IPRO 339
Summer 2008
Mid-term Review

Statement of Problem

-Need for affordable housing throughout the world

-Addressing past failures in social housing

-Applying our housing prototype to each specific situation

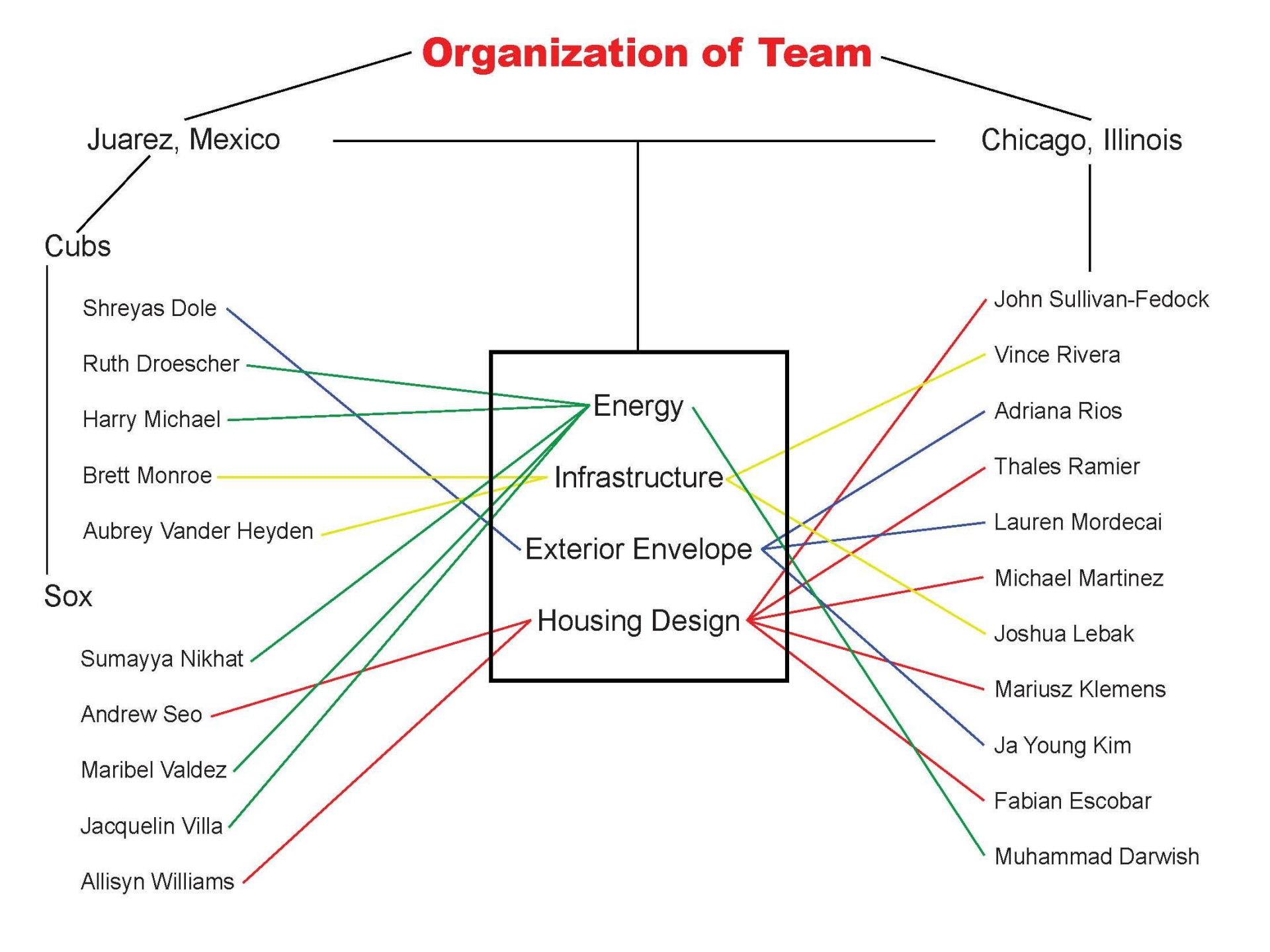
    -Making adjustments as needed to fit the problem at hand

