

TEAM PACIFIC



The team

Joe
MEP



Antonio
CM



Jan
SE



Pernille
MEP



Camilla
A



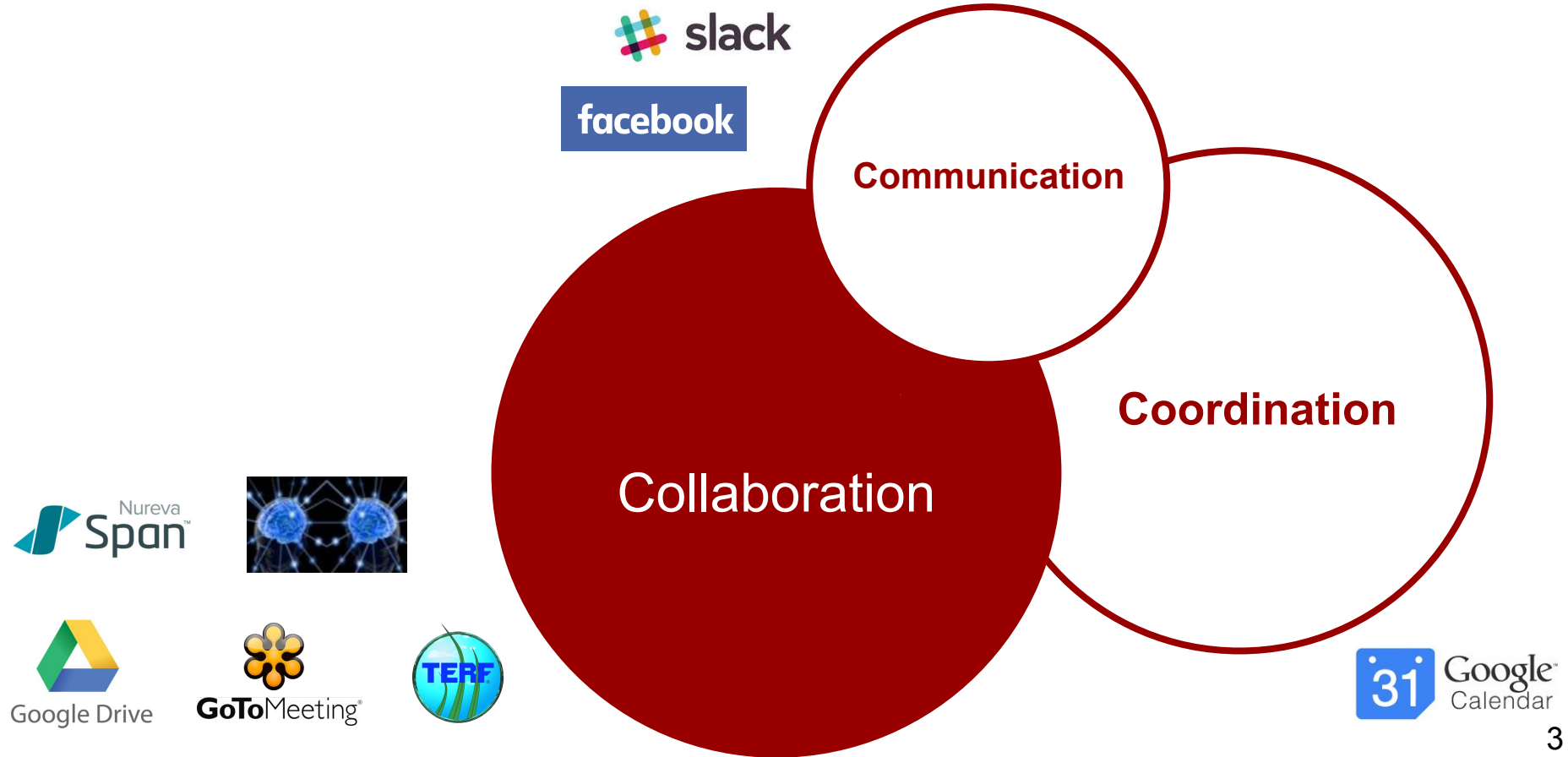
Chanel
CM



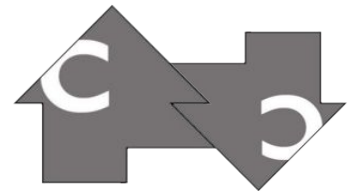
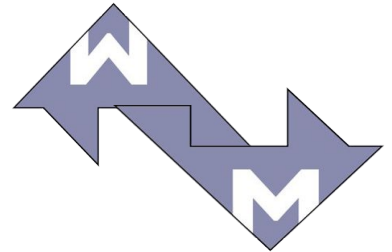
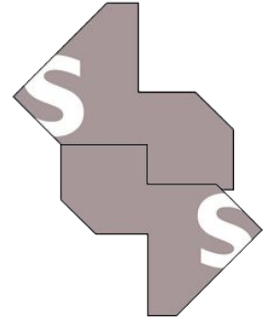
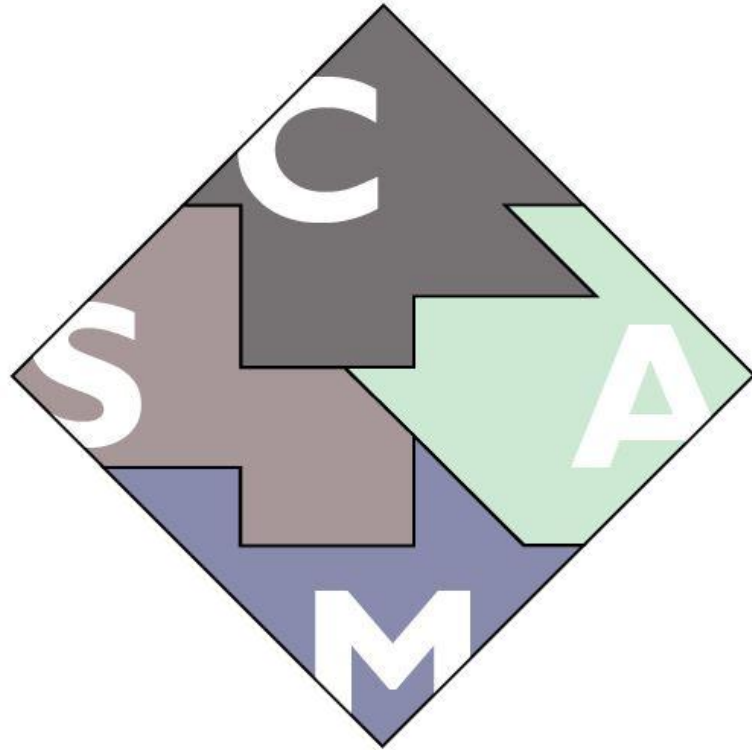
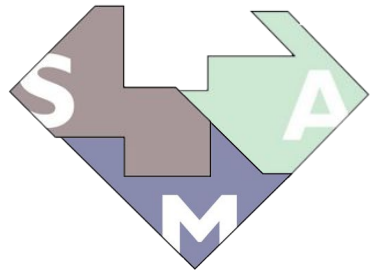
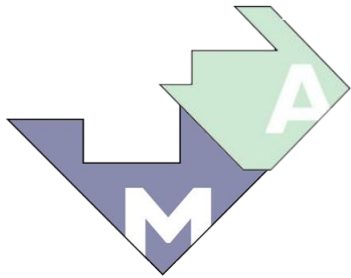
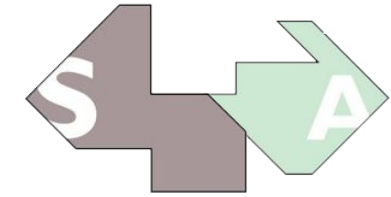
Siddharth
SE



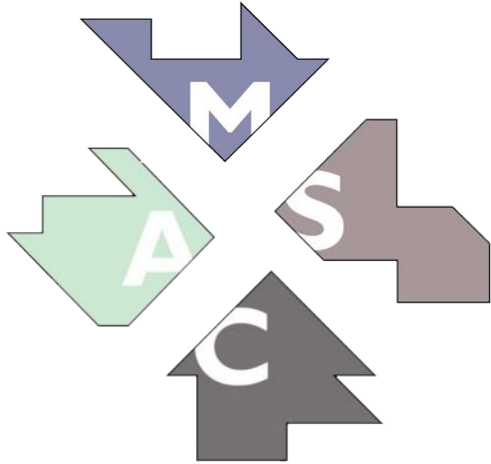
Norms, Protocols, software and tools



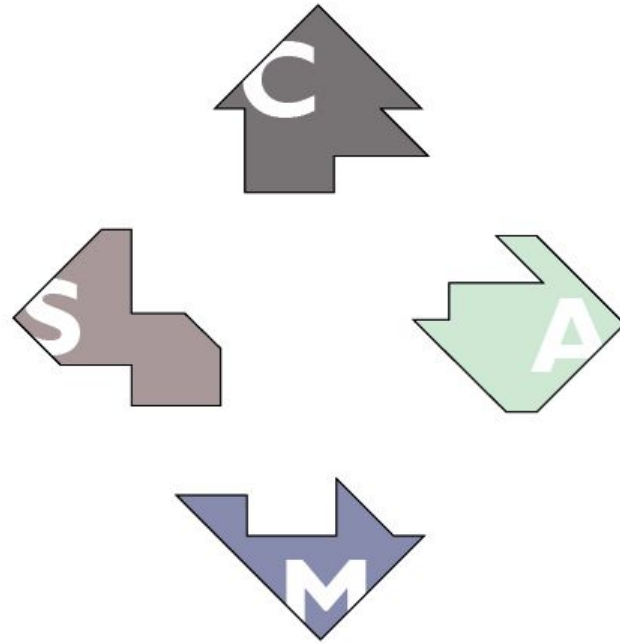
Group Collaboration



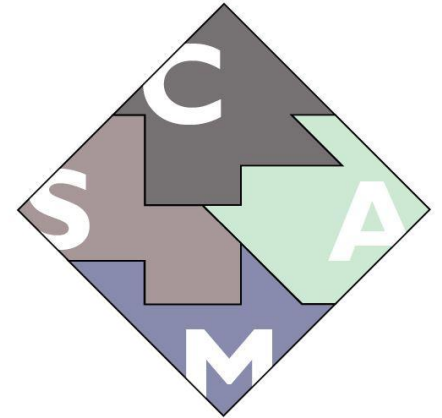
Team process



Jan 15



Mar 12



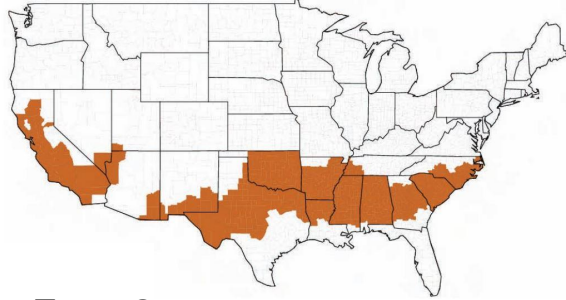
May 6



The site - San Francisco, CA, USA

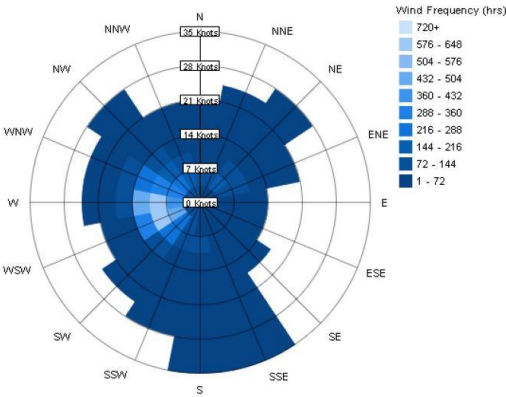


The climate - Marine climate



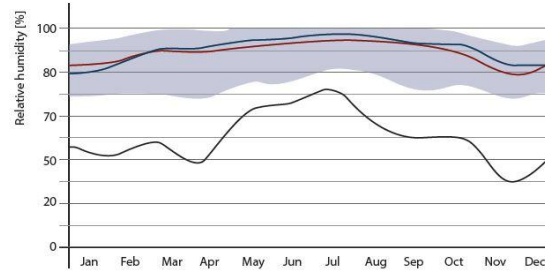
Zone 3

- Marine climate



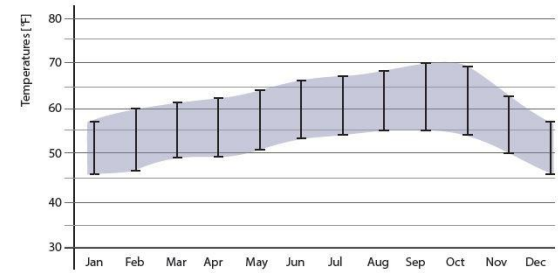
Wind [knots]

- Prevailing wind from SW



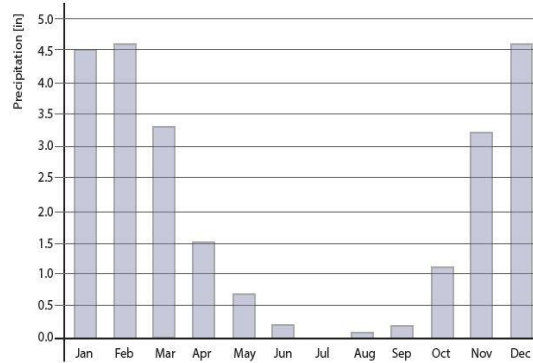
Relative humidity [%]

- High RH in mornings due to fog



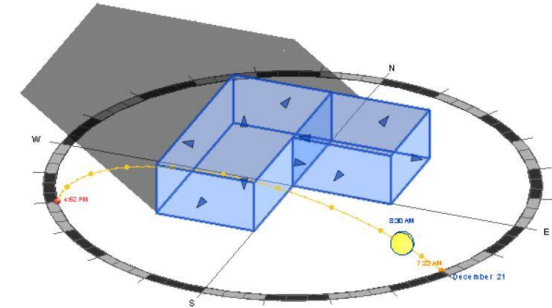
Temperatures [°F]

- Moderate climate



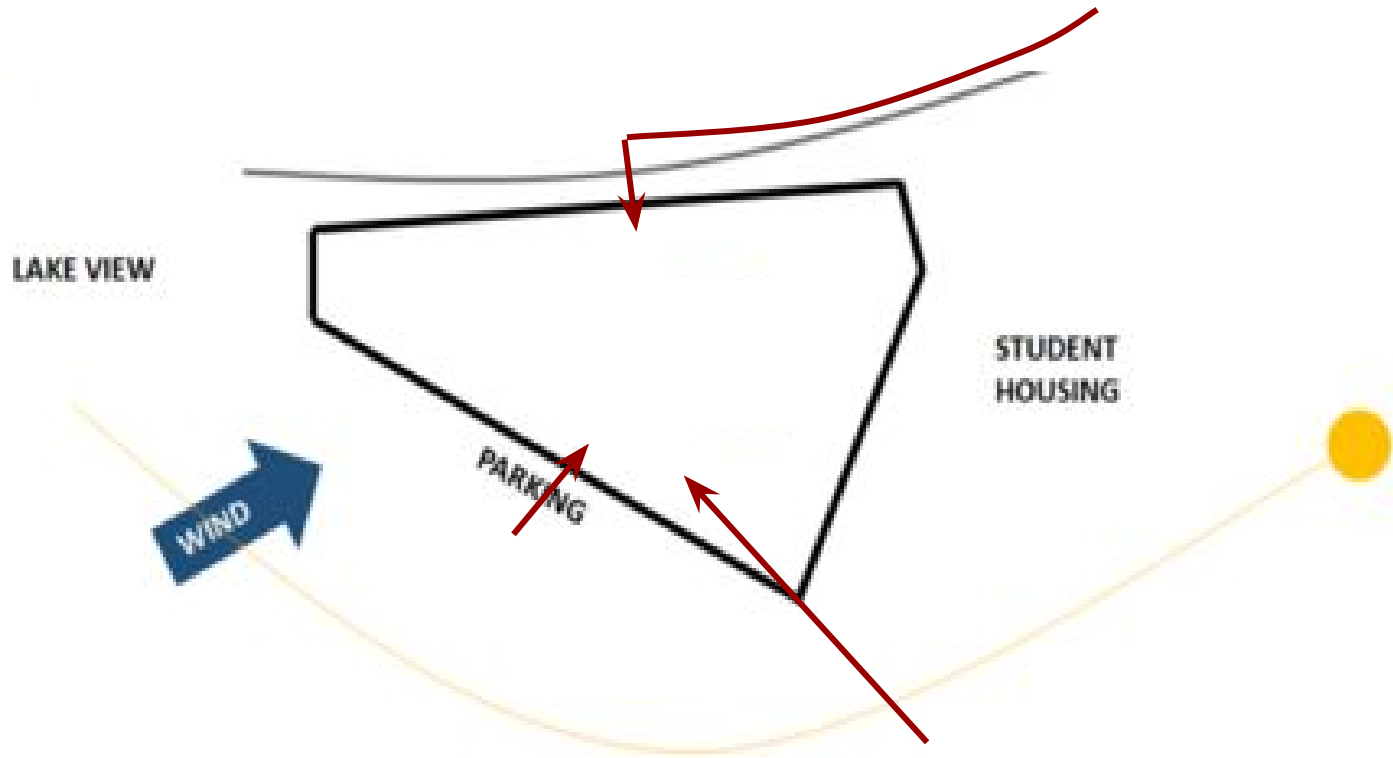
Precipitation [in]

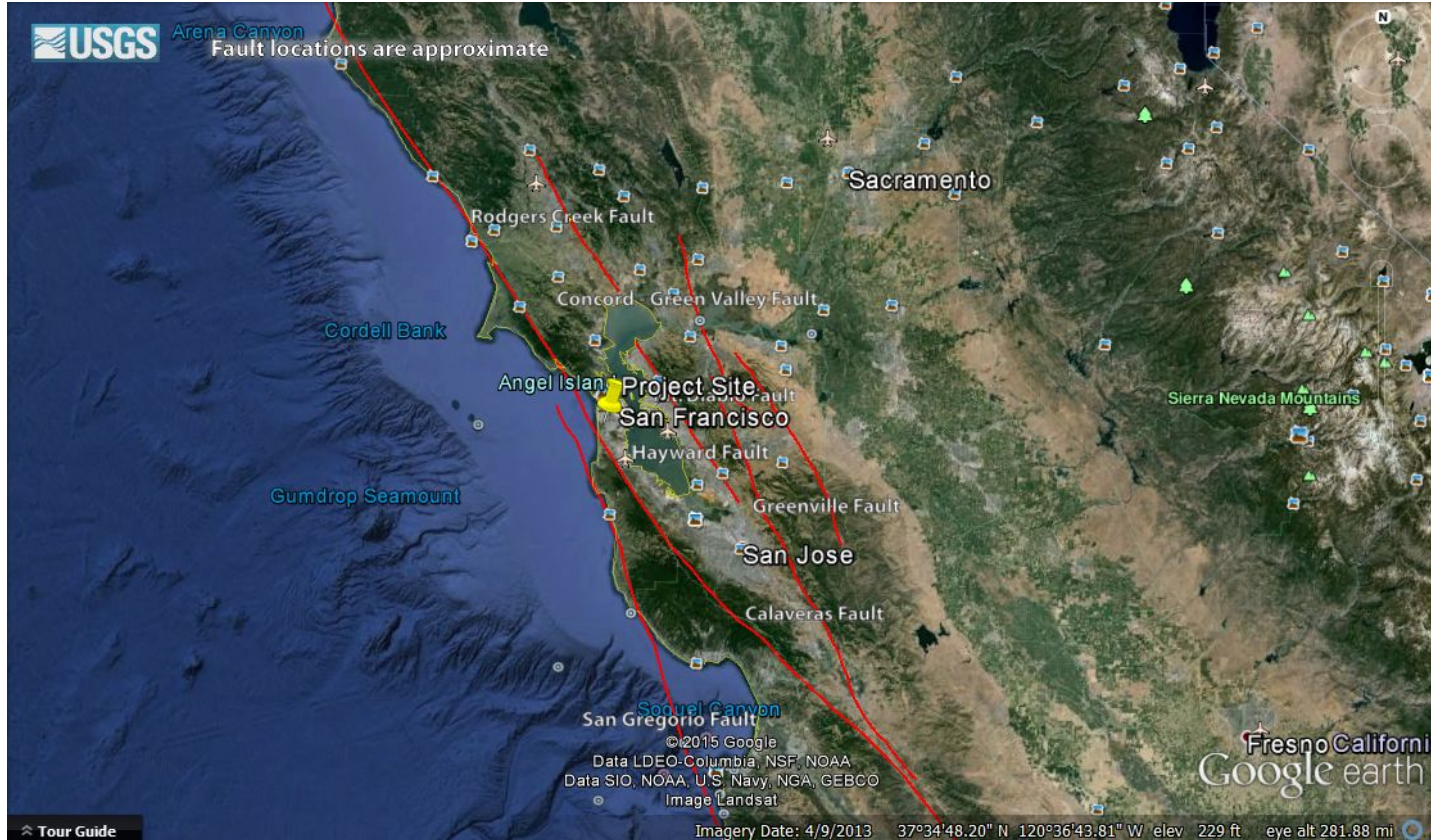
- Low precipitation



Sun availability

- About 3000 annual hours of sunlight





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

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 37.72077°N, 122.47716°W

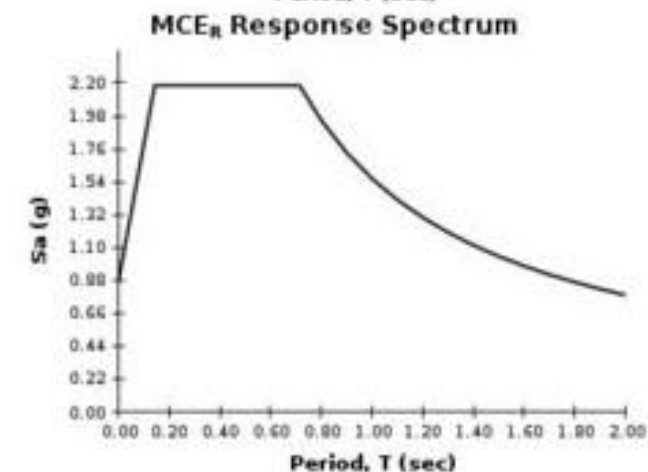
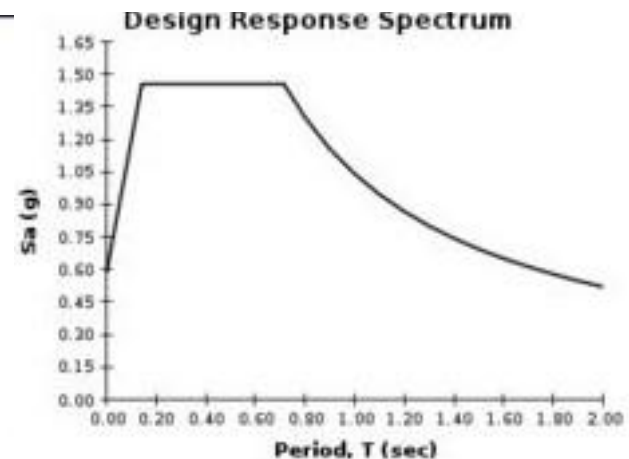
Site Soil Classification Site Class D - "Stiff Soil"

Risk Category IV (e.g. essential facilities)



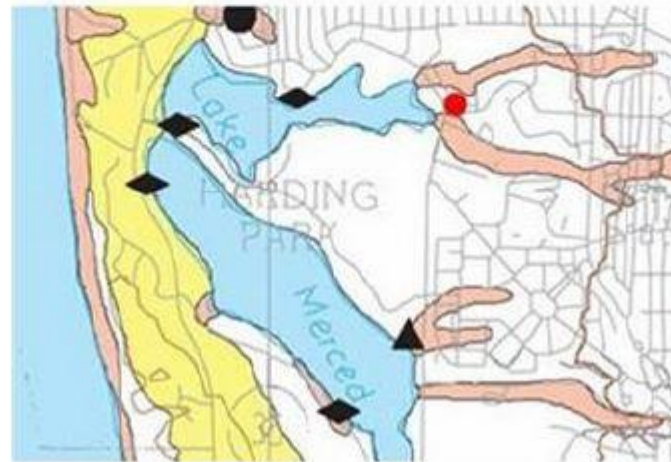
USGS-Provided Output

$S_0 = 2.182 \text{ g}$	$S_{M5} = 2.182 \text{ g}$	$S_{05} = 1.455 \text{ g}$
$S_1 = 1.040 \text{ g}$	$S_{M1} = 1.560 \text{ g}$	$S_{01} = 1.040 \text{ g}$





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



Room Function	Total Area (sq.ft.)	Minimum Live Load (psf)
Faculty Lounge	1000	100
Faculty Offices	3600	50
Student Offices	1200	50
Classrooms	3600	40
Storage Rooms	1000	150

Reference: California Building Code

http://www.ecodes.biz/ecodes_support/free_resources/2013California/13Building/PDFs/Chapter%2016%20-%20Structural%20Design.pdf



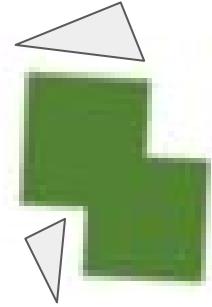
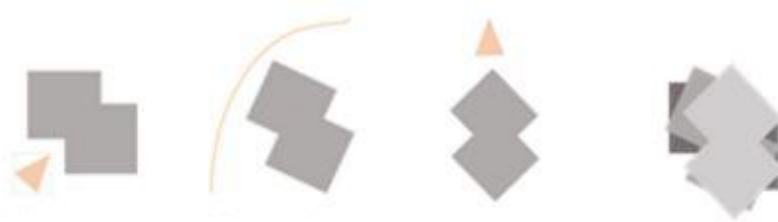
NATURE



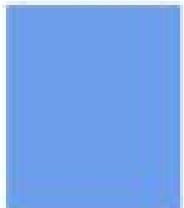
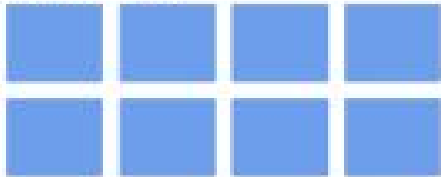
TWISTING LEVELS



ALSO



Decreasing the program space to have open collaboration spaces and learning spaces

