SUSTAINABILITY A HOLISTIC APPROACH

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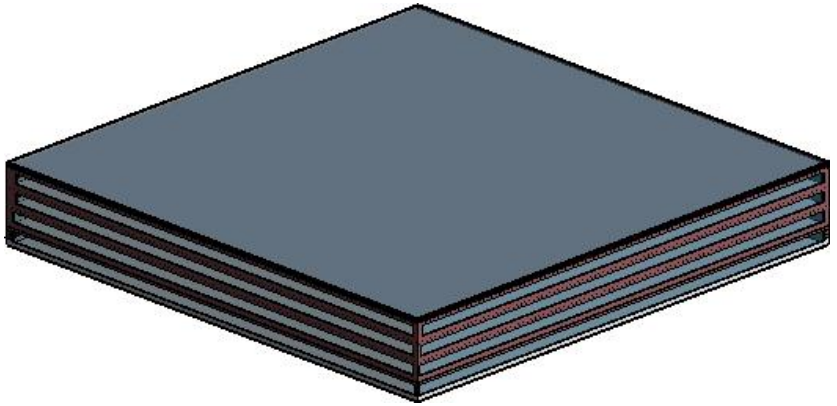
Problem Statement

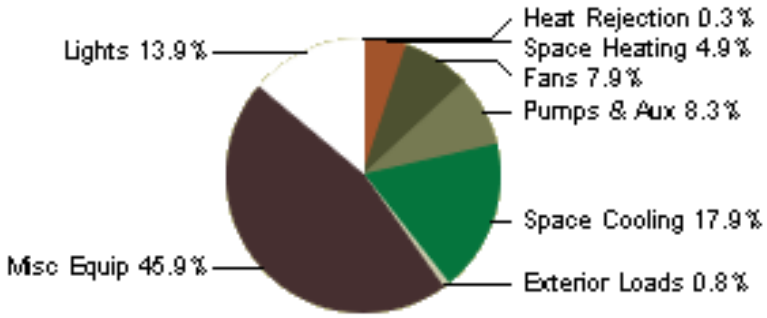
Can sustainable design be ugly?

BUILDING PERFORMANCE

Square Building

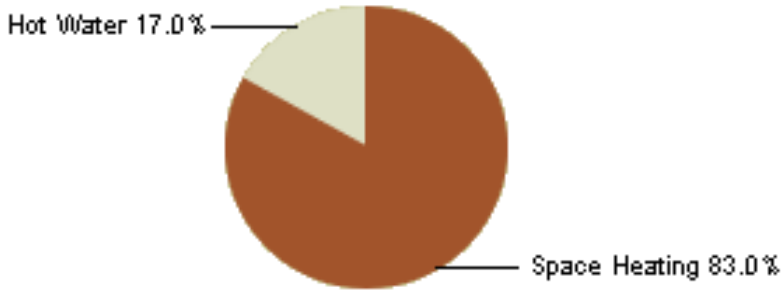


Building Type:	**Univ. Library**
Location/Climate:	**Fargo, ND**
Total Floor Area (sf):	**300,000**
Elect. Rate:	**$0.07/kWh**
Fuel Rate:	**$0.96/Therm**
Approx. LiveLoad (Occuoants):	**2,627**
Ave. Lighting Pwr. Density:	**1.31 W/ft2**
HVAC System:	**Underfloor**



Electric Power Plant Sources[2]

Fossil:	76%
Nuclear:	16%
Hydroelectric:	6%
Renewable:	2%



Renewable Potential

Photovoltaic Potential[4]

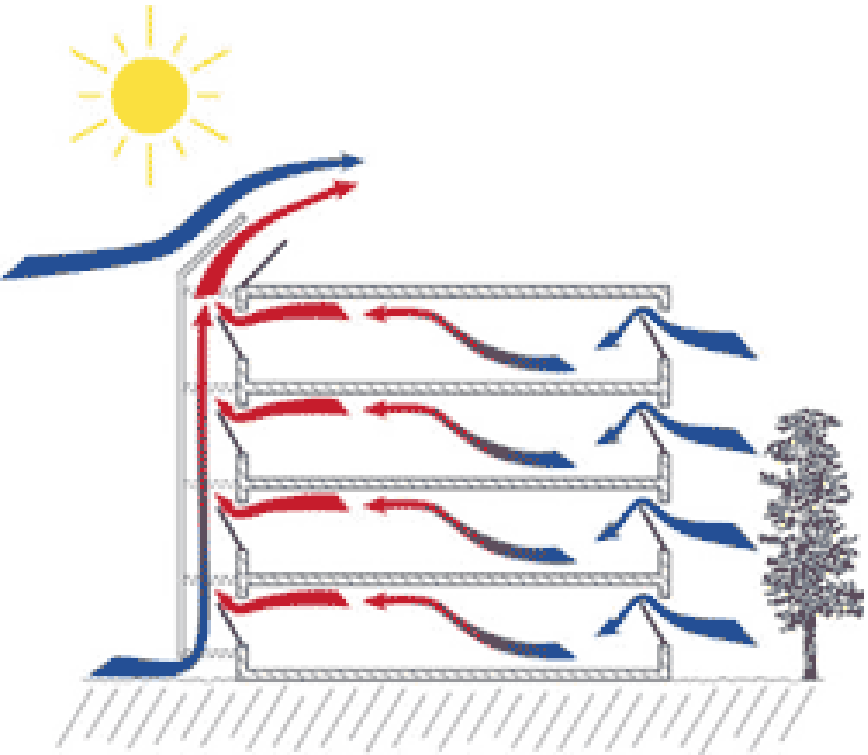
Annual Energy Savings:	9,903 kWh
Total Installed Panel Cost:	$45,906 / yr
Nominal Rated Power:	6 kW
Maximum Payback Period:	44 yrs @ $0.07 / kWh 4. Results based on all exterior surfaces being analyzed. Escalation rate of 2% applied to electric rate. Payback calculation does not include federal or state incentives, loan information, or tax breaks.

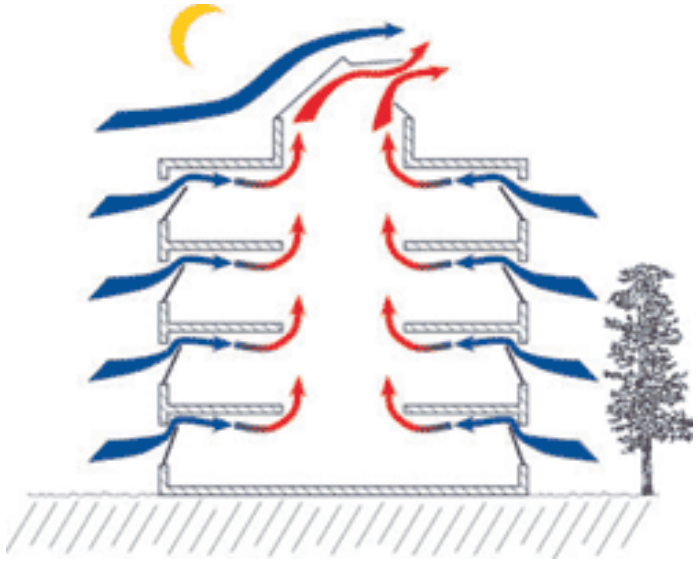
Wind Energy Potential[6]

Annual Electric Generation:	5,565 kWh 6. A single 15 ft diameter turbine, with cut-in and cut-out winds of 6 mph and 45 mph respectively, and located at the coordinates of the weather data.

Natural Ventilation Potential[7]

Total Hours Mech. Cooling Required:	1,859 Hours
Possible Natural Ventilation Hours:	814 Hours
Possible Annual Electric Energy Savings:	249,488 kWh
Possible Annual Electric Cost Savings:	$16,466
Net Hours Mech. Cooling Required:	1,045 Hours 7. Assumes natural ventilation only during comfort zone periods and air changes per hour are less than 20 ACH. Building form & opening design must be able to allow stack effect or cross ventilation.





Design Alternate

HVAC

1. 11.3 EER Packaged VAV, 84.8% boiler heating
2. Central VAV, HW Heat, Chiller 5.96 COP, Boilers 84.5 eff
3. 4-Pipe Fan Coil System, Chiller 5.96 COP, Boilers 84.5 eff
4. Central VAV, Electric Resistance Heat, Chiller 5.96 COP
5. 2-Pipe Fan Coil System, Chiller 5.96 COP, Boilers 84.5 eff
6. Premium Eff. VAV w/ Reheat, 150-300 ton (7.0 COP)
7. Premium Eff. VAV w/ Reheat, >300 ton (7.5 COP)
8. Underfloor Air Distribution

Lighting Efficiency (lighting power density)

1. LPD 10% less than base run
2. LPD 20% less than base run
3. LPD 30% less than base run
4. LPD 40% less than base run

Lighting Control

1. Occupancy sensors
2. Daylighting sensors & controls
3. Occupancy/Daylighting sensors & controls

Roof Construction

1. Metal Frame Roof without Insulation
2. Metal Frame Roof with Code Compliant Insulation
3. Metal Frame Roof with High Insulation
4. Metal Frame Roof with Super High Insulation
5. Wood Frame Roof without Insulation
6. Wood Frame Roof with Code Compliant Insulation
7. Wood Frame Roof with High Insulation
8. Wood Frame Roof with Super High Insulation
9. Continuous Deck Roof without Insulation
10. Continuous Deck Roof with Code Compliant Insulation
11. Continuous Deck Roof with High Insulation
12. Continuous Deck Roof with Super High Insulation
13. Cool Roof - R11 continuous ins. over roof deck
14. Cool Roof - R15 continuous ins. over roof deck
15. Cool Roof - R20 continuous ins. over roof deck
16. Cool Roof - R30 continuous ins. over roof deck
17. Structural Ins. Panel (SIP) Roof 6.25in (165mm)
18. Structural Ins. Panel (SIP) Roof 8.25in (210 mm)
19. Cool Roof - R38 continuous ins. over roof deck
20. Cool Roof - R50 continuous ins. over roof deck
21. Structural Ins. Panel (SIP) Roof 10.25in (260mm)

Walls

	Construction
1	Metal Frame Wall without Insulation
2	Metal Frame Wall with Code Compliant Insulation
3	Metal Frame Wall with High Insulation
4	Metal Frame Wall with Super High Insulation
5	Massive Wall without Insulation
6	Massive Wall with Code Compliant Insulation
7	Massive Wall with High Insulation
8	Massive Wall with Super High Insulation
9	Structural Ins. Panel (SIP) Wall 4.5in (114mm)
10	Structural Ins. Panel (SIP) Wall 6.5in (165mm)
11	Insulated Concrete Form (ICF) Wall, 10" thick form
12	Insulated Concrete Form (ICF) Wall, 12" thick form
13	Insulated Concrete Form (ICF) Wall, 14" thick form
14	Structural Ins. Panel (SIP) Wall 8.25in (210mm)
15	Structural Ins. Panel (SIP) Wall 10.25in (260mm)
16	Structural Ins. Panel (SIP) Wall 12.25in (311mm)

	Glazing Type
1	Monolithic Clear Low-e
2	Insulated Clear Low-e Hot Climate
3	Insulated Clear Low-e Cold Climate
4	Insulated Green Low-e
5	Insulated Blue Low-e
6	Insulated Grey Low-e
7	Insulated Bronze Low-e
8	Insulated Blue Reflective Low-e
9	Insulated Green Reflective Low-e
10	Insulated Grey Reflective Low-e
11	Insulated Bronze Reflective Low-e
12	Super Insulated 3-pane Clear Low-e PPG SB70XL/Clear IG
13	Translucent Wall Panel, (U-0.53, SHGC 0.36, Tvis 0.25)
14	Translucent Wall Panel, (U-0.53, SHGC 0.51, Tvis 0.50)
15	Translucent Wall Panel, (U-0.29, SHGC 0.19, Tvis 0.20)
16	Translucent Wall Panel, (U-0.10, SHGC 0.06, Tvis 0.04)

	Glass Amount
1	10%
2	-10%
3	25%
4	-25%
5	50%
6	-50%
7	Remove all

Energy/carbon efficiency simulations for various design configurations

Building Design									Resultants											
	General		Lighting		Roof	Northern Walls			Total Annual Costs			Total Annual Energy				Potential Energy Savings (Kwh)				
Form	Alternate	HVAC	Lighting Efficiency	Lighting Control	Construction	Construction	Glazing Type	Glass Amount	Electric	Fuel	Energy	Electricity (Kwh)	Fuel (Them)	Carbon Emissions(ton)	Carbon Emissions in SUV's	Photovoltaic	Wind Turbine	Natural Ventilation	Potential Net Carbon Emissions (tons)	Potential Net Carbon Emissions in SUV's
Square	D	D	D	D	D	D	D	D	145,840	114,359	260,200	2,209,707	119,373	2,907	264	9,903	5,565	249,488	1,864	169
"	#1	2	1	1	2	2	3	3	138,676	129,500	268,178	2,101,161	135,175	2,855	259	9,903	5,565	213,279	1,769	160
"	#2	4	2	1	4	4	3	3	119,404	123,586	242,990	2,054,259	126,576	2,830	247	9,903	5,565	215,578	1,704	155
"	#3	5	3	2	10	4	7	5	146,377	95,467	241,844	2,217,847	99,652	2,803	254	9,903	5,565	280,552	1,701	154
"	#4	7	4	2	12	13	11	5	116,197	94,512	210,709	1,760,540	98,656	2,194	199	9,903	5,565	320,134	1376	125
"	#5	8	4	3	21	16	11	5	102,413	101,392	203,806	1,551,726	105,837	1,960	178	9,903	5,565	340,222	1,254	114

* Suv Equivalency: 15,000 miles driven annually; 14 miles per gallon (5.95 km per liter).

1 Therm is equal to100,000 BTU t is approximately the amount of energy needed to heat 1 pound (0.454 kg) of water from 39 °F (3.9 °C) to 40 °F (4.4 °C)

1 Kwh is equal to 1000 watt hours

D- Default

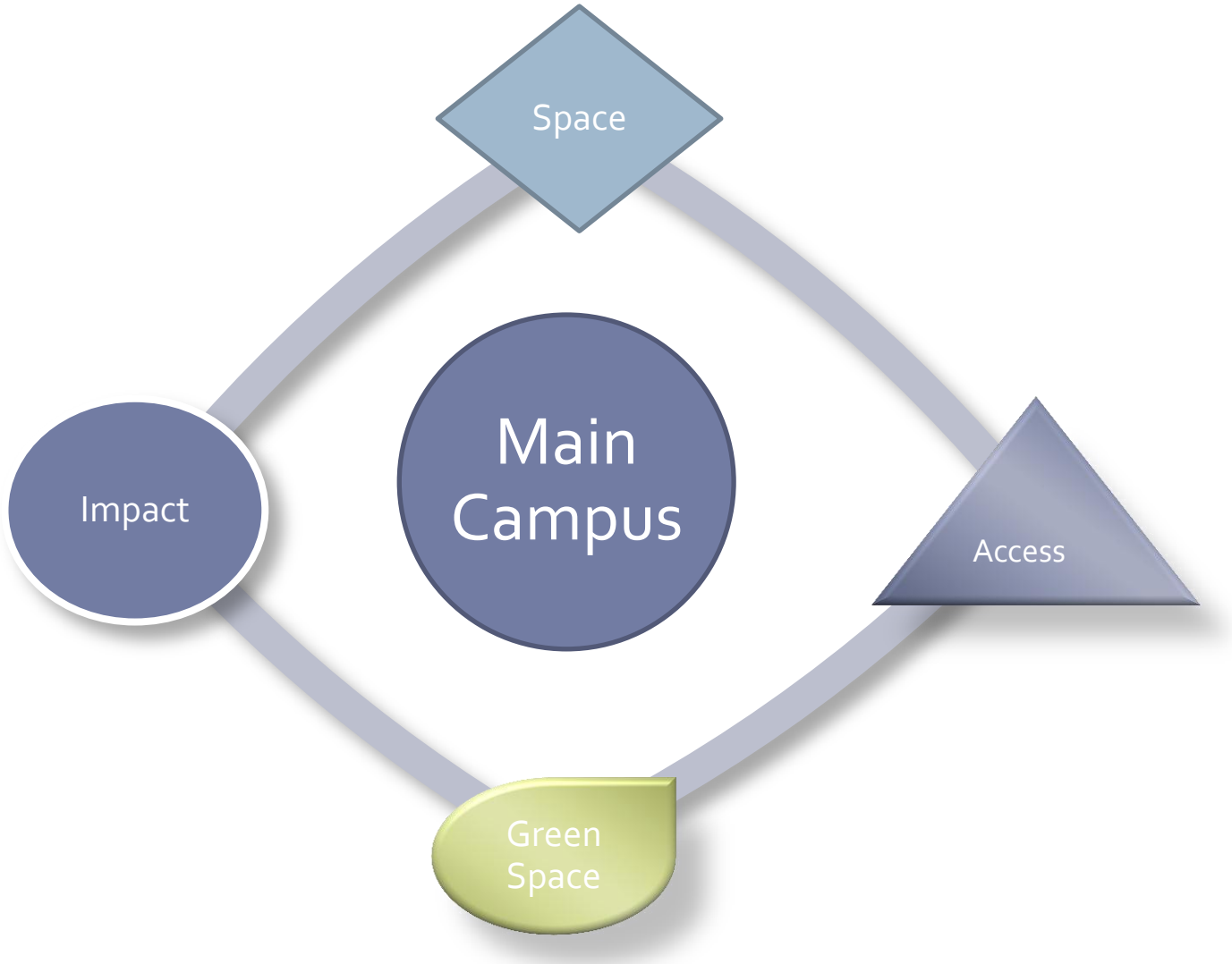
GREENBUILDINGSTUDIO

ECOTECT

EnergyPlus

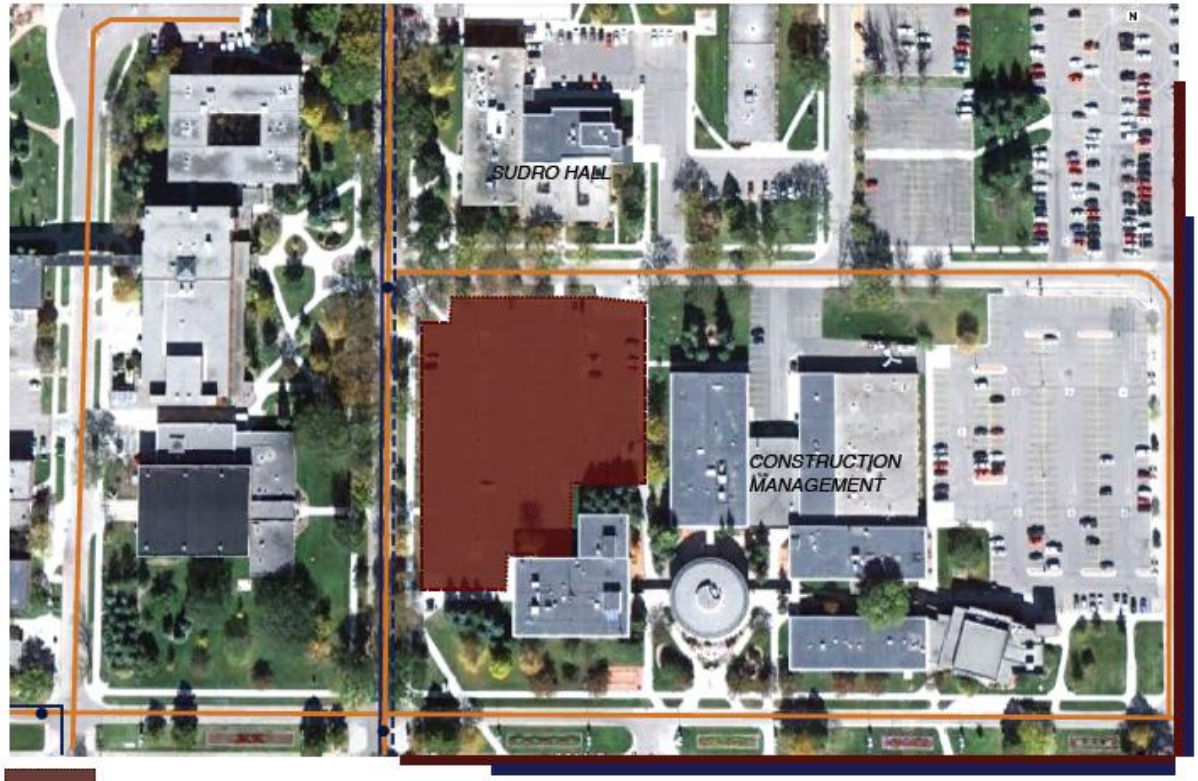
SITE IDENTIFICATION

Where Should we put it ?



Potential Site

1 site option one:
Visitor *lot*



Site Location

Vehicular Circulation

Route 31

Route 32

Bus Circulation Stop

centralized site

+the visitor lot is a centralized location on the campus. The centralized position of the library will provide easy access to the surrounding dormitories; Siem, Pavik, Thompson, Severnson, Reed, Johnson, Weible, and on campus apartments. This location will focus on the north portion of campus.

transit routes

+this site option is circulated by mulitple bus routes, enabling students to successfully get to and from the library.

cost

+site option one will have a large upfront cost to removal the original parking lot to begin structure footings. A large amount of the budget will be applied to the removal of the parking lot.

viewsheds are lost

+views of the new library will be lost due to the centralized location of the project. With newly constructed fitness center and memorial union, NDSU is missing the third piece to the puzzle; the library. Why hide it from the driver?