-Focus on solutions for Juarez, Mexico and Chicago, Illinois

    -Examining the differences in locations of each of these locations

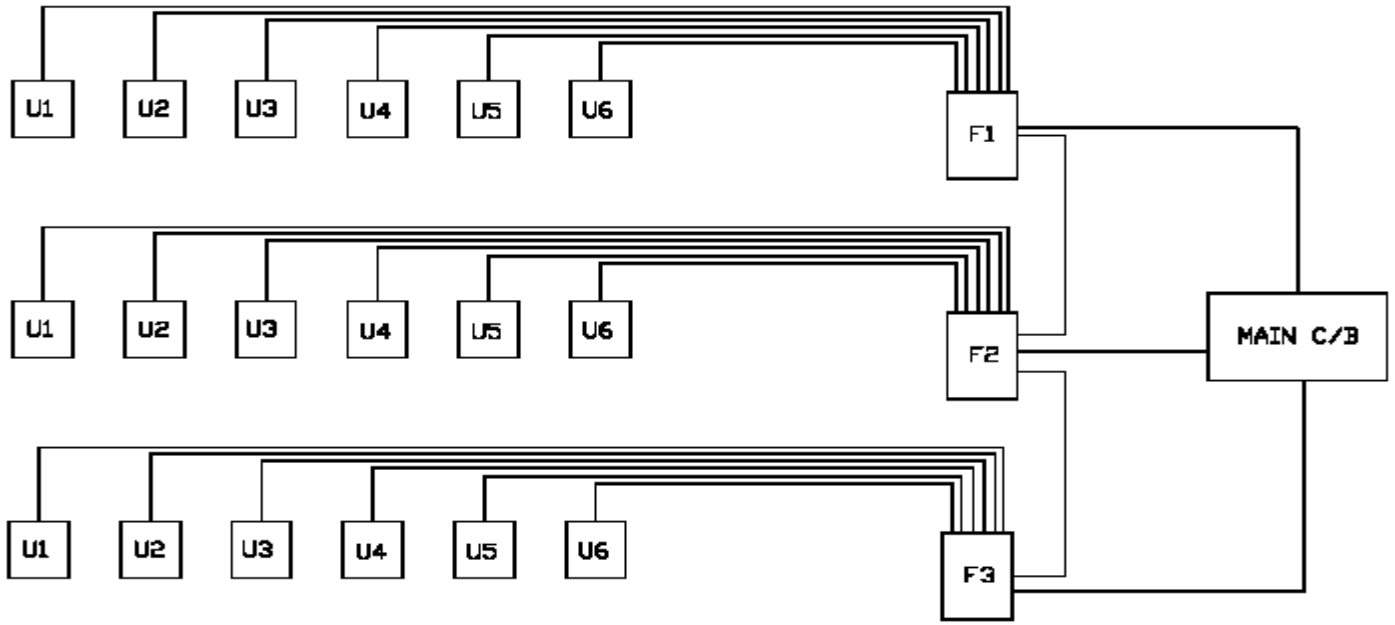
        -Climate, Culture, Region

    -Applying different building strategies to each situation


Organization of Team
Juarez, Mexico
Chicago, Illinois
Cubs
Sox
Shreyas Dole
Ruth Droescher
Harry Michael
Brett Monroe
Aubrey Vander Heyden
Sumayya Nikhat
Andrew Seo
Maribel Valdez
Jacquelin Villa
Allisyn Williams
Energy
Infrastructure
Exterior Envelope
Housing Design
John Sullivan-Fedock
Vince Rivera
Adriana Rios
Thales Ramier
Lauren Mordecai
Michael Martinez
Joshua Lebak
Mariusz Klemens
Ja Young Kim
Fabian Escobar
Muhammad Darwish

