



# UO Lewis Integrative Science Building

# Agenda

- Introductions
- Status update – CPC approval and SD report
- Overview of Design Development process
- Schedule update
- South elevation developments
- Entry and up and over developments
- Lighting Lab Study / Design Update
  - Atrium
  - Stair
  - Openings

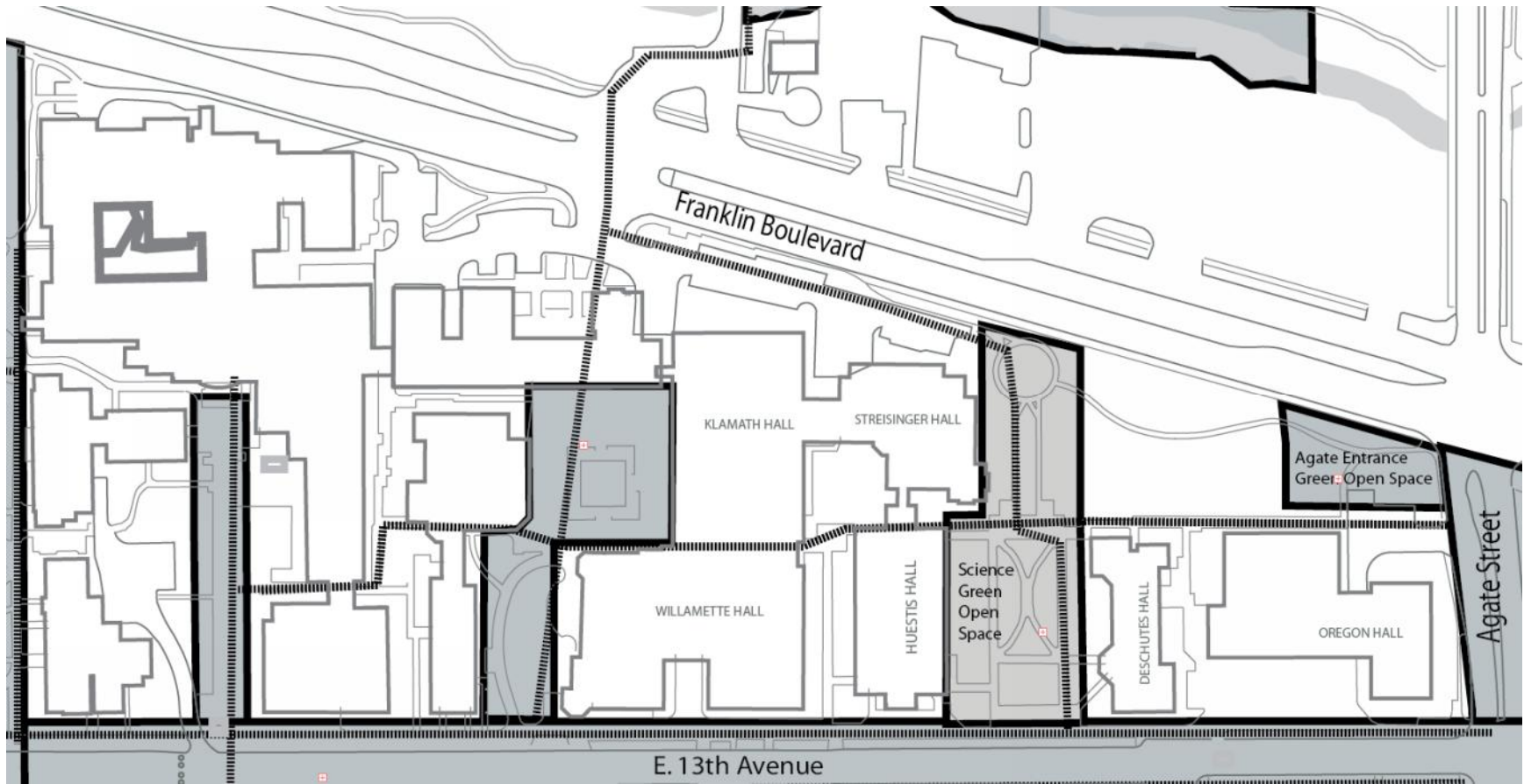
Design Status

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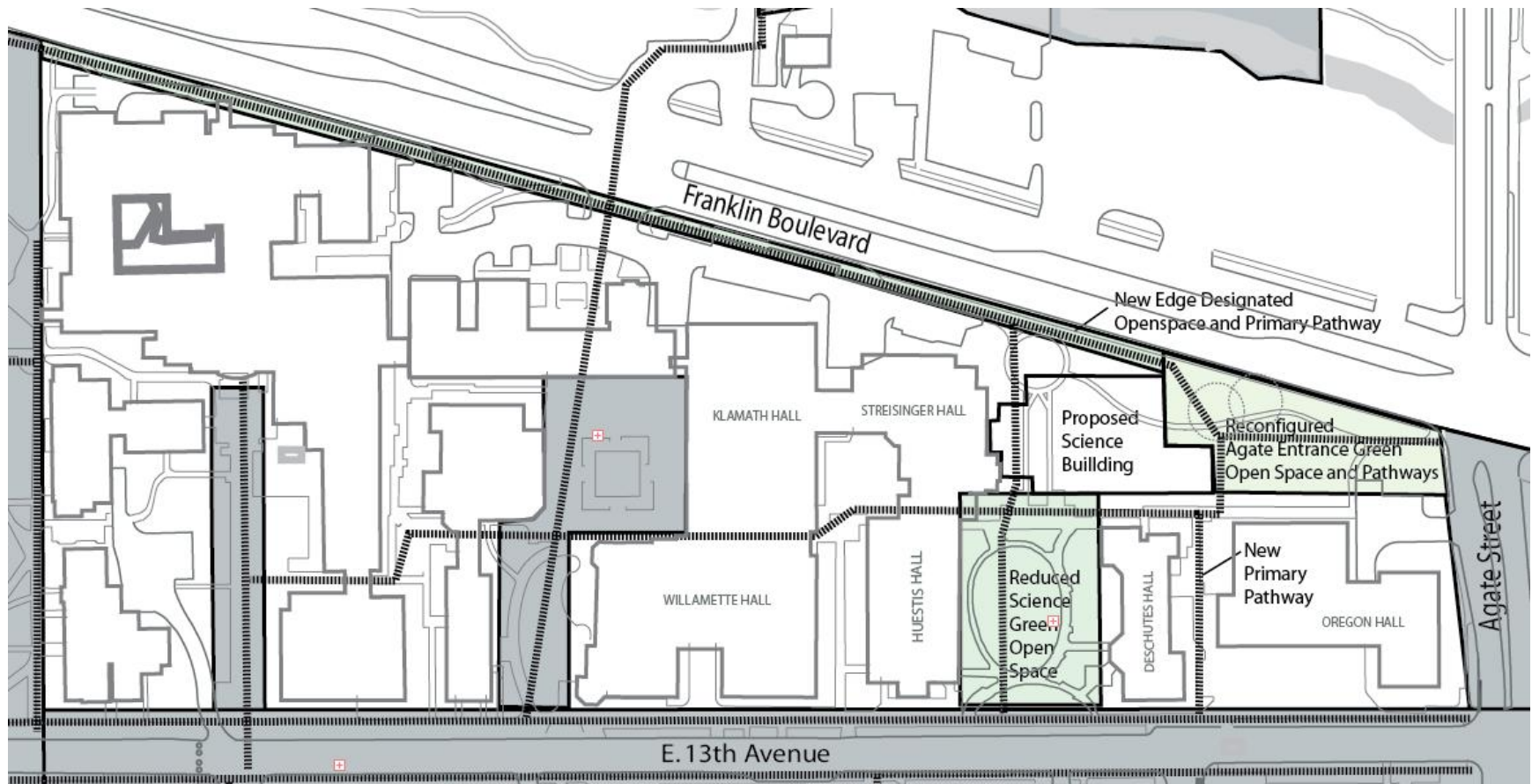
Site Development