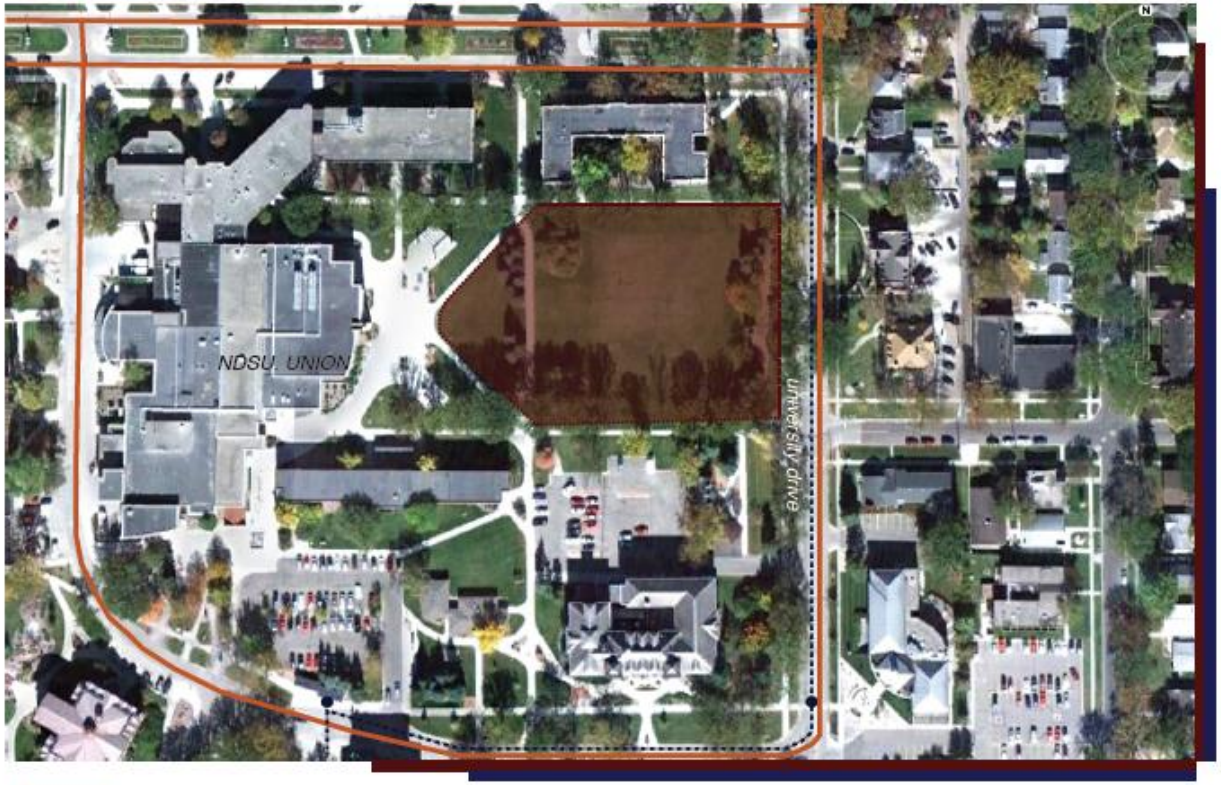
user and travel

+site option one focuses on campus residents instead of off campus residents. The focus should be the opposite when the majority of students live off campus and walk, bike or drive to campus. With the removal of the parking surface, off campus users will have to travel even farther for the new library site compared to the current location.

parking

+the visitor parking lot that is shared by many off campus residents will be transformed into the ndsu library. The large amount of parking will be relocated further off campus, limiting the off-campus student focus.

2 site location:
Churchill *field*



Site Location

Vehicular Circulation

Route 13

Bus Circulation Stop

pedestrian circulation

+pedestrian circulation is centralized around the memorial union. Busy pedestrian flow concentration happens between Albrecht Boulevard and the Babbling Brook located just west and southwest of the union.

transit and entrance points

+major transit and entrance points are located along University and 15th Avenue North, Centennial Boulevard and 12th Avenue North.

cohesive unit

+the chosen site location of the NDSU library will create a cohesive connection between the Memorial Union and dormitories; Dinan, Churchill and Burgum.

mixed use businesses

+possible mixed used buildings can be secured across from new the library space. Local businesses can help term University drive as the tradition coin the term to its original meaning as a centralized drive circulated next or leading up to campus. This are could resemble the intersection of Albrecht and 12th Avenue South.

plaza utilization

+the memorial union plaza will be utilized properly as an entrance and gathering space that will now serve two landmark structures on campus, the memorial union and library.

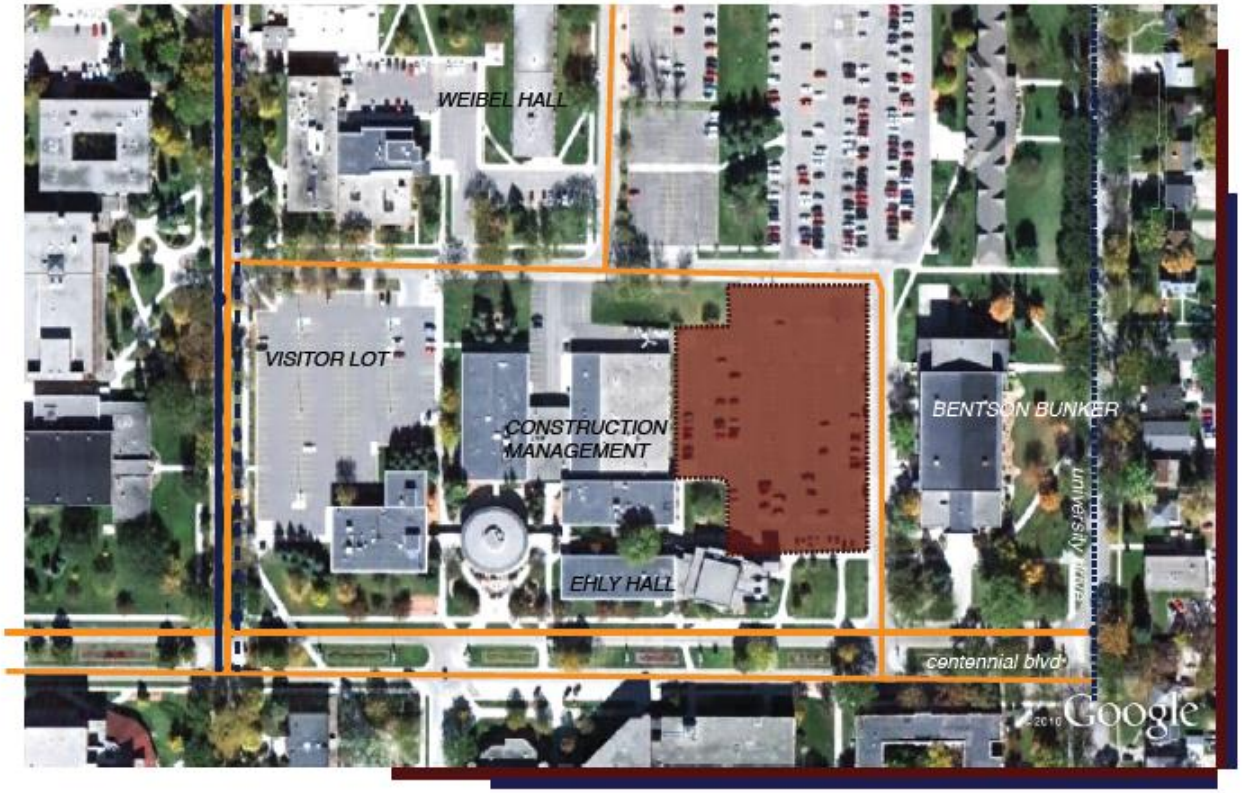
views and interest points

+ndsu will benefit from implementation of the library next to University Drive so new recruits and visitors will be attracted to the new structure and will make North Dakota State University a more successful campus.

loss of green space

+after a circulation analysis, there were no activities that went on at Churchill Field during visitations. The loss of this green space can be reintroduced using green sustainable design.

3 site option three: Bentson Bunker Fieldhouse



Site Location

Vehicular Circulation

Route 13

Route 31

Route 32

Bus Circulation Stop

centralized site

+bentson bunker fieldhouse lot is a centralized location on the campus. The centralized position of the library will provide easy access to the surrounding dormitories; Weible, Stockbridge, and campus apartments. This location will focus on the north portion of campus.

transit routes

+this site option is circulated by mulitple bus routes, enabling students to successfully get to and from the library.

mixed use businesses

+possible mixed used buildings can be secured across from new the library space. Local businesses can help term University drive as the tradition coin the term to its original meaning as a centralized drive circulated next or leading up to campus. This are could resemble the intersection of Albrecht and 12th Avenue South.

views and interest points

+ndsu will benefit from implementation of the library next to University Drive so new recruits and visitors will be attracted to the new structure. This location will spark more interest being that it would be situated next to the main athletic complex on campus.

cost

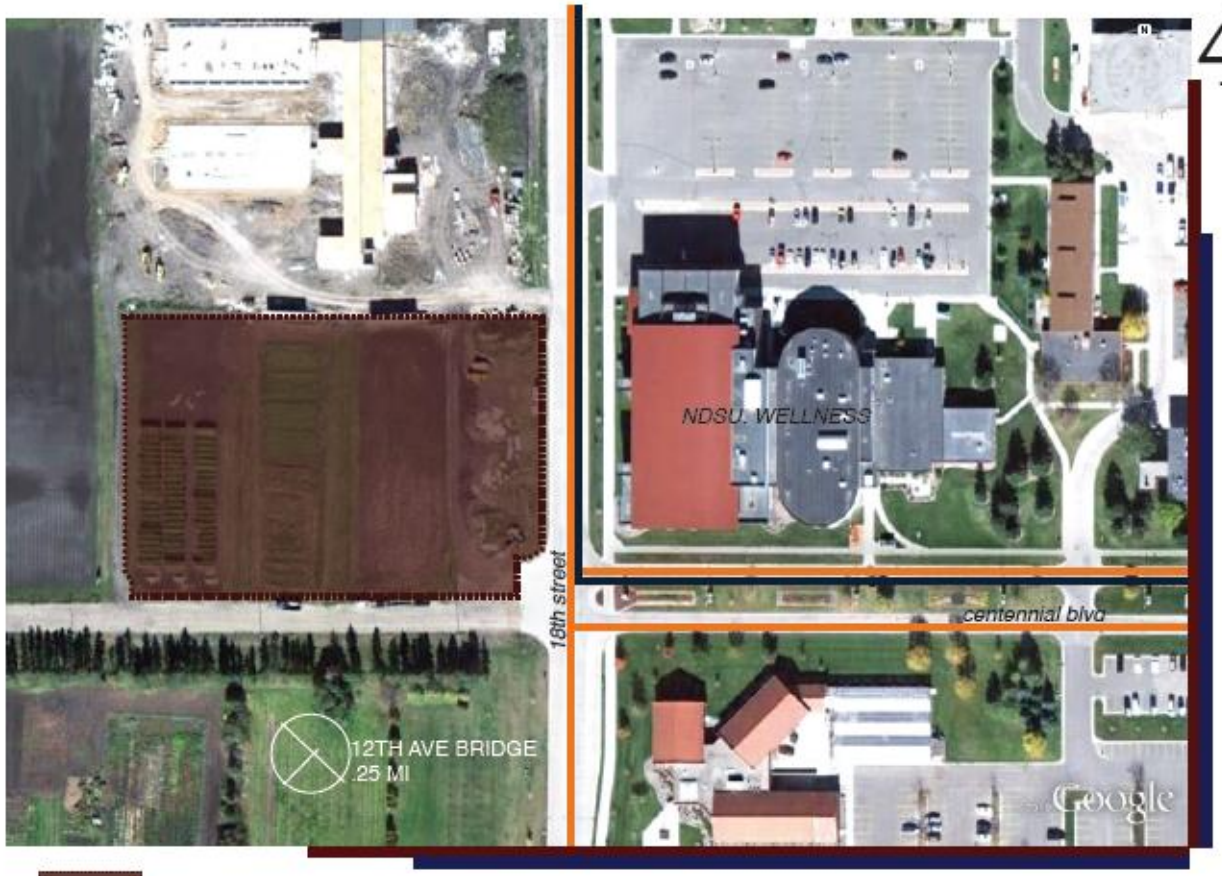
+site option three will have a large upfront cost to removal the original parking lot to begin structure footings. A large amount of the budget will be applied to the removal of the parking lot.

parking

+the parking lot shared by ehly hall, churchill, construction management and the bentson bunker fieldhouse would be transformed into the library; in turn taking away vital parking

user and travel

+site option three focuses on campus residents instead of off campus residents. The focus should be the opposite when the majority of students live off campus and walk, bike or drive to campus. With the removal of the parking surface, off campus users will have to travel even farther for the new library site compared to the current location.



Site Location

Vehicular Circulation

Route 31

Bus Circulation Stop

4 site option four: Wellness Center

views and interest points

+ndsu will benefit from the implementation of the library next to 18th Avenue so new recruits and visitors will be attracted to the new structure. This location will spark more interest being that it would be situated next to the wellness center complex on campus.

transit and entrance points

+major transit and entrance points are located along 18th Street North and 12th Avenue South. The Library would be clearly seen from the 12th Avenue Bridge to the southwest.

user and travel

+site option four focuses on off-campus residents. The focus should be the opposite when the majority of students live off campus and walk, bike or drive to campus.

cohesive unit

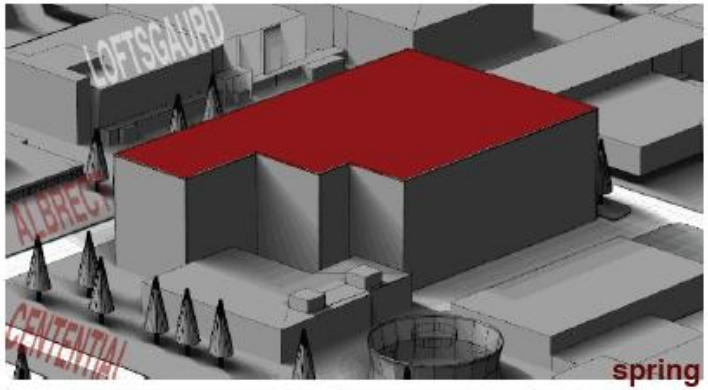
+the chosen site location of the NDSU library would create a broken connection between the core structures.

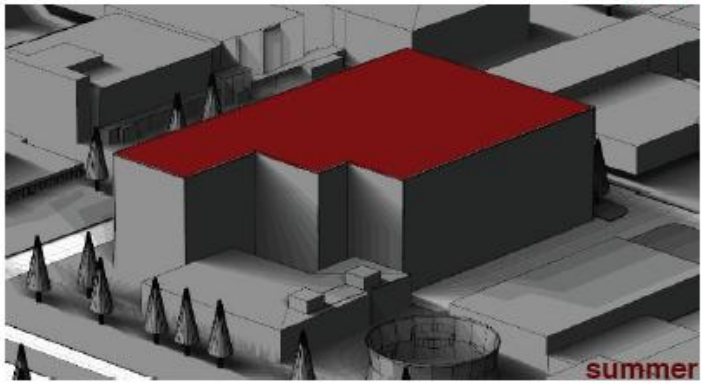
cost

+site option four will have a large utility cost when dealing with climatic issues that North Dakota has to deal with; prevailing winds and winter climate. Heating and utility costs would be a large setback towards the success of the building.

loss of greenspace

+the placement of the building would take away part of the ndsu research facility and land plots.


LOFTSGAARD
spring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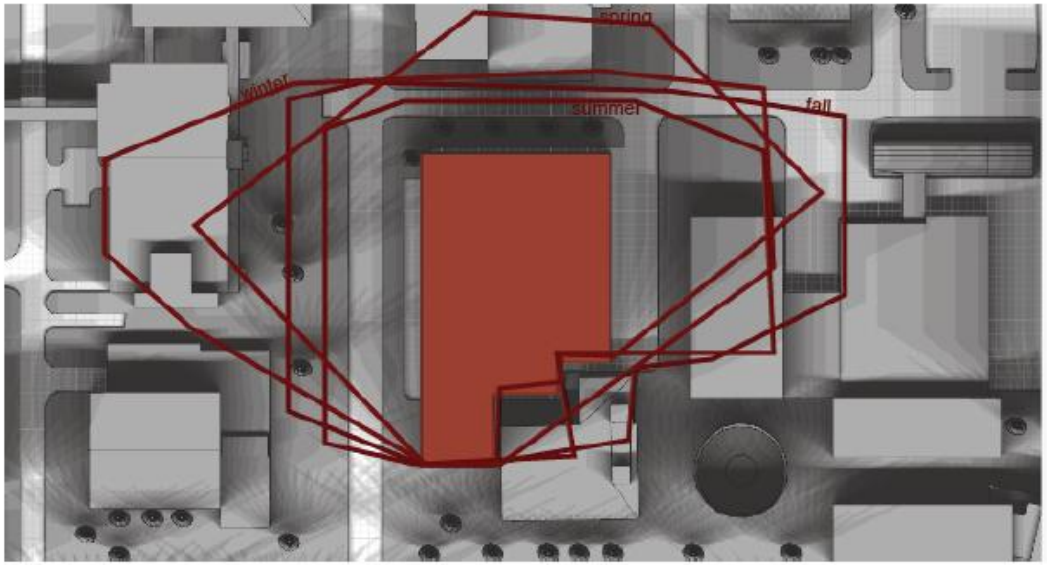
spring
winter
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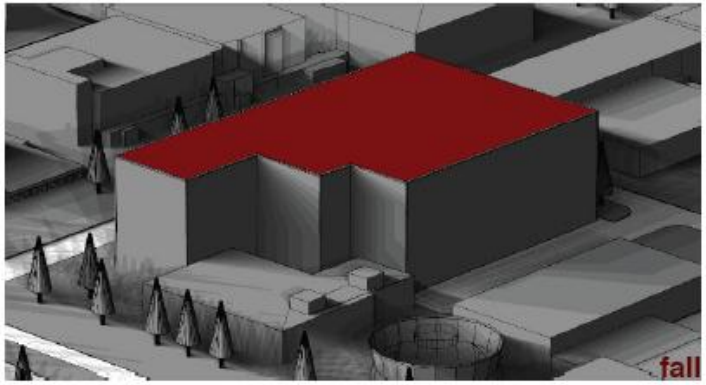
fall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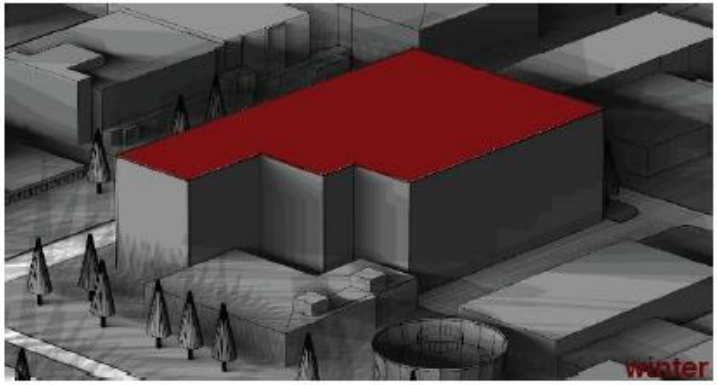
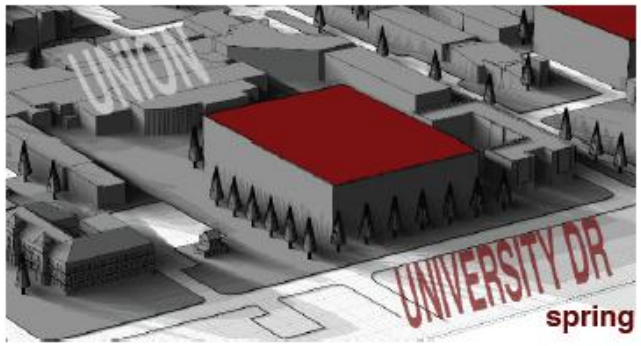
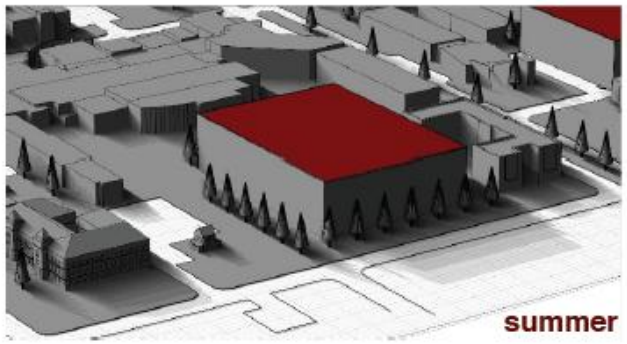

winter



spring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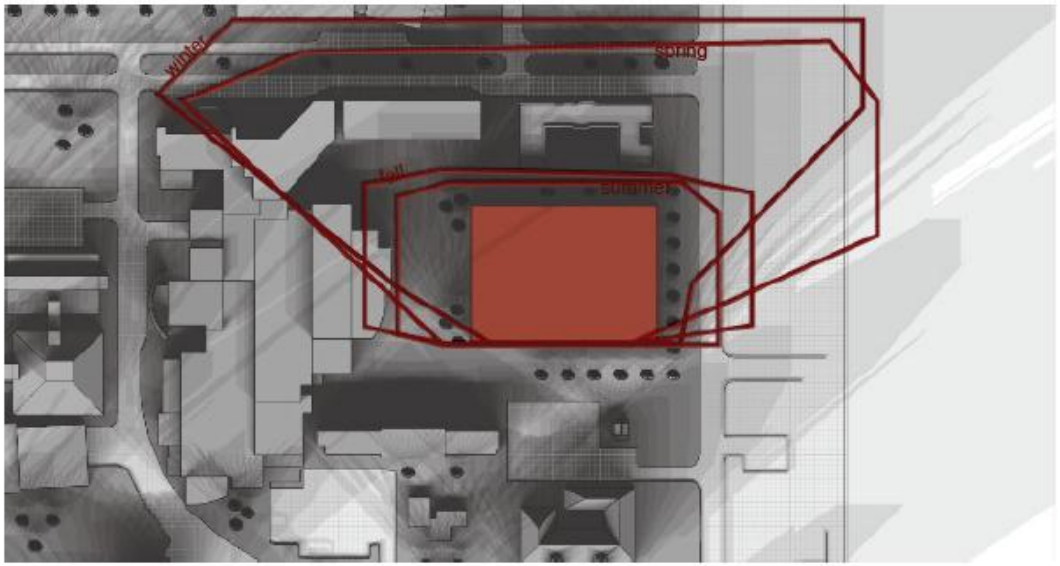

