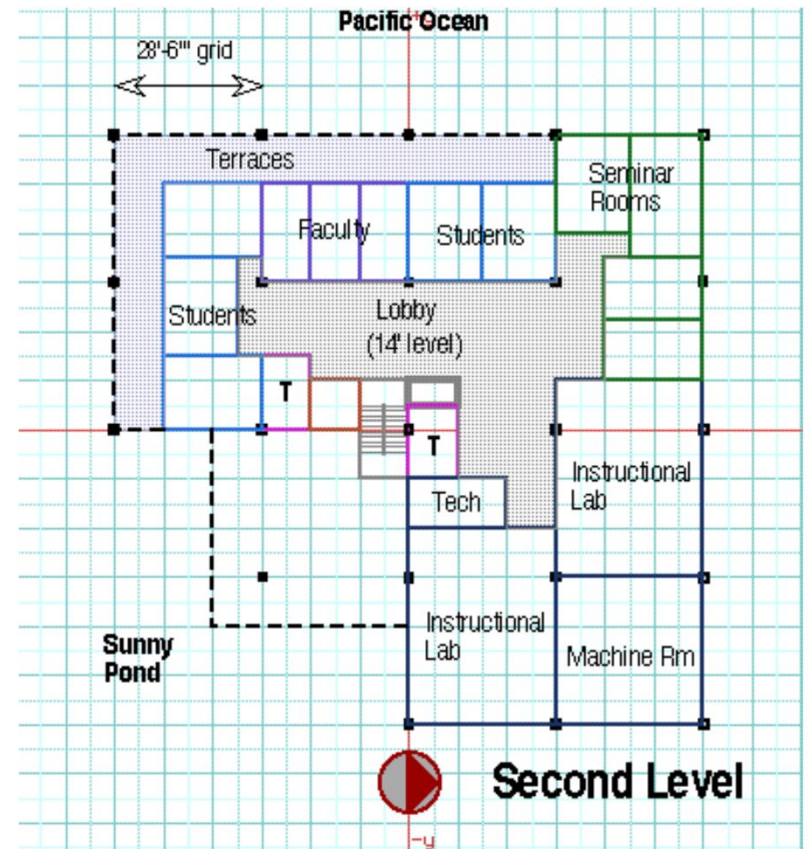
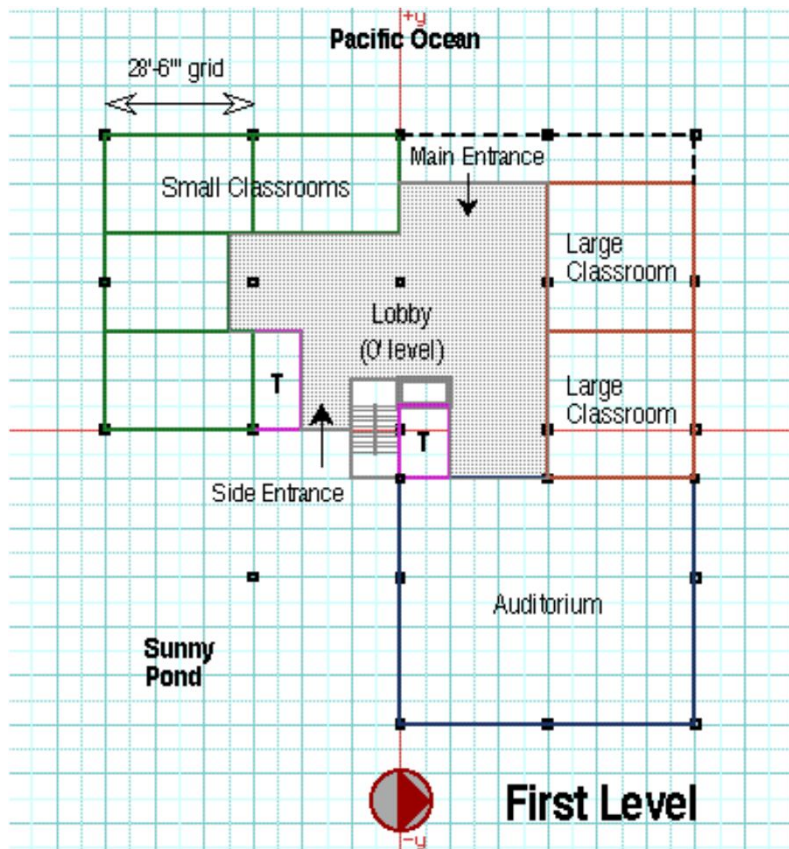


Iteration 1 - Structure

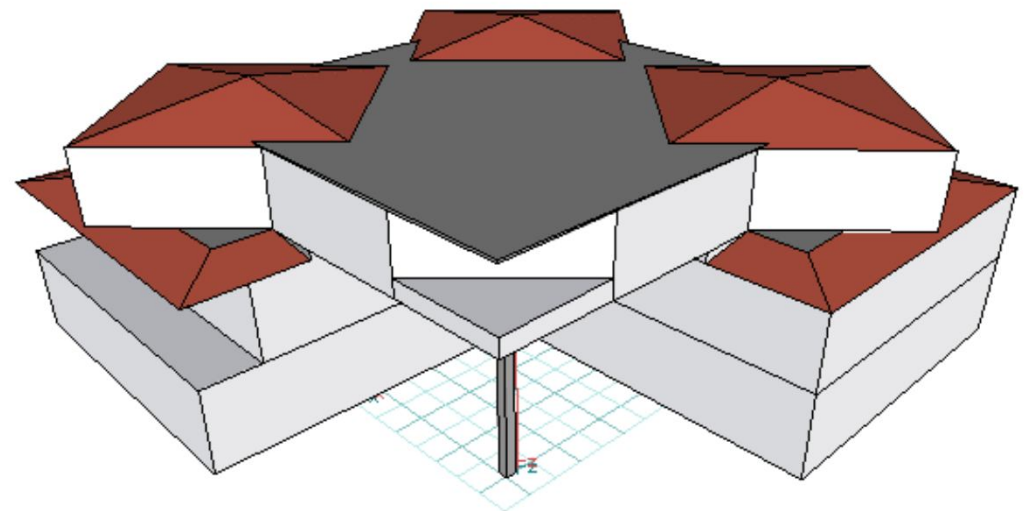
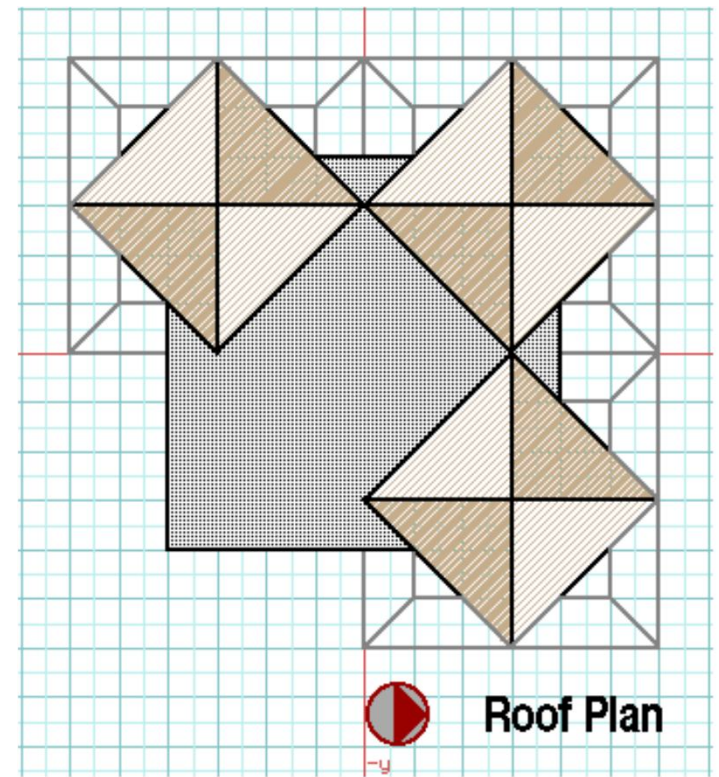
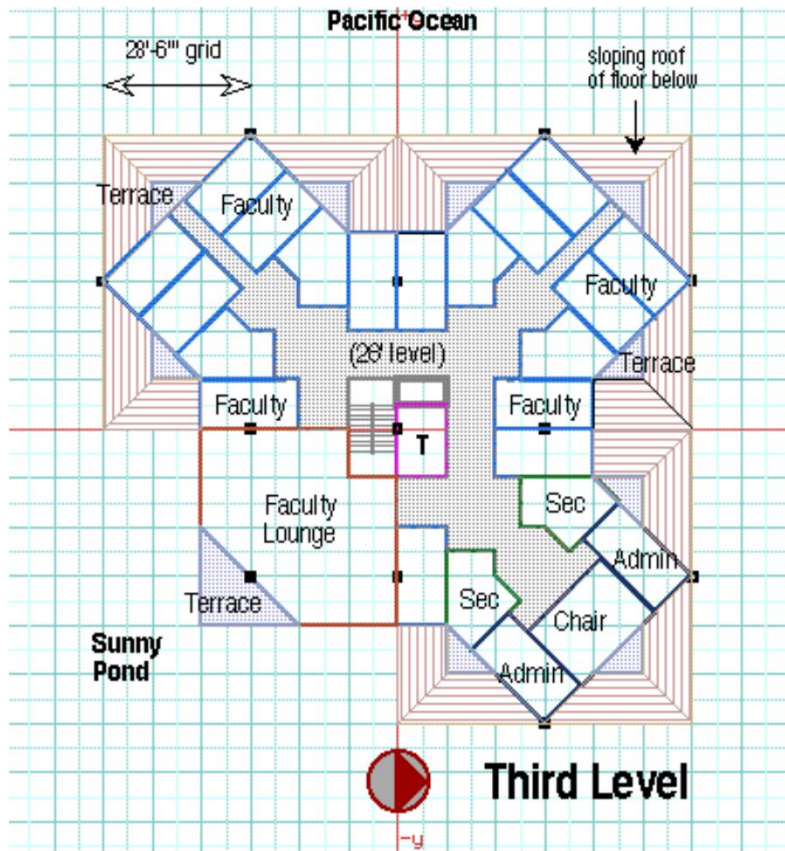


