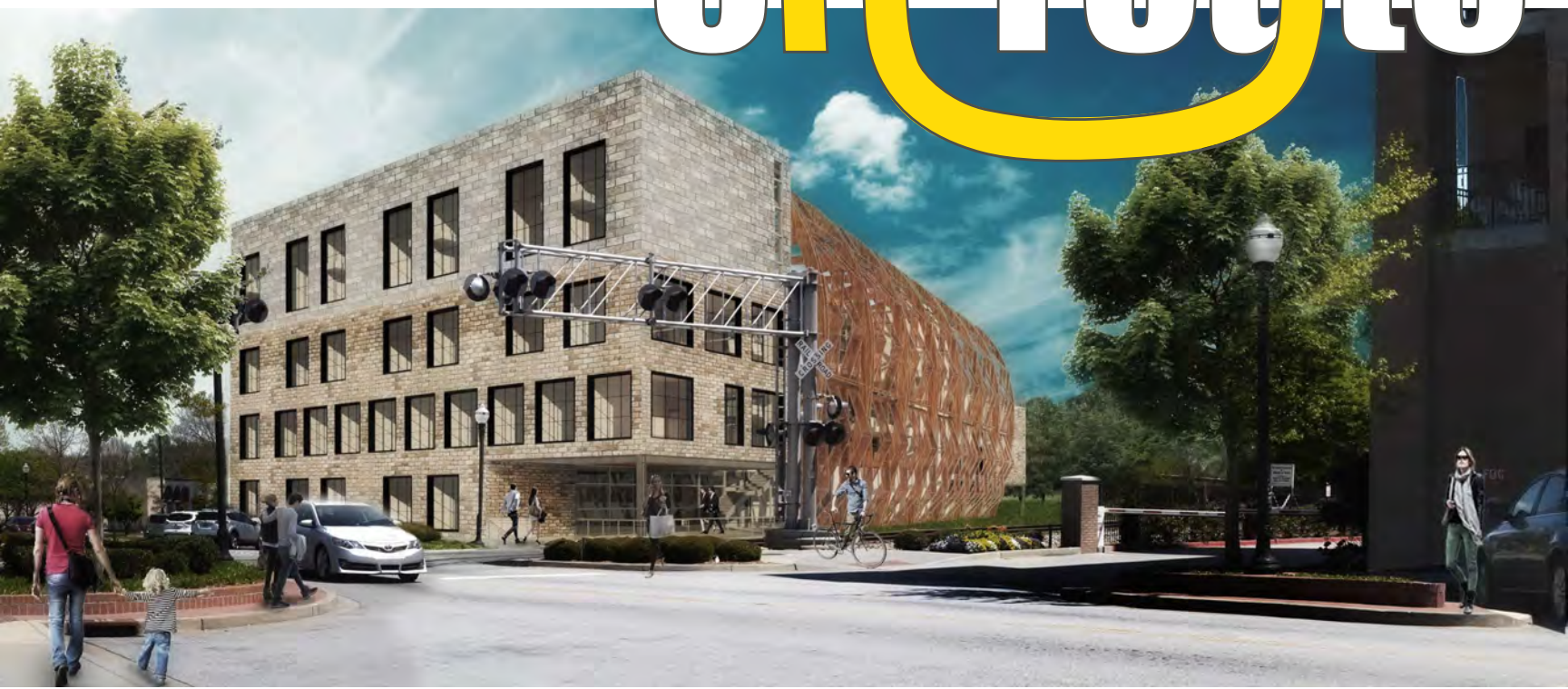
en route



Clemson University School of Architecture

Comprehensive Studio - Spring 2014

Jackie Batanglo
Katie Carter

Table of Contents

Program

LIVE-IN ENTREPRENEURIAL THINK TANK

WHY

1. Add convenience
2. Give them exposure to innovation
3. Decrease their total cost of rent
4. Increase productivity
5. Increase visible legitimacy

WHERE

In downtown Greenville, South Carolina
within 5 minute walking distance from Main St.

PRIZE

Internal Competition - Winning Project $1,000

SIZE

30 to 40 Units

3 different living units:

a. 2 bedrooms/ 2 bath
b. 1 bedroom/ 1 bath
c. studio

Offices

Conference/ Meeting spaces
Community Integration/ Mixed-use proposal

CLIENT

Bob Barreto, GBS Building Supply
Bobby Barreto, Asterisk Development

Entrepreneur Jam Session - Client Research

NEEDS

PHYSICAL SEGREGATION
COLLABORATION SPACE
SENSE OF COMMUNITY
EFFICIENT COMMUNICATION
DYNAMIC SPACES
NATURAL DAYLIGHTING
DEDICATED VISITOR PARKING
SECURED STORAGE

CHALLENGES

DISTRACTION
NOISE CONTROL
ISOLATION
ATYPICAL WORK HOURS
NETWORKING W/ PUBLIC + BUSINESSES
CONSIDERATION OF SPOUSE/FAMILY

DESIGN CONSIDERATIONS

MAKE CLEAR SEPARATION BTWN ENVIRONMENTS
NATURAL LIGHTING
FLEXIBILITY IN EFFICIENCY
COLLABORATIVE SPACES IN WORK ENVIRONMENT
CASUAL SPACES FOR INTERACTION BTWN ALL RESIDENTS

Site Based Research - Noise Reduction

FIGURE 7 // EFFECT OF A NOISE BARRIER ON THE PATH OF NOISE FROM THE RECEIVER TO THE SOURCE. A NOISE BARRIER REDUCES NOISE LEVELS IN THREE WAYS: BY DEFLECTING NOISE OFF OF IT, BY DAMPENING THE NOISE THAT IS TRANSMITTED THROUGH IT, AND BY BENDING, OR DIFFRACTING NOISE OVER IT. THE AREA RECEIVING THE MOST PROTECTION BY THE NOISE BARRIER IS TYPICALLY REFERRED TO AS THE "SHADOW ZONE".

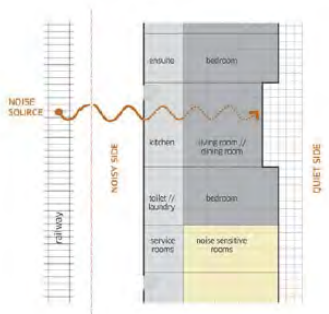


FIGURE 9 // LOCATING NOISE SENSITIVE ROOMS AWAY FROM RAIL NOISE IN DETACHED DWELLINGS; AND FIGURE 10 (RIGHT) - LOCATING NOISE SENSITIVE ROOMS AWAY FROM RAIL NOISE IN MULTI-UNIT DWELLINGS. (SOURCE: ADAPTED FROM FIGURE 3.6 IN THE DEVELOPMENT NEAR RAIL CORRIDORS AND BUSY ROADS - INTERIM GUIDELINE BY THE STATE OF NEW SOUTH WALES, AUSTRALIA)

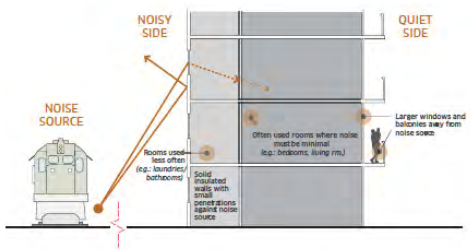


FIGURE 10 // LOCATING NOISE SENSITIVE ROOMS AWAY FROM RAIL NOISE IN MULTI-UNIT DWELLINGS (SOURCE: ADAPTED FROM FIGURES 3.5 & 3.6 IN THE DEVELOPMENT NEAR RAIL CORRIDORS AND BUSY ROADS - INTERIM GUIDELINE BY THE STATE OF NEW SOUTH WALES, AUSTRALIA)

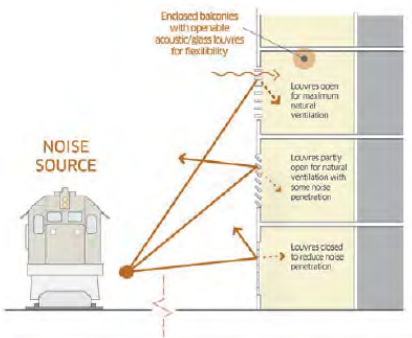


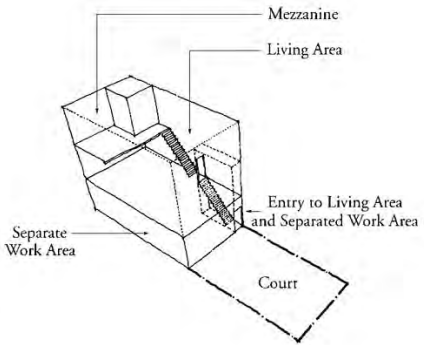
FIGURE 12 // USING ENCLOSED BALCONIES FACING A RAILWAY CORRIDOR AS NOISE SHIELDS. (SOURCE: ADAPTED FROM FIGURE 3.16 IN THE DEVELOPMENT NEAR RAIL CORRIDORS AND BUSY ROADS - INTERIM GUIDELINE BY THE STATE OF NEW SOUTH WALES, AUSTRALIA).

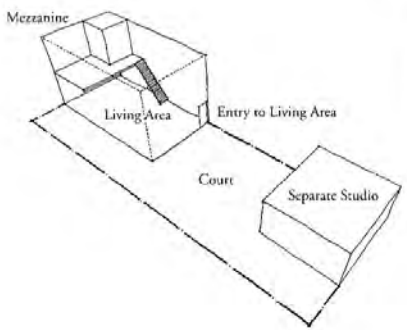
Program Research

LIVE-NEAR™

Live-Near™ meets the needs of those who feel that the proximity afforded by live/work is important, but who would nevertheless would like some separation between living and working spaces. This can be to minimize exposure to hazardous materials or high-impact work activity, out of consideration for family or roommate, or simply to fill the need for the bit of distance created by a wall or floor. In a live-near™ unit, the living portion may more closely resemble an apartment or townhouse. The work space is separated by a wall (sometimes glazed and sometimes fire rated) or a floor.

> *"A live-near™ unit is particularly appealing to artists with families, two non-intimate roommates, or anyone who wants some separation from their work." (South Prescott Village case study, 1989)*





LIVE-NEARBY™

In this configuration, a short walk separates the living portion and the work space– across a courtyard, to a converted garage or other accessory structure, or up or down an exterior staircase, for example. While this type may initially appear to be simply mixed use, classification as live/work may permit its existence in places where a residential or a commercial space alone might not be permitted.

"Housing over retail, i.e. live-nearby,™ is definitely a form of live-work." (*Live-Work Planning and Design: Zero-Commute Housing*, 2012)

" if you combine a great place to live with well-ordered workplaces and pay attention to the life between the buildings, you have the makings of a great community"

- Thomas Dolan

PROGRAM

• LIVE

studio	500 SF	X 10	=	5000 SF
1bed/1bath	750 SF	X 10	=	7500 SF
2bed/2bath	900 SF	X 10	=	9000 SF
mail room	125 SF	X 1	=	125 SF

TOTAL
21,625 SF

• WORK

office space	150 SF	X 30	=	4500 SF
recept/lobby	200 SF	X 1	=	200 SF
waiting area	100 SF	X 1	=	100 SF
conference	250 SF	X 2	=	500 SF
collaborative	250 SF	X 1	=	250 SF
classroom	400 SF	X 1	=	400 SF
storage/print	125 SF	X 3	=	375 SF
lounge/kitchen	300 SF	X 1	=	300 SF
restrooms	100 SF	X 8	=	800 SF