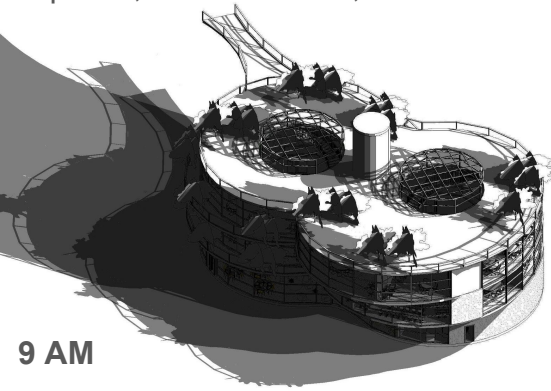


1/2

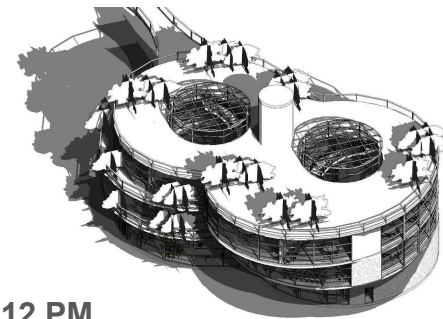


Shading

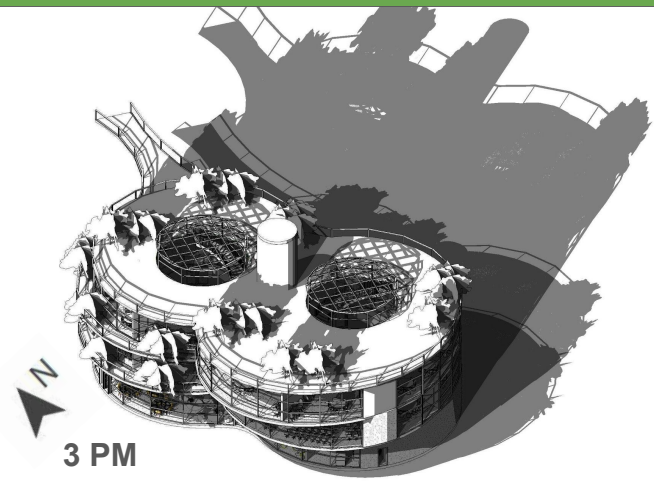
Equinox, winter solstice, summer solstice



9 AM



12 PM

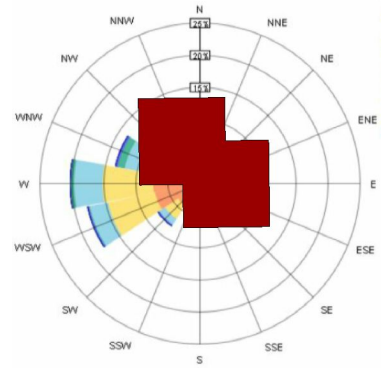


3 PM

Wind speed (knots)

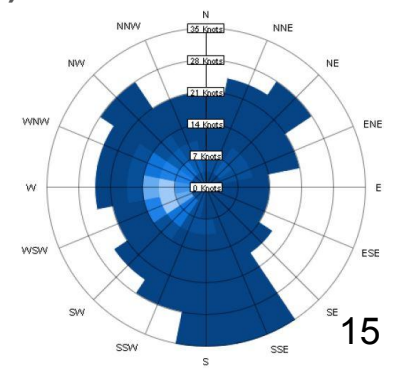
Radial scale is % of time

- 34+
- 26 - 30
- 21 - 26
- 17 - 21
- 13 - 17
- 9 - 13
- 4 - 9
- 0 - 4

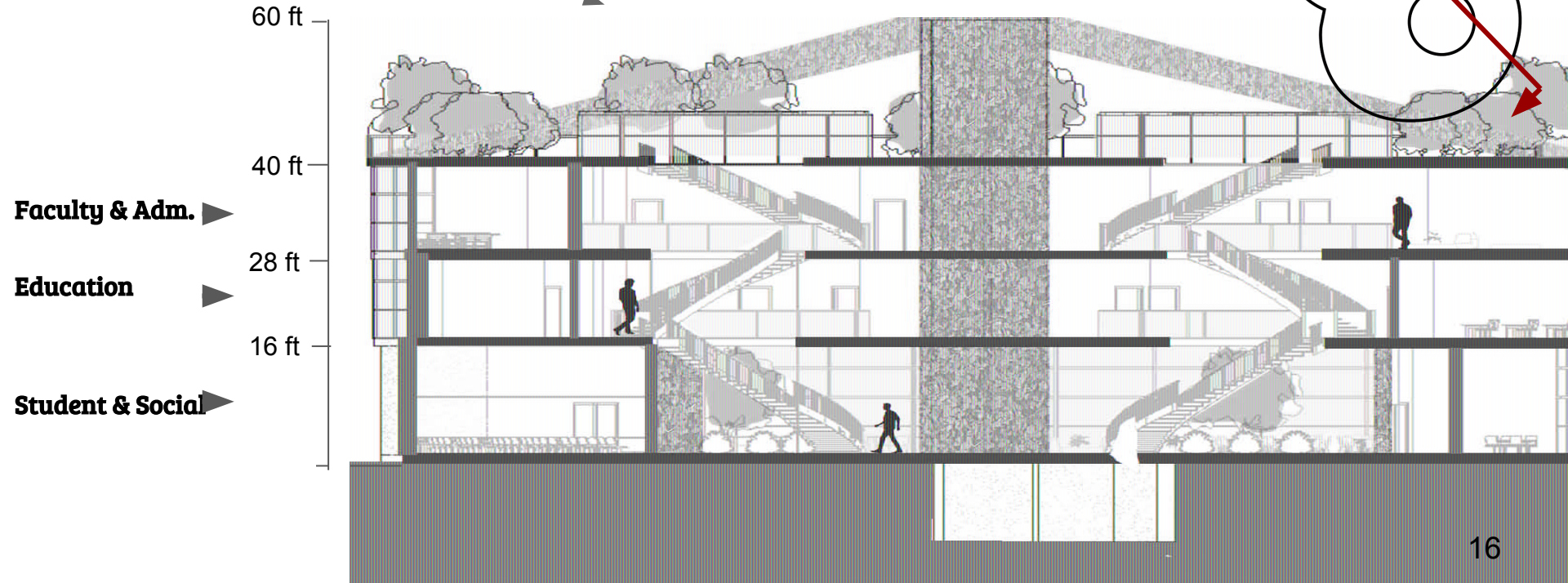


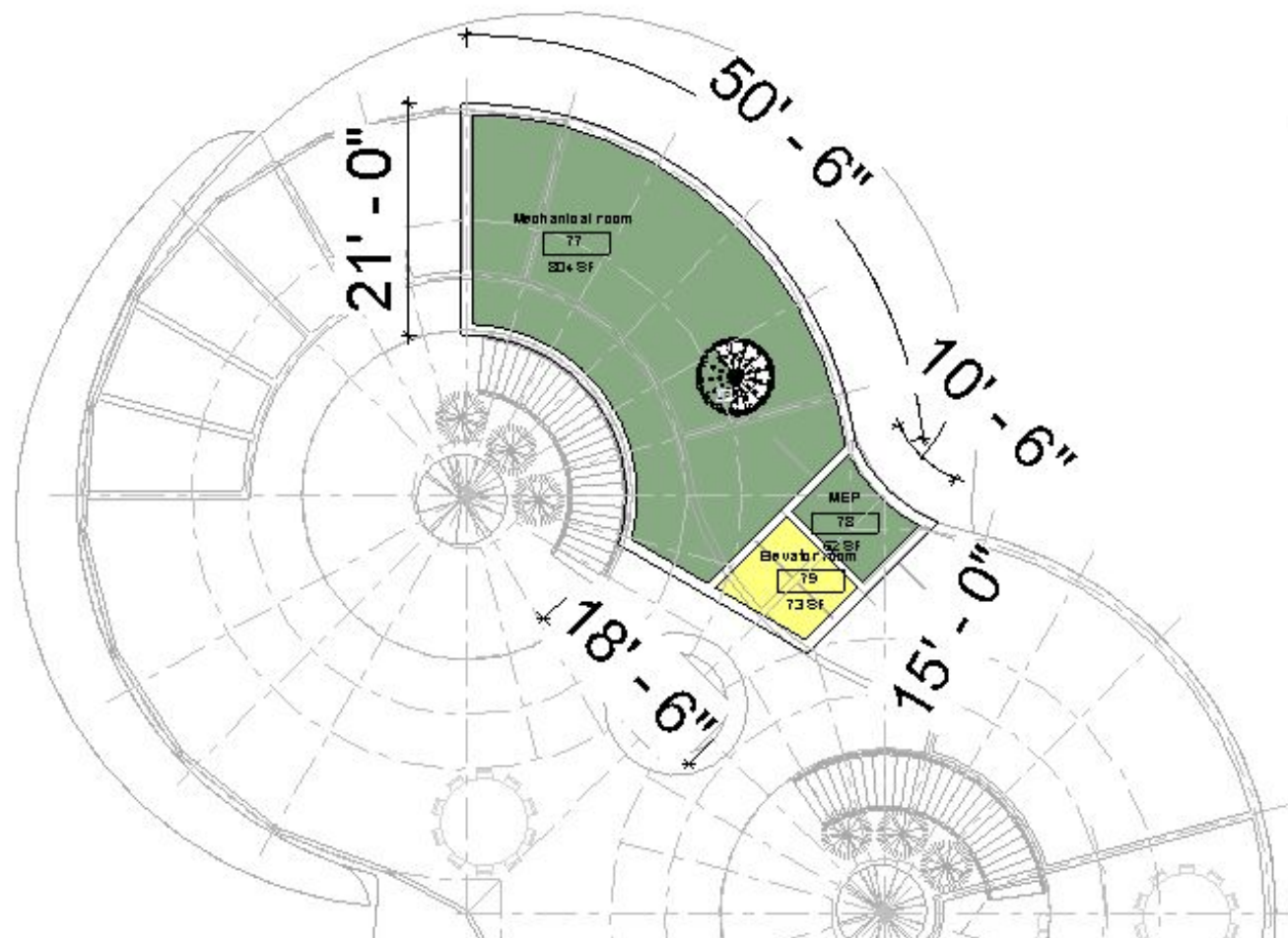
Wind frequency (hrs)

- 720+
- 576 - 648
- 504 - 576
- 432 - 504
- 360 - 432
- 288 - 360
- 216 - 288
- 144 - 216
- 72 - 144
- 1 - 72



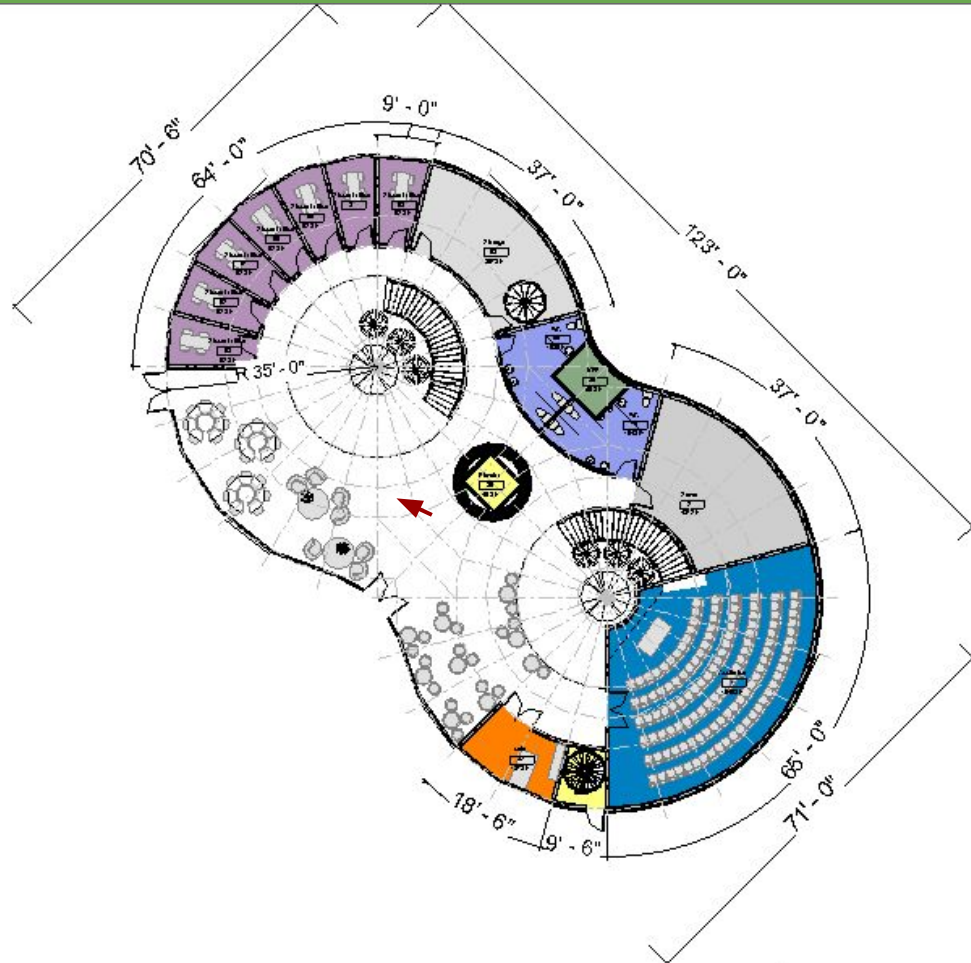
Section





- Room Legend
- Elevator room
 - Mechanical room
 - MEP

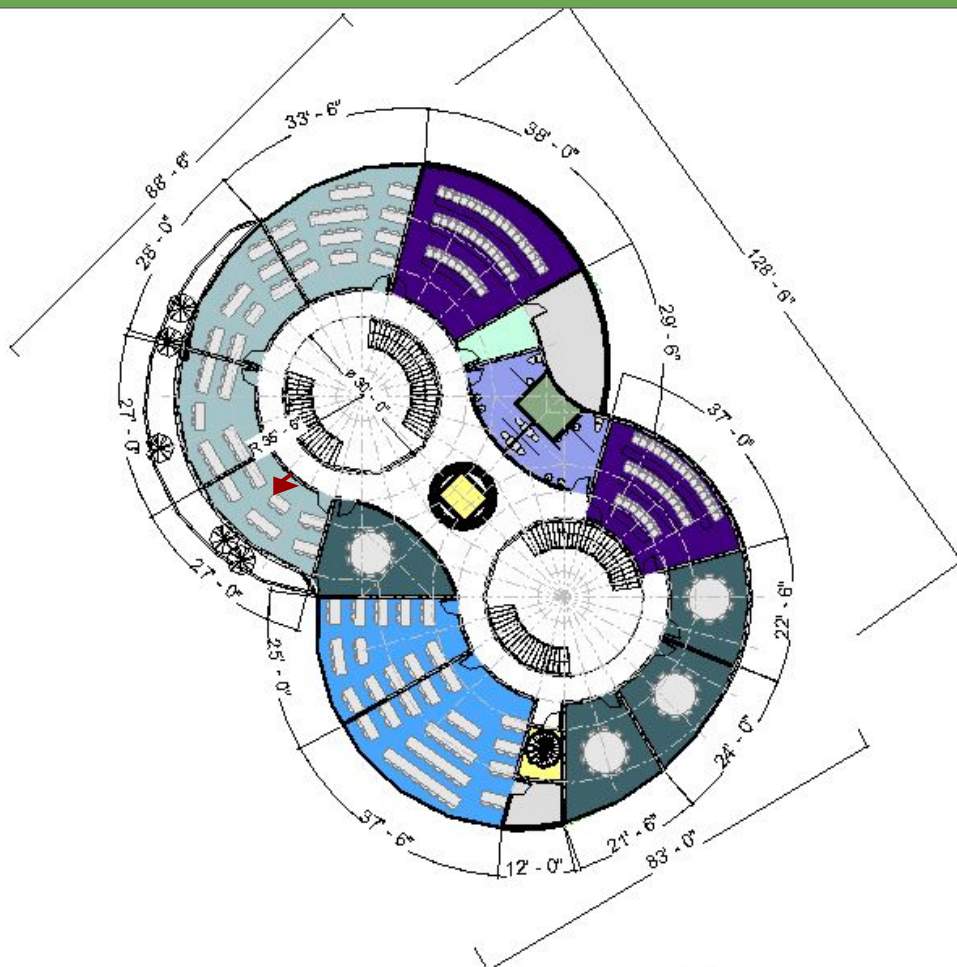
Ground Floor













Room Legend

-  Auditorium
-  cafe
-  Elevator
-  MEP
-  Server
-  Stairs
-  Storage
-  Student office
-  WC














Room Legend

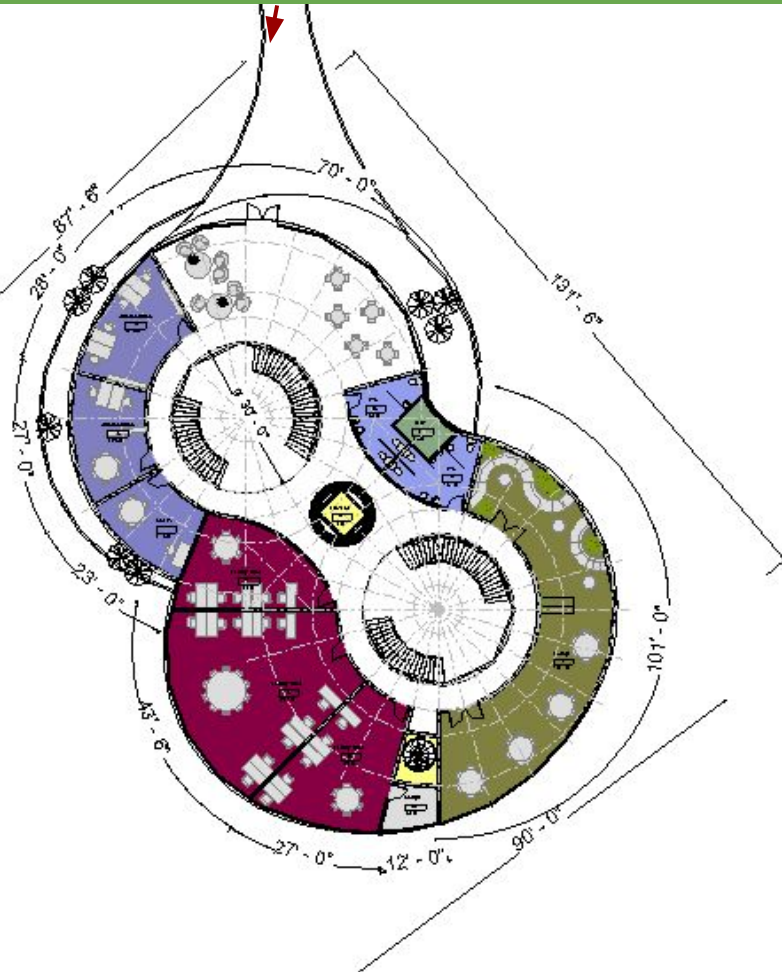
-  Big Classroom
-  Elevator
-  Lab
-  MEP
-  Seminar
-  Small Classroom
-  Stairs
-  Storage
-  Tec support
-  WC





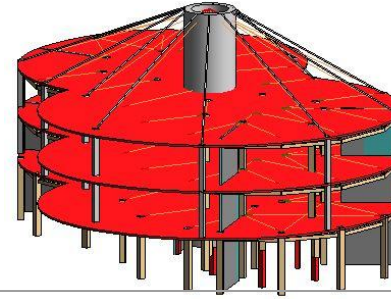
Room Legend

-  Administration
-  Chairs
-  Elevator
-  Faculty Office
-  Lounge
-  MEP
-  Stairs
-  Storage
-  WC





Structural System



Gravity System

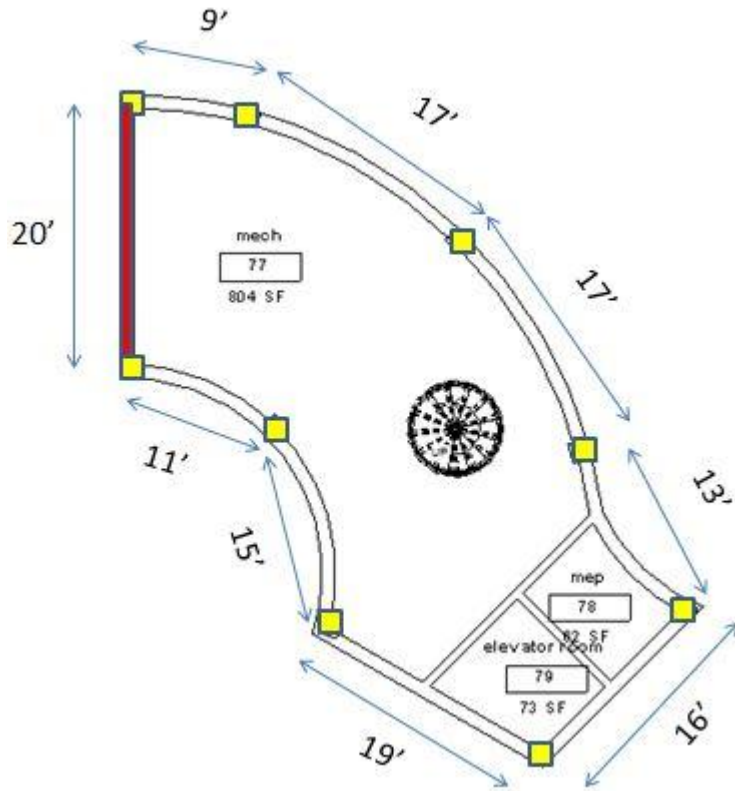
Tension Columns- Fiberglass (Glass FRP)
[18F17 Flanged Tube]
Compression Columns- Timber [18"x18"]
Cables- Steel [Nominal Diameter- 1.5"]

Lateral System

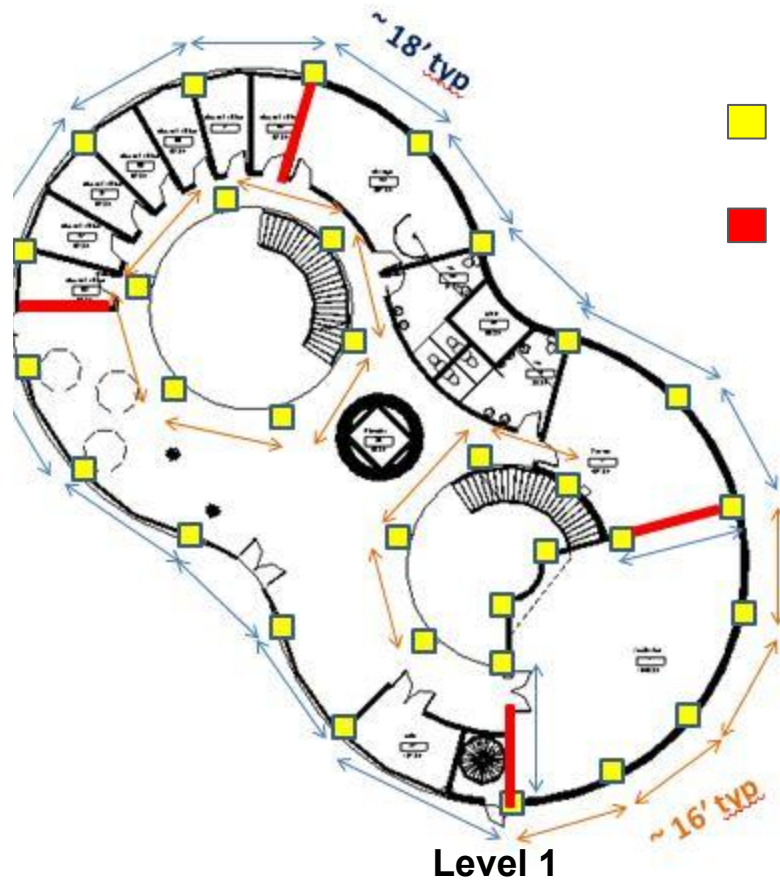
Concrete Shear Wall (Core/Spine)
Outer Diameter- 13' Inner Diameter- 10.5'
Thickness- 15"
Timber Shear Walls
Thickness- 8"

Floor System



Cross-Laminated Timber Slab with Glulam Beams
Slab Depth- 6"
Beam Depth- 12"

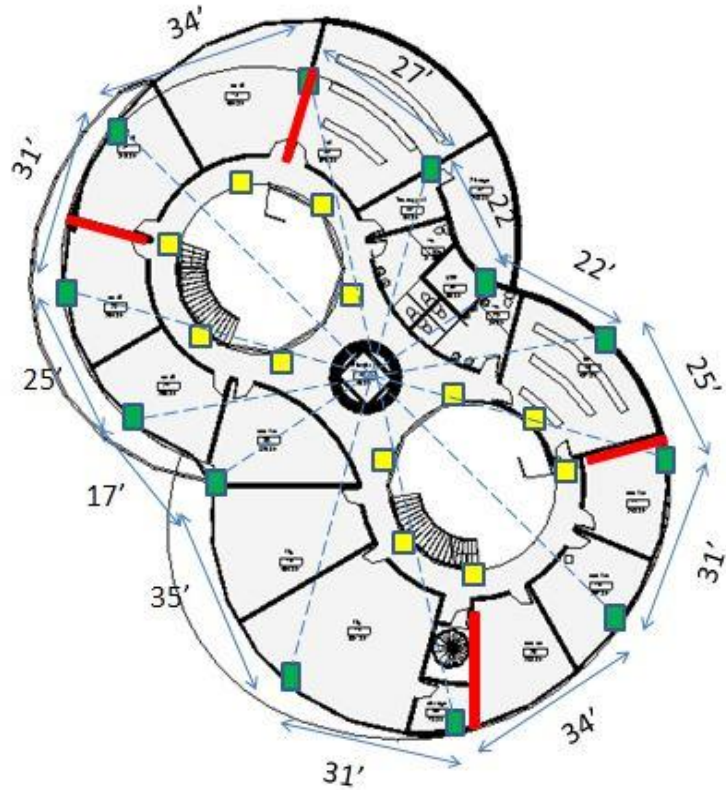


Basement

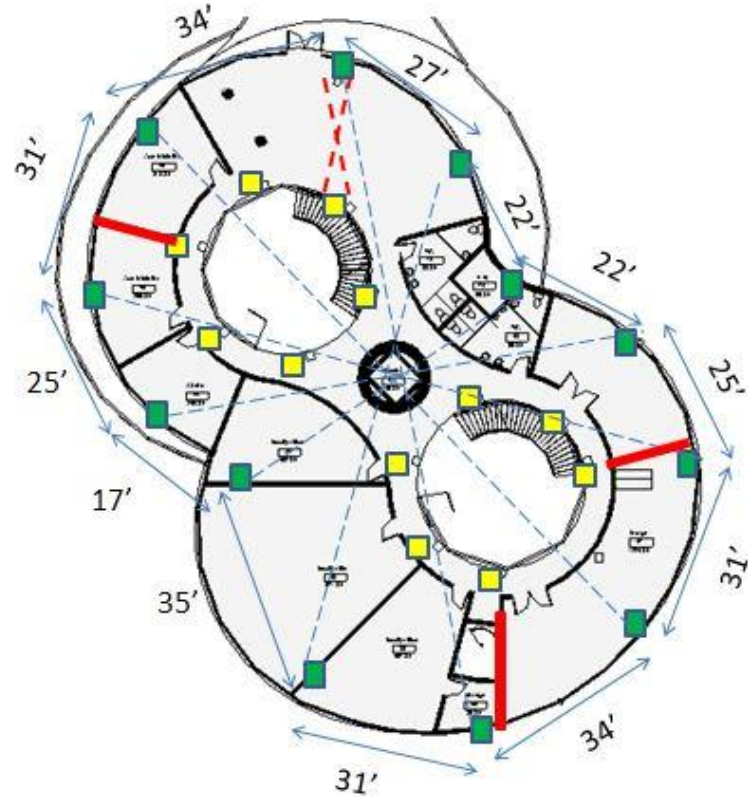


Level 1

-  Timber Columns
18"x18"
-  Timber Shear
Wall 8"