# Problems in Iteration 1

- Non uniform structural grid
- Many columns lacking vertical continuity
- 10' height for a level was insufficient for HVAC system
- Sloping roofs at the second level did not seem very well composed

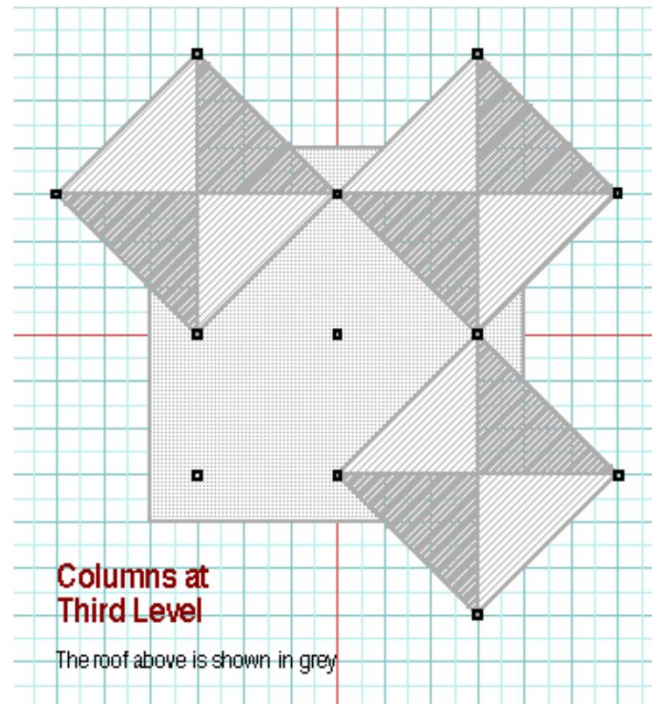
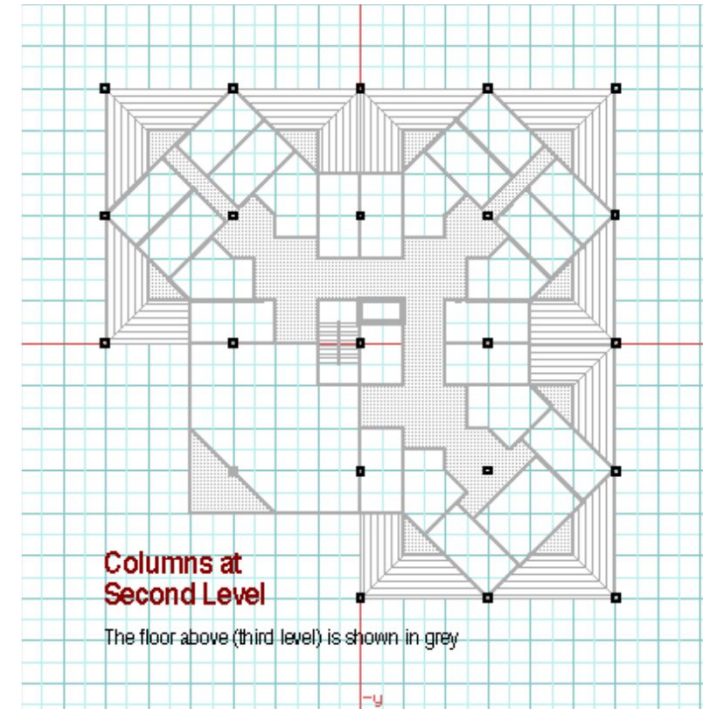
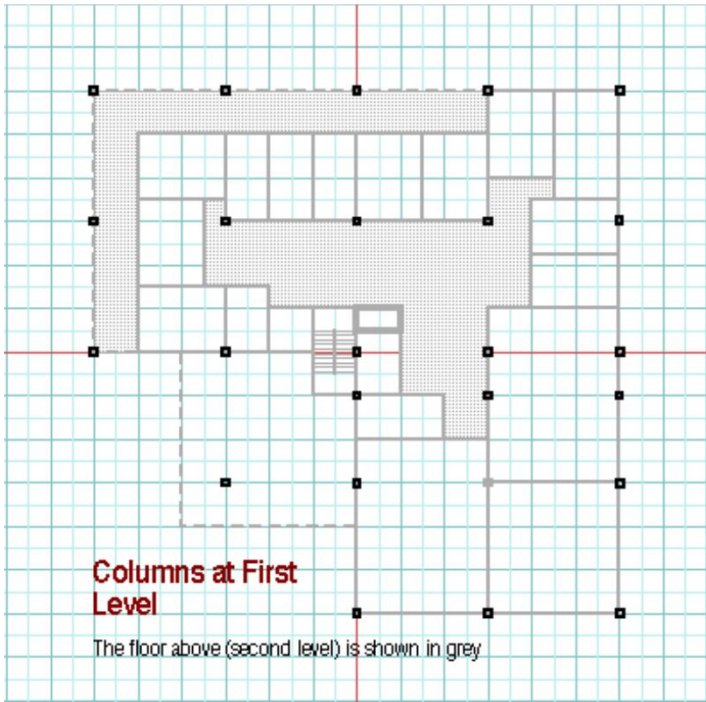


