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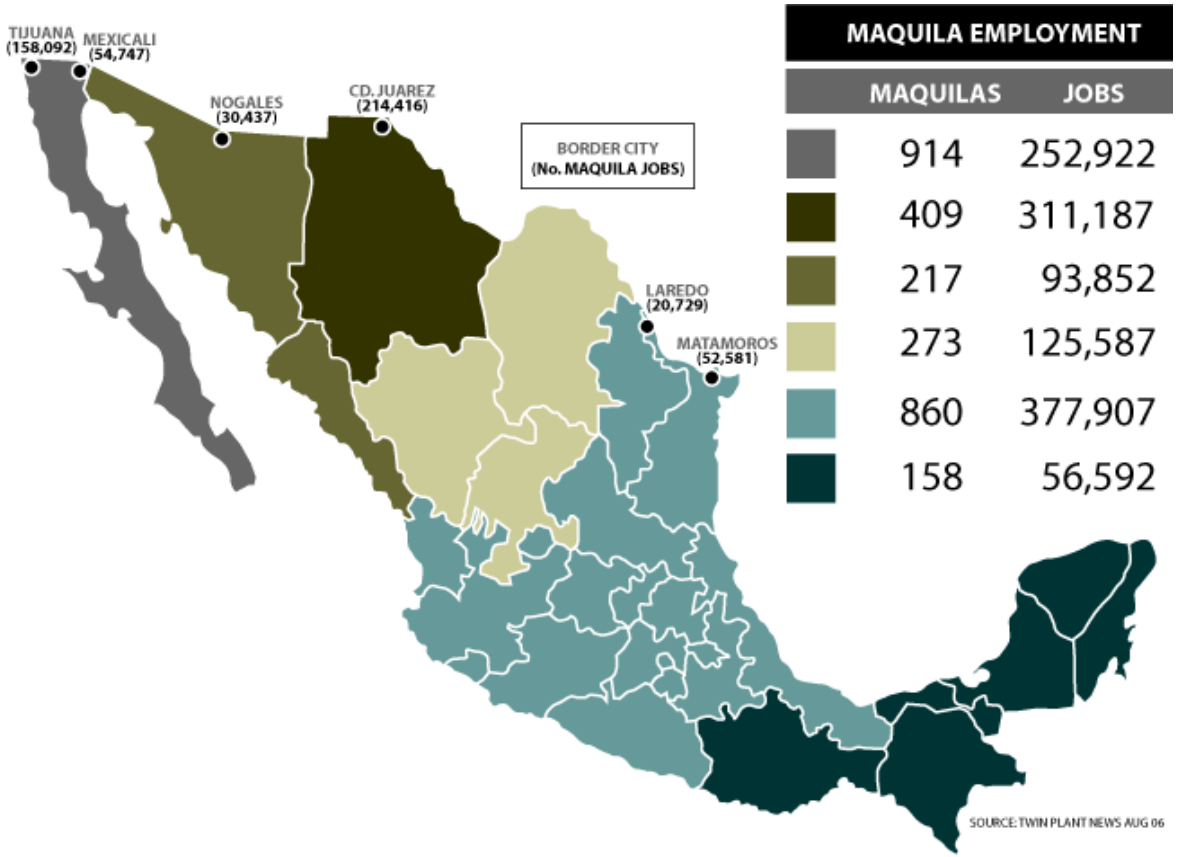
designing affordable housing out of shipping containers for cuidad juarez, mexico

maquiladoras + Cuidad Juarez

- lack of housing and facilities
- 40% in poverty



shipping containers

- 17 million empty containers worldwide
- 700,000 empty containers in the U.S.

goals + objectives

• improve the standard of living of *maquiladoras* workers in Ciudad Juárez by providing an affordable and desirable housing