Campus Plan Amendment



Campus Plan Amendment







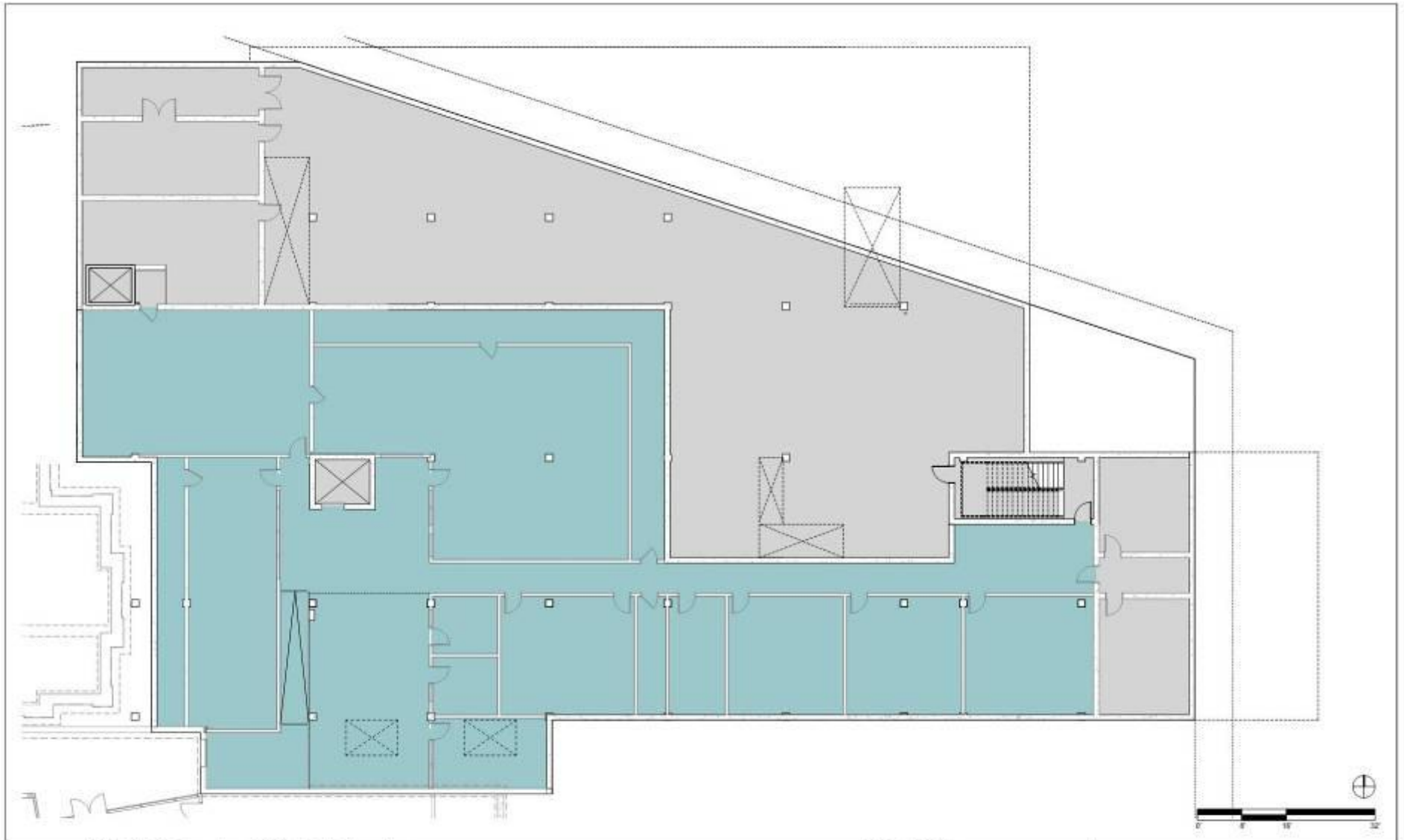
**Proposed Site Design**  
**Including trees to be removed**



Design Status

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Plan Development



**HDR Architecture, Inc. / THA Architecture, Inc.**

HDR | 1001 SW 5th Avenue | Suite 1900 | Portland, Oregon 97204 | 503.423.3800  
THA | 733 SW Oak Street | Suite 100 | Portland, Oregon 97205 | 503.227.1254

**UO LISB**

Lewis Integrative Science Building

Preliminary Schematic Design  
Revised 10-08-2009

**A -100**

LEVEL 0 - BASEMENT PLAN

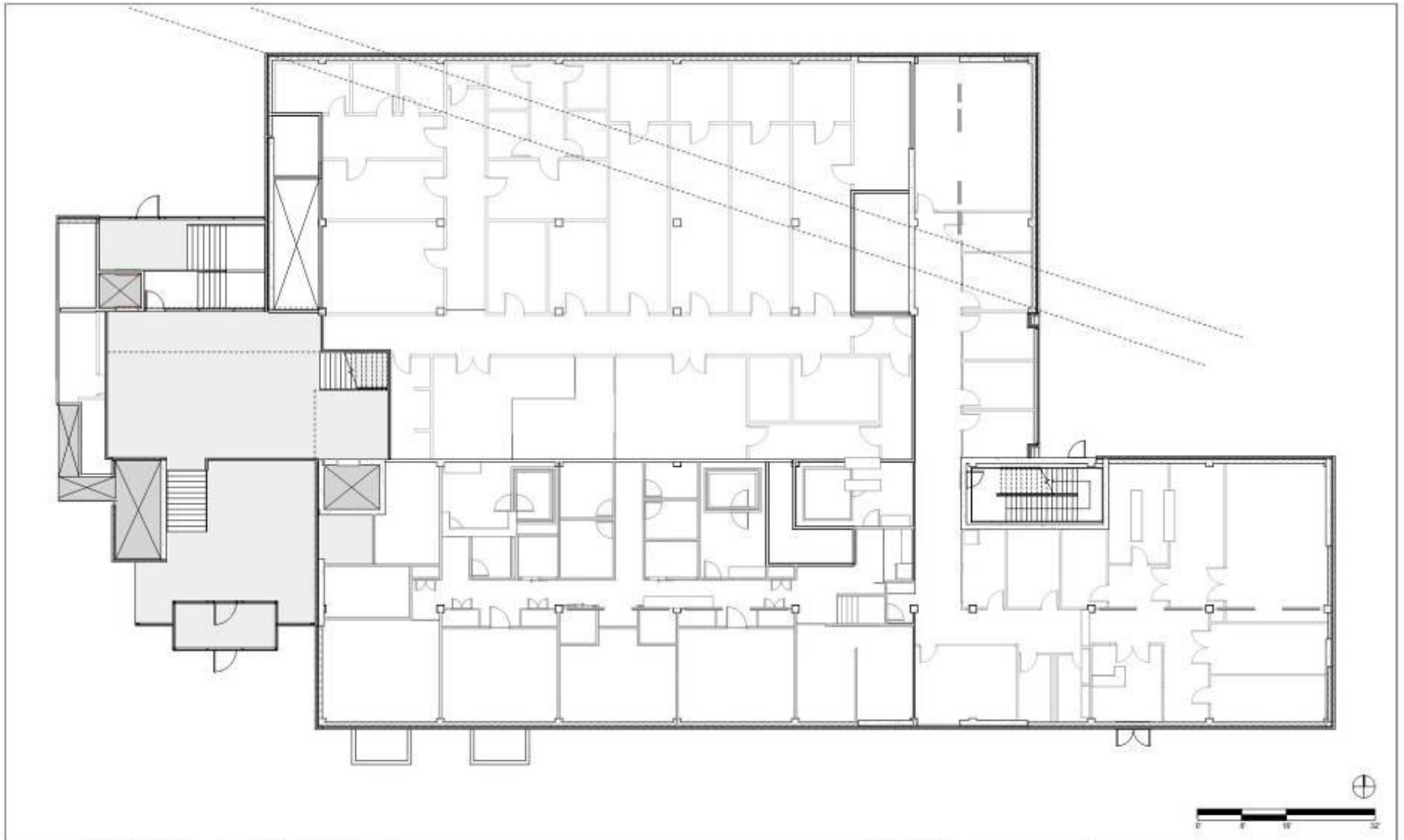


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Lewis Integrative Science Building  
Preliminary Schematic Design  
Revised 10-08-2009

**A -101**  
LEVEL 1 - FIRST FLOOR PLAN





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**UO LISB**

Lewis Integrative Science Building

Preliminary Schematic Design  
Revised 10-08-2009

**A -101.5**  
LEVEL 1.5 - MID LEVEL PLAN



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THA | 733 SW Oak Street | Suite 100 | Portland, Oregon 97205 | 503.227.1254