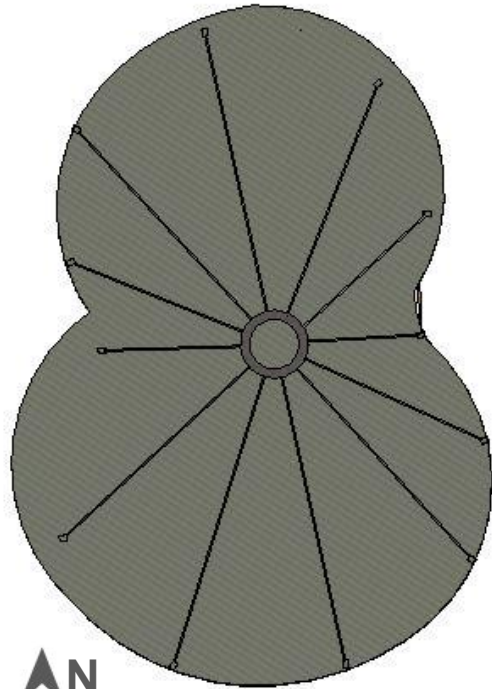


Level 2

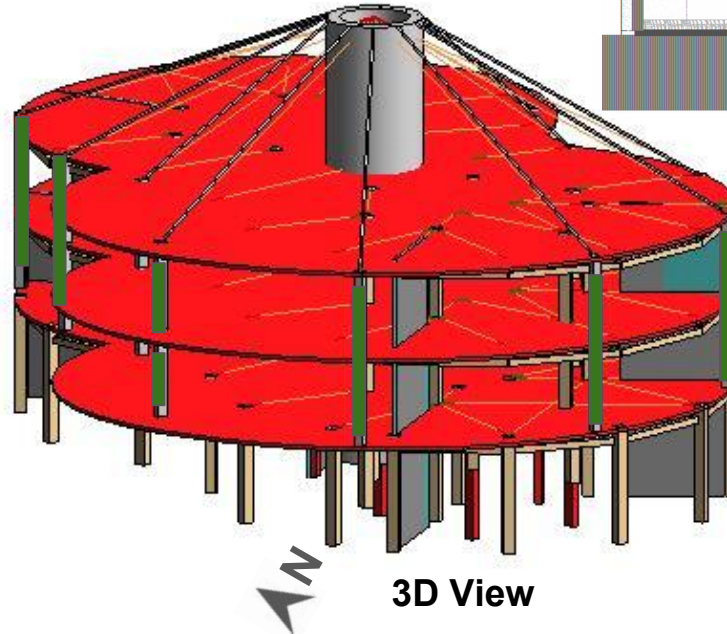


Level 3

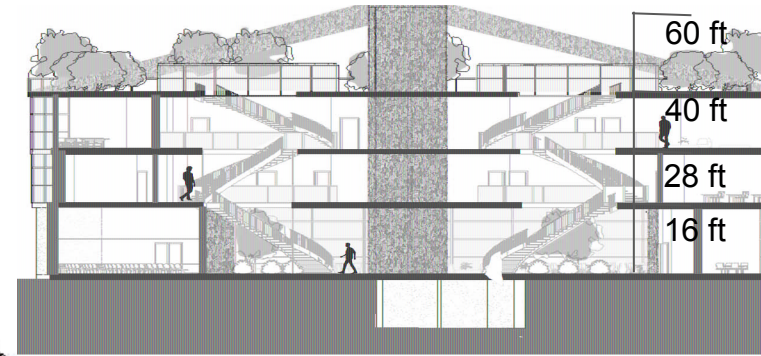
- ▲ N
- Timber 18"x18"
 - Fiberglass 18F17
 - Timber Shear Wall 8"
 - Cable Connection to Core (Level 4)
 - - - Concentrically Braced Frame L8x8x7/8







Top View- Cable Layout



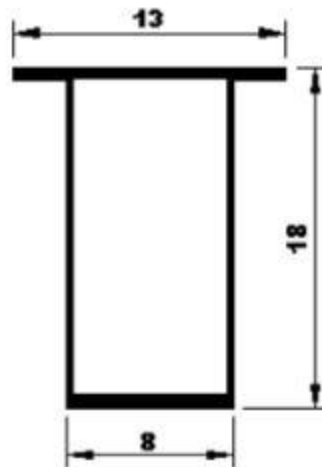
3D View



-  Timber 18"x18"
-  Fiberglass 18F17
-  Concrete Core
-  Cables

18F17 Flanged Tube

W =	16.75 lb/ft
A =	22.47 in ²
I _{xx} =	1197.3 in ⁴
I _{yy} =	279.7 in ⁴
E =	3,967,000 psi
G =	425,000 psi
M =	2,000,000 lb-in
r =	3.53 in
Bf/Bt =	20.8
K =	1



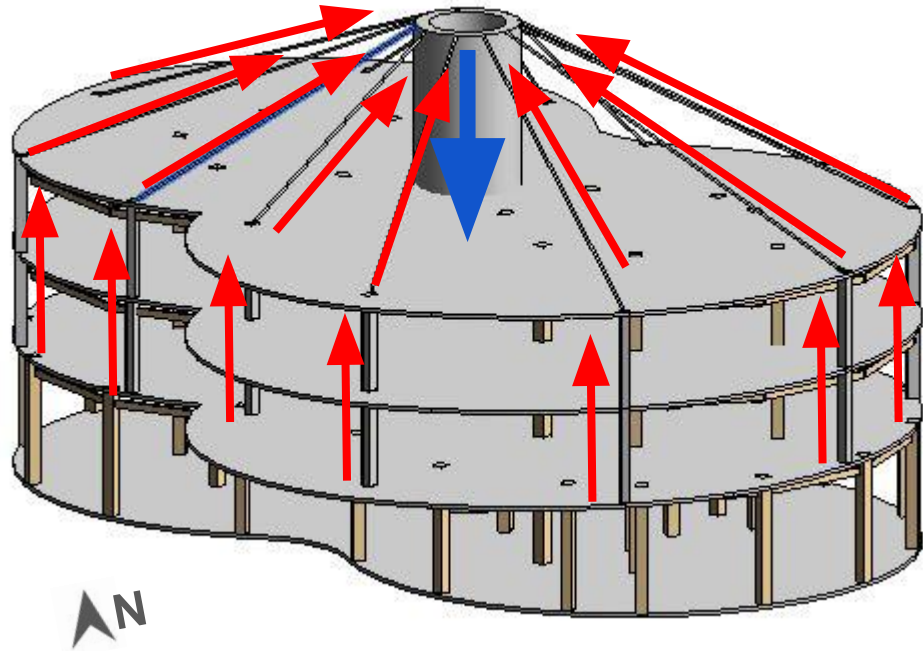
Allowable Uniform Load - Unbraced						
Span (Ft.)	L/D = 120		L/D = 180		L/D = 240	
	1	2	1	2	1	2
31	555	555	472	555	354	555
32	521	521	429	521	322	521
33	490	490	392	490	294	490
34	461	461	358	461	269	461
35	435	435	328	435	246	435
36	412	412	302	412	226	412
37	390	390	278	390	208	390
38	369	369	256	369	192	369
39	351	351	237	351	178	351
40	330	333	220	333	165	333
41	306	317	204	317	153	317
42	285	302	190	302	142	302
43	266	288	177	288	133	288
44	248	275	165	275	124	275
45	232	263	154	263	116	263

Beam FOS = 2.5

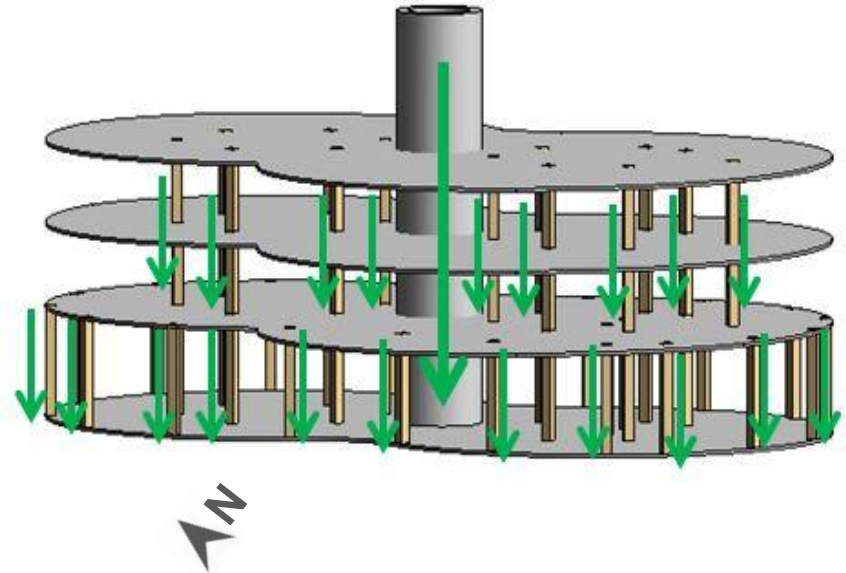
Column Load	
Lth (Ft.)	Axial (Lbs.)
11	72396
12	69013
13	66041
14	63403
15	61042
16	58914
17	56982
18	55218
19	53600
20	52109
21	50730
22	49448
23	48254
24	47137
25	46091

Col. FOS = 3

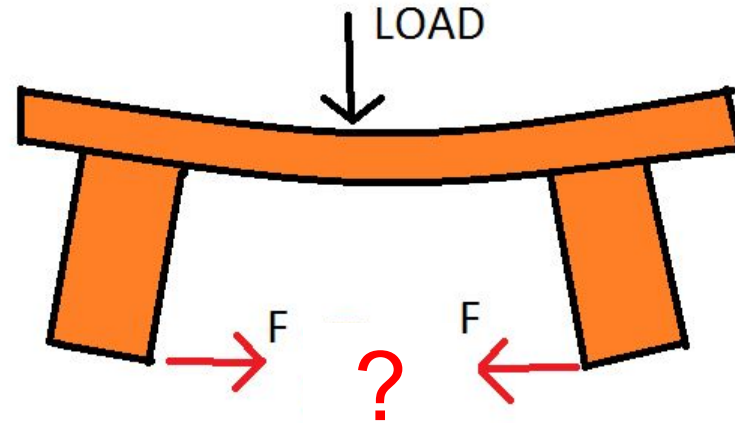
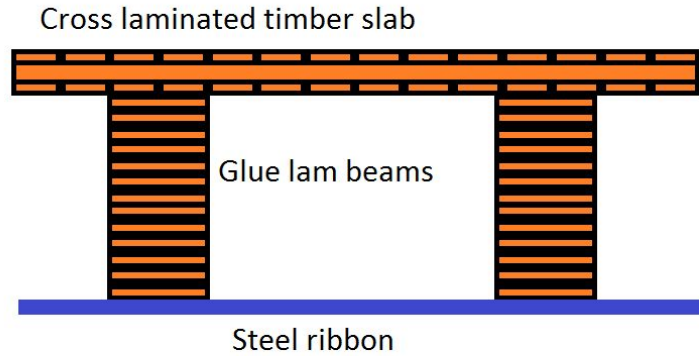
Manufacturer- Enduro Composites



Load Transfer Through Tension



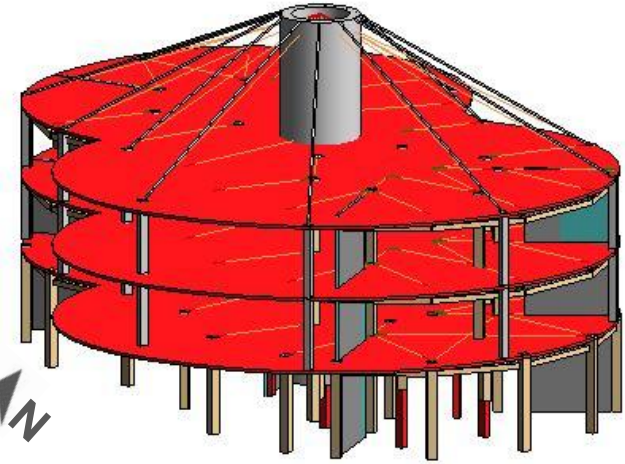
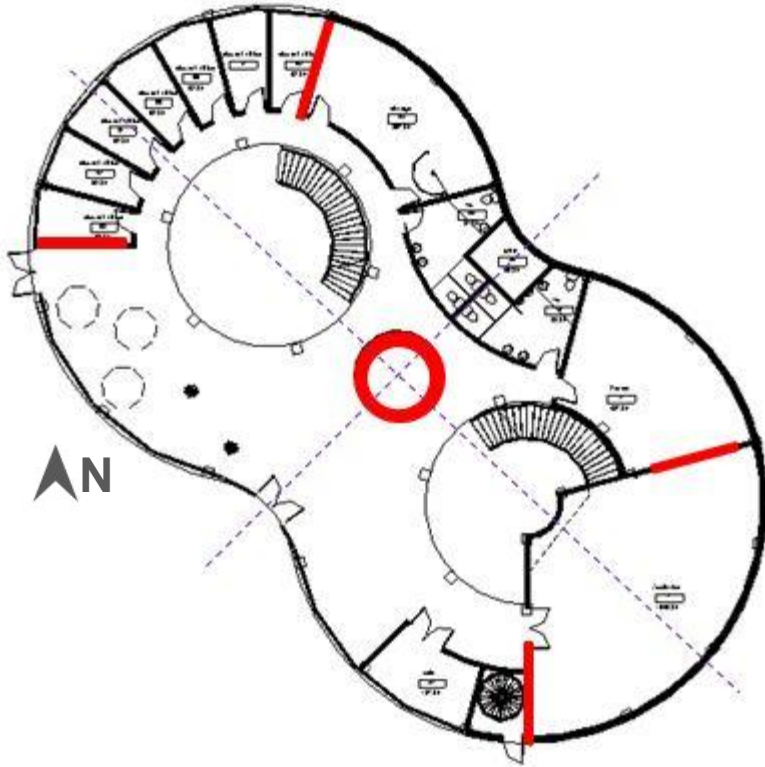
Gravity Load Flow



CLT Slab - 6"

Glue lam beam 8"

Steel plates - depth = 1/2", width = 4", every 2 feet



$I = 1.5$
 $S_{ds} = 1.455$

$R = 5$ (Ordinary Reinforced Concrete Shear Wall)

Base Shear = 1145 kips

Outer Diameter = 13'

Inner Diameter = 10.5'

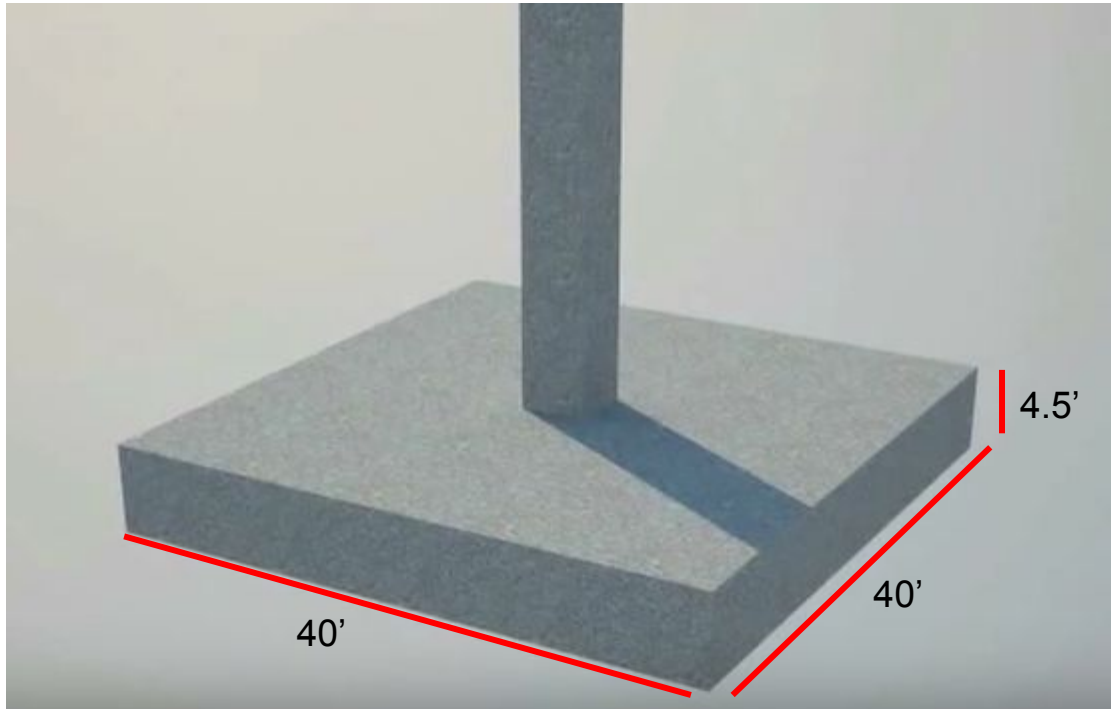


$R = 6.5$

Base Shear = 880 kips

Thickness = 8"





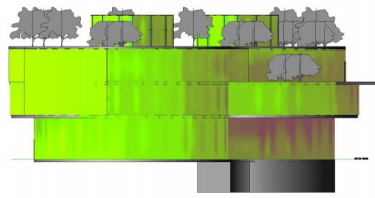
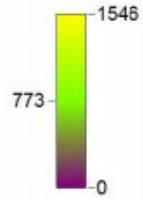
Soil Bearing Capacity= 3500psf

Large footing due to high
overturning moments

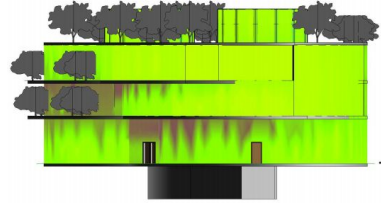
Alternative- Piles (Expensive)

Solar analysis

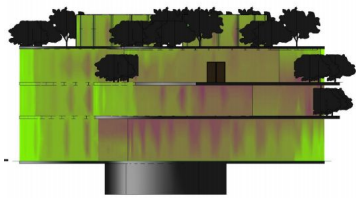
Cumulative insolation [kWh/m²]



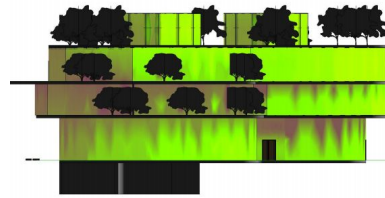
East



Southern



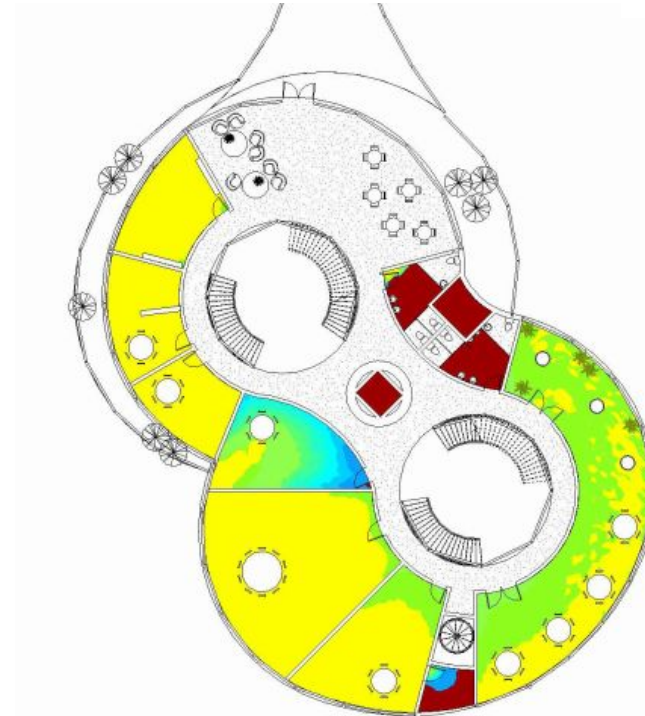
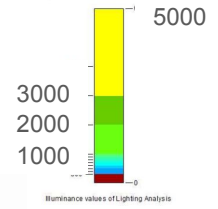
North



West

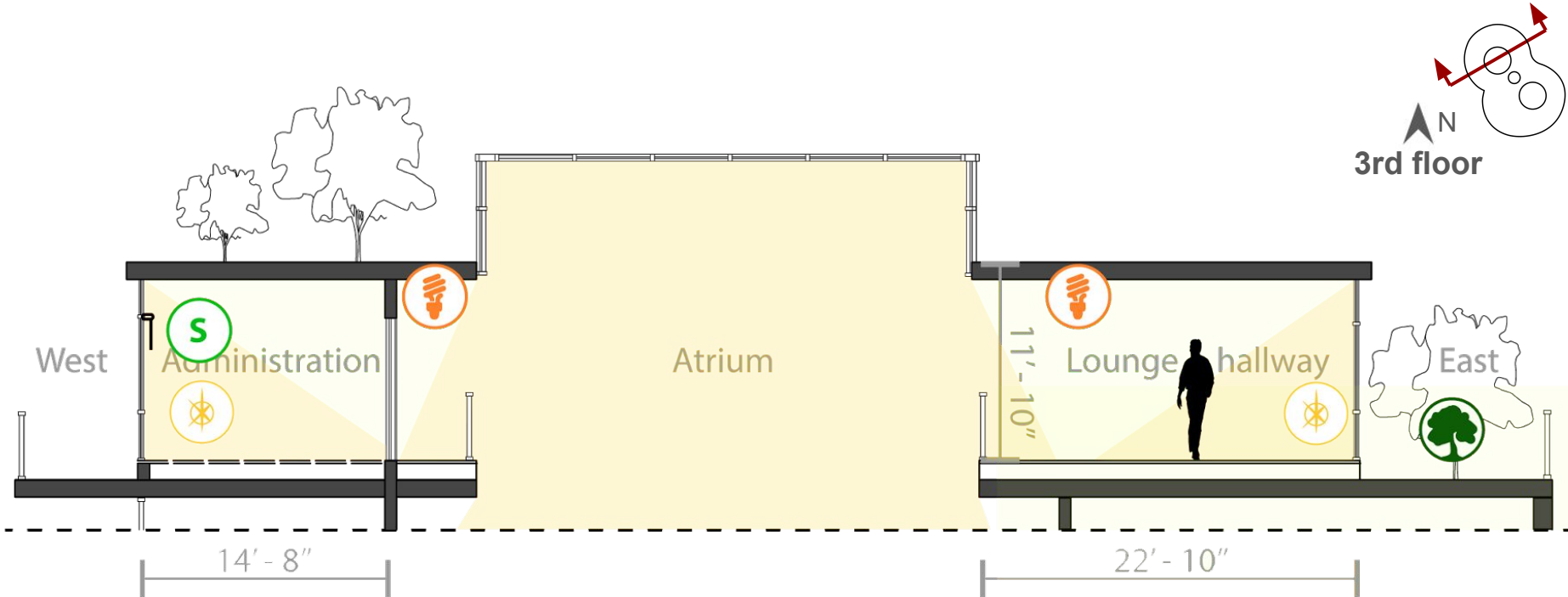
Daylight

Fall Equinox 3PM [lux]





N
3rd floor


Daylight Control



 Solar film

 Shading trees

 Internal manual shading

 Daylight controlled artificial lighting

Large potential

- Prevailing wind direction
- Large solar heat gain
- Minimum change in internal load

- SM = Small classrooms
- SE = Seminar rooms
- B = Big classrooms

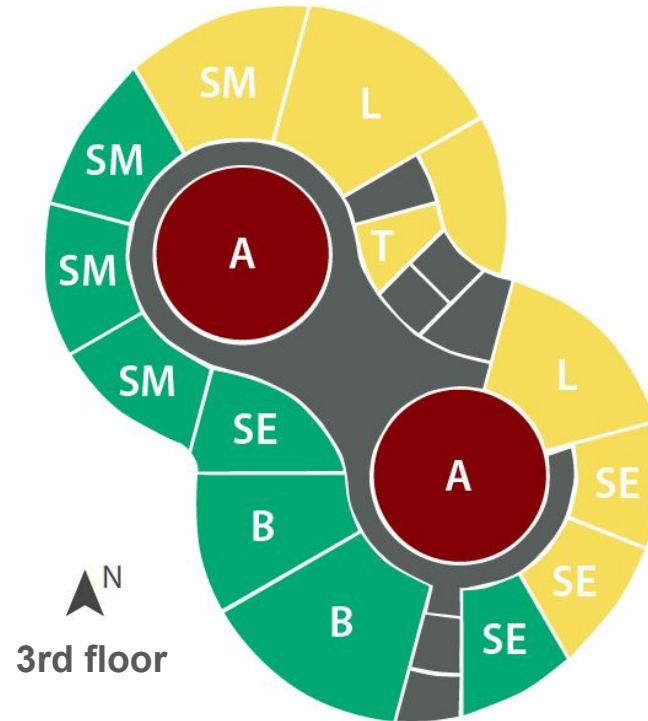
Smaller potential

- Large and changing internal loads
- Need for mechanical ventilation

- SM = Small classrooms
- L = Labs.
- T = Toilets
- SE = Seminar rooms

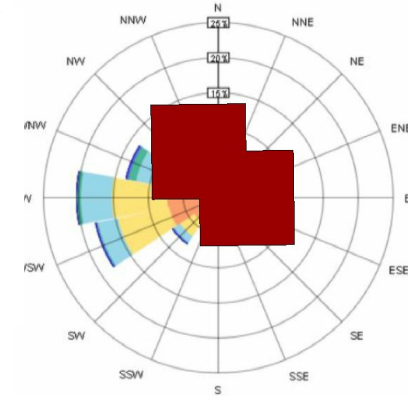
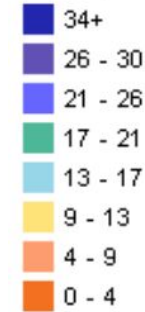
No or limited need

- Shafts, elevators, stairs, etc.