Iteration 2



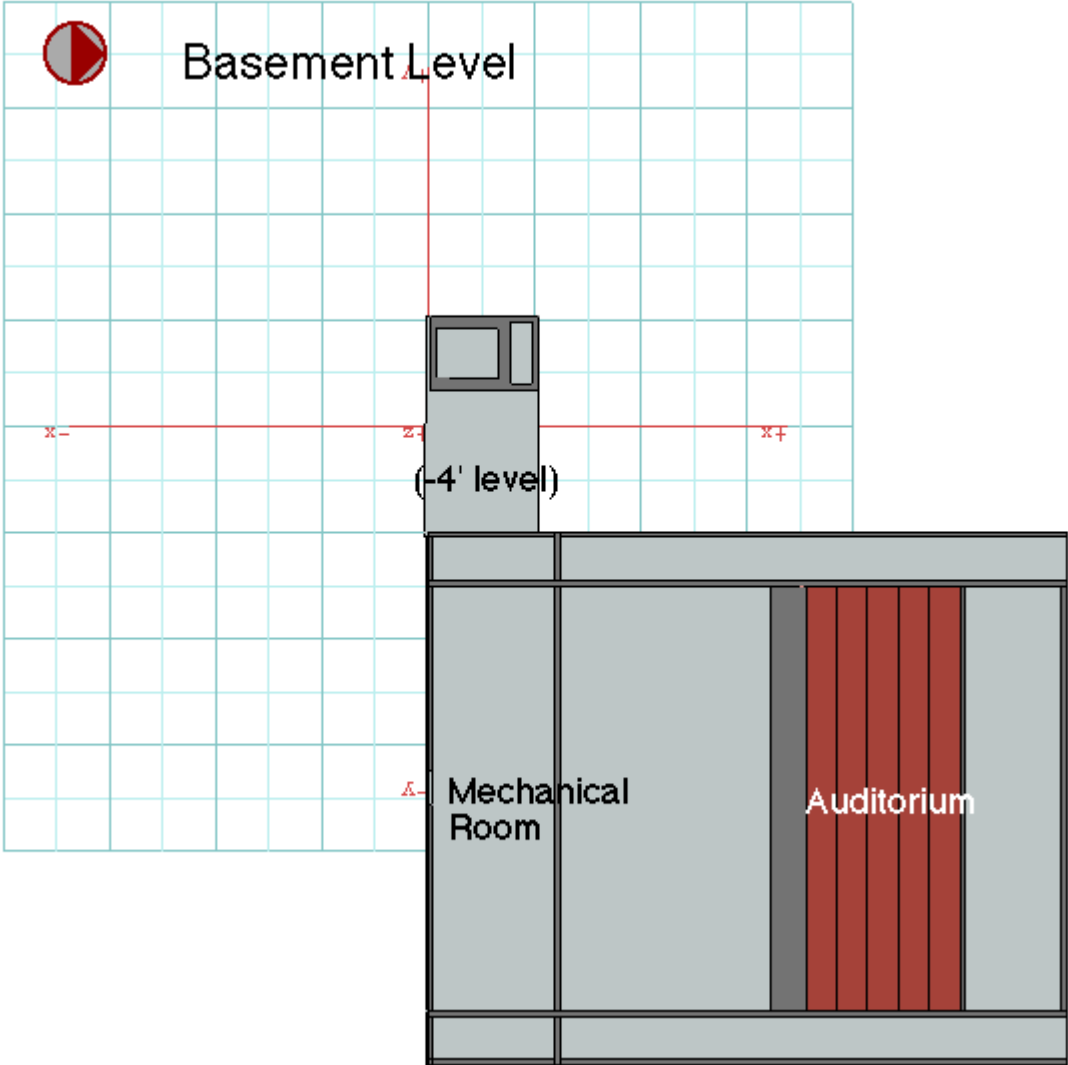
Iteration 2





## Iteration 2 - Structure

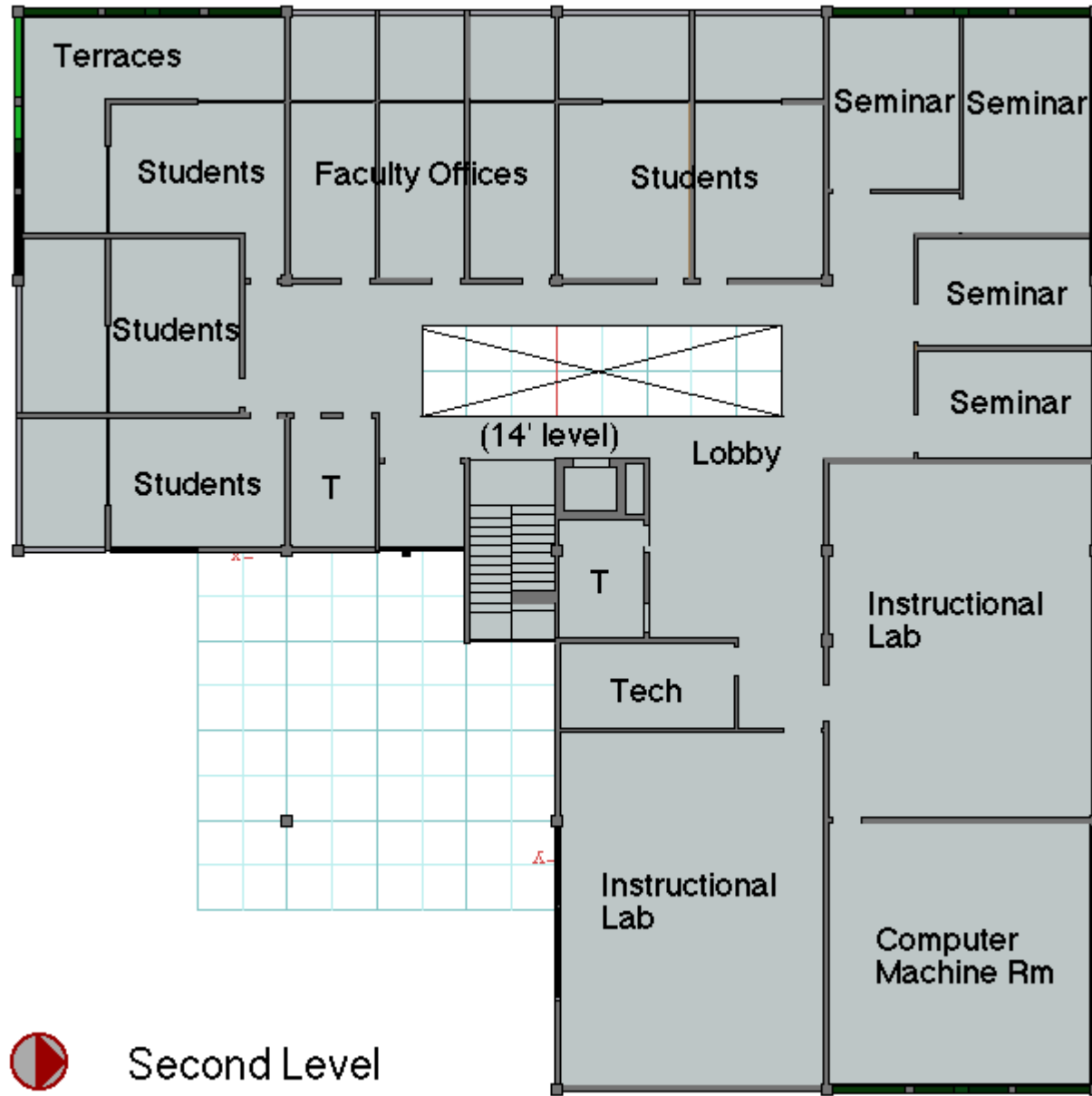
# Basement Plan




# First Floor Plan

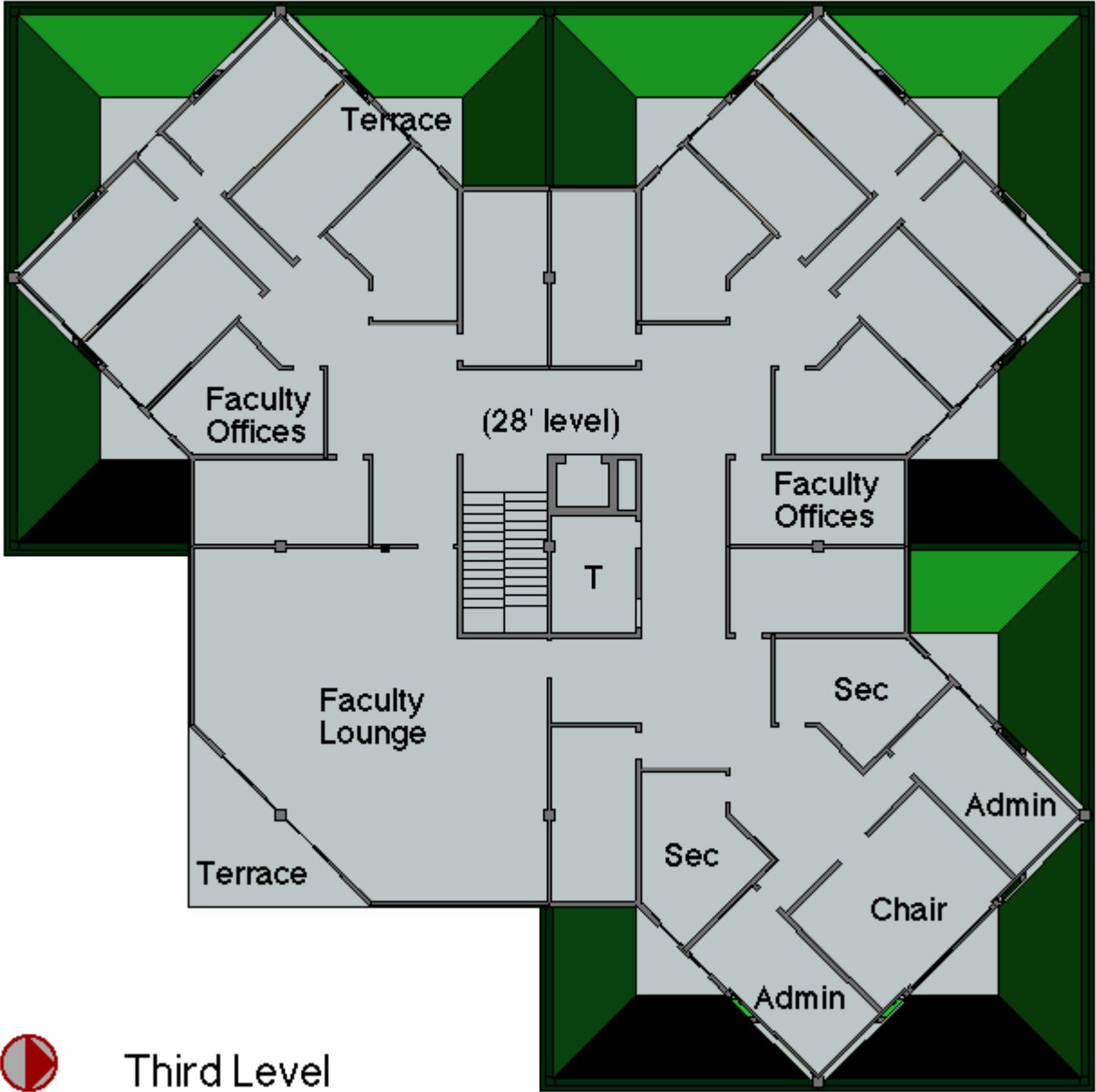


