TEAM PACIFIC

Team

Joe
MEP

Antonio
CM

Jan
SE

Pernille
MEP

Camilla
A

Chanel
CM

Siddharth
SE

Owners

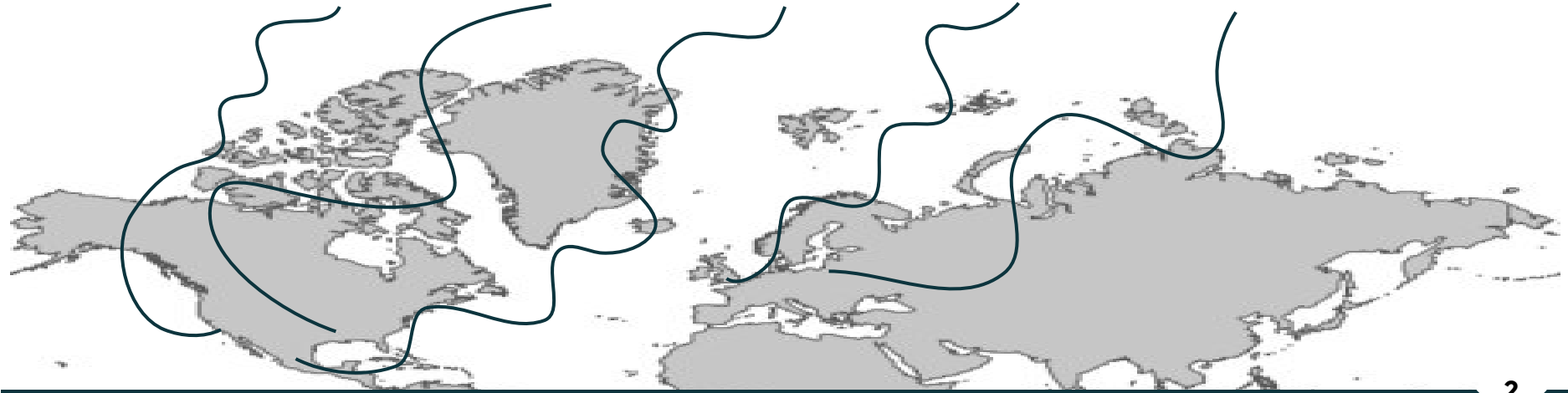
Enrique
CM

Jackie
SE

Elias
SE

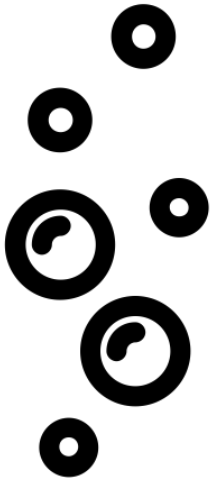
Dorian
MEP

Aleksandra
A



The Challenges

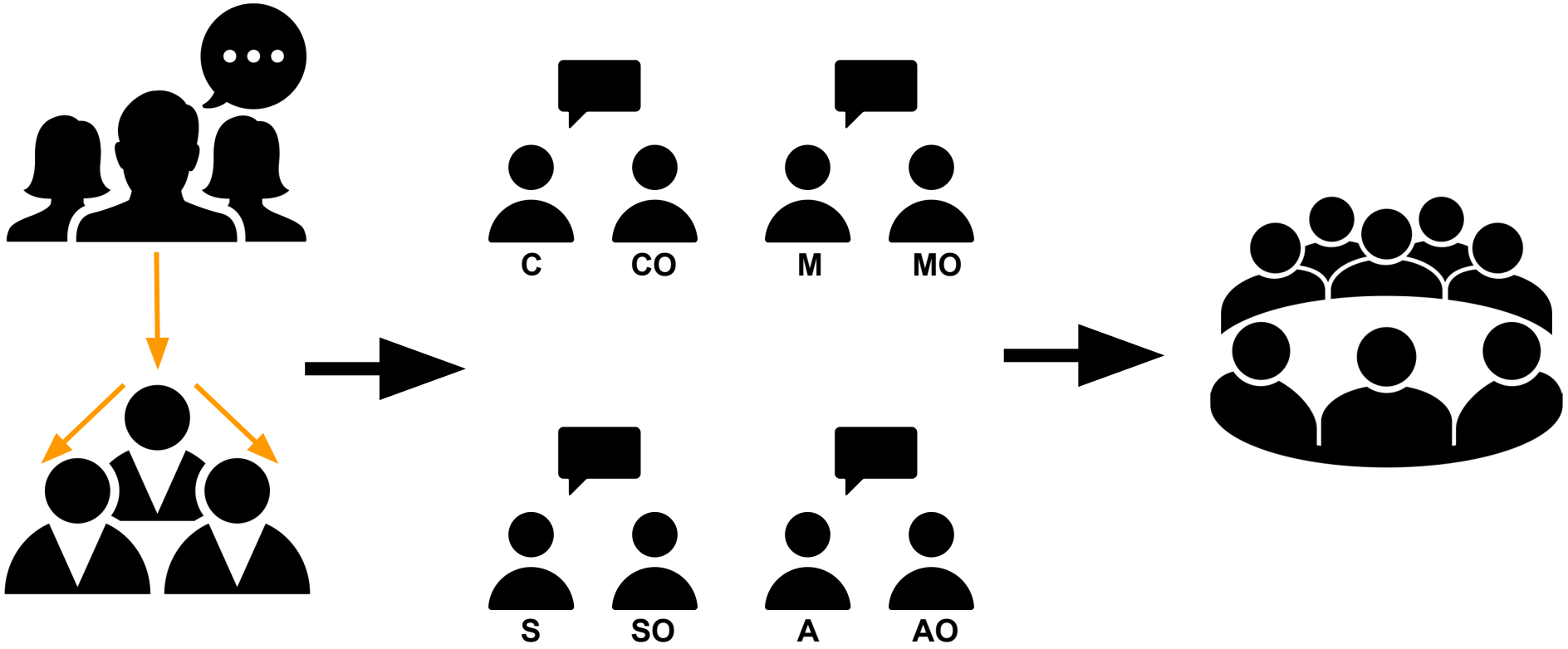
Client Affinity



Air Quality

CLIENT AFFINITY

Communication



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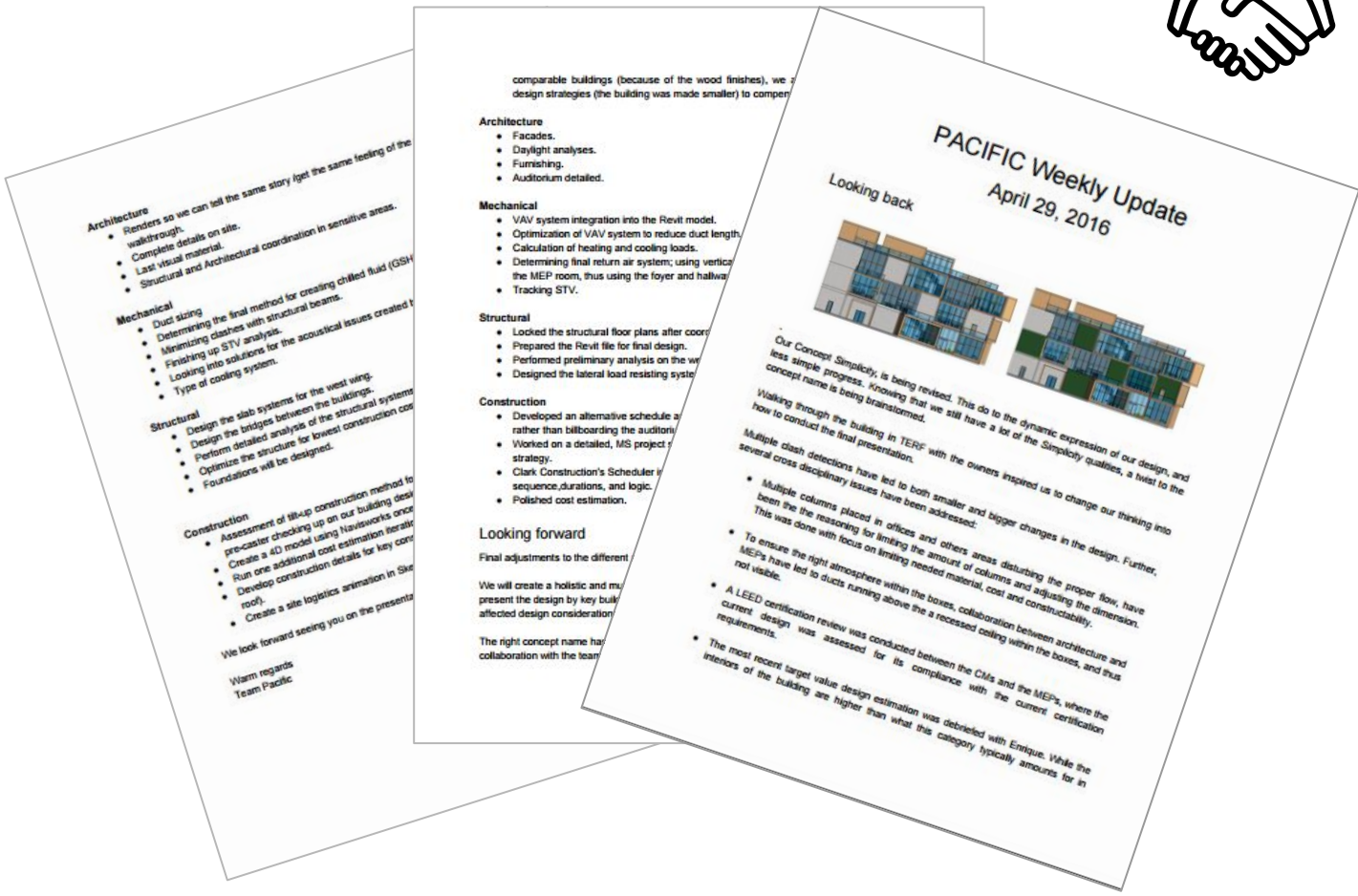


PACIFIC Weekly Update

April 29, 2016

Looking back

Our Concept Simplicity, is being revised. This do to the dynamic expression of our design, and less simple progress. Knowing that we still have a lot of the Simplicity qualities, a twist to the concept name is being brainstormed.

Walking through the building in TERF with the owners inspired us to change our thinking into how to conduct the final presentation.

Multiple clash detections have led to both smaller and bigger changes in the design. Further, several cross disciplinary issues have been addressed:

- Multiple columns placed in offices and others areas disturbing the proper flow, have been the the reasoning for limiting the amount of columns and adjusting the dimension. This was done with focus on limiting needed material, cost and constructability.
- To ensure the right atmosphere within the boxes, collaboration between architecture and MEPs have led to ducts running above the a recessed ceiling within the boxes, and thus not visible.
- A LEED certification review was conducted between the CMs and the MEPs, where the current design was assessed for its compliance with the current certification requirements.
- The most recent target value design estimation was debriefed with Enrique. While the interiors of the building are higher than what this category typically amounts for in

Looking forward

Final adjustments to the different

We will create a holistic and mu
present the design by key built
affected design consideration

The right concept name ha
collaboration with the team

Architecture
- Facades.
- Daylight analyses.
- Furnishing.
- Auditorium detailed.

Mechanical
- VAV system integration into the Revit model.
- Optimization of VAV system to reduce duct length.
- Calculation of heating and cooling loads.
- Determining final return air system; using vertica
the MEP room, thus using the foyer and hallwa
- Tracking STV.

Structural
- Locked the structural floor plans after coor
- Prepared the Revit file for final design.
- Performed preliminary analysis on the w
- Designed the lateral load resisting syste

Construction
- Developed an alternative schedule a
rather than billboarding the auditori
- Worked on a detailed, MS project
strategy.
- Clark Construction's Scheduler i
sequence,durations, and logic.
- Polished cost estimation.

Architecture
- Renders so we can tell the same story /get the same feeling of the
walkthrough.
- Complete details on site.
- Last visual material.
- Structural and Architectural coordination in sensitive areas.

Mechanical
- Duct sizing
- Determining the final method for creating chilled fluid (GSH
- Minimizing clashes with structural beams.
- Finishing up STV analysis.
- Looking into solutions for the acoustical issues created
- Type of cooling system.

Structural
- Design the slab systems for the west wing.
- Design the bridges between the buildings.
- Perform detailed analysis of the structural systems
- Optimize the structure for lowest construction cos
- Foundations will be designed.

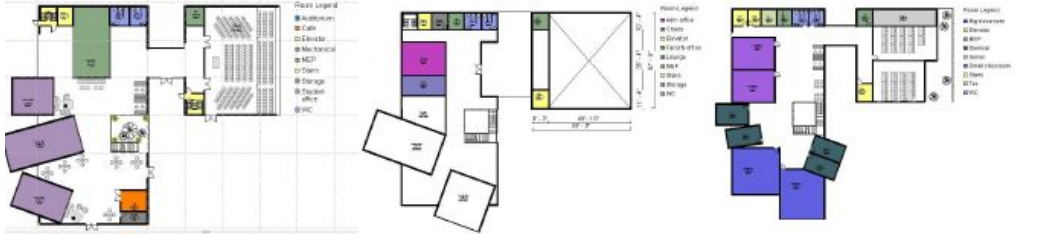
Construction
- Assessment of tilt-up construction method fo
- pre-caster checking up on our building desi
- Create a 4D model using Navisworks once
- Run one additional cost estimation iterati
- Develop construction details for key cons
roof).
- Create a site logistics animation in Ske