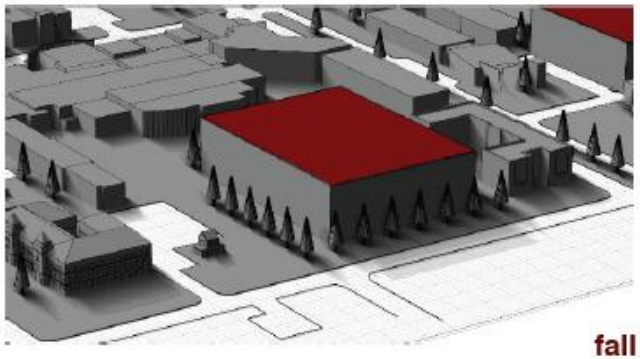
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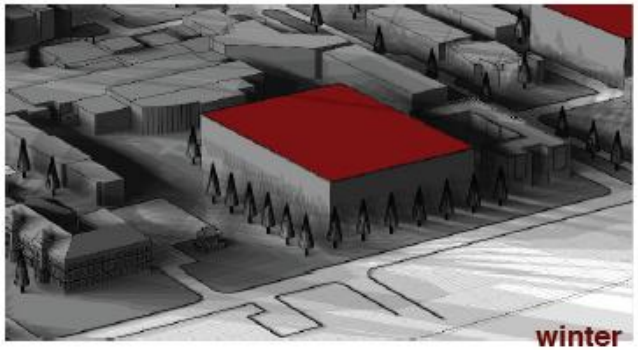
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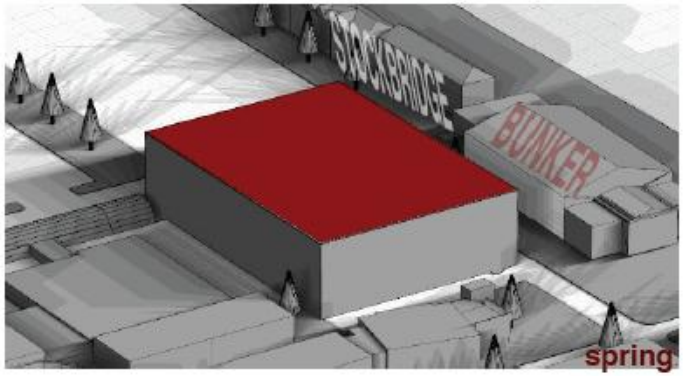
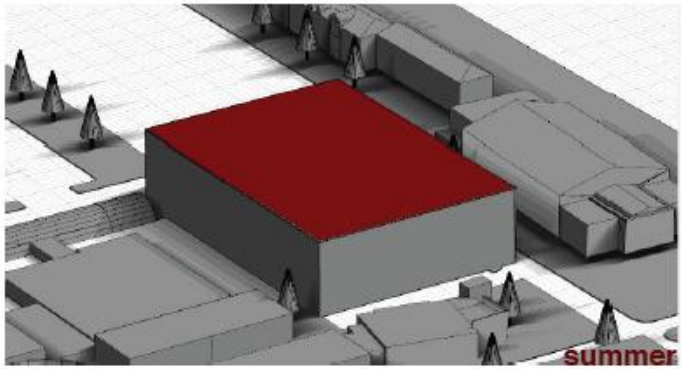

STOCKBRIDGE
BUNKER
spring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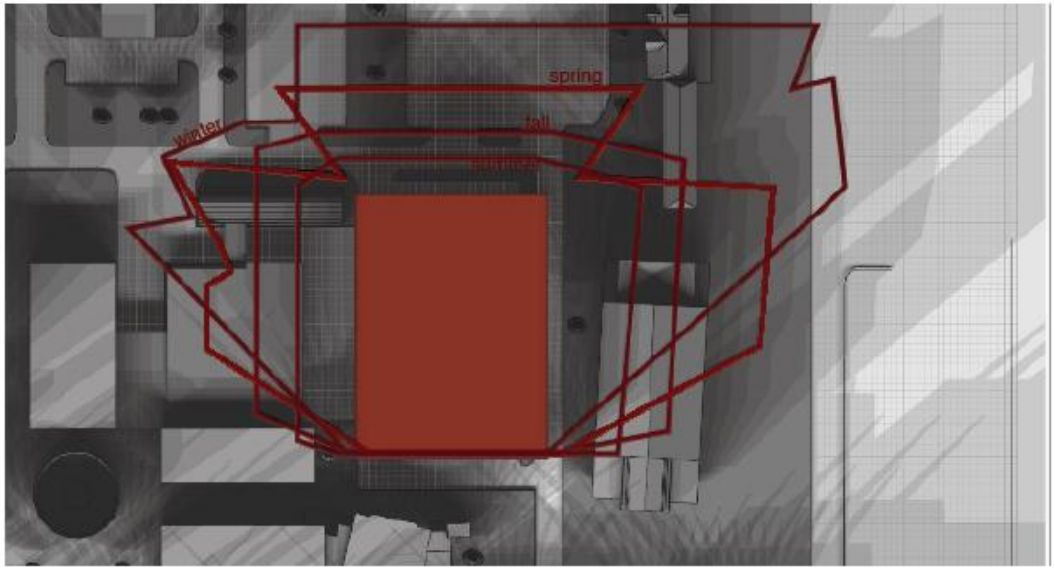
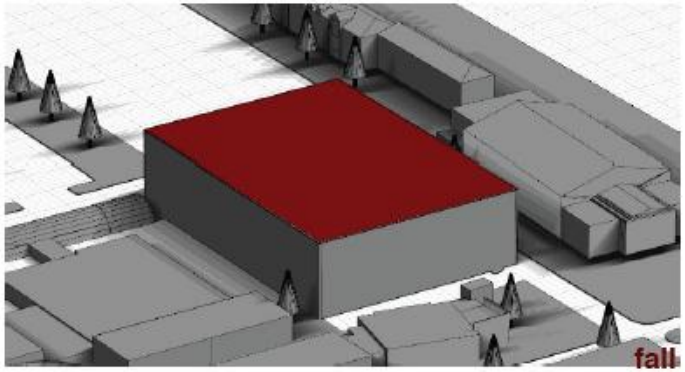

spring
fall
winter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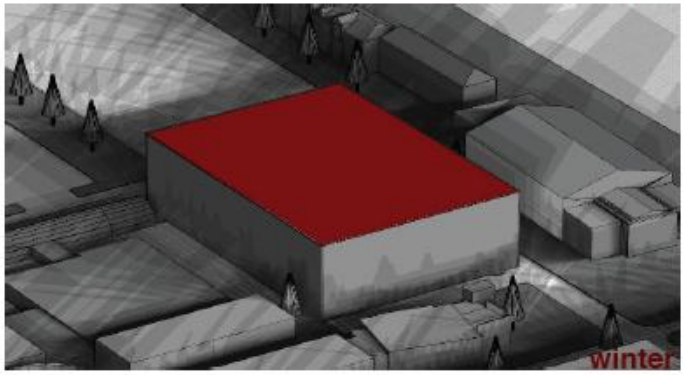
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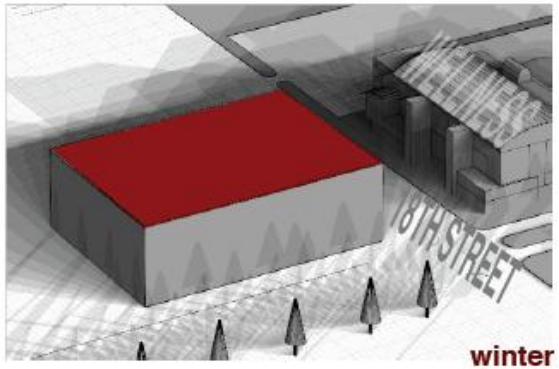
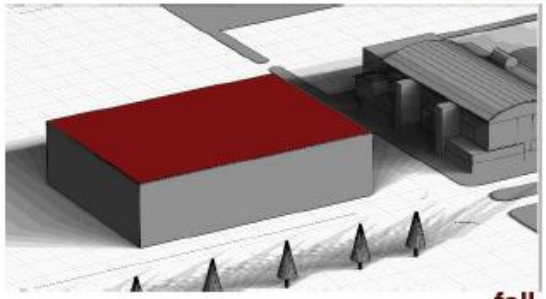
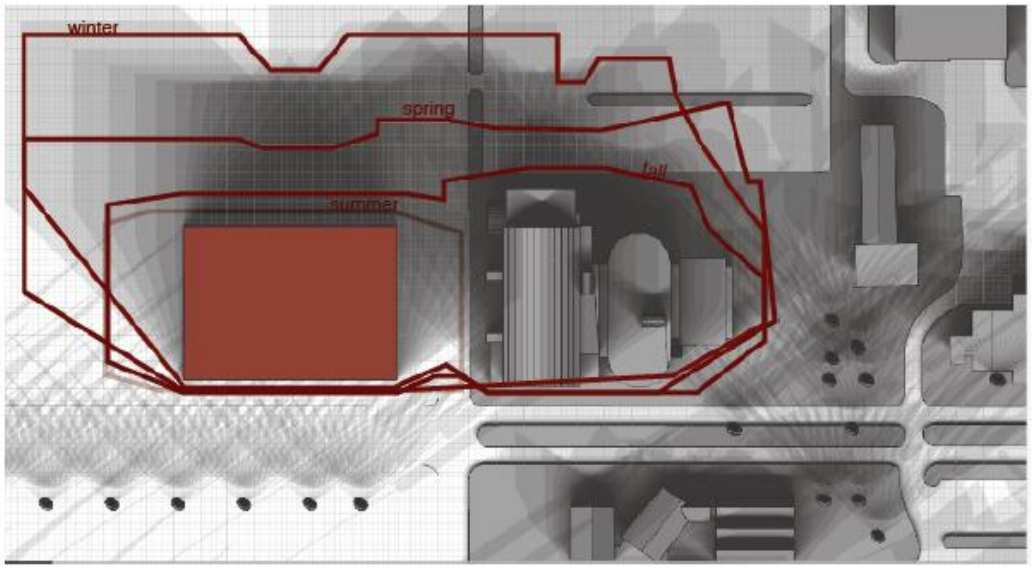
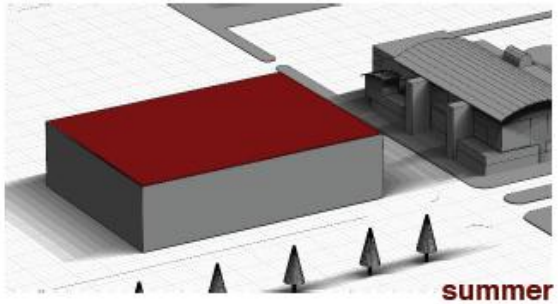


winter

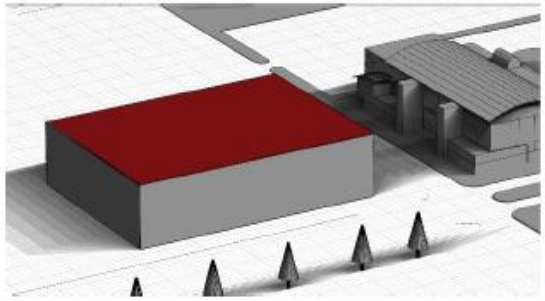


fall

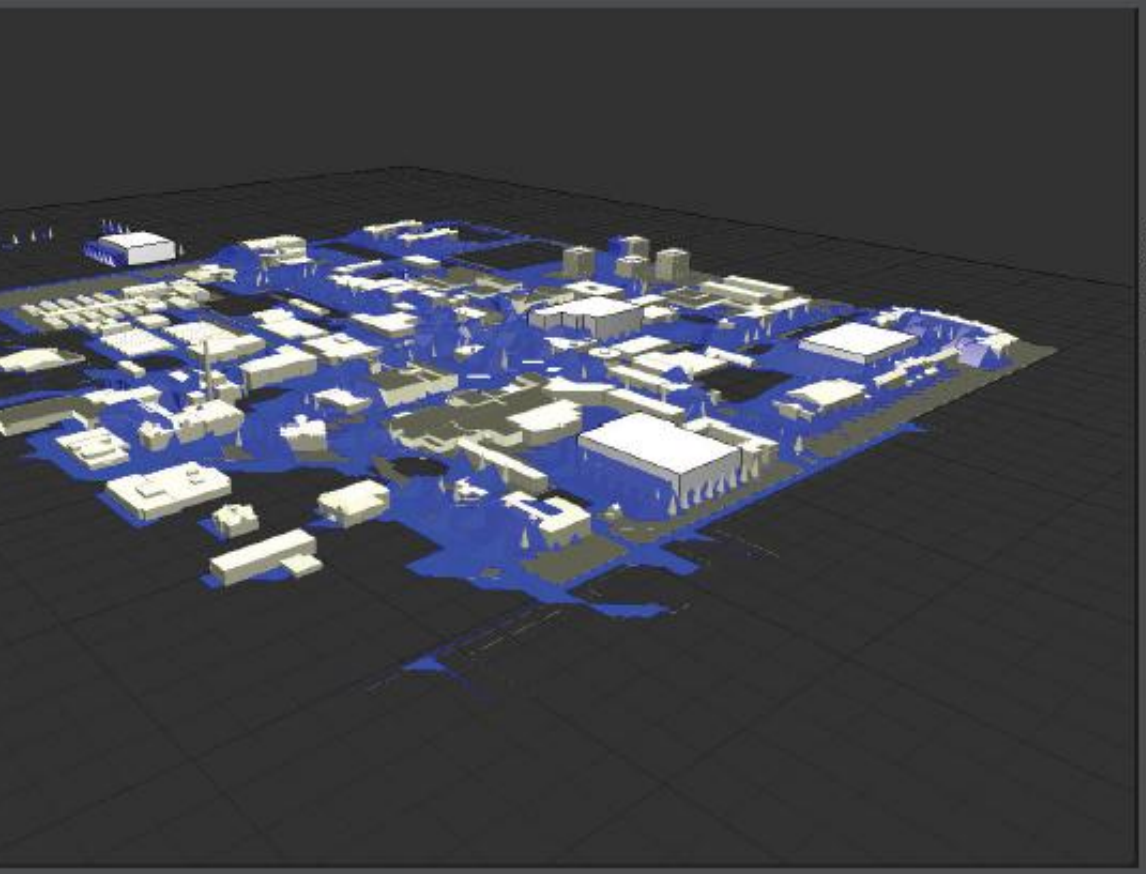




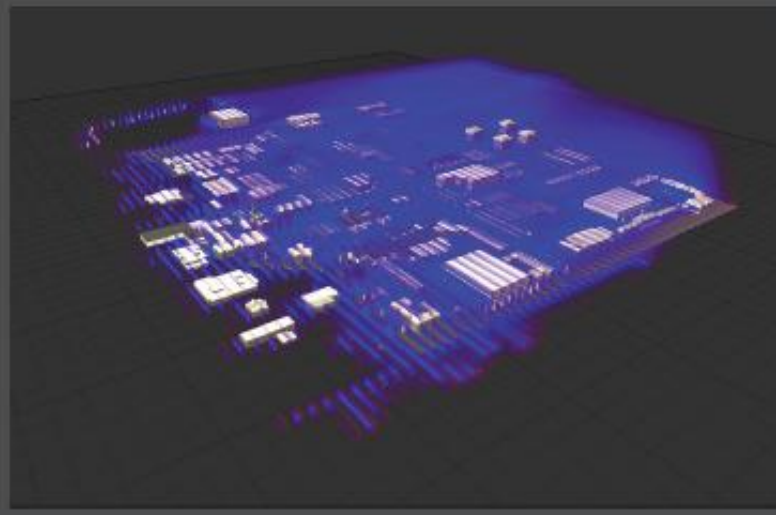
summer

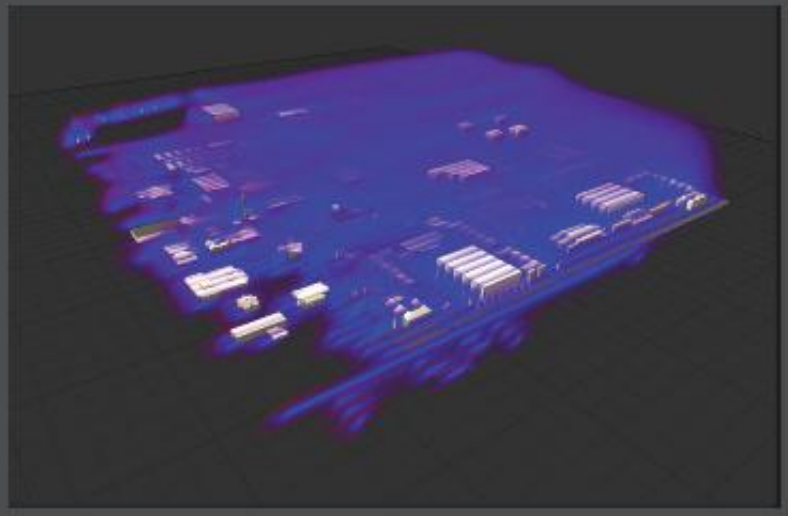


spring



The thermal performance of any sites is determined by the surrounding elements. Particularly, a site enclosed from all directions thermally performs better than the one exposed on all sides. Sites that are holding a large volume are protected from thermal conduction.





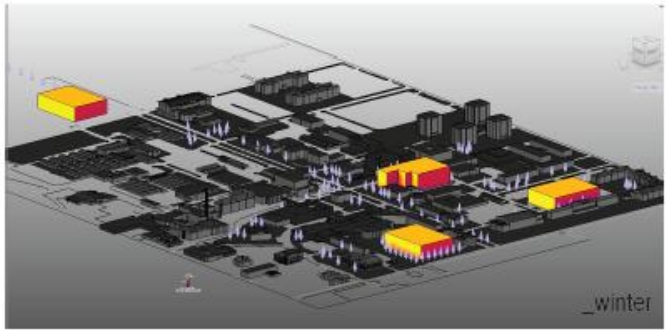
THERMAL.

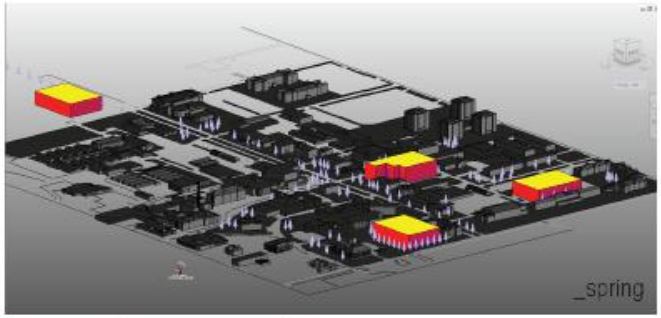
analysis

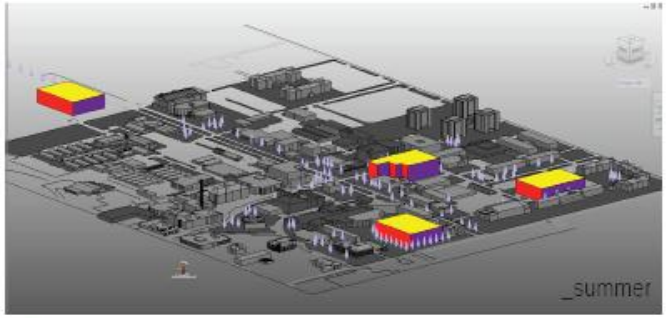
Internal temperature of any building will always tend towards the local mean outdoor temperature. Any fluctuations in outside temperature or solar load will cause the internal air temperature to fluctuate in a similar way, though delayed and dampened somewhat by thermal capacitance and resistance within the building fabric. When the total of all heat losses become equal to the total of all gains, then internal temperatures stabilize.