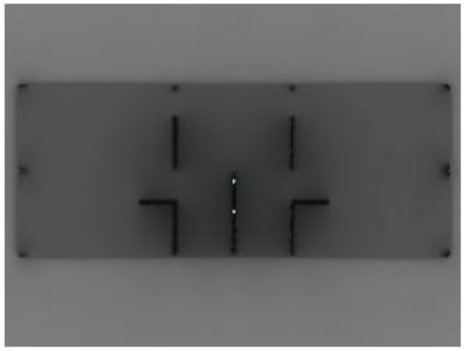
Electrical

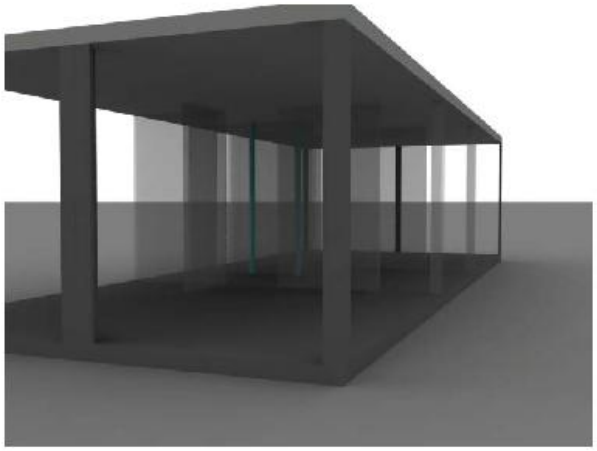
ELECTRICAL RISER DIAGRAM

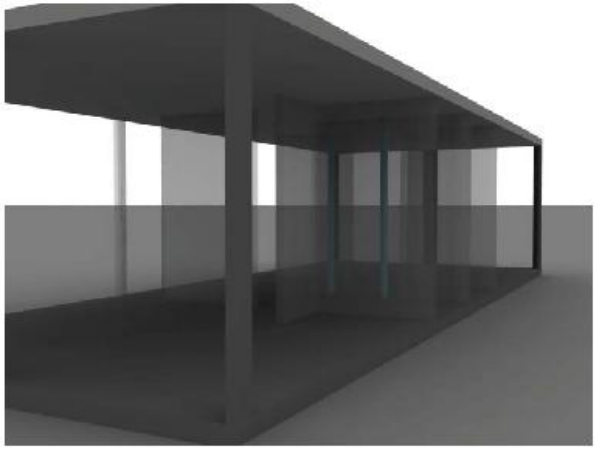


Plumbing

PLUMBING DIAGRAM







- INT. WALLS
- VENT/STACK

Energy Subgroup

Progress:

- More detailed climate analysis for Chicago and Juarez were done.
- Chicago analysis comprised of a look into wind directions, strength and relation to time of year. Solar analysis was done in relation to radiation values and also time of day, which relates to insulation of the houses.
- Juarez analysis consisted of a general overview of proposed site, as well as other sites which could also be used. Wind and solar analysis were done, also including a look into radiation values.
- Thermal masses, which are any material that has the capacity to store heat, were studied as relating to the exterior of the container.
- An analysis of thermal convection, relating to the heat load of each layout (Chicago and Juarez) was initiated.
- An analysis on the projected required load for each unit was done as follows: It was found to be about, 7000 Watts.

Goals

- Convection calculations will be made
- Thermal mass implementation will be analyzed
- Work on climate relation to each site
- Get price quote for the engine required to generate electricity for zero energy

Exterior Cladding

Challenge:

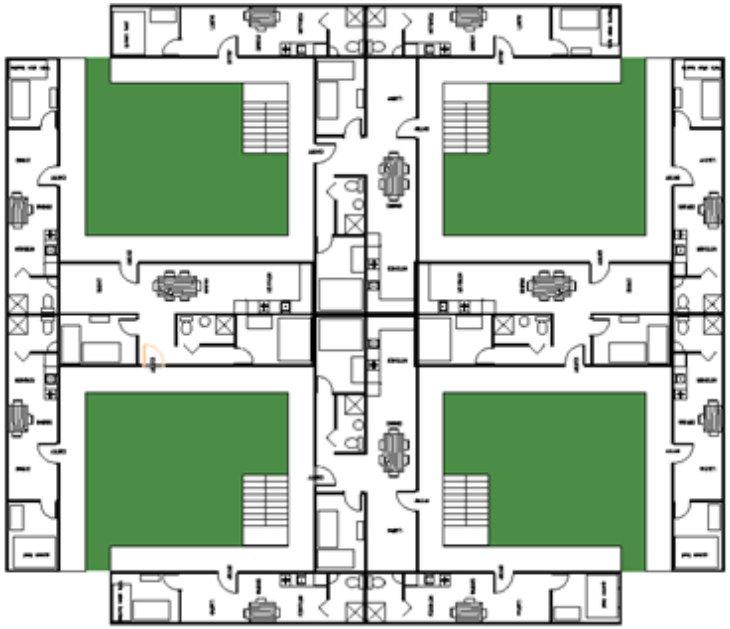
Juarez, Mexico

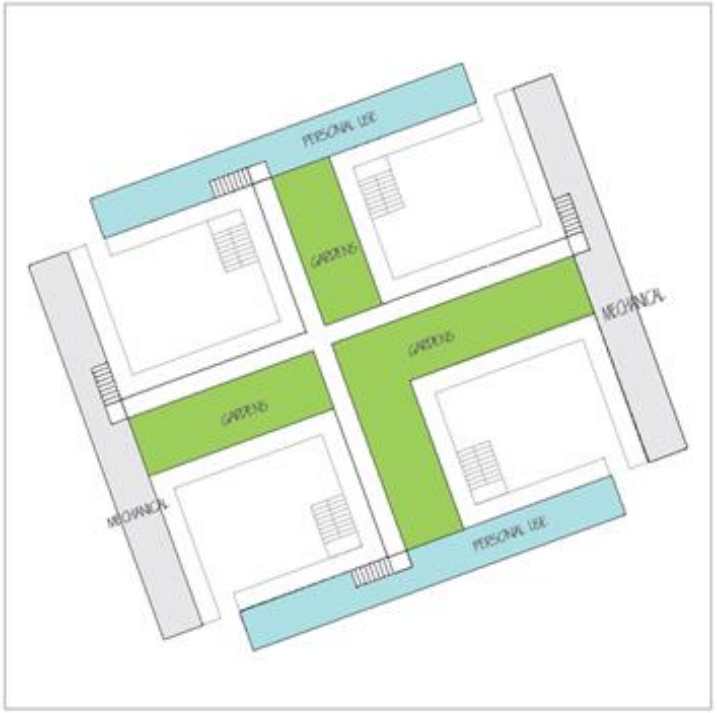
- **-Extreme Heat**
- **-Solar Exposure**
- **-Availability**
- **-Durability**