We look forward seeing you on the presenta

Warm regards
Team Pacific

Owner Involvement

Twisted boxes



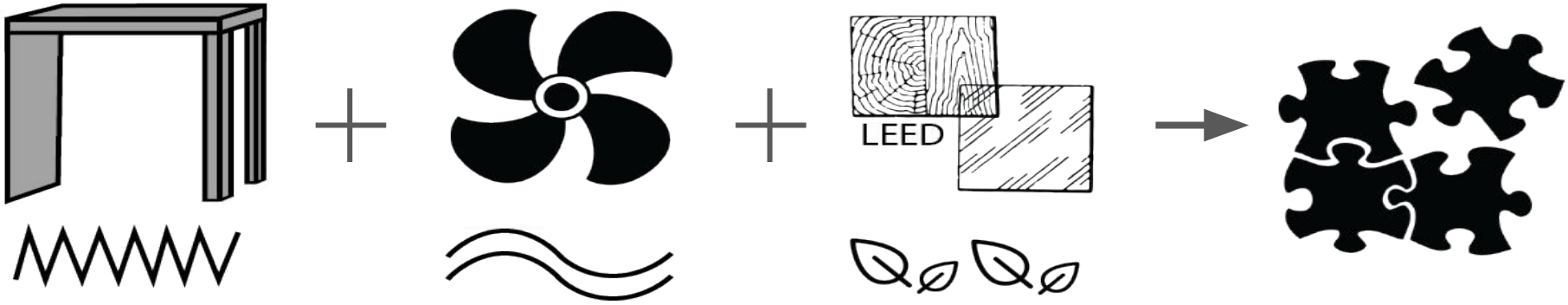
Almost straight boxes

Completely straight boxes

Walk through

GROUP WORK

Collaboration



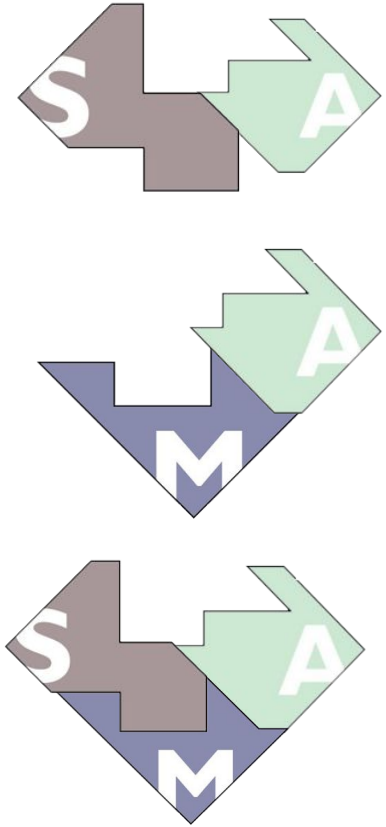
Earthquakes

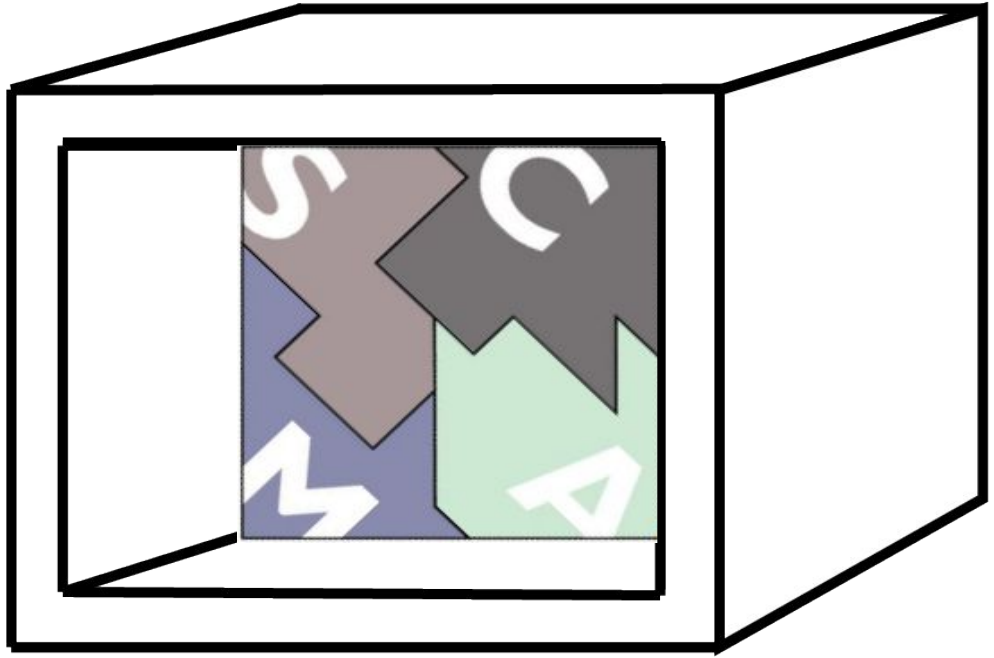
Passive Systems

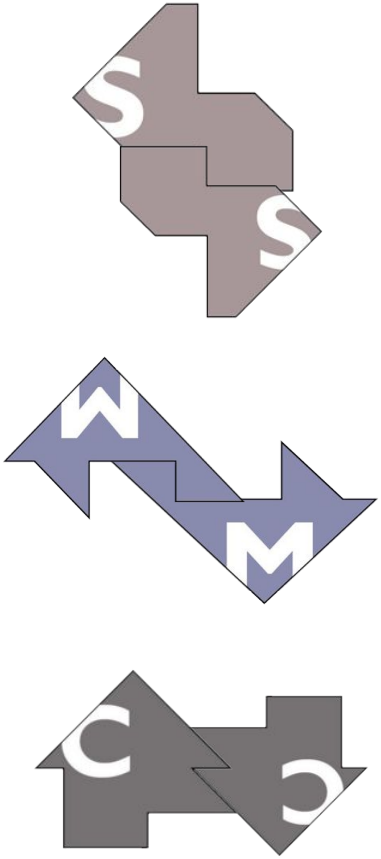
Sustainable Construction

Creating the Design

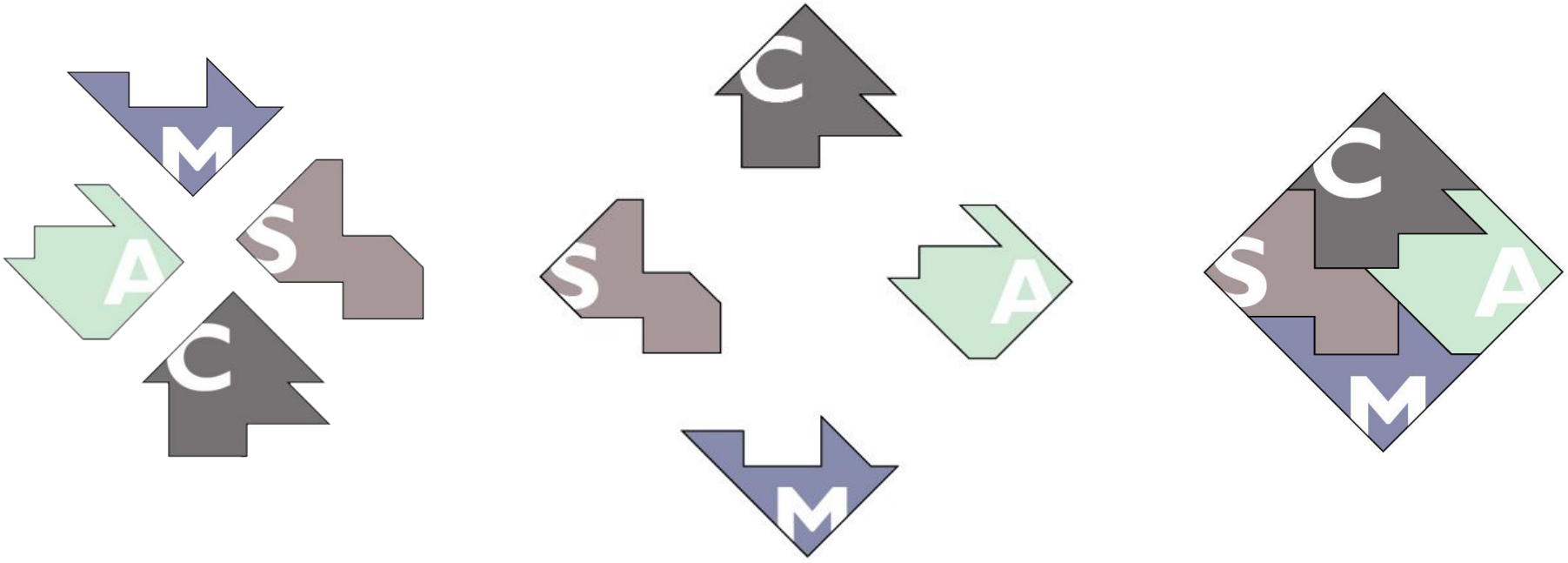
Collaboration







Collaboration



Jan 15

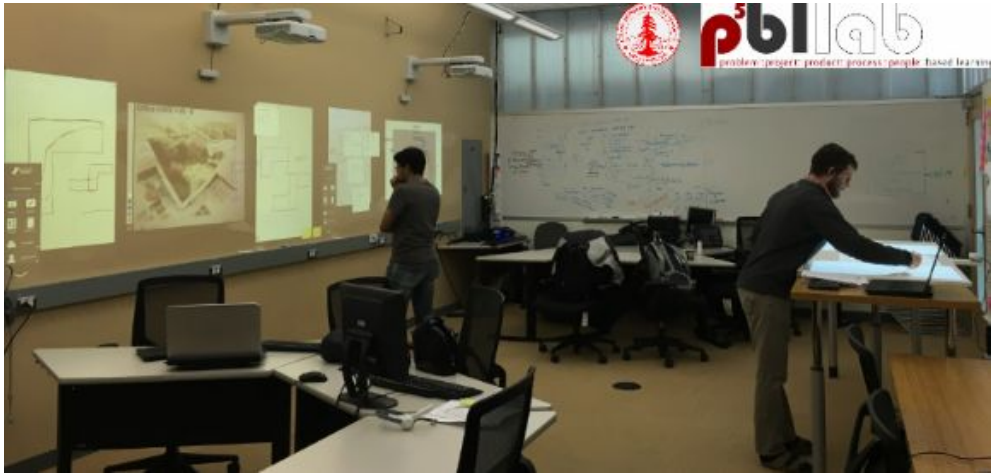
Mar 12

May 6

Collaboration & Coordination

TERF Coordination

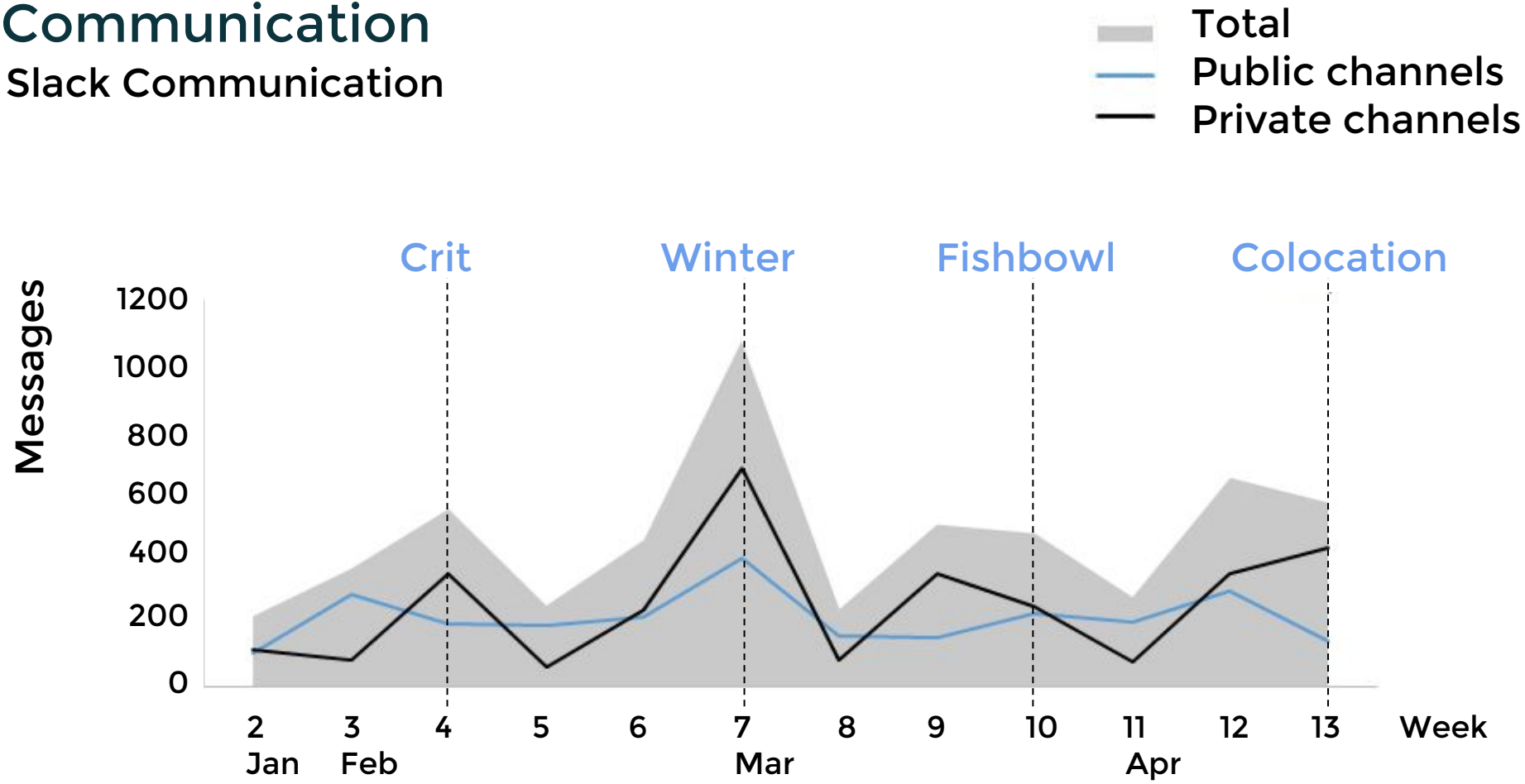
SPAN Collaboration



slack TERF GoToMeeting Doodle Google Calendar

Communication

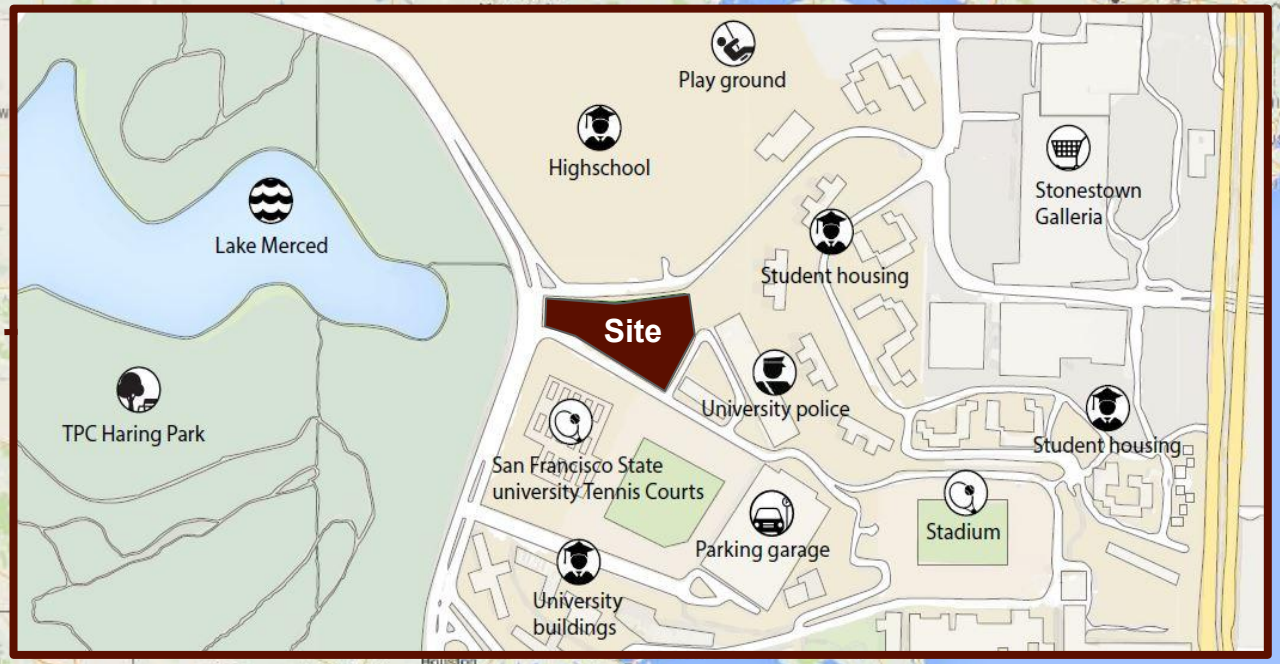
Slack Communication



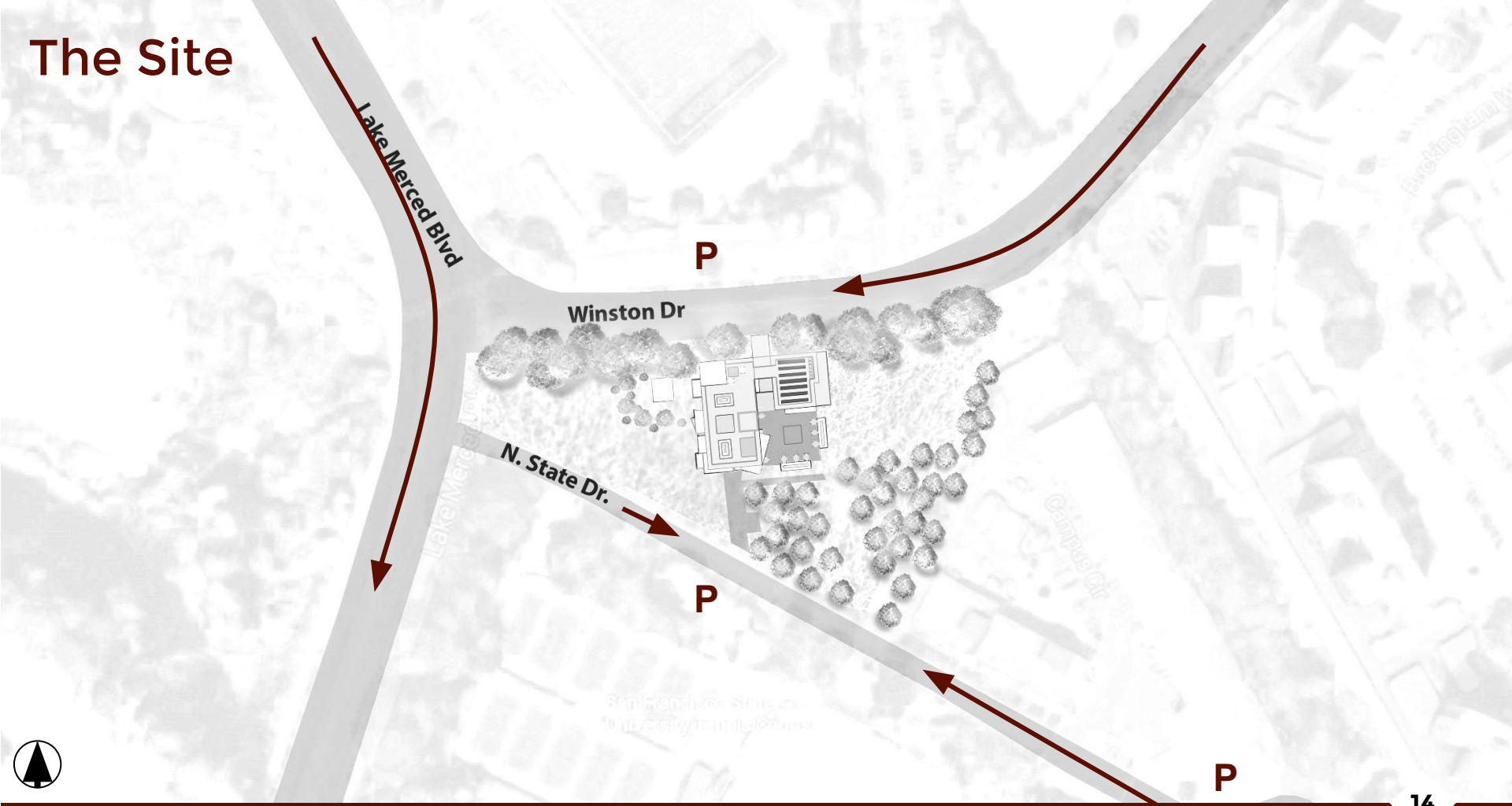
SITE

The Site

San Francisco

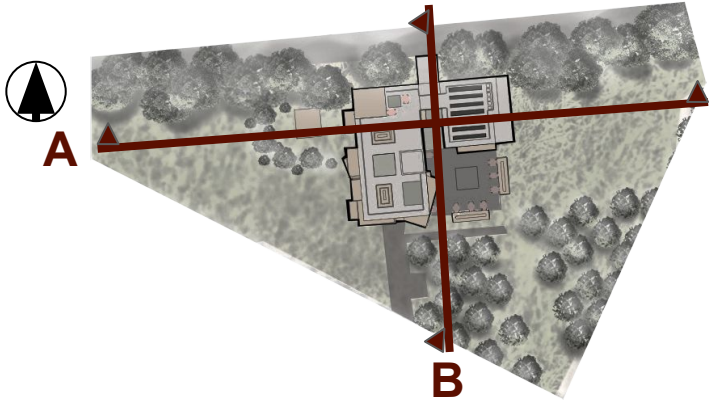


The Site



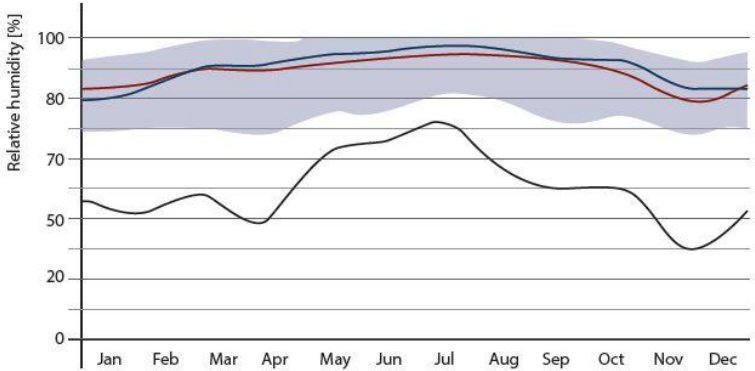
The Site

Site elevation

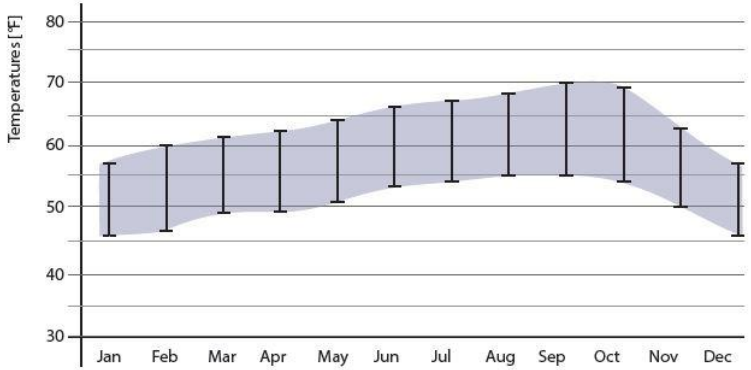


The site

Weather Conditions

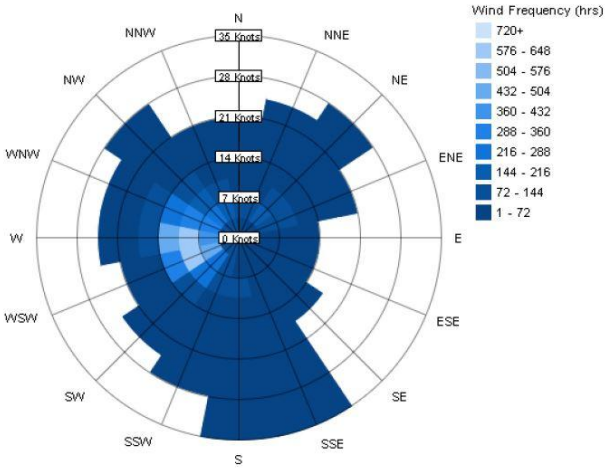


Relative humidity [%]
- High RH in mornings due to fog



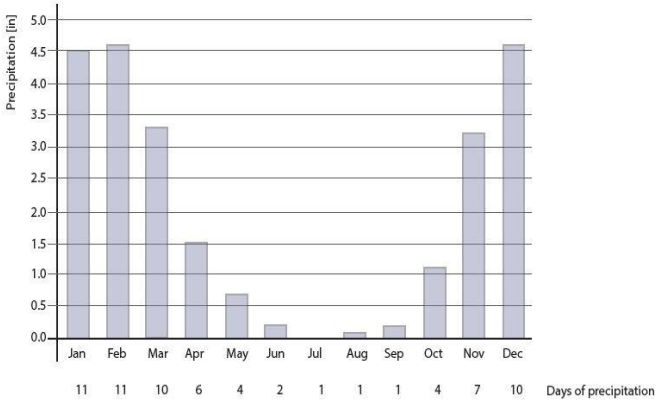
Temperatures [°F]
- Moderate climate

Weather Conditions



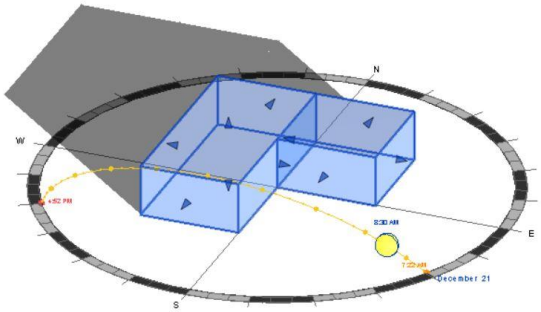
Wind [knots]

- Prevailing wind from SW



Precipitation [in]

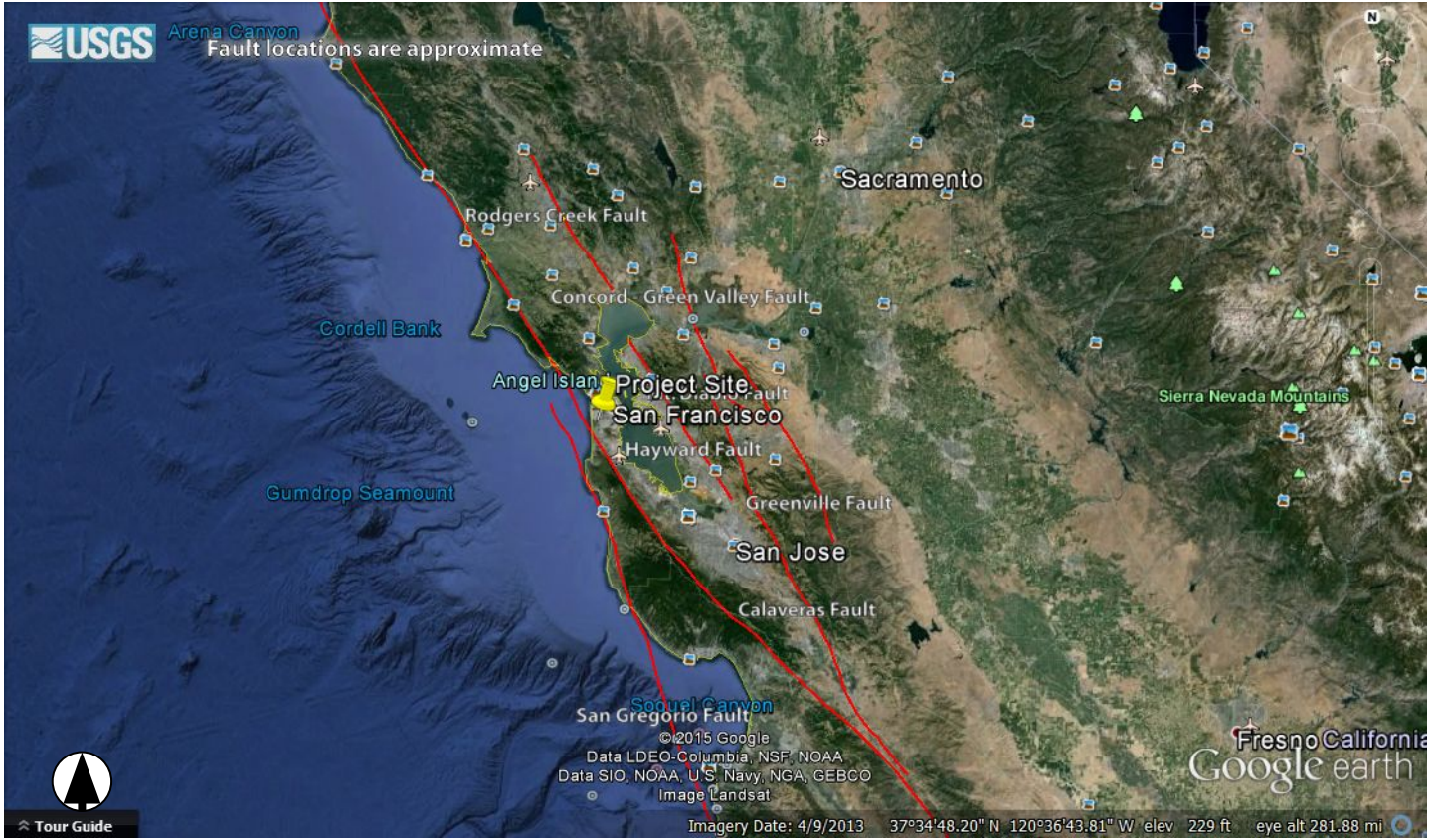
- Low precipitation



Sun availability

- About 3000 annual hours of sunlight

Earthquake Faults



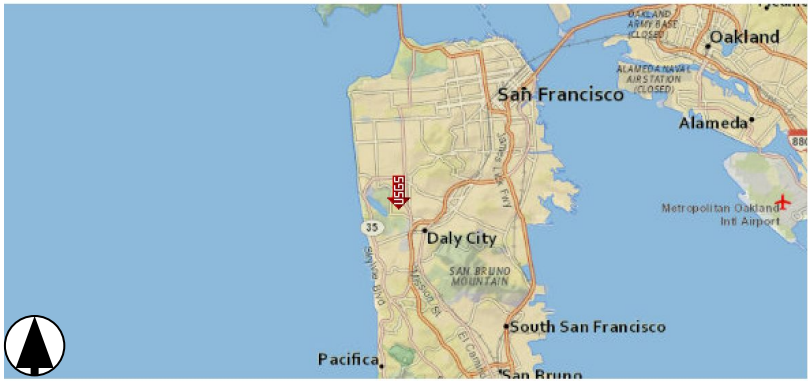
Distance from closest fault (San Andreas):
2.5mi = 4km

Earthquake Information

USGS Design Maps Summary Report

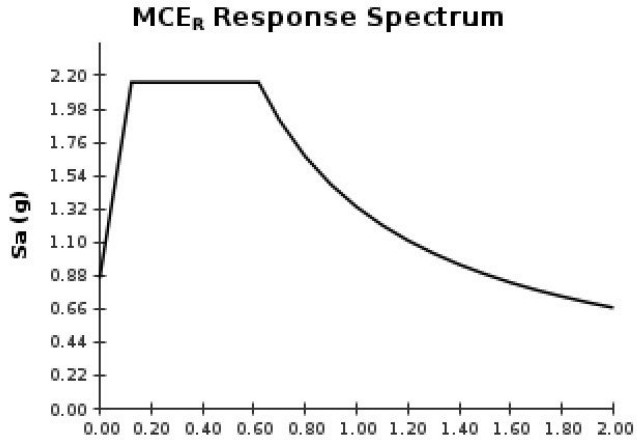
User-Specified Input

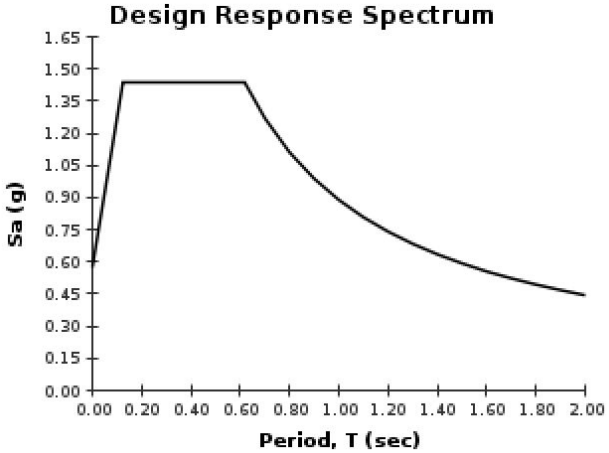
Building Code Reference Document	ASCE 7-10 Standard (which utilizes USGS hazard data available in 2008)
Site Coordinates	37.72699°N, 122.48°W
Site Soil Classification	Site Class C – "Very Dense Soil and Soft Rock"
Risk Category	I/II/III



USGS-Provided Output

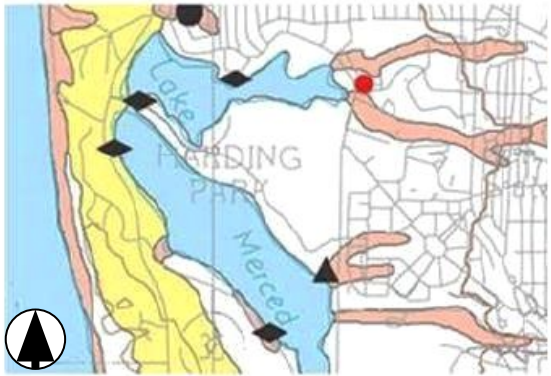
S_S =	2.156 g	S_{MS} =	2.156 g	S_{DS} =	1.437 g
S_1 =	1.026 g	S_{M1} =	1.333 g	S_{D1} =	0.889 g





Soil Profile

- Soil Condition
  - Well sorted fine to medium sand
  - Bearing capacity: 3500 psf
  - Not in liquefaction zone
  - Water table: 14 ft below grade



DECISION PROCESS

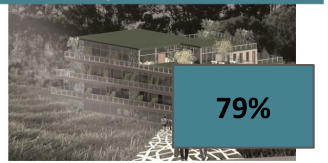
Nature Concept

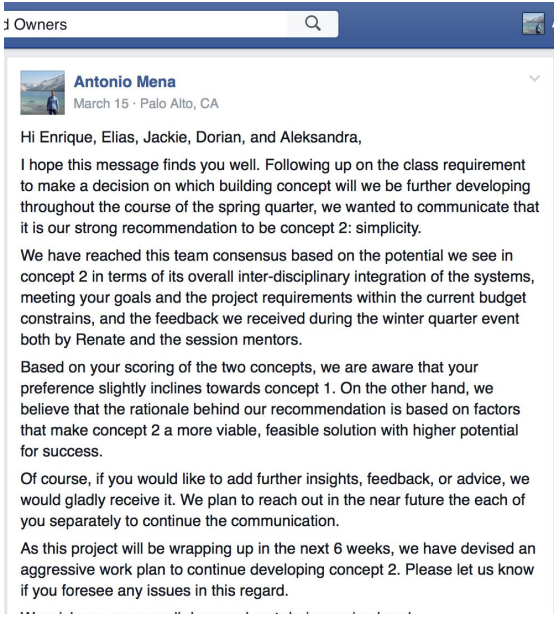
Simplicity Concept

Decision Matrix → Client Affinity

Comparison

A E C MEP

	Nature	Simplicity		
	 85%	 79%		
	Fiber Glass + Timber + VAV w. Reheat	Steel + Radiant and DOAS	Concrete + VAV w. Reheat	Concrete + Steel + Fan Coil
Program layout	3	3	5	5
Navigability	5	5	4	4
Indoor climate initiatives	5	3	5	4
Structural efficiency	3	4	5	5
Innovative	4	3	3	3
Value	3	4	5	4



Owners

Antonio Mena
March 15 · Palo Alto, CA

Hi Enrique, Elias, Jackie, Dorian, and Aleksandra,

I hope this message finds you well. Following up on the class requirement to make a decision on which building concept will we be further developing throughout the course of the spring quarter, we wanted to communicate that it is our strong recommendation to be concept 2: simplicity.

We have reached this team consensus based on the potential we see in concept 2 in terms of its overall inter-disciplinary integration of the systems, meeting your goals and the project requirements within the current budget constrains, and the feedback we received during the winter quarter event both by Renate and the session mentors.

Based on your scoring of the two concepts, we are aware that your preference slightly inclines towards concept 1. On the other hand, we believe that the rationale behind our recommendation is based on factors that make concept 2 a more viable, feasible solution with higher potential for success.

Of course, if you would like to add further insights, feedback, or advice, we would gladly receive it. We plan to reach out in the near future the each of you separately to continue the communication.

As this project will be wrapping up in the next 6 weeks, we have devised an aggressive work plan to continue developing concept 2. Please let us know if you foresee any issues in this regard.