**UO LISB**

Lewis Integrative Science Building

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Revised 10-08-2009

**A -102**  
LEVEL 2 - SECOND FLOOR PLAN

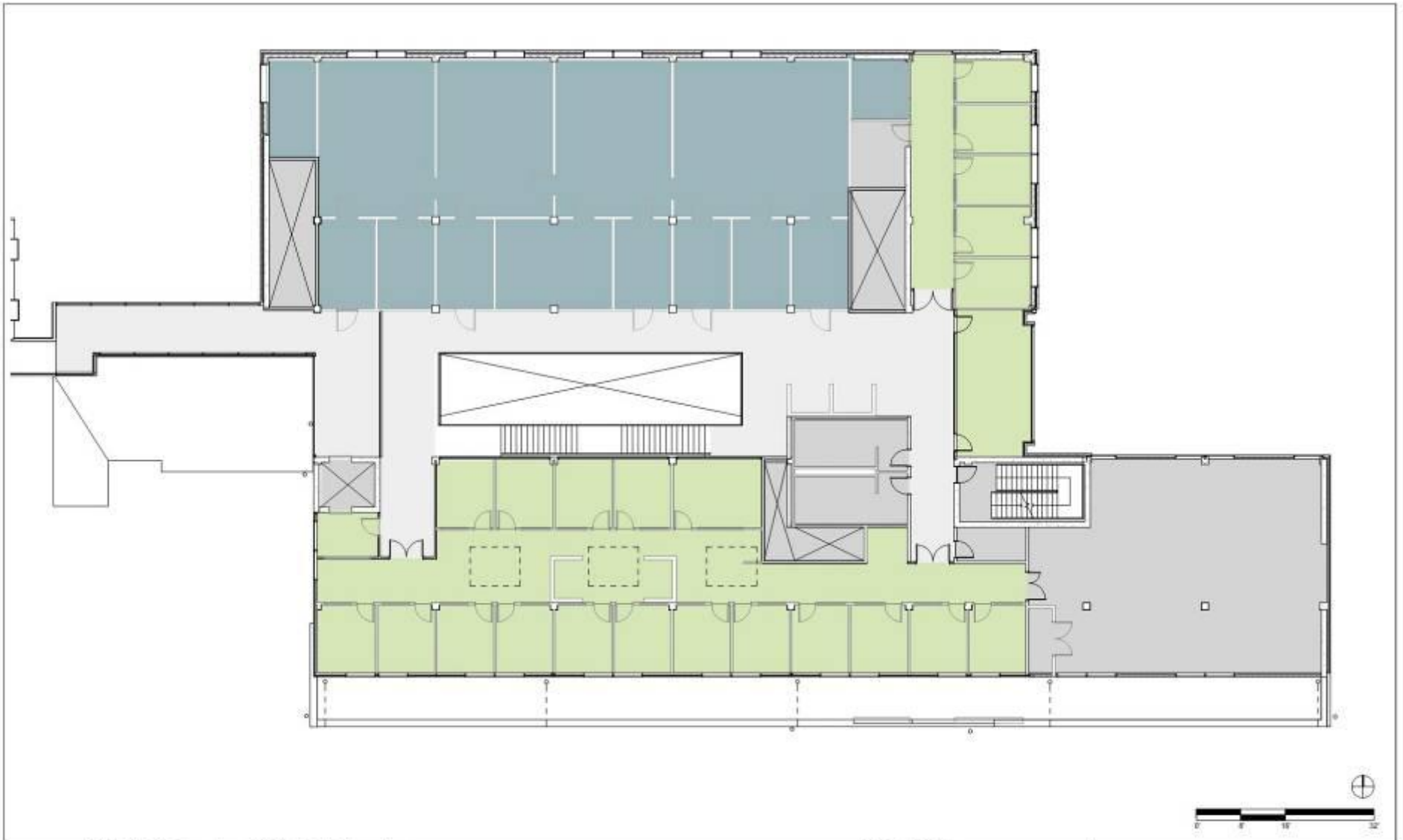


**HDR Architecture, Inc. / THA Architecture, Inc.**  
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**UO LISB**  
Lewis Integrative Science Building  
Preliminary Schematic Design  
Revised 10-08-2009

**A -103**  
LEVEL 3 - THIRD FLOOR PLAN

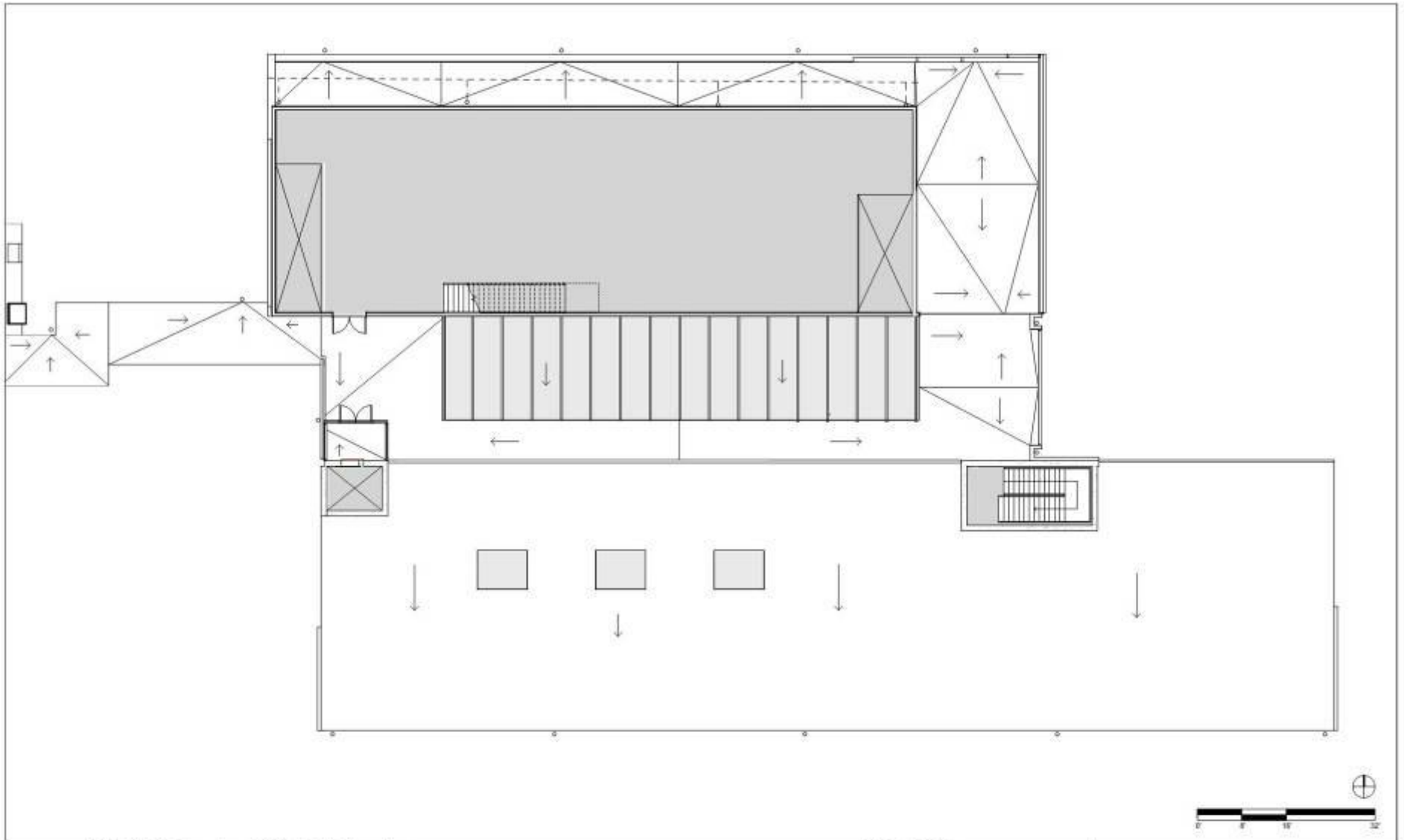




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HDR | 1001 SW 5th Avenue | Suite 1900 | Portland, Oregon 97204 | 503.423.3800  
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**UO LISB**  
Lewis Integrative Science Building  
Preliminary Schematic Design  
Revised 10-08-2009