TOTAL
7,425 SF

• COMMUNITY

indoor common	300 SF	X 2	=	600 SF
outdoor common	1000 SF	X 1	=	1000 SF

TOTAL
1,600 SF

TOTAL
30,650 SF

CIRCULATION: 20%
6,130 SF

MECHANICAL: 5%
1,532

GRAND TOTAL
38,312 SF

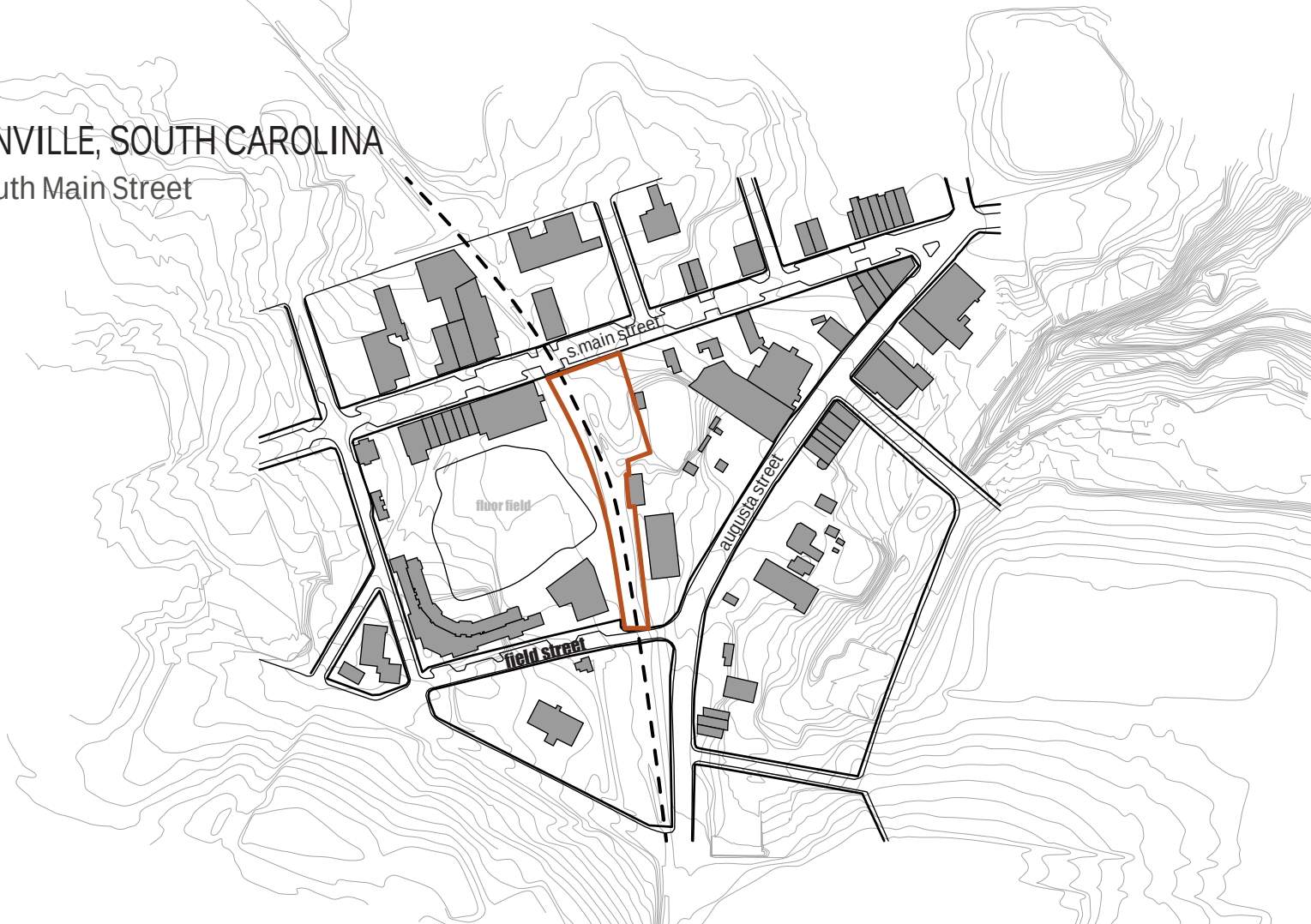
PARKING (NOT INCLUDED)
60 Spaces
14,520 SF

Site Location & Analysis

Site

GREENVILLE, SOUTH CAROLINA

911 South Main Street



Site Analysis

SWOT Diagram

	HELPFUL to achieving the objective	HARMFUL to achieving the objective
INTERNAL ORIGIN attributes of the organization	STRENGTHS - directly connected to downtown - main street frontage - close proximity to other businesses, entertainment, and amenitites - slow traffic - highly developed streetscape, sidewalks - walking distance to parks, bike trails, and downtown attractions - unique, expanding neighborhood	WEAKNESSES - small site - minimal space for parking - neighboring businesses are more industrial giving unpleasant view - faces service side of Fluor Field
EXTERNAL ORIGIN attributes of the environment	OPPORTUNITIES - make connections with historic district - host events for Fluor Field - high volume of foot traffic near site - celebrate site conditions of train	THREATS - adjacency to train tracks - loud noise from ball park - setback requirements of train tracks

Sun Analysis

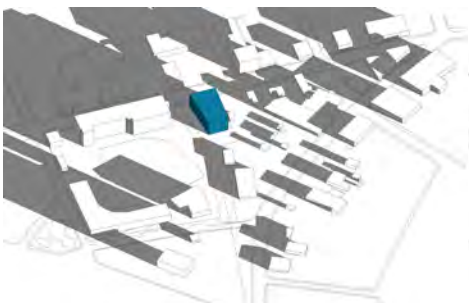
June

8 am

12 pm

5 pm

December



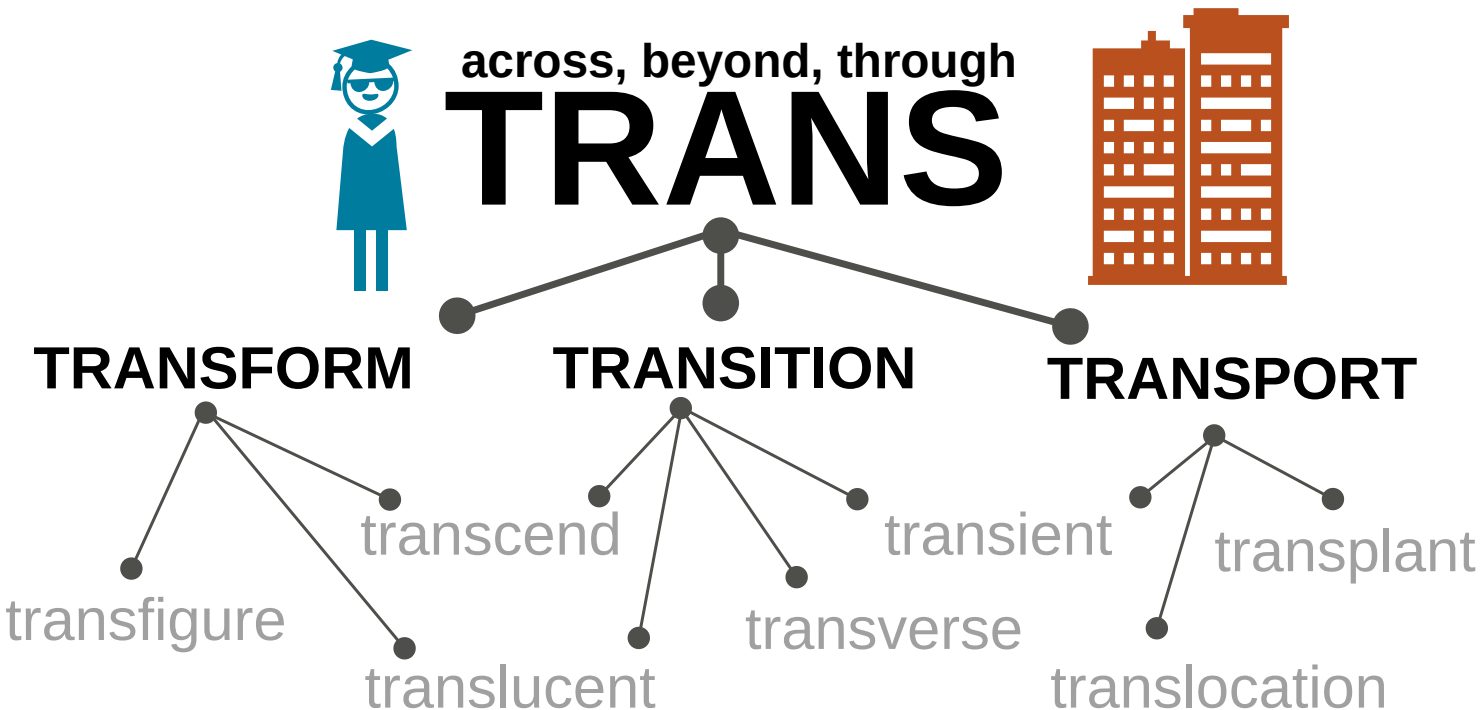
8 am

12 pm

5 pm

Pre-Design: Concept Proposal

Concept


across, beyond, through
TRANS
TRANSFORM
TRANSITION
TRANSPORT
transfigure
transcend
translucent
transient
transverse
transplant
translocation

translucent

transcend

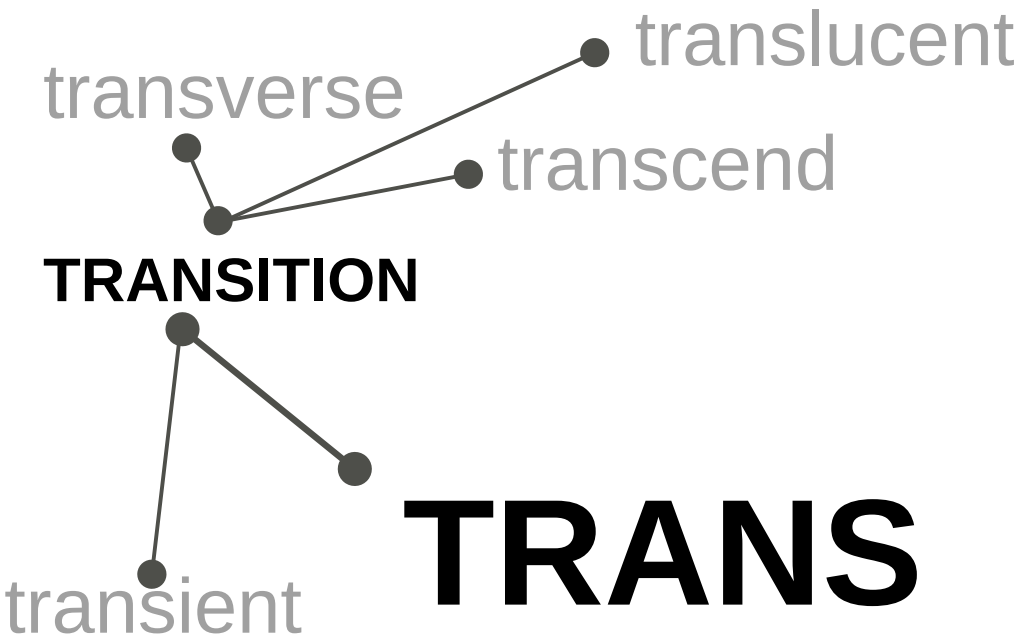
transfigure

TRANSFORM

TRANS

BUILDING ELEMENTS

- **multi-function walls, windows, furniture**
- **flexibility in efficiency**



PEOPLE

- **moving throughout, crossing thre-sholds of live -work-community**
- **public vs. private**
- **circulation**