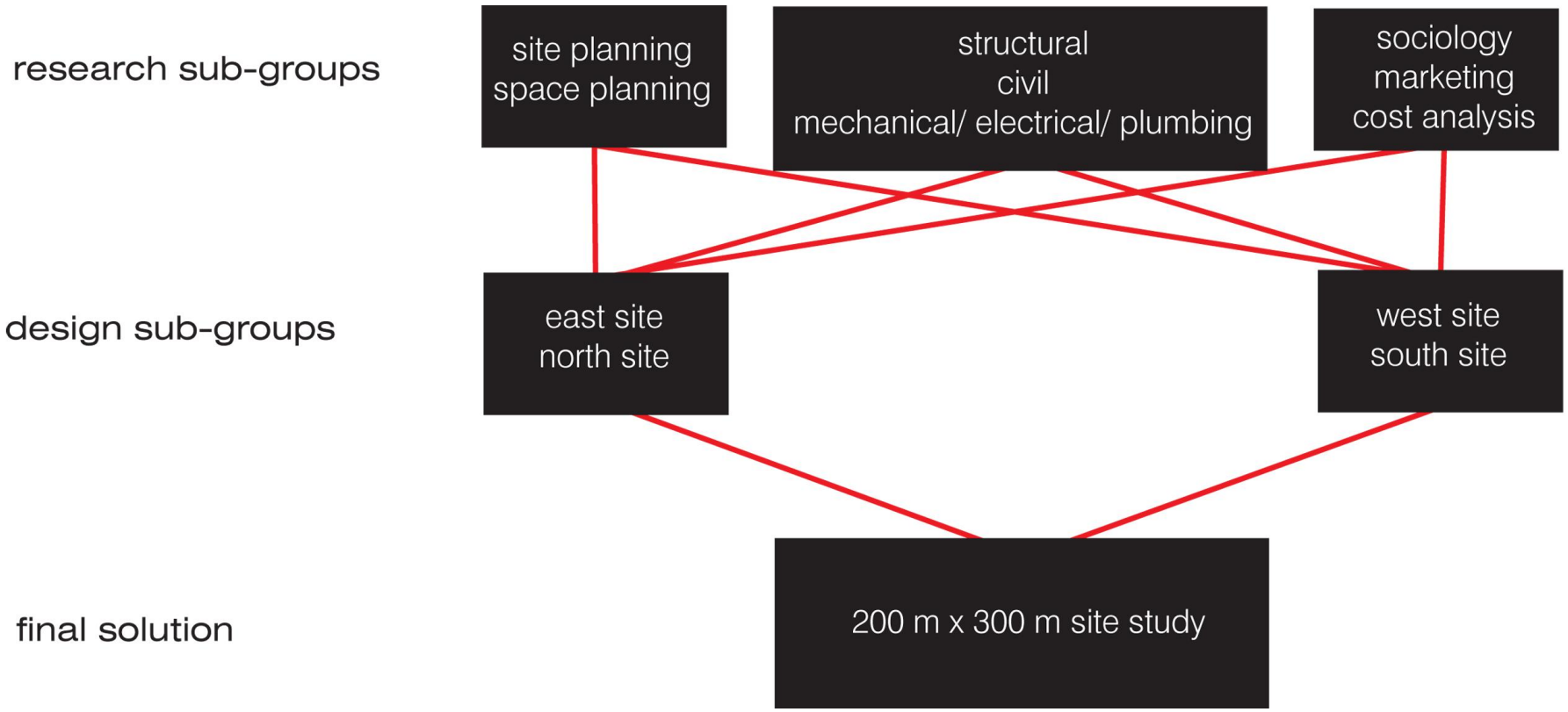
• create a safe and pleasant community

• provide dignity and choice to residents of the community

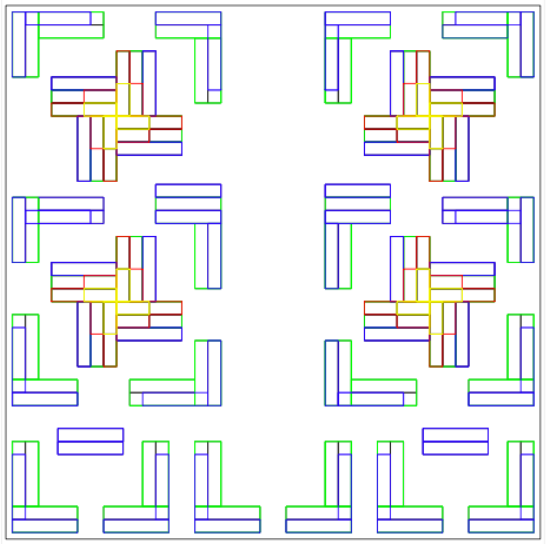
• create a sense of pride and ownership for residents of the community

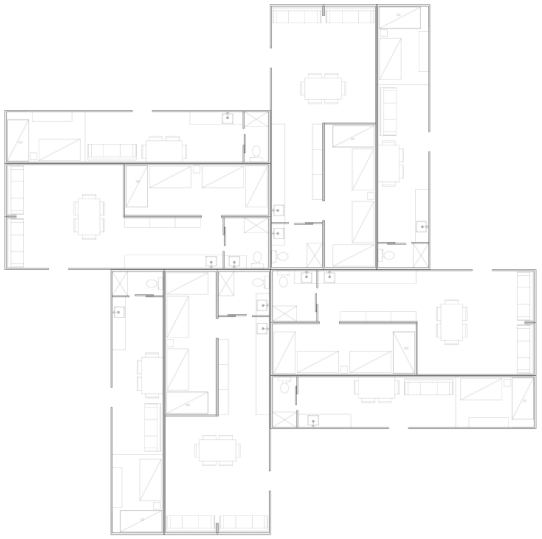
• provide comfortable living spaces that protect the inhabitants from the harsh environment

methodology



west + south site studies



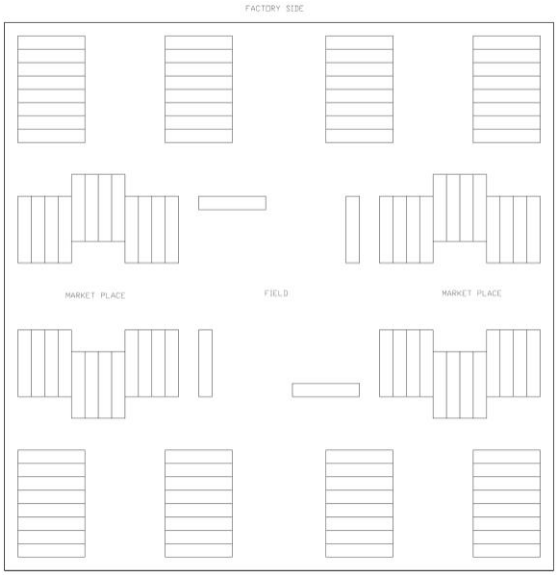


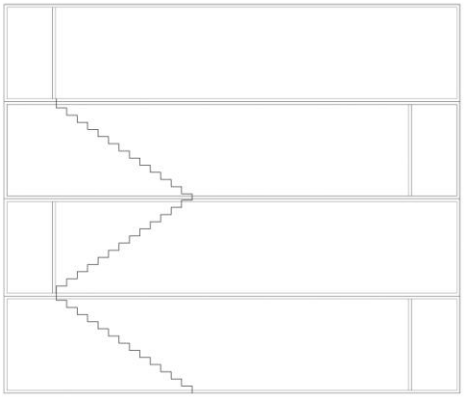
•to create courtyard spaces that would allow each unit to have access to more private outdoor space

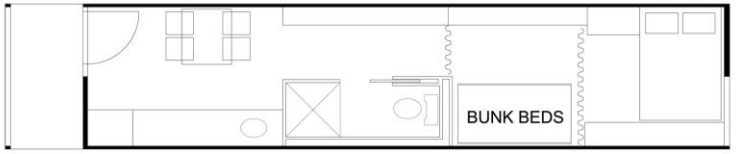
•Provide a variety of different sized housing options

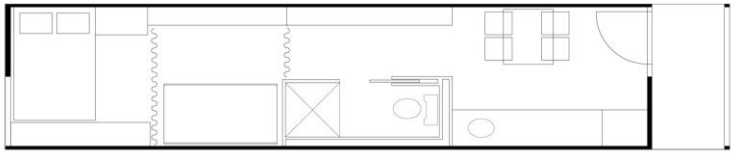
•Create an aesthetic that disguises the idea of ‘shipping containers’