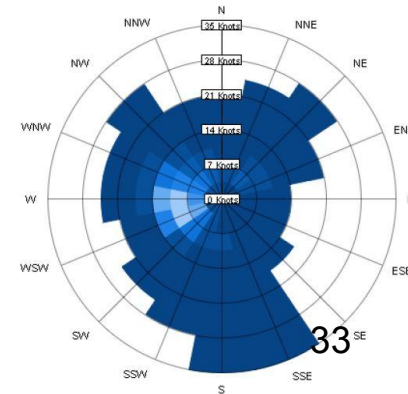


Wind speed (knots)

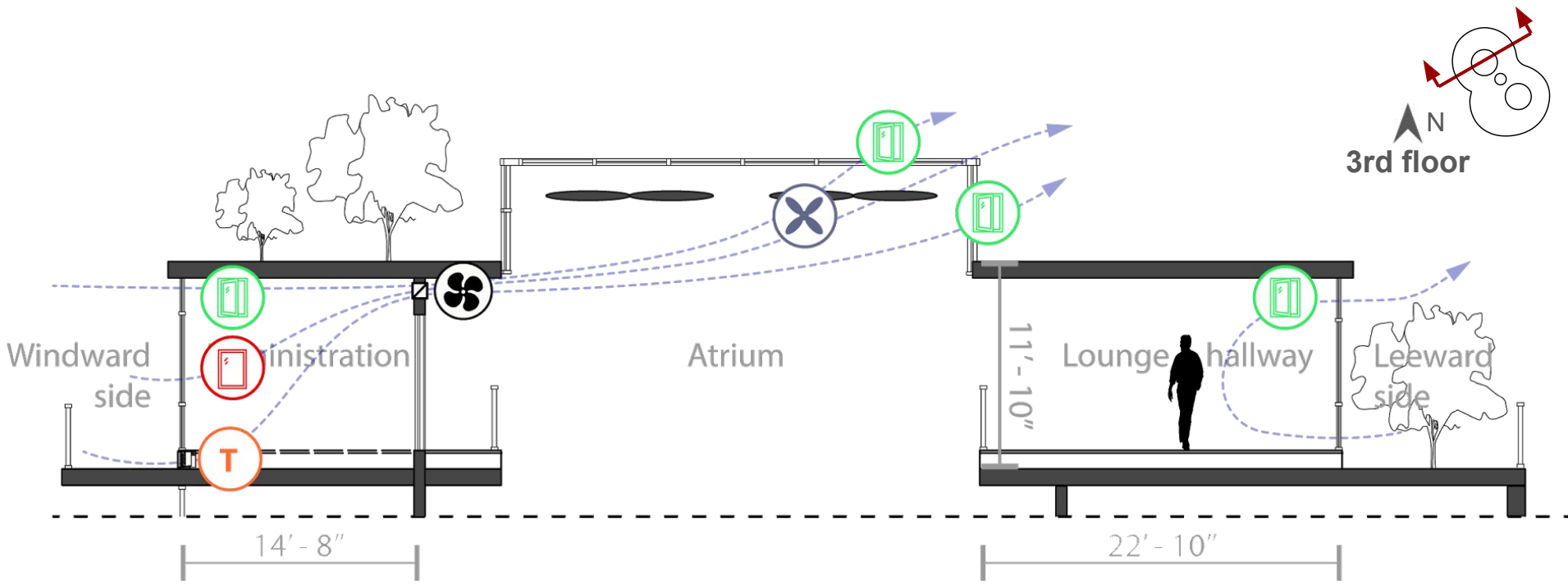
Radial scale is % if time







Wind frequency (hrs)

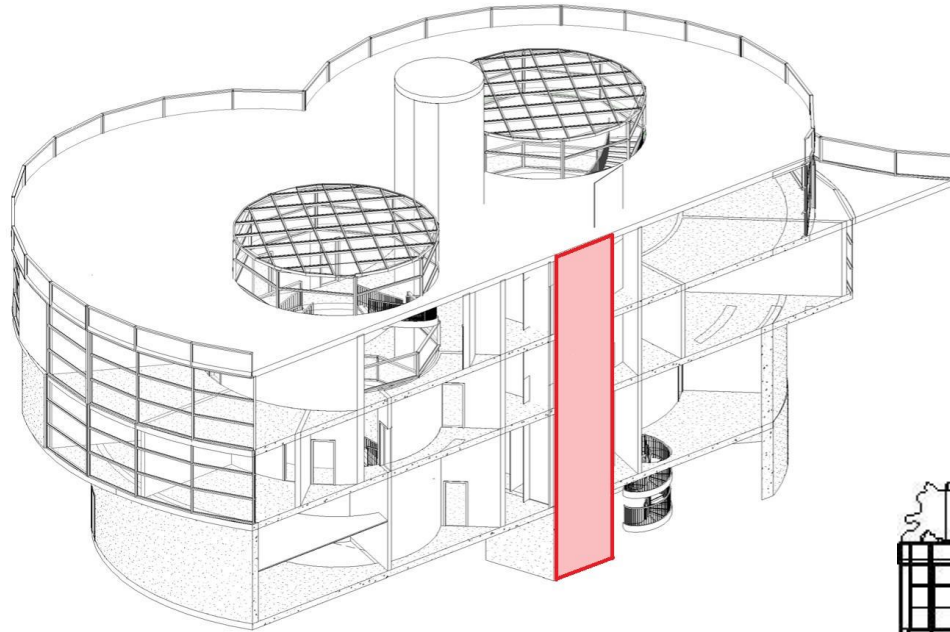


Utilizing Wind

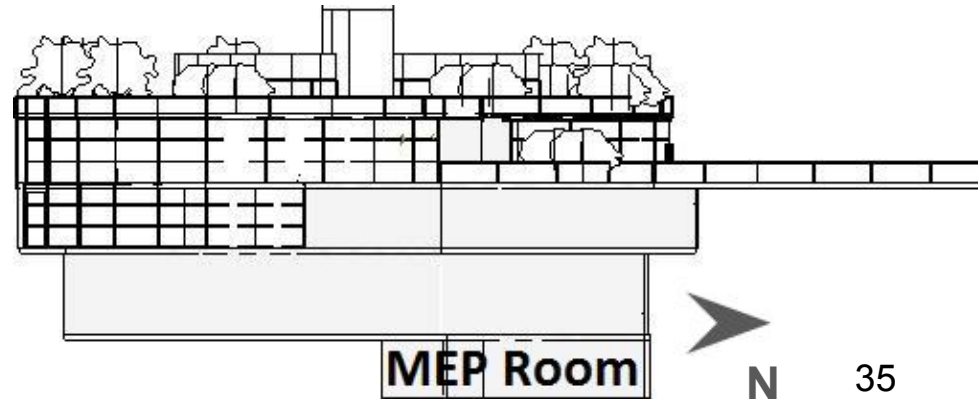


-  Smoke exhaust fans
-  Self-regulating axial fans
-  Automatically controlled windows
-  Operable windows
-  Trickle vent 34

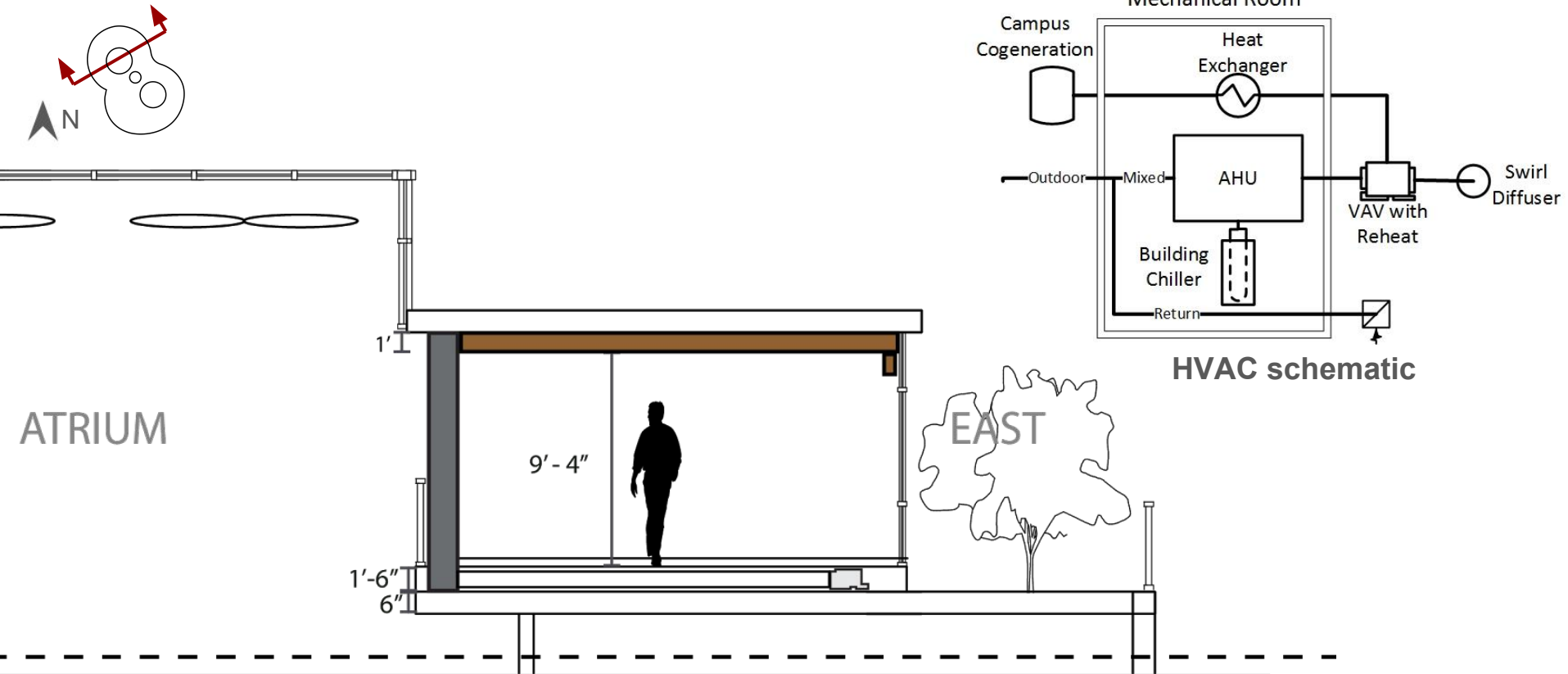
Shaft and Mechanical Room



	Main Duct	Main Supply
VAV	18-27"	36"
Radiant	12-16"	20"

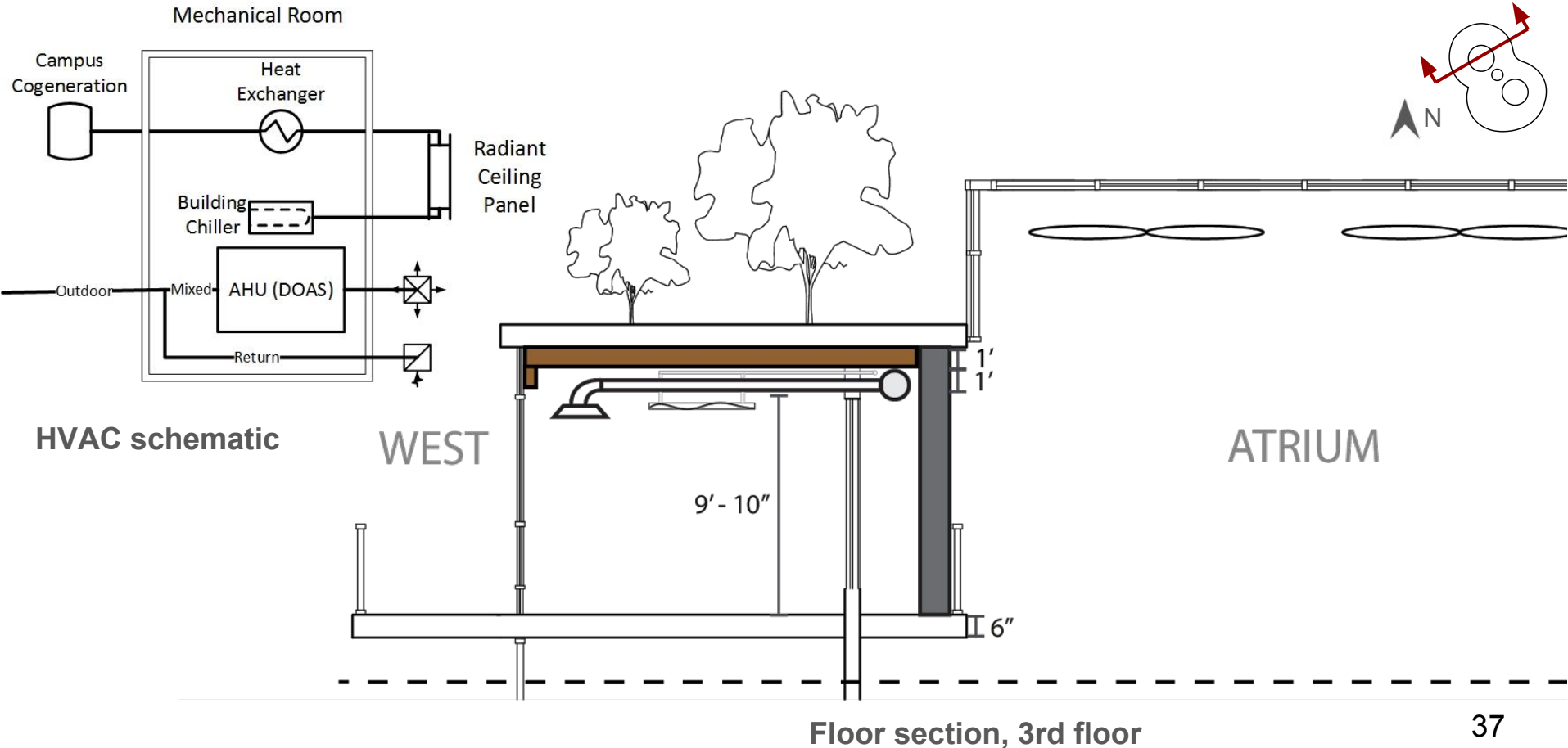


HVAC option - VAV with reheat



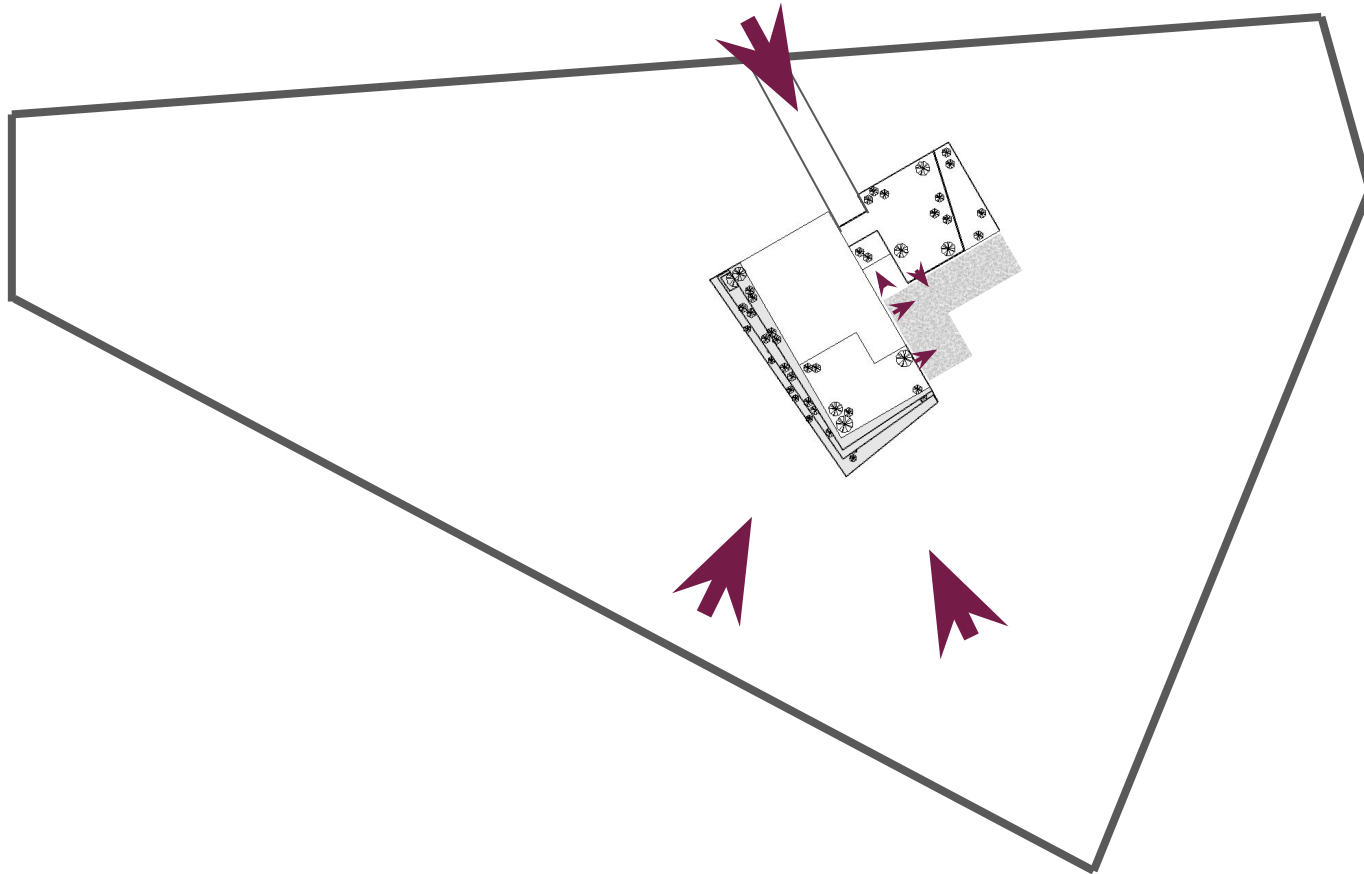
Floor section, 3rd floor

HVAC option - Radiant ceiling & DOAS





SIMPLICITY

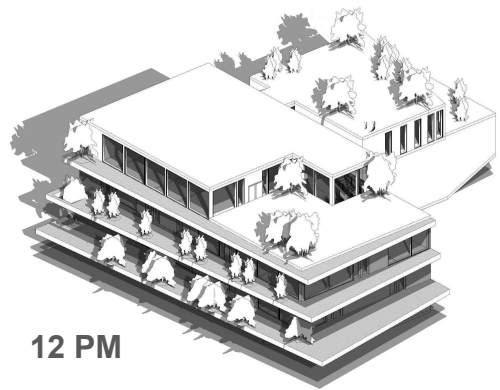


Shading

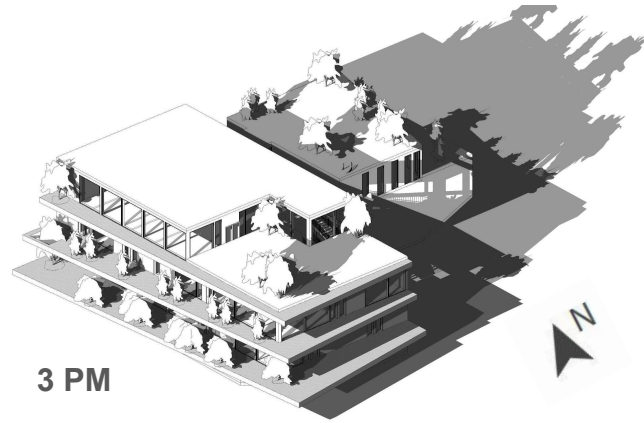
Equinox, winter solstice, summer solstice



9 AM



12 PM

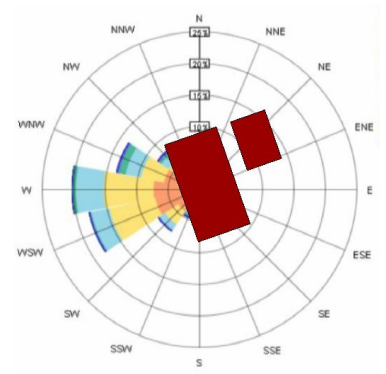


3 PM

Wind speed (knots)

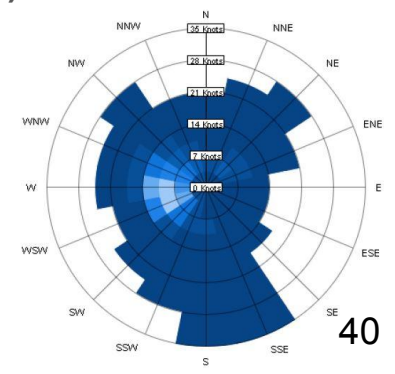
Radial scale is % if time

- 34+
- 26 - 30
- 21 - 26
- 17 - 21
- 13 - 17
- 9 - 13
- 4 - 9
- 0 - 4



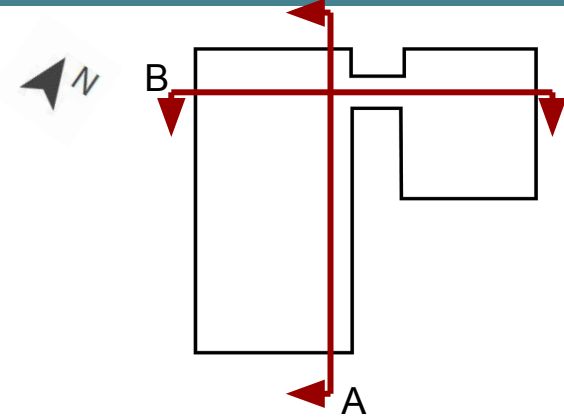
Wind frequency (hrs)

- 720+
- 576 - 648
- 504 - 576
- 432 - 504
- 360 - 432
- 288 - 360
- 216 - 288
- 144 - 216
- 72 - 144
- 1 - 72



40

Section



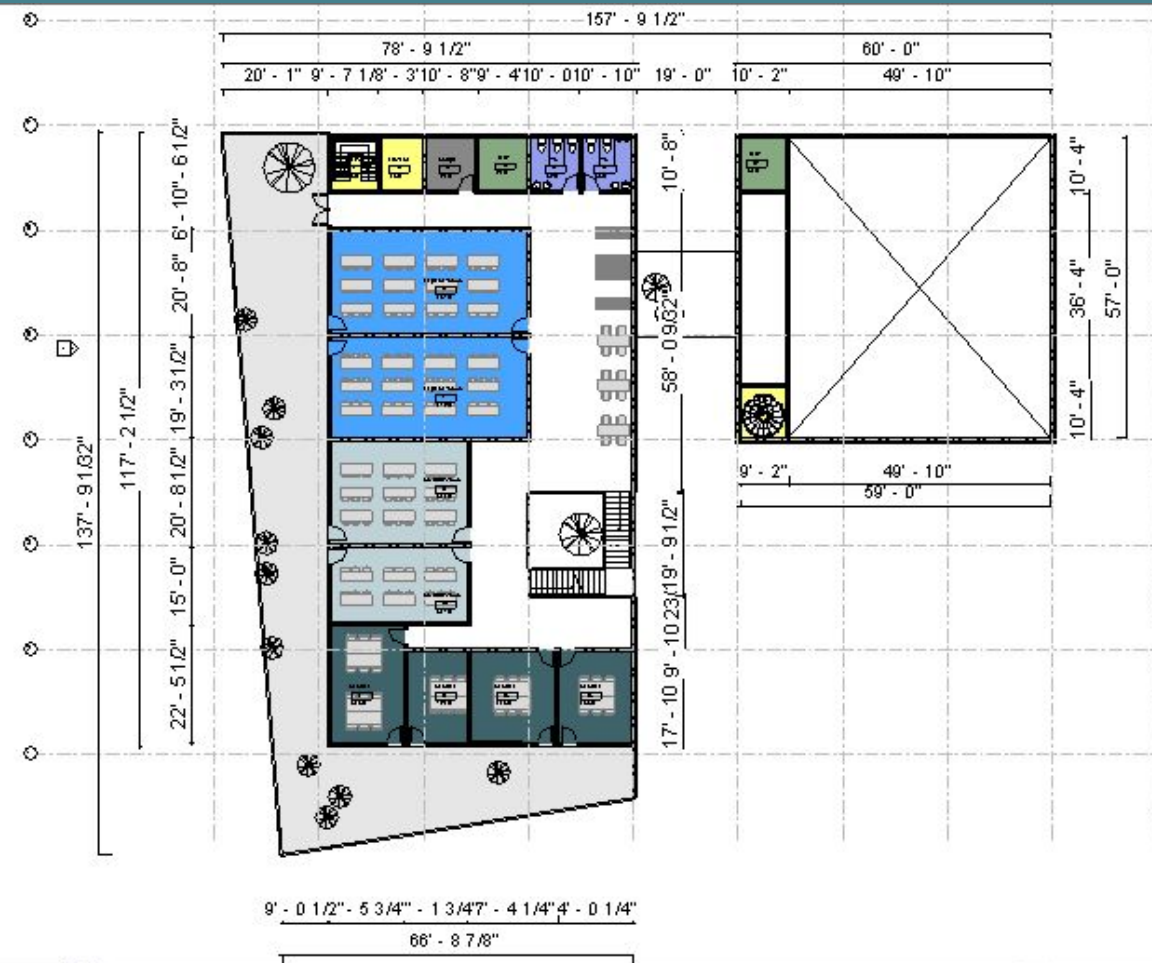
- 48 ft ← - - - - - Student & learning
- 36 ft ← - - - - - Education & learning
- 24 ft ← - - - - - Faculty & learning
- 12 ft ← - - - - - Social & learning

Ground Floor



- Room Legend
- Auditorium
 - Cafe
 - Elevator
 - Mechanical
 - MEP
 - Stairs
 - Storage
 - WC
















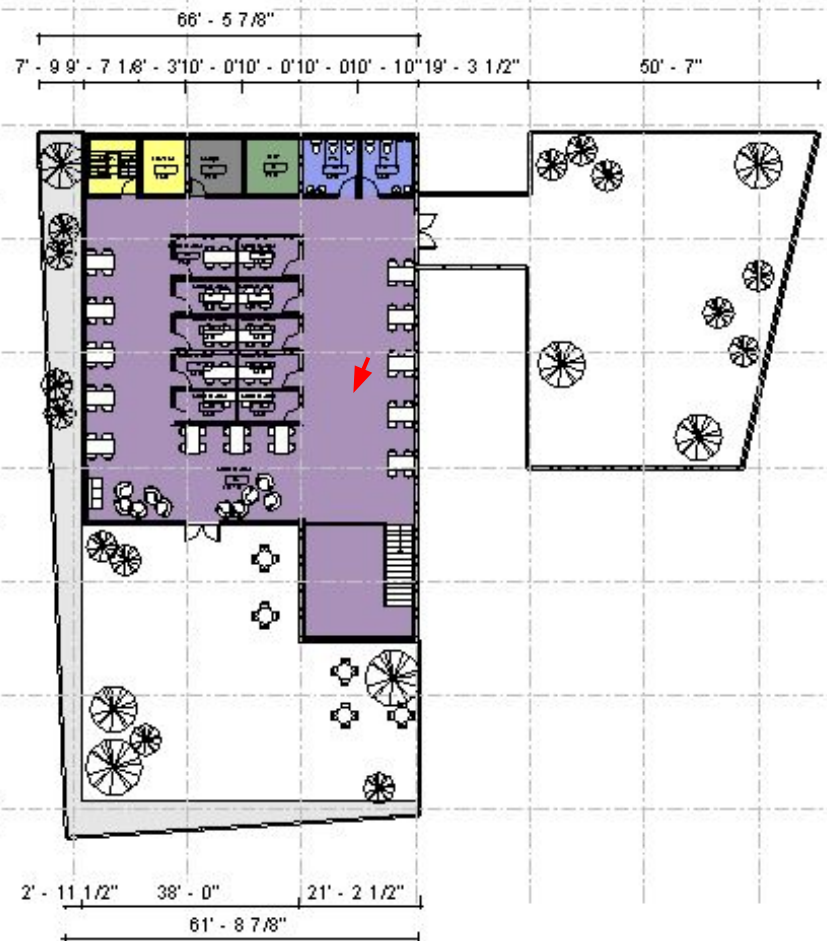
Room Legend

- Elevator
- Large Classroom
- MEP
- Seminar
- Small Classroom
- Stairs
- Storage
- WC