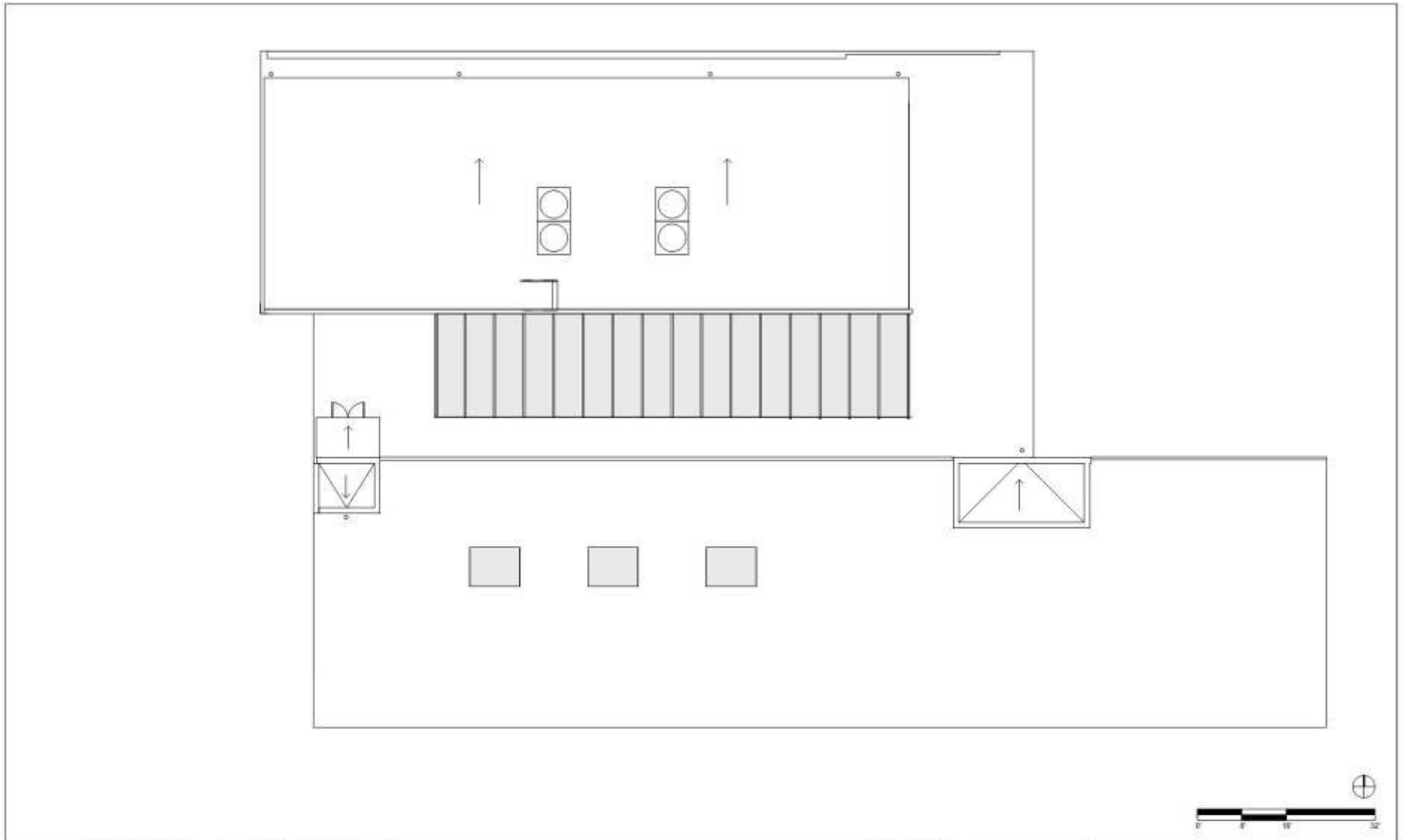
**A -104**  
LEVEL 4 - FOURTH FLOOR PLAN



**HDR Architecture, Inc. / THA Architecture, Inc.**  
 HDR | 1001 SW 5th Avenue | Suite 1900 | Portland, Oregon 97204 | 503.423.3800  
 THA | 733 SW Oak Street | Suite 100 | Portland, Oregon 97205 | 503.227.1254

**UO LISB**  
 Lewis Integrative Science Building  
 Preliminary Schematic Design  
 Revised 10-08-2009

**A -105**  
 LEVEL 5 - MECH. PENTHOUSE PLAN



**HDR Architecture, Inc. / THA Architecture, Inc.**  
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 THA | 733 SW Oak Street | Suite 100 | Portland, Oregon 97205 | 503.227.1254