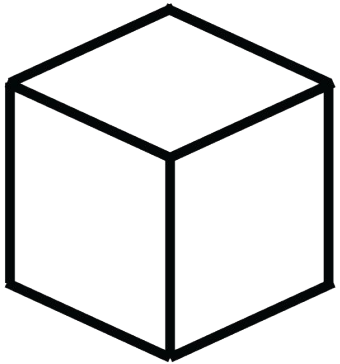
Recommendation Key points

- Interdisciplinary Coordination
- Systems Integration
- Goals and Project Req
- Budget Constraints
- Feedback on Winter Event

OVERALL STRATEGY

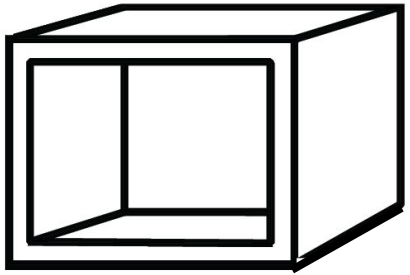
Outside and Inside the Box

Concept development



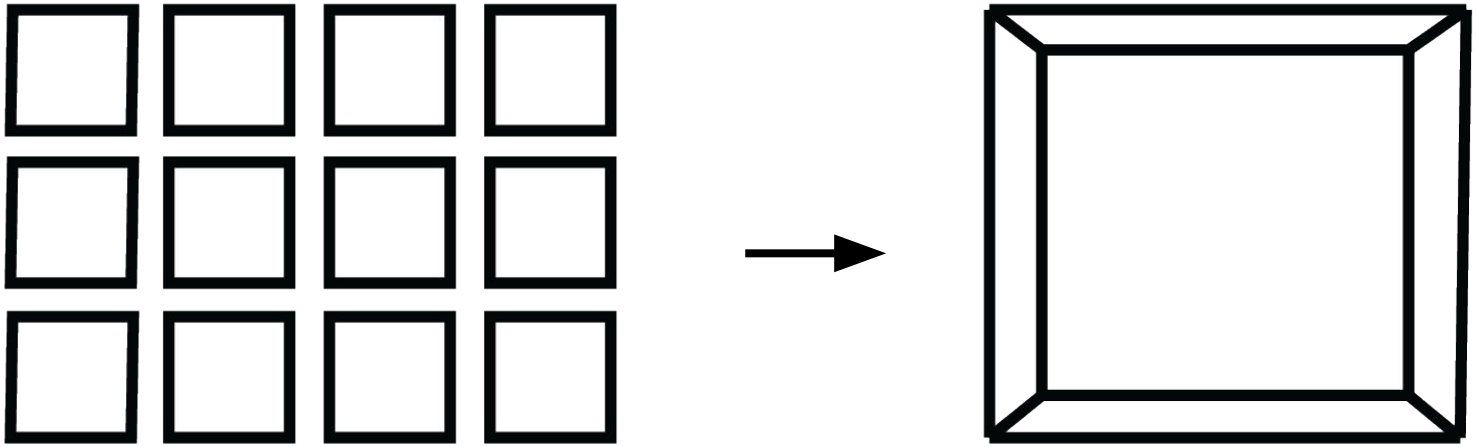
Simplicity

Nature



Outside and Inside the Box

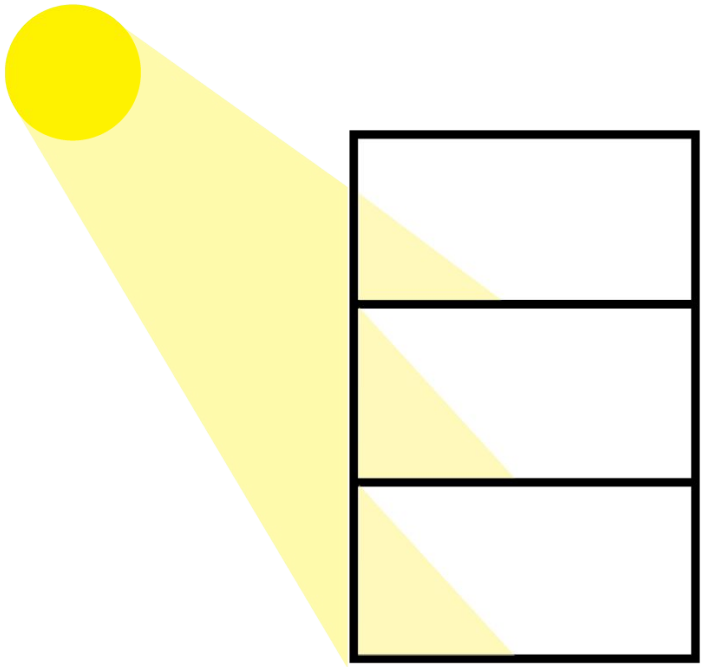
Future Collaboration

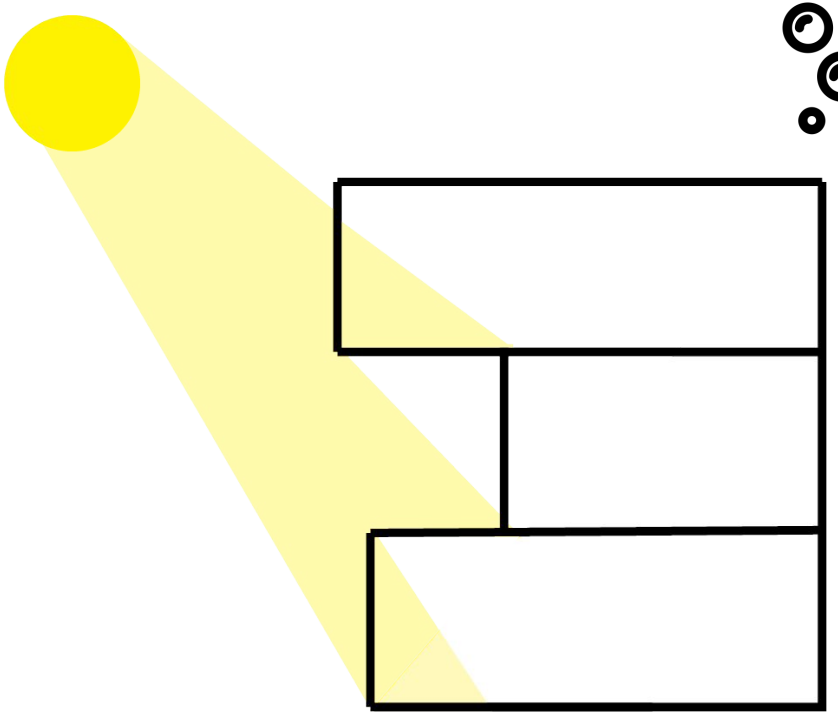


Single Offices

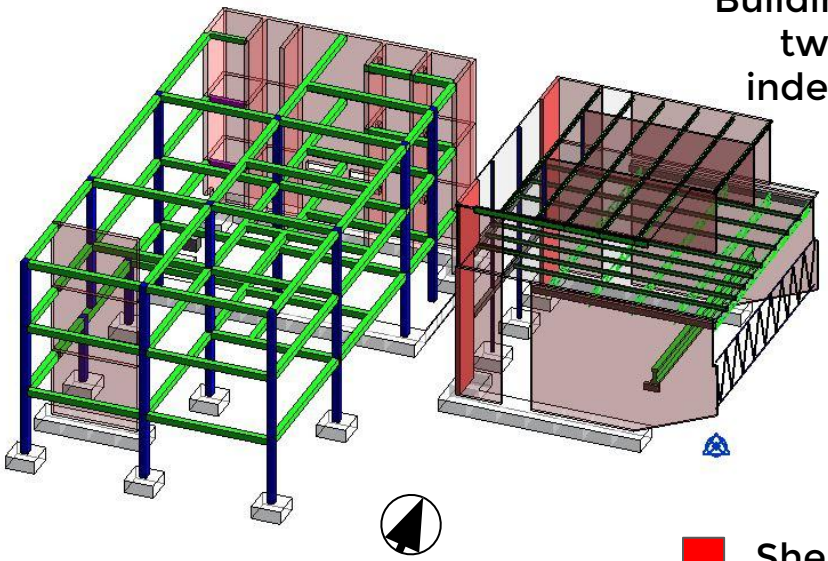
Open Offices

West facade Boxes

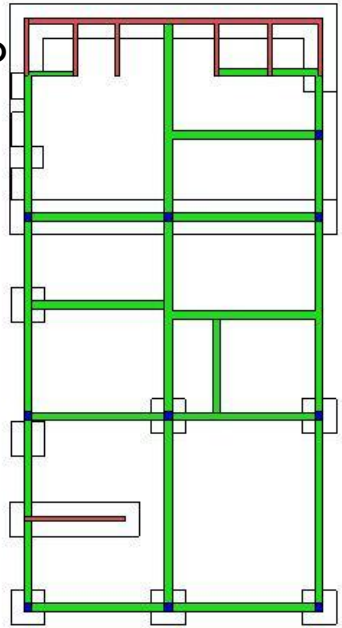


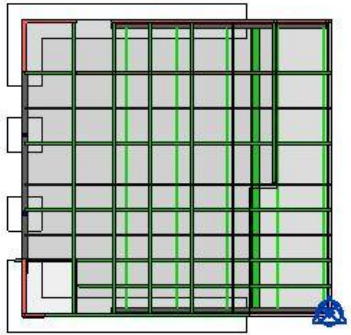


Structural concept



Building is divided into two structurally independent wings





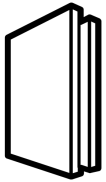
- Shear walls
- Columns
- Beams
- Foundations

Sustainable Design Strategies

EUI 2030 Challenge (70%):

31 kBTU/sf

Initial design using Revit Insight



Thermal mass
External walls, Foundation, Roof

Window
Thermal transmittance, Vlt, SHGC, WWR

Lighting
Lighting efficiency
Daylight and occupancy controls

Infiltration
Air Leakage

Primary Energy Factors: Electrical = 0.12, Fuel = 0.80.

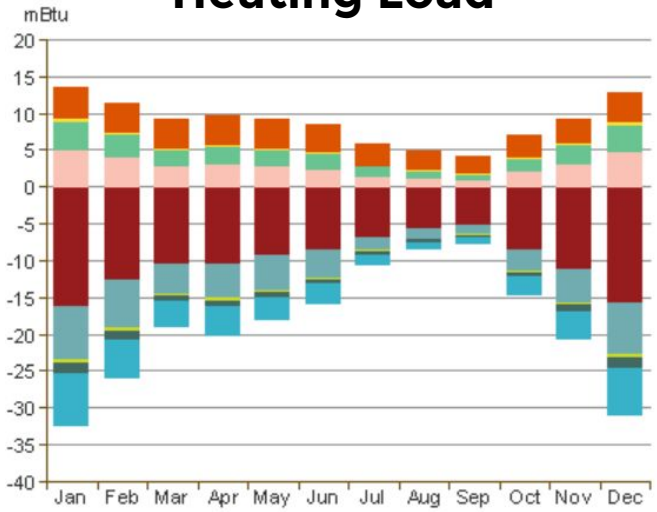
Heating and Cooling Load

Primary Energy Factors: Electrical = 0.12, Fuel = 0.80.

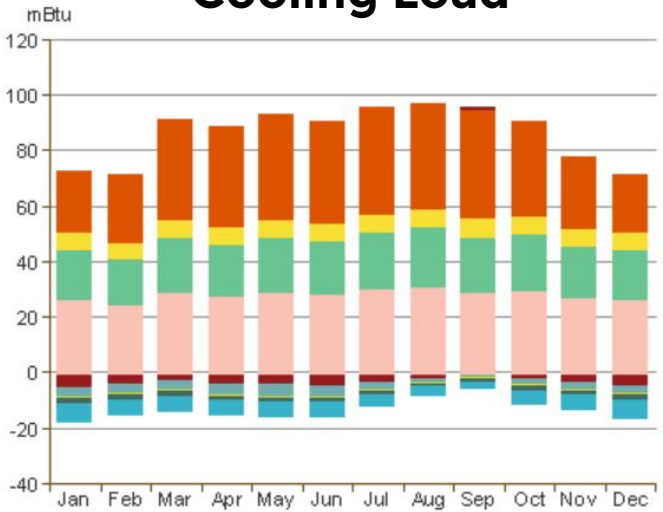
EUI Baseline:

43 kBTU/sf 7 kWh/sf/yr 19 kBtu/sf/yr

Heating Load



Cooling Load



Design Results

EUI Final design

31 kBTU/sf

133 kWh/sf/yr

3 kBtu/sf/yr

- Area Lights
- Ext Usage
- Misc Equip
- Space Cooling
- Heat Rej
- Vent Fans
- Pumps Aux
- Space Heat
- Hot water

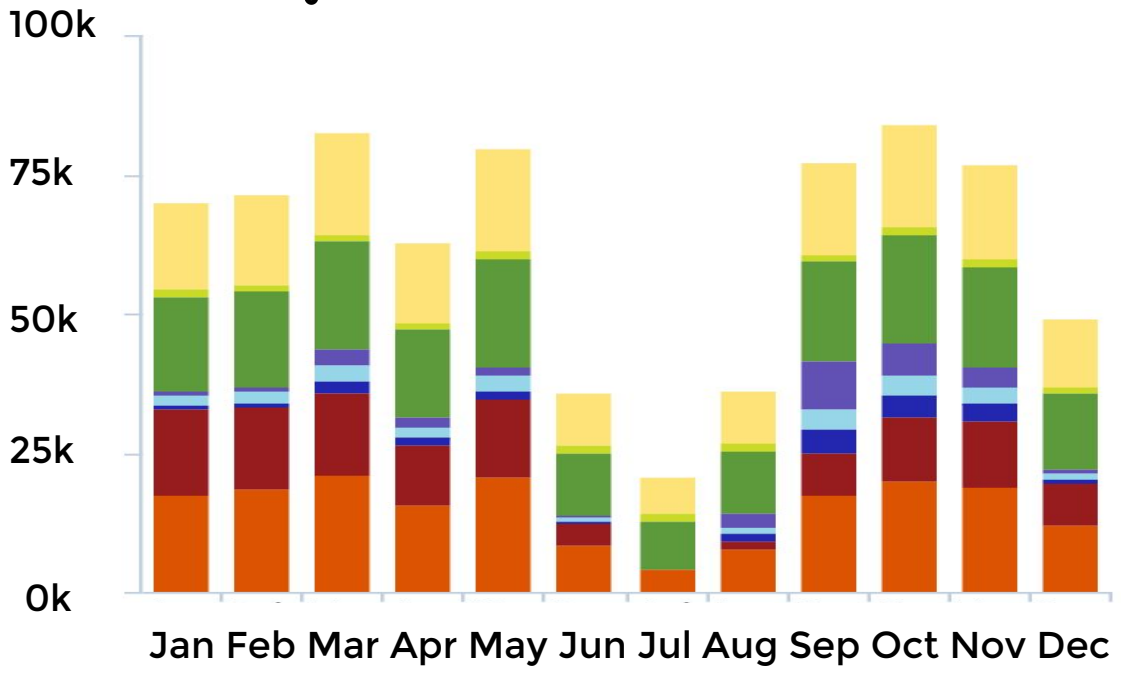
Natural ventilation Potential

Possible natural ventilation hours = 1.078h

Net hours mechanical cooling required = 78h

Carbon Neutral Potential

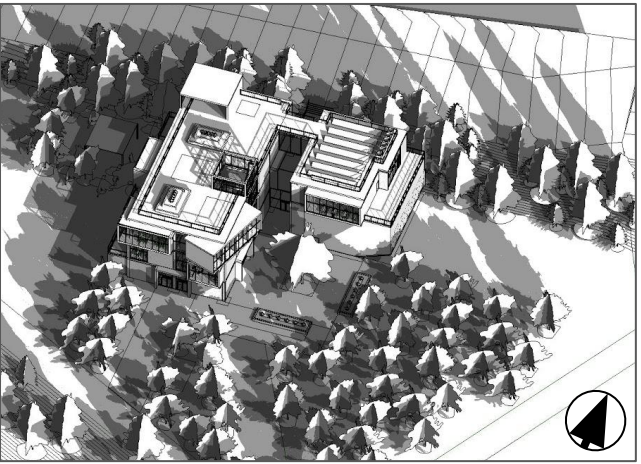
Net CO2 emissions = 50% Reduction



Passive / Active Strategy

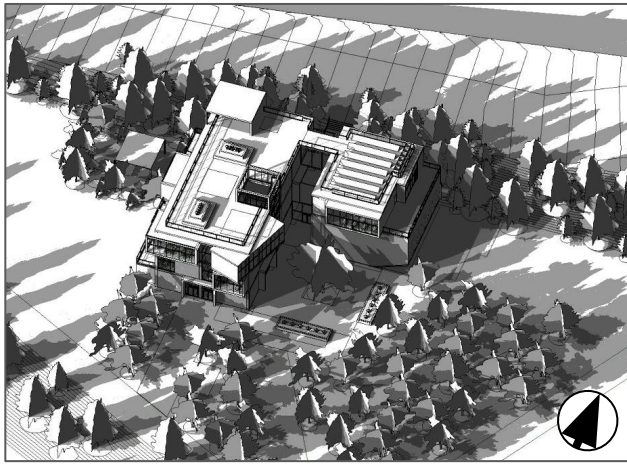
Building Orientation
Solar gains, potential natural ventilation

PV panels
Placement, area, distance, panel orientation and angle



9 AM

12 PM

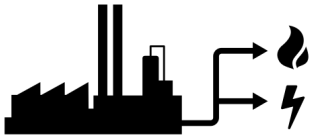


3 PM

Shading / sun analysis of equinox, winter solstice, summer solstice

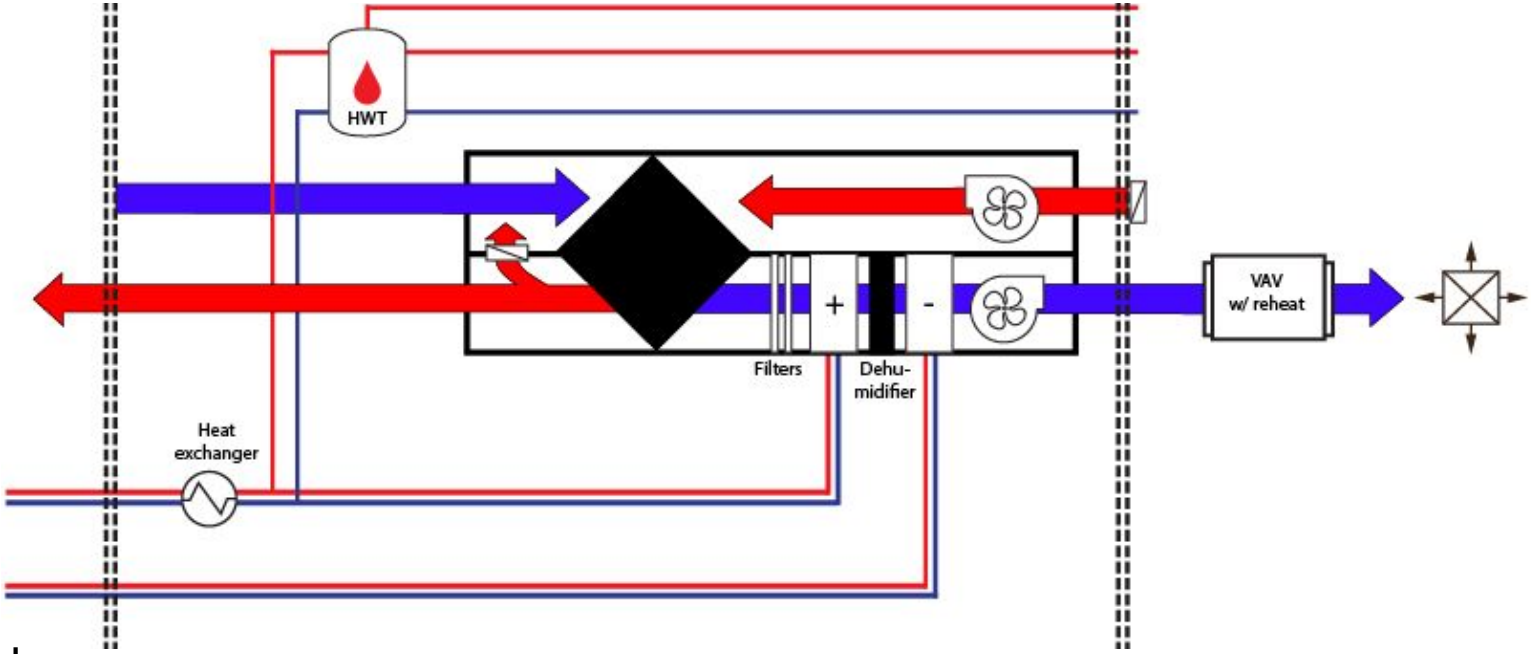
Mechanical Strategies

Outside **MEP room** **Room**



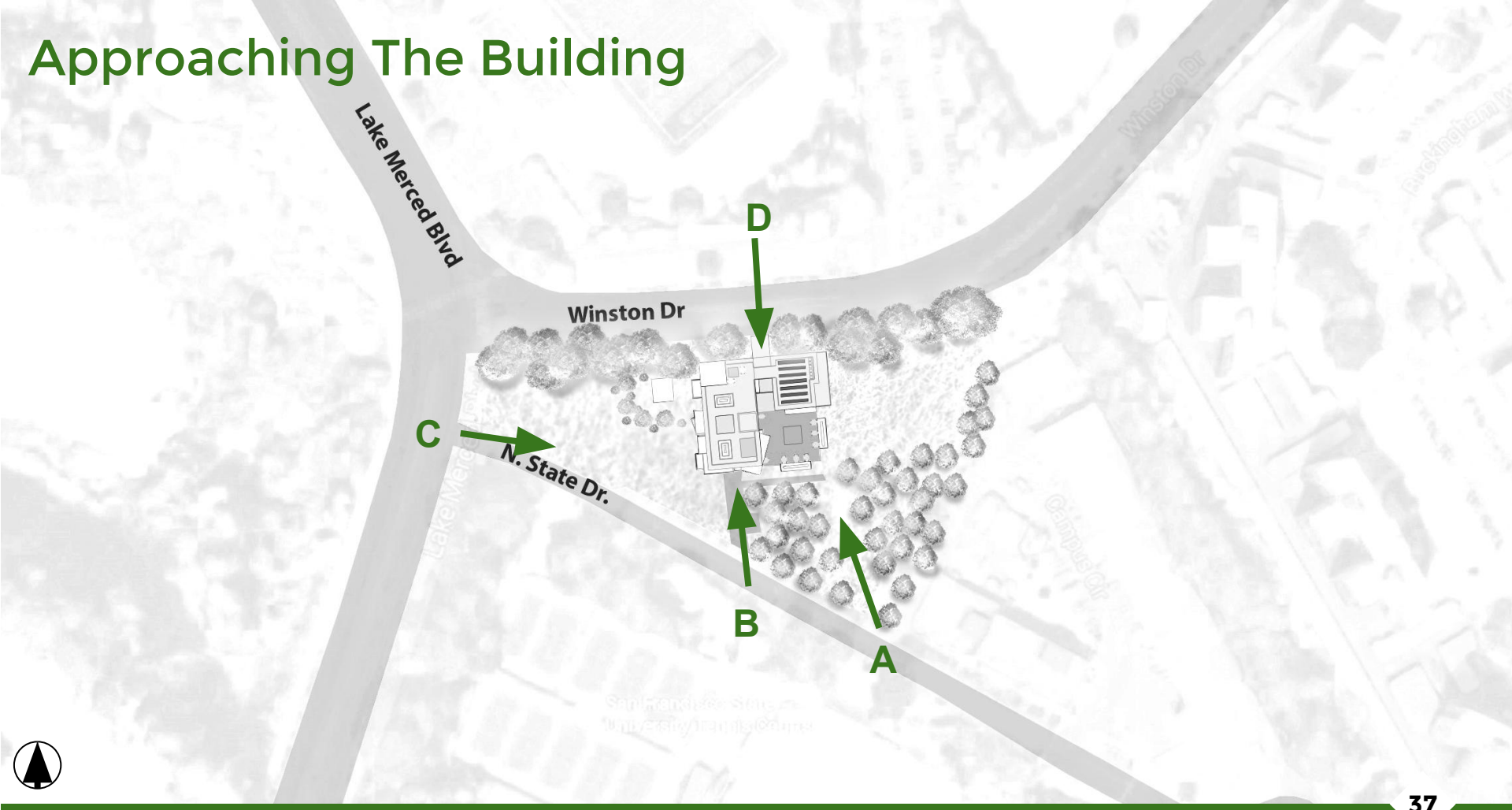
Cogeneration
El 35%, Heat 50%

Cooling w/ Ground source heat pump



OUTSIDE

Approaching The Building



A - Approaching From South East

B- Main Entrance From South

C- Arriving From West

D- North Entrance

GENERAL

Student and Social

1st Floor

Room Legend

- Auditorium
- Cafe
- Elevator
- Mechanical
- MEP
- Open space
- Stairs
- Storage
- Student office
- WC

Faculty

2nd Floor

Room Legend

- Adm & Senior office
- Chairs
- Elevator
- Faculty Lounge
- Faculty office
- MEP
- Open Space
- Stairs
- Storage
- WC

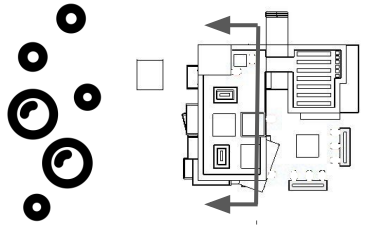
Educational

3rd Floor

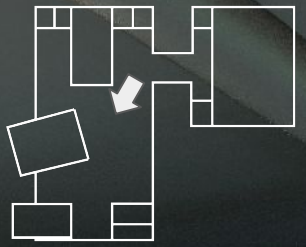
Room Legend

- Big classroom
- Elevator
- Lab
- MEP
- Open Space
- Seminar
- Server
- Small classroom
- Stairs
- Tec
- WC