West site: 4 unit types, 130 Units. 530 people



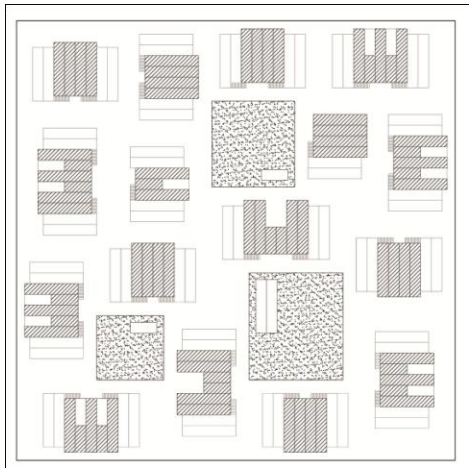




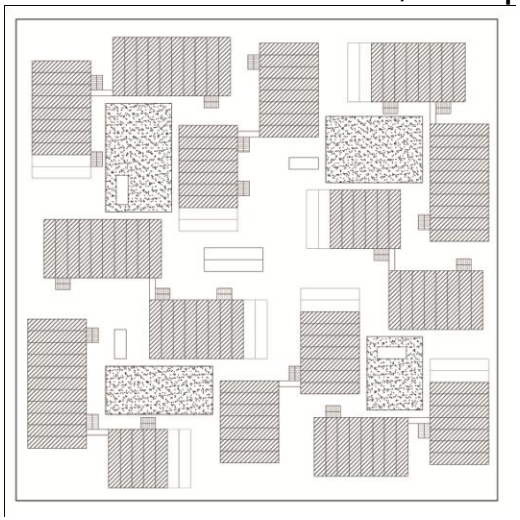


South site: 2 unit types, 352 units, 1408 people

north + east site studies

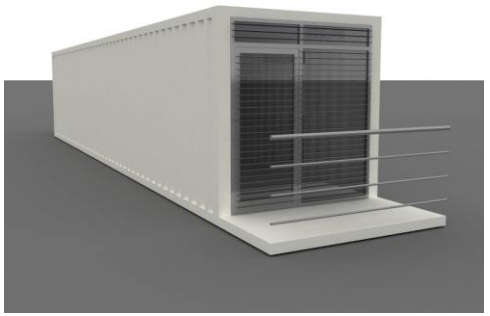


East site: 100m x 100m, 3 unit types,
111 Units, 555 people, 555 people/ hectare



North site: 100m x 100m, 2 unit types,
512 units, 2,560 people, 2,560 people / hectare

- Vehicular corridors restrained to site's perimeter
- Security gained by visibility
- Maximum of four containers tall
- Incorporation of potential commercial activity within site
- Adaptability to similar situations around the world
- Accommodation of culture in the physical environment



final site

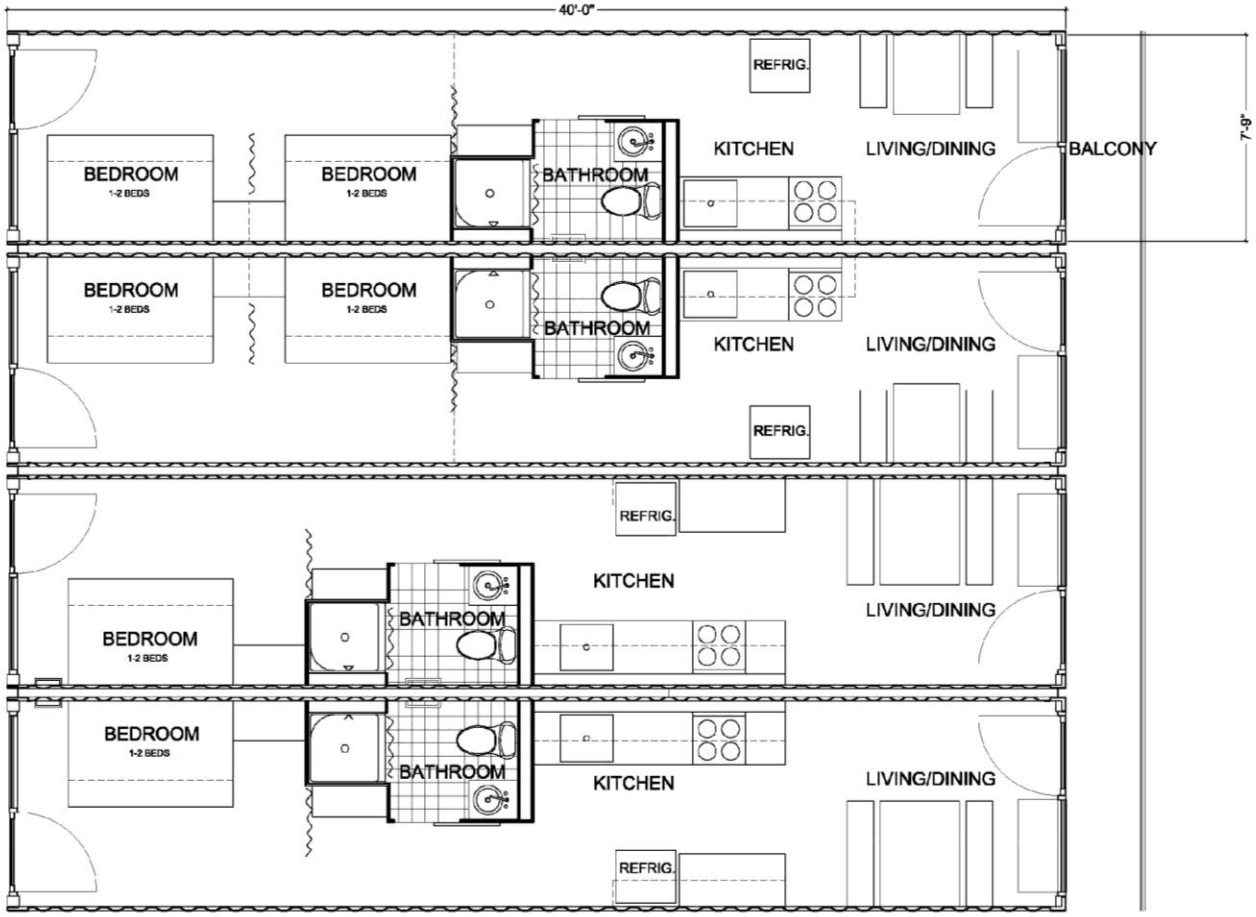
Final site: 200m x 300m, 3 unit types,
1,773 units, 8,865 people, 1,478 people / hectare