Room Legend

-  Administration
-  Chairs
-  Elevator
-  Faculty offices
-  Lab
-  Lounge
-  MEP
-  Server
-  Stairs
-  Tec
-  WC



Room Legend



- Elevator
- MEP
- Stairs
- Storage
- Student office
- WC





North Elevation



East Elevation

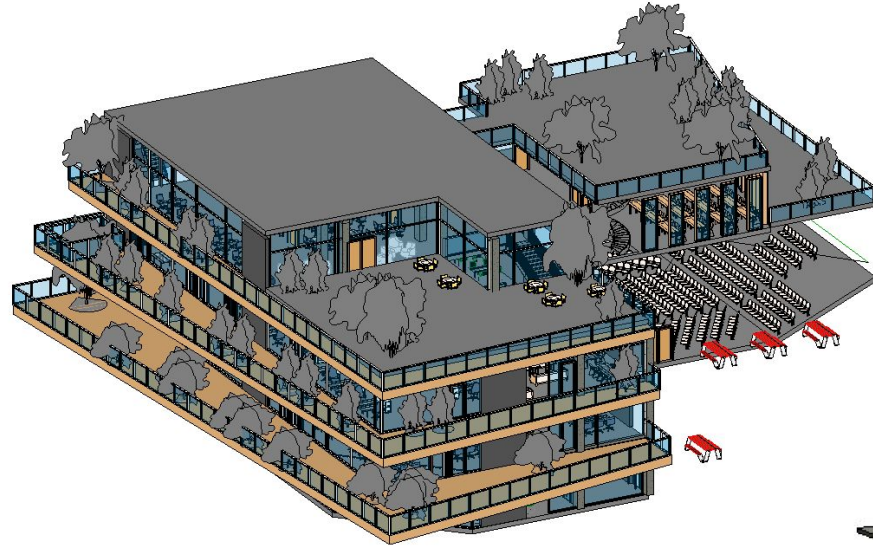


South Elevation

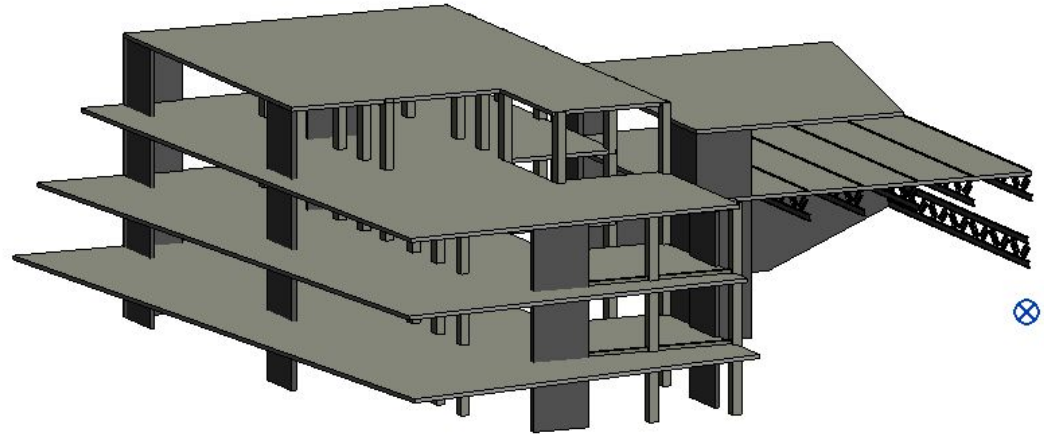


West Elevation



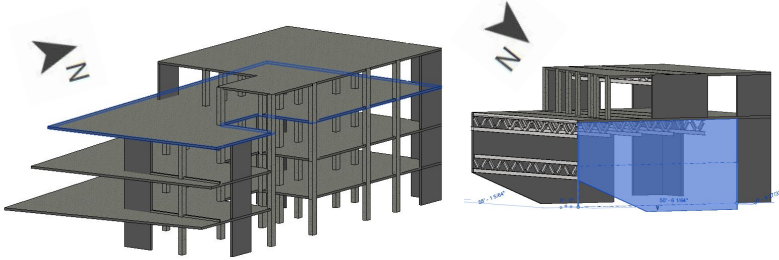


Architectural

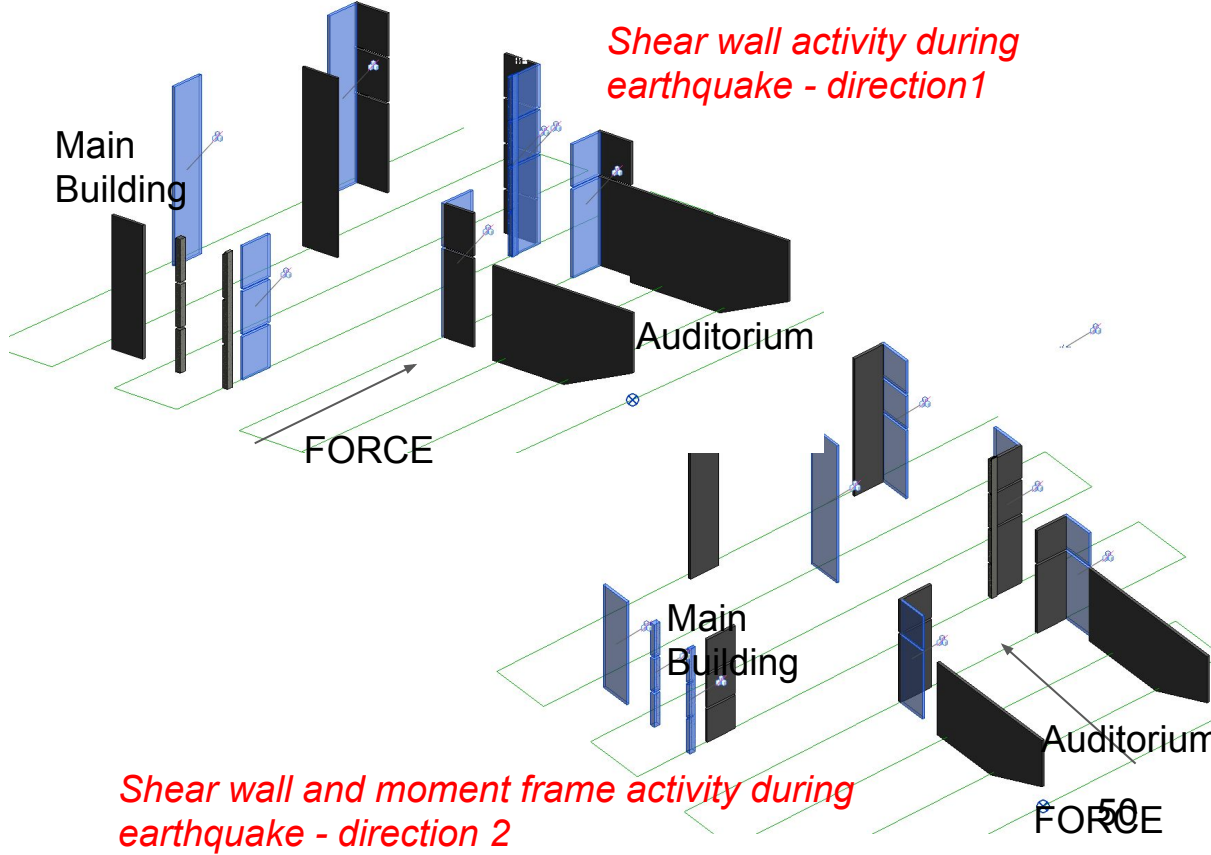
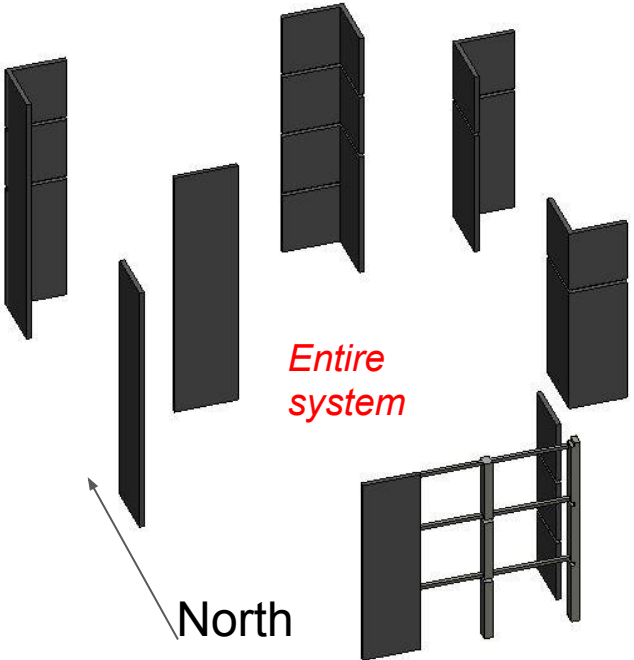


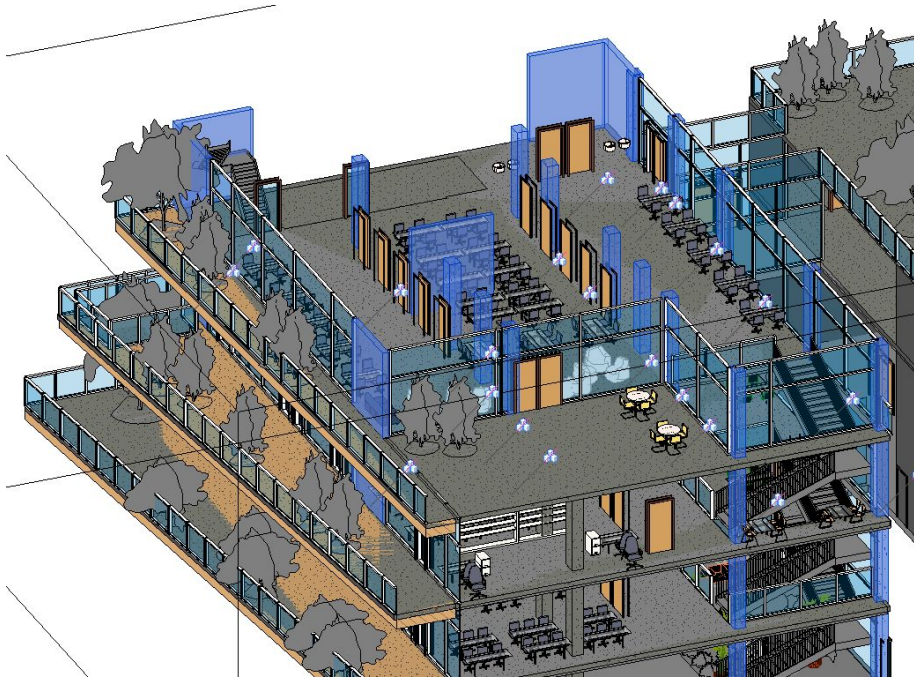
Structural



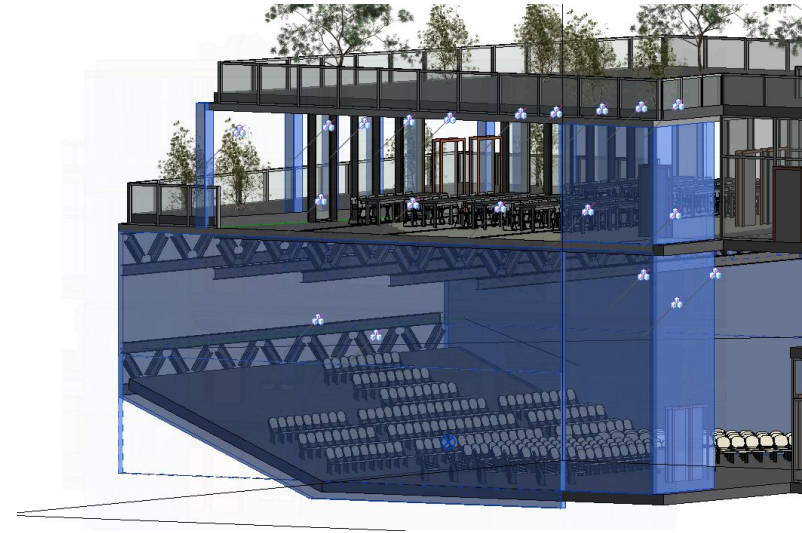
<h2>Structural System</h2>	
<h2>Gravity System</h2>	<p>Columns - concrete [18" x 18"] Truss - steel - (auditorium) [height 4'] Deep Beam - concrete (auditorium) [12']</p>
<h2>Lateral System</h2>	<p>Shear walls - concrete [thickness 10"] Moment frame - concrete [columns [18" x 18"], beam [15"]</p>
<h2>Floor System</h2>	<p>Composite slab - 14" Concrete Slab Depth - 6" Beam Depth - 8"</p>

Lateral system

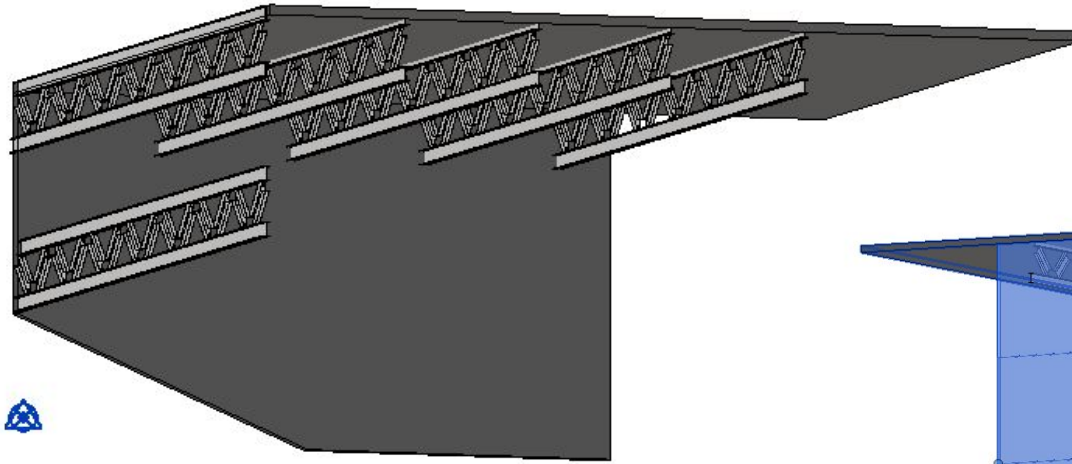




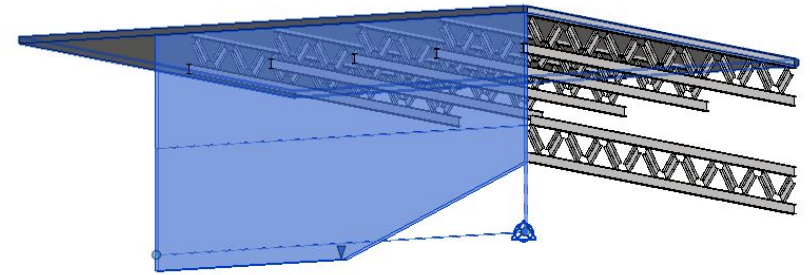
Main building



Auditorium

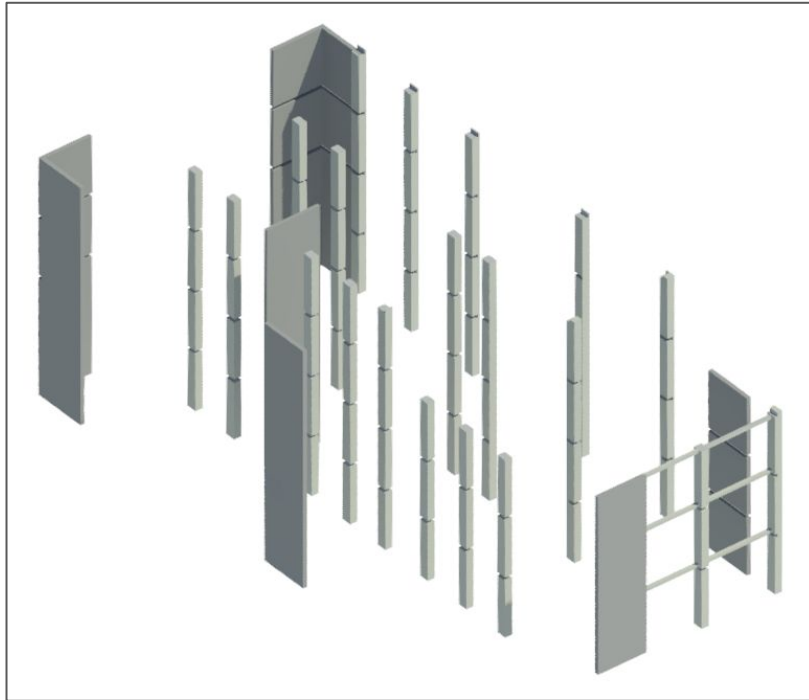


- 1.) Composite slab (14")
- 2.) Steel truss beam (4')

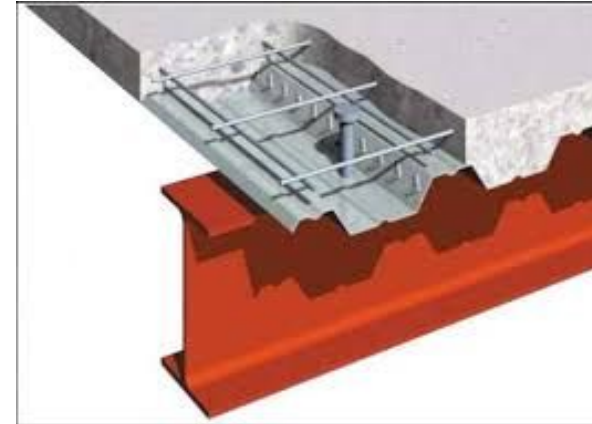


Deep beam (2 x 12')

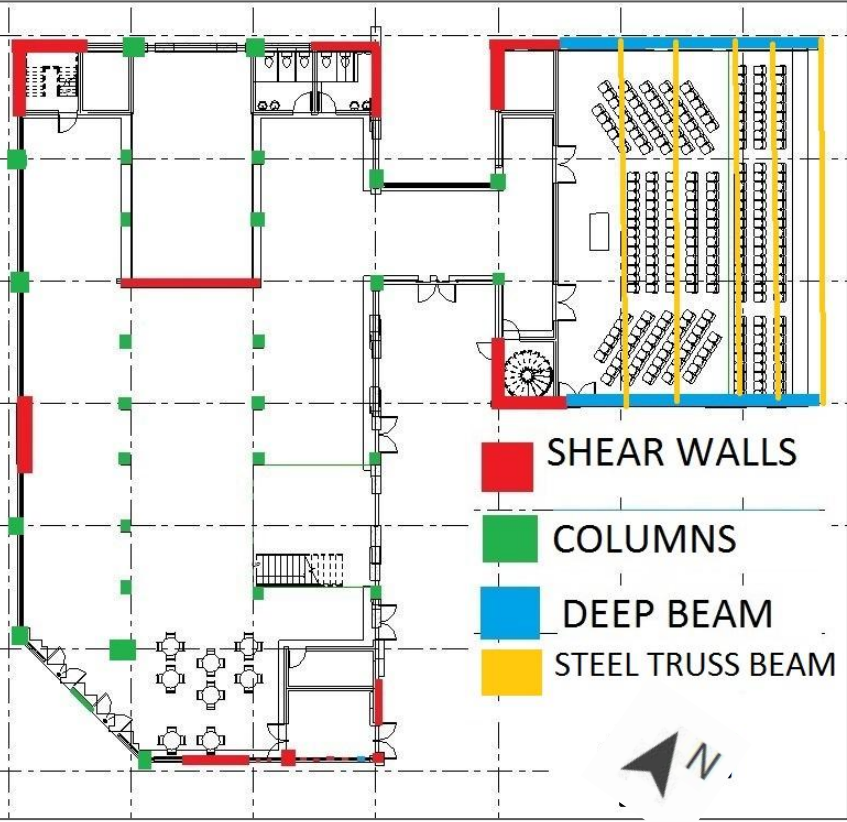
- works as cantilever
- supports truss beam
- truss beam supports inclined slab



Concrete columns (18" x 18")
Concrete beams (6" x 10")
Concrete walls (10")



Composite slab
14" = 8" steel + 6" concrete

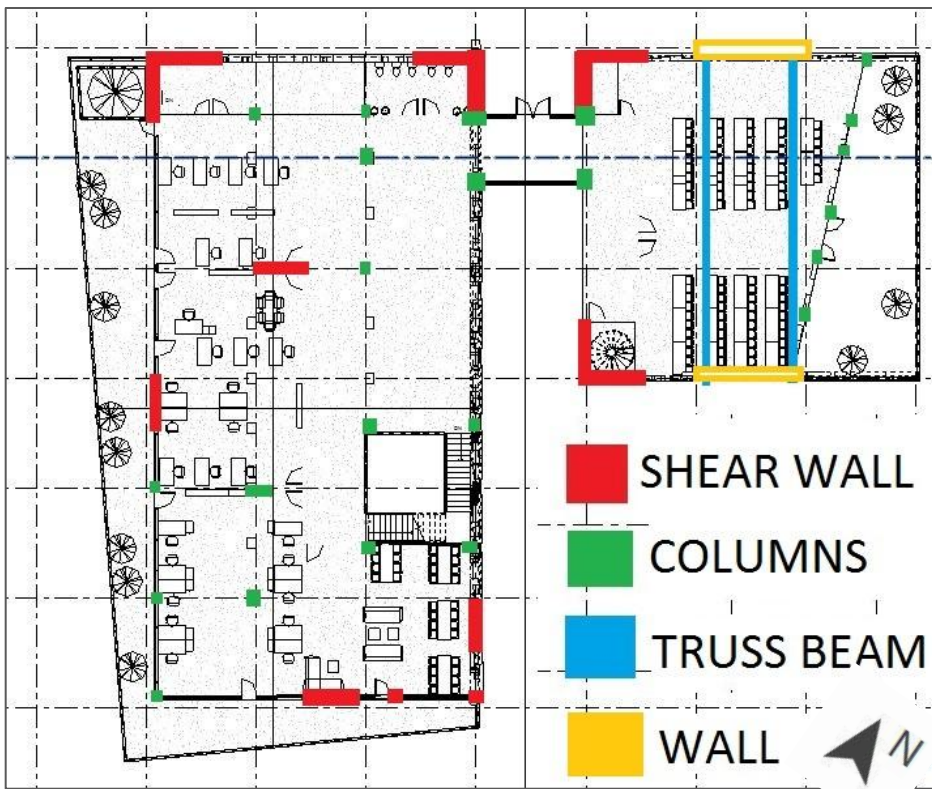


Level 1

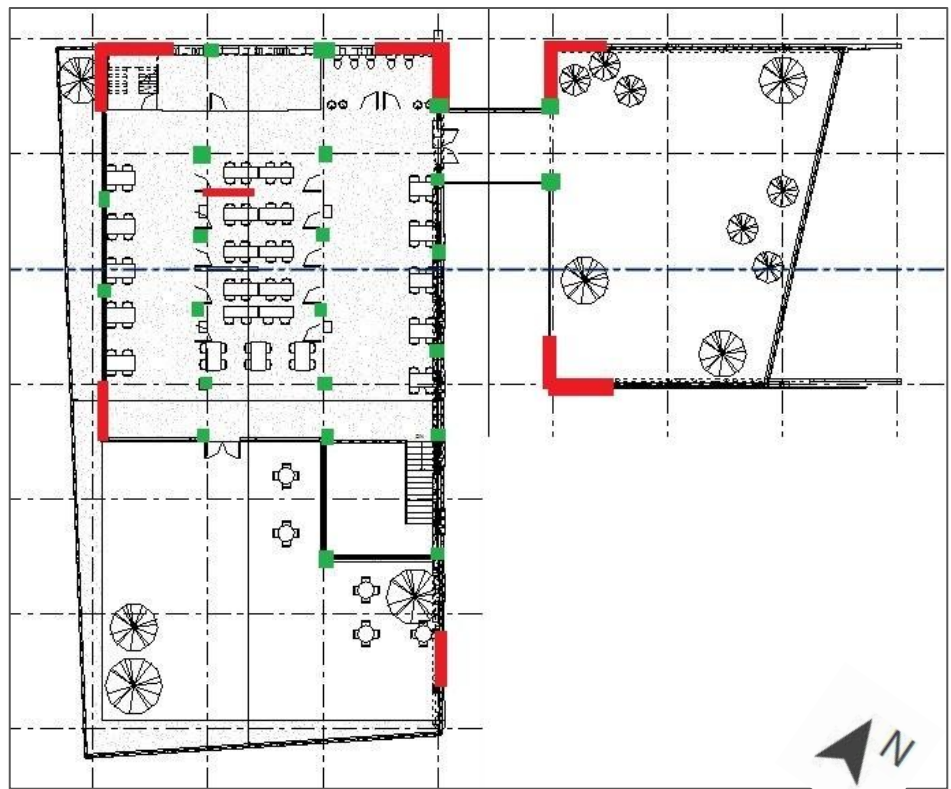


Level 2

Floor Plans - Alternative 1

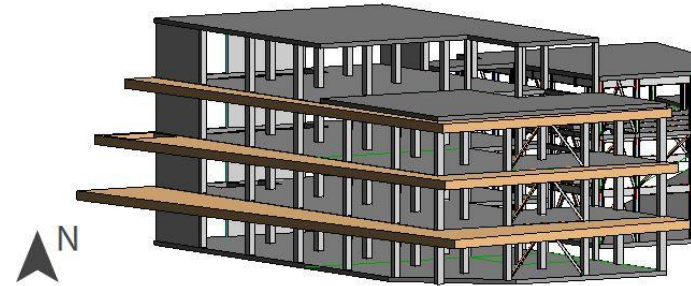


Level 3



Level 4

Structural System (West Wing)