Section West

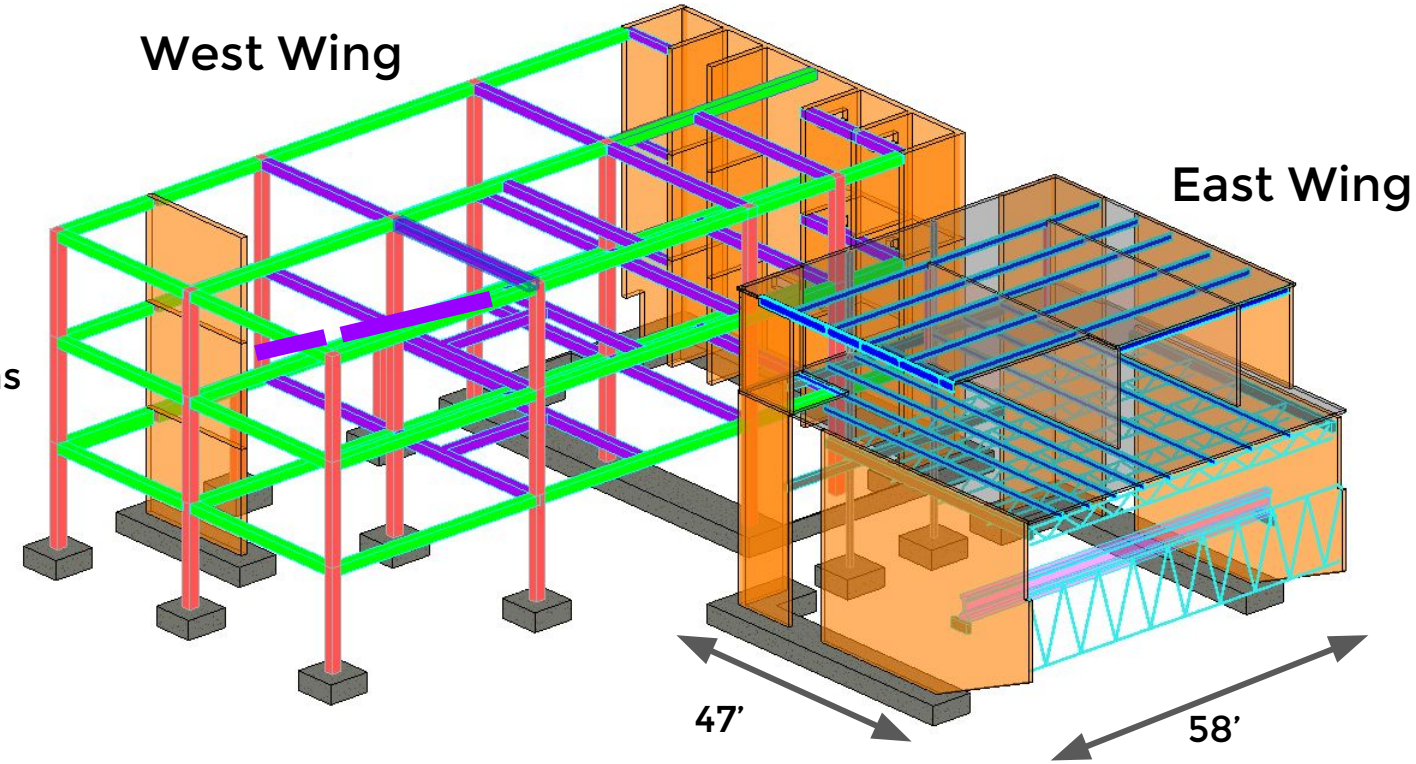


Visible Systems



Structural System

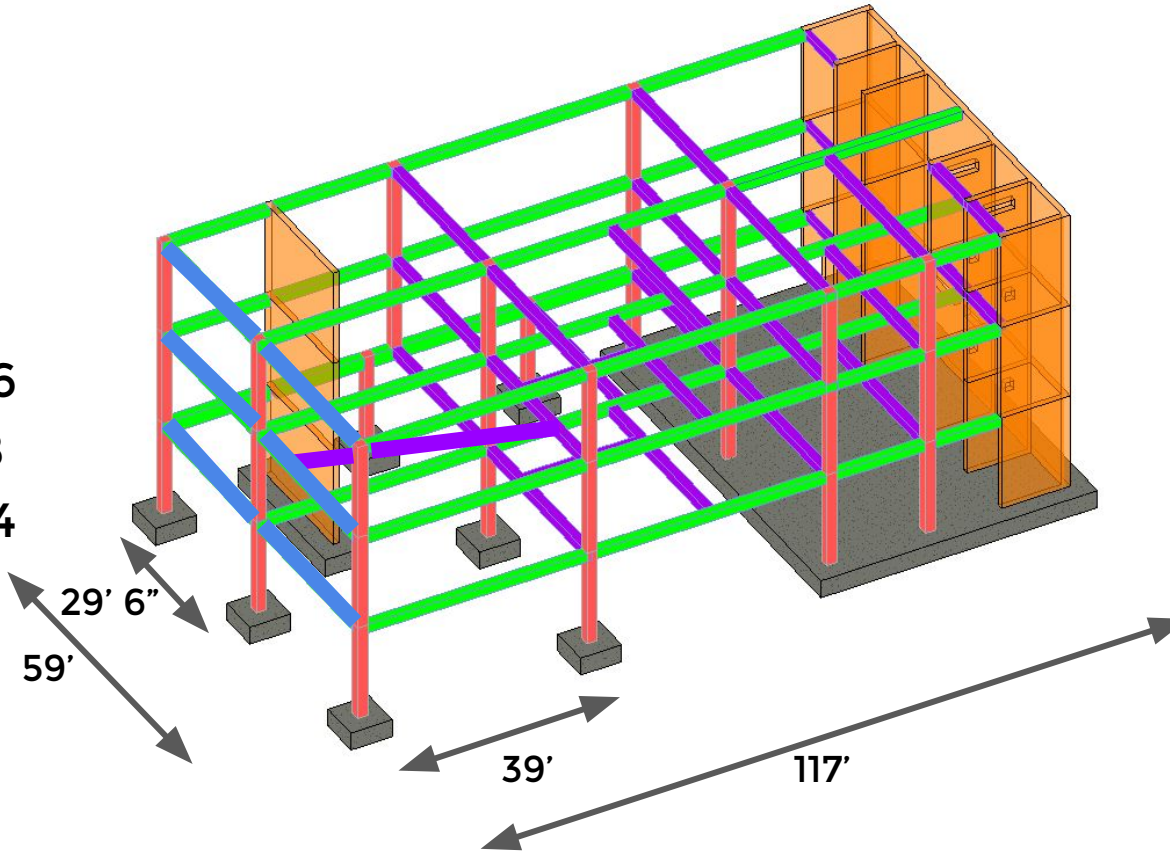
- Shear walls
- Columns
- Main Beams
- Secondary beams
- Composite slab beams
- Truss beam
- Balcony beam
- Foundations



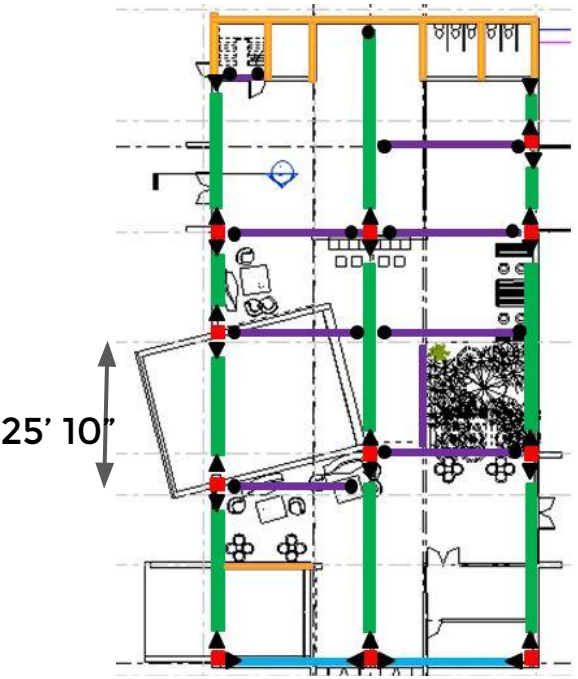
West Wing

Concrete 6000 psi

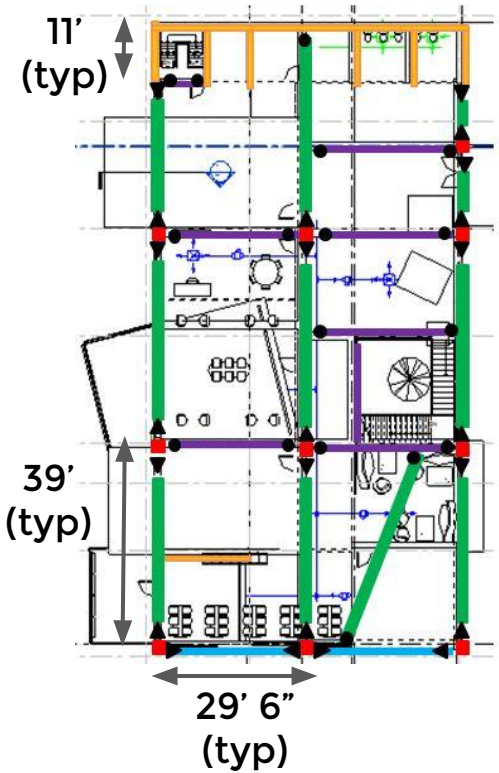
- Shear walls - 12”
- Columns - 24x24
- Primary Beams-1 - 20x26
- Primary Beams-2 - 16x18
- Secondary Beams - 14x14
- Foundation - 36” depth



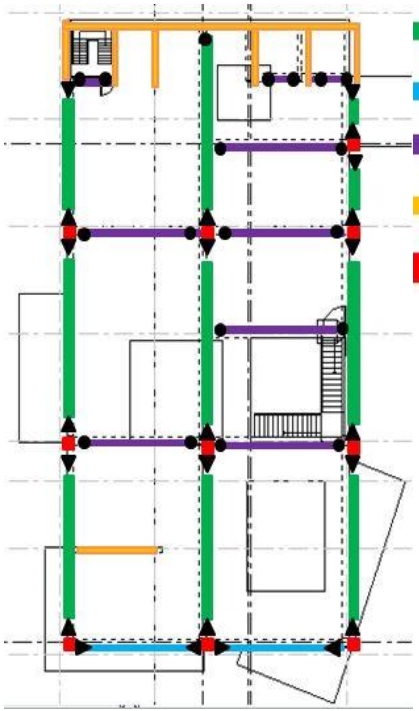
West Wing - Structural Floor Plans



Level 1



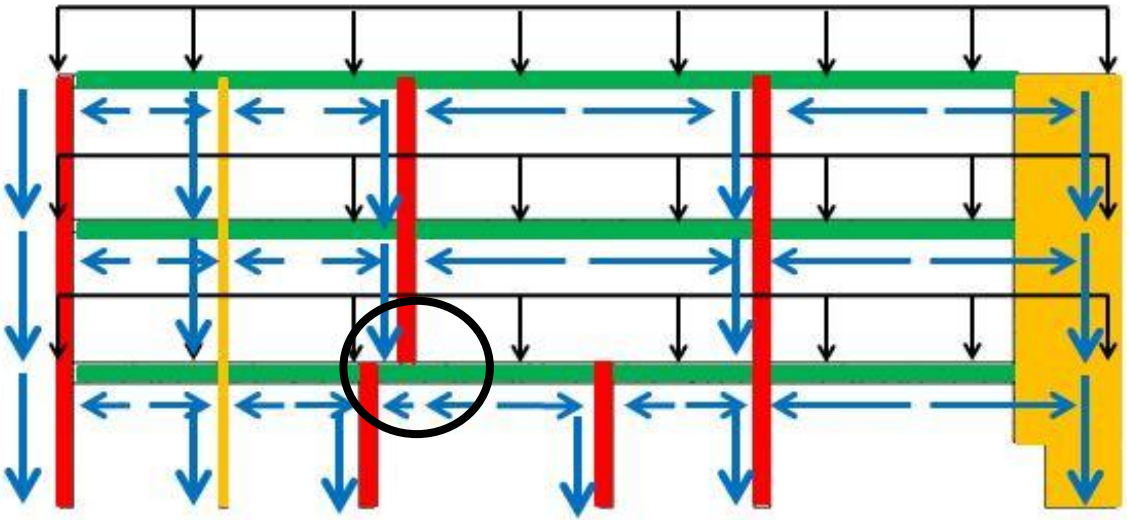
Level 2

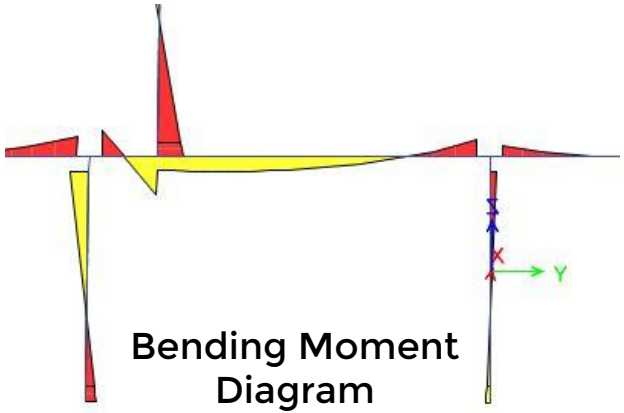


Level 3

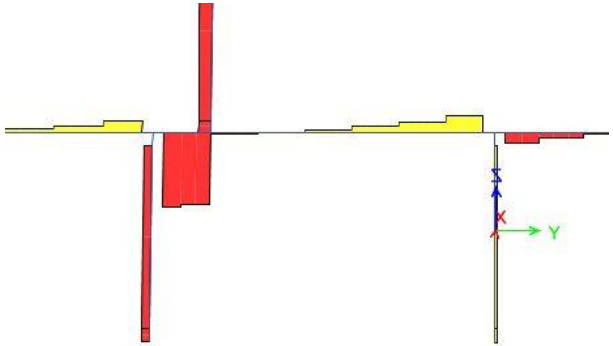
RC Beam 20x26
RC Beam 16x18
RC Beam 14x14
12” RC Shear Wall
RC Column 24x24

West Wing - Gravity Load Path



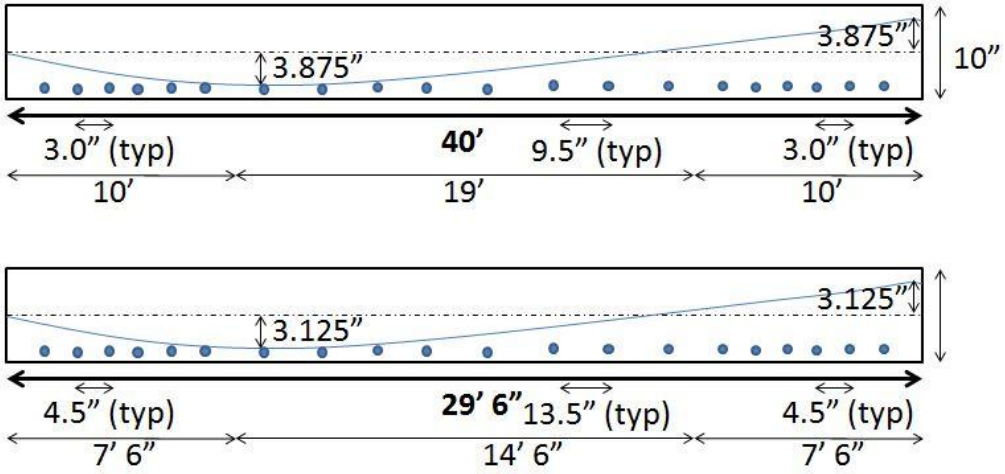


Bending Moment Diagram

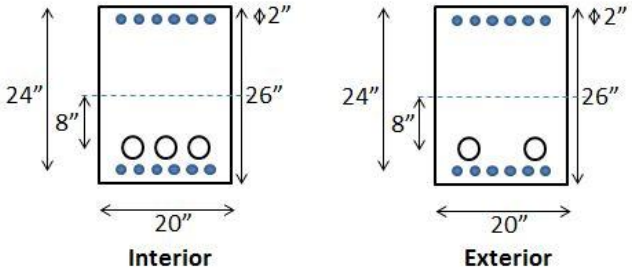


Shear Force Diagram

West Wing - Prestressing System



Floor Slabs



Beams of Main Frame

f_c'= 6 ksi

GR 270 Low Relaxation Strands

Diameter= 0.6”

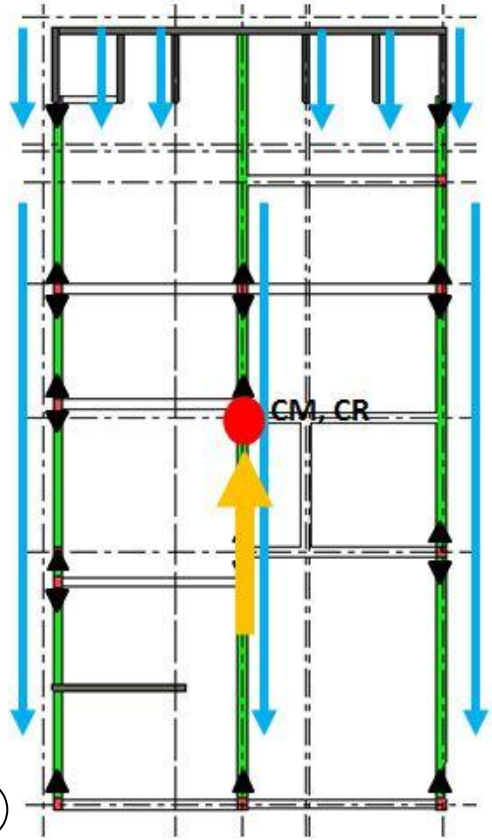
A_{ps} per strand= 0.216 in^2

f_{pe}= 162 ksi

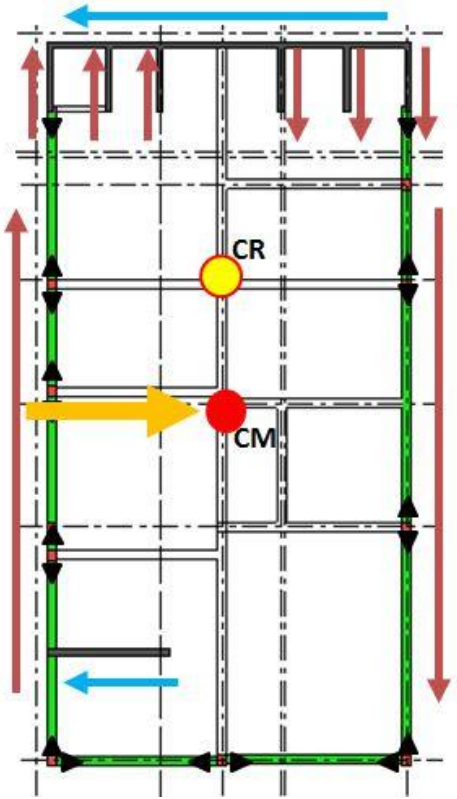
5 strands of 0.216 in^2

#8 bar

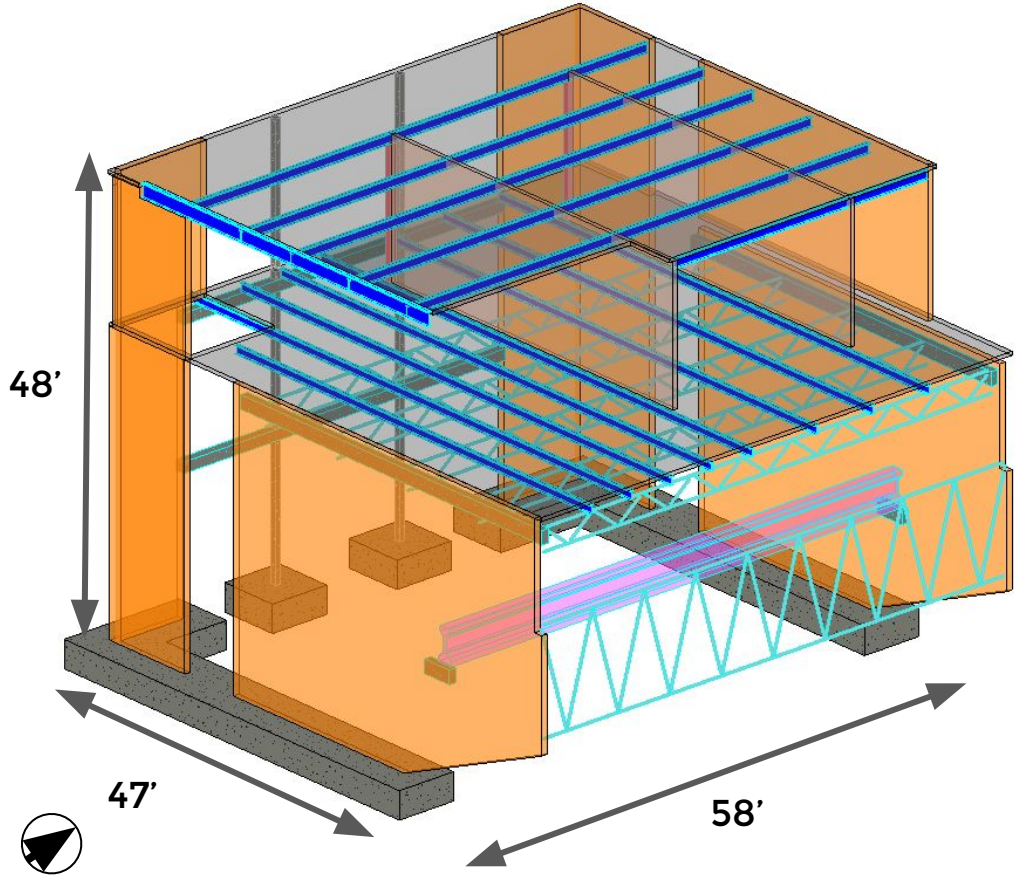
West Wing - Lateral Load Path



- Center of Mass (CM)
- Center of Rigidity (CR)



East Wing



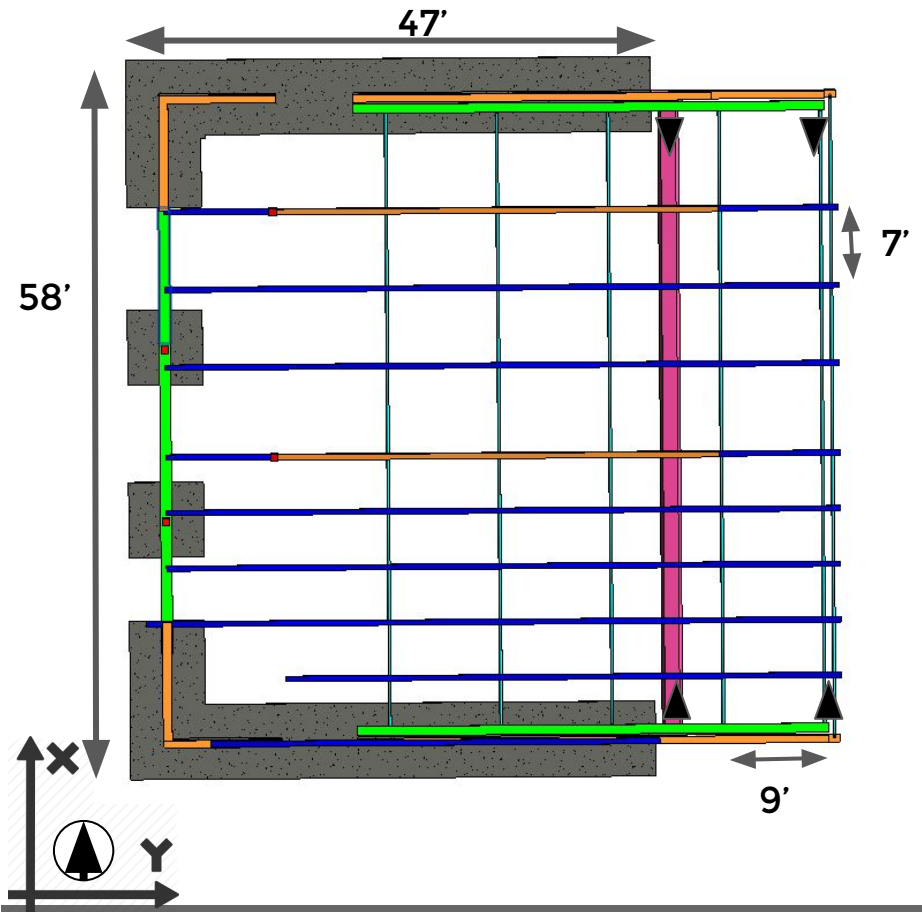
<u>Concrete 6000 psi</u>

- Shear walls N dir - 10”
- Shear walls E-W dir - 8”
- Columns - 14x14
- Secondary beams - 18x24
- Balcony I beam - 3’ 9”
- Composite slab depth- 5”
- Foundation - depth 36”

<u>Steel A992</u>

- Composite slab beams - 20x26
- Truss Beams - HSS 3x0216

East Wing - Structural Floor Plan



Concrete 6000 psi

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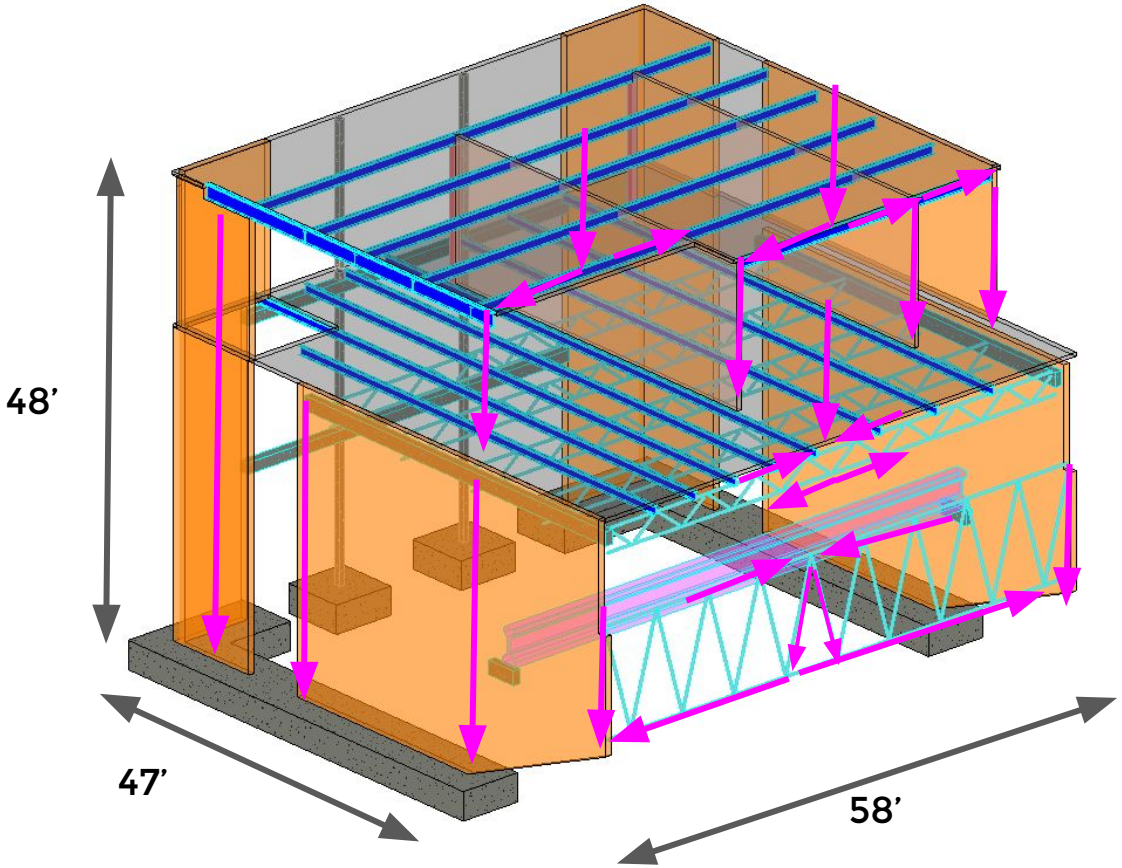
- Composite slab depth- 5”
- Foundation - depth 36”