# Second Floor Plan



 Second Level

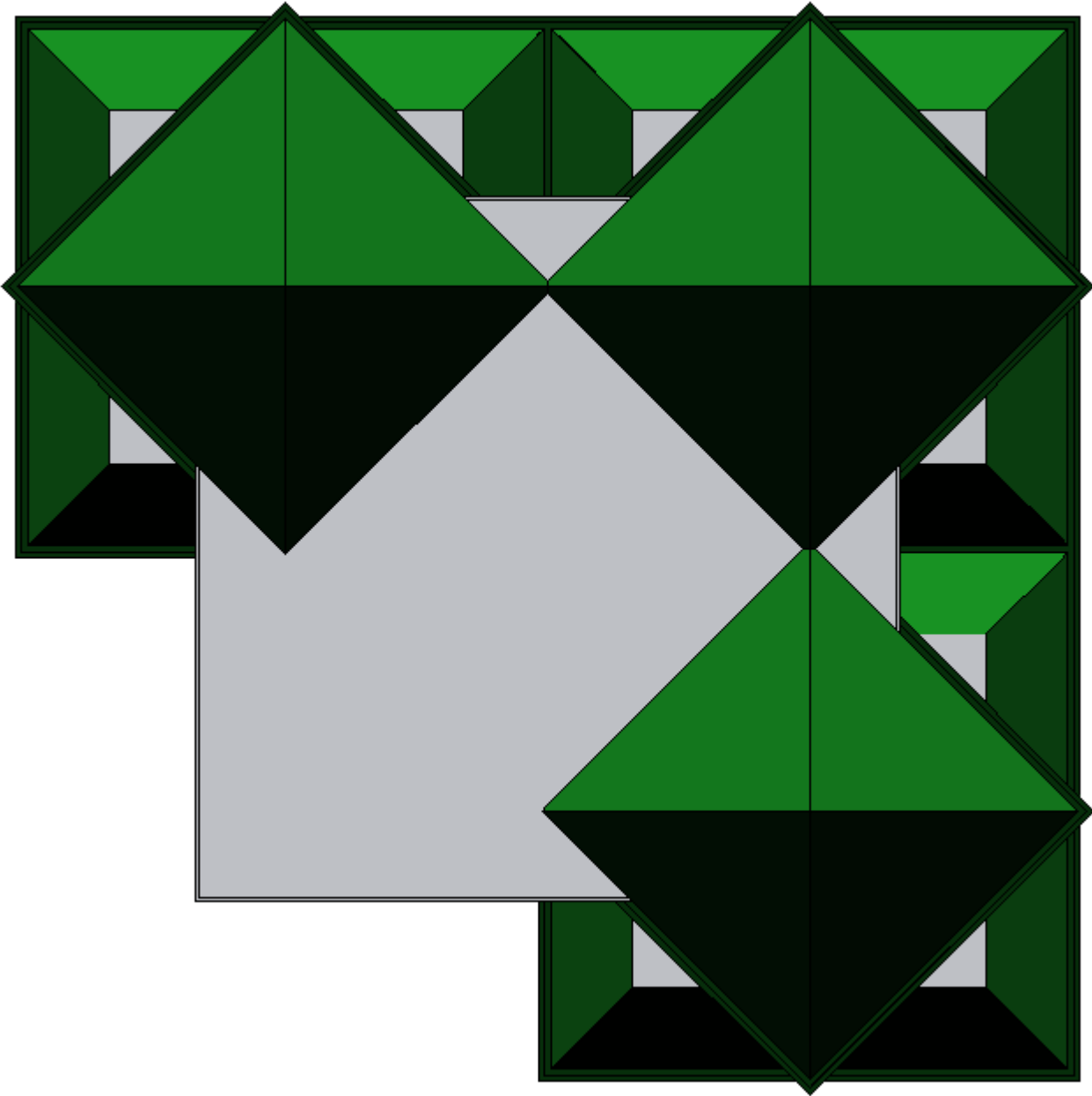
# Third Floor Plan



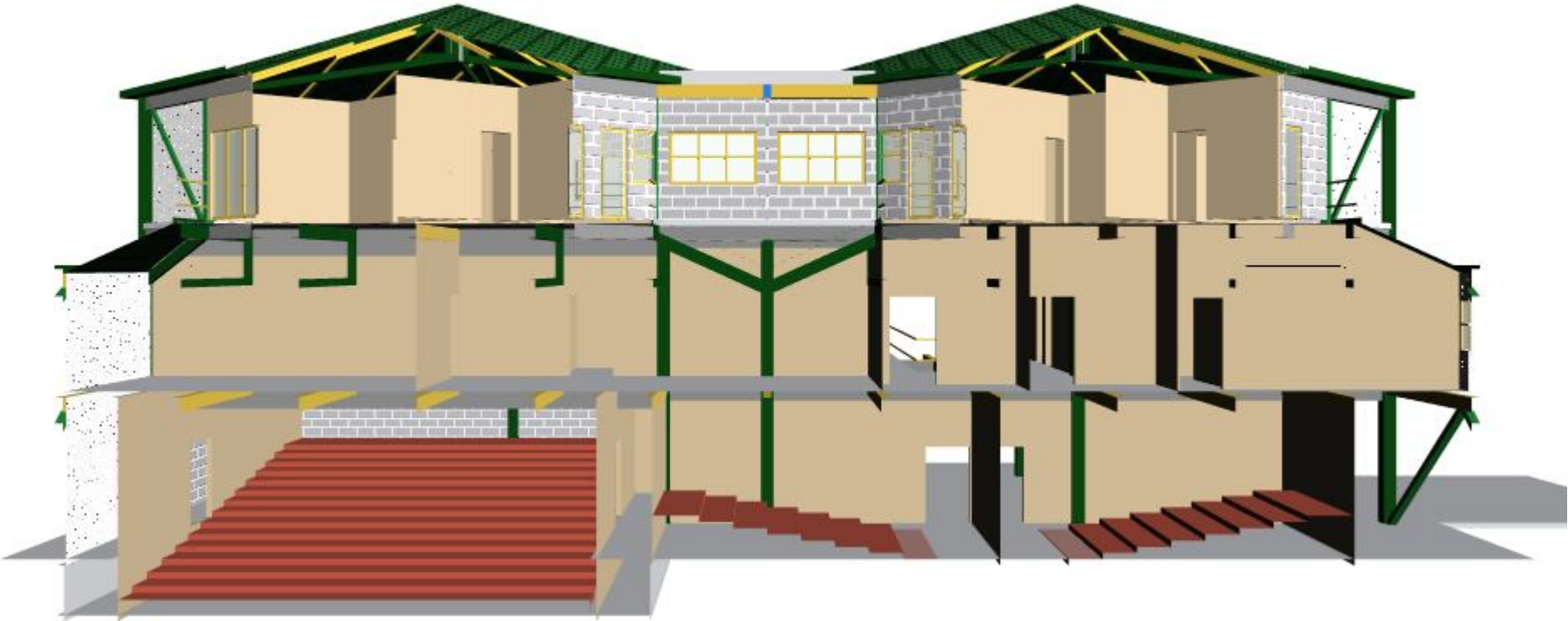
 Third Level



Roof Plan