**UO LISB**  
 Lewis Integrative Science Building  
 Preliminary Schematic Design  
 Revised 10-08-2009

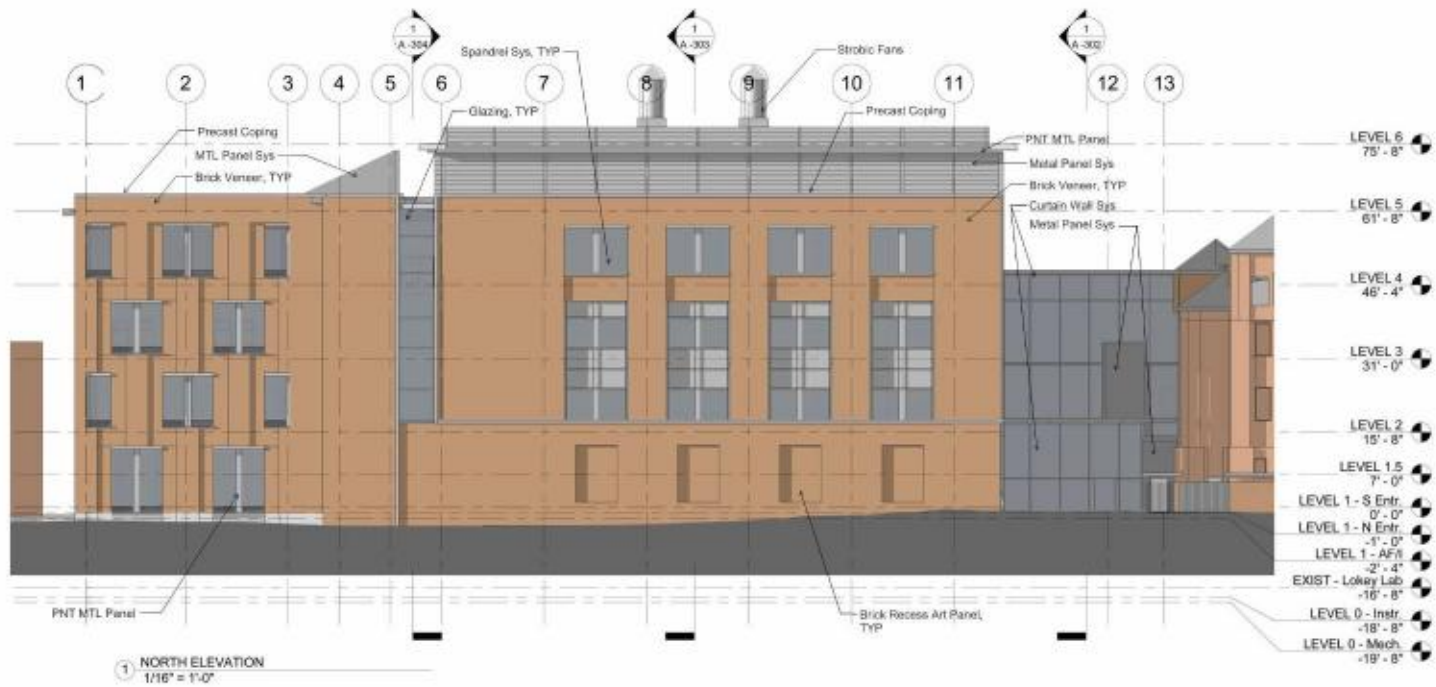
**A -106**  
 LEVEL 6 - ROOF PLAN

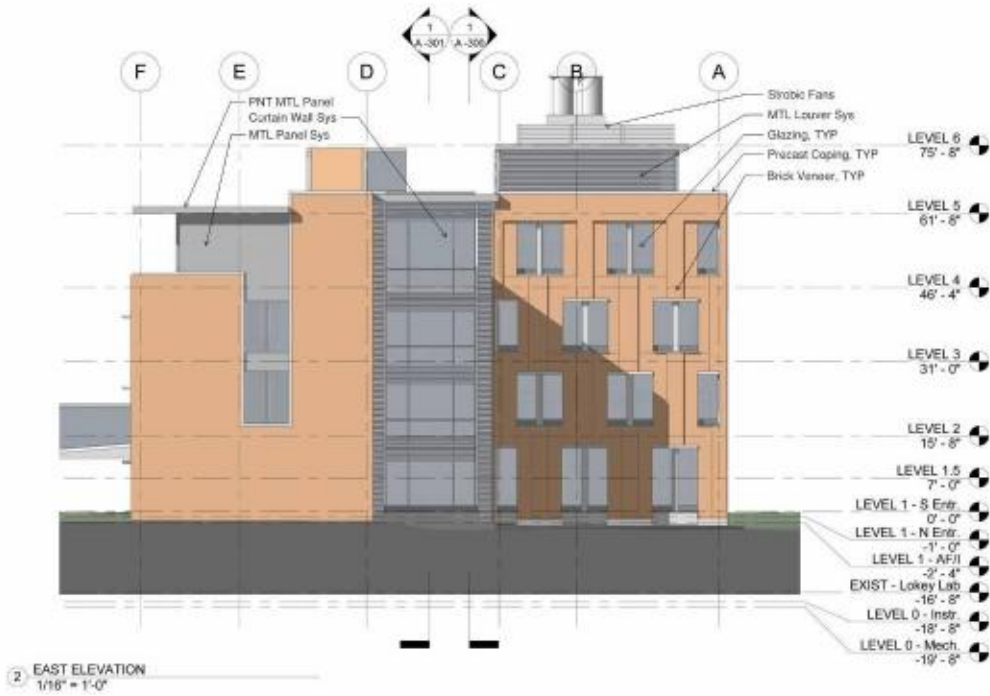
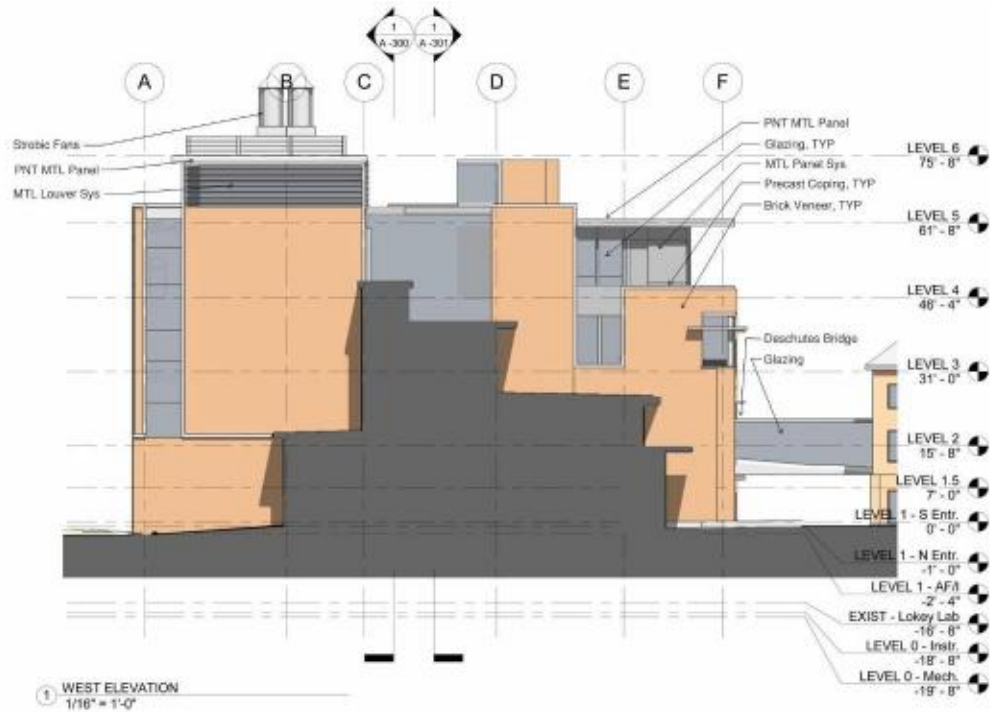


Design Status

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Building Development





Elevations





Proposed Building Design  
View from Science Green



Proposed Building Design  
View from Science Green



Proposed Building Design  
cut-away view at Up-and-Over connection





Proposed Building Design  
cut-away view at Up-and-Over connection

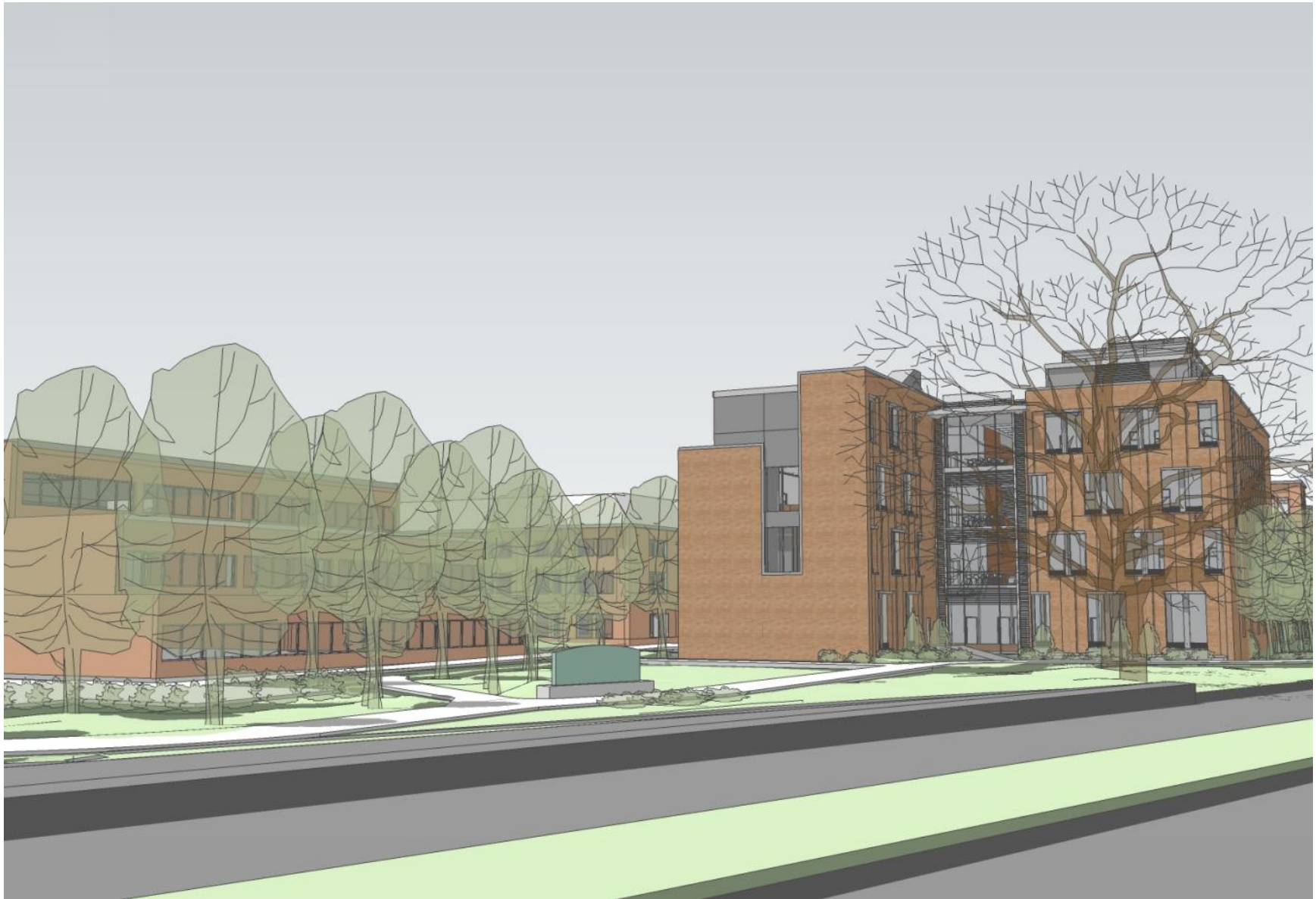




Proposed Building Design  
cut-away view at Up-and-Over connection



Proposed Building Design  
View from North – Franklin Blvd



Proposed Building Design  
View from North – Franklin Blvd





Proposed Building Design  
View from North – Franklin Blvd





Proposed Building Design

View from Franklin



Proposed Building Design

View from 13<sup>th</sup>



Proposed Building Design  
View from Science Green







## SCHEMATIC DESIGN BUDGET OPTIONS LOG

DATE: 7-Oct-09

Project: U of O - Lewis Integrative Science Bldg.  
 Architect: HDR / THA

### BUDGET OPTIONS SUMMARY

ACCEPTED	(\$4,327,639)
POTENTIAL:	(\$2,756,120)
REJECTED:	(\$3,781,022)