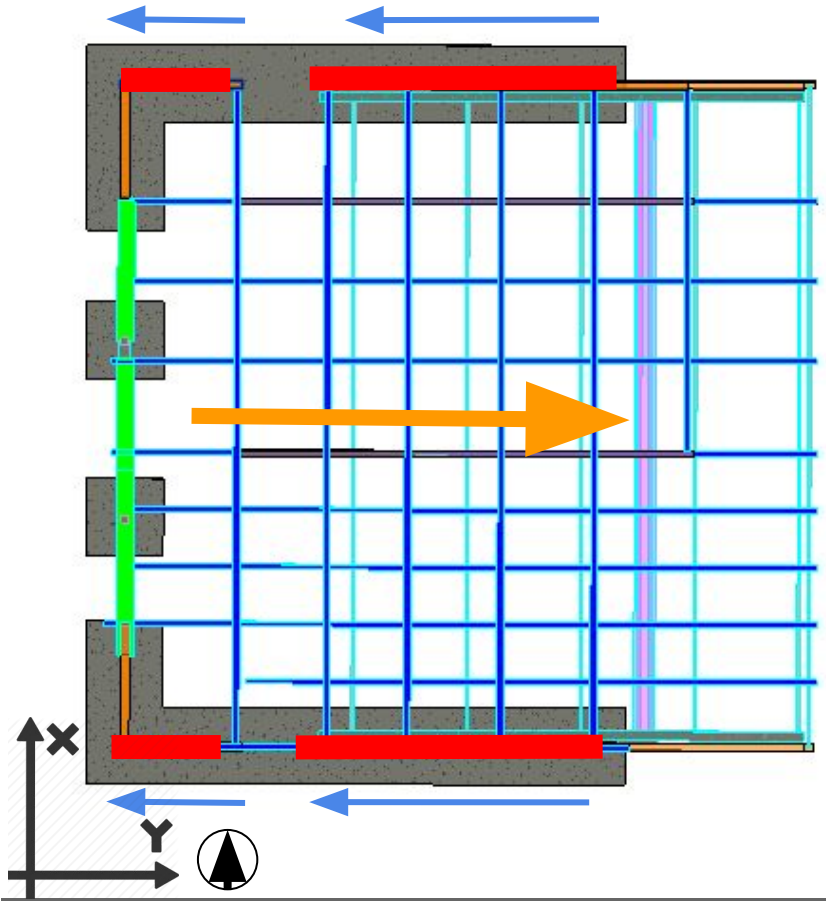
Steel A992

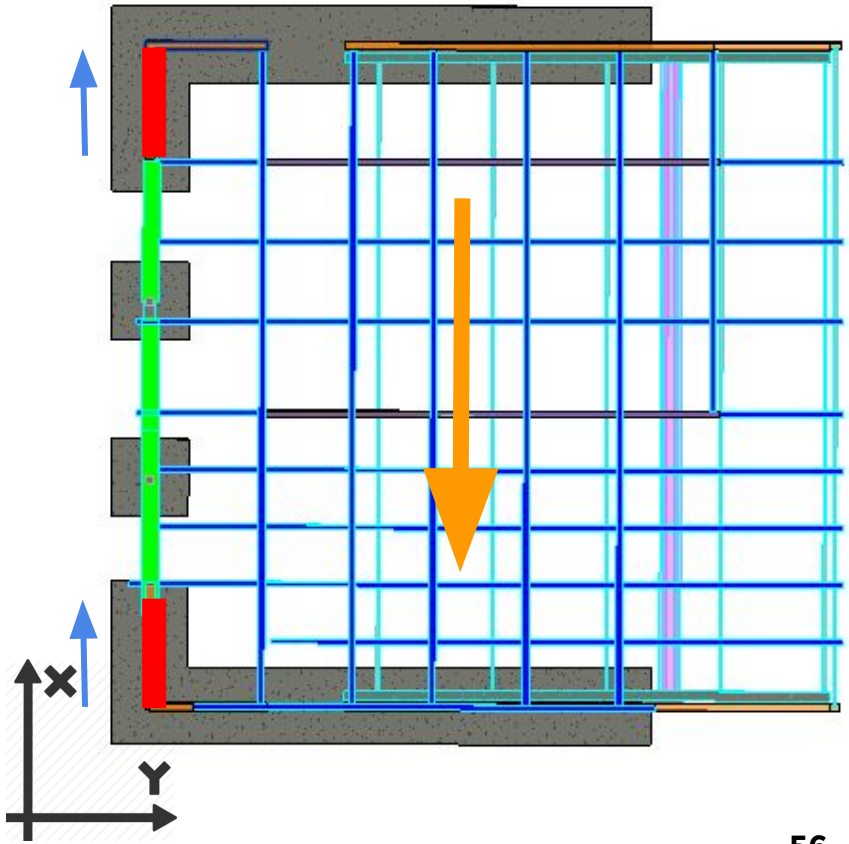
- Composite slab beams - 20x26
- Truss Beams - HSS 3x0216

East Wing - Gravity Load Path

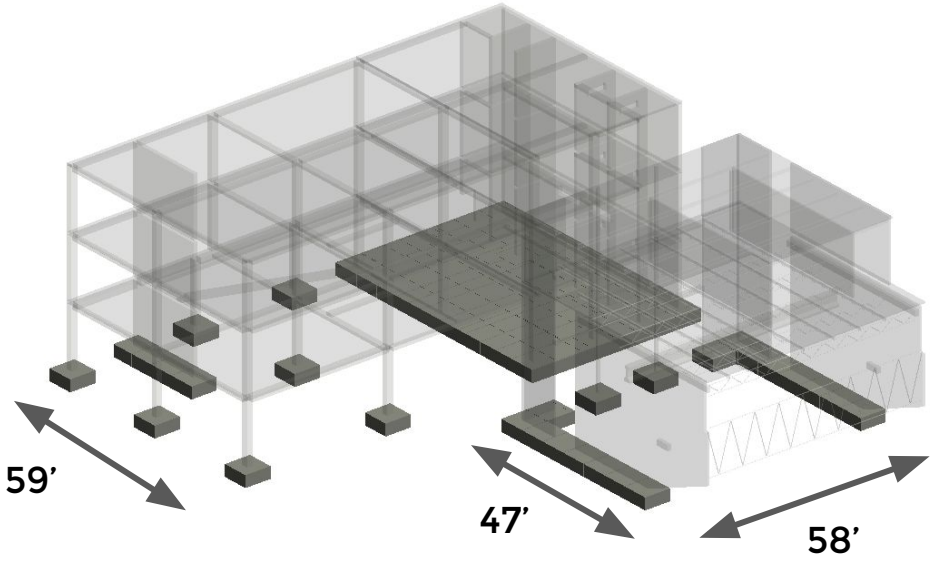


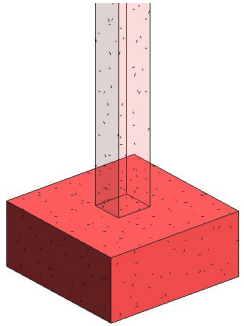
East Wing - Lateral Load Path



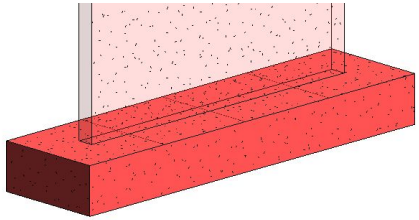


Foundation

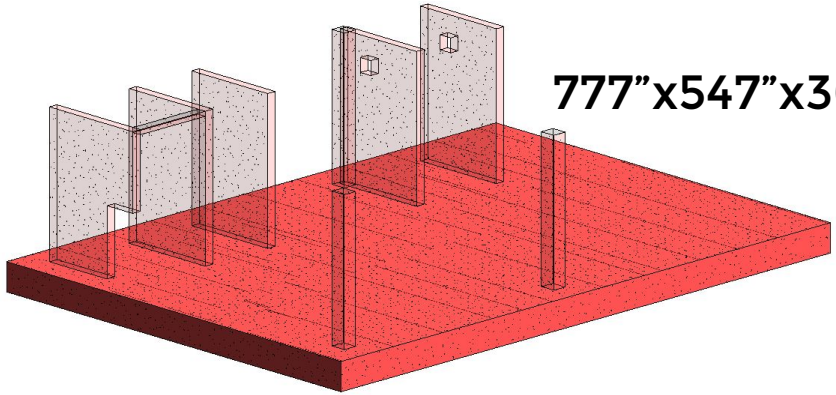




81”x81”x36”

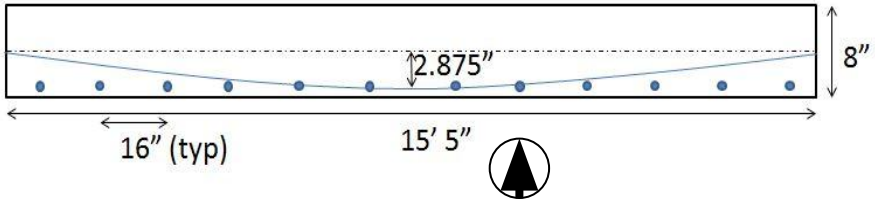


324”x81”x36”

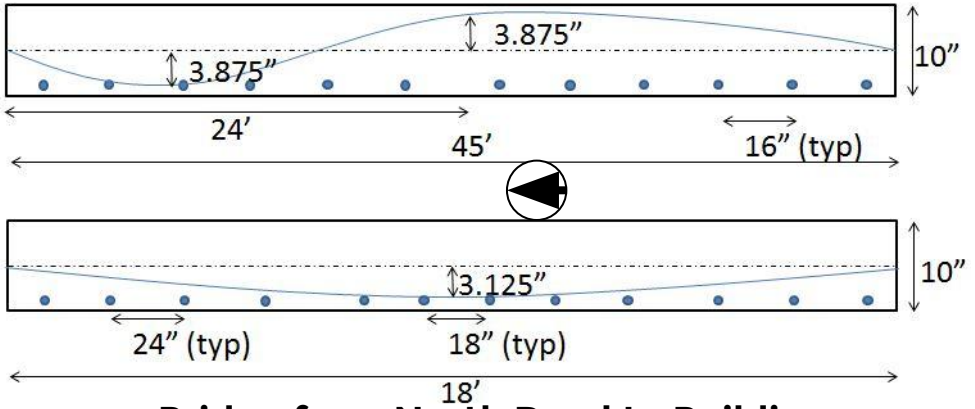


777”x547”x36”

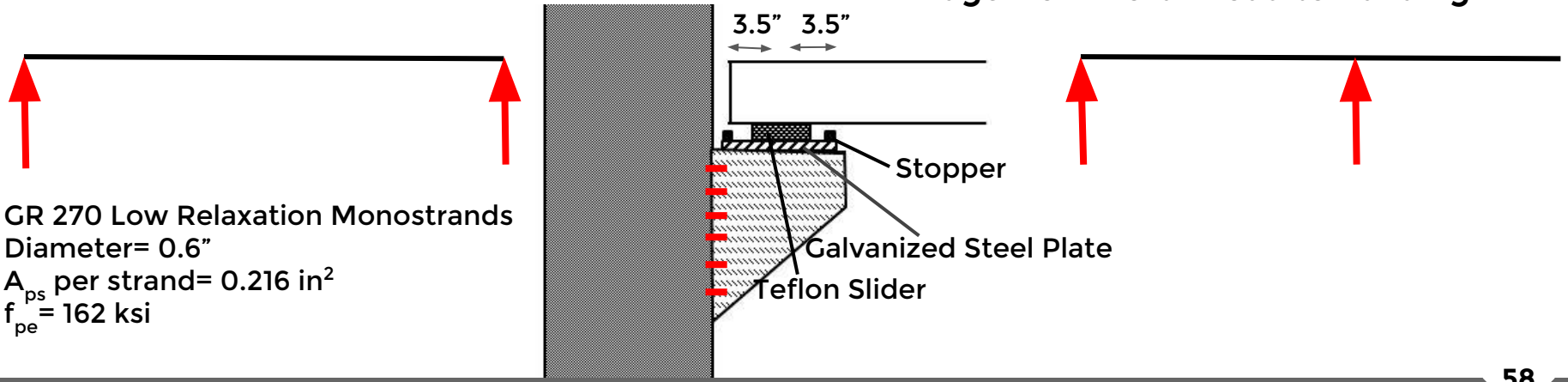
Bridge design



Bridge b/w East and West Wings

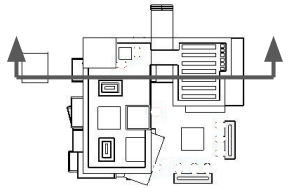


Bridge from North Road to Building



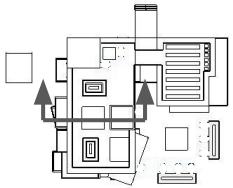
GR 270 Low Relaxation Monostrands
Diameter= 0.6”
A_{ps} per strand= 0.216 in^2
f_{pe}= 162 ksi

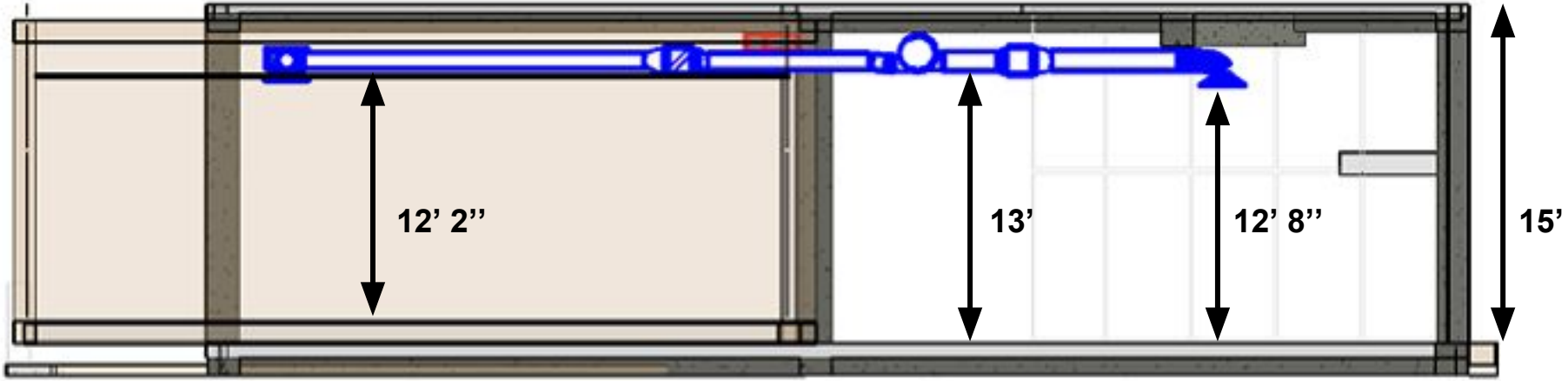
Mechanical System



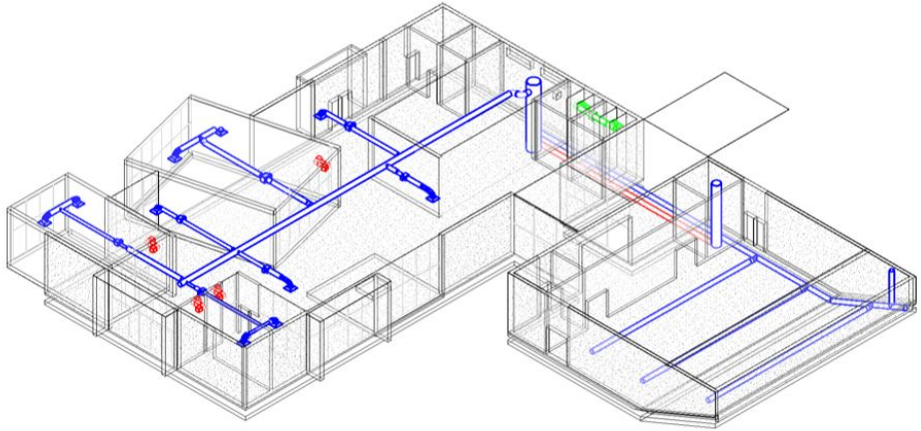
Floor Sandwich

Mechanical - Floor Sandwich

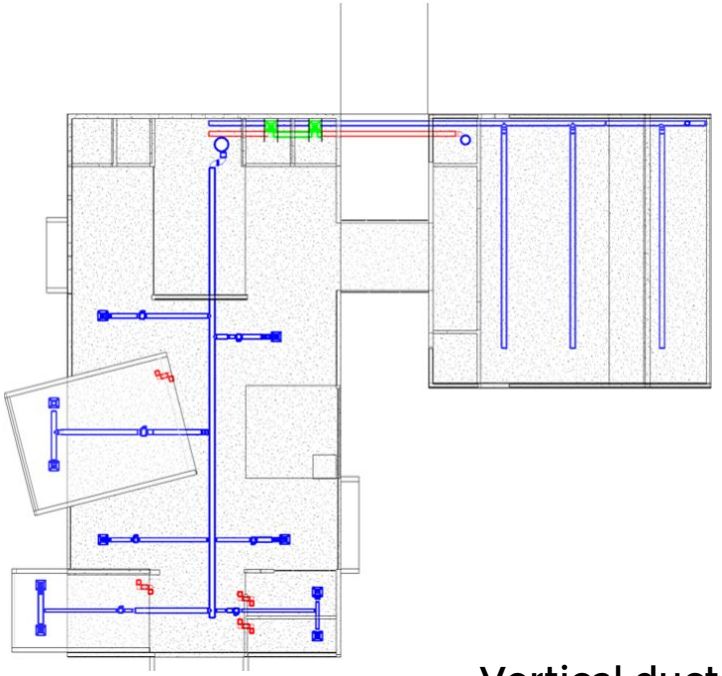




Mechanical - First Floor



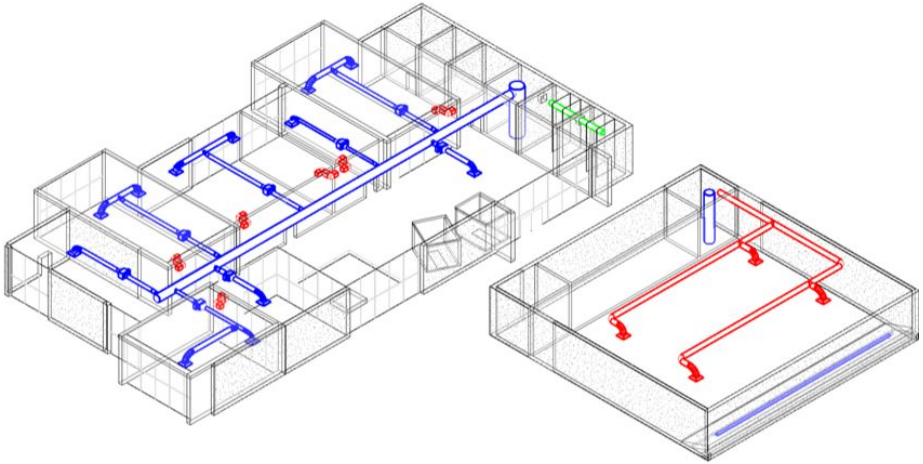
Isometric view



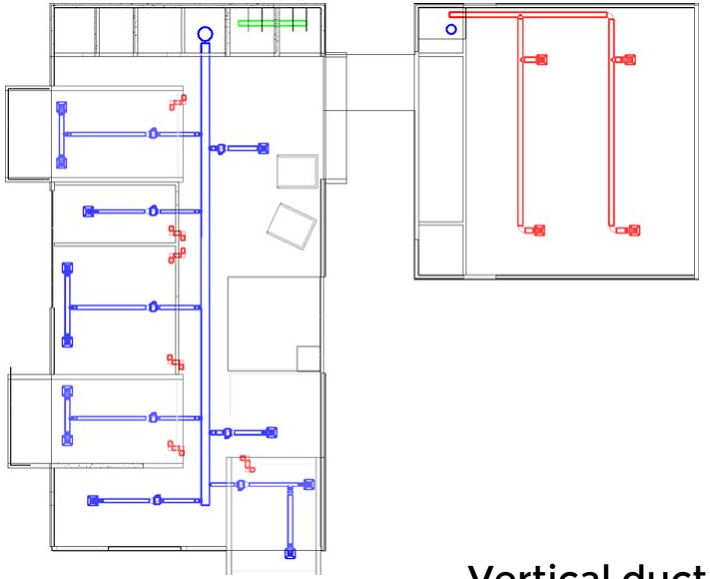
Plan

Vertical duct - 36”
Main duct - 20”
Branch - 11”
Terminal duct - 8”
Return ducts - 12”

Mechanical - Second Floor



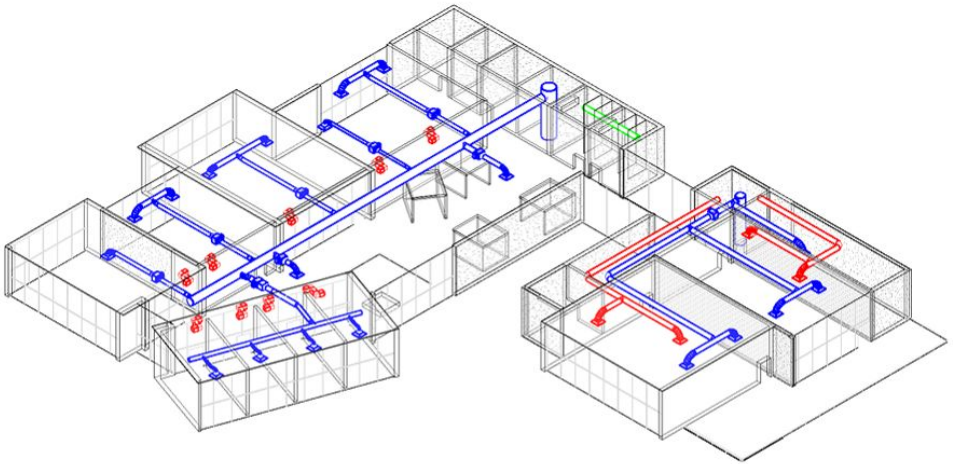
Isometric view



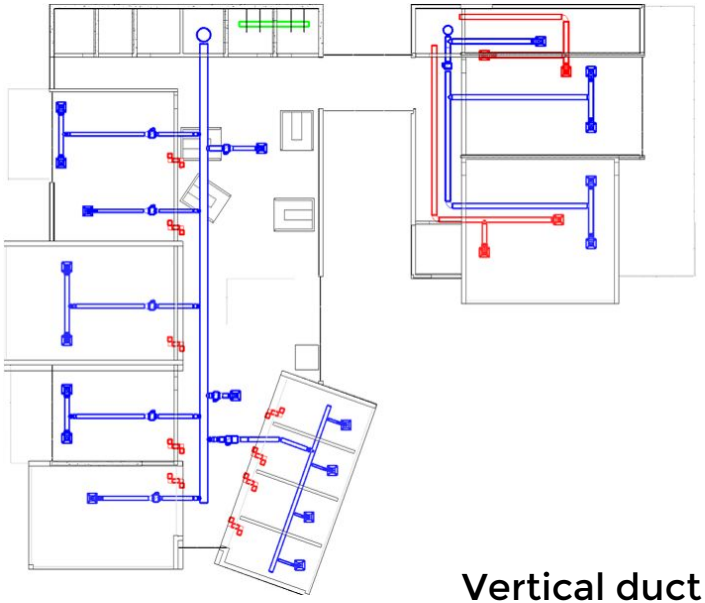
Plan

Vertical duct - 36”
Main duct - 20”
Branch - 11”
Terminal duct - 8”
Return ducts - 12”

Mechanical - Third Floor



Isometric view



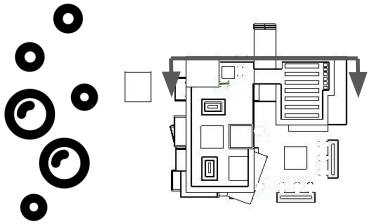
Plan

Vertical duct - 36”
Main duct - 20”
Branch - 11”
Terminal duct - 8”
Return ducts - 12”