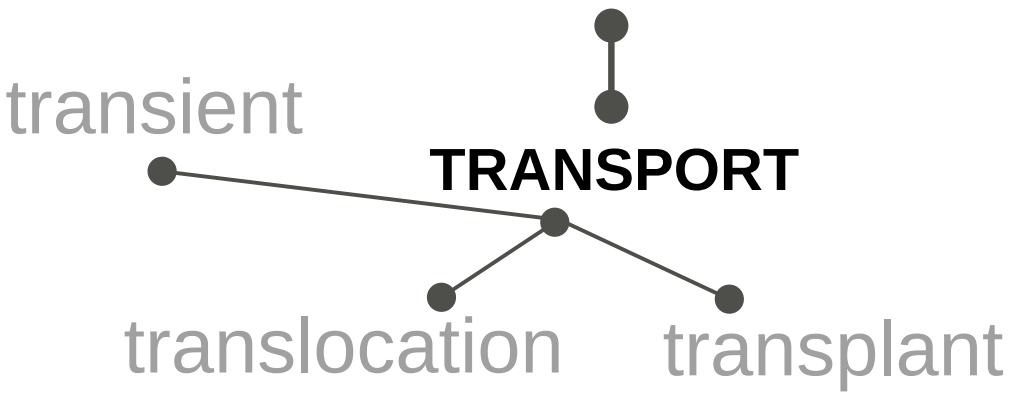
SITE

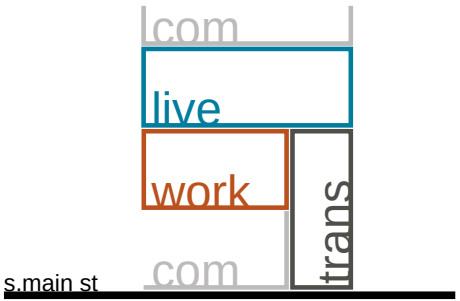
- **train tracks, motion of business**

PEOPLE

- **temporary living**

TRANS

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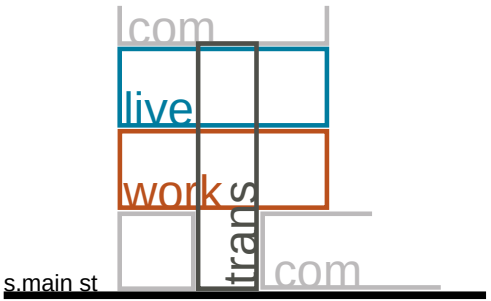
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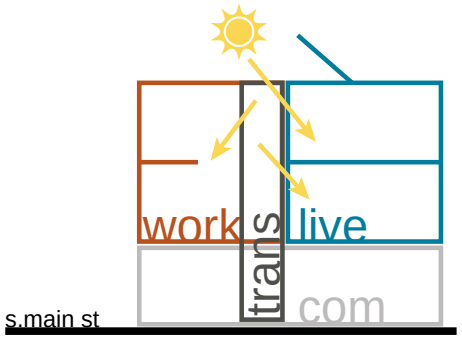
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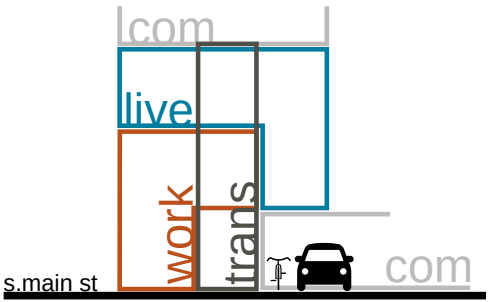
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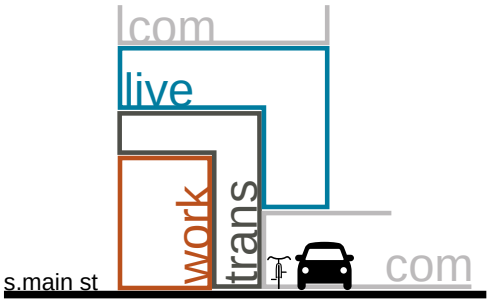
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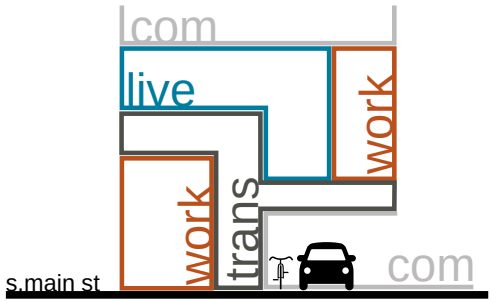
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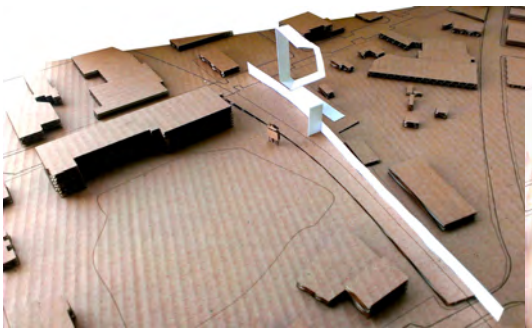
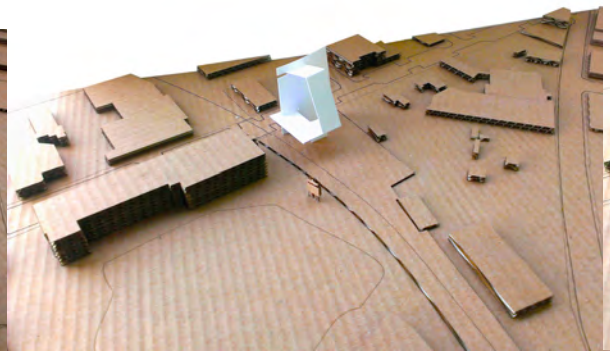
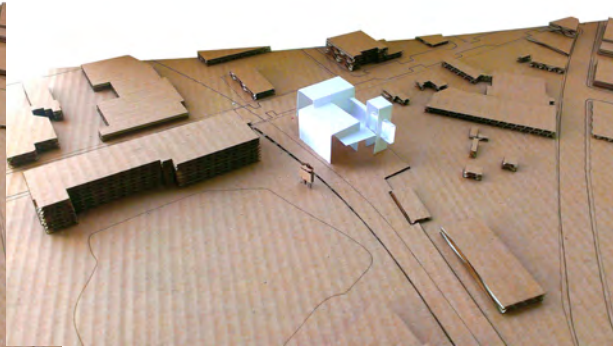
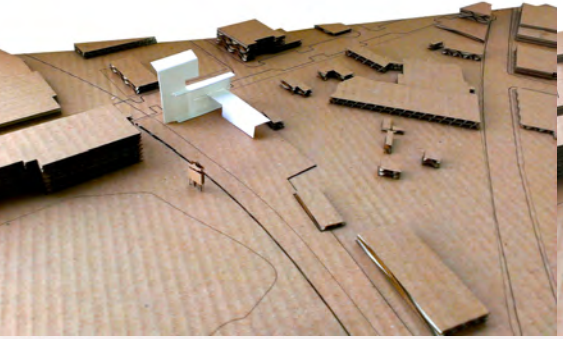
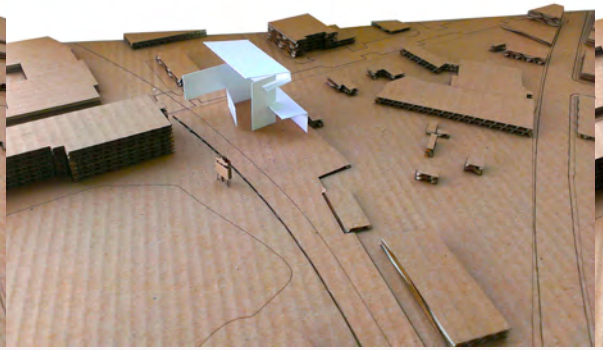
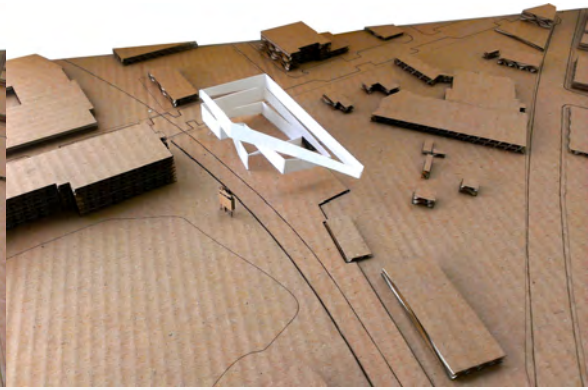
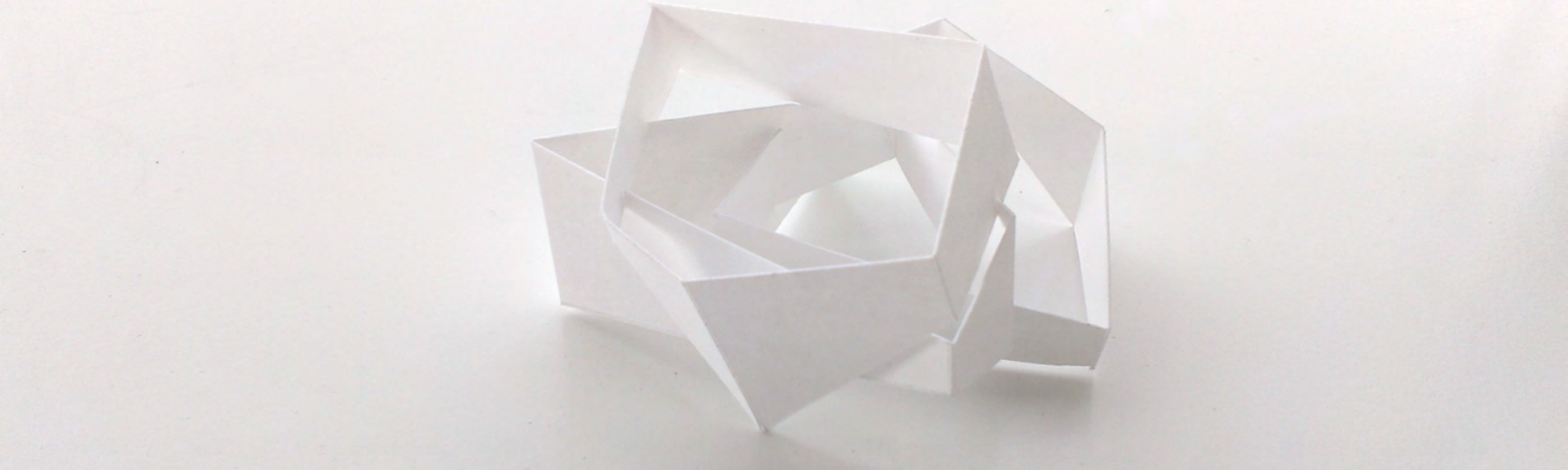
Concept Models



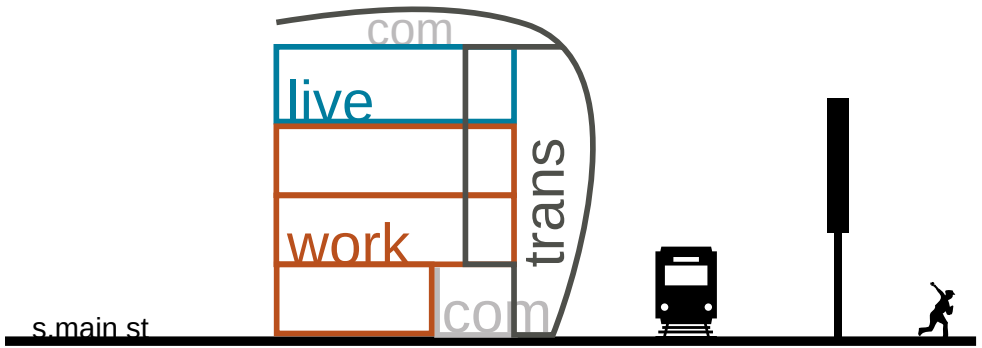


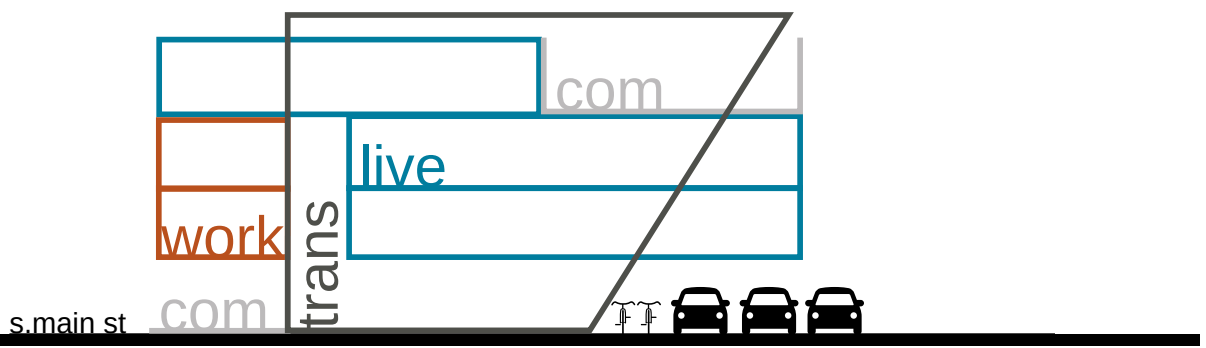


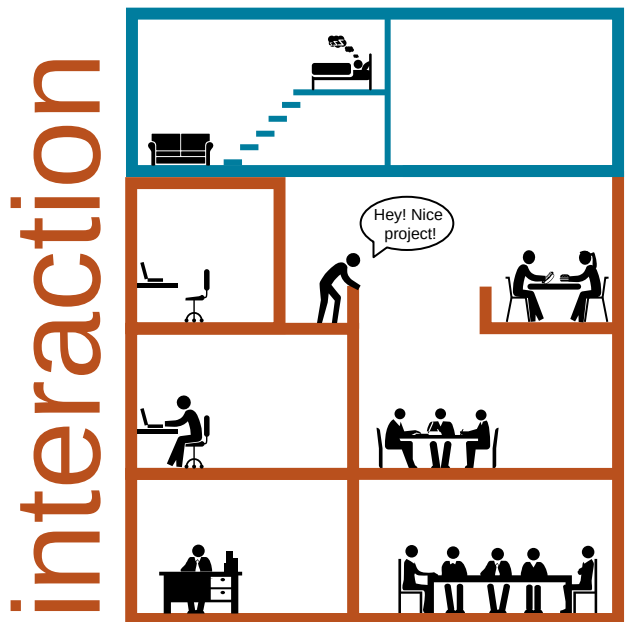
Design Development: Building Planning

Programmatic spaces are arranged so that work areas are facing south main street for street frontage and pedestrian visibility. Dwelling units are moved to the southern side of site for more privacy and noise control. A transition space acts as a buffer from the train noise and the harsh sunlight from the west.