Gravity System

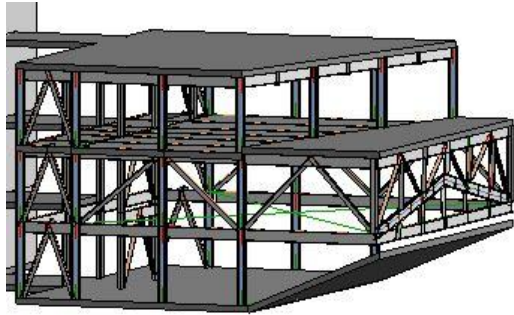
Columns- Concrete (18"x18")
Columns Surrounding Atrium- Concrete (14"x14")

Lateral System

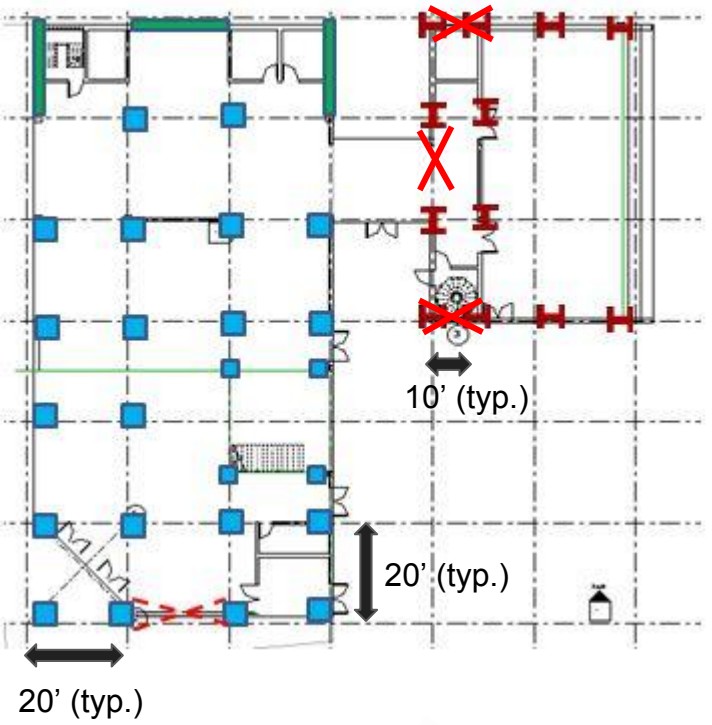
Shear Wall- Concrete (12")
Concentric Braced Frame- Steel/Concrete
(Brace- L8x8x7/8
Beam- Conc. 9"x12")

Floor System

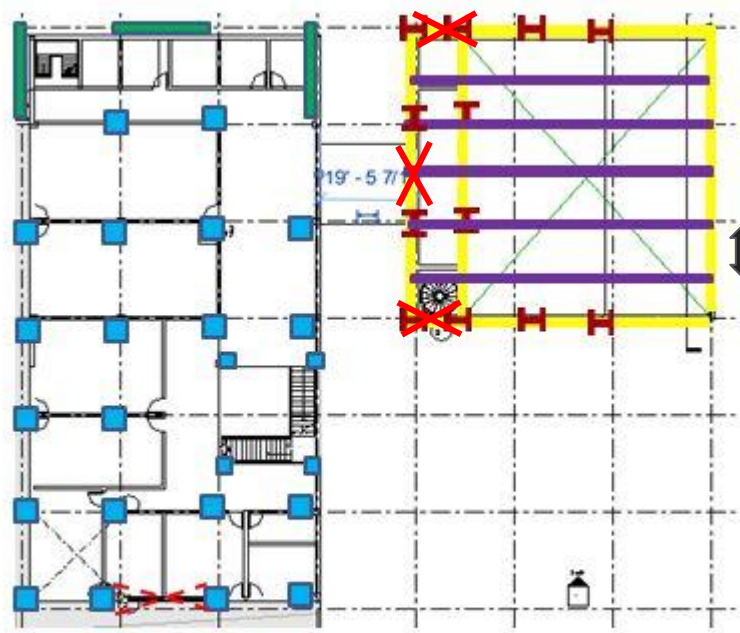
Prestressed Concrete- 10" with 0.6" diameter strands
spaced at 2" c/c

<p>Structural System (East Wing)</p>	
<p>Gravity System</p>	<p>Columns- Steel (W14x82) Beams- W21x48 (Exterior) W24x62 (Interior)</p>
<p>Lateral System</p>	<p>Concentric Braced Frame- Steel (Brace- L8x8x7/8 Beam- W21x48)</p>
<p>Floor System</p>	<p>Concrete with Steel Deck- 2" steel deck with 4.5" Normal Weight Concrete (2Hr Fire Rating)</p>

Floor plans

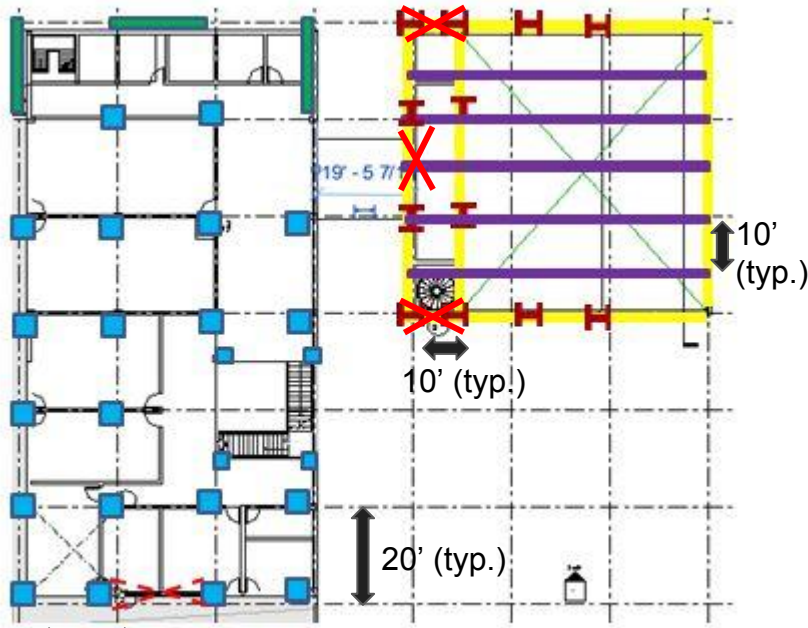


Level 1

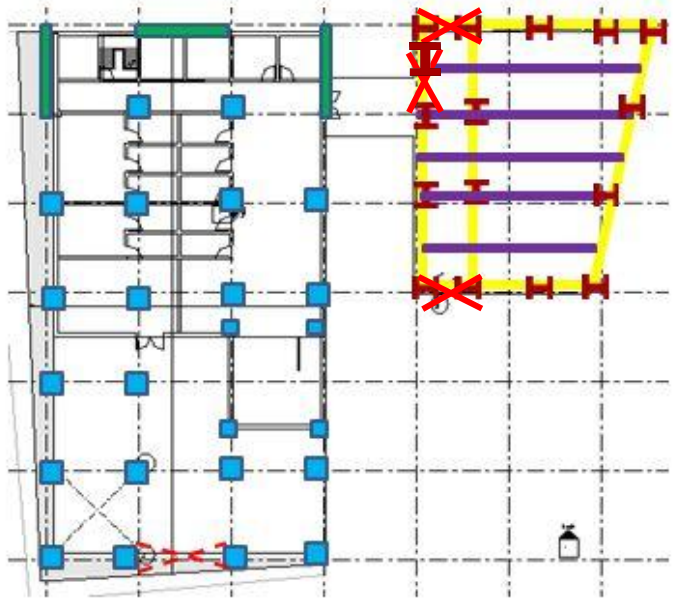


Level 2

- Concrete 18" x 18"
- W14x82
- W21x48
- W24x62
- 6" Concrete Shear Wall
- Concentrically Braced Frame

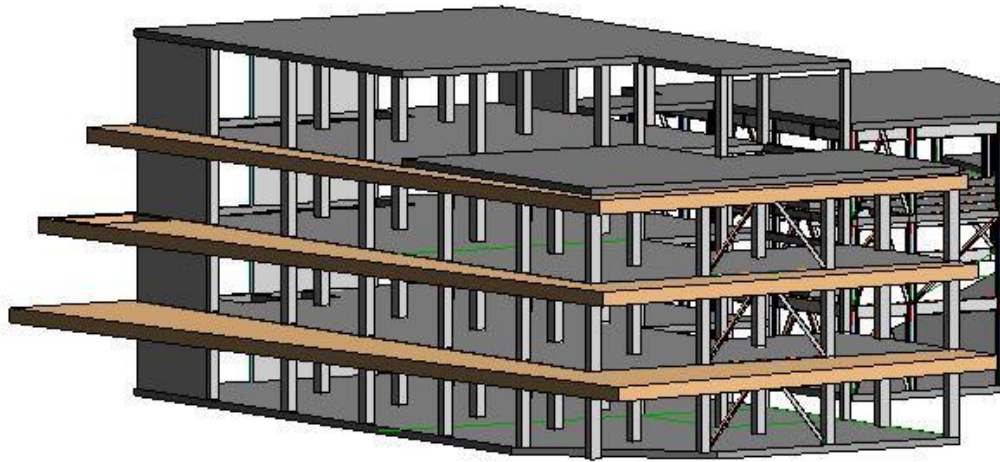


Level 3

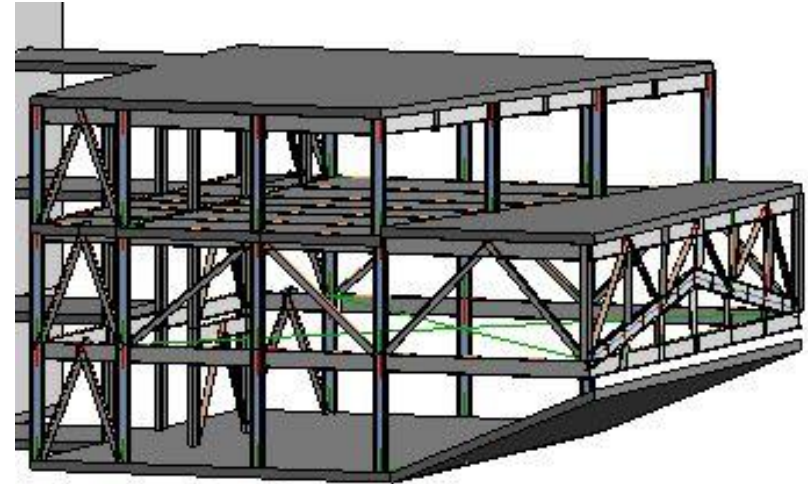


Level 4

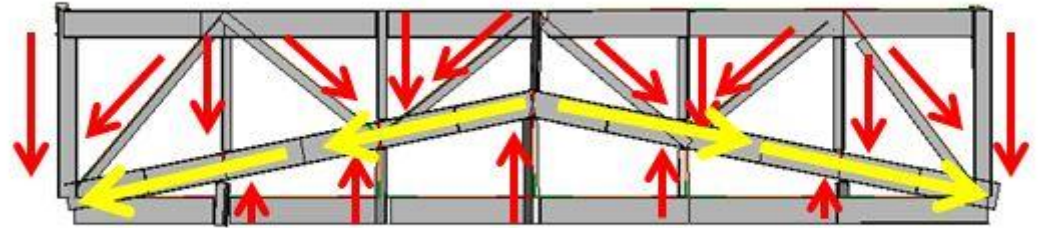
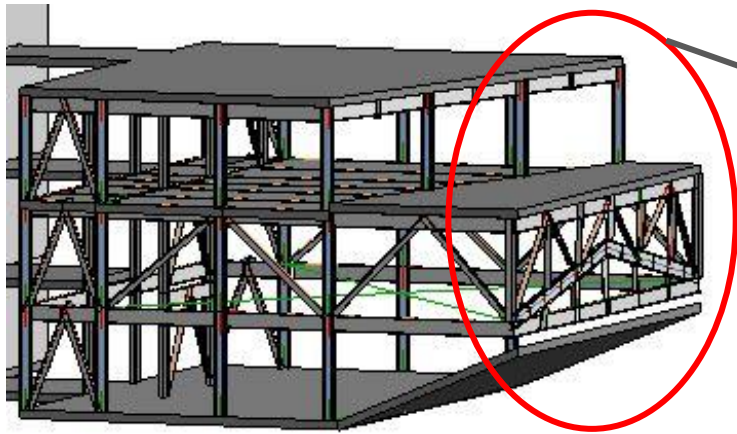
- Concrete 18" x 18"
- W14x82
- W21x48
- W24x62
- 6" Concrete Shear Wall
- Concentrically Braced Frame



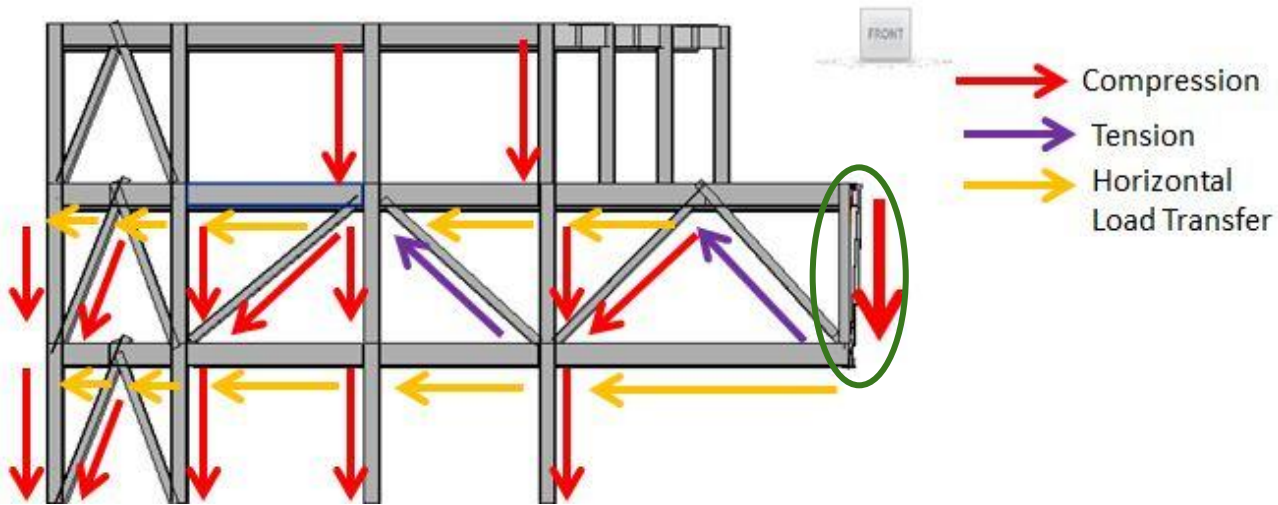
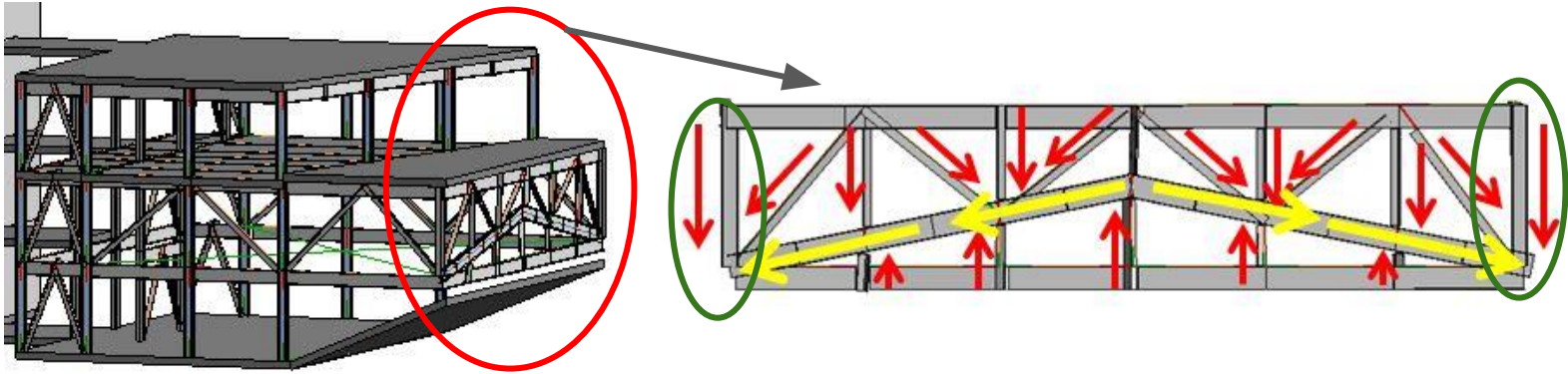
West Wing

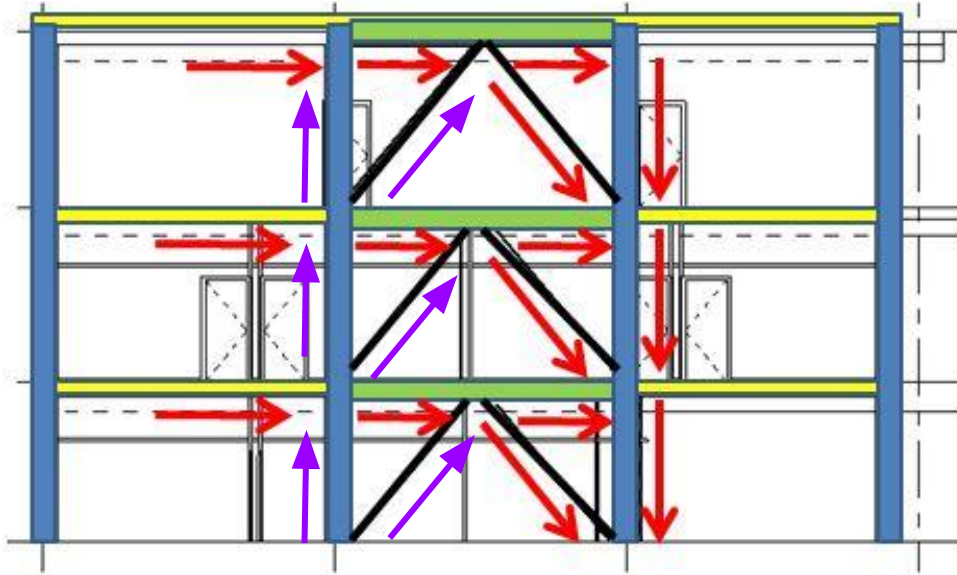


East Wing



Gravity load path - east wing





$I = 1.5$

$R = 5$ (Ordinary Reinforced Concrete Shear Wall)

$R = 6$ (Steel Special Concentrically Braced Frame)

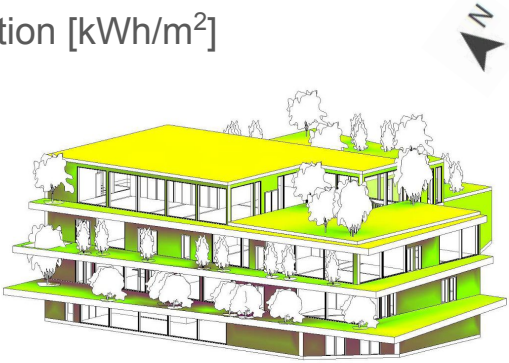
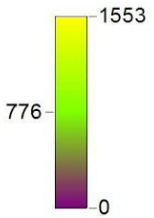
$S_{ds} = 1.455$

Base Shear = 1746 kips (Shear Wall)

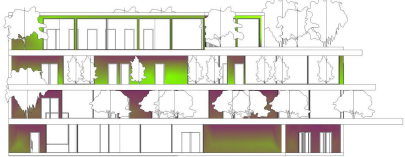
= 1455 kips (Concentrically Braced
Frame)

Solar analysis

Cumulative insolation [kWh/m²]



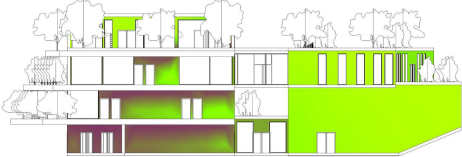
North



West



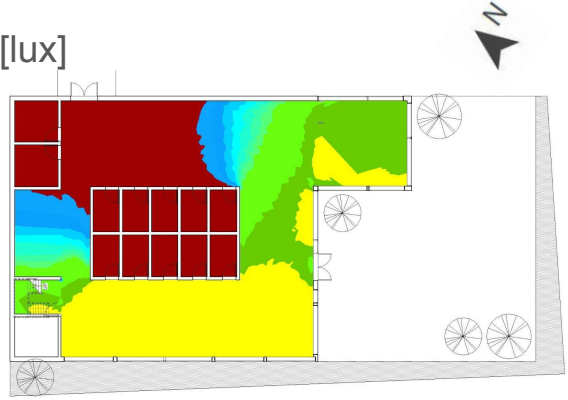
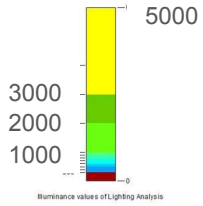
East



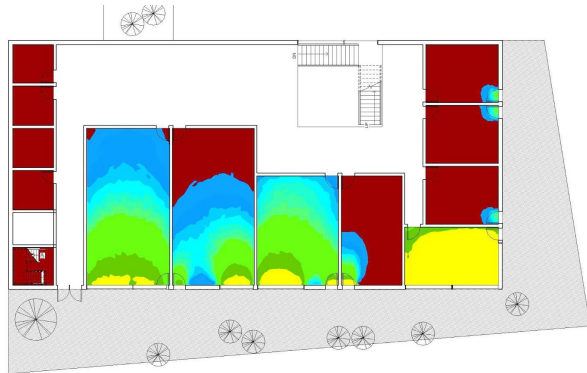
Southern

Daylight

Fall Equinox 3PM [lux]

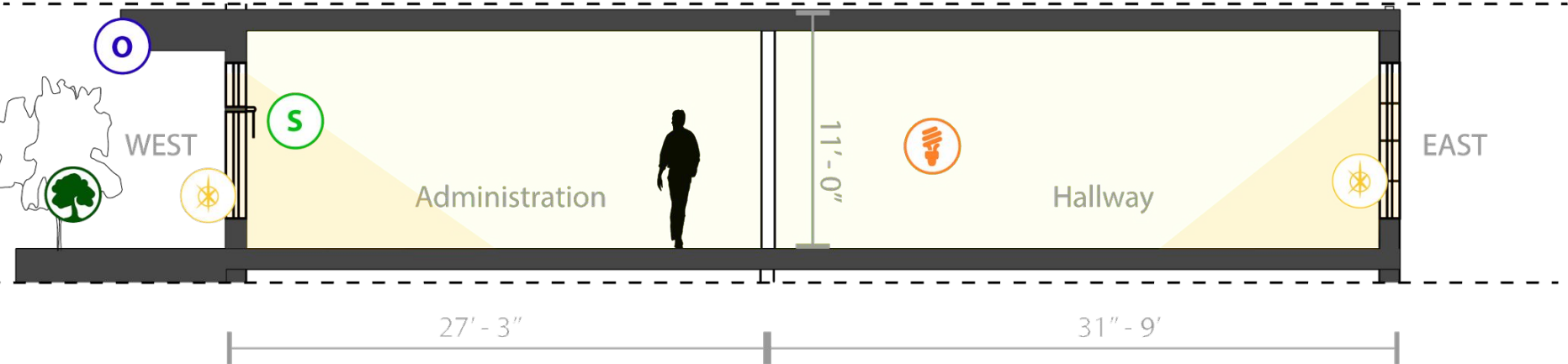
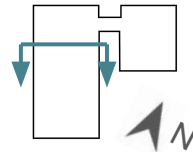







4th floor

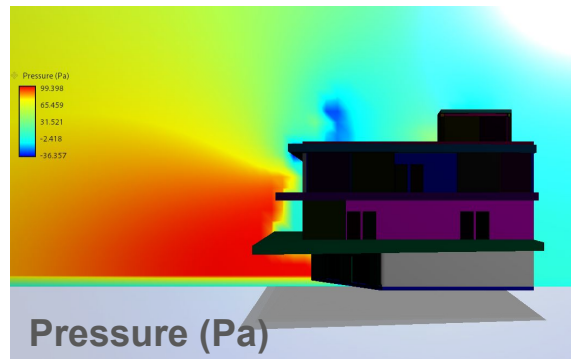
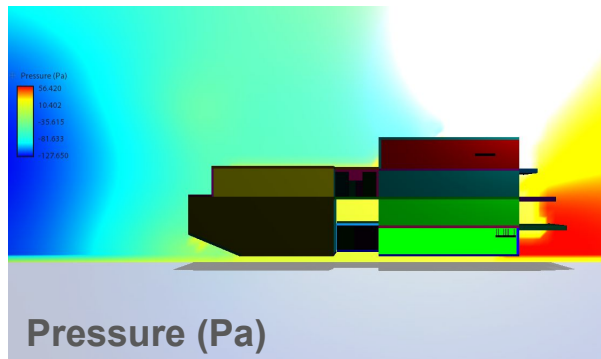
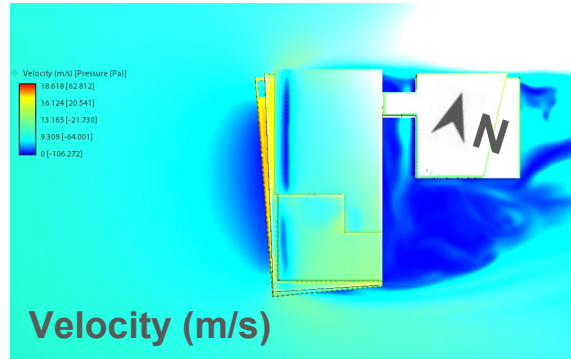
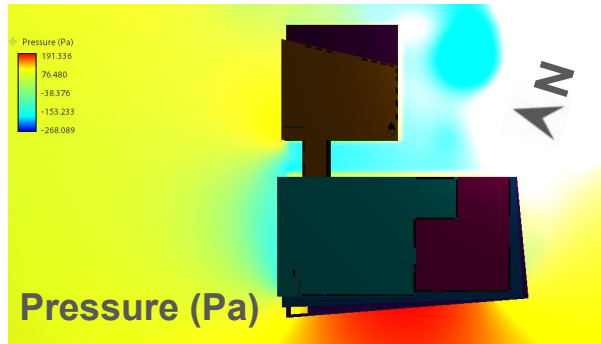


4th floor

Daylight Control

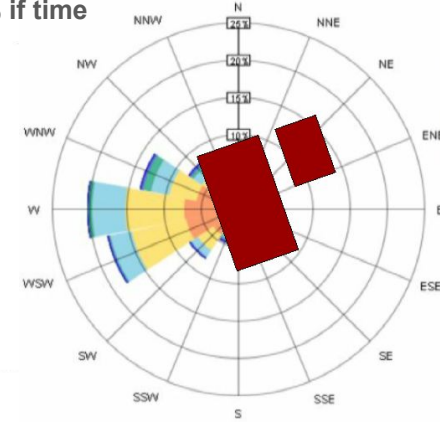


-  Solar film
-  Shading trees
-  External overhangs
-  Internal manual shading
-  Daylight controlled artificial lighting