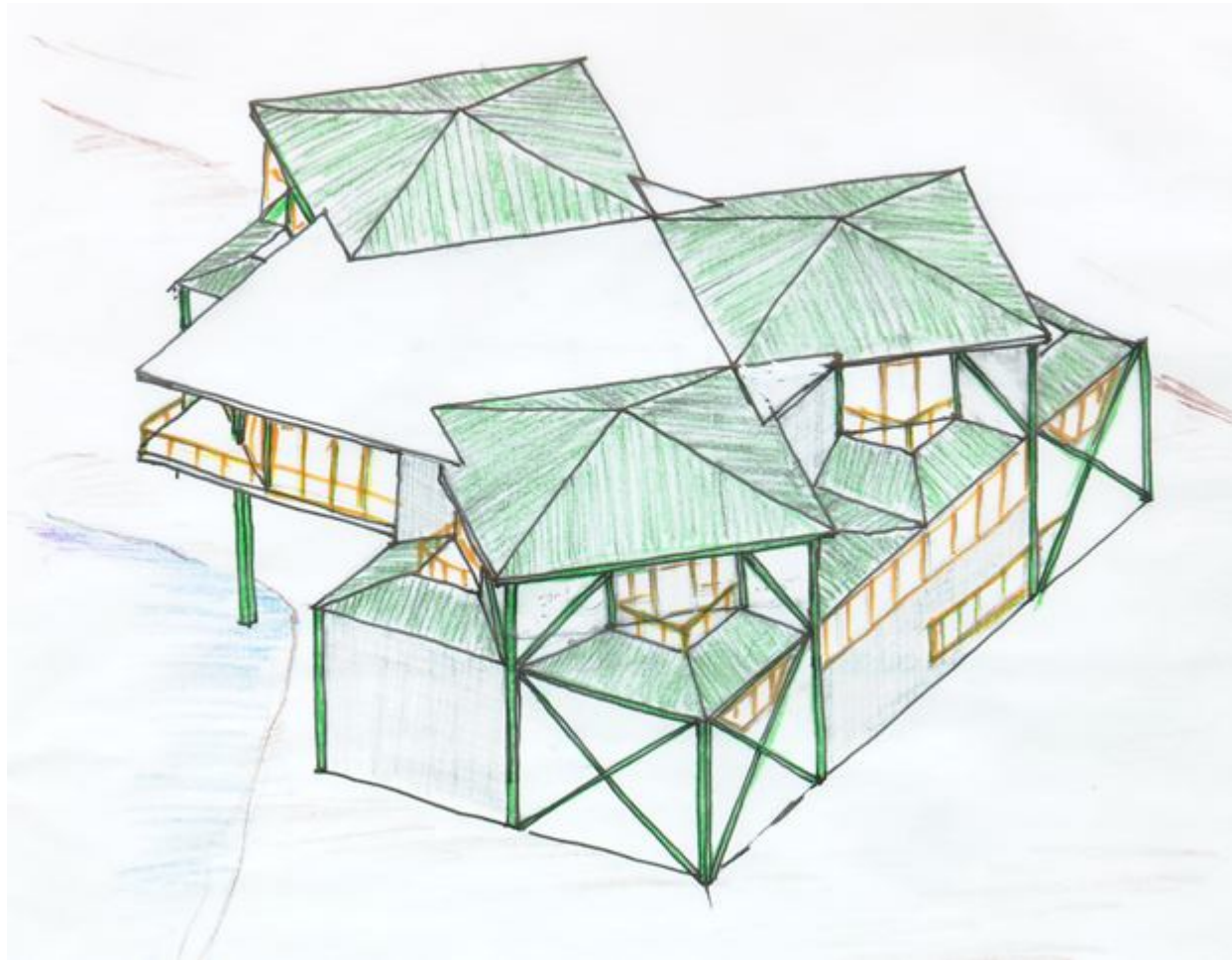
East-West Section



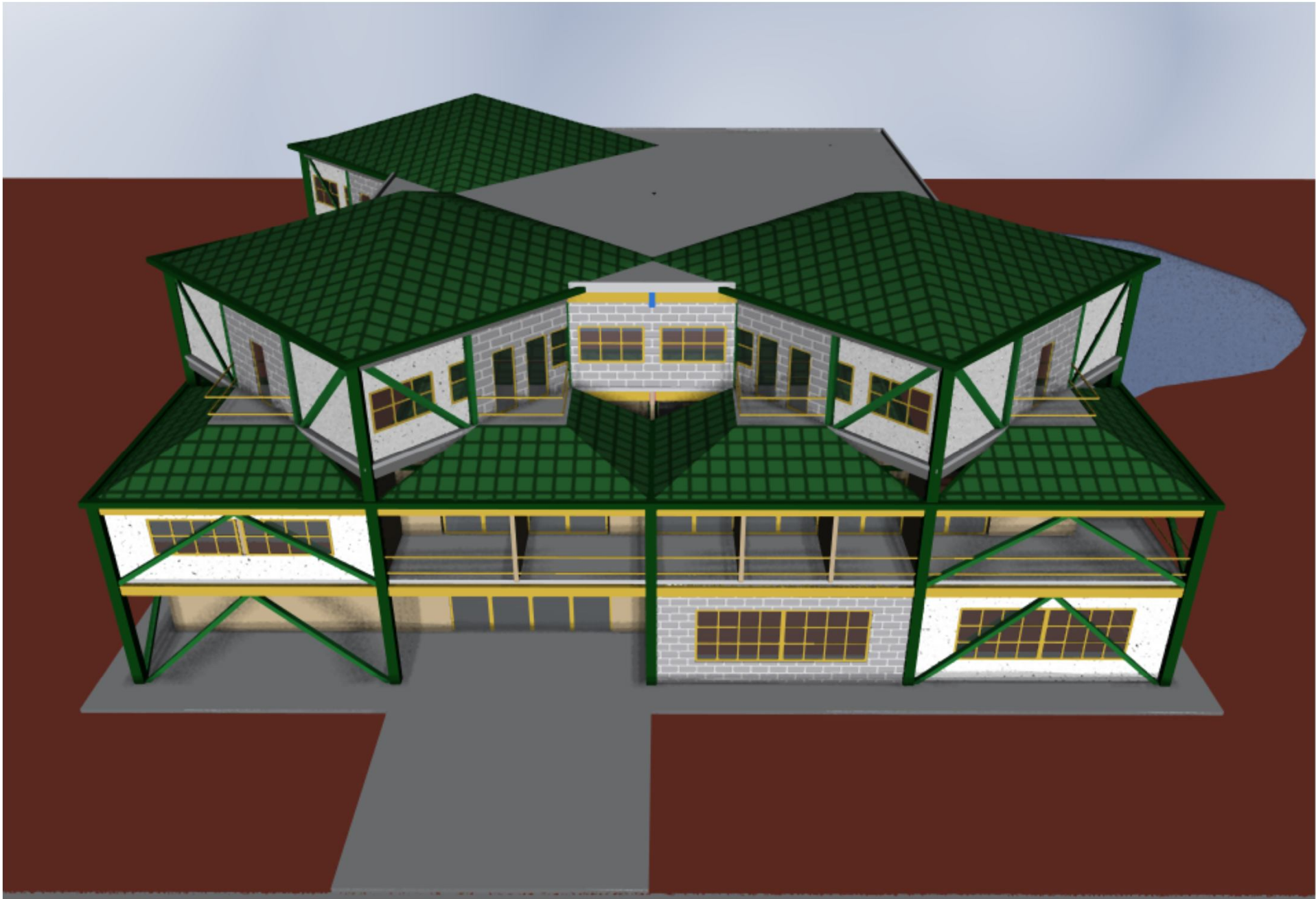
North-South Section

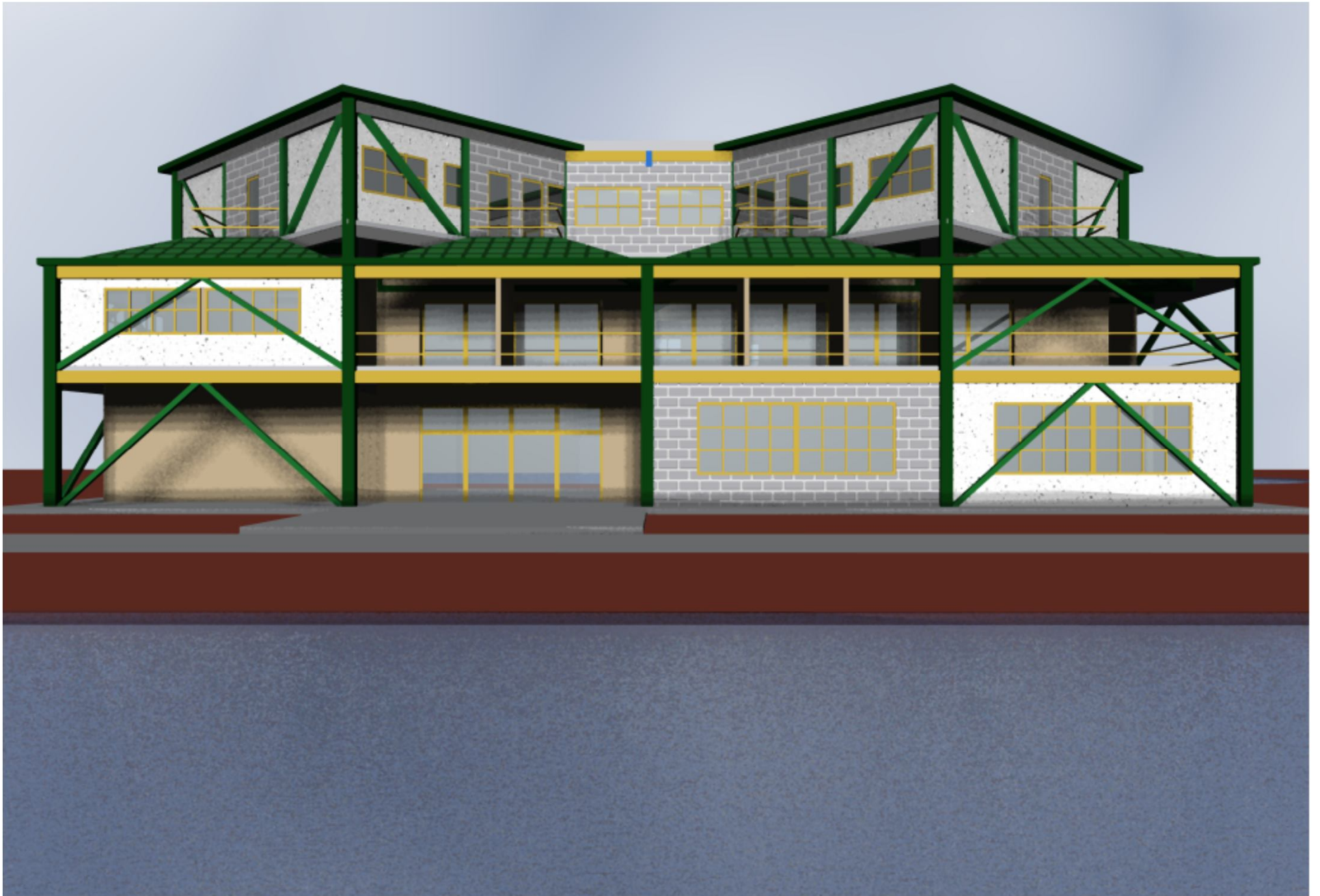


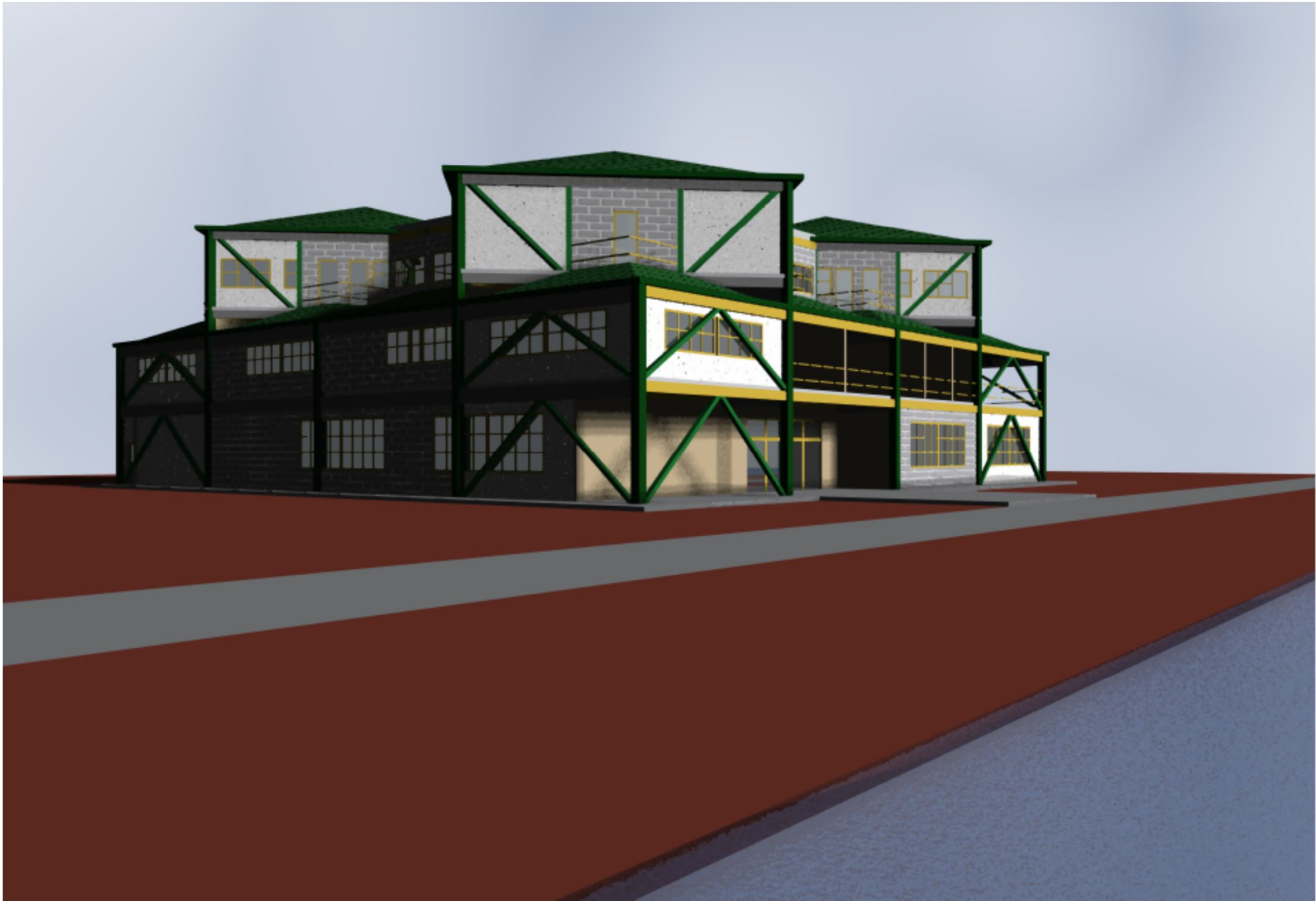