N

unit types

Proposed Unit Plan A

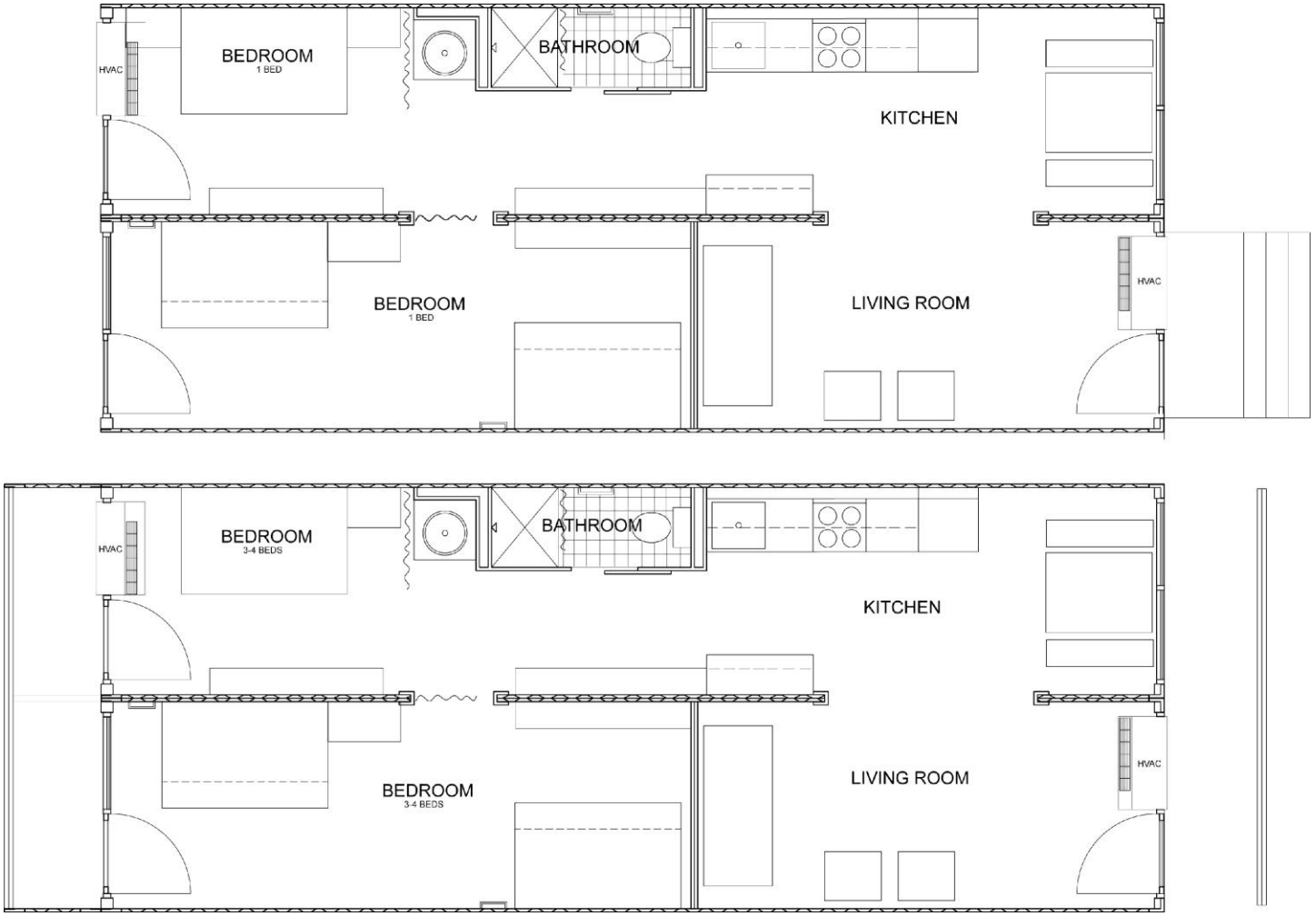
shell: 8 ft. x 40 ft. modified shipping container