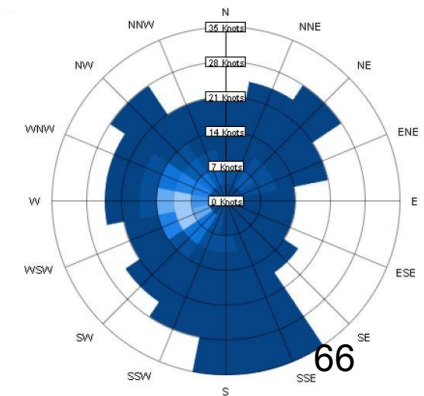


Wind speed (knots)

Radial scale is % if time



Wind frequency (hrs)



Building Zones

Large potential

- Prevailing wind direction
- Large solar heat gain
- Minimum change in internal load

- AD = administration offices
- C = Chair
- F = Faculty offices
- L = Lounge

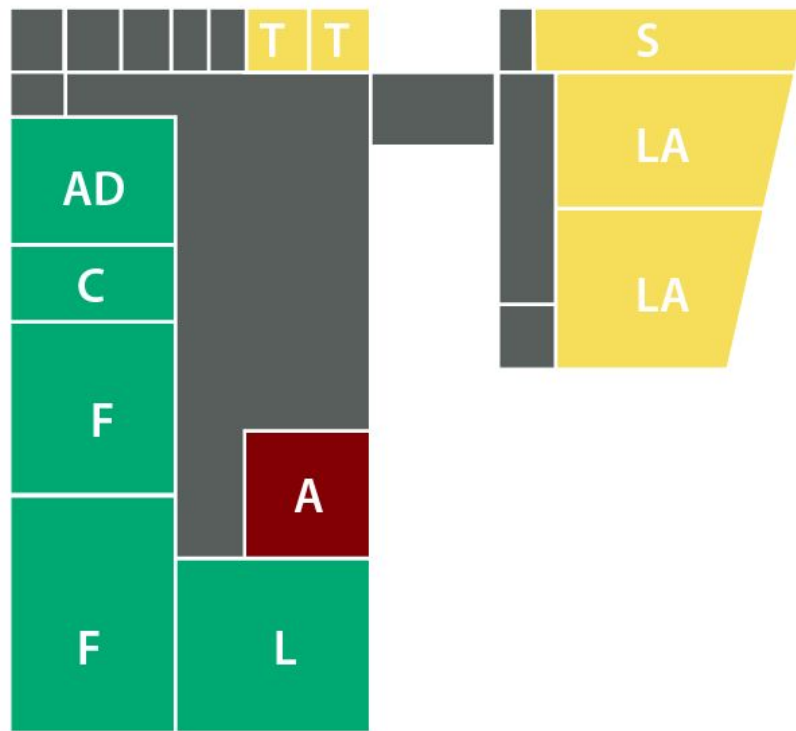
Smaller potential

- Large and changing internal loads
- Need for mechanical ventilation

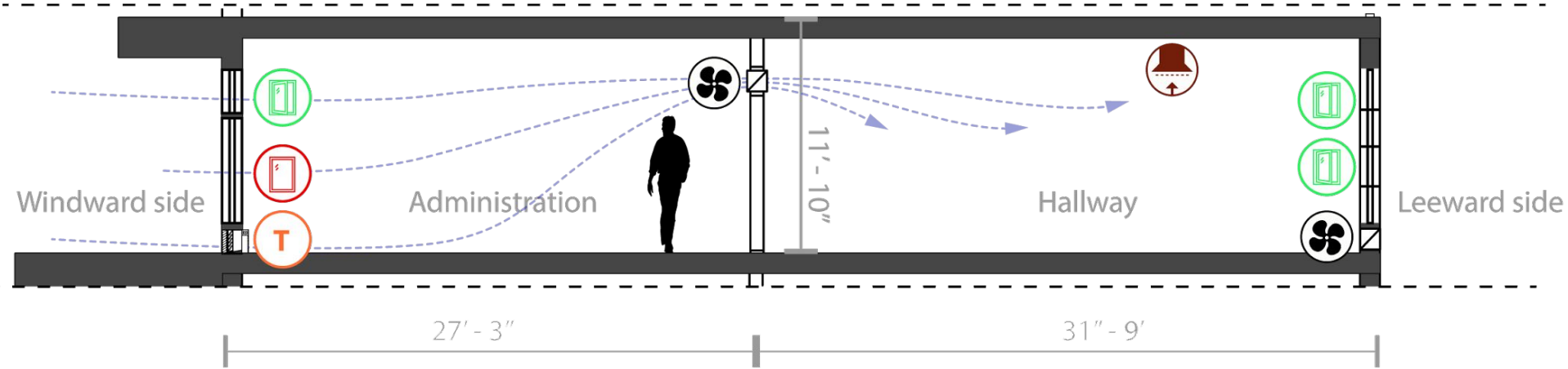
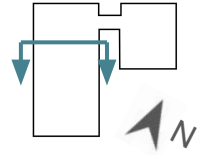
- T = Toilet
- S = Server room
- LA = Lab.

No or limited need

- Shafts, elevators, stairs, etc.




Utilizing wind conditions



T Trickle vent

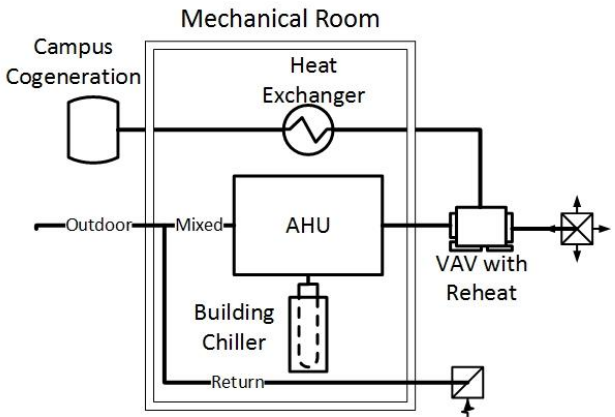
 Self-regulating axial fans

 Automatically controlled windows

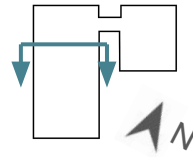
 Operable windows

 Return grill 68

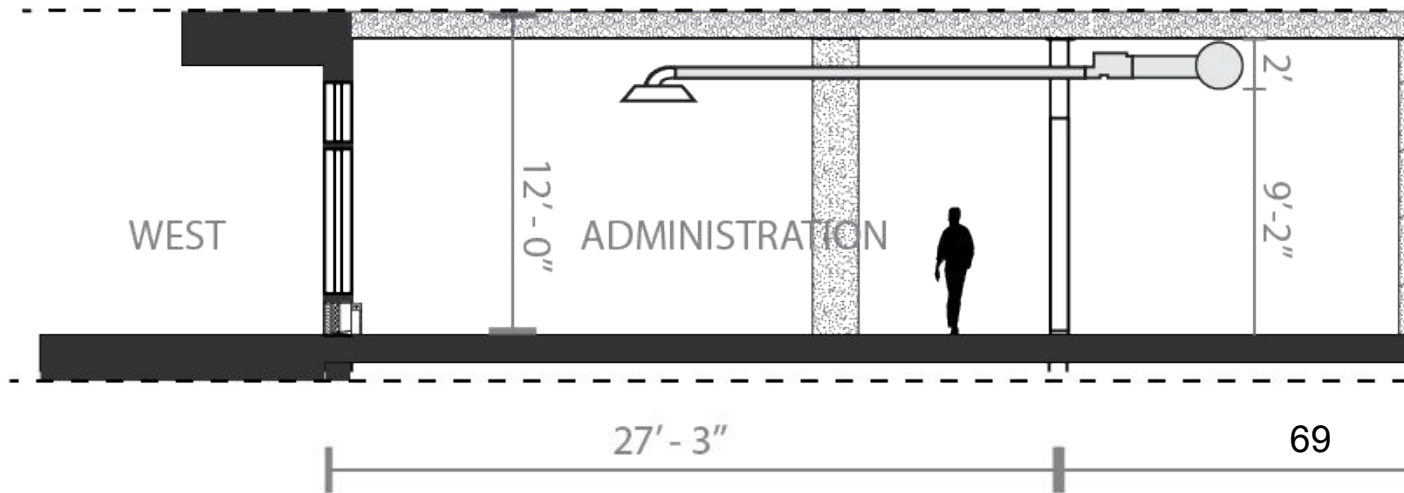
HVAC - VAV with Reheat



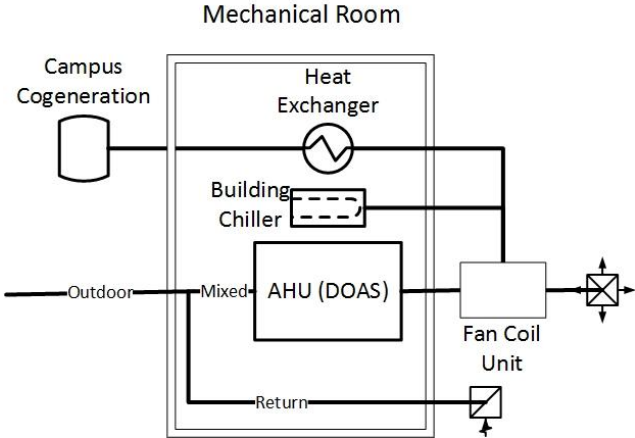
HVAC schematic



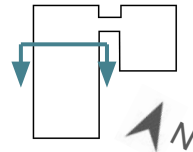
Floor section, 3rd floor



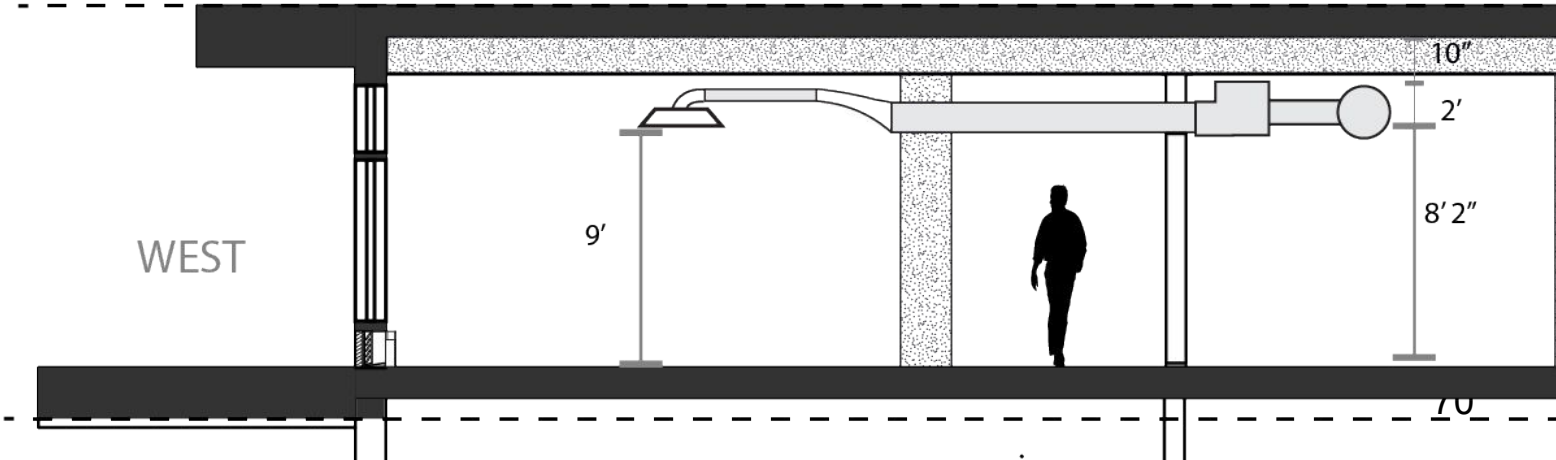
HVAC - Fan Coil

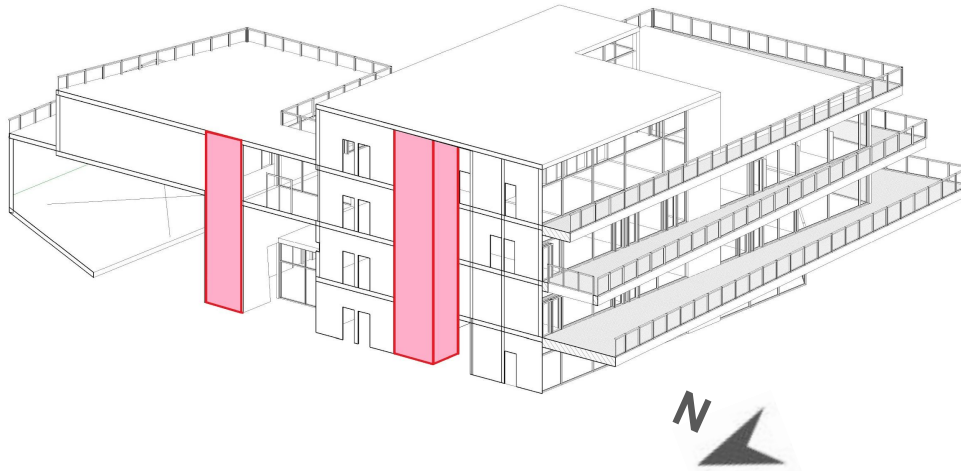


HVAC schematic



Floor section, 3rd floor



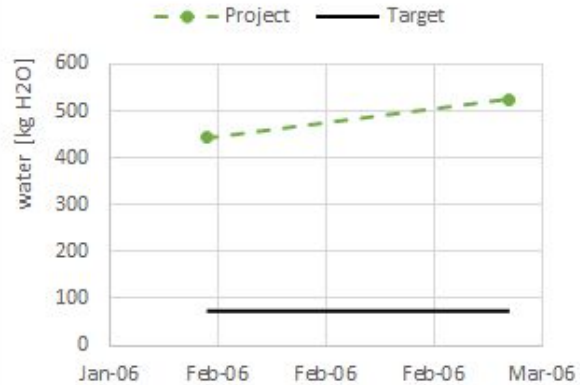


	Main Duct	Main Supply
	18-27"	36"

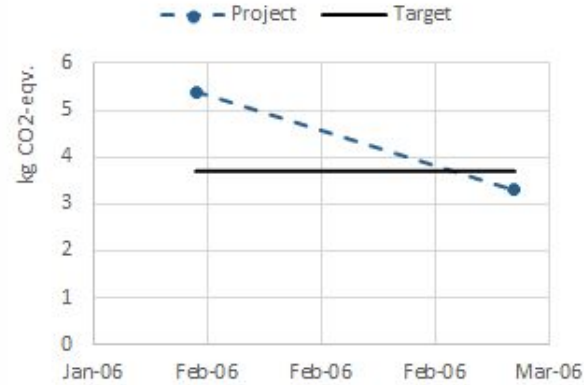
Nature - Sustainable Target Value



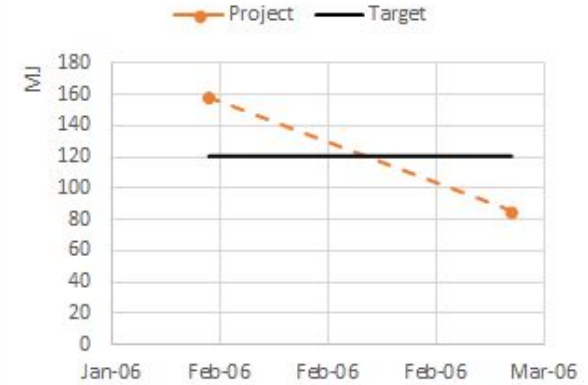
Water progress



CO2 progress



Energy progress



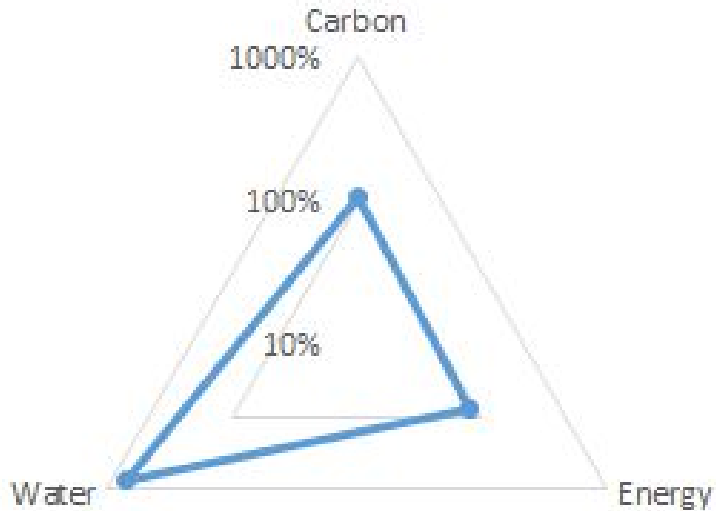
Sustainable Target Value



Nature



3.3 kg-CO₂ eqv.
88%



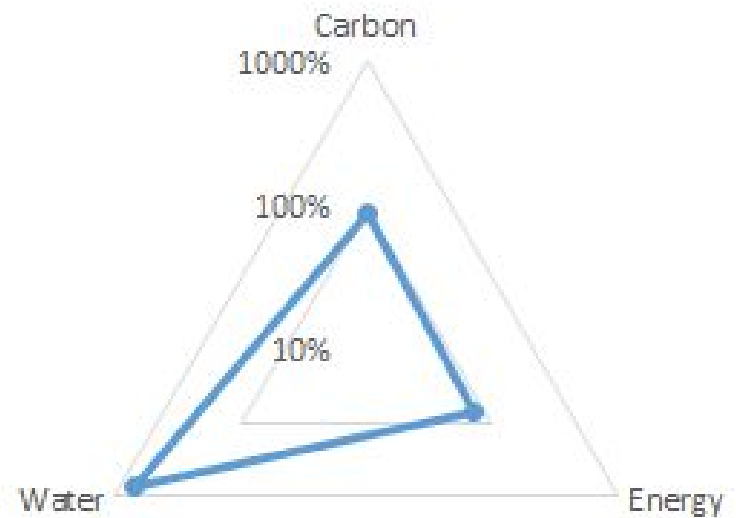
526 kg H₂O
718 %

85 MJ
71%

Simplicity



4.0 kg-CO₂ eqv.
108%



531 kg H₂O
725 %

94 MJ
79% 73

SITE PLANNING, EQUIPMENT AND MATERIALS



Construction will impact	Solution
Air quality	Minimize environmental disruption
Traffic levels on roads	Plan and schedule to minimize disturbance
Water	Water cleaning and recycling program, Stormwater pollution prevention
Safety	Zero tolerance
Keeping time, budget and quality	Communication Platforms & Software

1



2



3



4



5



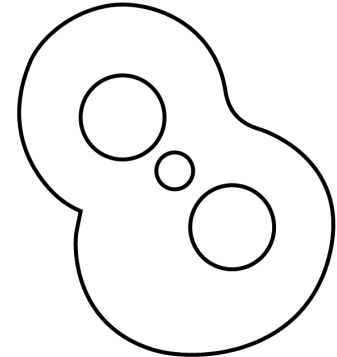
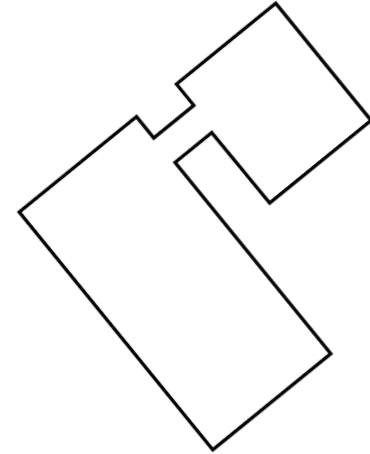
6

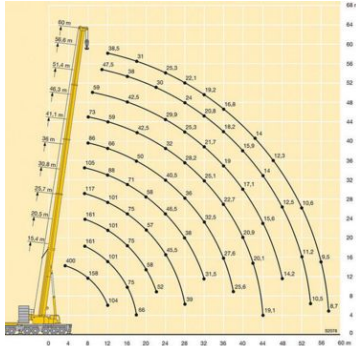


1. Spray water on the surface of dusty material before, during and after excavation
2. Use dump truck equipped with mechanical cover for transportation of dusty material
3. Wash vehicle to remove any dusty materials before leaving a site
4. Keep the haul road wet by water sprinkler or water bowser
5. Low energy emitting air dust control sprinkler for particle capture, with noise barrier



The safety of our worksites is one of our most important issues. We believe that all accidents can be prevented.





- Mobile crane (100 ton)
- Radius 140 feet, capacity 11 000 lbs

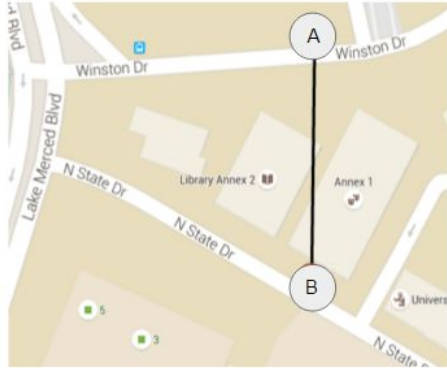


- Rent locally from nationaltrailer.ca
- Construction workers pleasure



Material access

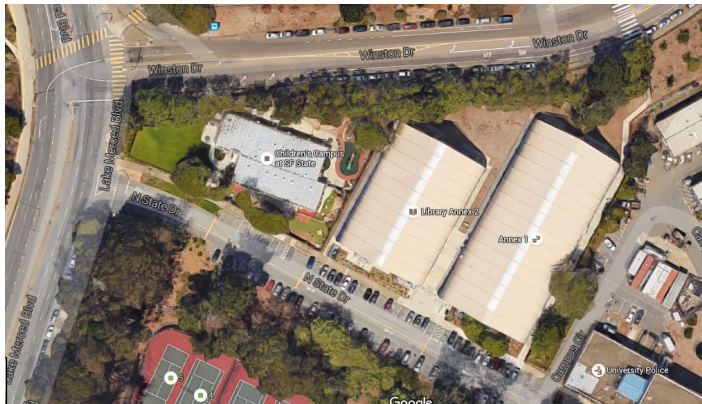




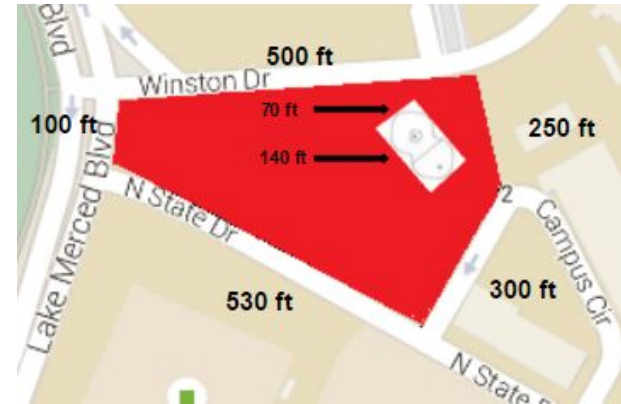
Elevation



Overview















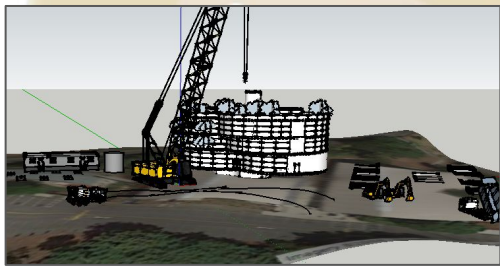
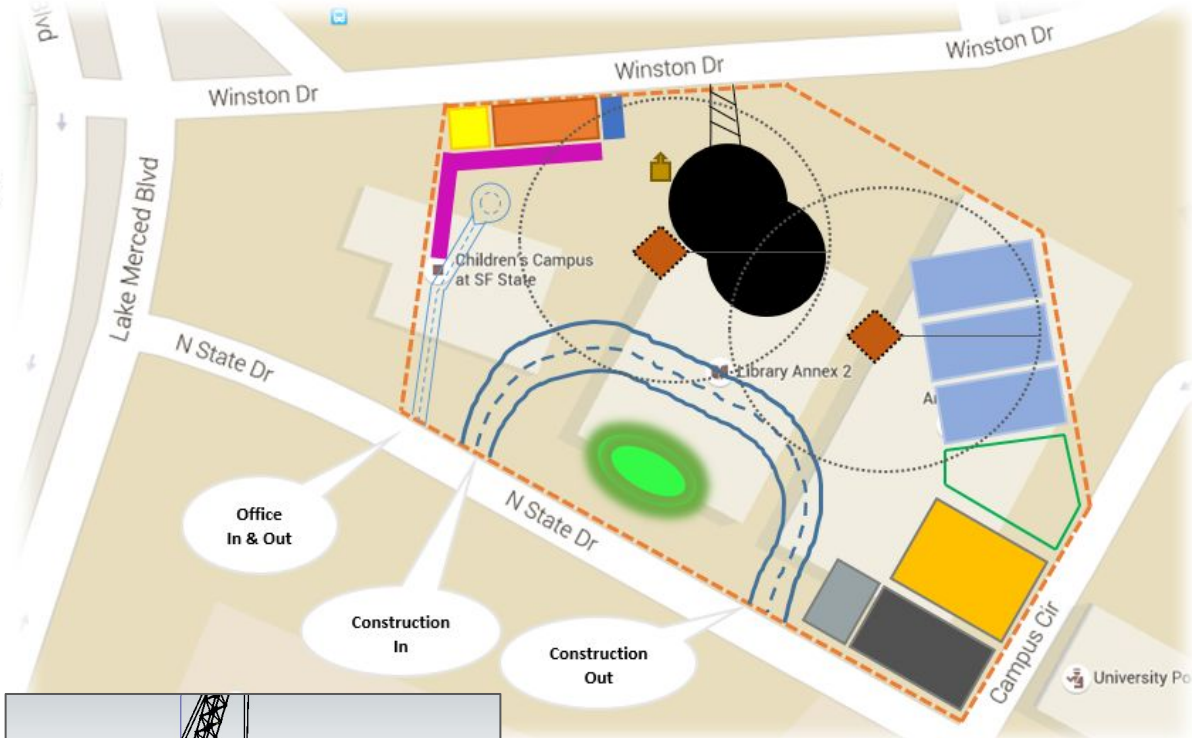
Scale