## Initial Sketch



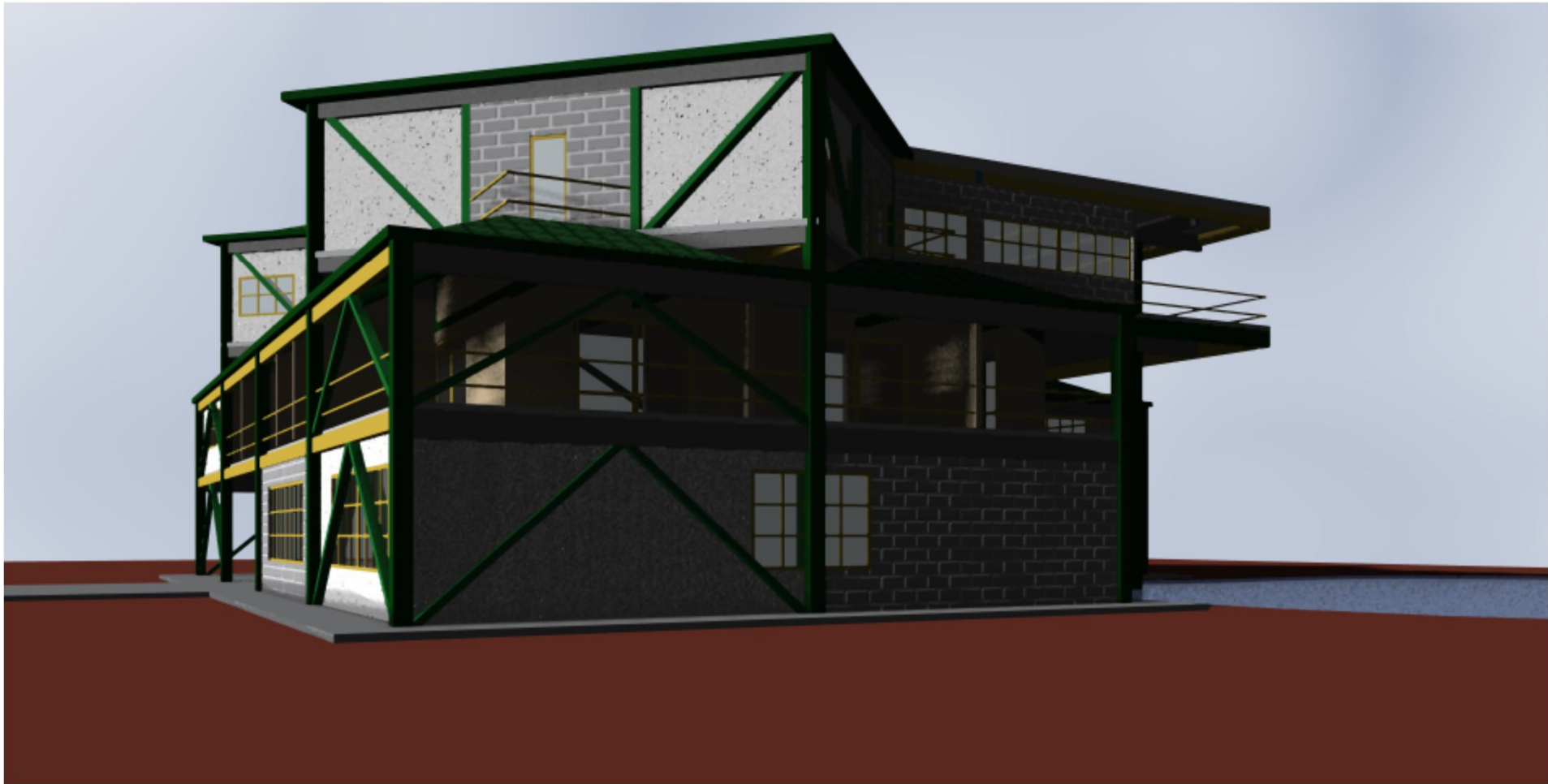




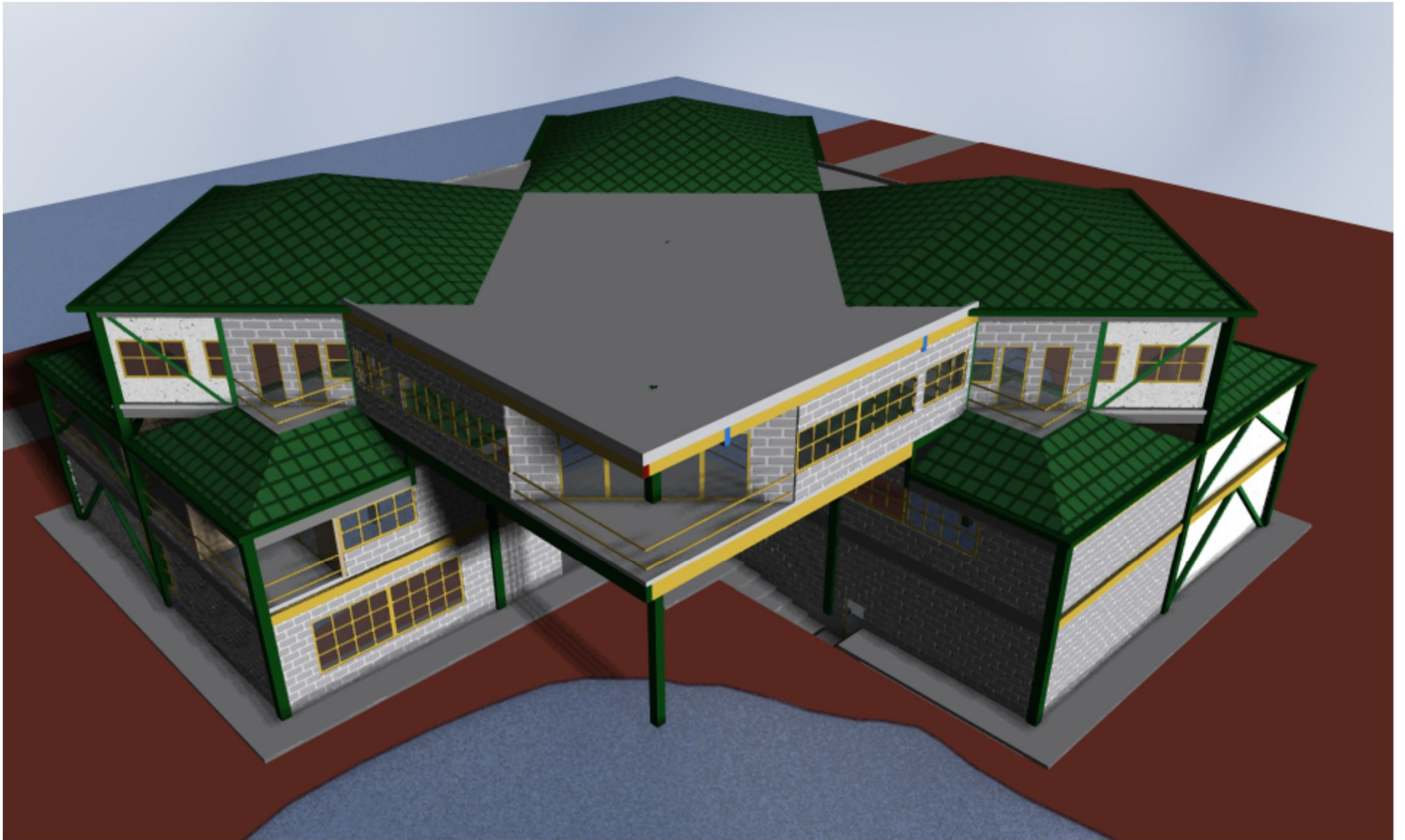








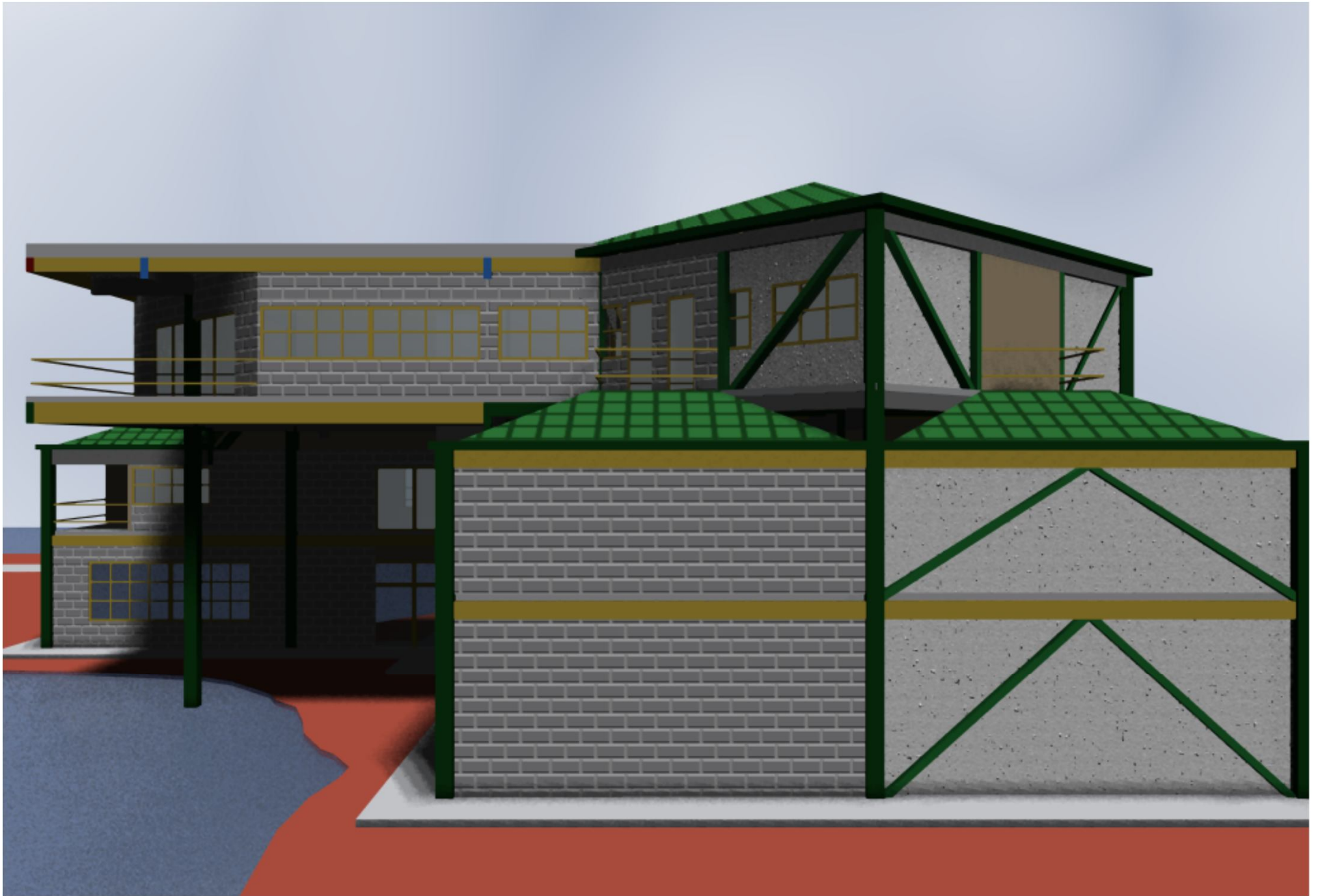




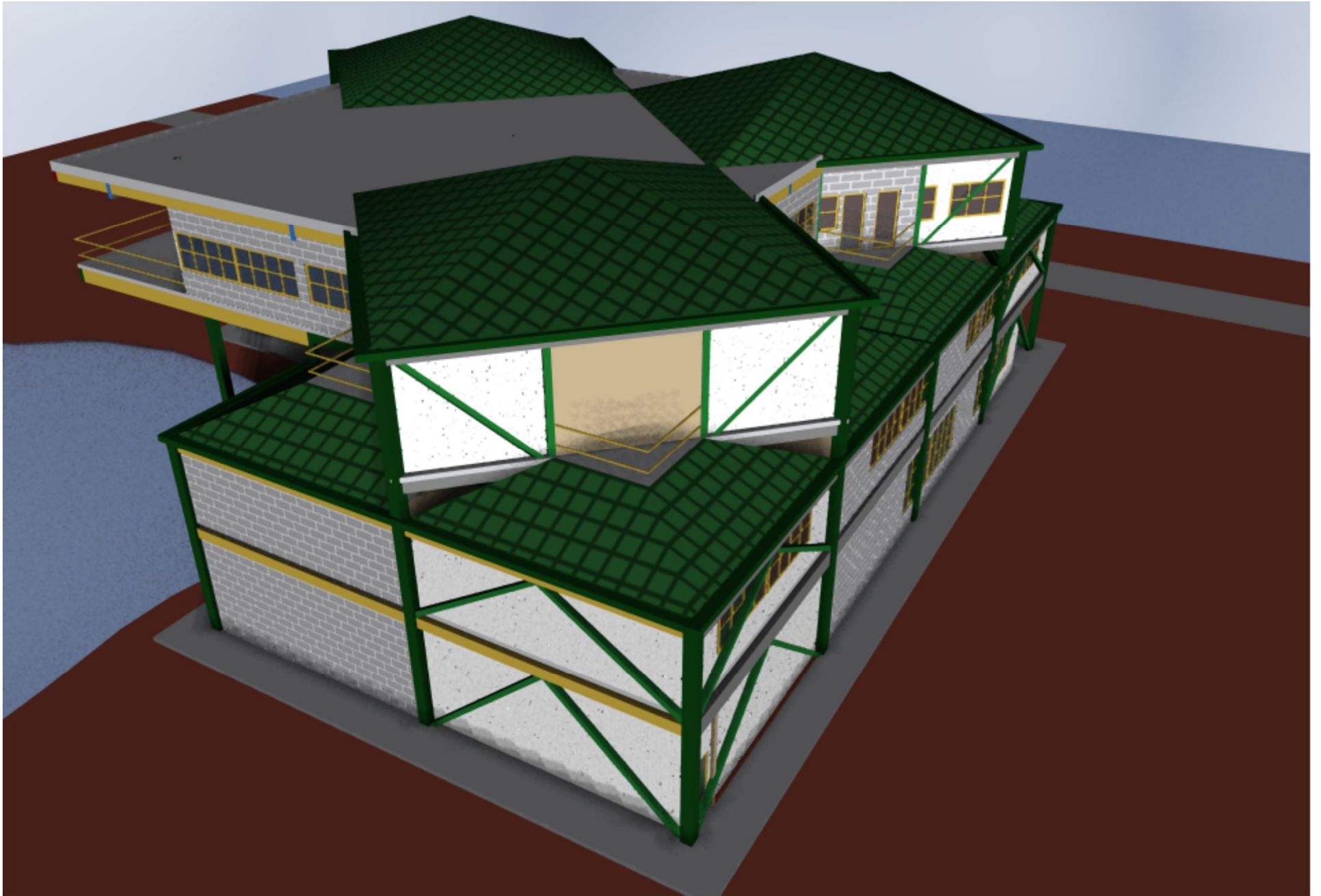