#	Summary System	DD ESTIMATE	ACCEPTED CHANGES	REVISED TOTAL
02	Demolition	\$198,004	\$0	\$198,004
03	Sitework	\$3,928,696	(\$295,249)	\$3,633,447
04	Structure	\$6,881,409	\$0	\$6,881,409
05	Exterior Wall	\$4,919,880	(\$431,181)	\$4,488,699
06	Roofing	\$874,944	(\$130,748)	\$744,196
07	Interior Construction	\$5,638,085	(\$567,415)	\$5,070,670
08	Vert. Transportation	\$413,518	\$0	\$413,518
09	HVAC	\$5,807,651	\$0	\$5,807,651
10	Plumbing	\$2,477,188	(\$100,000)	\$2,377,188
11	Fire Sprinklers	\$323,453	\$0	\$323,453
12	Electrical	\$4,314,818	(\$109,500)	\$4,205,318
14	Laboratory / Equipment	\$3,556,528	(\$346,000)	\$3,210,528
15	General		(\$1,412,212)	(\$1,412,212)
	<b>Sub Total</b>	<b>\$39,334,174</b>	<b>(\$3,392,305)</b>	<b>\$35,941,869</b>
	General Conditions	\$2,339,212	\$0	\$2,339,212
	PL/PD Insurance	\$0	\$0	\$0
	Performance Bond	0.75% \$384,627	(\$37,278)	\$347,349
	Builder's Risk	0.38% \$194,878	(\$18,888)	\$175,990
	Contractors Contingency	2.5% \$1,282,091	(\$86,212)	\$1,195,879
	Fee	2.17% \$944,709	(\$76,703)	\$868,006
	<b>Subtotal</b>	<b>\$44,479,691</b>	<b>(\$3,611,386)</b>	<b>\$40,868,305</b>
	Design & Estimating Contingency	10.0% \$5,337,563	(\$1,250,732)	\$4,086,831
	Escalation	3.0% \$1,334,391	(\$108,342)	\$1,226,049
	Preconstruction	\$132,000	\$0	\$132,000
	<b>Budget Total</b>	<b>\$51,283,645</b>	<b>(\$4,970,460)</b>	<b>\$46,313,185</b>



# Schedule

- Campus Planning Approval – October 21
- Schematic Design Complete
- Design Schedule
  - DD Oct 09 – Feb 10
  - CD March 10 – Sept 10
  - Permitting & Bidding
  - Phased Bid Packages
- Construction Start Target
  - Late summer 2010

Design Status

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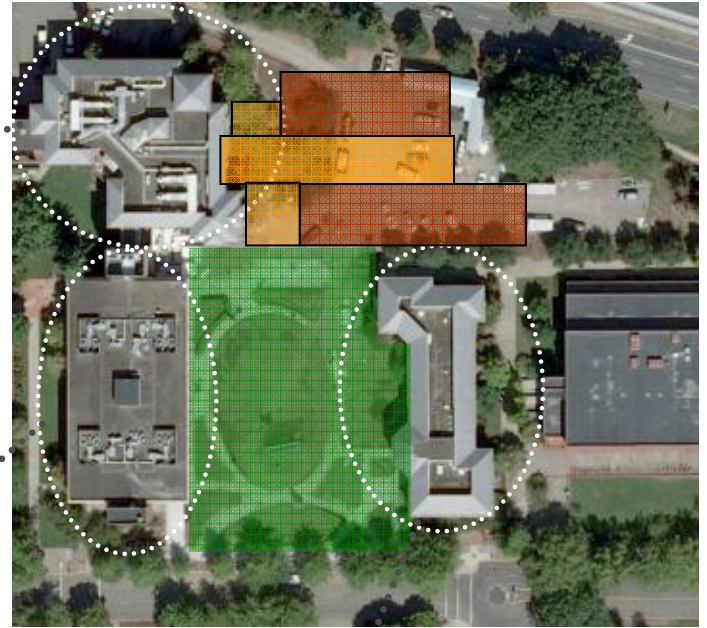
Design Update

Design Update: **South Elevation**

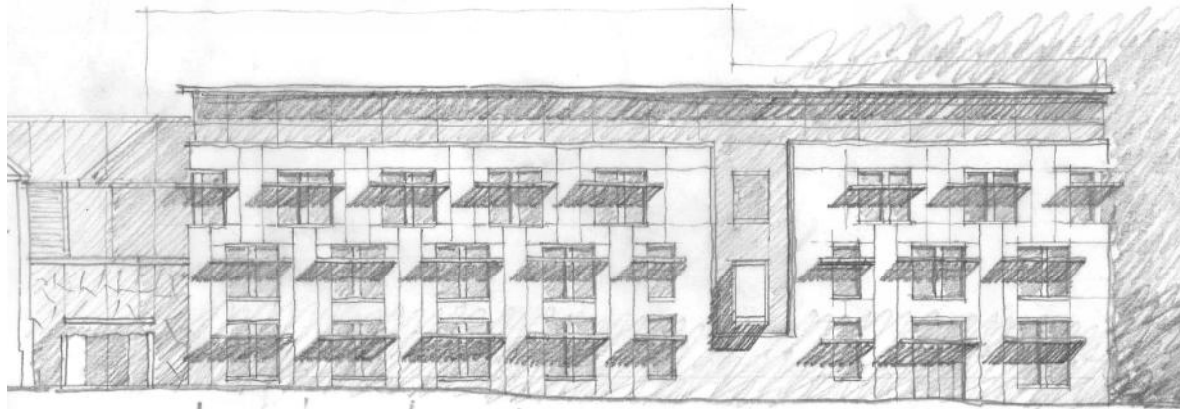
# South Elevation



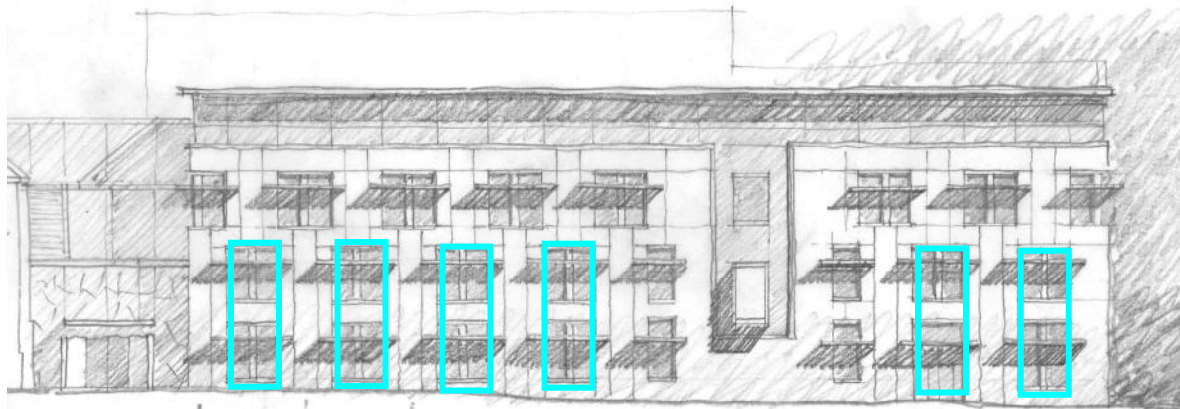
# Exterior Elevations: Context





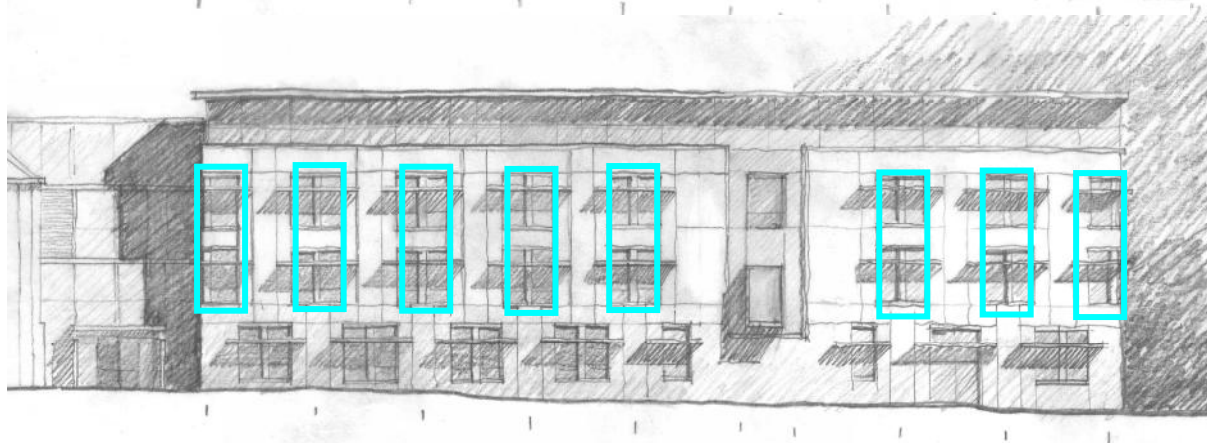
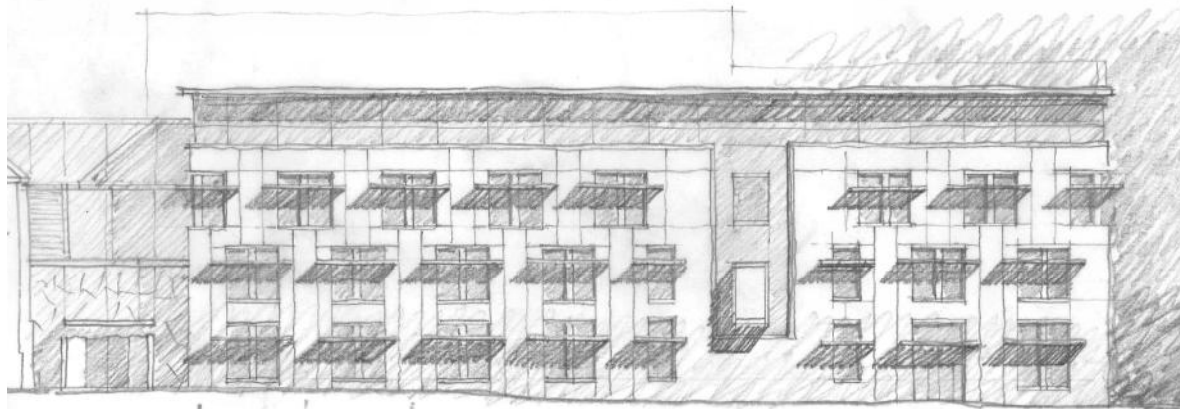