Chicago, Illinois

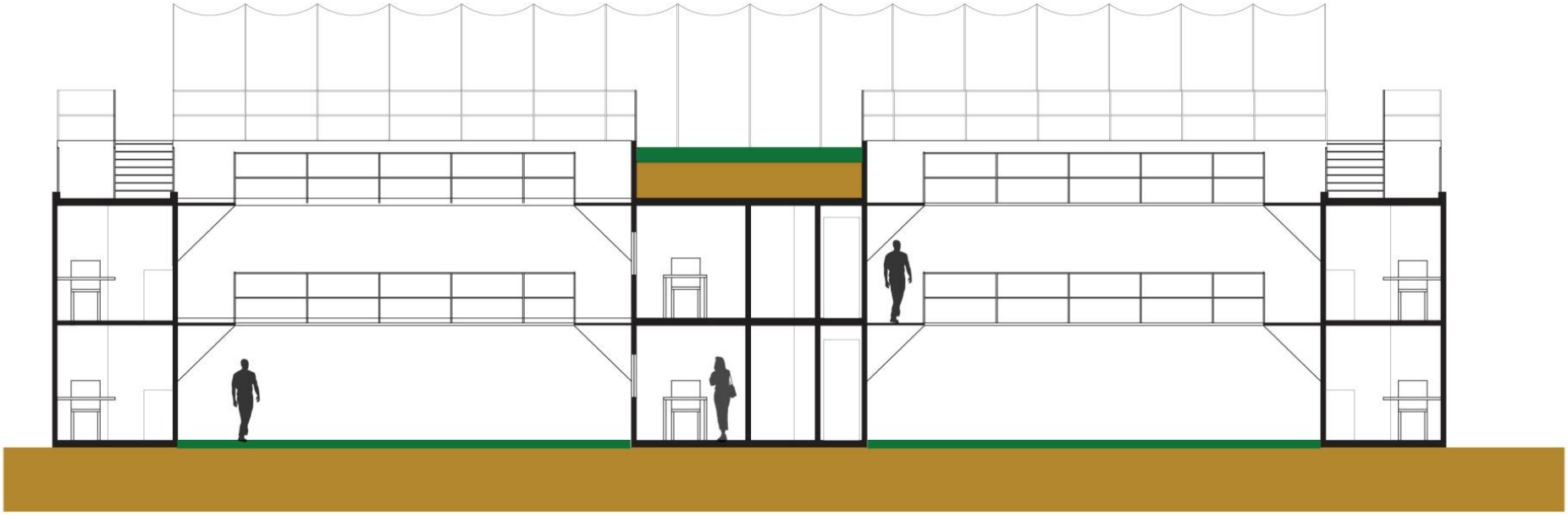
- **-Cost**
- **-Availability**
- **-Homogeneity with surrounding buildings**
- **-Efficiency**