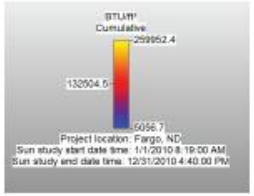
SOLAR_*radiation*

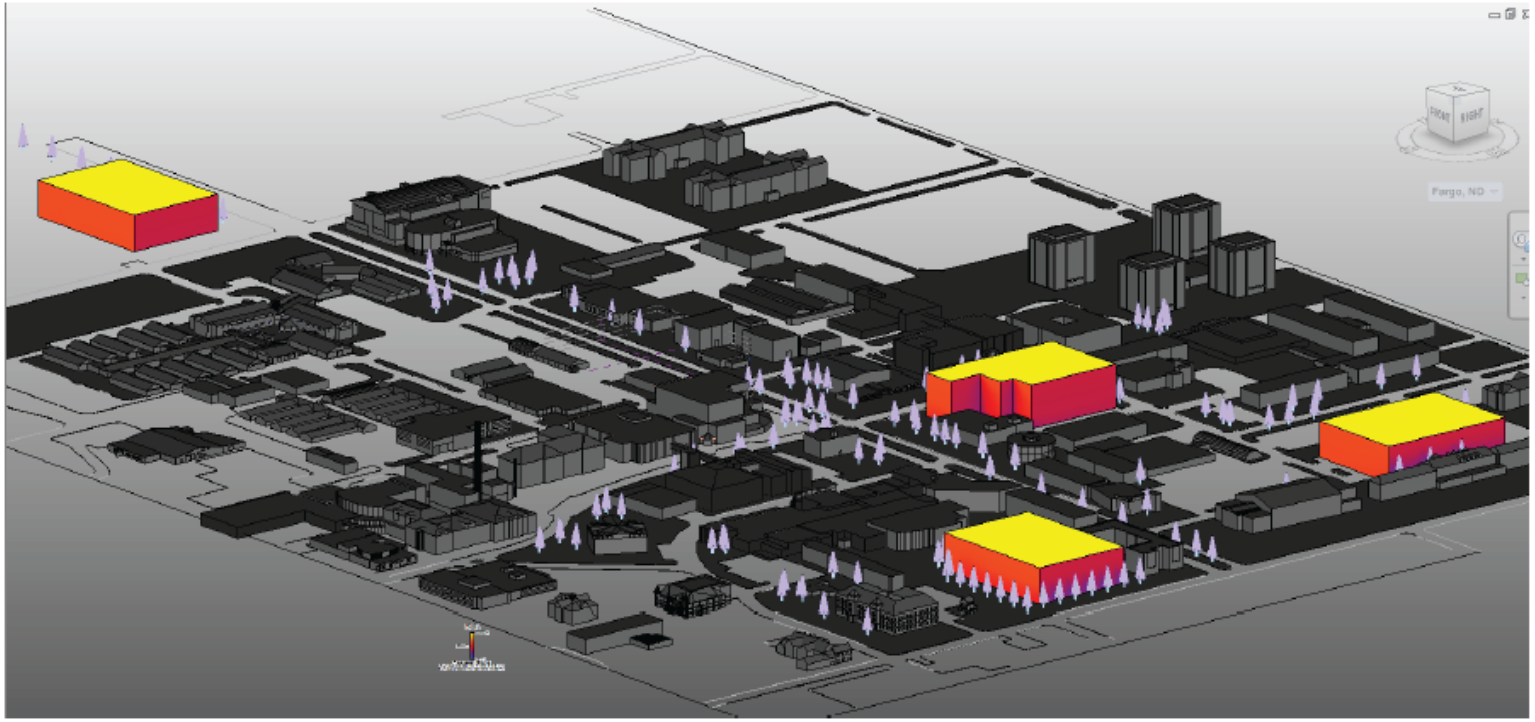
When designing energy efficient buildings, solar radiation can play an important role in determining building form. On one hand, energy from the sun can be harnessed through solar passive design and as a renewable energy source using photo-voltaic systems; on the other hand, solar radiation also represents the largest source of heat gain in buildings, which can demand significant amounts of energy to keep a building cool







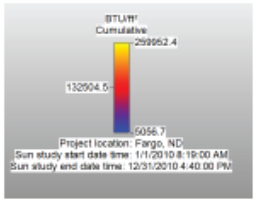


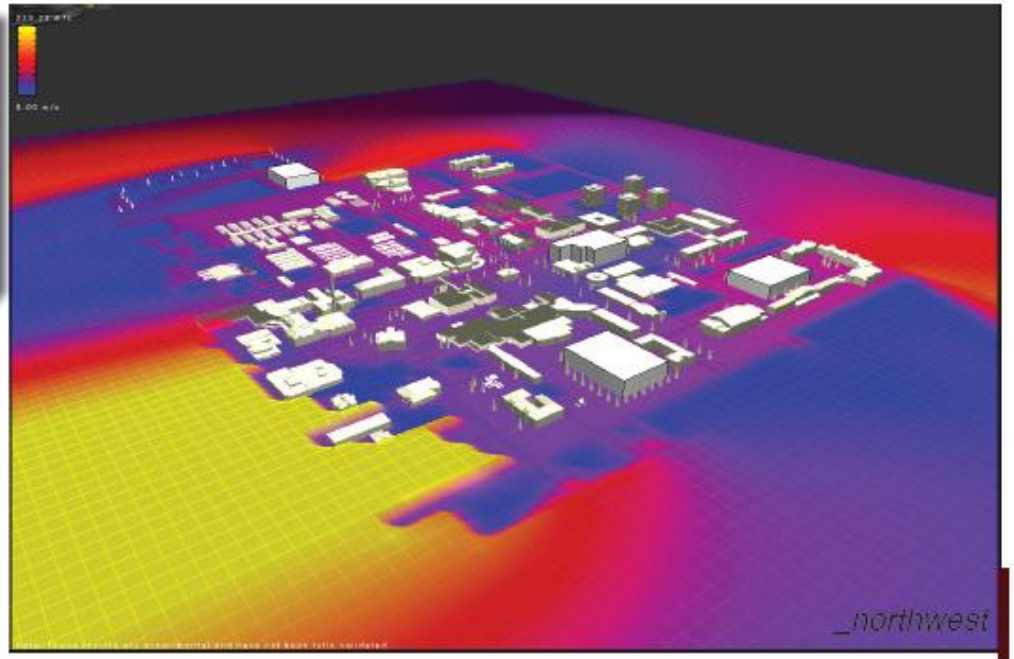


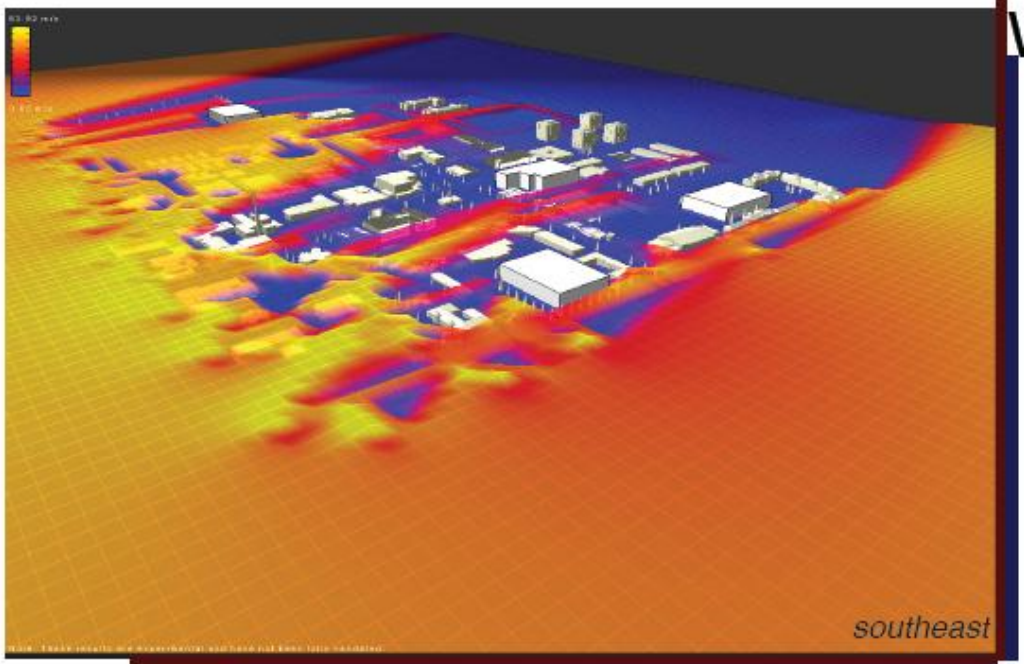
SOLAR *radiation*
4SEASON.ANALYSIS

It also becomes apparent in the ventilation components that are integrated into façade and which serve the purpose of heat recovery in the winter and of cooling the building units in the summer, as well as in the components for heat insulation, and sun shading.

The colors represent solar radiation on building envelope thru different time periods of the year (yellow being the highest and blue being lowest).







WIND_*tunnel*

DESIGN. *MATRIX*

site analysis

- *transportation*
  - *+pedestrian circulation*
  - *+user types*
  - *+vehicular circulation*
  - *+transit routes*
- *viewsheds*
  - *+cohesiveness and flow*
  - *+views and points of interest*
  - *+centralization*
  - *+green space*
- *street types*
  - *+mixed use potential*
  - *+transit routes*
  - *+circulation*

	s1	s2	s3	s4
pedestrian circulation	10	8	8	2
transit & entrance points	9	9	8	2
cohesiveness & flow	8	10	7	2
mixed use potential	0	10	2	10
views & points of interest	0	10	6	10
greenspace	0	8	5	6
centralization	10	8	8	2
design focus: on-campus residents	8	5	7	2
design focus: off-campus residents	2	5	3	8
	47/90	73/90	54/90	44/90

DESIGN. *MATRIX*
performance analysis

	s1	s2	s3	s4
site impact	4	6	3	10
shade & shadow	5	7	8	10
solar radiation	6	10	6	10
thermal analysis	6	8	8	3
wind tunnel	10	8	8	6
geothermal potential	5	5	7	10
photovoltaic potential	6	8	6	10
natural lighting	5	8	5	8
	47/80	60/80	51/80	67/80
total annual energy cost	$216,000	$201,000	$212,000	$225,000
net carbon emission	149 SUV	140 SUV	148 SUV	170 SUV

Suv Equivalency: 15,000 miles driven annually, 14 miles per gallon (5.95 km per liter).

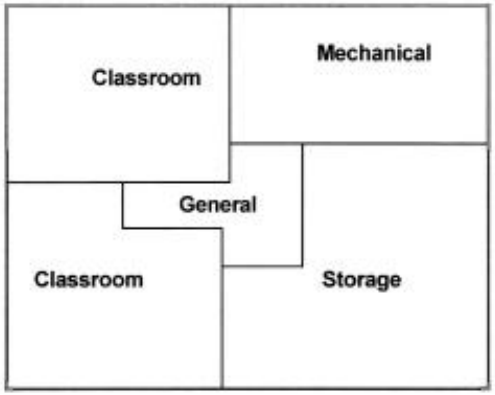
	s1	s2	s3	s4	
site analysis	47/90	73/90	54/90	44/90	
performance analysis	47/80	60/80	51/80	67/80	
TOTAL	94/170	133/170	105/170	111/170	

BUILDING PROGRAM

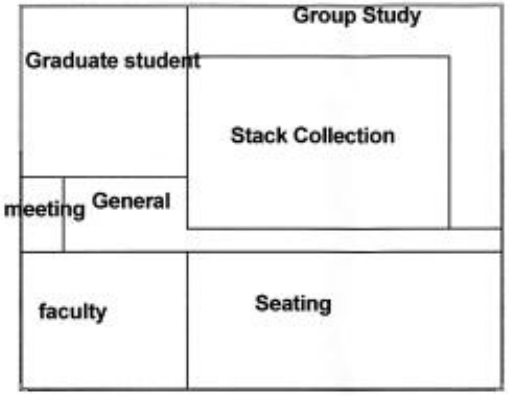
		Per Sq. Ft	Sq. Ft.		Future expansion	
Folio (Oversize) – 1st floor:	6,873	5	1374.6	4	5498.4	
Reserve Collection – 1st floor	549	10	54.9	4	219.6	
Federal Documents – 2nd floor:	92,476	10	9247.6	1	9247.6	
State Documents – 2nd floor:	8,850	10	885	1	885	
Federal Documents Maps – Lower Level	60,269	50	1205.38	1	1205.38	
Shott Collection – 1st floor: 1,817	1,817	10	181.7	1	181.7	
Media – 1st floor: 2,382	2,382	10	238.2	4	952.8	
Media Audio Book: 123	123	20	6.15	4	24.6	
Media CD Audio: 588	588	20	29.4	4	117.6	
Periodicals – 1st floor: 20,092	20,092	25	803.68	1	803.68	
Rare Books – 1st floor: 1,929	1,929	5	385.8	1	385.8	
Stacks – 2nd floor: 290,917	290,917	10	29091.7	4	116366.8	
Thesis – 2nd floor: 9,160	9,160	10	916	3	2748	
GRHC (Germans from Russia Heritage Collection) – 1st floor: 11,042	11,042	20	552.1	1	552.1	
Total Collection Space			44972.21			###
Public Access Computer(20 sit down and 20stand up)PAC	40	30	1200	2	2400	
Electronic Work Stations(1 per 200 students)	70	45	3150	2	6300	
microfilm reader/printer	5	35	175			
Seating Space 20 Seats Per 1000						
Seats	340	30	10200	2	20400	
Individual Study rooms(2 per 1000)	28	25	700	2	1400	
Group Study 1 per 1000)	14	50	700	2	1400	
Total User Seating Space			23125			
Staff Work Area	40	150	6000	2	12000	
Meeting Area	40	25	1000	2	2000	
						45900
Special Use						
Newspapers	2	25	50	2	100	
Paper Back	2	35	70	2	140	
Microfiche – Lower Level:	1,037	50	20.74	2	41.48	
Maps – Lower Level	755	10	75.5	2	151	
Maps Roll File – Lower Level:	207	10	20.7	2	41.4	
Photocopier/scanning	4	50	200	2	400	
Staff lounge/break	4	80	320	2	640	
Vertical Files	10	10	100	0	0	
Index table	2	140	280	2	560	
Display case	20	10	200	4	800	
			1336.94			2873.88
Classroom Spaces & theater			12000	2	24000	
Lounge Spaces			5000	1	5000	
Center for Writers			4000	1	4000	
Lounge wireless			12000	1	12000	
Food Service			400	1	400	
24/7 study			6000	1	6000	
Faculty Study Rooms			3000	1	3000	
Graduate Study rooms			4000	1	4000	
faculty collaborative space			2000	1	2000	
visiting scholars area			2000	1	2000	
			###		###	
vestibules, security systems						
near entrances and circulation desks, c-car						
pickup area, corridors, stairwells, elevator shafts, and restrooms	25 to 30%		26000		50000	
Total Sq. Ft			###		300000	

NDSU Main Library
Student Population 14,200

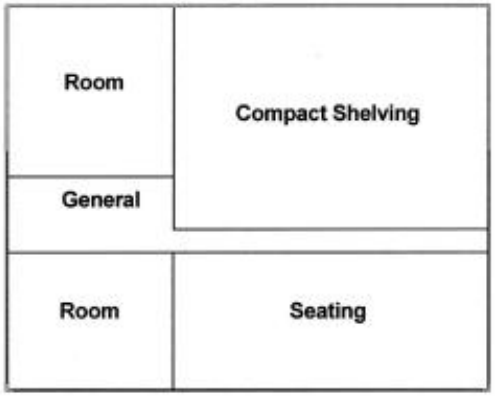
Current Space		Future Expanson		
Total Collection Space	44,972		3	140000
User Seating Space	23,125		2	46000
Staff Work Area	6,000		2	12000
Meeting Area	1,000		2	2000
Special Use	1,336		3	3000
General spaces	26,000		2	40000
Classroom Spaces		12,000	2	24000
Lounge Spaces		5,000	1	5,000
Lounge wireless		12,000	1	10,000
Center for Writers		4,000	1	4,000
Food Service		400	1	400
24/7 study		6000	1	6000
Faculty Study Rooms		3000	1	3000
Graduate Study rooms		4000	1	4000
faculty collaborative space		2000	1	2000
visiting scholars area		2000	1	2000
Total Square Footage	102,433			303,400