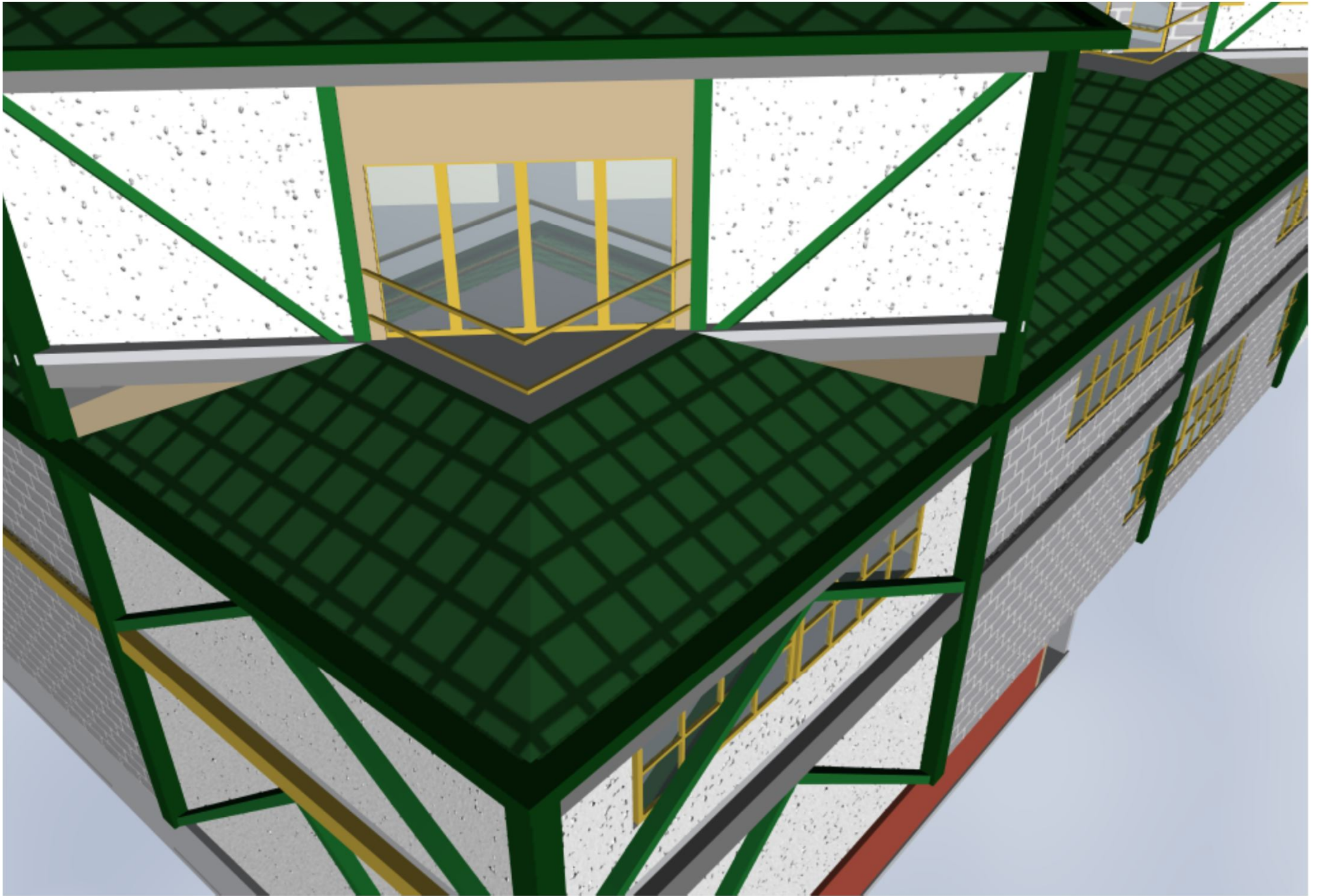




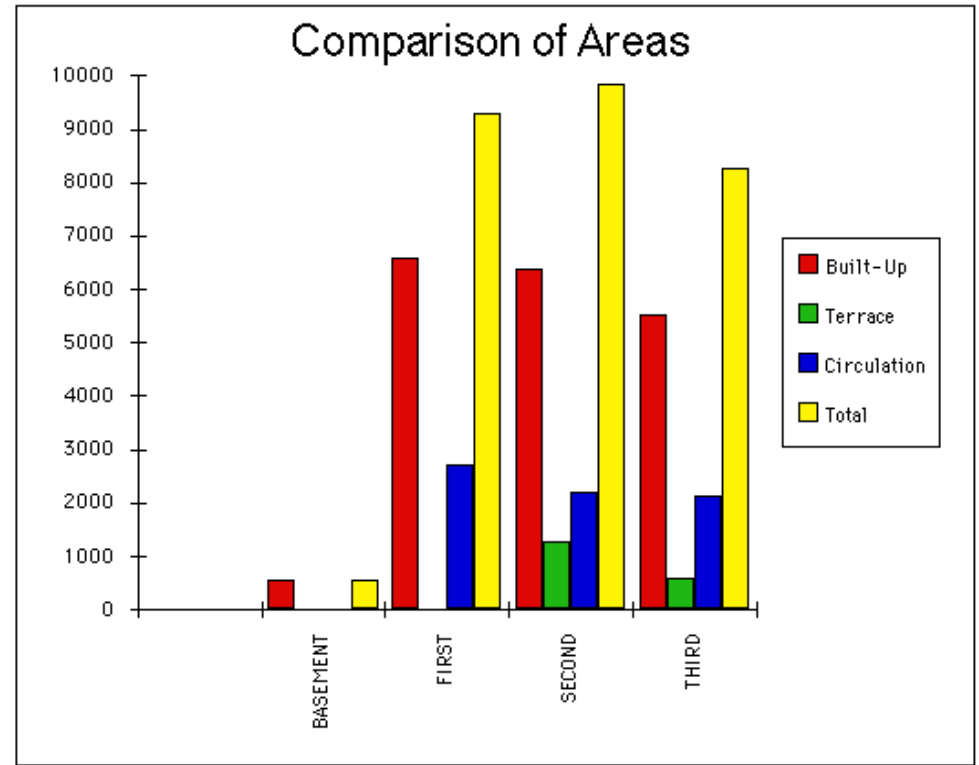




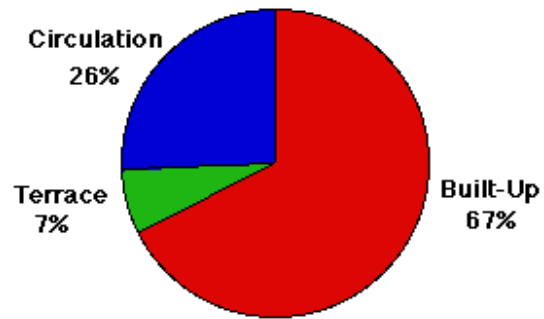




# Architectural Analysis

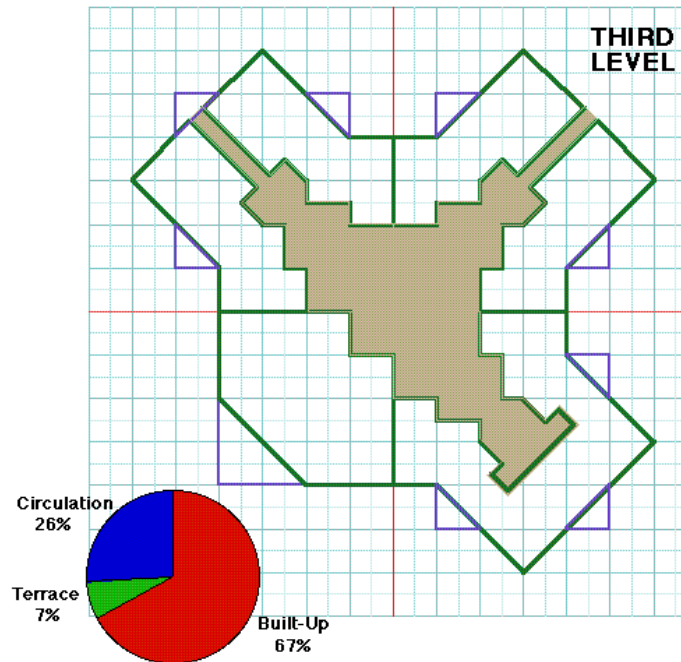