Proposed Unit Plan B

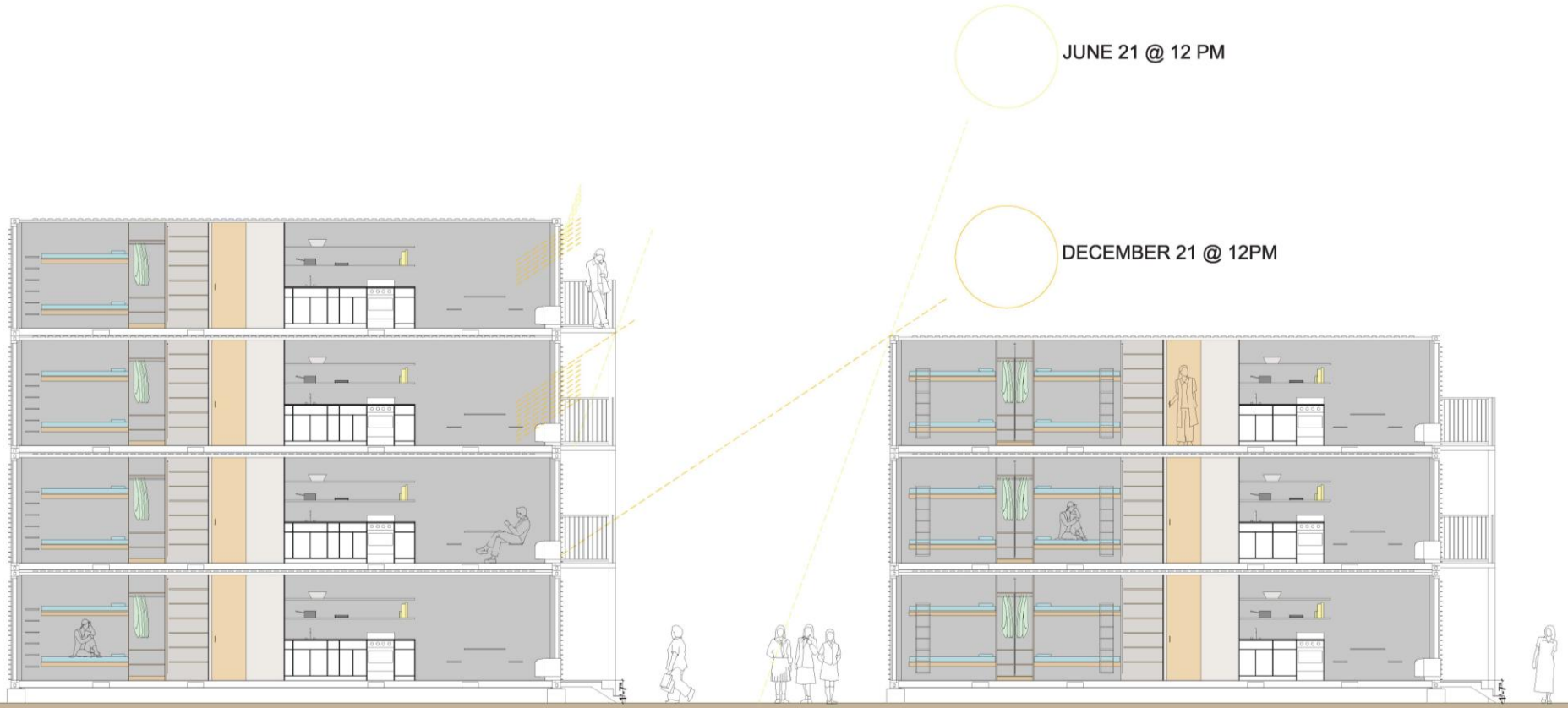
shell: 8 ft. x 40 ft. modified shipping container

unit types



Proposed double-unit plan

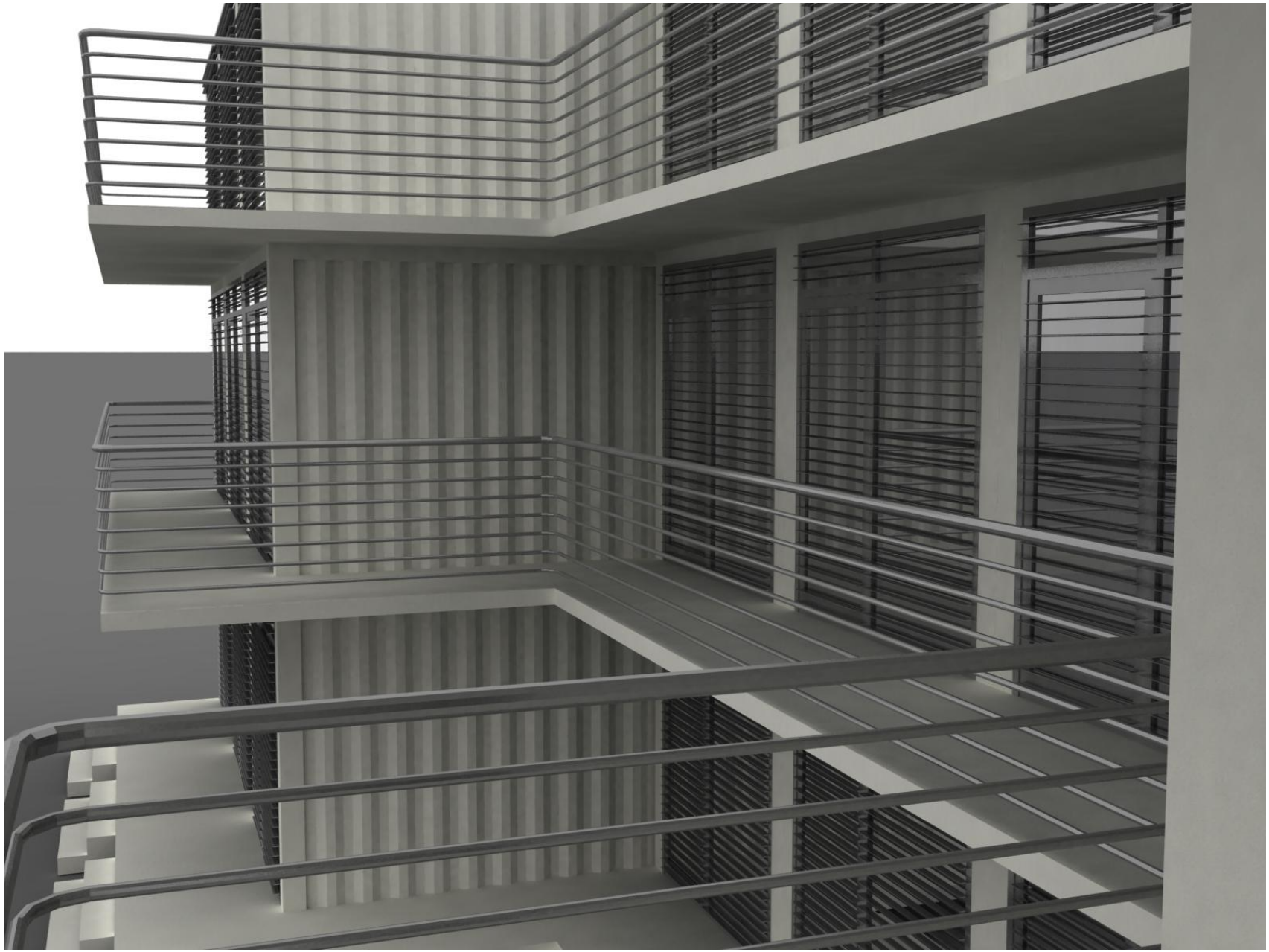
shell: 2 - 8 ft. x 40 ft. modified shipping containers