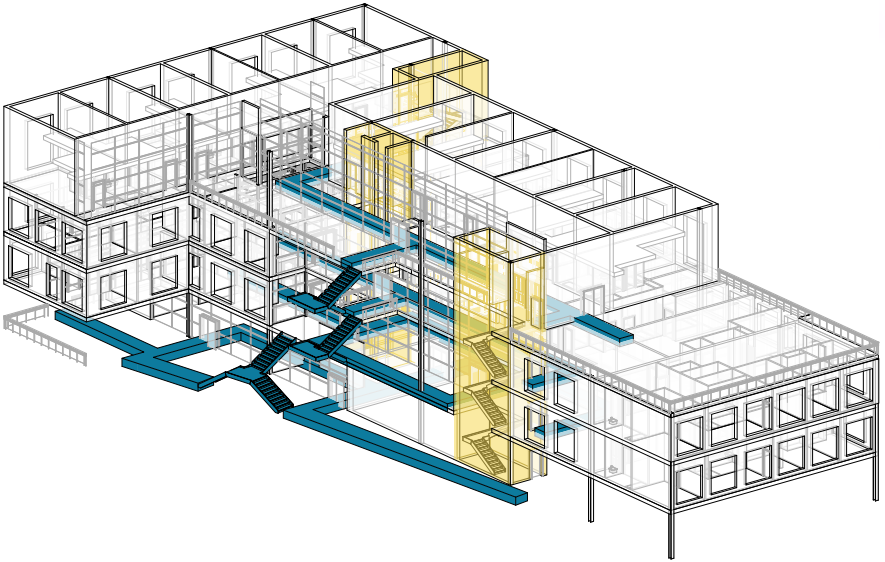




The work area is designed for collaboration through staggering the various levels of offices to promote interaction between the businesses.



Circulation/ Transition Space



Canopy Design Development

site distinctiveness

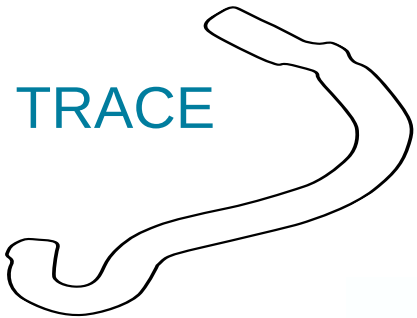
railroad

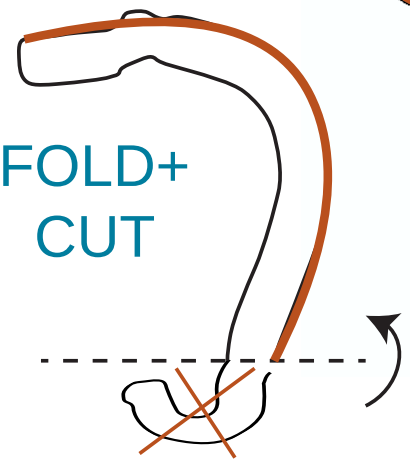
site detail

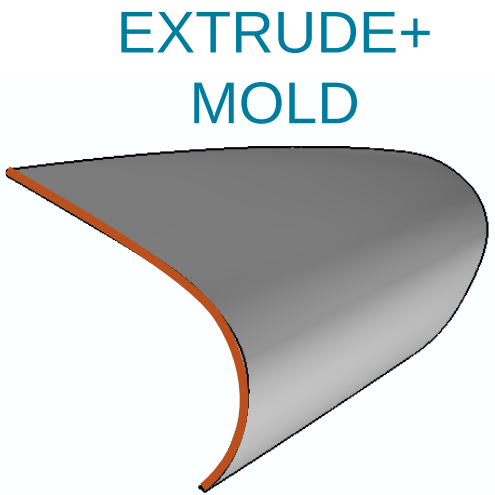
railway fastening system

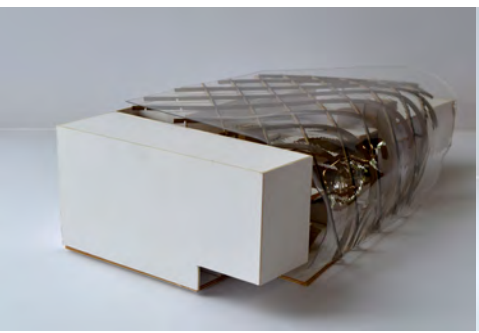
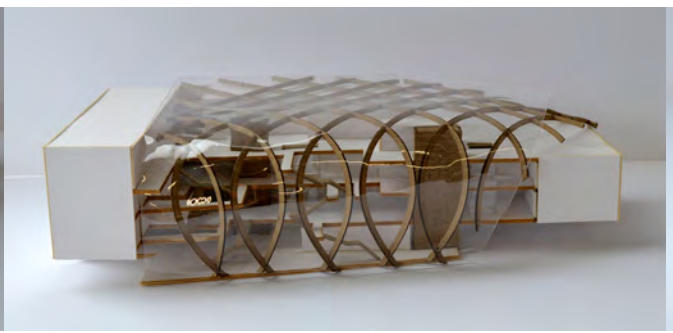
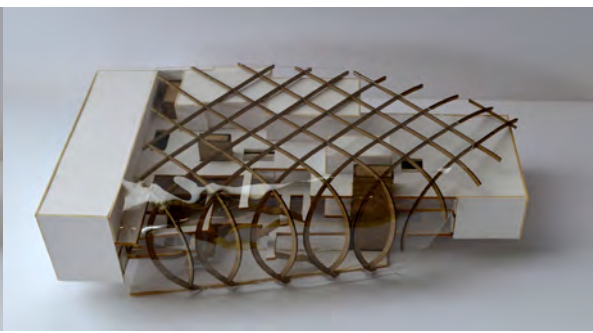
rail anchor

attaches the base of the rail to the crosstie

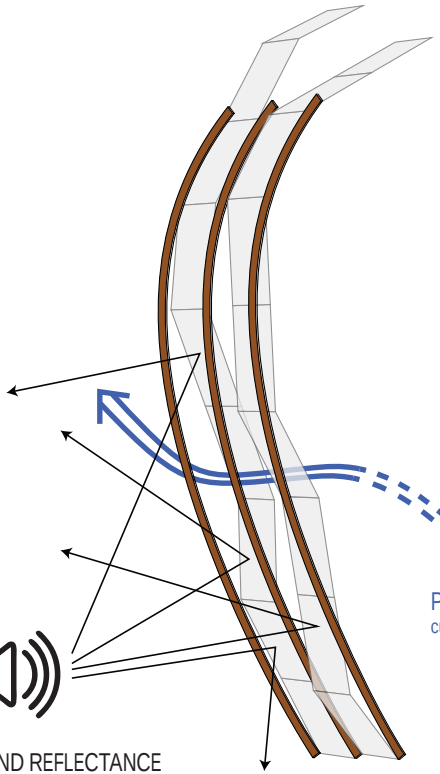






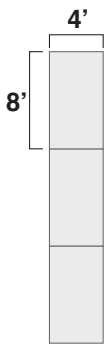
SUN FILTER

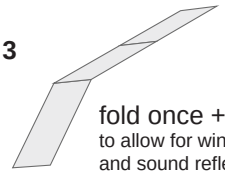


PASSIVE COOLING
cuts heating + cooling costs

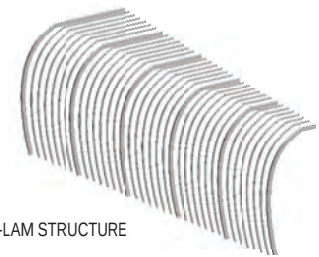
SOUND REFLECTANCE

STANDARDIZED
PANEL SYSTEM

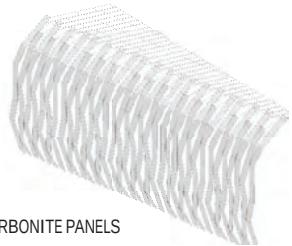




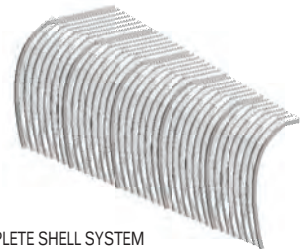
fold once + repeat
to allow for wind harnessing
and sound reflectance