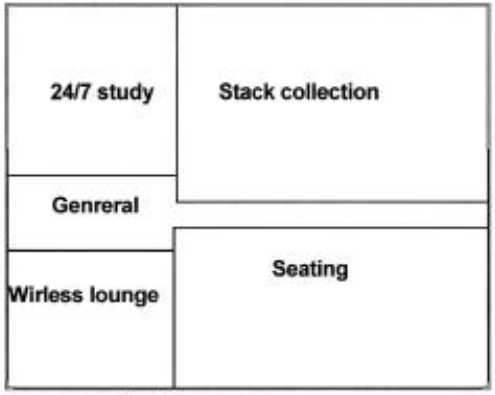
Lower Level



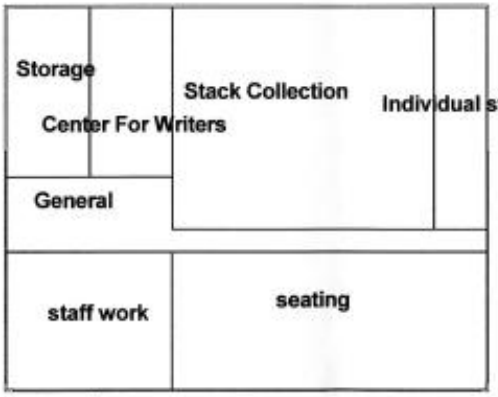
Level 2



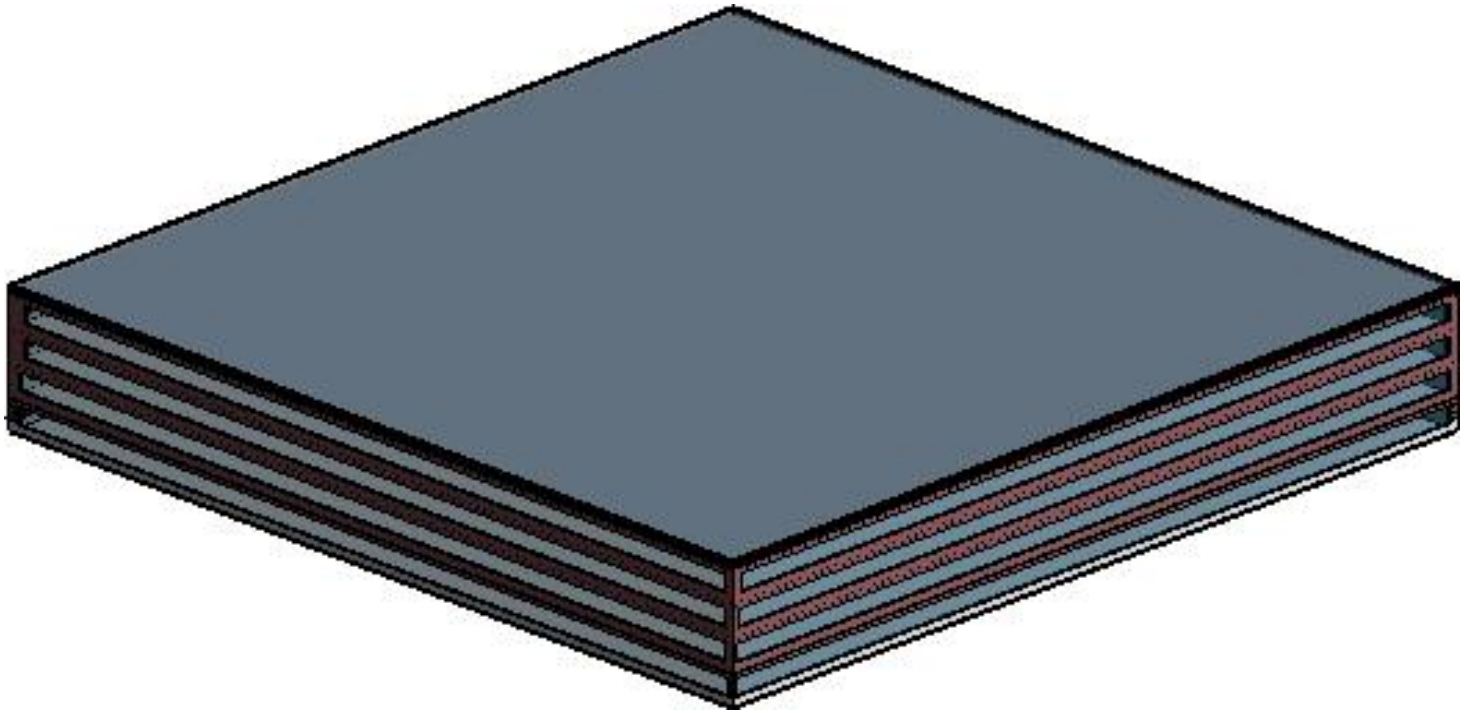
Level 4



Level 1

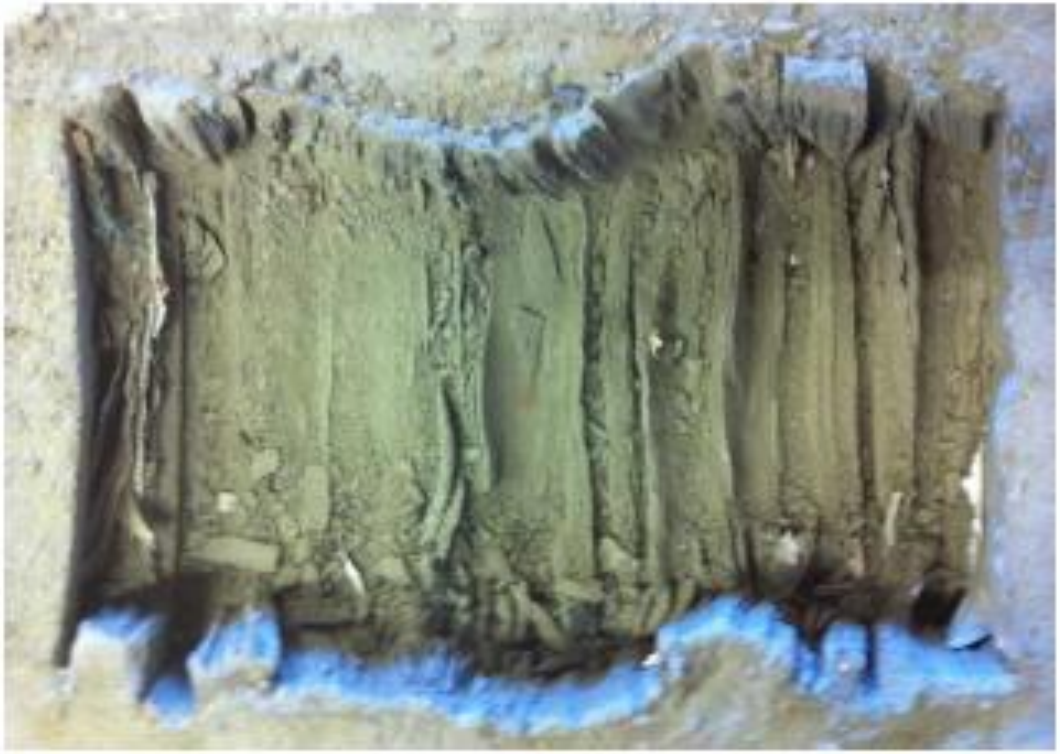


Level 3



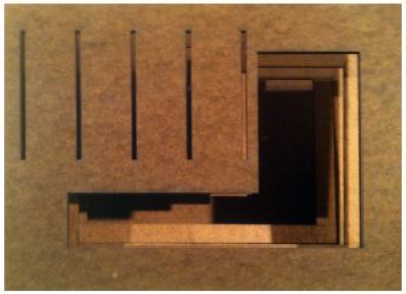

performance
aesthetics
economics
culture

BUILDING AESTHETIC

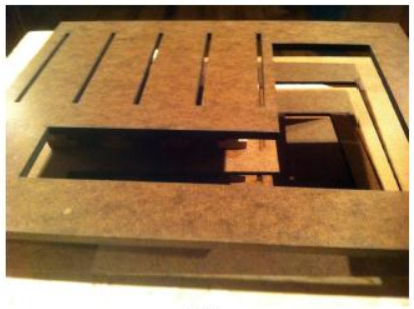


Books cast in concrete

Impression from the cast concrete

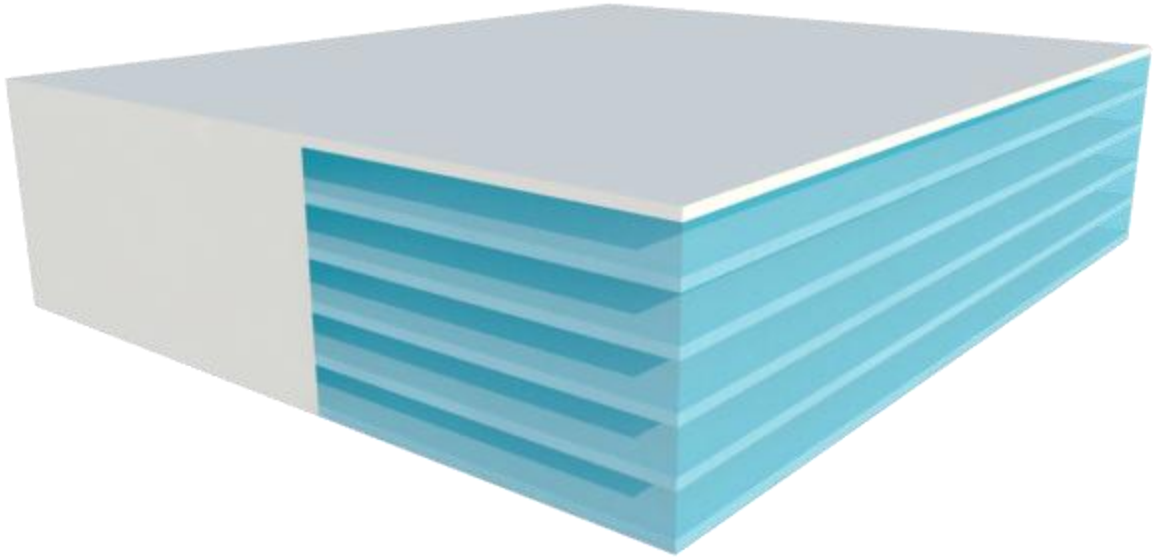


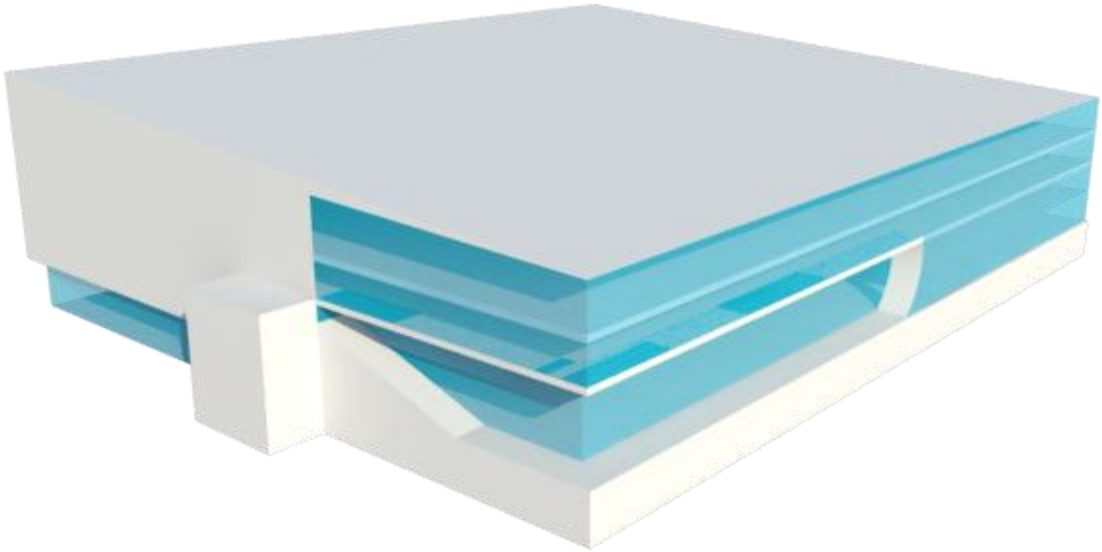
Plan perspective

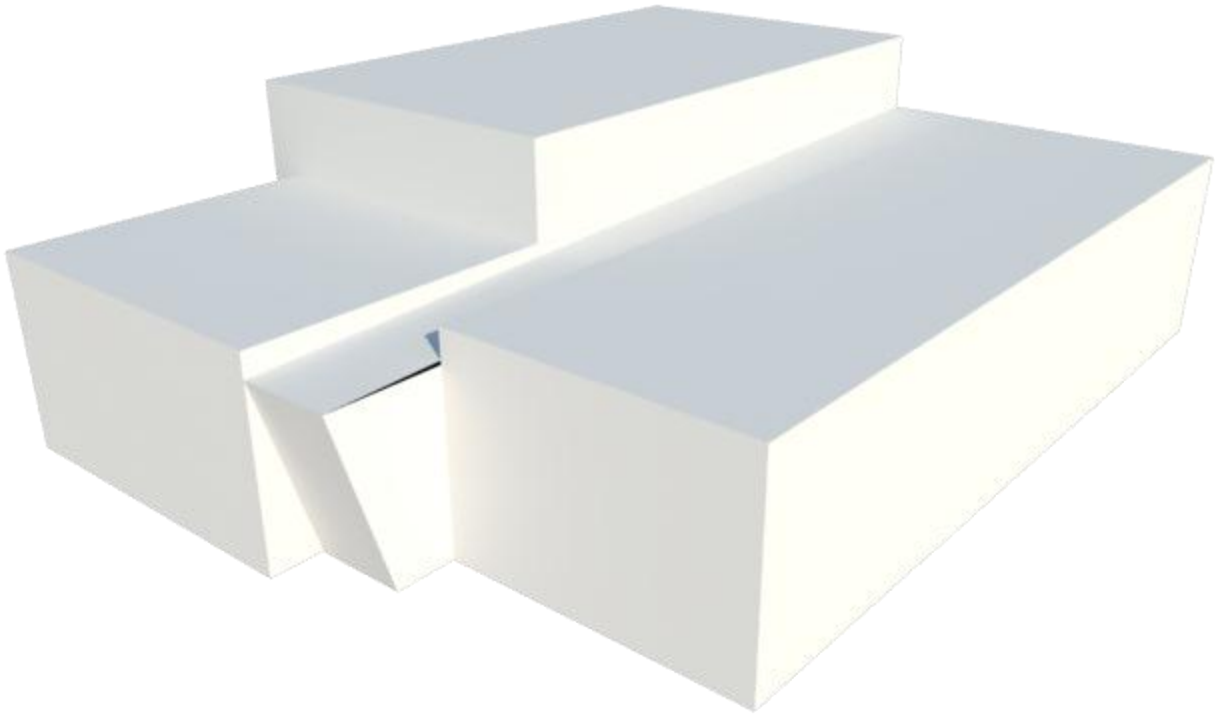


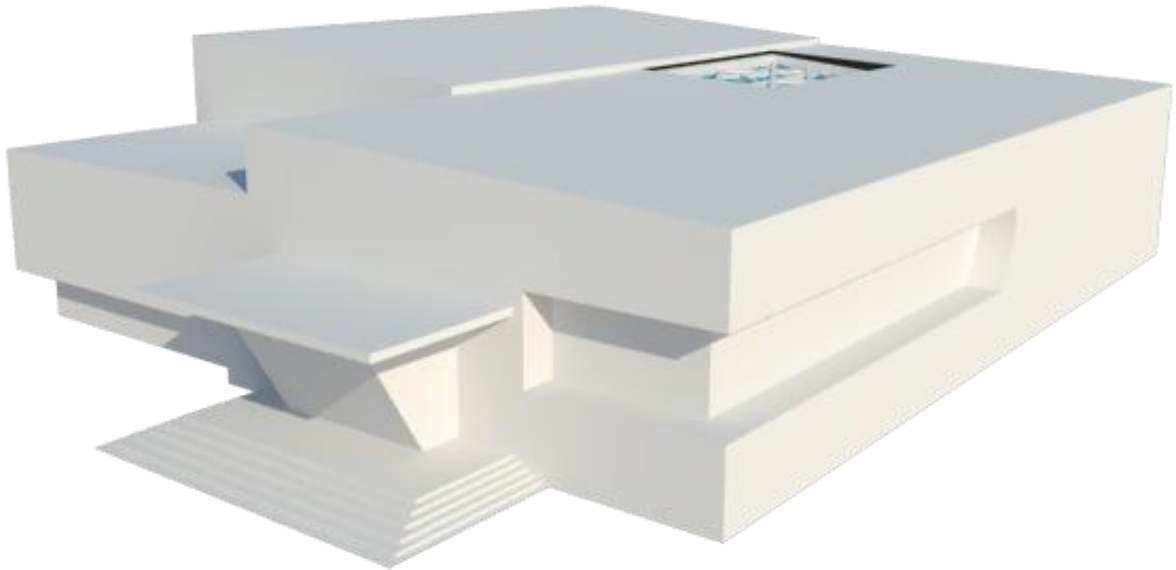
Atrium

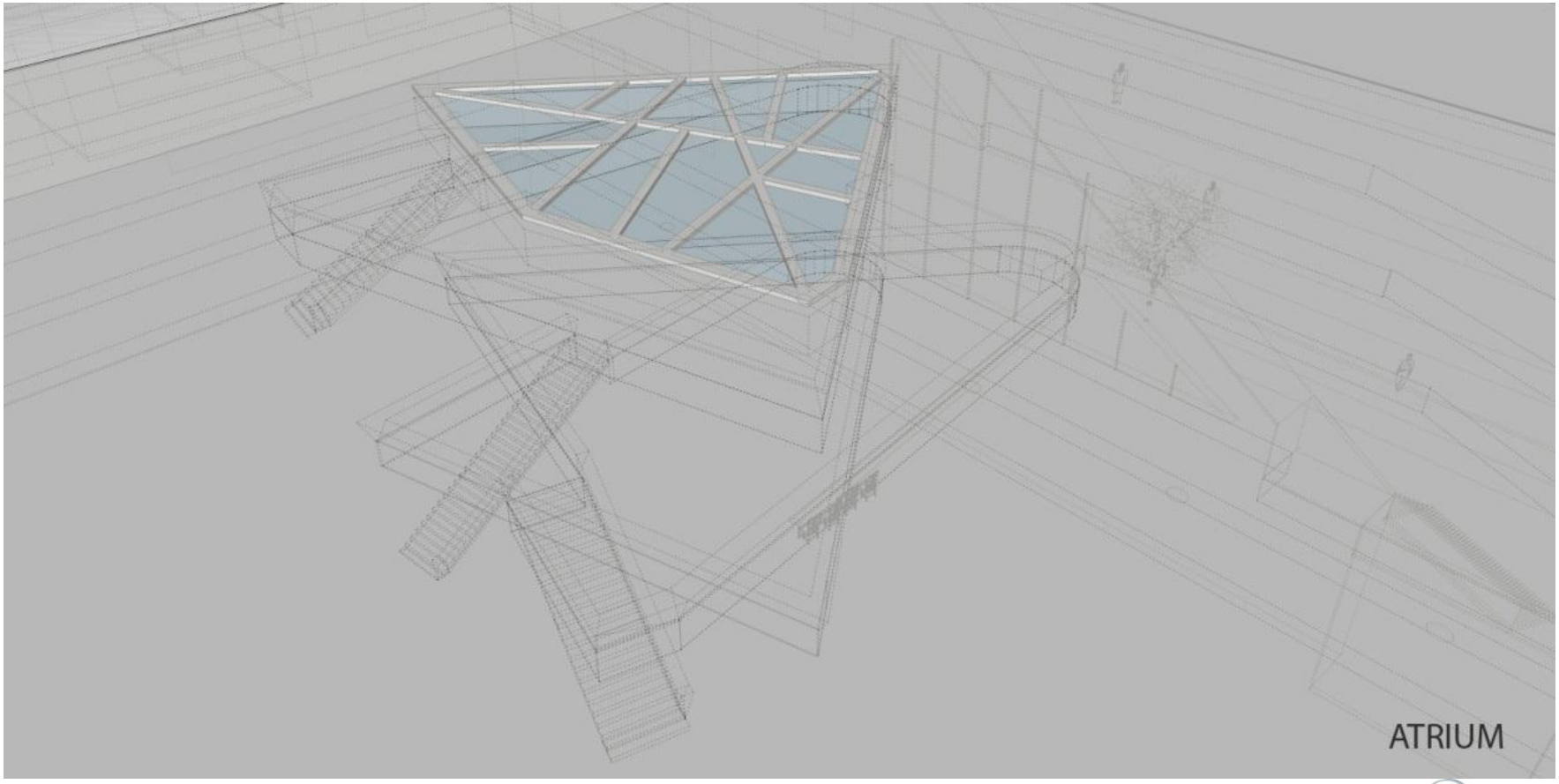
Movement though layers

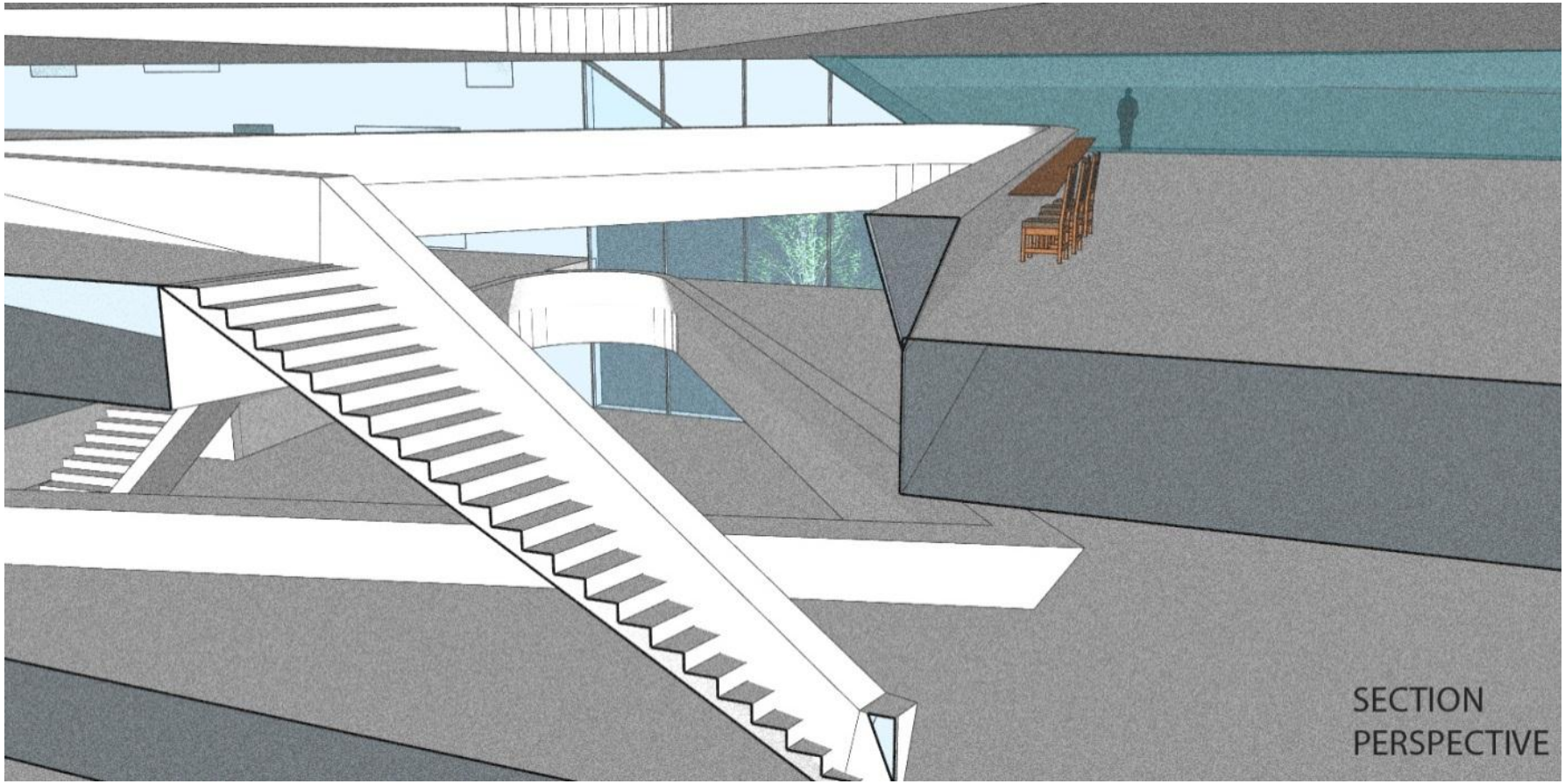


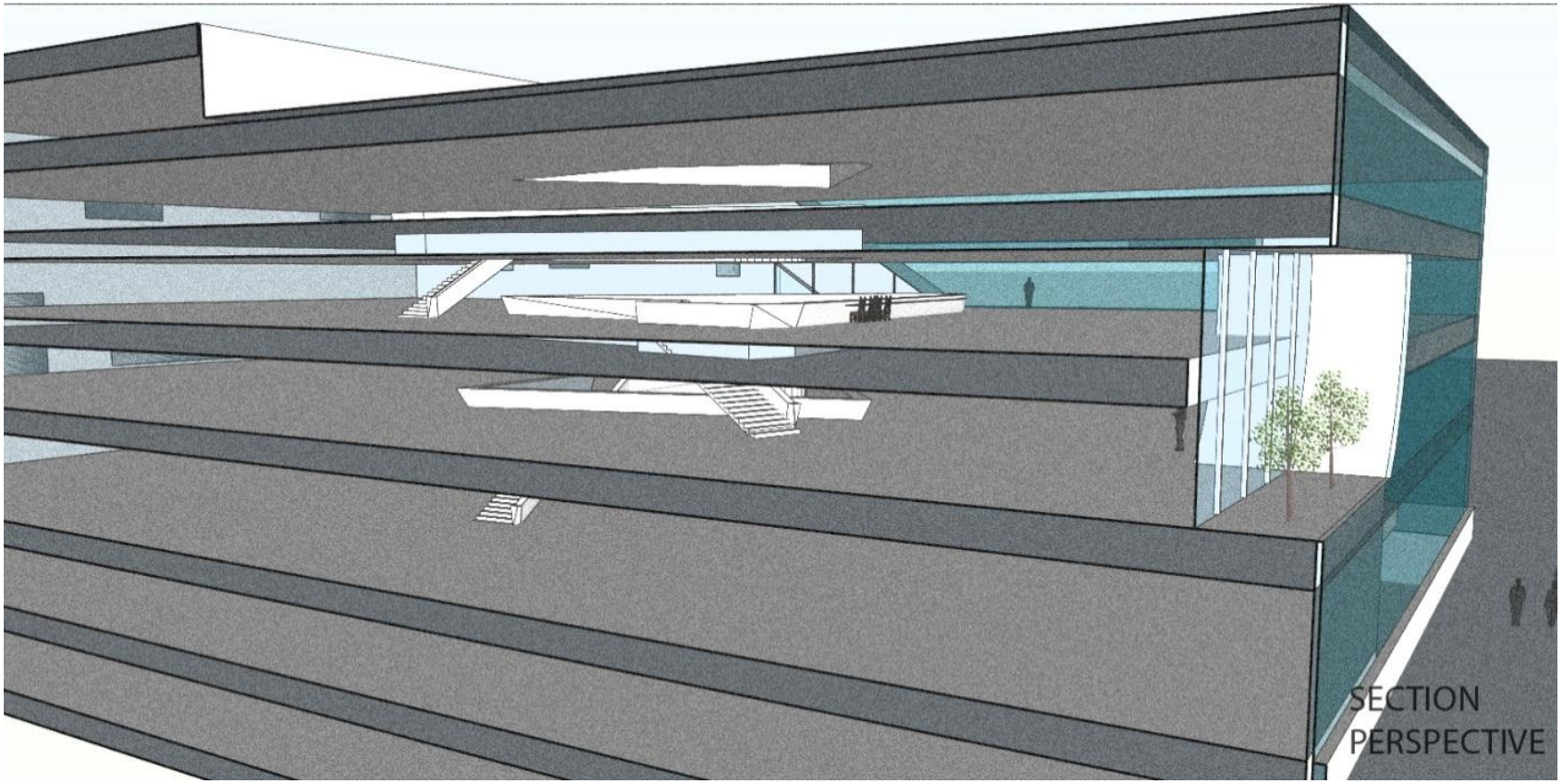


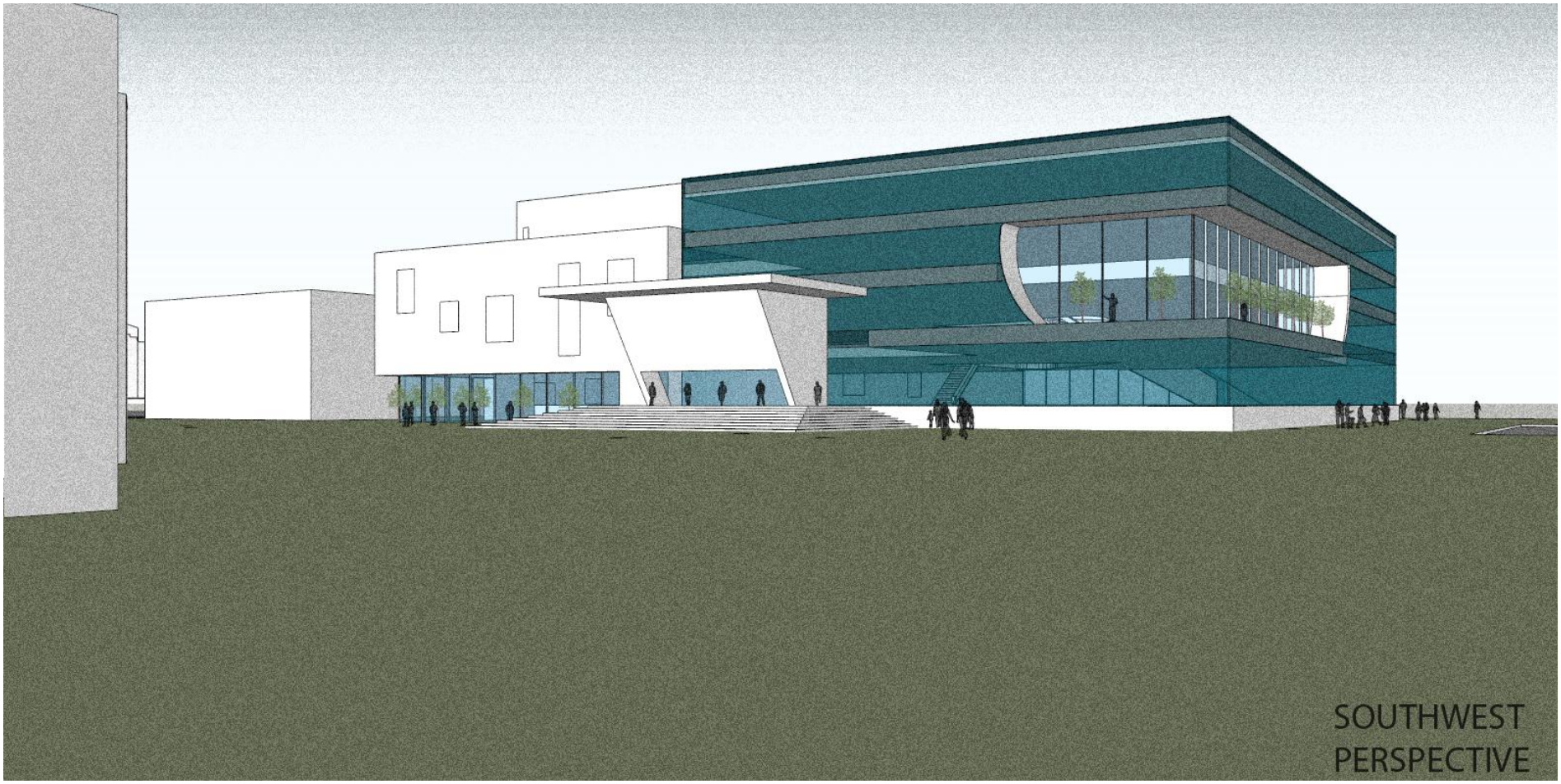




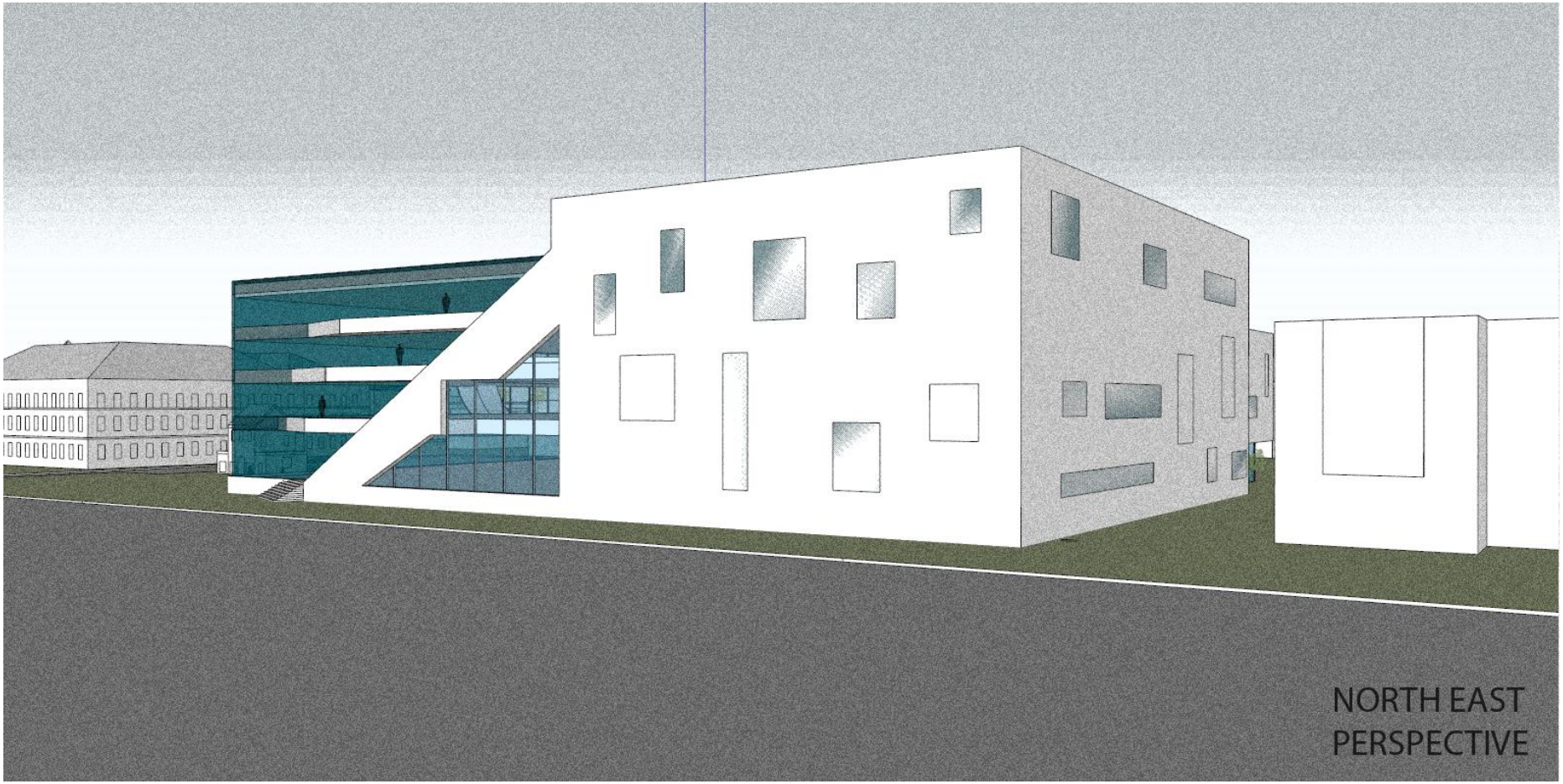

ATRIUM

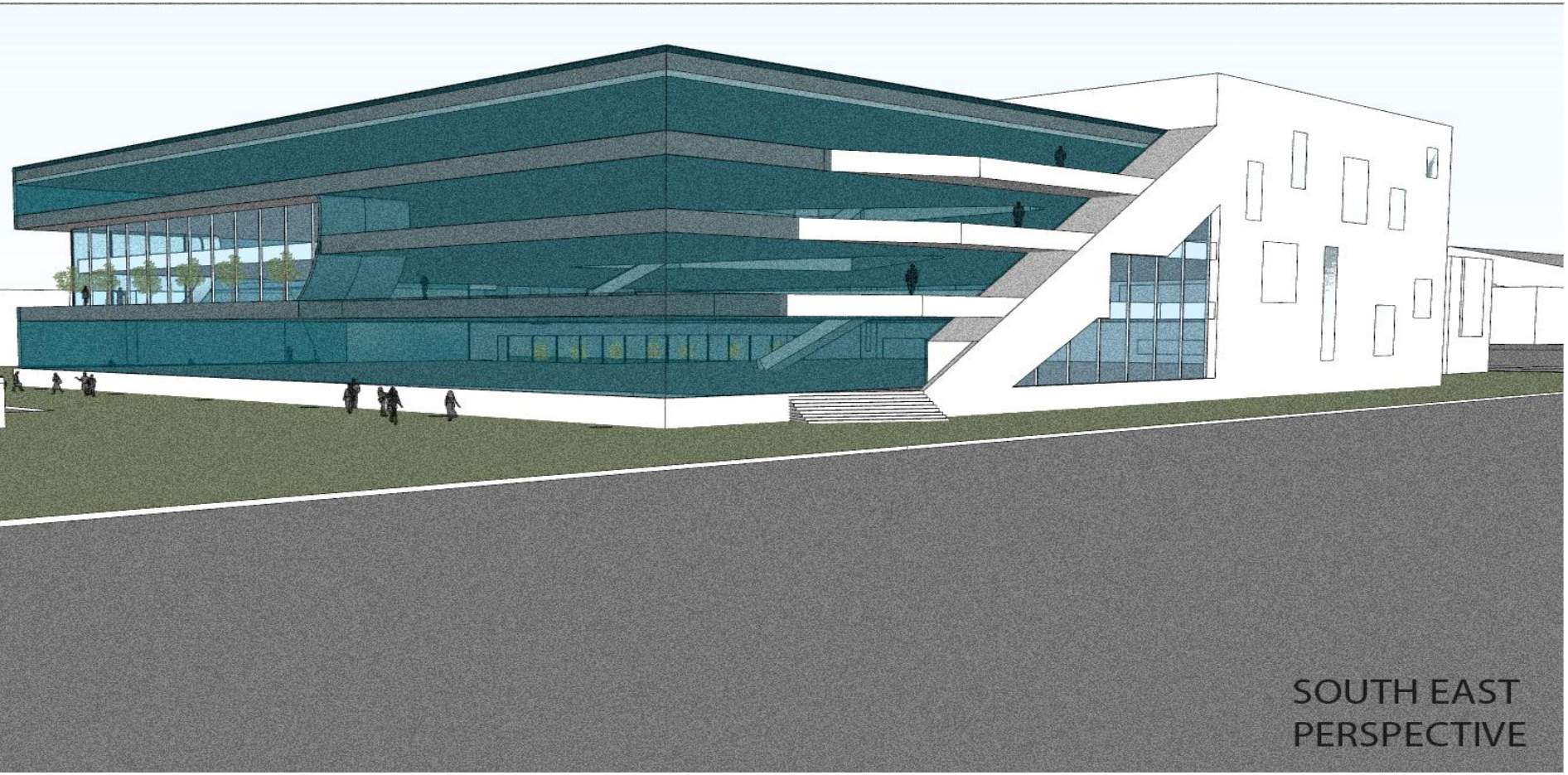

SECTION
PERSPECTIVE


SECTION
PERSPECTIVE

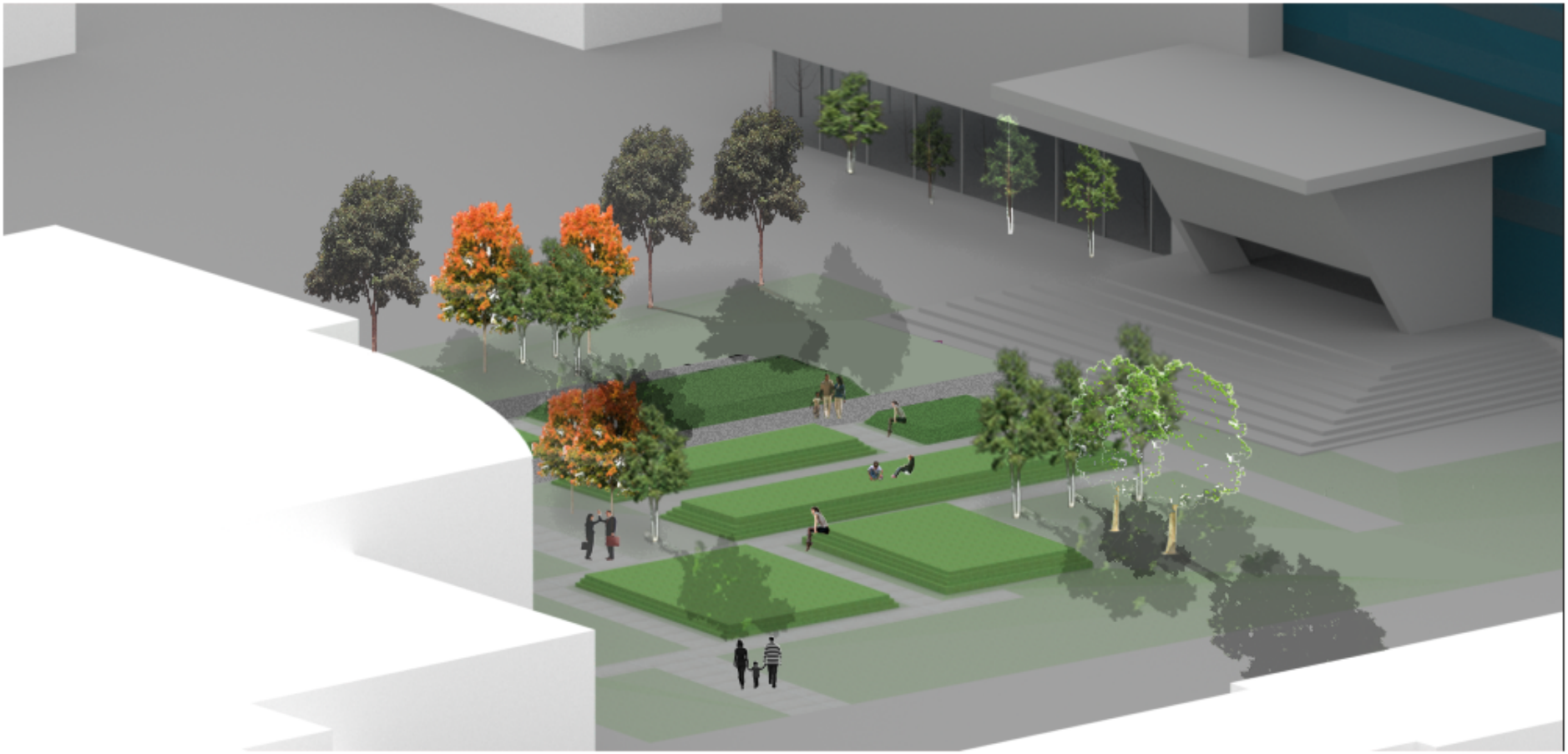

SOUTHWEST
PERSPECTIVE