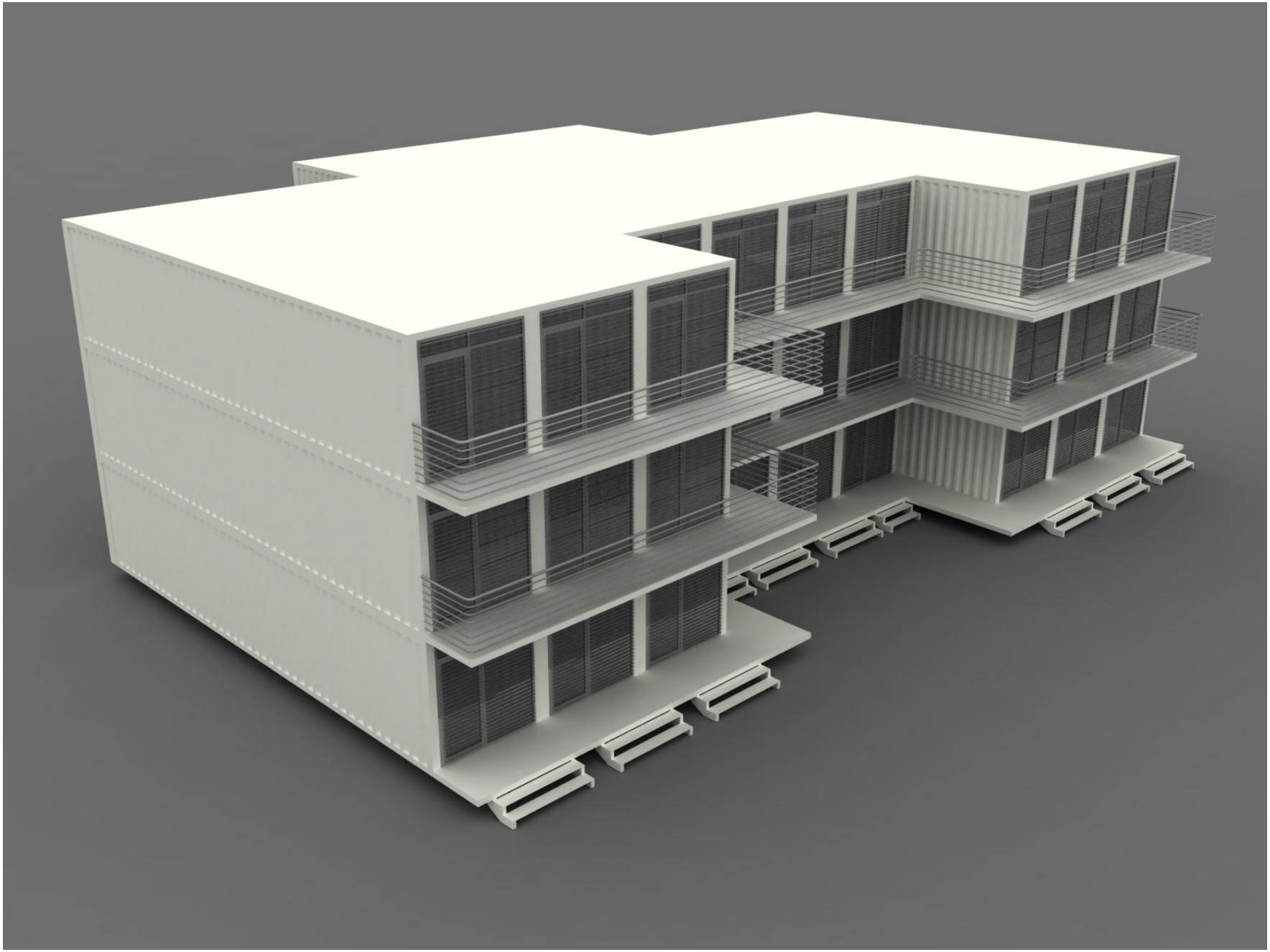


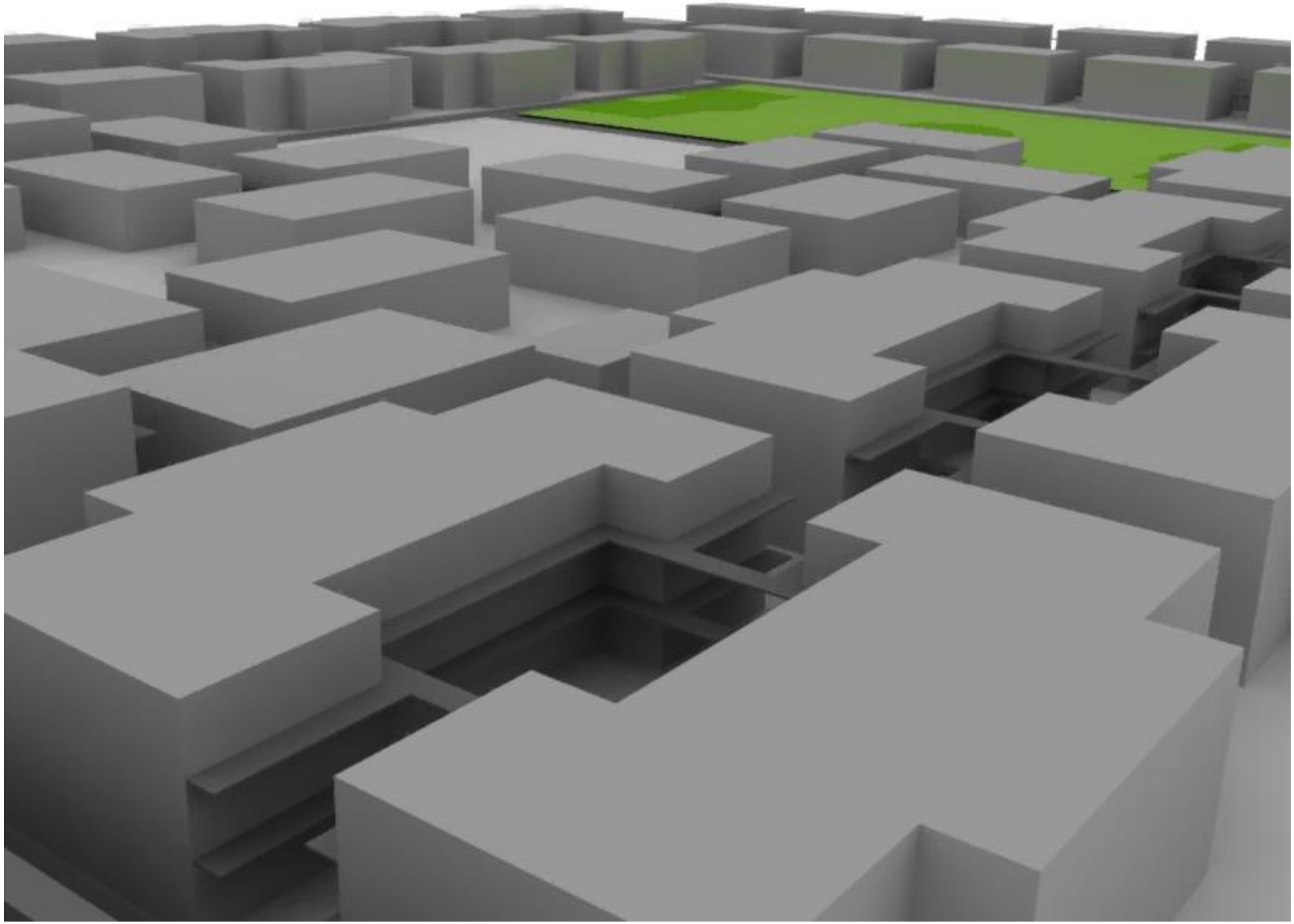
1 SECTION (TYP.)