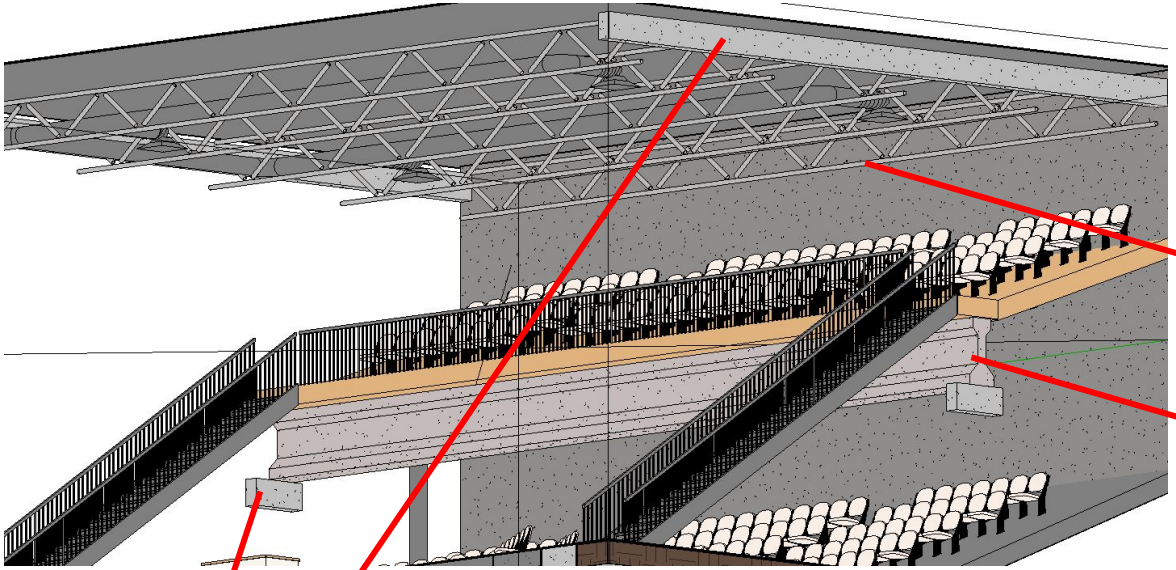
AUDITORIUM

Auditorium

Section south



Structural System

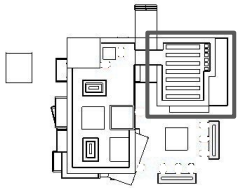


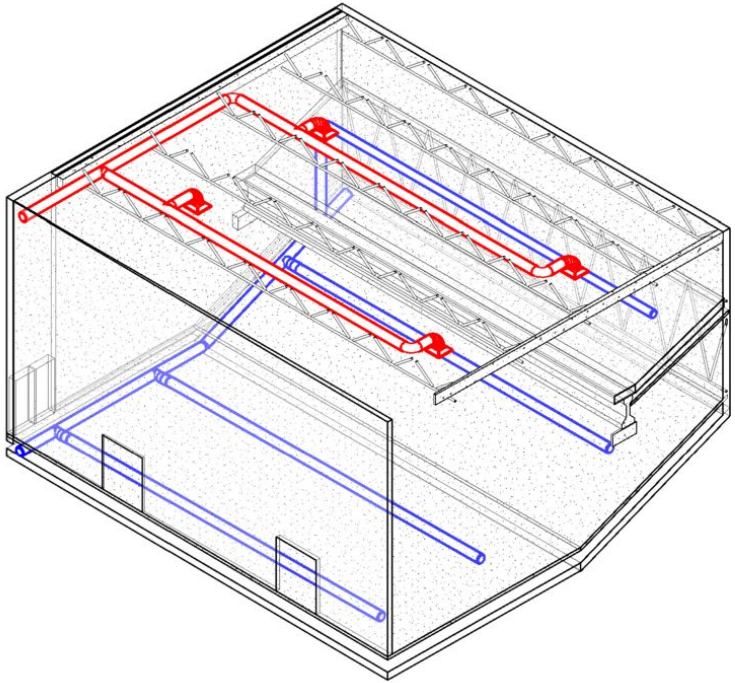
Steel truss - depth 2’ 6”
HSS 3x0,216

Concrete I beam
Depth 3’ 9”

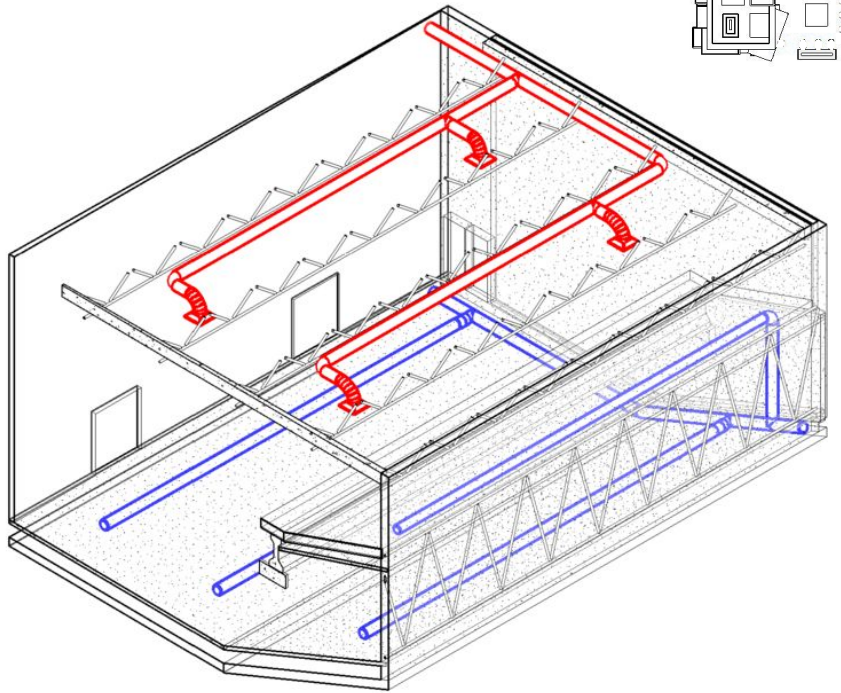
On-wall concrete
short cantilever
10x18”

MEP, A and SE Collaboration





Isometric view



Isometric view

SOCIAL SPACES

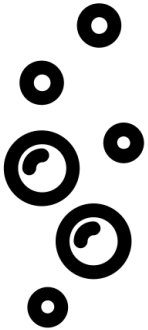
Social Spaces

Faculty Lounge

Green Walls

LEED

Sustainable Sites, Water Efficiency, Energy and Atmosphere, Materials and Resources, Indoor Environmental Quality, Innovation.



Air Quality

Different plants absorb different toxic chemical, thus reducing the concentration of formaldehyde, VOCs, TCE, benzene, etc.

Acoustics

Plants attenuate sound by reflecting, refracting and absorbing acoustic energy.

Green Walls

Option 1: Modular Boxes

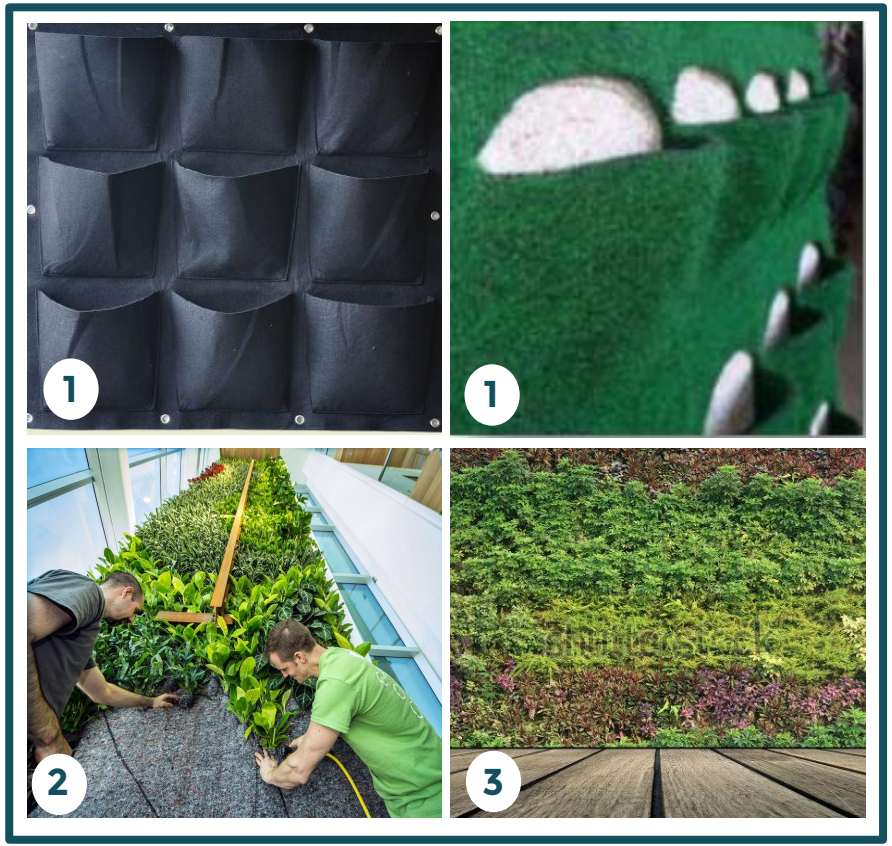
- Heavy (30 lb/sf)
- Limited root development space

Option 2: Hydroponic Systems

- Light (4 lb/sf)
- Mono-cropping
- Easy to maintain

Option 3:Green Facades

- Long term, high maintenance.
- Potential for structural damage



Green Walls



Endemic plants

No irrigation

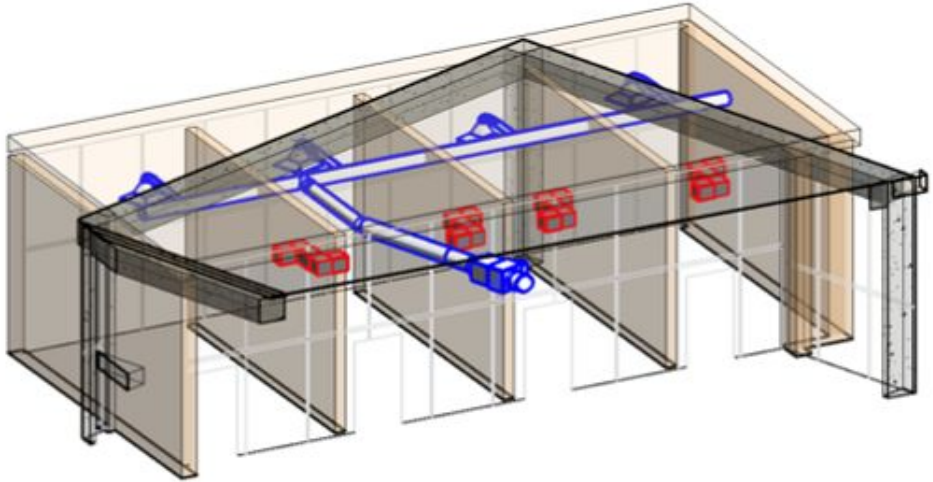
Silver bush lupine, western redbud.

BOX DESIGN

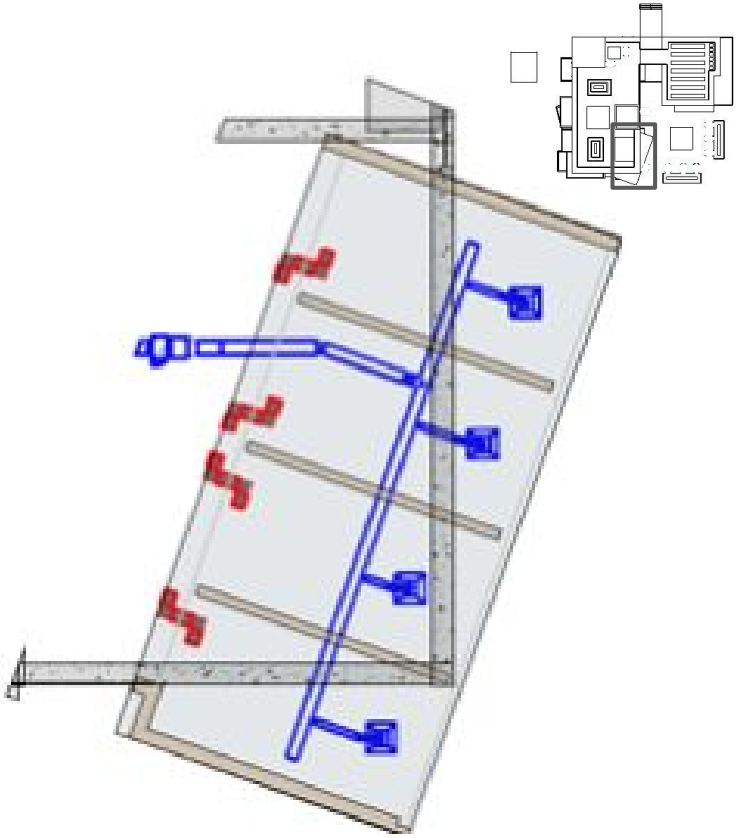
The Box

Collaborative spaces

MEP, SE and A collaboration

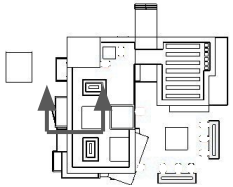


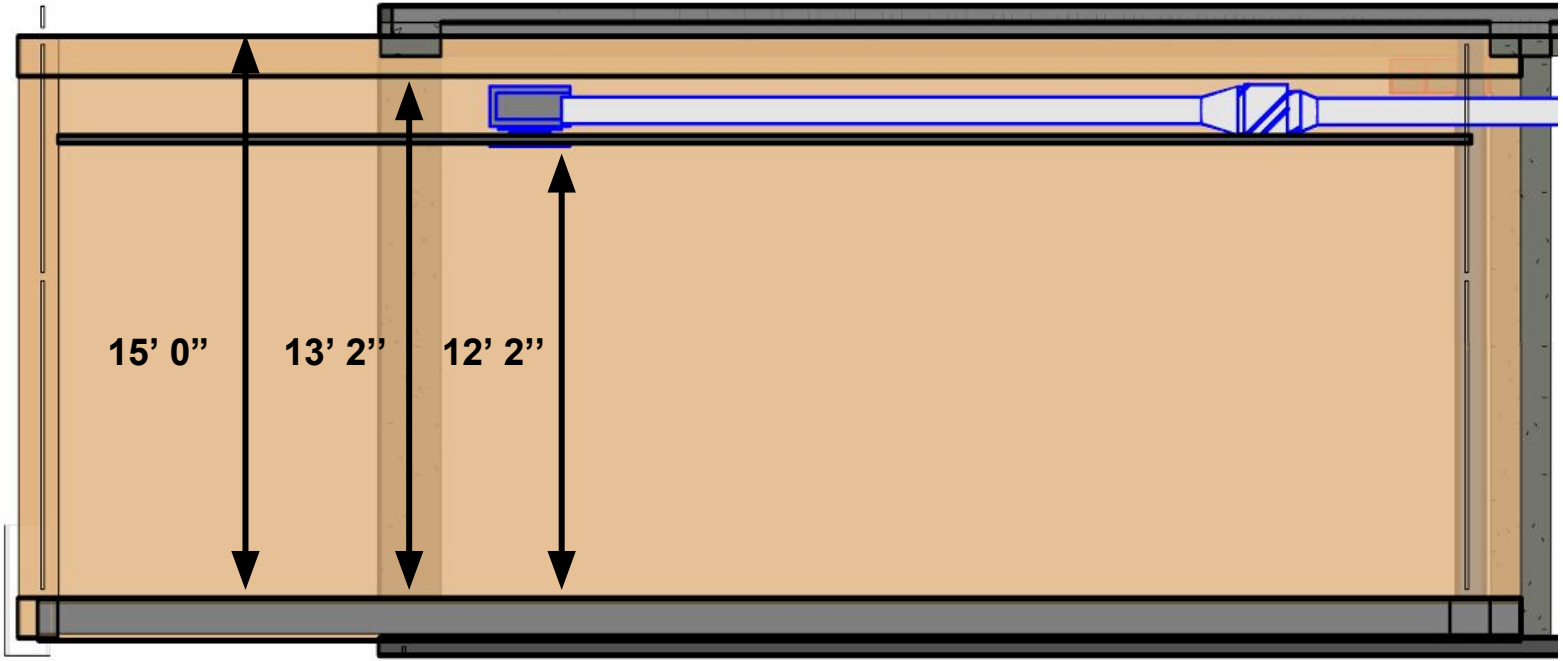
Isometric view



Plan

MEP, SE and A collaboration

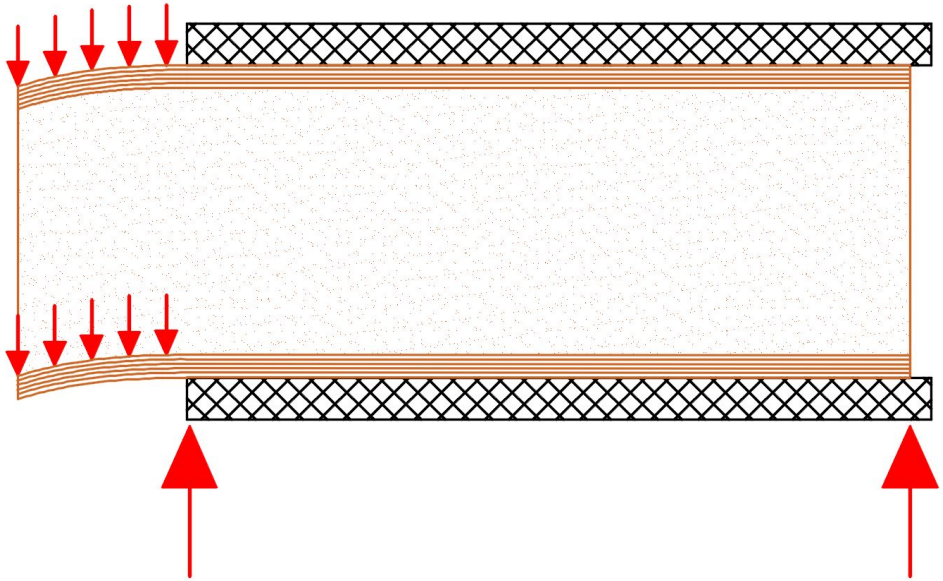




Detailed section

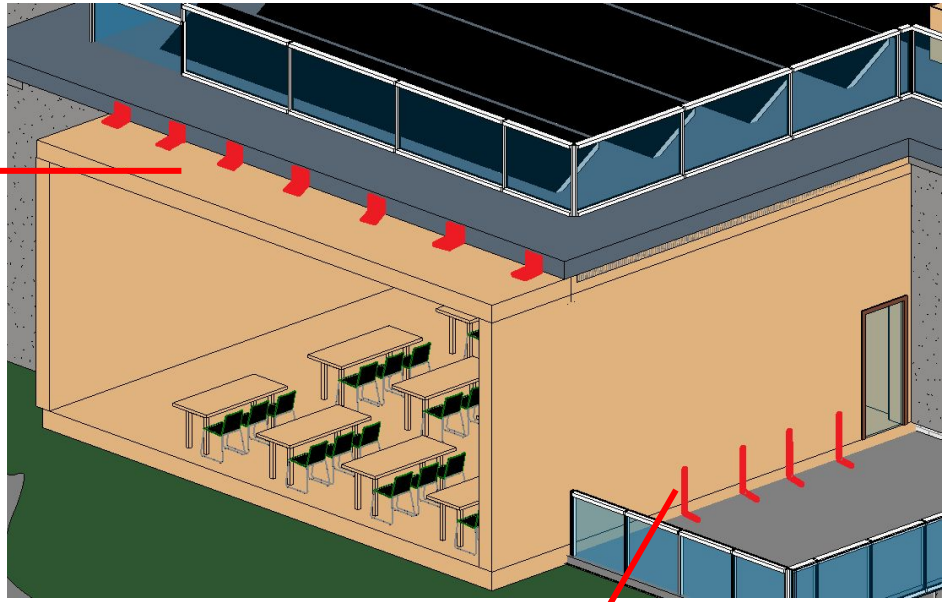
Structural system

7 layer
Top and bottom slab
Depth = 6”

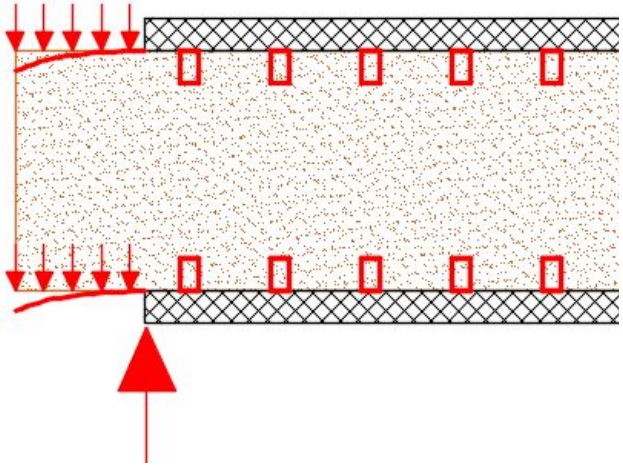


Box walls used as a deep beams, anchored in bottom and top slab

Structural system - Connections



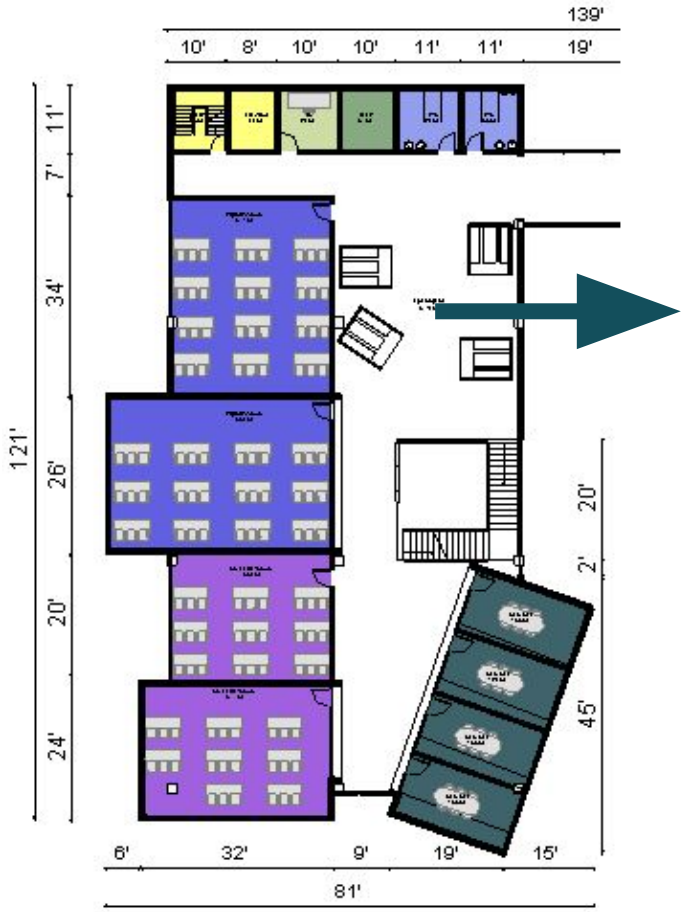
Box walls used as a deep beams,
anchored in bottom and top slab