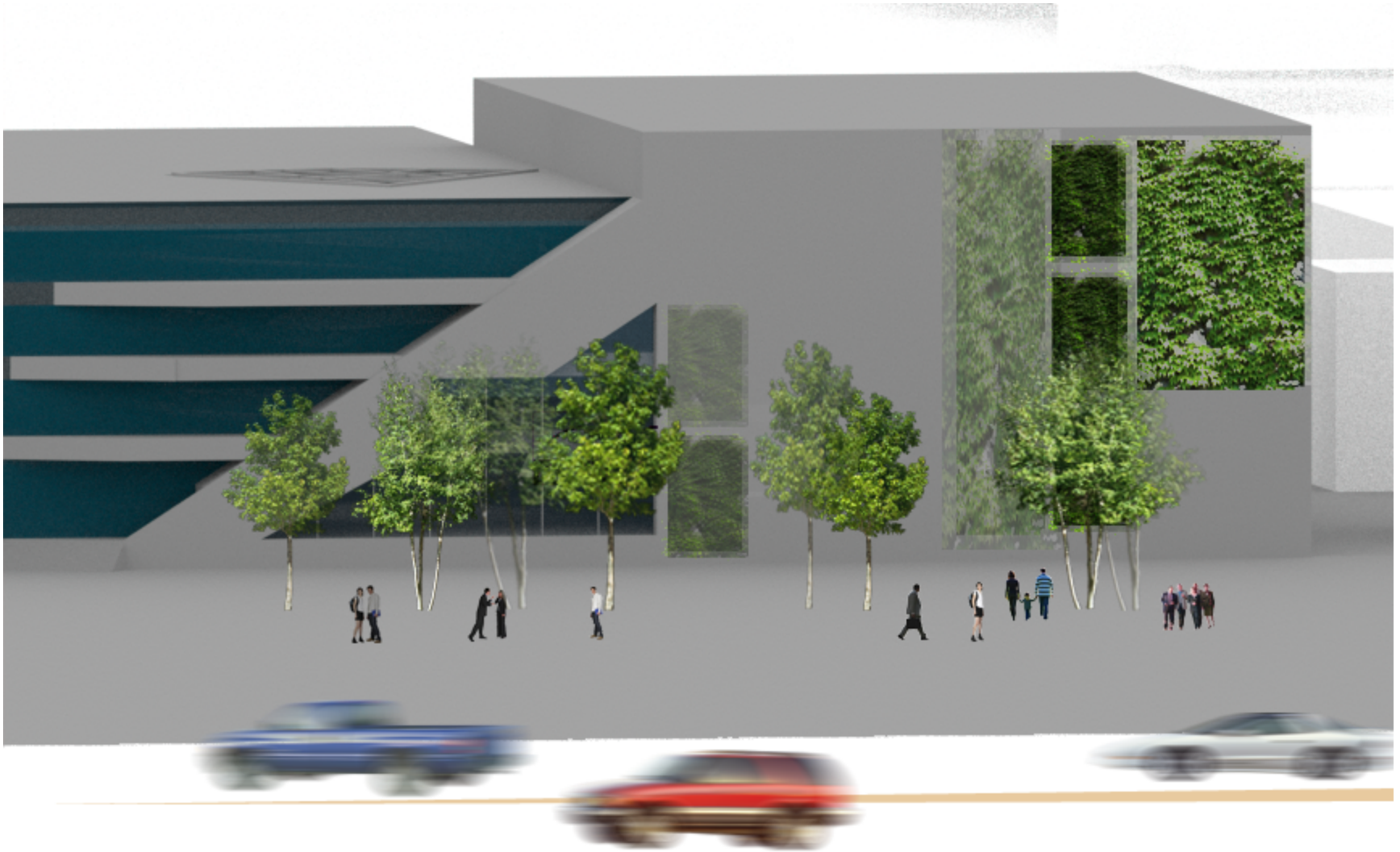

NORTH WEST
PERSPECTIVE


NORTH EAST
PERSPECTIVE

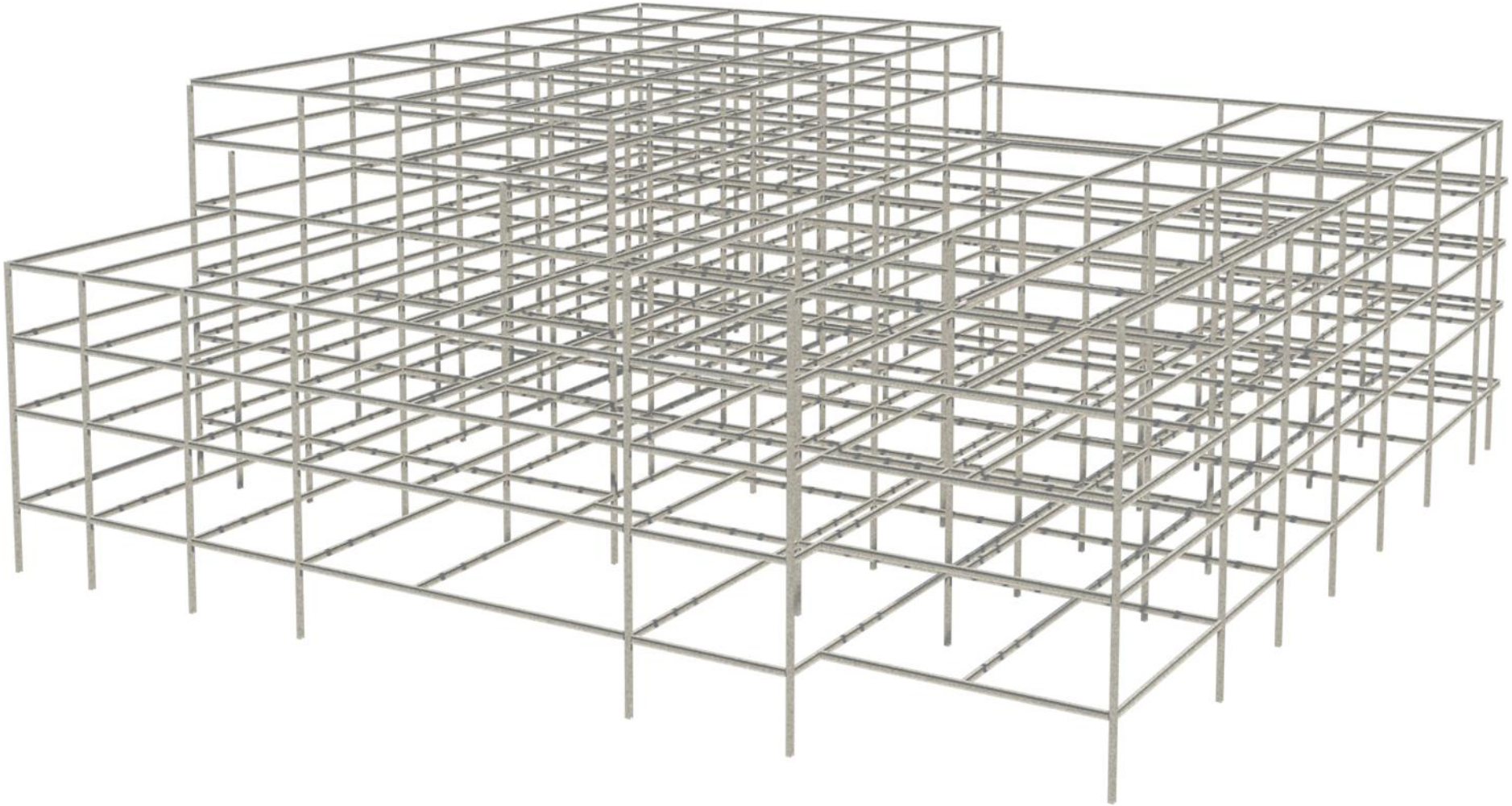

SOUTH EAST
PERSPECTIVE

BUILDING CULTURE





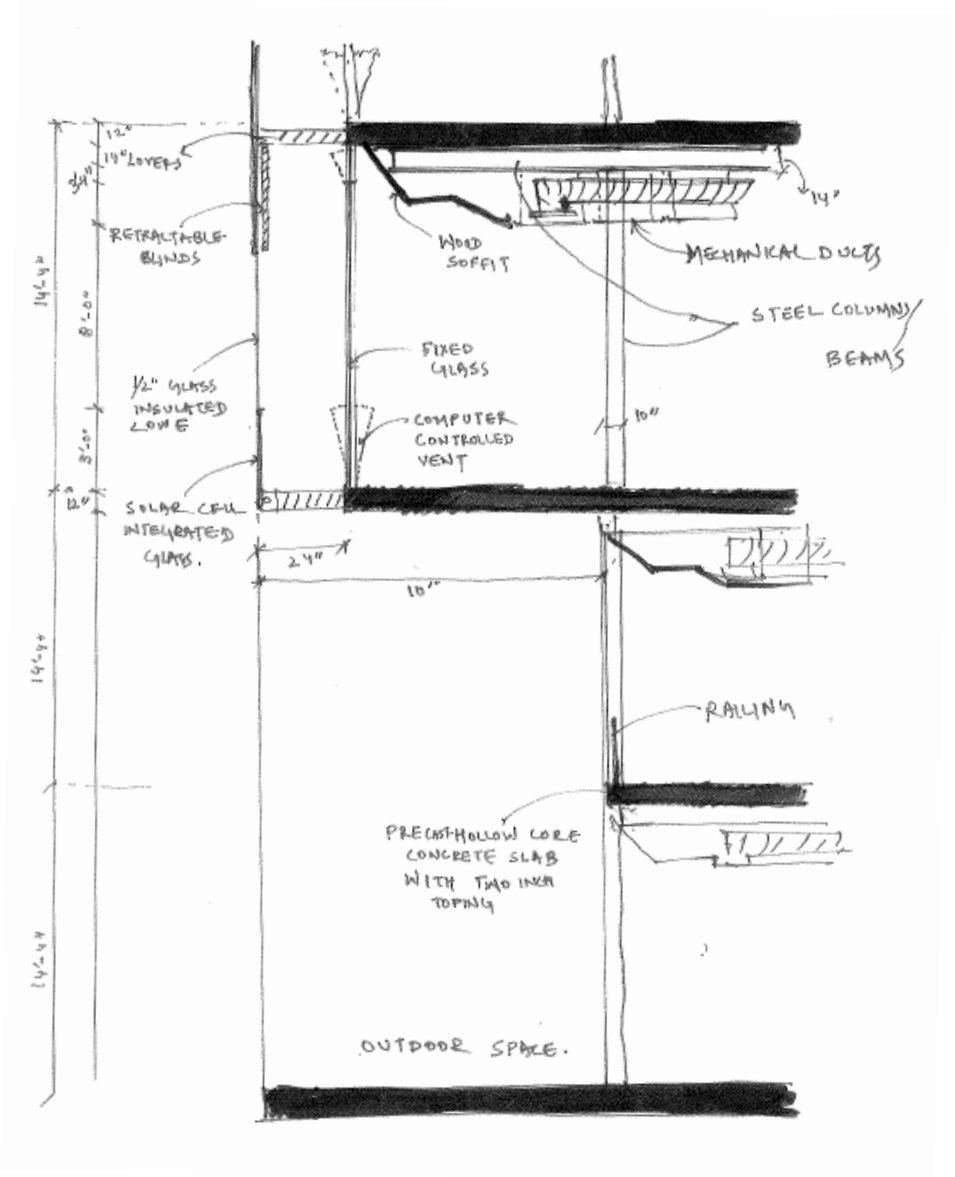
BUILDING ECONOMICS



Phillips Exeter Library
Louis Kahn
1965
12000 sq.ft

Phoenix Central Library
Bruder &DWLarchitects
1995
280000 sq. ft.

Seattle Central Library
Rem Koolhaas at OMA
2004
362000 sq.ft.

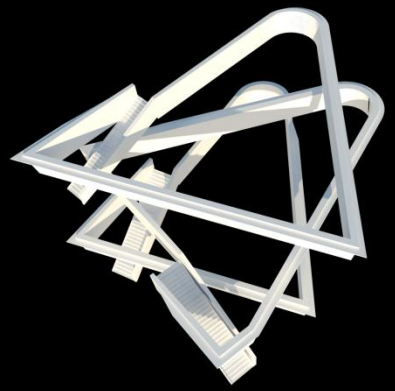


Double Skin Facade Detail

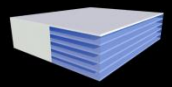
1 Base Run	
Energy, Carbon and Cost Summary	
Annual Energy Cost	$303,458
Lifecycle Cost	$4,133,093
Annual CO_2 Emissions	
Electric	3,481.6 tons
Onsite Fuel	569.4 tons
Large SUV Equivalent	368.3 SUVs / Year
Annual Energy	
Energy Use Intensity (EUI)	61 kBtu / ft² / year
Electric	3,473,712 kWh
Fuel	98,168 Therms
Annual Peak Demand	1,419.3 kW
Lifecycle Energy	
Electric	104,211,360 kW
Fuel	2,945,047 Therms
Assumptions	

2 Design Alternative	
Estimated Energy & Cost Summary	
Annual Energy Cost	$236,334