GLU-LAM STRUCTURE



POLYCARBONITE PANELS

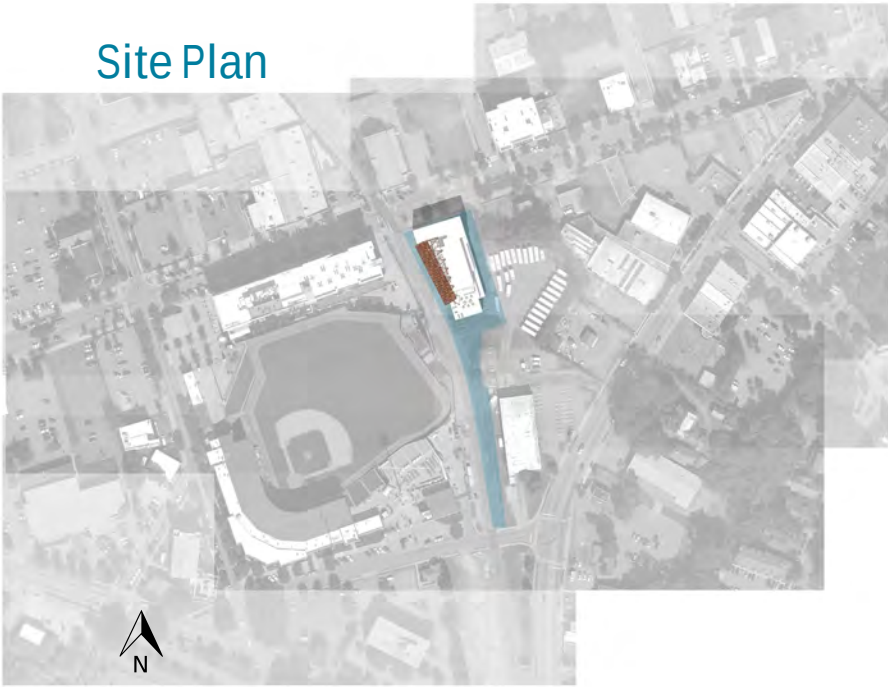


COMPLETE SHELL SYSTEM

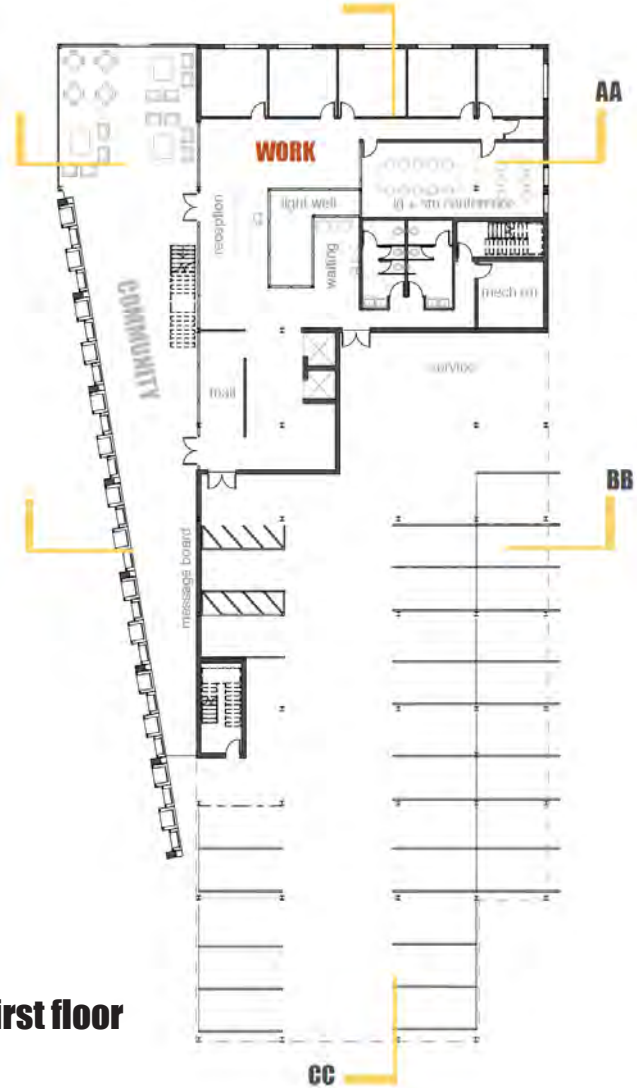


Final Design: Comprehensive

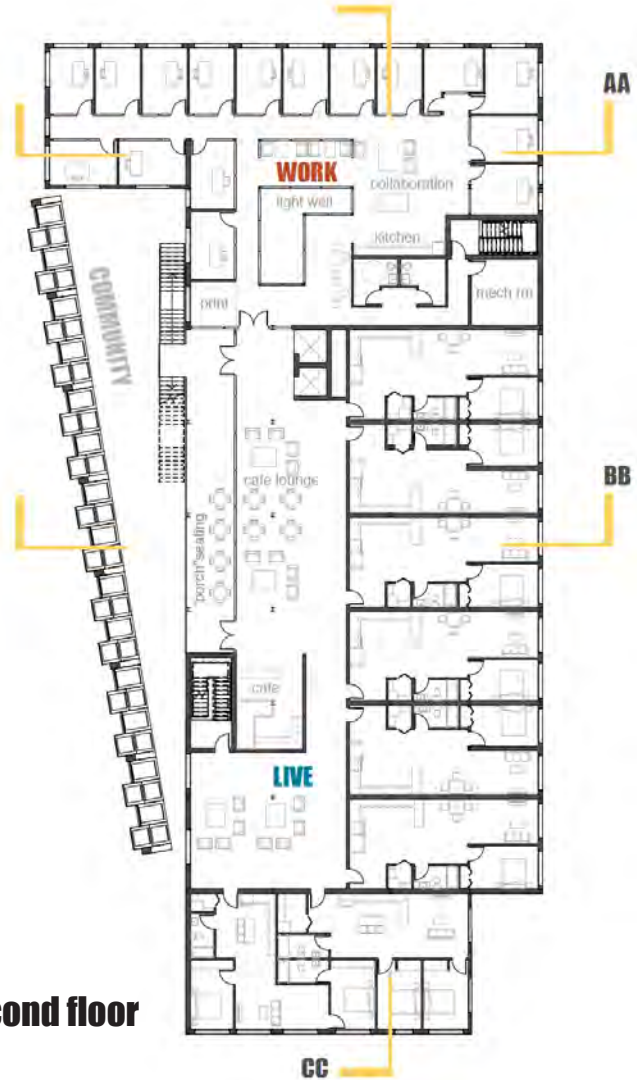
Site Plan



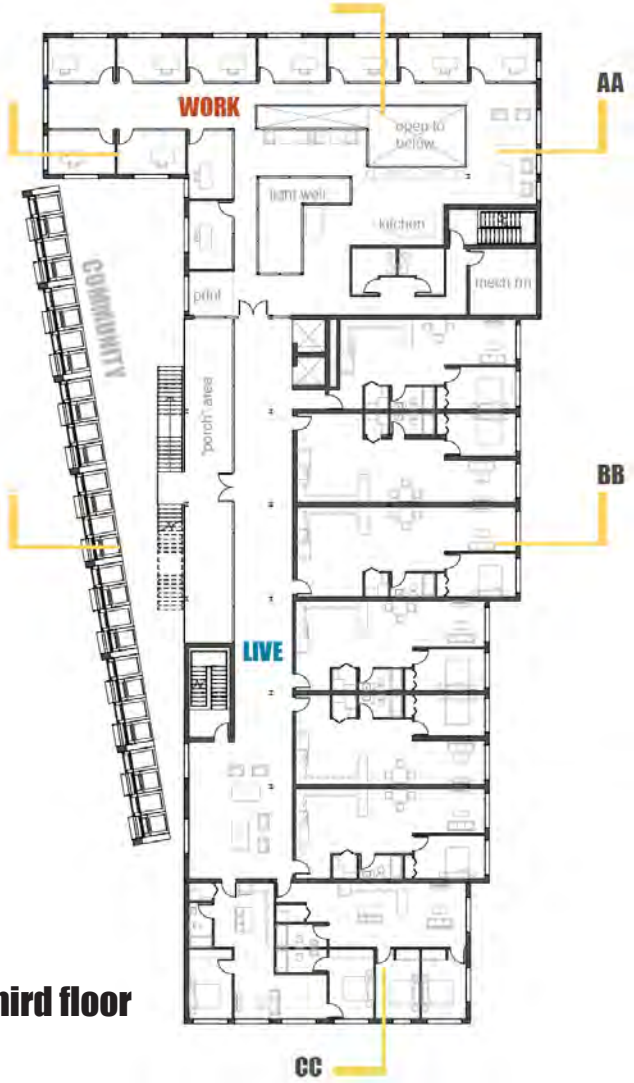
Floor Plans



first floor



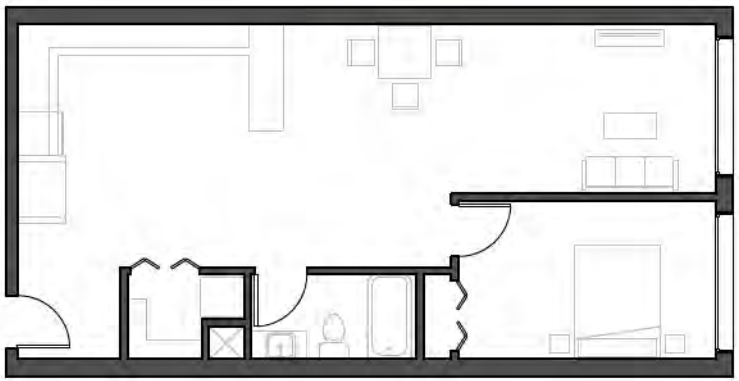
second floor



third floor

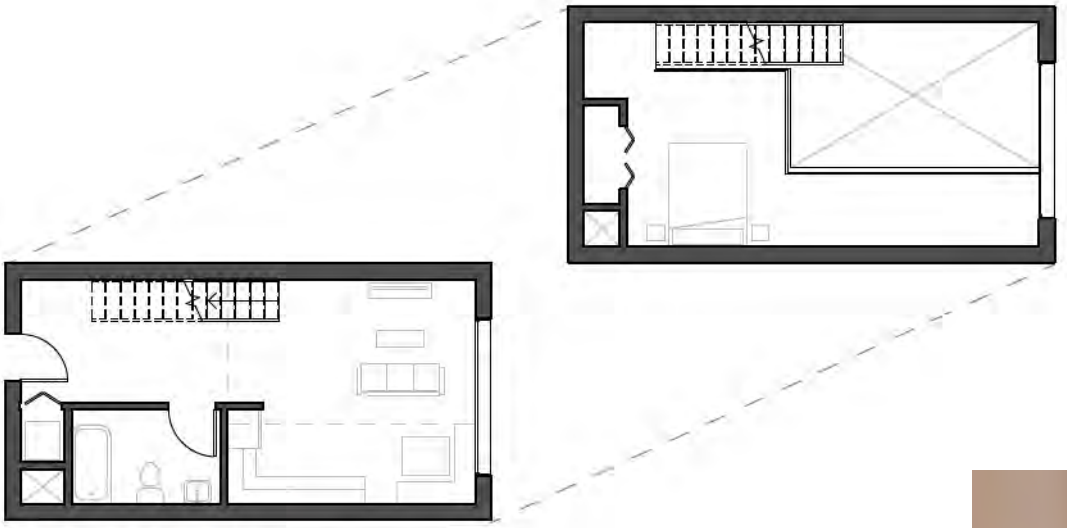
fourth floor

Dwelling Unit Plans



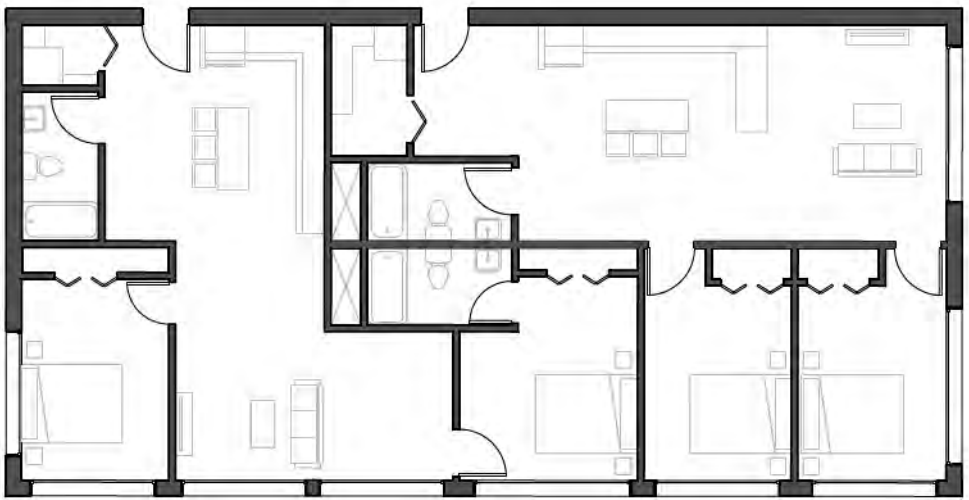
1 BEDROOM UNIT

800 SF



STUDIO LOFT

600 SF



2 BEDROOM UNIT BLOCK

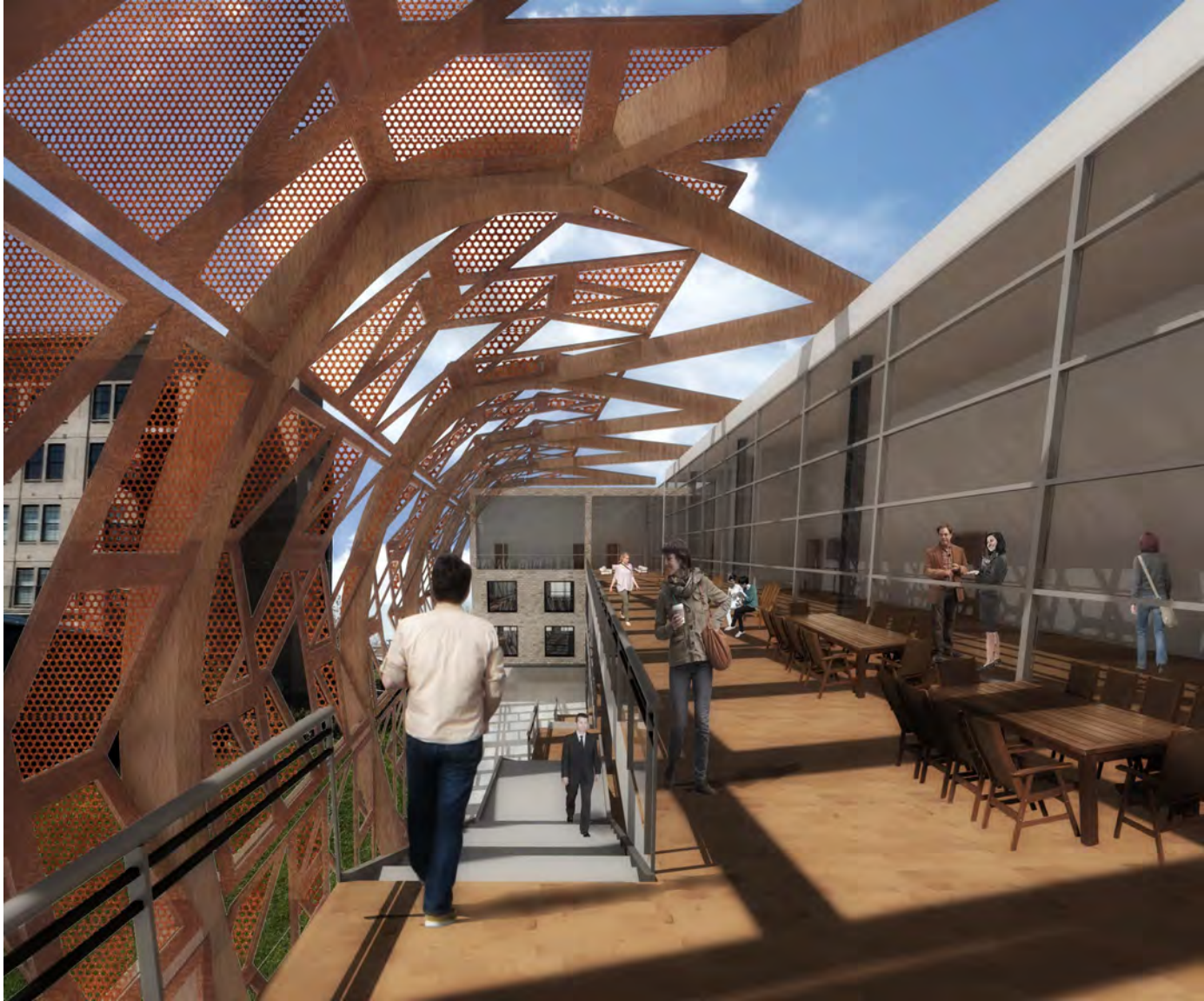
Each Unit: 900 SF

Office Spaces

Entry Atrium View

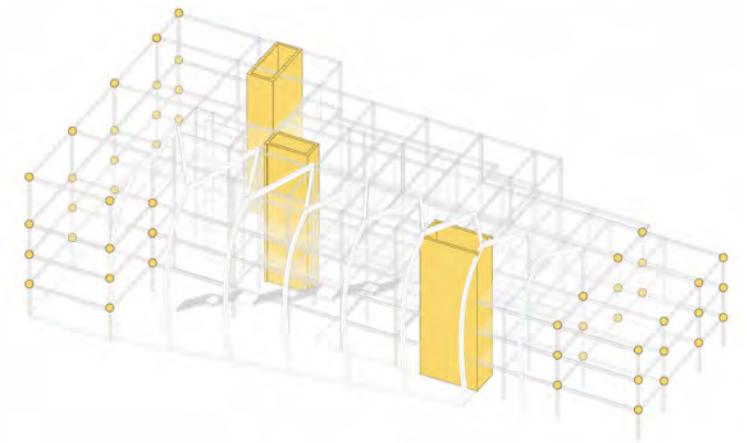

Second Floor Cafe

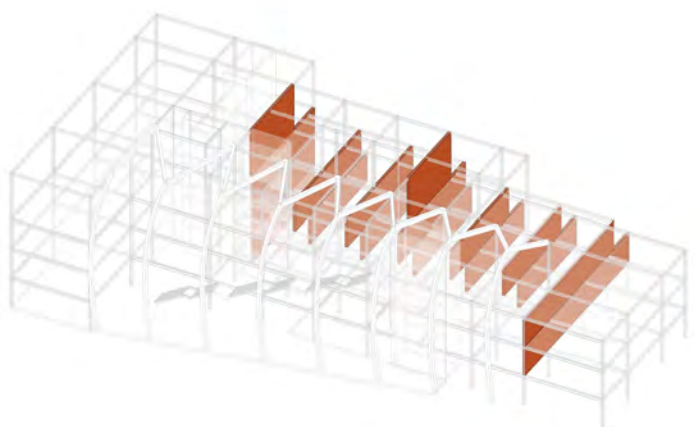