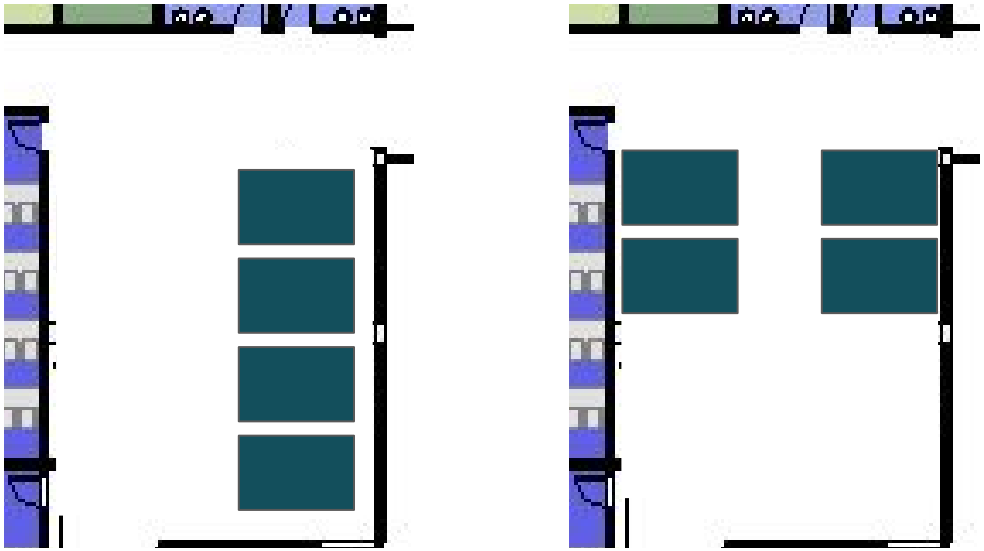


Structural system - Anchor

Flexible Boxes

Flexible Boxes





Flexible Furniture Boxes

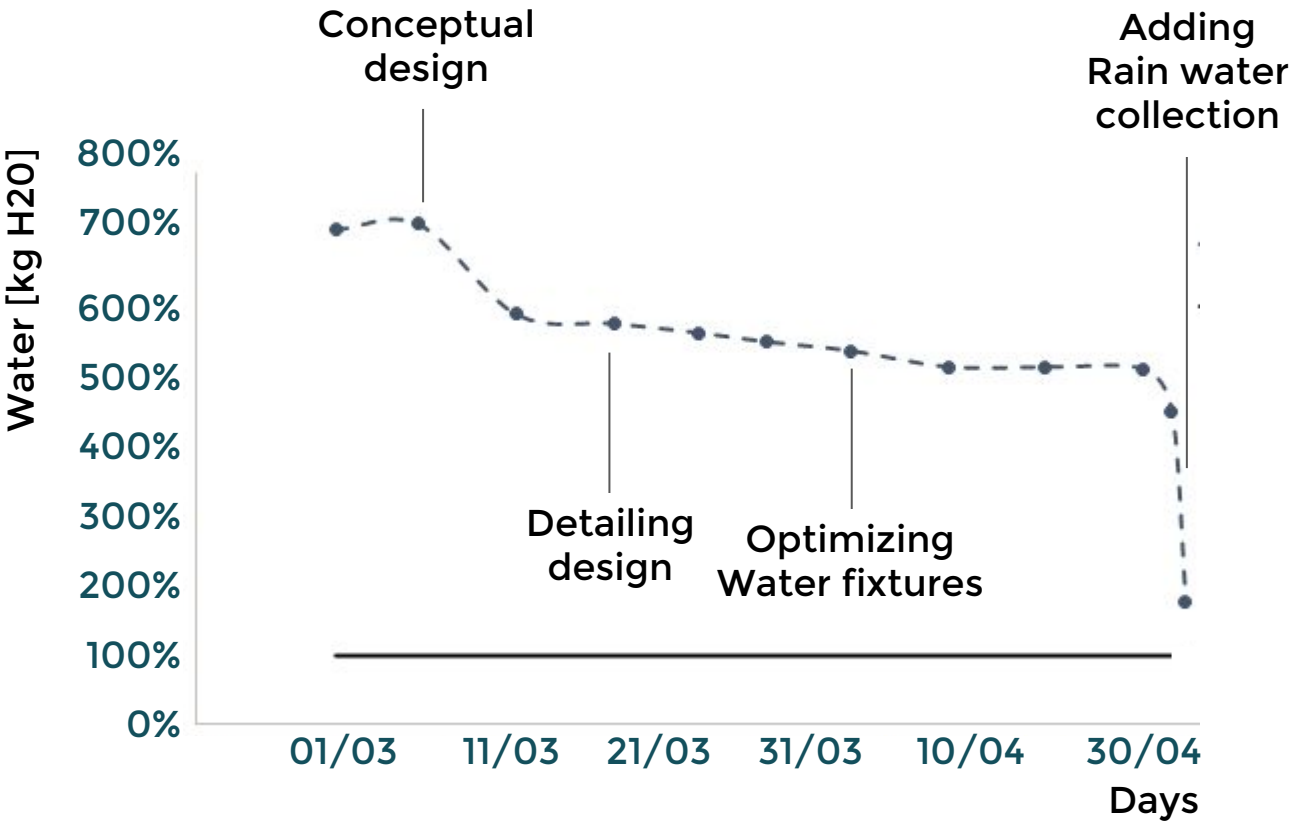
ROOF DESIGN

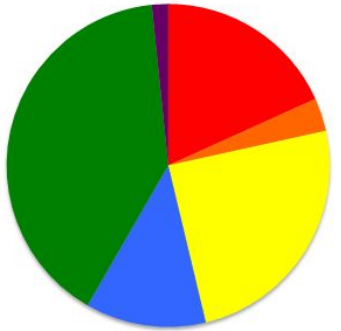
The Roof

Beehives for Air Quality

Sustainable Target Value

Water progress





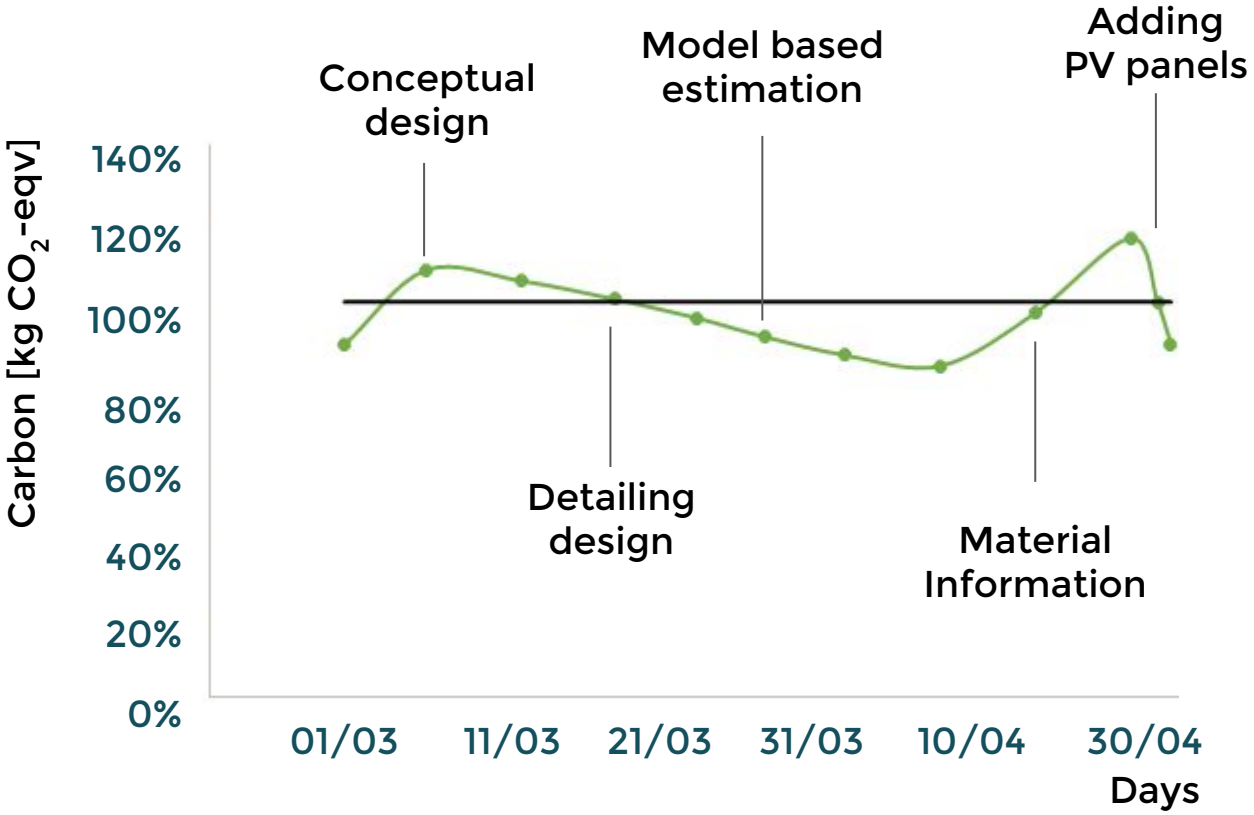
Materials
Transport
Construction
Electricity
Heating
Water Use

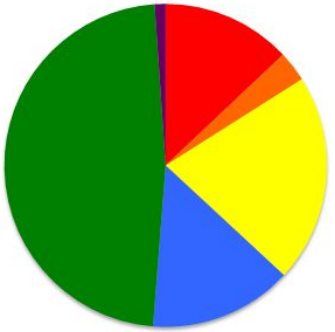
Water

Target

Sustainable Target Value

Carbon Progress





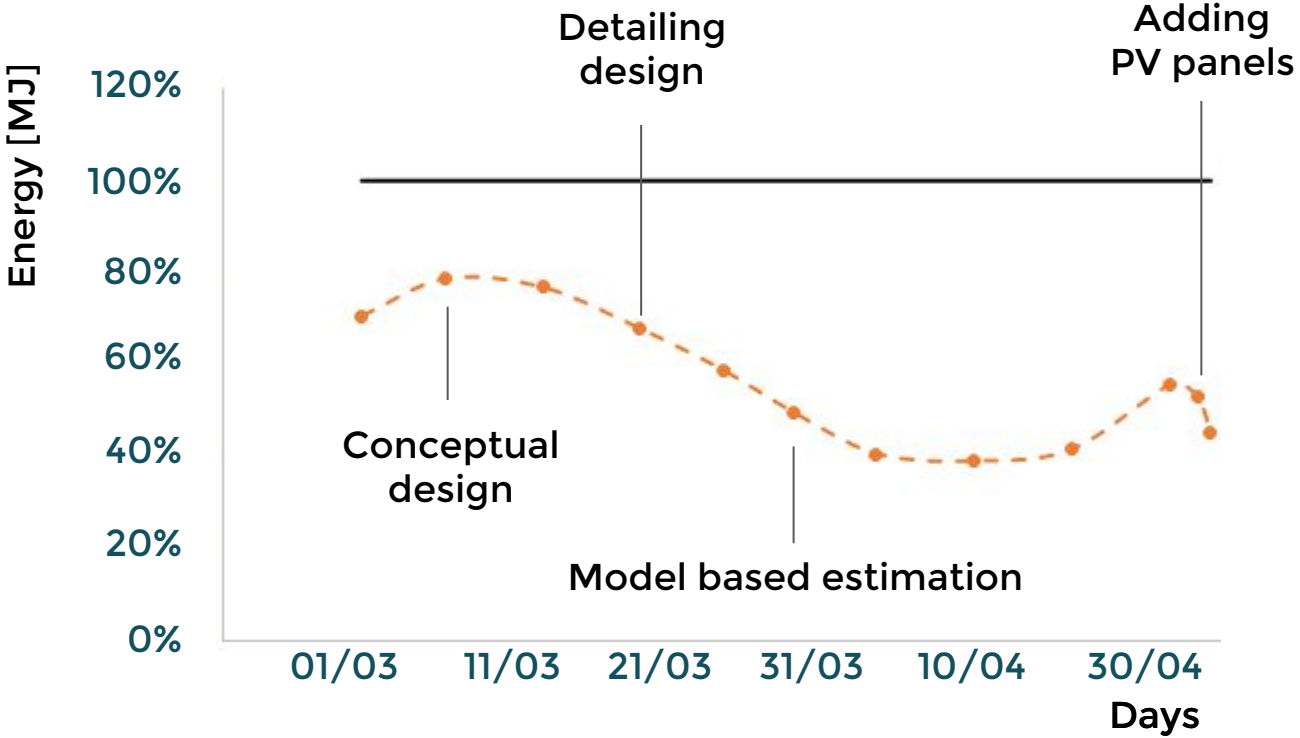
Materials
Transport
Construction
Electricity
Heating
Water Use

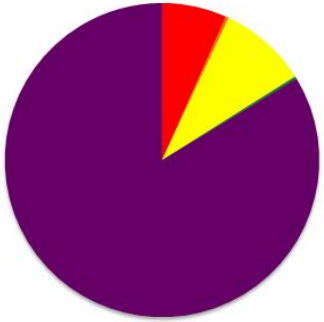
CO_2

Target

Sustainable Target Value

Energy progress



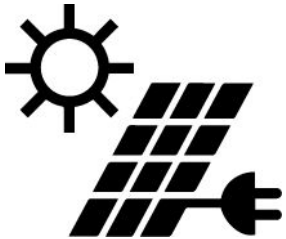


Materials
Transport
Construction
Electricity
Heating
Water Use

Energy

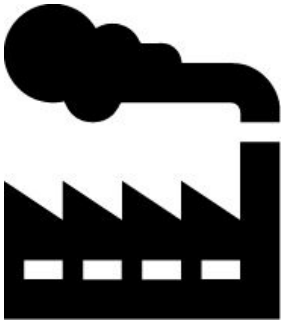
Target

Sustainable Target Value



PV panels
13.400 kWh/yr

Rain Water Collection
112.500 gal/yr

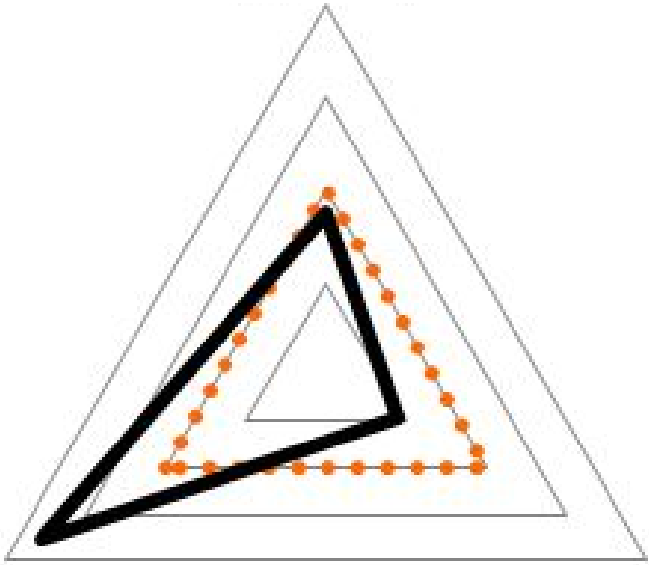


Cogeneration
Electricity 35%,
Heating 50%

Sustainable Target Value

Targets
Project

Carbon
3.3 kg CO_2-eqv



Water
130.7 kg H_20

Energy
54.2 MJ

LEED

- Rating System
  - LEED v4 BD+C NC
- 55 points - Gold Certified

- Energy Efficiency - 25%.
- Construction:
  - SWPPP
  - IAQ
  - Material & Resources
- Process

LEED v4 for BD+C: New Construction and Major Renovation
Project Checklist

Project Name: PACI
Date: APR. 30, 201

Y	?	N			
1			Credit	Integrative Process	1

Y	?	N		Location and Transportation	16
			Credit	LEED for Neighborhood Development Location	16
1			Credit	Sensitive Land Protection	1
		2	Credit	High Priority Site	2
2		3	Credit	Surrounding Density and Diverse Uses	5
		5	Credit	Access to Quality Transit	5
1			Credit	Bicycle Facilities	1
1			Credit	Reduced Parking Footprint	1
		1	Credit	Green Vehicles	1

Y	?	N		Sustainable Sites	10
Y			Prereq	Construction Activity Pollution Prevention	Required
1			Credit	Site Assessment	1
		2	Credit	Site Development - Protect or Restore Habitat	2
1			Credit	Open Space	1
		3	Credit	Rainwater Management	3
2			Credit	Heat Island Reduction	2
1			Credit	Light Pollution Reduction	1

Y	?	N		Water Efficiency	11
Y			Prereq	Outdoor Water Use Reduction	Required
Y			Prereq	Indoor Water Use Reduction	Required
Y			Prereq	Building-Level Water Metering	Required
2			Credit	Outdoor Water Use Reduction	2
		6	Credit	Indoor Water Use Reduction	6
		2	Credit	Cooling Tower Water Use	2
1			Credit	Water Metering	1

Y	?	N		Energy and Atmosphere	33
Y			Prereq	Fundamental Commissioning and Verification	Required
Y			Prereq	Minimum Energy Performance	Required
Y			Prereq	Building-Level Energy Metering	Required
Y			Prereq	Fundamental Refrigerant Management	Required
3		3	Credit	Enhanced Commissioning	6
11		7	Credit	Optimize Energy Performance	18
1			Credit	Advanced Energy Metering	1
		2	Credit	Demand Response	2
		3	Credit	Renewable Energy Production	3
1			Credit	Enhanced Refrigerant Management	1
		2	Credit	Green Power and Carbon Offsets	2

Y	?	N		Materials and Resources	13
Y			Prereq	Storage and Collection of Recyclables	Required
Y			Prereq	Construction and Demolition Waste Management Planning	Required
		5	Credit	Building Life-Cycle Impact Reduction	5
2			Credit	Building Product Disclosure and Optimization - Environmental Product Declarations	2
2			Credit	Building Product Disclosure and Optimization - Sourcing of Raw Materials	2
2			Credit	Building Product Disclosure and Optimization - Material Ingredients	2
2			Credit	Construction and Demolition Waste Management	2

Y	?	N		Indoor Environmental Quality	16
Y			Prereq	Minimum Indoor Air Quality Performance	Required
Y			Prereq	Environmental Tobacco Smoke Control	Required
2			Credit	Enhanced Indoor Air Quality Strategies	2
3			Credit	Low-Emitting Materials	3
1			Credit	Construction Indoor Air Quality Management Plan	1
2			Credit	Indoor Air Quality Assessment	2
1			Credit	Thermal Comfort	1
2			Credit	Interior Lighting	2
3			Credit	Daylight	3
		1	Credit	Quality Views	1
		1	Credit	Acoustic Performance	1

Y	?	N		Innovation	6
2		3	Credit	Innovation	5
1			Credit	LEED Accredited Professional	1

Y	?	N		Regional Priority	4
		1	Credit	Regional Priority: Specific Credit	1
		1	Credit	Regional Priority: Specific Credit	1
		1	Credit	Regional Priority: Specific Credit	1
		1	Credit	Regional Priority: Specific Credit	1

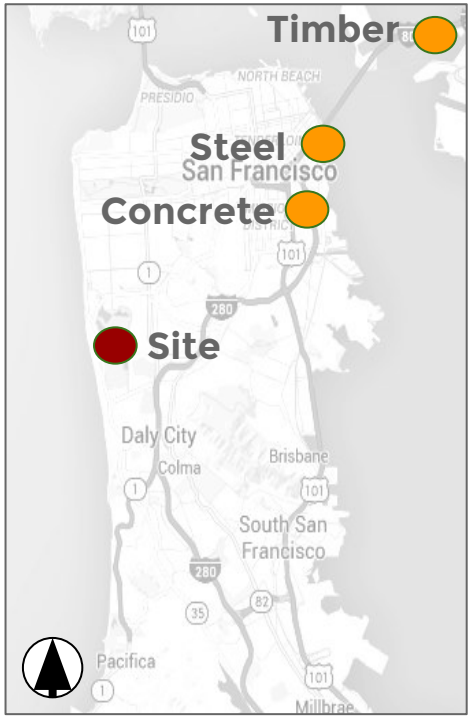
55	0	55	TOTALS	Possible Points:	110

Certified: 40 to 49 points, **Silver:** 50 to 59 points, **Gold:** 60 to 79 points, **Platinum:** 80 to 110

CONSTRUCTION

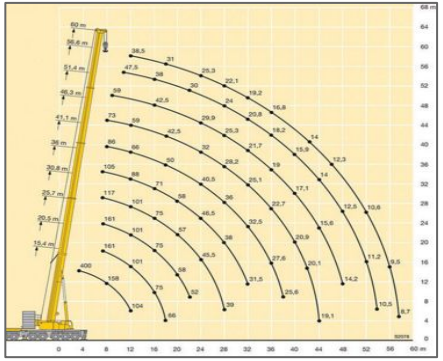
Material and Equipment

Material access



Trailer and BBQ

Mobile Crane 200



Air Quality

1. 

2. 

3. 

4. 

5. 

6. 

1. Spray water
2. Mechanical cover
3. Wash vehicle
4. Keep the road wet
5. Air dust control sprinkler for particle capture
6. Noise barrier for the sprinkler

Safety

Zero tolerance

06.30 o’clock morning warm up

Site Logistics

- Building Footprint with path
- Air Quality Control
- BBQ Area & Progression Display Board
- Morning gymnastics area
- Waste & Recycling station
- Staff Office
- Rain Water Tank
- Staff Parking
- Mobile Crane – Radius 140 foot
- Construction Hoist
- Lay Down Areas
- Equipment Parking
- Water Cleaning Area
- Washing Zone

3D Logistics

Target Value Design (TVD)

General Considerations & Costing Summary

CEQA & LEED Premium of $ 250 k.

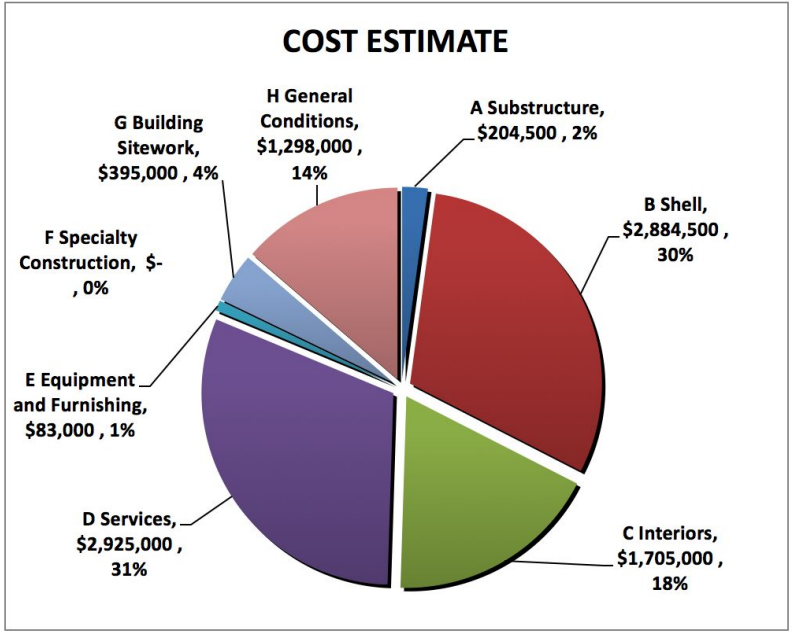
Environmental Activism Premium of $ 50 k

California Prevailing Wages Premium of $ 8/SF

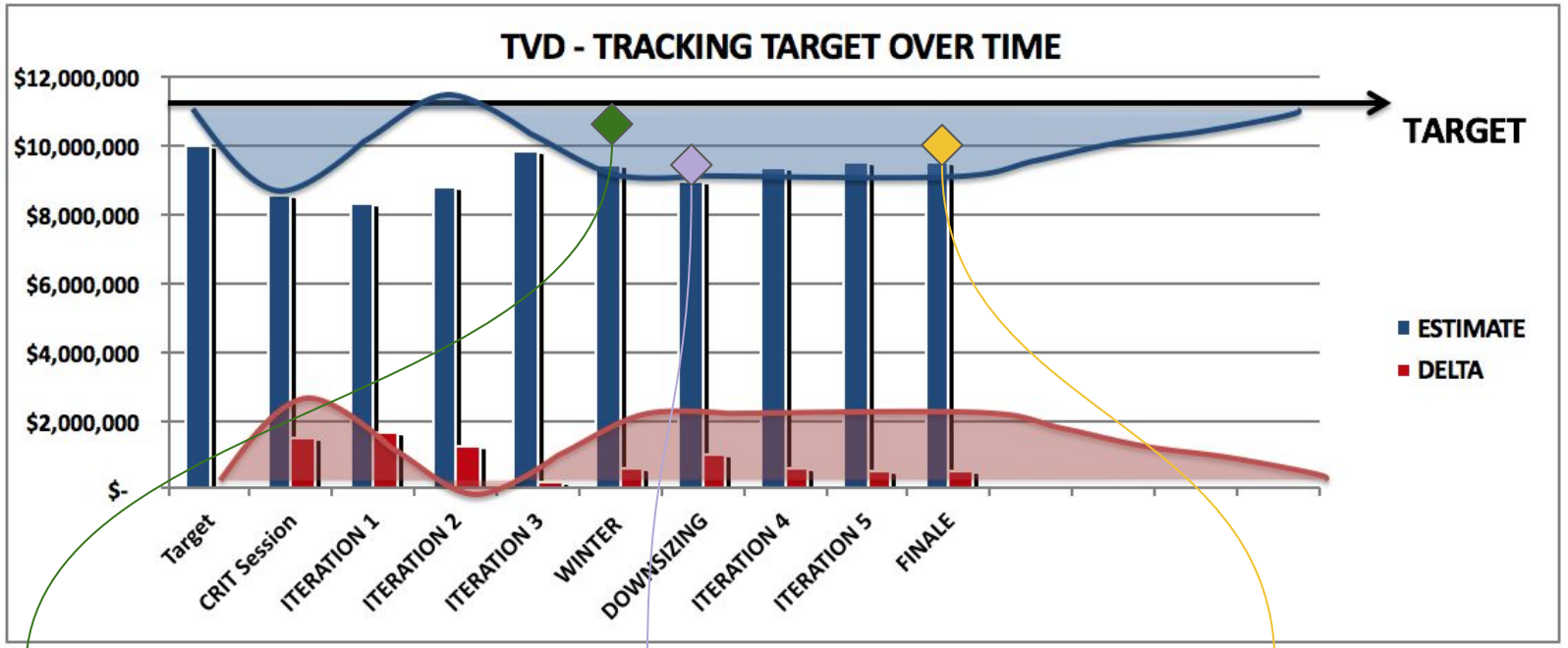
Total Cost: $9,500,000

Gross Floor Area: 31,000 SF

Cost per SF of GFA $310



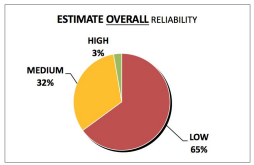
TVD - Influencing Design



- Low
- Med.
- Hi.

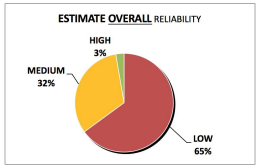
Winter Quarter Outlook:
GFA: 36,000 SF
Cost per SF = $288
Estimation = 9.4 Mil.

Estimate Overall



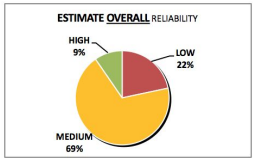
Building Downsizing in Spring:
GFA: 30,000 SF
Cost per SF = $288
Estimation = 8.8 Mil.

Estimate Overall



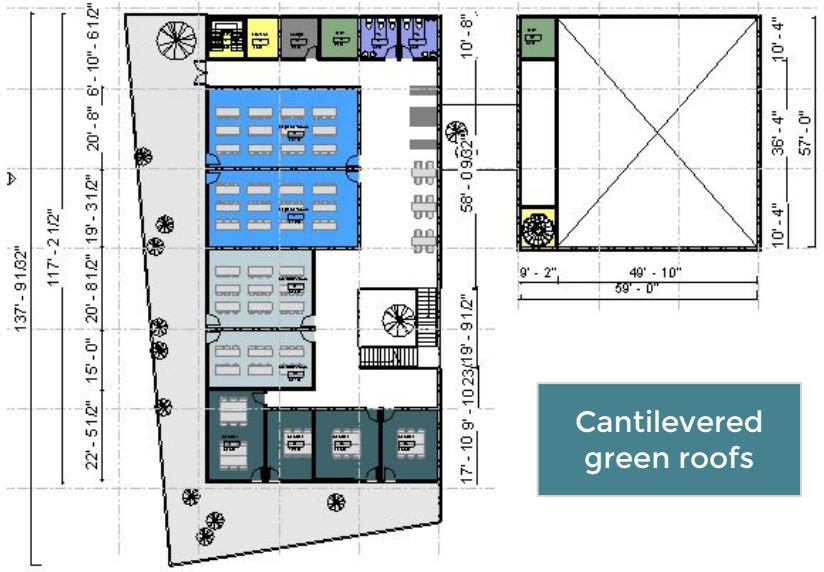
Final Cost Estimation:
GFA: 31,000 SF
Cost per SF = $310
Estimation = 9.5 Mil.