Lifecycle Cost	$2,946,469
Annual CO_2 Emissions	
Electric	1,649.1 tons
Onsite Fuel	630.9 tons
Large SUV Equivalent	207.3 SUVs / Year
Annual Energy	
Energy Use Intensity (EUI)	61 kBtu / ft² / year
Electric	2,085,607 kWh
Fuel	108,778 Therms
Annual Peak Demand	908.8 kW
Lifecycle Energy	
Electric	62,568,210 kW
Fuel	3,263,331 Therms
Assumptions	

sustainable design includes the relation of these Four factors

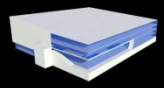


performance



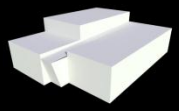
_. passive solar design
_.double skin facade
_.green roof
_.geothermal system
_.rainwater harvesting
_.photovoltaics
_.triple-pane glass
_.structural insulated panel

aesthetics



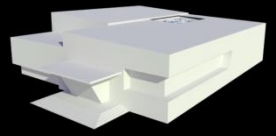
_.indoor/ outdoor space
_.interactive atrium
_.24/7 study lounge
_.interactive green roof
_.dynamic spaces

economics

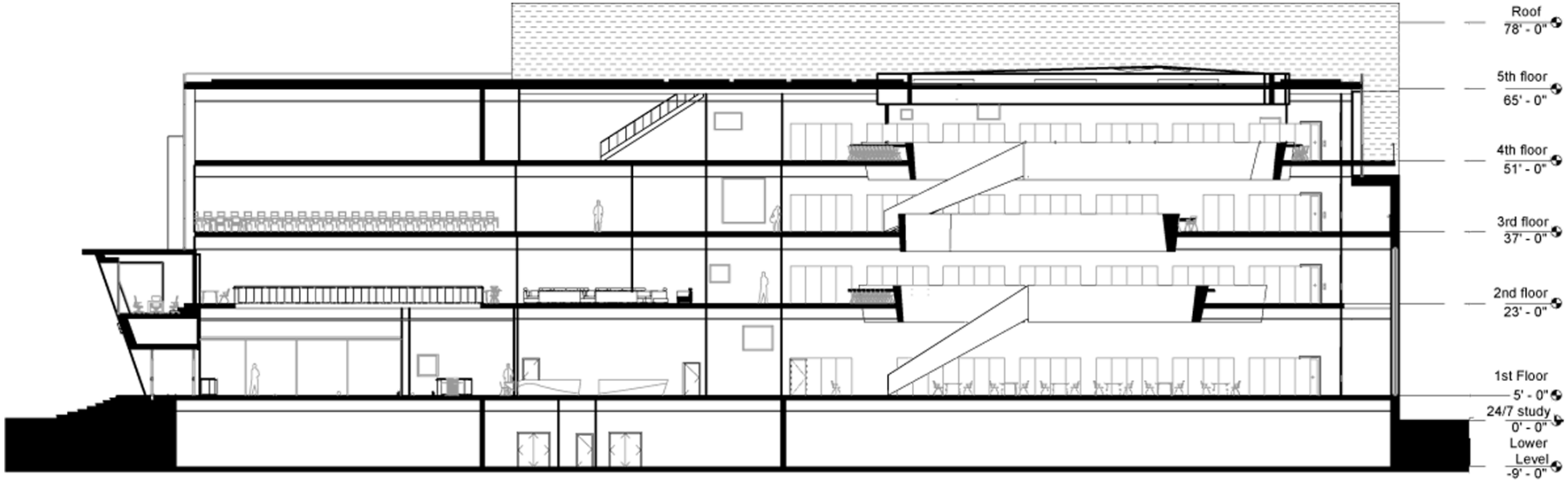


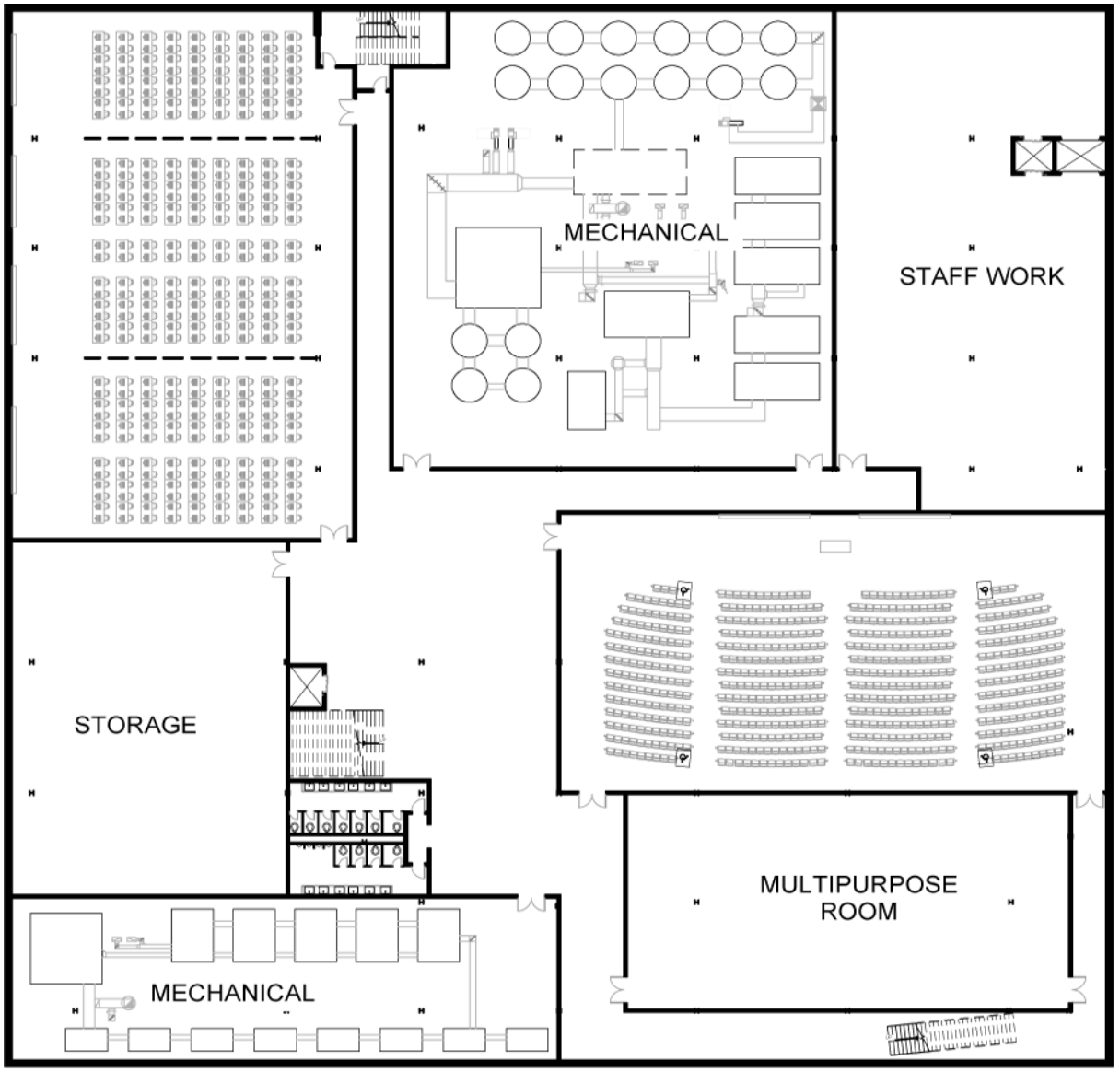
_.flexible space
_.basic form
_.steel columns and beams
_.precast hollow core floors
_.structural insulated panel