Juarez Scheme 1

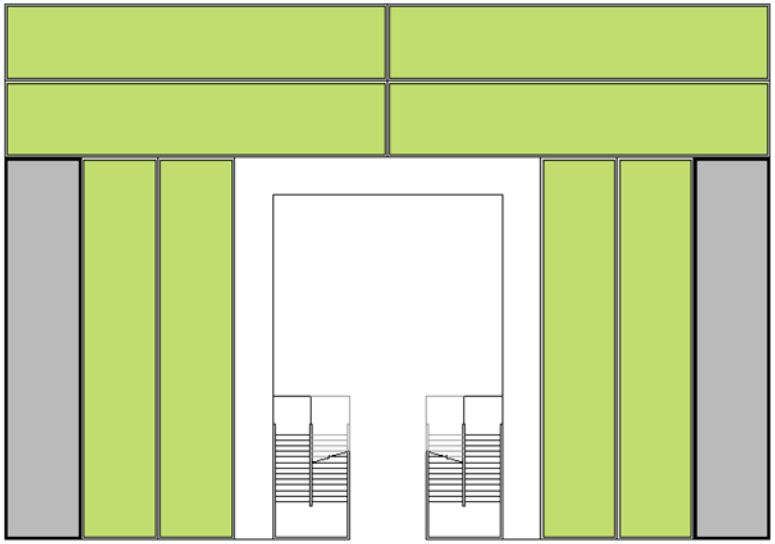


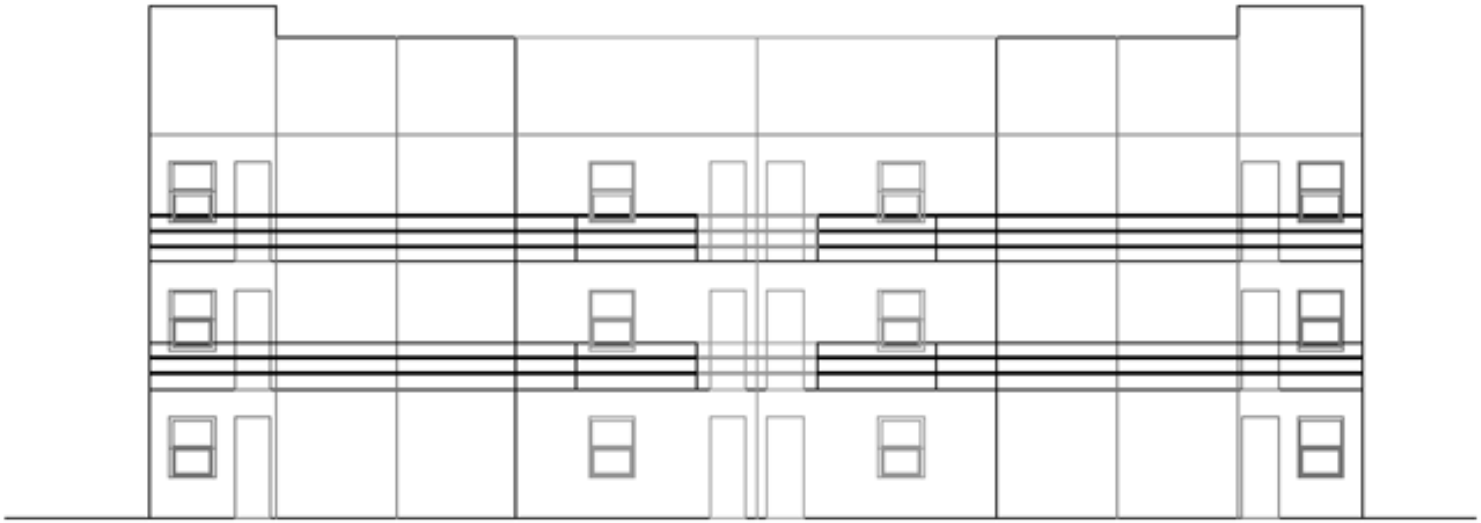


SITE PLAN
SCALE: 1/16" = 1'-0"
N

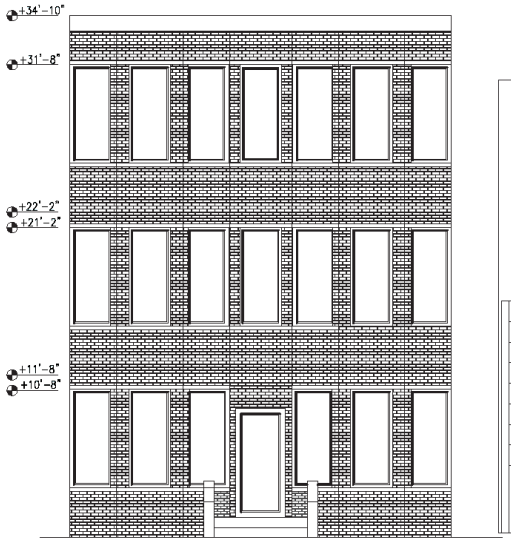


Juarez Scheme 2

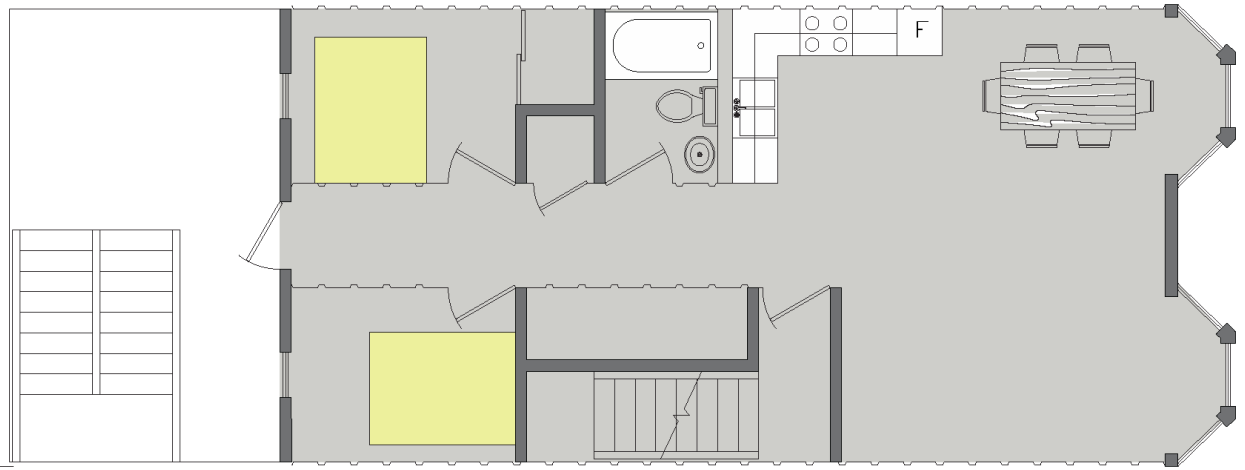




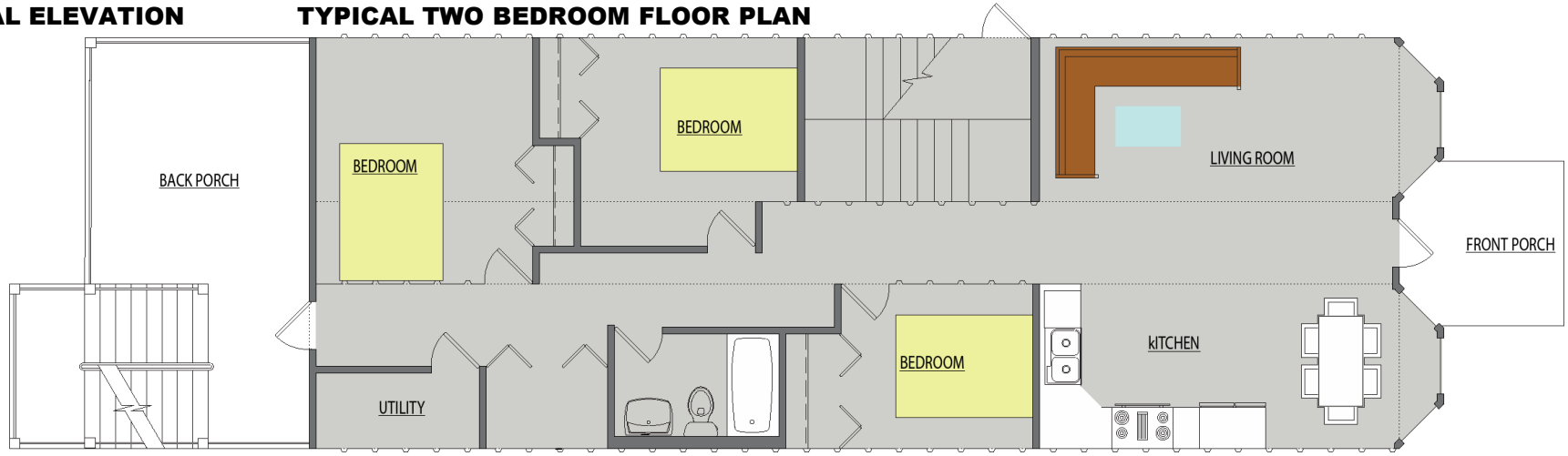
Chicago Schemes



TYPICAL ELEVATION

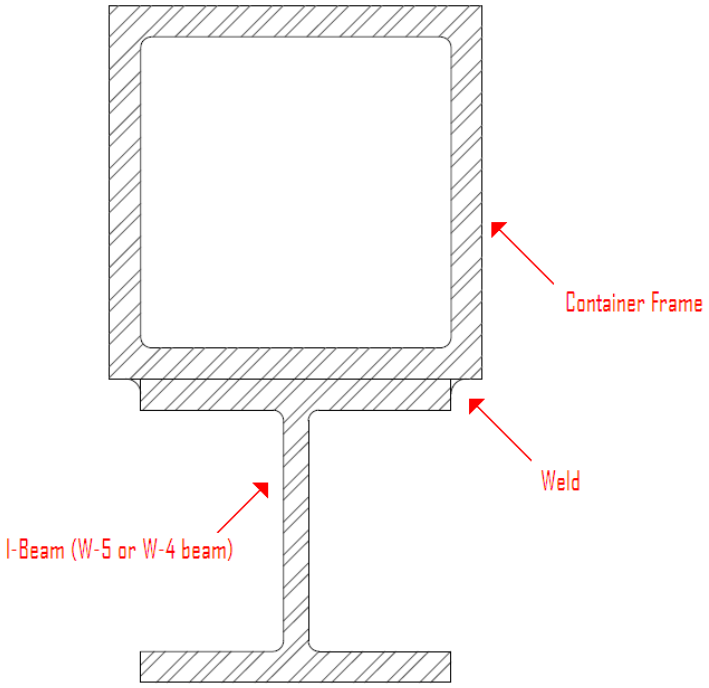


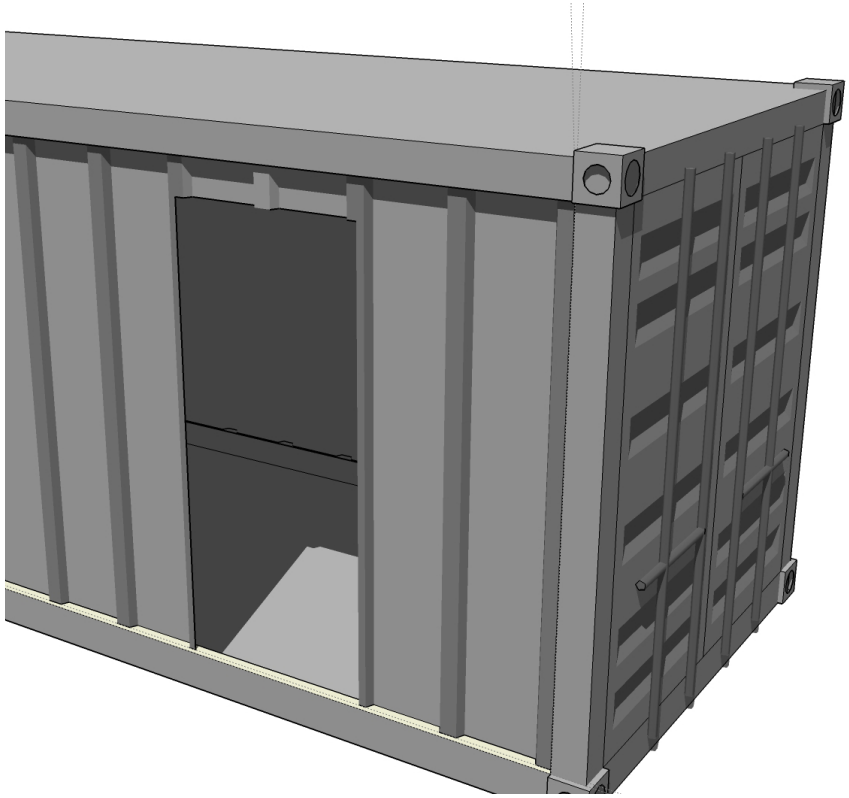
TYPICAL TWO BEDROOM FLOOR PLAN



TYPICAL THREE BEDROOM FLOOR PLAN

Structural Solutions





Obstacles

Subgroup Obstacles

Energy

-Identifying affordable energy sources.
-Current energy software determined to be too specific for this project.

Infrastructure

-Infrastructure design often constrained due to the progress of other subgroups.

Exterior Envelope

-Material selections often constrained due to the progress of other subgroups.

Housing Design + Structural

-Structural limitations of shipping containers.
-Space planning due to the 8’ width of the shipping containers.

IPRO 339 Team Obstacles

Time

-Difficulty in coordinating team meetings.

Communication

-Communications between subgroups often limited to Saturday team meetings.