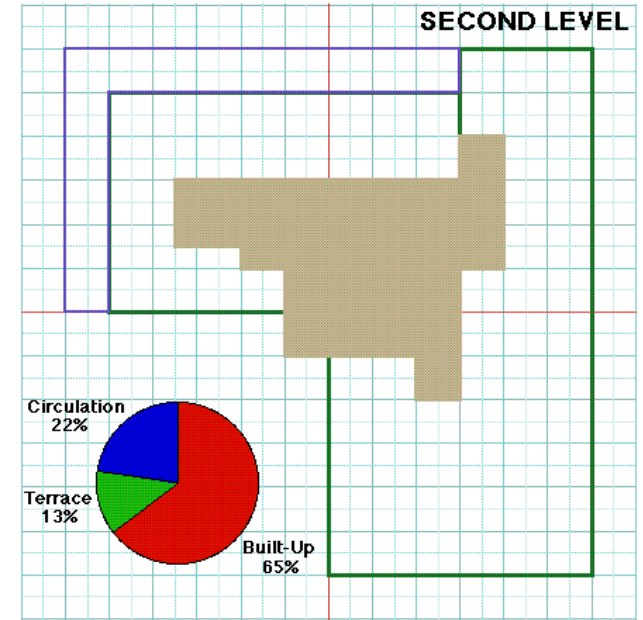
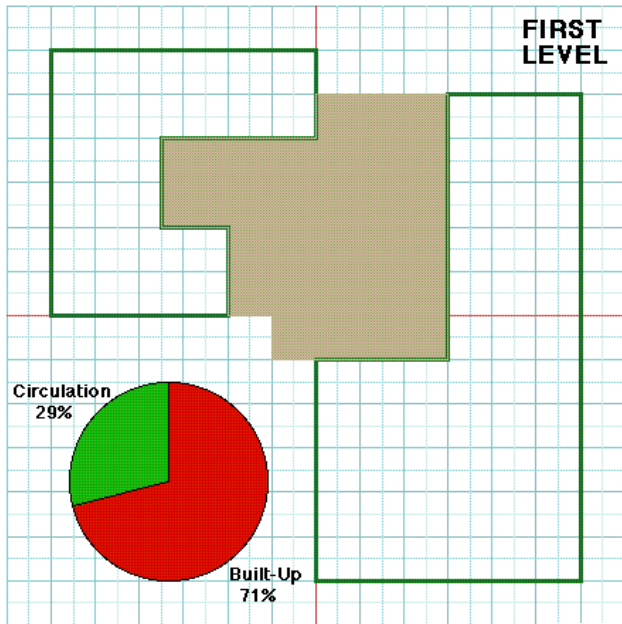


Area Comparison for Entire Building



Built-up	Terrace	Circulation	Total
18513	1849	7036	27398





# Architectural Analysis