SCALE: 1/4" = 1'-0"

cost

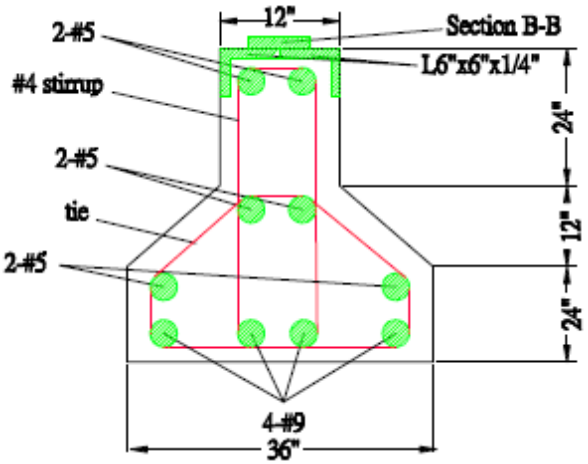


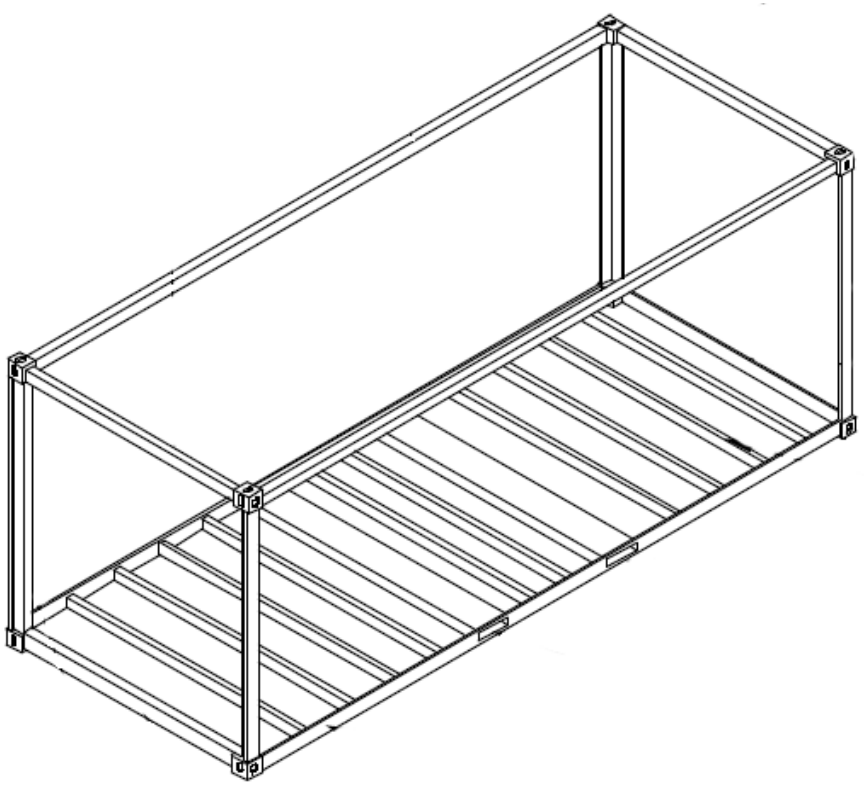




shipping container as structure

- Rigid steel frame, primary load bearing component
- Concrete foundations required

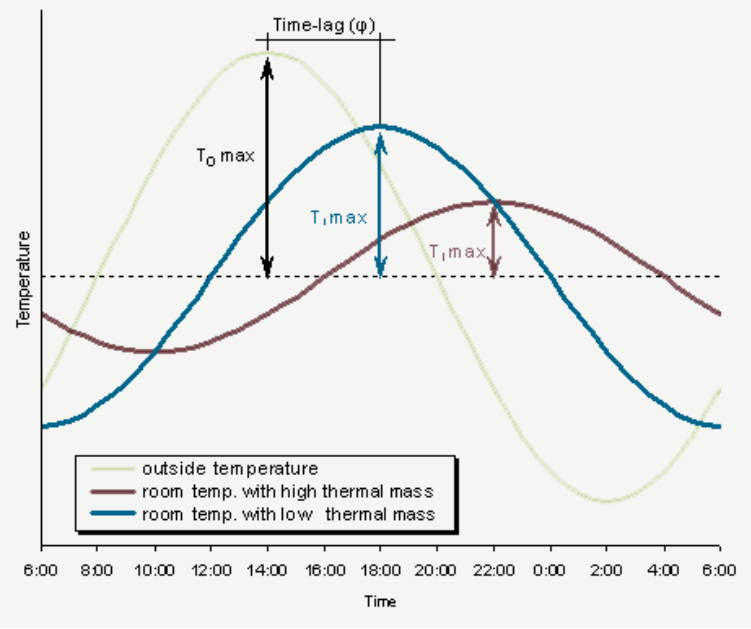




cob as thermal insulation

- Low thermal conductivity (0.6 W/m*K) compared to steel (50 W/m*K)