culture

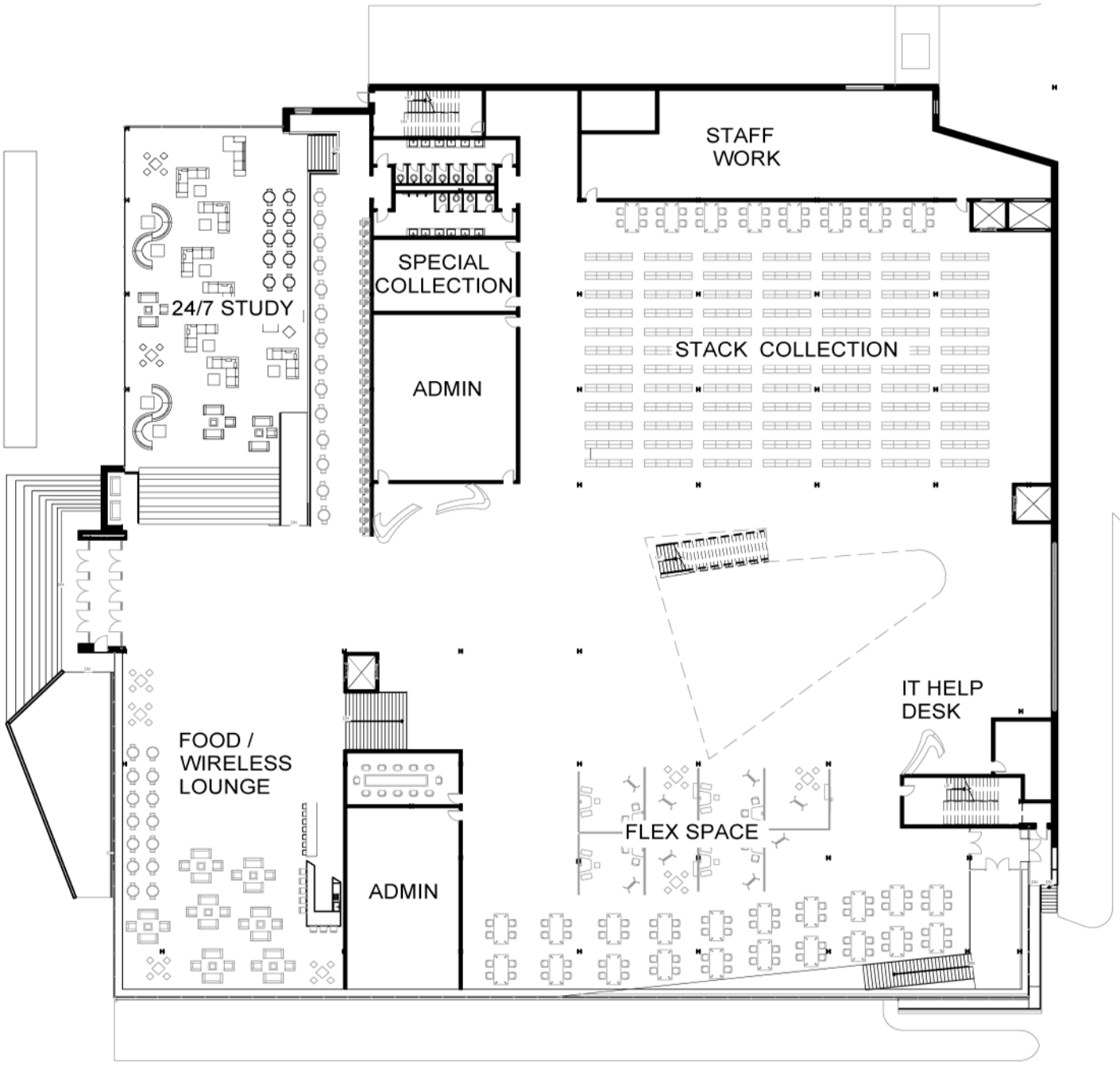


_.local material
_.green spaces
_.linear landscaping
_.warm colors

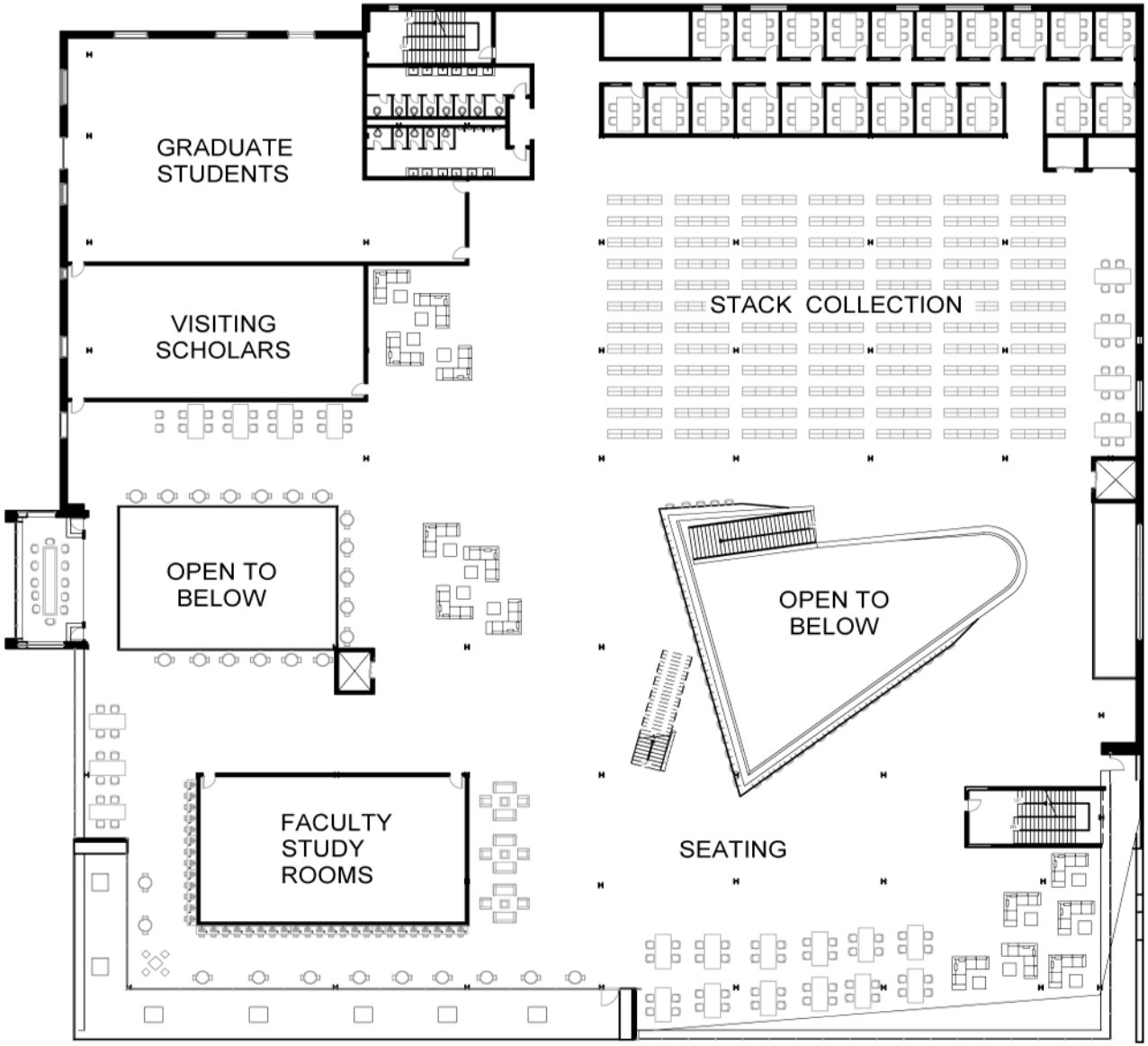

Roof
78' - 0"
5th floor
65' - 0"
4th floor
51' - 0"
3rd floor
37' - 0"
2nd floor
23' - 0"
1st Floor
5' - 0"
24/7 study
0' - 0"
Lower Level
-9' - 0"


MECHANICAL
STAFF WORK
STORAGE
MULTIPURPOSE ROOM
MECHANICAL

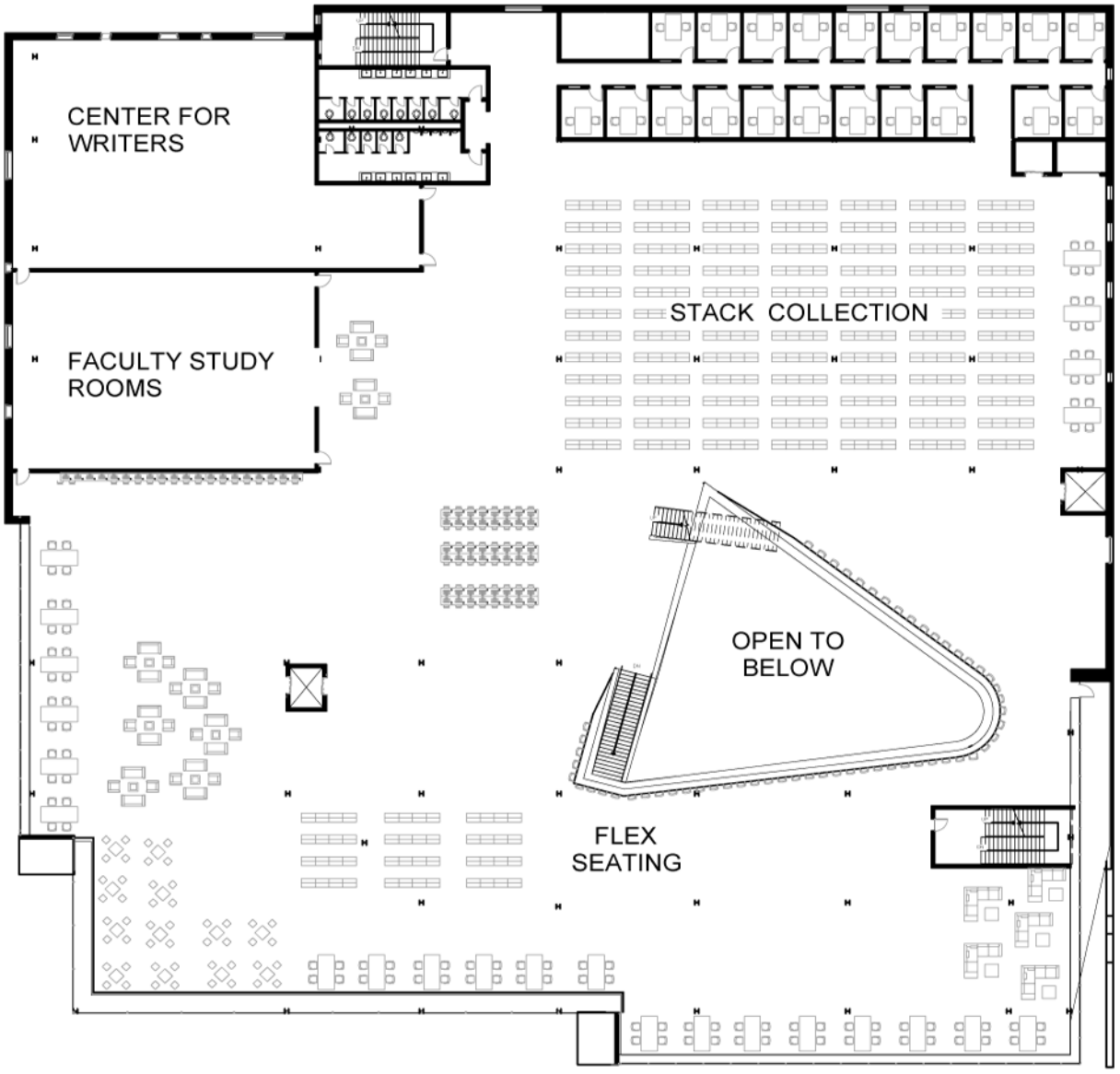
LOWER LEVEL


STAFF
WORK
SPECIAL
COLLECTION
24/7 STUDY
ADMIN
STACK COLLECTION
IT HELP
DESK
FOOD /
WIRELESS
LOUNGE
FLEX SPACE
ADMIN

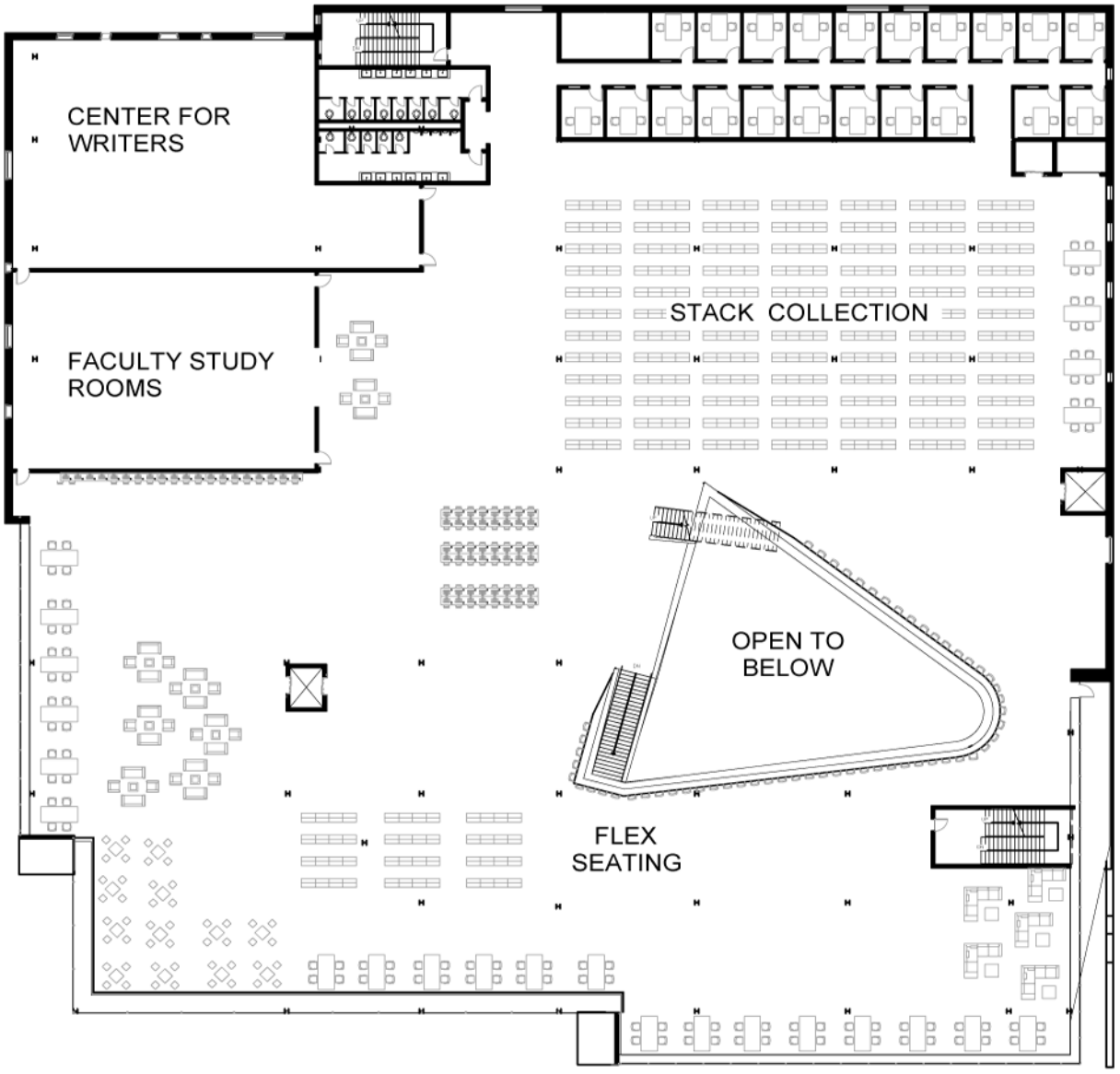
LEVEL 1


GRADUATE STUDENTS
VISITING SCHOLARS
STACK COLLECTION
OPEN TO BELOW
OPEN TO BELOW
FACULTY STUDY ROOMS
SEATING

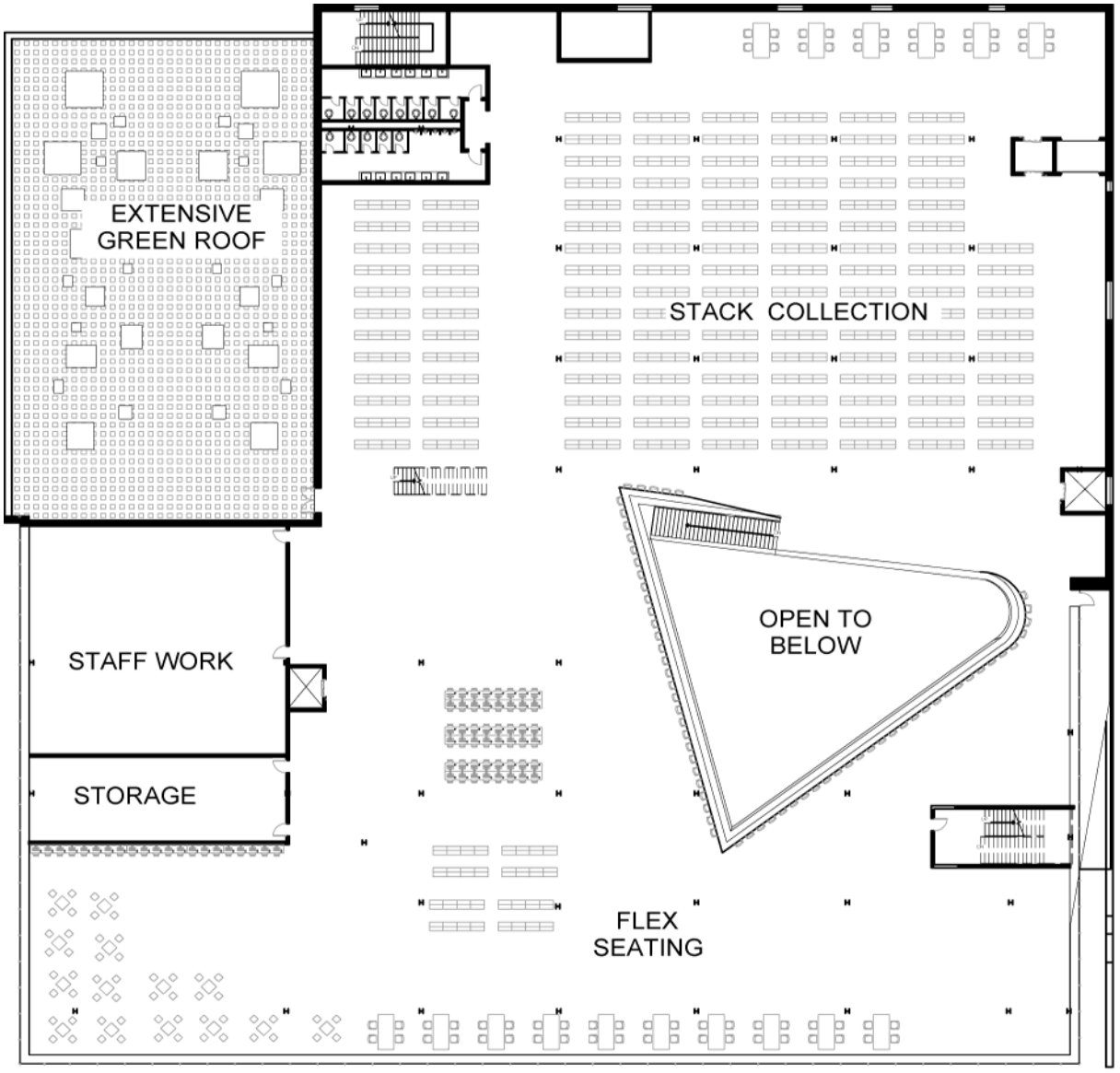
LEVEL 2


CENTER FOR
WRITERS
FACULTY STUDY
ROOMS
STACK COLLECTION
OPEN TO
BELOW
FLEX
SEATING

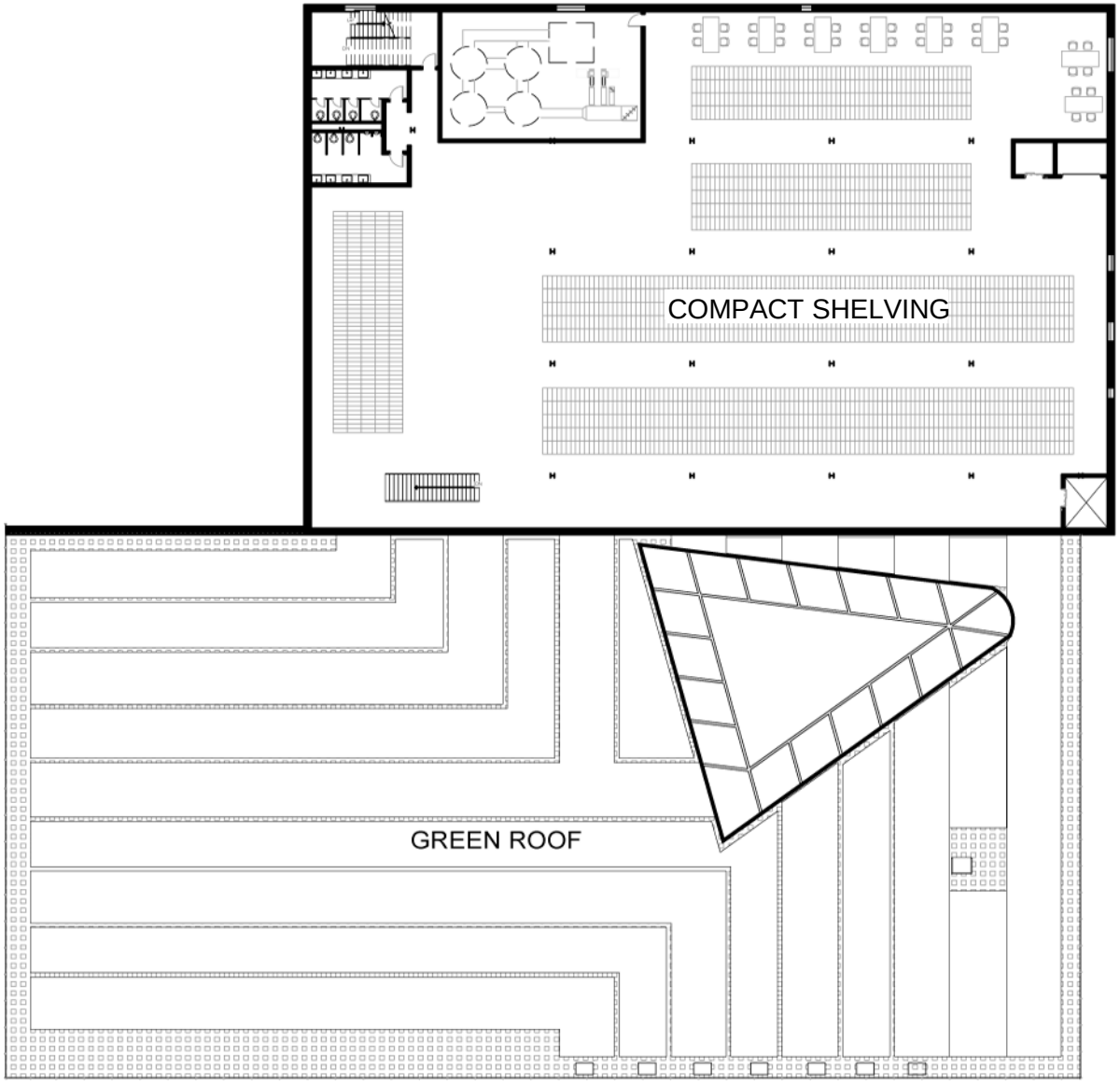
LEVEL 3


CENTER FOR
WRITERS
FACULTY STUDY
ROOMS
STACK COLLECTION
OPEN TO
BELOW
FLEX
SEATING

LEVEL 3


EXTENSIVE
GREEN ROOF
STACK COLLECTION
OPEN TO
BELOW
STAFF WORK
STORAGE
FLEX
SEATING

LEVEL 4



LEVEL 5