Canopy Porch from Fourth Floor



Rooftop Community Space

Structure Analysis





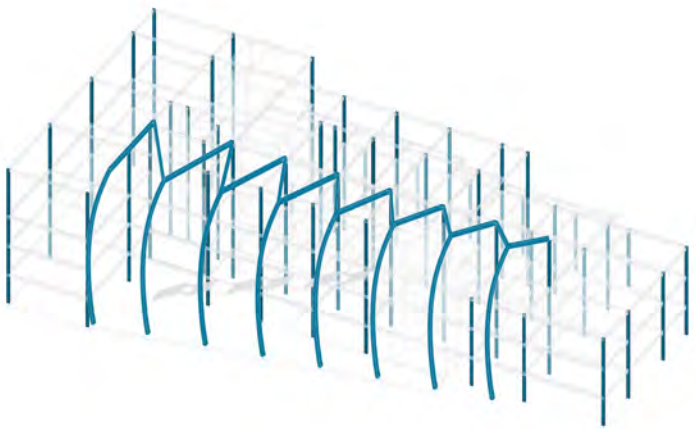
Lateral Force Resisting System

Core Shear Walls : provide lateral stiffness to structure

Moment Frame : steel frame with rigid connection between columns and beams

Vertical Load Resisting System

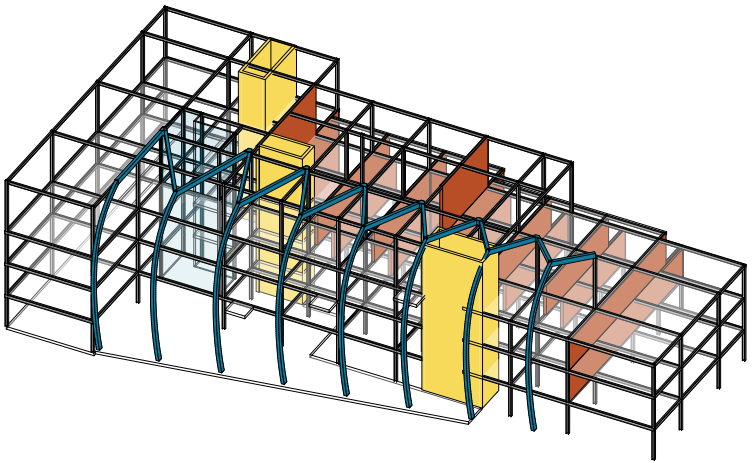
Cross Bracing Walls : uniform load transfers loads to concrete columns at bottom level where it is resisted by foundation footings



Vertical Load Resisting System

Column & Beam Grid : point loads are carried down to foundation

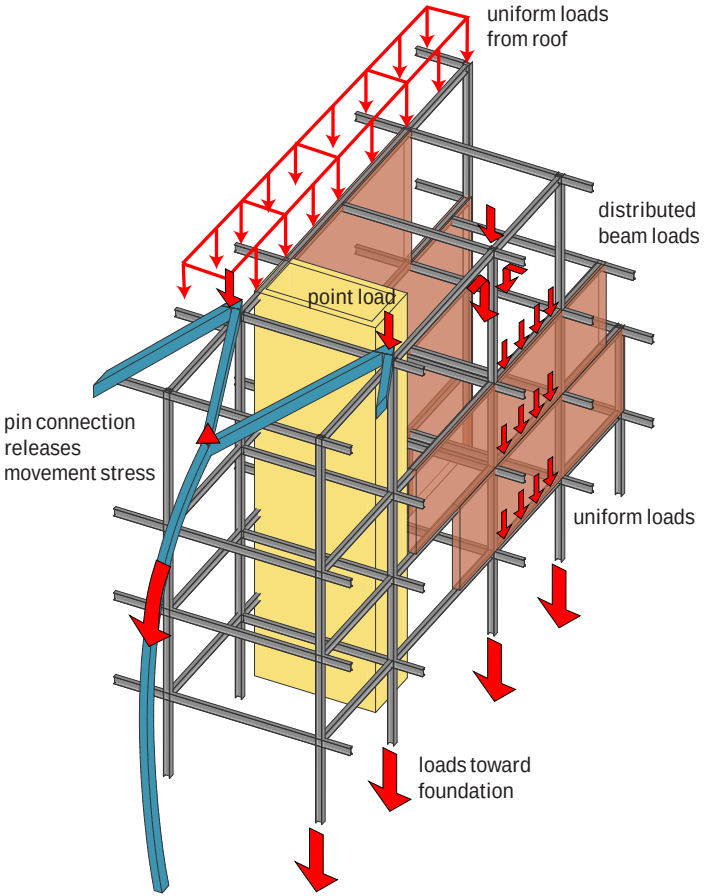
Canopy “V” Bracing : pin connections absorb any movement while system provides shear resistance