- High thermal mass



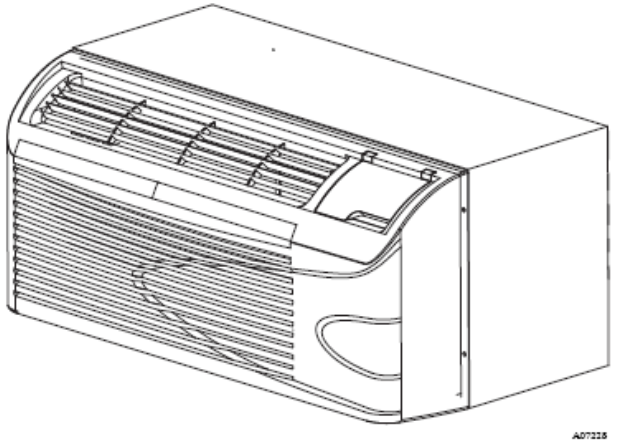
- A natural resource

mechanical system

- Heating and Cooling loads:

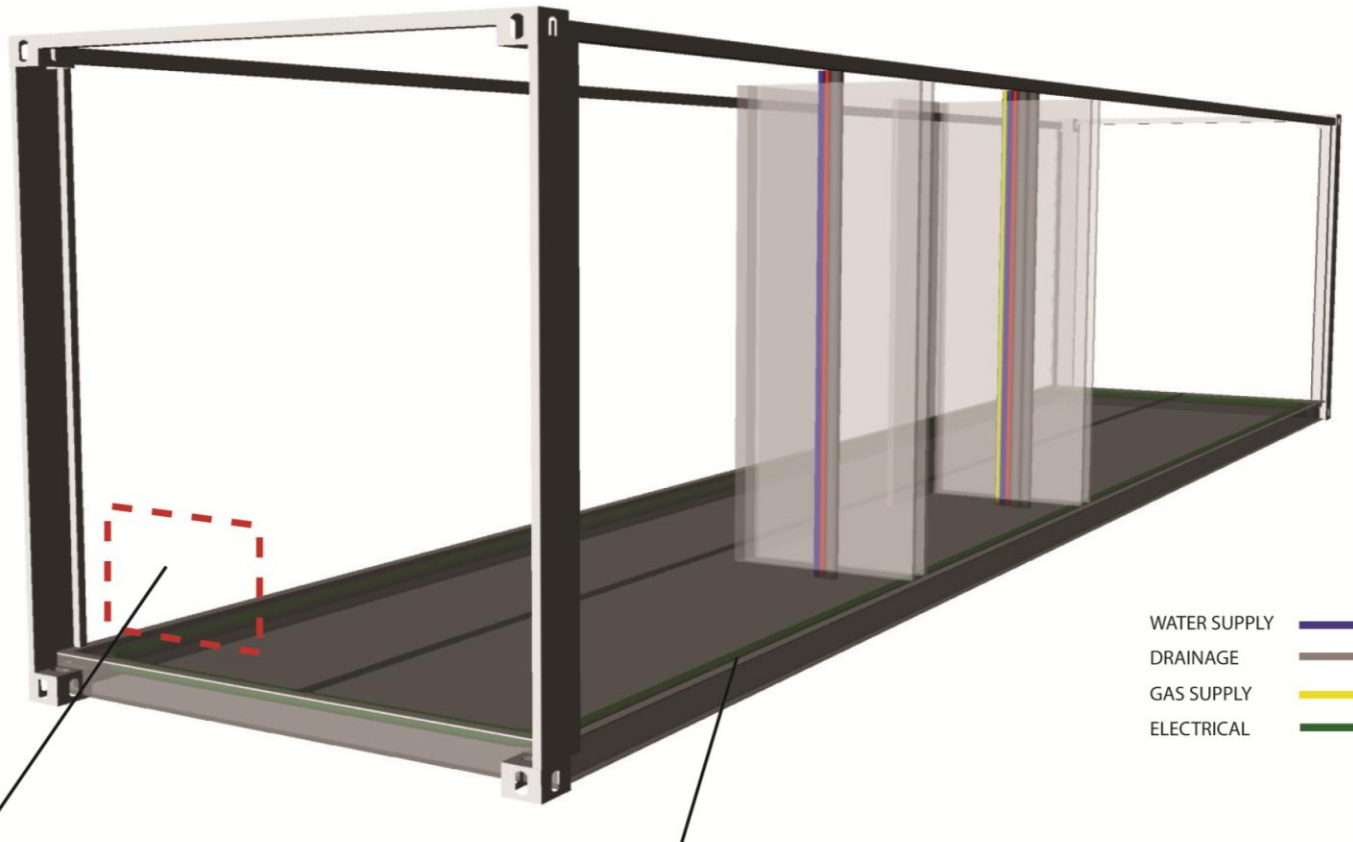
Building Orientation	Cooling Load (Btu/hr)	Heating Load (Btu/hr)
North-South	10,000	15,000
East-West	15,000	15,000

- PTAC, heats and cools



mechanical system

PROPOSED MEP DISTRIBUTION



MECHANICAL

INDIVIDUALLY CONTROLLED HEAT & A. C.

ELECTRICAL

COMMON RISER SYSTEM
WITH BRANCH CIRCUIT SYSTEM

PLUMBING

COMMON SHARED RISER SYSTEM
FOR WATER, WASTE AND VENTS

addressing the cultural needs

- Provide recreational, spiritual and practical areas
- Tailor cost to the average income
- Keep safety and security in mind

questions?