Estimate Overall



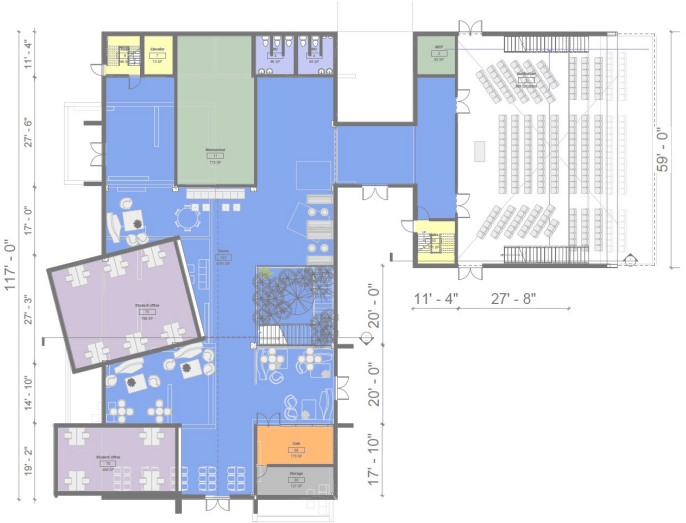
TVD - Building Downsizing

Winter

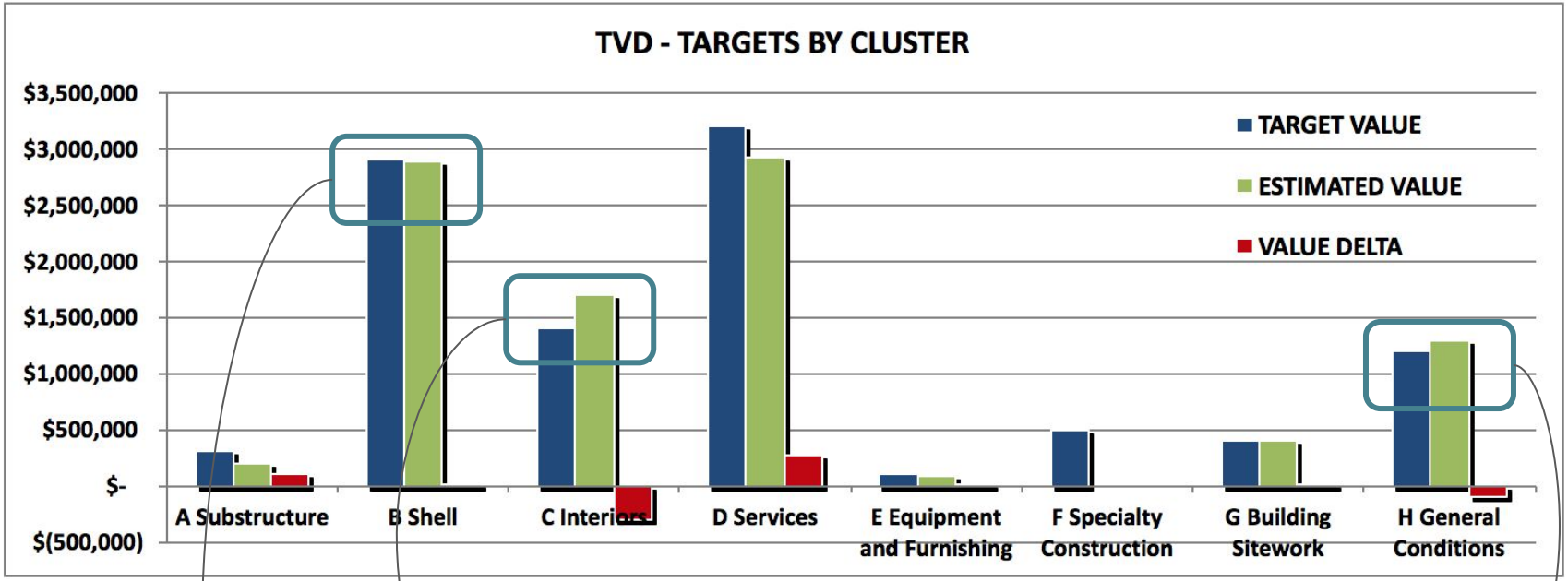


Cantilevered green roofs

Spring



TVD - Cost Breakdown

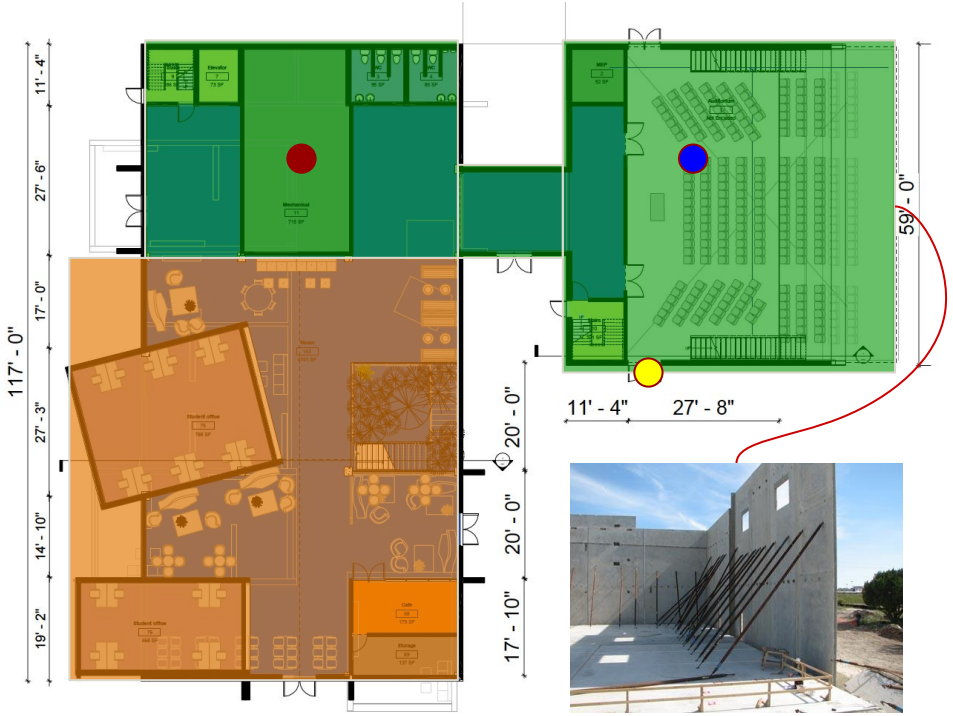


Same as winter presentation TVD

Finishes over target value

Prevailing wage premium

Strategic Zoning



MEP Room

Labs

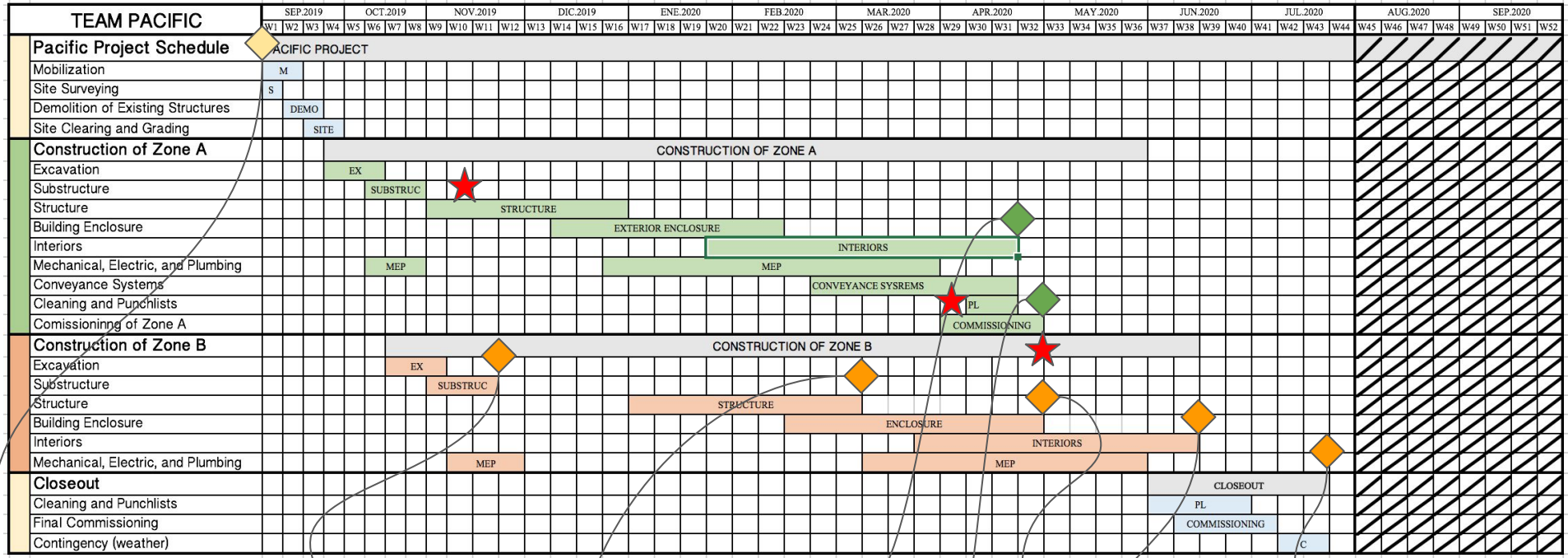
Entrance

Zone A

Zone B

- Winter Quarter Outlook
- Refinement of the schedule
- Level by level alternative
- Temporary Isolation solution
- Peer Review

Time Schedule



Start Date:
Procure Elevators.
Procure MEP
Procure Doors, frames and hardware.

Foundations Complete

Structure Complete

Interiors Complete

Labs Delivered

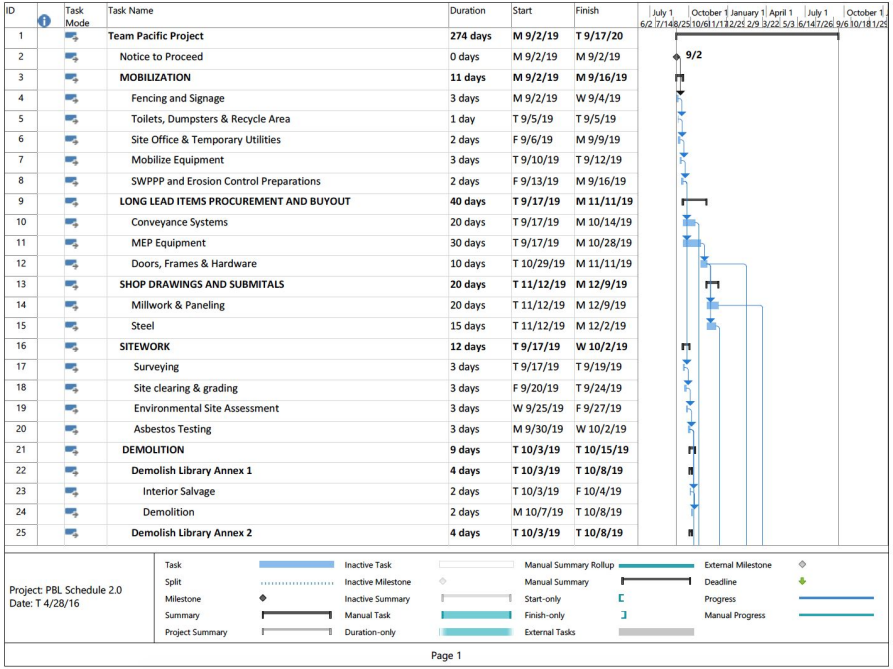
Building Enclosed

Interiors Finished

Construction Complete!

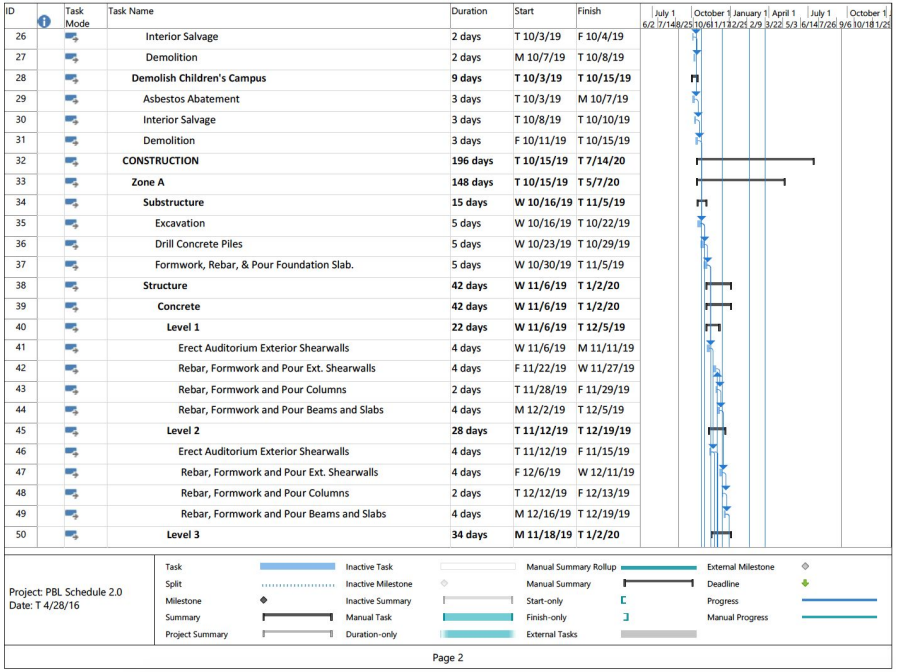
Critical Stage!

Schedule Level of Detail



ID	Task Mode	Task Name	Duration	Start	Finish
1		**Team Pacific Project**	**274 days**	**M 9/2/19**	**T 9/17/20**
2		Notice to Proceed	0 days	M 9/2/19	M 9/2/19
3		**MOBILIZATION**	**11 days**	**M 9/2/19**	**M 9/16/19**
4		Fencing and Signage	3 days	M 9/2/19	W 9/4/19
5		Toilets, Dumpsters & Recycle Area	1 day	T 9/5/19	T 9/5/19
6		Site Office & Temporary Utilities	2 days	F 9/6/19	M 9/9/19
7		Mobilize Equipment	3 days	T 9/10/19	T 9/12/19
8		SWPPP and Erosion Control Preparations	2 days	F 9/13/19	M 9/16/19
9		**LONG LEAD ITEMS PROCUREMENT AND BUYOUT**	**40 days**	**T 9/17/19**	**M 11/11/19**
10		Conveyance Systems	20 days	T 9/17/19	M 10/14/19
11		MEP Equipment	30 days	T 9/17/19	M 10/28/19
12		Doors, Frames & Hardware	10 days	T 10/29/19	M 11/11/19
13		**SHOP DRAWINGS AND SUBMITALS**	**20 days**	**T 11/12/19**	**M 12/9/19**
14		Millwork & Paneling	20 days	T 11/12/19	M 12/9/19
15		Steel	15 days	T 11/12/19	M 12/2/19
16		**SITEWORK**	**12 days**	**T 9/17/19**	**W 10/2/19**
17		Surveying	3 days	T 9/17/19	T 9/19/19
18		Site clearing & grading	3 days	F 9/20/19	T 9/24/19
19		Environmental Site Assessment	3 days	W 9/25/19	F 9/27/19
20		Asbestos Testing	3 days	M 9/30/19	W 10/2/19
21		**DEMOLITION**	**9 days**	**T 10/3/19**	**T 10/15/19**
22		**Demolish Library Annex 1**	**4 days**	**T 10/3/19**	**T 10/8/19**
23		Interior Salvage	2 days	T 10/3/19	F 10/4/19
24		Demolition	2 days	M 10/7/19	T 10/8/19
25		**Demolish Library Annex 2**	**4 days**	**T 10/3/19**	**T 10/8/19**

Page 1

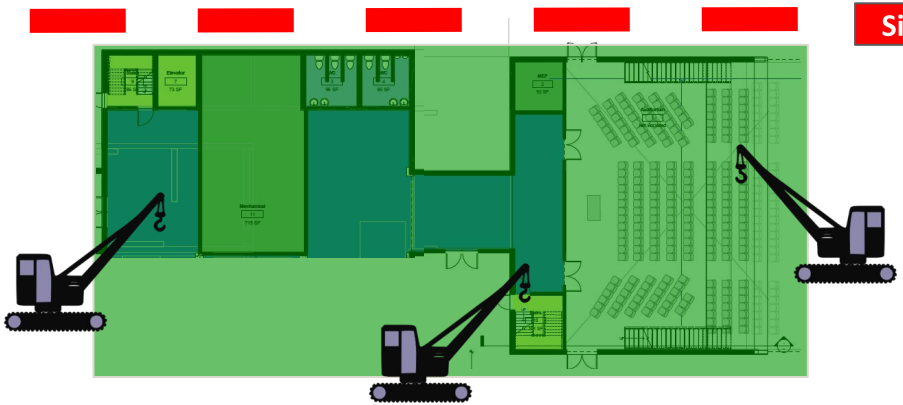


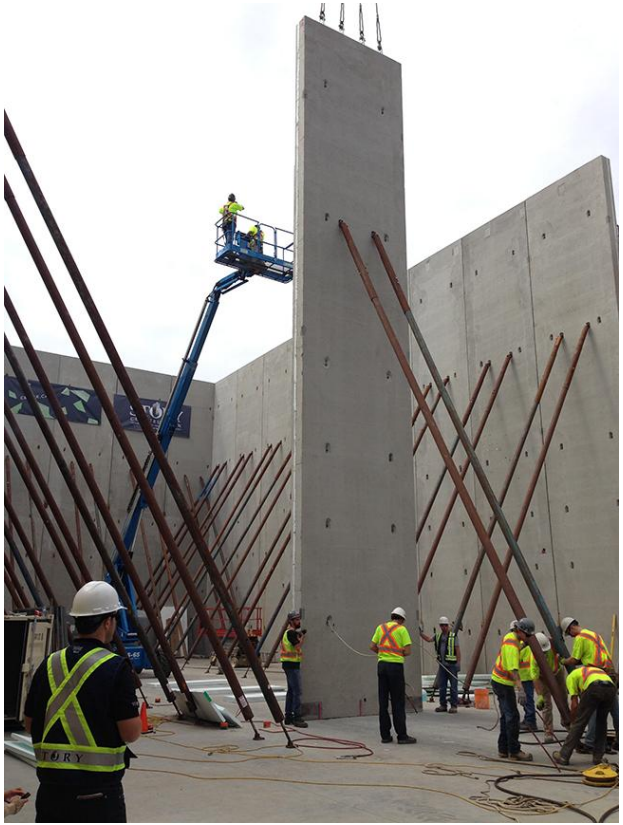
ID	Task Mode	Task Name	Duration	Start	Finish
26		Interior Salvage	2 days	T 10/3/19	F 10/4/19
27		Demolition	2 days	M 10/7/19	T 10/8/19
28		**Demolish Children's Campus**	**9 days**	**T 10/3/19**	**T 10/15/19**
29		Asbestos Abatement	3 days	T 10/3/19	M 10/7/19
30		Interior Salvage	3 days	T 10/8/19	T 10/10/19
31		Demolition	3 days	F 10/11/19	T 10/15/19
32		**CONSTRUCTION**	**196 days**	**T 10/15/19**	**T 7/14/20**
33		**Zone A**	**148 days**	**T 10/15/19**	**T 5/7/20**
34		**Substructure**	**15 days**	**W 10/16/19**	**T 11/5/19**
35		Excavation	5 days	W 10/16/19	T 10/22/19
36		Drill Concrete Piles	5 days	W 10/23/19	T 10/29/19
37		Formwork, Rebar, & Pour Foundation Slab.	5 days	W 10/30/19	T 11/5/19
38		**Structure**	**42 days**	**W 11/6/19**	**T 1/2/20**
39		**Concrete**	**42 days**	**W 11/6/19**	**T 1/2/20**
40		**Level 1**	**22 days**	**W 11/6/19**	**T 12/5/19**
41		Erect Auditorium Exterior Shearwalls	4 days	W 11/6/19	M 11/11/19
42		Rebar, Formwork and Pour Ext. Shearwalls	4 days	F 11/22/19	W 11/27/19
43		Rebar, Formwork and Pour Columns	2 days	T 11/28/19	F 11/29/19
44		Rebar, Formwork and Pour Beams and Slabs	4 days	M 12/2/19	T 12/5/19
45		**Level 2**	**28 days**	**T 11/12/19**	**T 12/19/19**
46		Erect Auditorium Exterior Shearwalls	4 days	T 11/12/19	F 11/15/19
47		Rebar, Formwork and Pour Ext. Shearwalls	4 days	F 12/6/19	W 12/11/19
48		Rebar, Formwork and Pour Columns	2 days	T 12/12/19	F 12/13/19
49		Rebar, Formwork and Pour Beams and Slabs	4 days	M 12/16/19	T 12/19/19
50		**Level 3**	**34 days**	**M 11/18/19**	**T 1/2/20**

Page 2

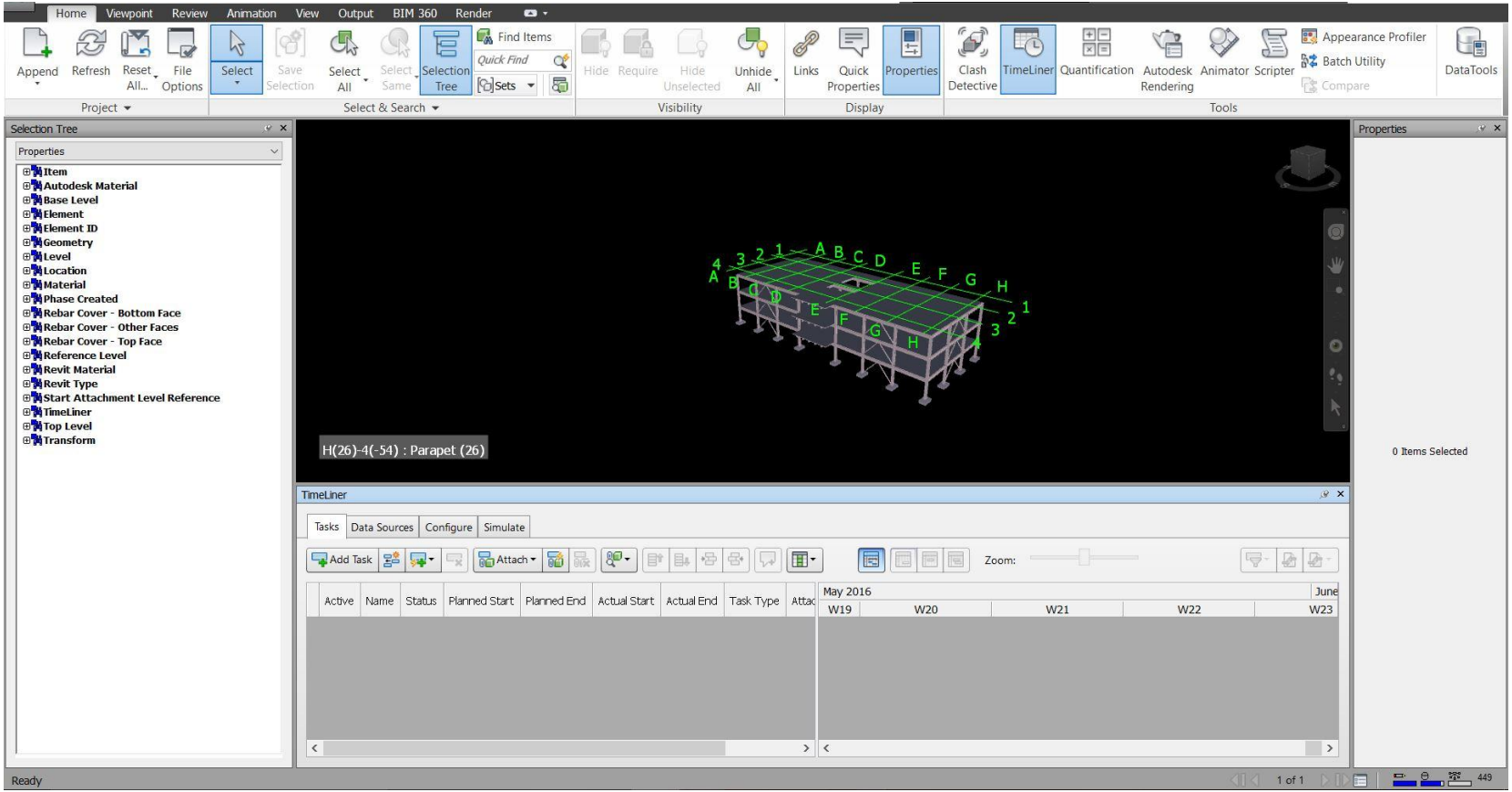
Critical Construction Zones

- Critical Construction Stage.
- Tilt-up auditorium walls.
- Prefabricated core walls.
  - Core walls
  - Shoring





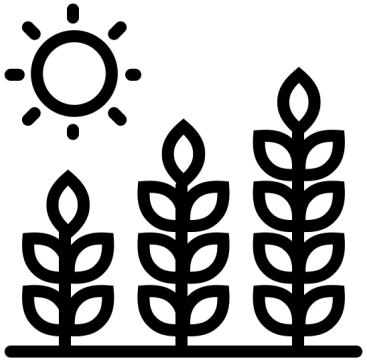
4D Animation



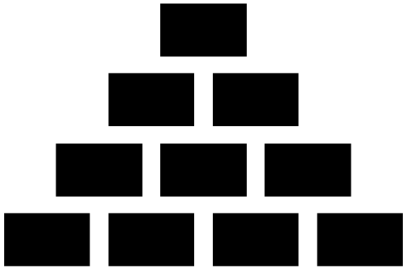
AIR QUALITY

Summary of Initiatives

Green Walls



Passive Systems



Building Design

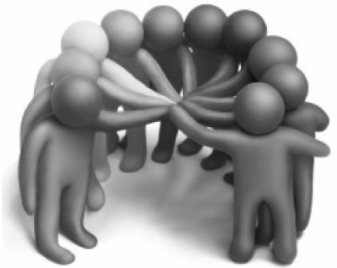
Beehive

CLIENT AFFINITY

Summary of initiatives

Newspaper & Reports

Formal to Informal Communication



Owner Involvement

Result Orientated Guidance

THE END

Takeaways

“Tools, methods, and software are important and critical, but not sufficient. The real change needed is the way how we deal with people” **- Antonio**

“Interaction with industry mentors and learning from their suggestions and thought processes was an enriching experience” **- Siddharth**

“True communication requires comprehension and empathy” **- Joe**

“Every team member wants to win, but what we have learned is that it is not going to happen without the teammates” **- Jan**

“The most important thing is not to get the work done, but how we do it. The laughs are what you remember” **- Chanel**

“If group members, don’t have an idea of each other's knowledge/strength and respect for their individual field tasks, no good result comes out of it”**- Camilla**

“No good solution comes easily” **- Pernille**

Thank You Slide !

PBL Team

Renate Fruchter
Flavia Grey
Maria Frank

Pacific owners

Dorian Curcanu
Enrique Hernandez Delgado
Elias Chg
Jackie Yiyang Jiao
Aleksandra Sobczyk

Mentor and members of the AEC Industry

John Nelson
Elizabeth Joyce
Willem Kymmel
Cole Roberts
Plamen Ivanov
Forest Peterson
Humberto Cavallin
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Greg Luth
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