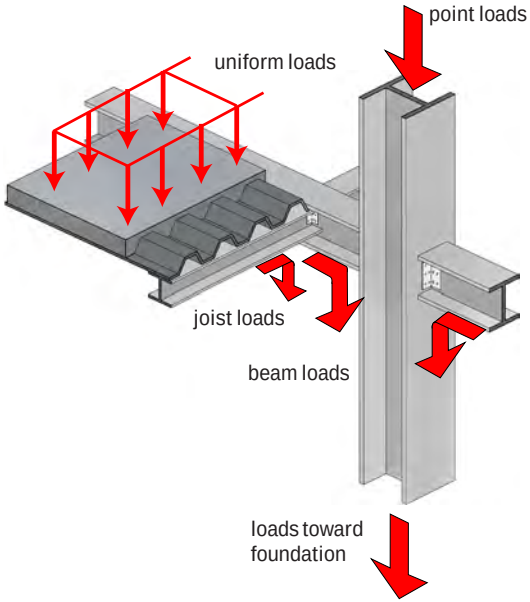


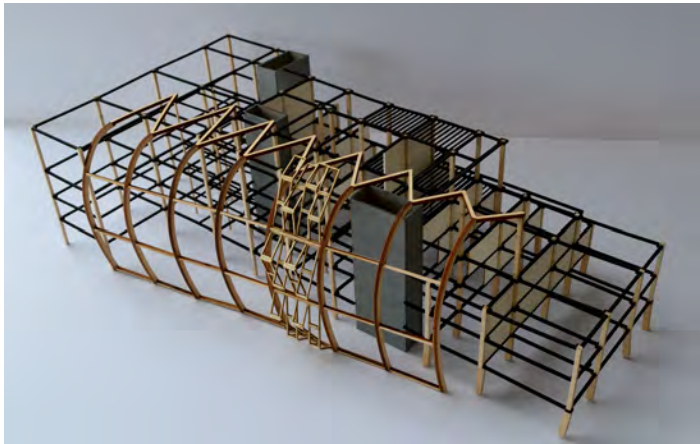
Complete Structure System

Load tracing analysis in detail

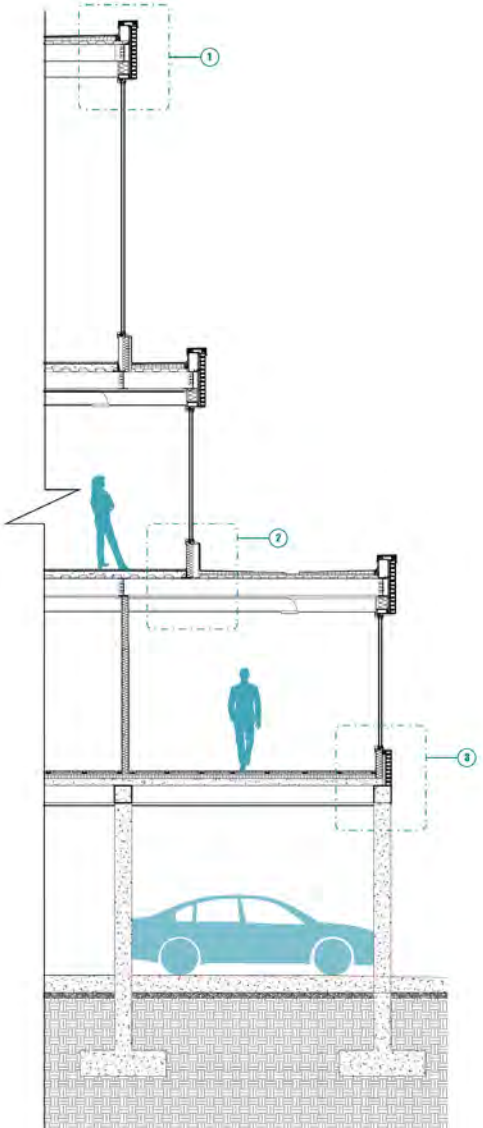
Load Tracing Details

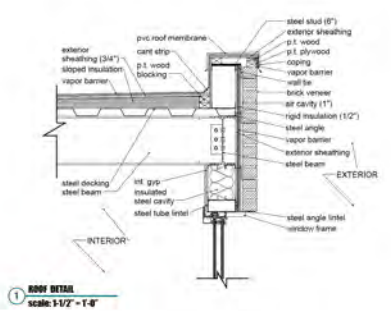




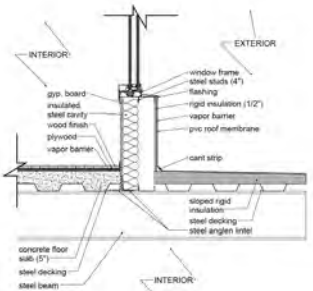


Detail Wall Section

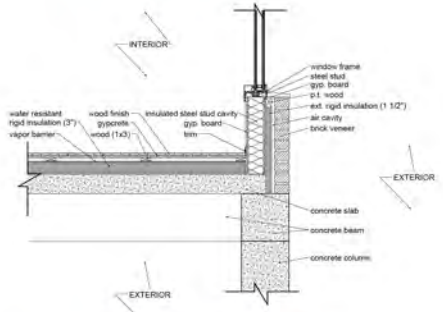




1 **ROOF DETAIL**
scale: 1-1/2" = 1'-0"



2 **THERMAL BREAK DETAIL - HORIZONTAL INTERIOR/ EXTERIOR CONDITION**
scale: 1-1/2" = 1'-0"



3 **THERMAL BREAK DETAIL - VERTICAL INTERIOR/ EXTERIOR CONDITION**
scale: 1-1/2" = 1'-0"

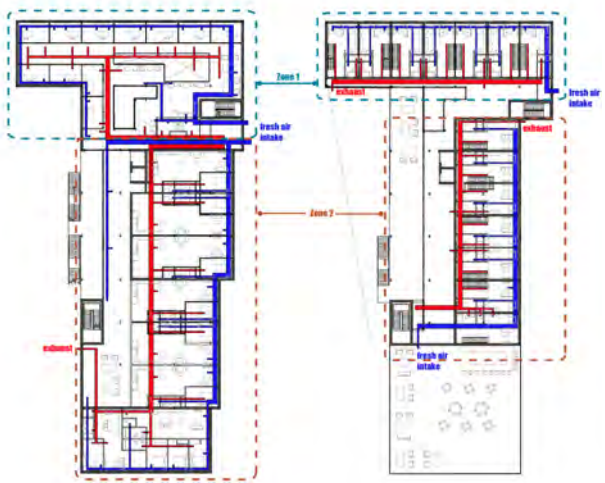
HVAC

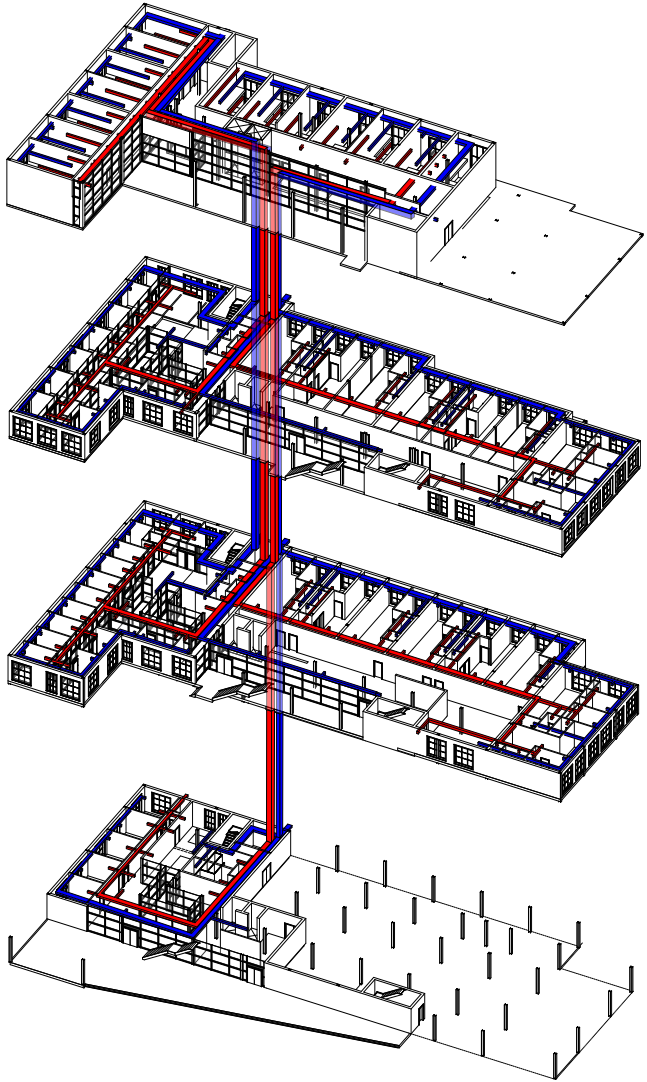
Central All-Air: single Duct Variable Air Volume

- air is conditioned at central location
- supply + return air circulates
- each zone controls temperature

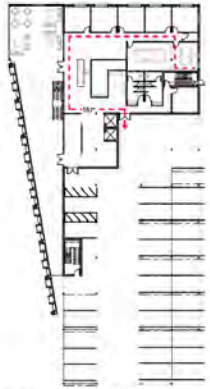
Apt Zones : 10,000 SF
- 15 tons cooling capacity
- 100 SF for boiler room
- 20 SF for cooling tower

Office Zones : 5,300 SF
- 12 tons cooling capacity
- 90 SF for boiler room
- 15 SF for cooling tower

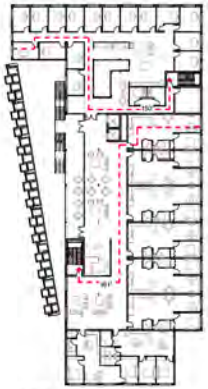




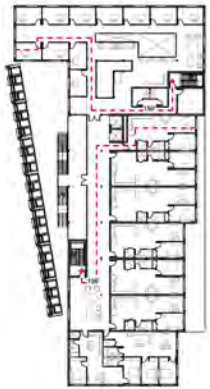
Code Analysis & Life Safety Plans



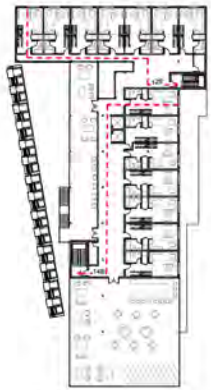
FIRST FLOOR



SECOND FLOOR



THIRD FLOOR



FOURTH FLOOR

2012 IBC CODE INFO:

Occupancy: Residential Group R-2 (section 310.4)
Residential occupancies containing sleeping units or more than two dwelling units where the occupants are primarily permanent in nature.

Construction Type: Section 602
- **Type IIIB: Ordinary Construction, Mix non-combustible + Combustible materials**
- **Exterior walls – 2 hrs**

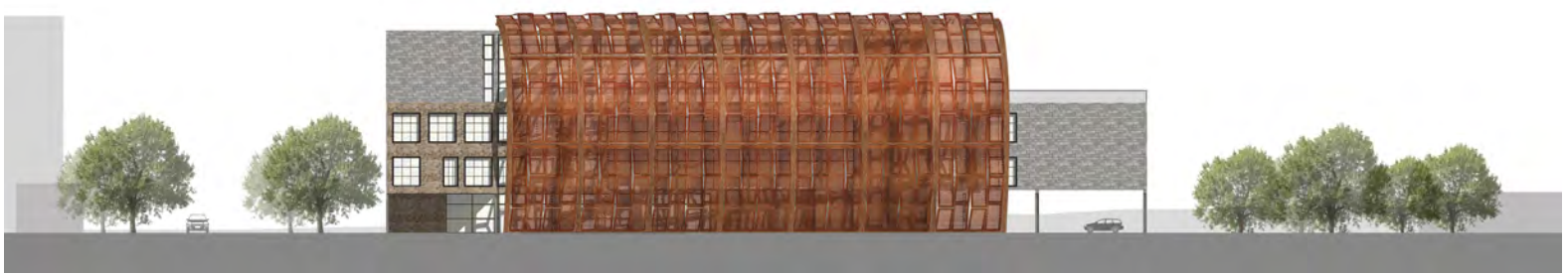
Allowable Building Height and Areas: Table 503, Sections 504-506
- **Height limit for Type IIIB: 75ft**
- **Max 6 stories**
- **Max Total SQ FT for all floors: 48,000 sf**
- **Max Area for any single floor: 16,000 sf**

Fire Resistance:
- **Required rating for building elements: Table 601**
- **Primary Structural Frame: 2hr rating**
- **Bearing Walls (exterior and interior): 2hr rating**
- **Non-bearing walls and partitions (interior): 0hr**
- **Floor Construction: 2hr rating**
- **Roof Construction: 1hr rating**
- **Separation Distances: Table 602, Sections 704,705 (walls)**
- **Exterior walls: 1hr fire rating for Type IB when fire separation distance is between 10' – 30'**

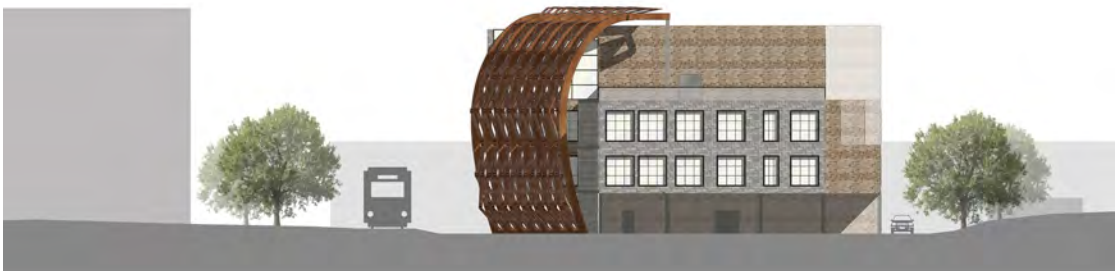
Egress:
- **General: Section 1003: The general requirements specified in Sections 1003 through 1013 shall apply to all three elements of the means of egress system, in addition to those specific requirements for the exit access, the exit and the exit discharge detailed elsewhere in this chapter.**
- **Occupant Load: Section 1004: Business Occupancy = 100 gross, Residential Occupancy = 200 gross**
- **Egress Width: Section 1005**
- **Accessibility and Egress: Section 1007: Accessible spaces shall be provided with not less than one accessible means of egress.**
- **Exit travel distance limitations: Section 1016, Table 1016.1: Section 1015 and 1019: with sprinkler system - B = 300 ft R = 250 ft**