Site Logistics



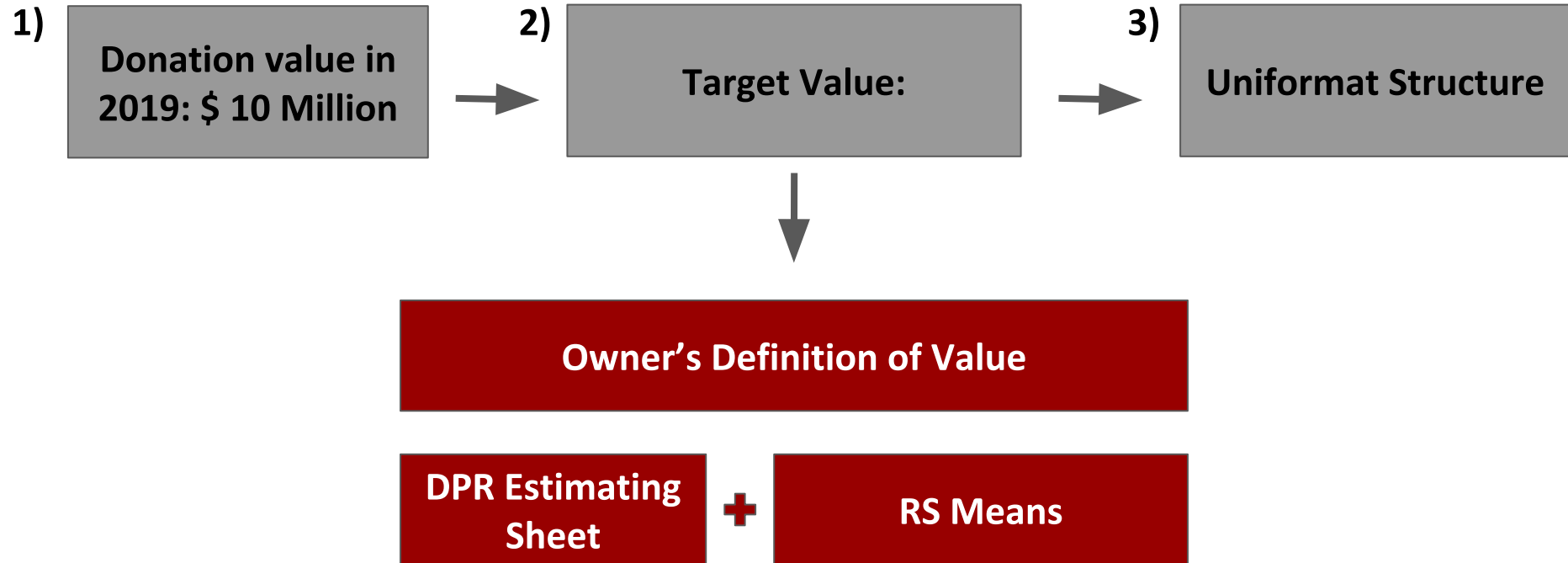
-  Building Footprint with path
-  Air Quality Control
-  BBQ Area & Progression Display Board
-  Waste & Recycling
-  Staff Office
-  Rain Water Tank
-  Staff Parking
-  Mobile Crane – Radius 140 foot
-  Construction Hoist
-  Lay Down Areas
-  Equipment Parking
-  Water Cleaning Area
-  Washing Zone



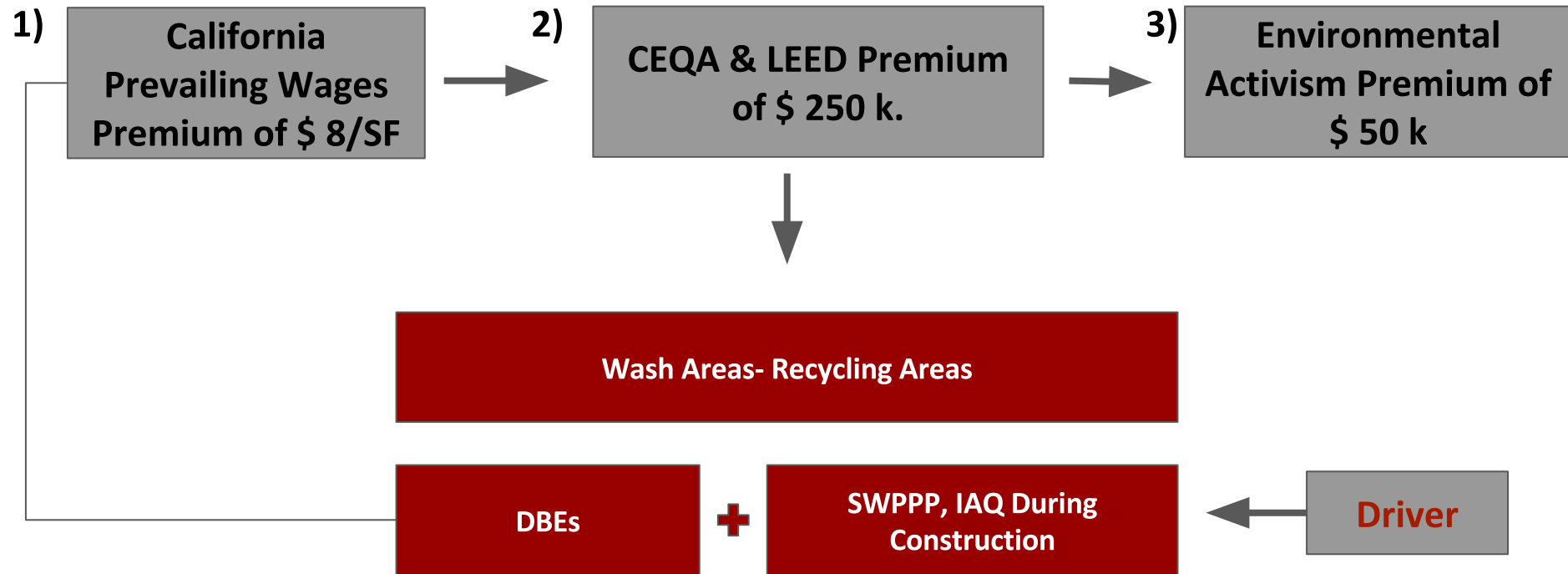
Major Goals: Air Quality, Easy Access, Safety



COSTING AND SCHEDULE



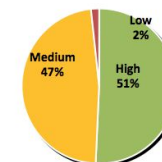
General Costing Considerations



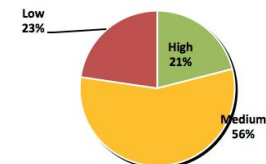
Example for C.Interiors estimating sheet

CATEGORY	Identification Number	LINE ITEM DESCRIPTION	COST DATA			QUANTITY		ESTIMATE RELIABILITY			ESTIMATE		
			Unit	Material O&P	Installation O&P	Total O&P	Quantity	Unit	Quantity Reliability	Cost Data Reliability	Overall Reliability	% of Total	ESTIMATED COST
C. INTERIORS													
C1010 Partitions													
		5/8" Drywall partitions on both sides with metal stud framing of 1.3/8"	SF	\$ 1.21	\$ 5.25	\$ 6.46	17750	SF	1	1	1	13%	\$ 1,255,926
		Interior glazed opening, glass 1/4" tempered of max 6' x 4', aluminum flush frame.	Opng.	\$ 855.75	\$ 863.46	\$ 1,719.21	10		3	3	3	1%	\$ 131,887
C1020 Interior Doors													
		Metal door/Metal frame, flush hollow core, 20 ga half glass.	Each	\$ 997.50	\$ 656.82	\$ 1,654.32	88	Each	1	1	1	1%	\$ 145,580
C1030 Fixings													
		Toilet partitions, cubicles, ceiling hung, stainless steel.	Unit	\$ 1,286.25	\$ 438.37	\$ 1,724.62	20	Unit	1	2	2	1%	\$ 34,492
		Urinal screens, wall hung, stainless steel	Unit	\$ 666.76	\$ 175.64	\$ 842.40	4	Unit	1	2	2		\$ 3,370
		Bath and toilet accessories (per accessory)	Each	\$ 32.55	\$ 67.16	\$ 99.71	40	Each	3	3	3		\$ 3,988
		Mirror framed with shelf, 72 x 24	Each	\$ 299.25	\$ 146.12	\$ 445.37	8	Each	1	1	1		\$ 3,563
		Counters	LF	\$ 227.20	\$ 87.82	\$ 315.02	48	LF	2	3	3		\$ 15,121
C2010 Stair Construction													
		Concrete fill metal pan and picket rail, 24 risers with landing.	Flight	\$ 17,955.00	\$ 4,442.40	\$ 22,397.40	8	Flight	1	3	3	2%	\$ 179,179
C3010 Wall Finishes													
		Painting interior on plaster drywall, brushwork, primer and 3 coats.	SF	\$ 0.30	\$ 1.80	\$ 2.10	30175	SF	1	2	2	1%	\$ 63,368
		Structural steel, spraywork primer.	SF	\$ 0.13	\$ 0.65	\$ 0.78	0	SF	1	2	2		\$ -
		Paneling, prefinished plywood, chestnut.	SF	\$ 6.62	\$ 4.68	\$ 11.30	1775	SF	1	3	3		\$ 20,058
		Ceramic tile, 12" x 12"	SF	\$ 5.25	\$ 8.63	\$ 13.88	3550	SF	1	3	3		\$ 49,274
C3020 Floor Finishes													
		Carpet tile, nylon, fusion bonded 24" x 24", 42 oz.	SF	\$ 5.93	\$ 1.08	\$ 7.01	28,030	SF	2	2	2	3%	\$ 339,343
		Concrete integral topping and finish.	SF	\$ 0.13	\$ 3.96	\$ 4.09	3,504	SF	2	2	2		\$ 196,493
		Terrazo	SF	\$ 7.14	\$ 29.54	\$ 36.68	3,504	SF	2	2	2		\$ 14,331
		Stone flooring, polished granite on mortar bed	SF	\$ 20.21	\$ 36.90	\$ 57.11	0	SF	2	2	2		\$ 128,519
C3030 Ceiling Finishes													
		Plaster ceiling, 3 coat gypsum, on concrete/wood	SF	\$ 1.75	\$ 10.70	\$ 12.45	0	SF	2	2	2	3%	\$ 266,733
		1/2 FR drywall, painted and textured.	SF	\$ 1.03	\$ 6.72	\$ 7.75	31402	SF	2	2	2		\$ -
		3/4" Mineral fiber acoustical ceiling on runners.	SF	\$ 4.31	\$ 6.77	\$ 11.08	2109	SF	1	2	2		\$ 243,366
													\$ 23,368

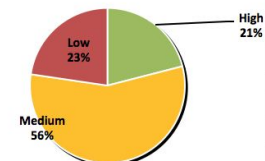
C: Quantity Reliability

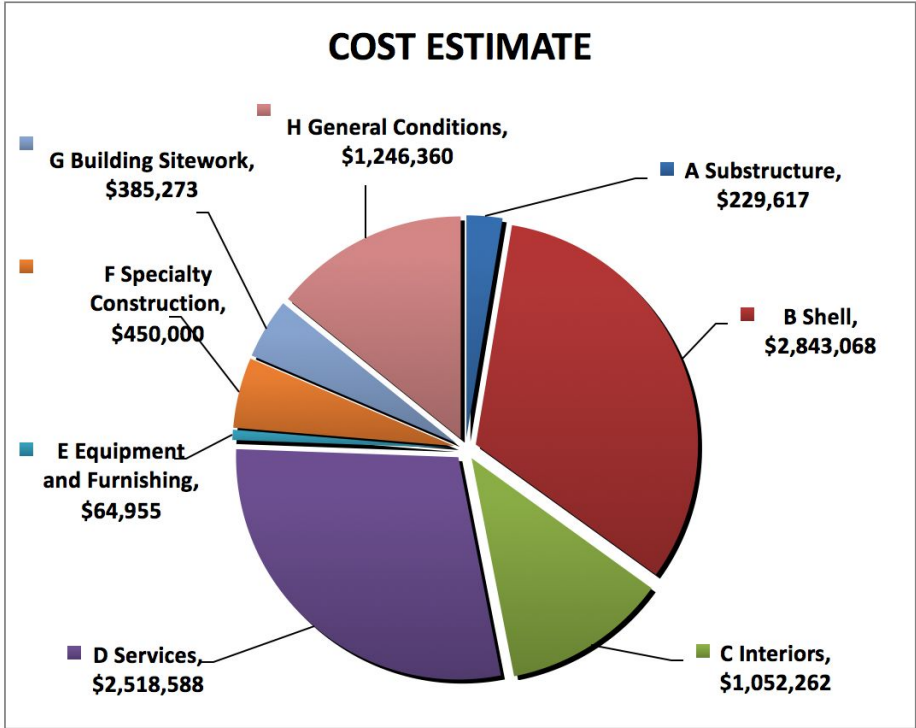


C: Cost Data Reliability



C: Overall Reliability

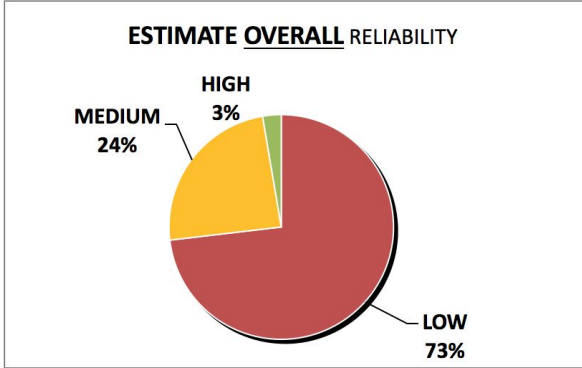




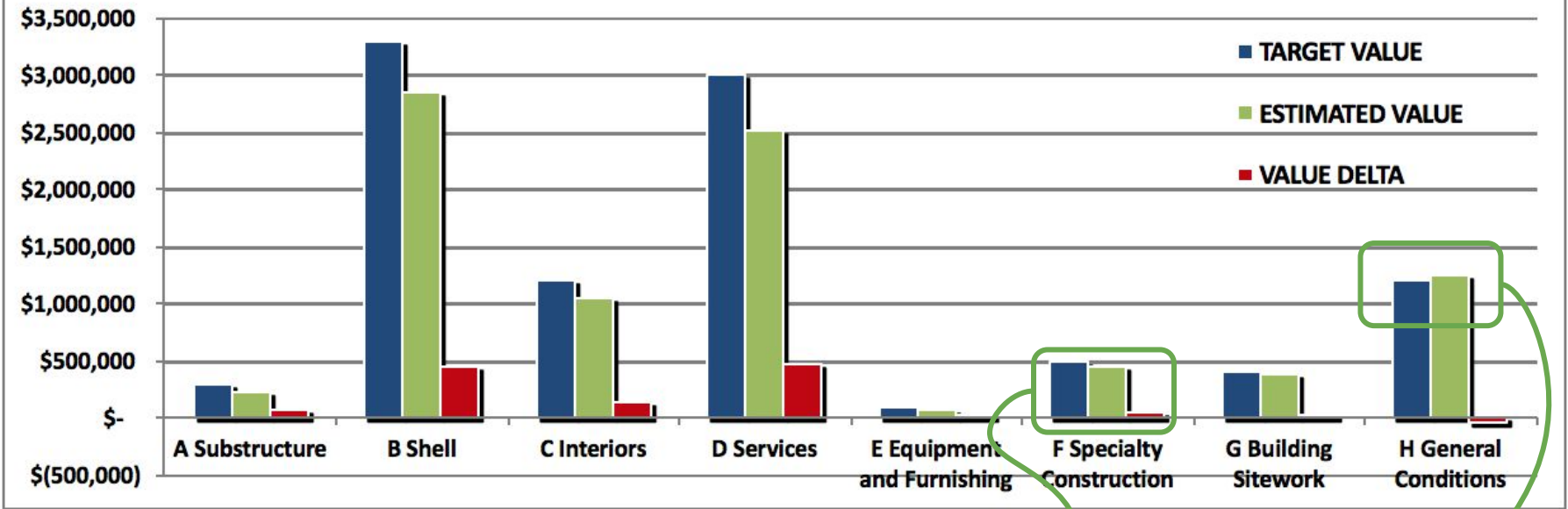
Total Cost:
\$8,790,123

Occupiable Area:
24,545 SF

Cost per SF:
\$305/SF



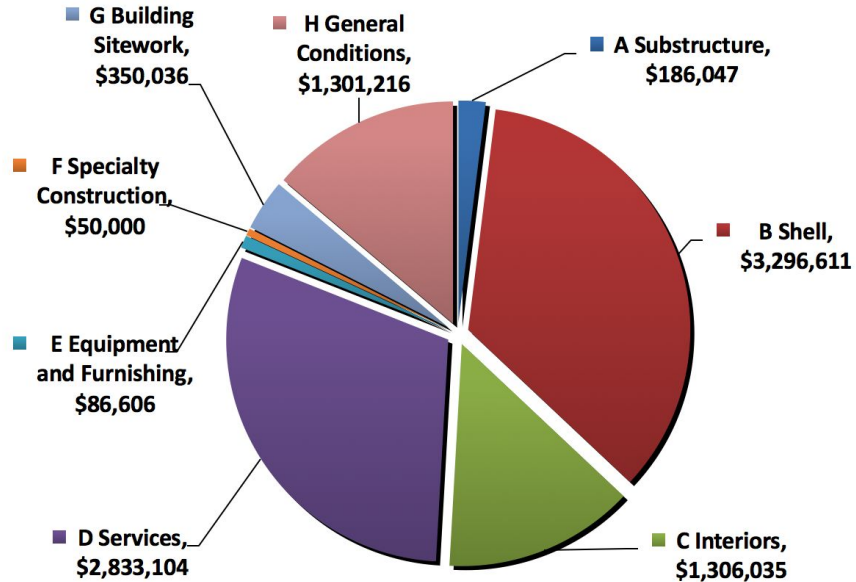
TVD - TARGETS BY CLUSTER



Special Structure Allowance

Prevailing wage premium.

COST ESTIMATE

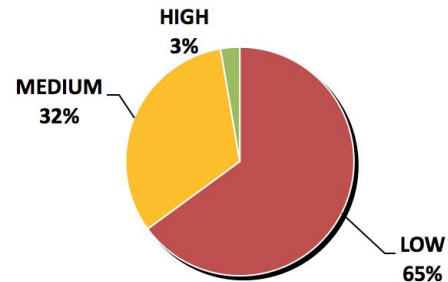


Total Cost:
\$9,409,655

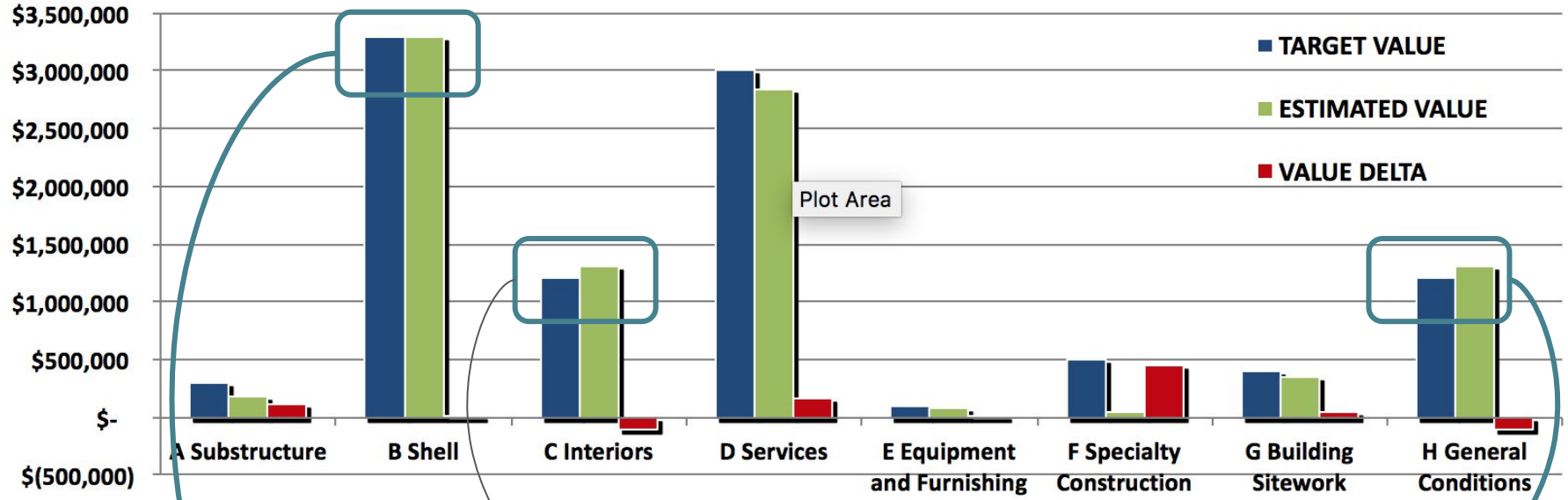
Occupiable Area:
31,402 SF

Cost per SF:
\$288/SF

ESTIMATE OVERALL RELIABILITY



TVD - TARGETS BY CLUSTER



Risky

TVD Exterior Finishes.

Prevailing wage premium.

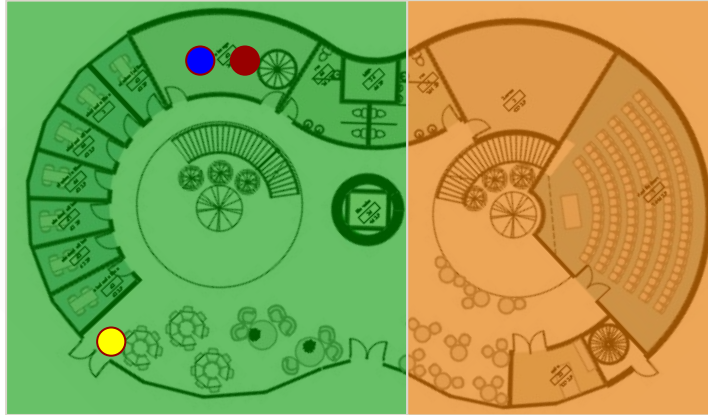
Scheduling Zoning and Strategy



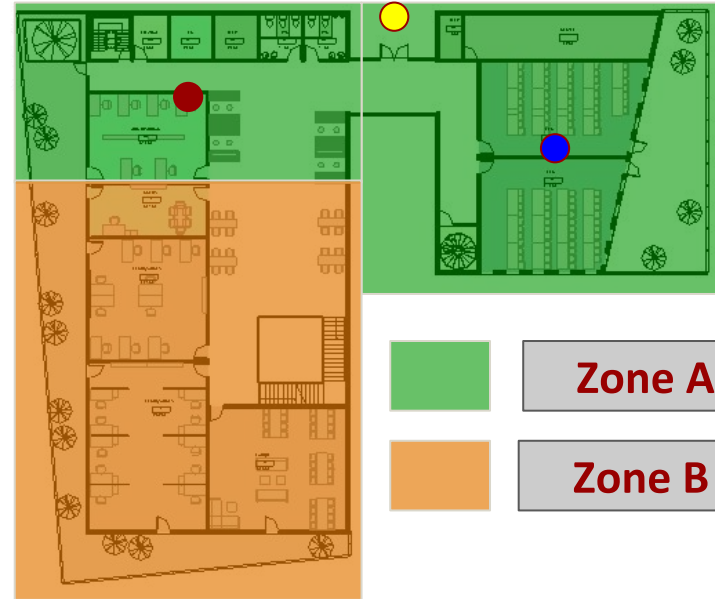
Nature



Simplicity



- MEP Room
- Labs
- Entrance



- Zone A
- Zone B

Building Divided into two Zones



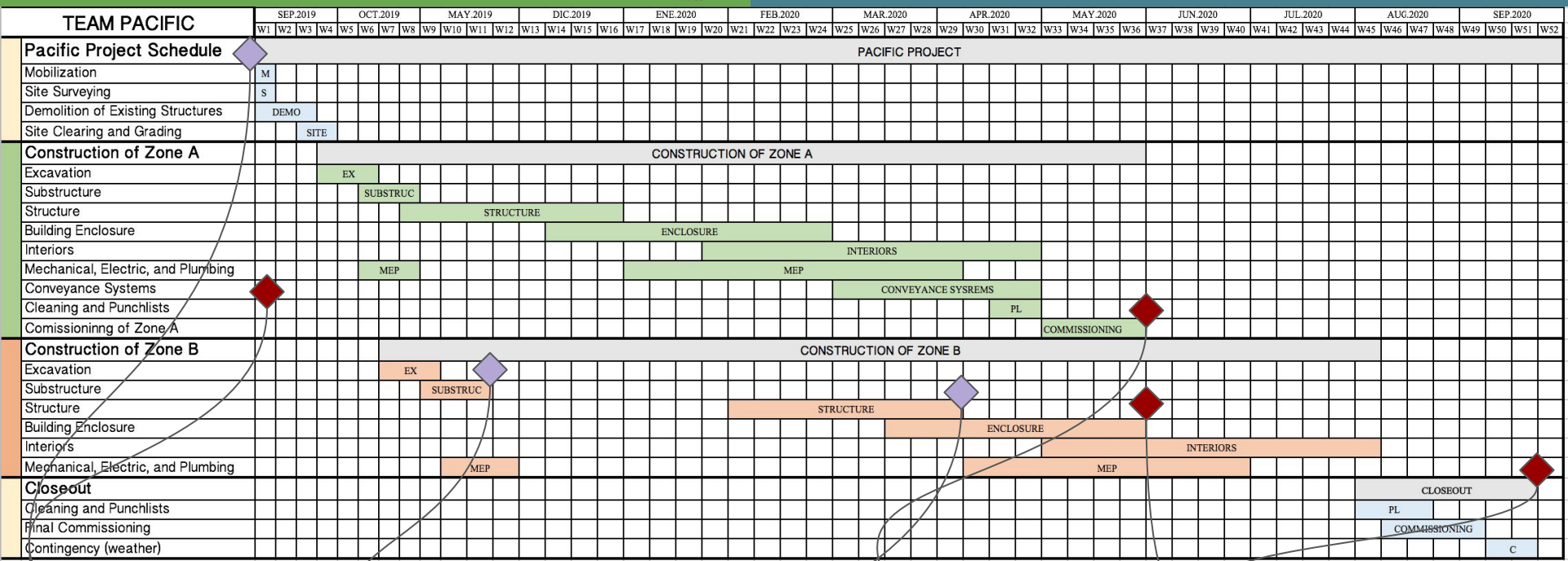
Billboarding



Allows early lab commissioning.

Nature

Simplicity



Procure Elevators

Labs delivered

Project Completion

Start date

Foundations

Structure

Enclosure



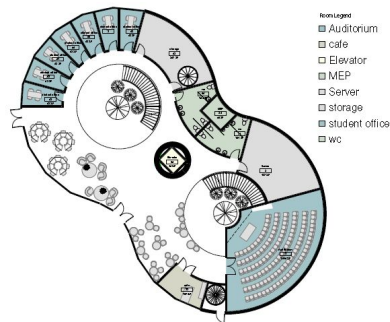
Nature



Simplicity



Cost per SF:
\$305/SF



Early tenants in labs: **Likely**

Main challenges:

Curtain wall escalation: \$200,000

Structure Escalation: \$200,000

Structural cables complexities.

Constructability challenge: **Medium**

\$ 100 k - \$ 150 k savings if switch to timber.

Cost per SF:
\$288/SF



Early tenants in labs: **Very likely.**

Main challenges:

Tight budget

Finishes escalation: \$ 200,000

Auditorium Escalation \$100,000

Constructability challenge: **Fair**

COMPARISON



&





Nature



Simplicity



**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

TEAM PACIFIC

THE END

Thank you !