Elevations

Northeast



Northwest

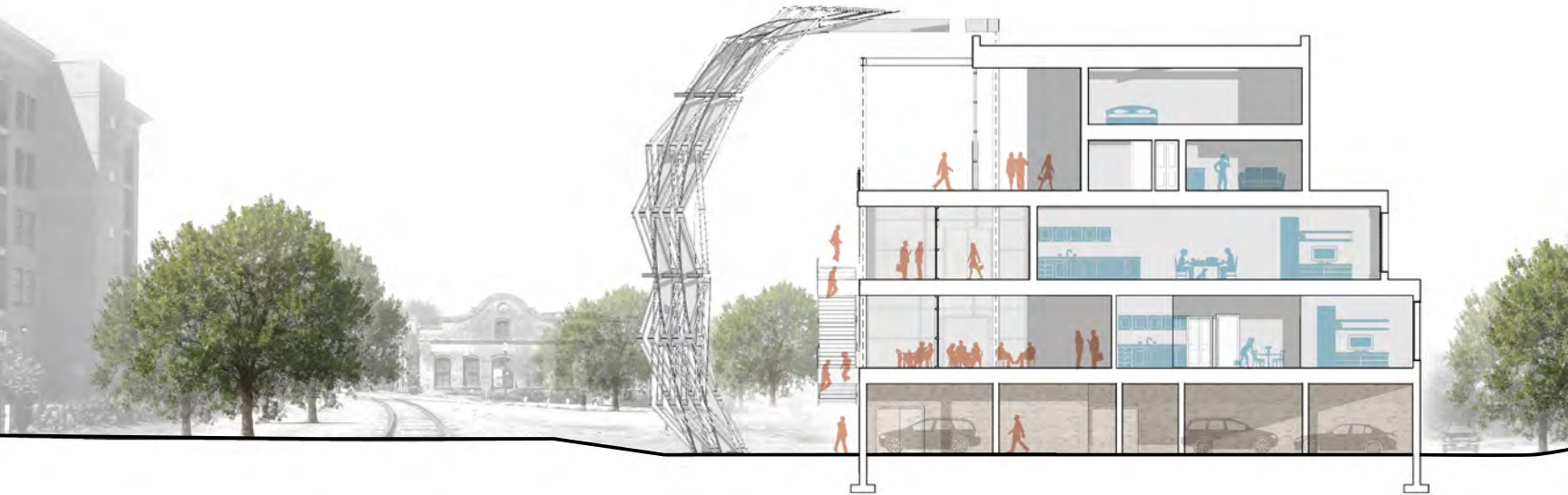


Southwest

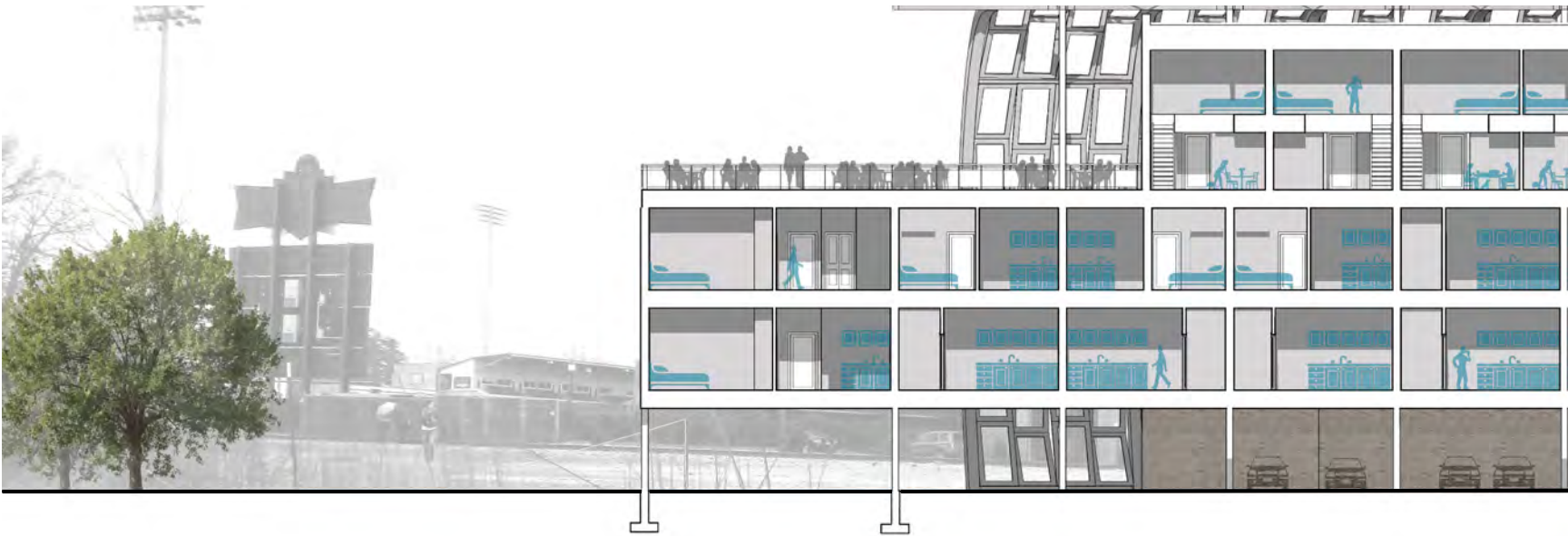
Southeast

Building Sections

Transversal Section AA

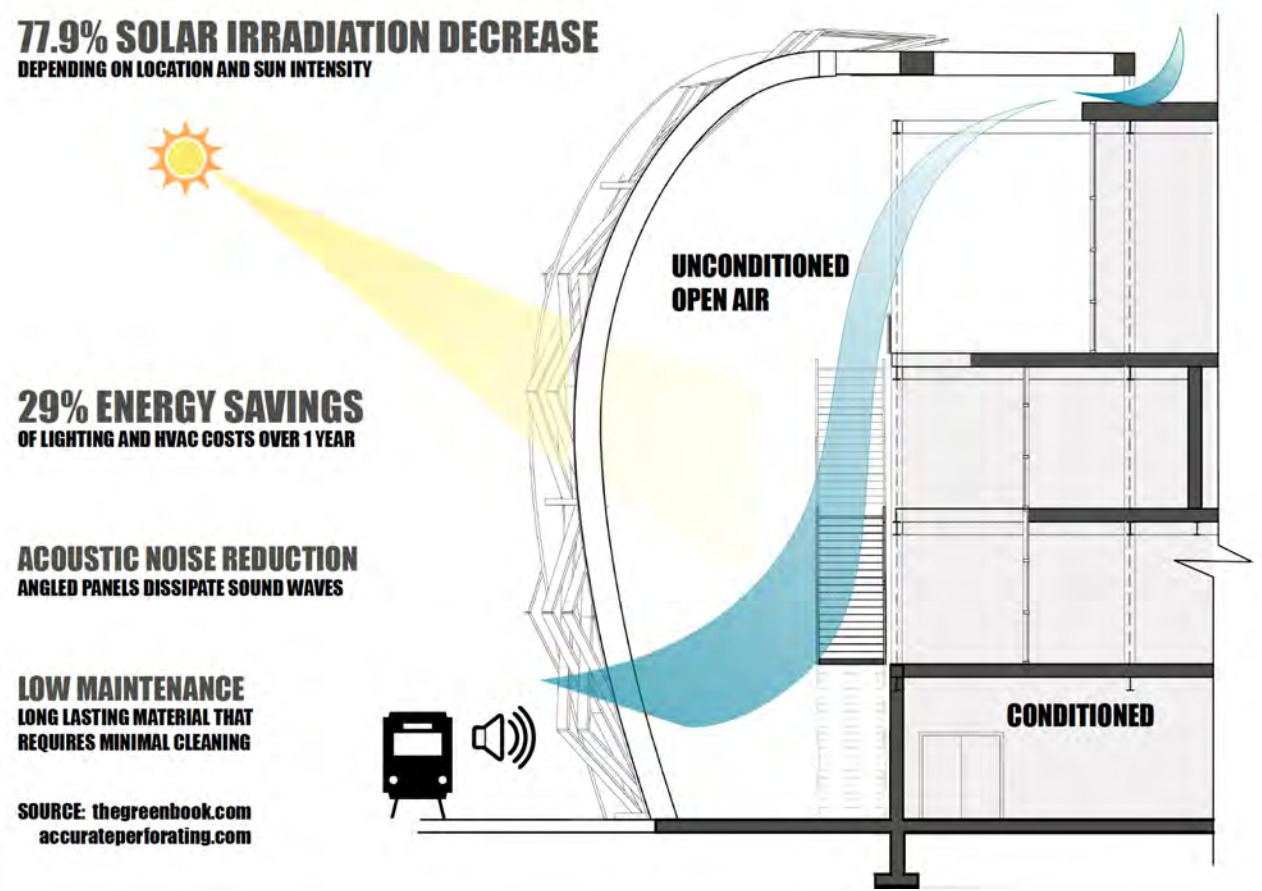


Transversal Section BB



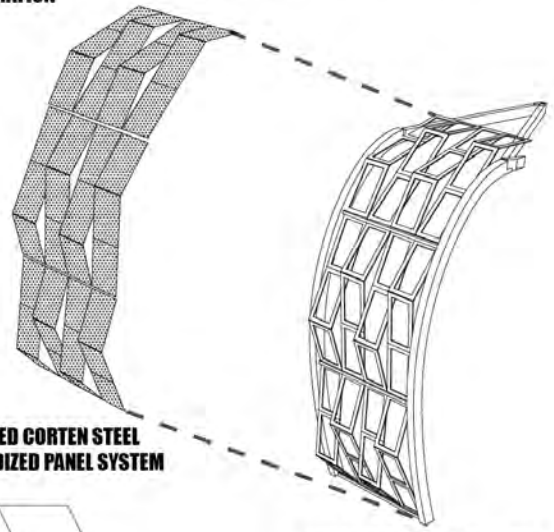
Longitudinal Section CC

Canopy Function & Performance



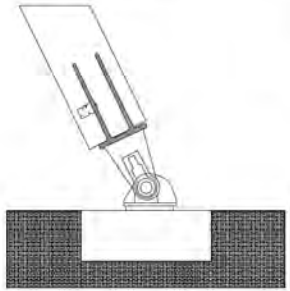
PROVIDE PRIVACY WITHOUT BLOCKING SUN

30% PERFORATION

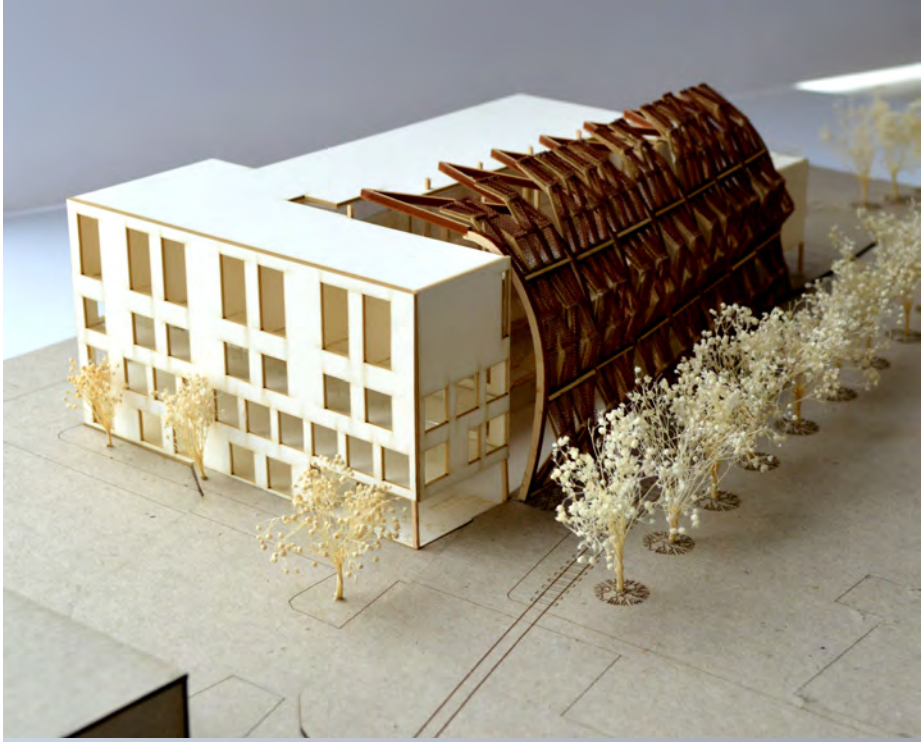


PERFORATED CORTEN STEEL
STANDARDIZED PANEL SYSTEM

LARGE GLU-LAM STRUCTURE
WITH STEEL FRAME SUPPORTS



GLU-LAM FOUNDATION PIN CONNECTION DETAIL







FLOOR • FIELD