South Elevation Studies

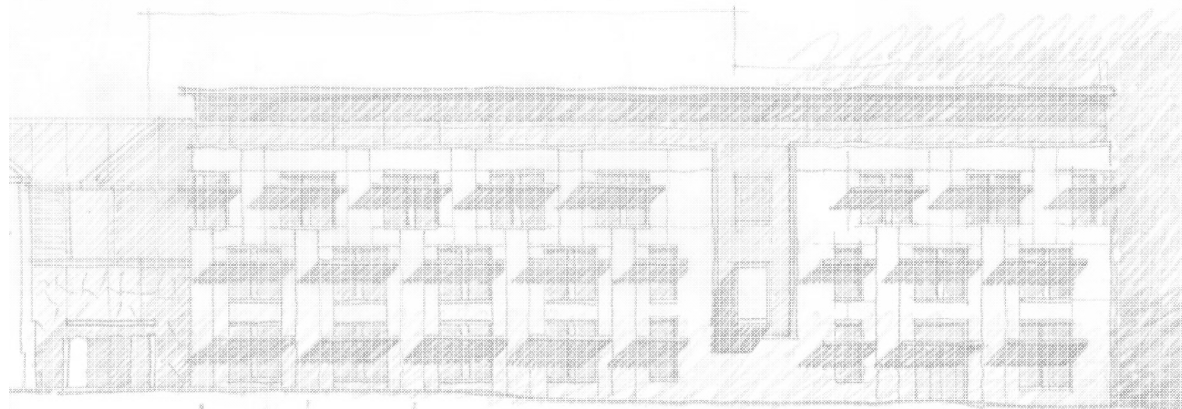


South Elevation Studies



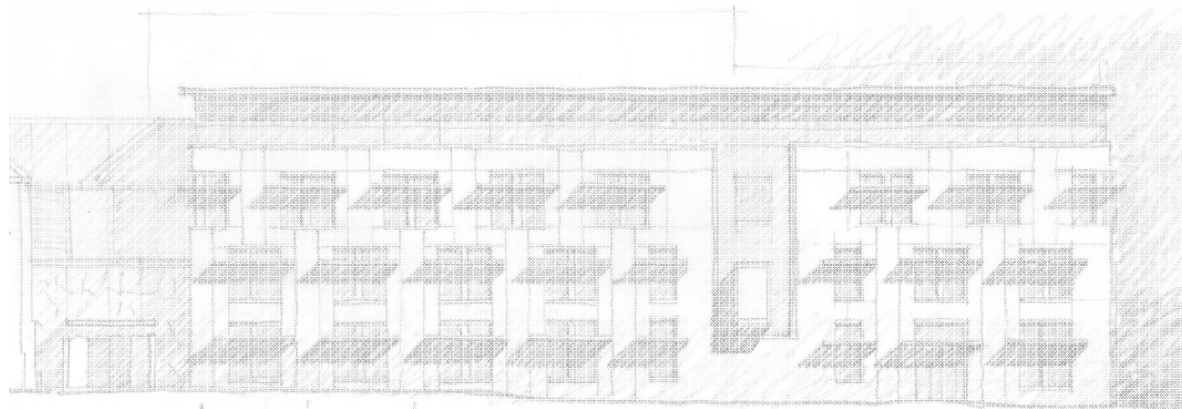


South Elevation Studies



South Elevation Studies





South Elevation Studies

Design Update: Up & Over











Design Update:  
Atrium Lighting Lab Study

# Lighting Lab Study: Questions Posed

- What is the optimal **skylight placement and size** to “daylight” the atrium?
  - Impact on vertical distribution of daylight
  - Impact on 4<sup>th</sup> flr offices, conf room, public spaces
- Which **stair configuration** optimizes daylight vertically in the atrium?
  - Four configurations tested.
- How does light **animate the atrium** at different times of the year?

# Assumptions

## Skylight

- VT Horizontal Glazing: 70%
- Horizontal Maintenance correction: 70%
- Framing Correction: 85%

## East Window

- VT Vertical Glazing: 50%
- Vertical Maintenance correction: 90%

## Material Reflectance

- Painted walls atrium north (white): 80%
- Wood wall atrium south: 30%

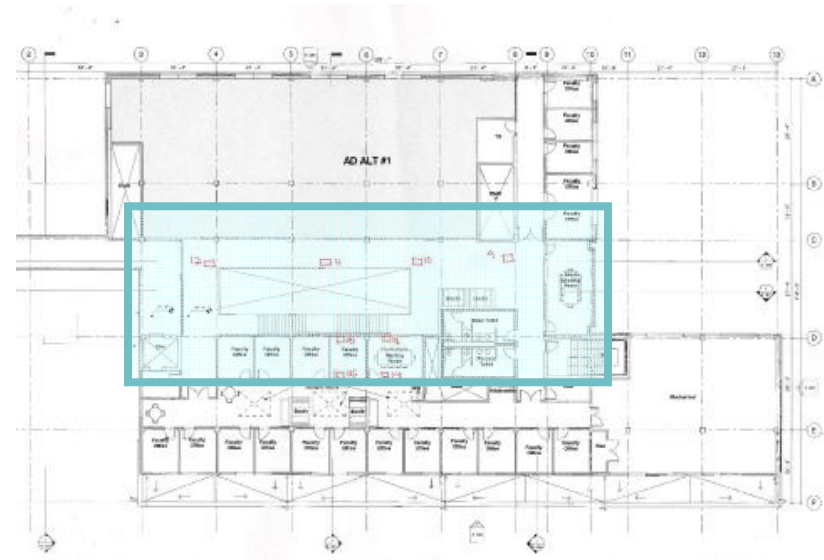


# Artificial Sky: Simulates a high overcast sky



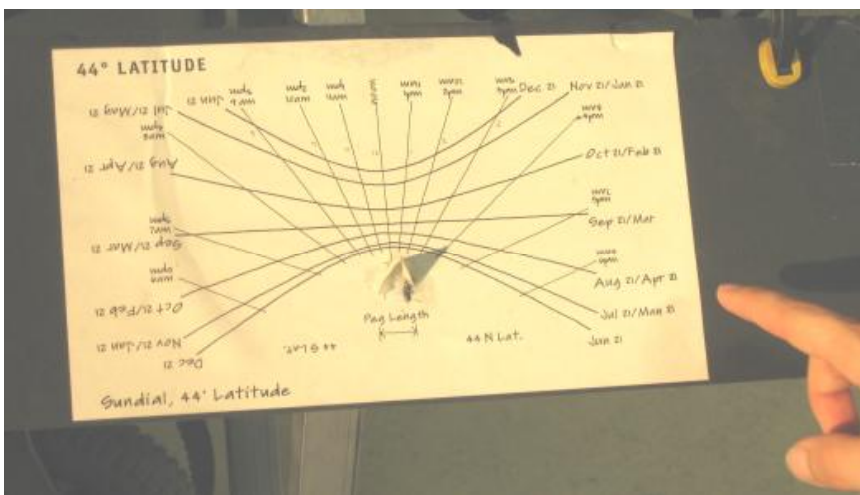
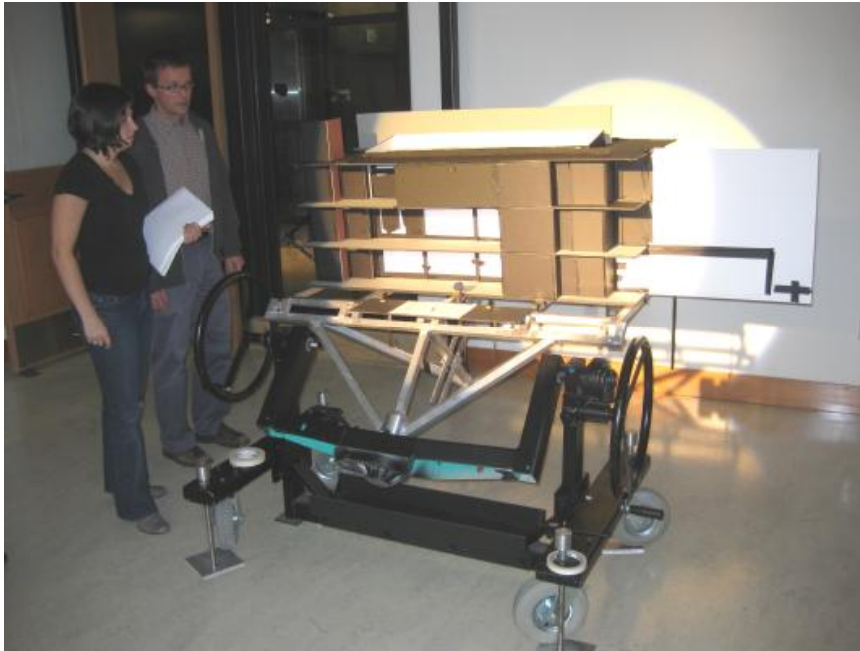
# Artificial Sky:

Sensor locations and extent of model





# Heliodon: Simulates direct sunlight by time of day and season

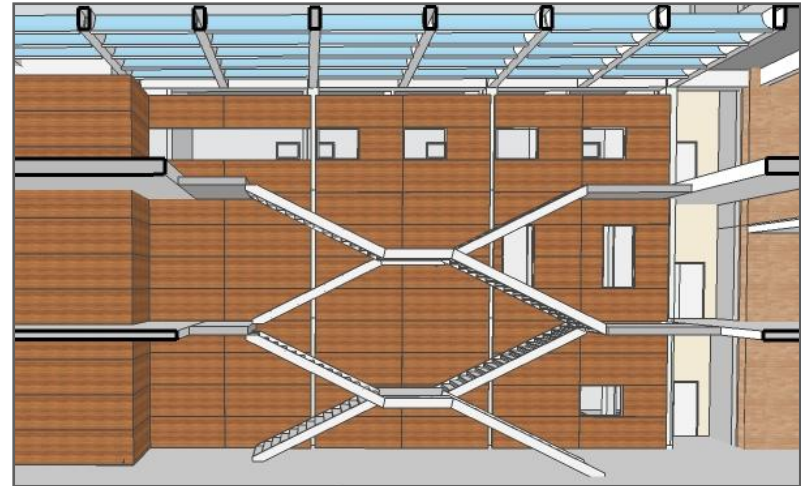


# Stair Options Tested:

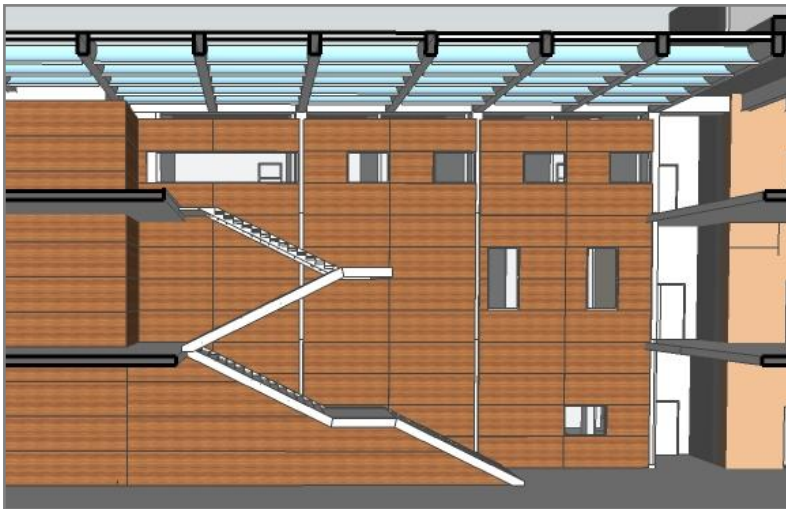
Variations in position and configuration



Stacked Stair (SD Stair)



Scissor Stair



Straight then Switchback Stair



Switchback Stair



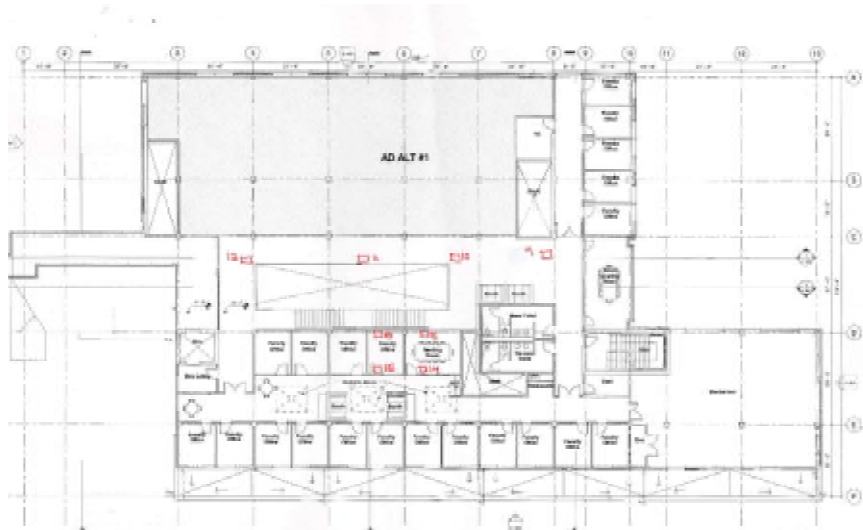
# Artificial Sky: Daylight sensor locations



2 FLR



3 FLR



4 FLR



Skylight Aligned w/  
South Side of Atrium

10.20.09\_Artificial Sky Testing

**Combined Corrected Daylight Factors (Horizontal + Vertical Glazing Contributions)**

Stair Configuration	2	2	2	2	1	1	3	3	4	4	
Skylight Configuration	A	B	C	D	C	D	A	B	A	B	
Run #											
Sensor #	CC1	CC2	CC3	CC4	CC5	CC6	CC7	CC8	CC9	CC10	CC11
* 1	n/a	0.44	0.43	0.42	0.41	0.42	0.43	0.43	0.44	0.48	0.48
2	n/a	0.97	1.10	0.69	0.60	0.74	0.73	1.25	1.27	1.33	1.32
3	n/a	2.41	2.51	1.38	1.01	1.48	1.29	2.74	2.44	2.61	2.31
4	n/a	1.33	1.23	0.52	0.40	0.60	0.55	1.36	1.27	1.00	0.92
5	n/a	2.71	2.30	2.64	1.84	2.50	2.30	4.05	3.78	4.91	4.31
6	n/a	1.85	2.05	1.58	1.50	1.56	1.61	1.92	1.92	2.00	1.94
7	n/a	4.39	4.56	3.70	3.19	3.75	3.47	4.51	4.09	4.64	4.15
8	n/a	1.89	2.12	1.47	1.37	1.54	1.54	1.93	1.88	1.88	1.84
* 9	n/a	4.67	0.59	8.68	0.65	9.57	0.66	4.72	0.57	5.06	0.57
10	n/a	6.11	2.76	11.15	4.80	11.76	4.38	5.98	2.42	6.46	2.47
11	n/a	6.05	6.35	11.48	13.28	11.82	11.92	5.92	5.71	6.60	6.20
12	n/a	2.92	3.10	4.53	5.43	4.62	4.96	2.98	2.97	3.38	3.28
13	n/a	3.72	2.33	0.57	0.31	0.52	0.33	3.52	2.46	4.61	3.38
14	n/a	0.41	0.33	0.20	0.13	0.22	0.12	0.29	0.17	0.35	0.25
15	n/a	2.09	1.69	0.26	0.17	0.26	0.20	1.87	1.69	2.46	2.37
16	n/a	0.30	0.29	0.14	0.12	0.15	0.12	0.24	0.20	0.29	0.28
17	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Sensor Location Description

- Flr 2, East Side, Inline with circ., Centered between Atrium opening and East window wall.
- Flr 2, Inline with circ., NE corner of atrium opening.
- Flr 2, Inline with circ., Center of atrium opening.
- Flr 2, Inline with circ., NW corner of atrium opening.
- Flr 2, Center of atrium opening.
- Flr 3, Inline with circ., NE corner of atrium opening.
- Flr 3, Inline with circ., Center of atrium opening.
- Flr 3, Inline with circ., NW corner of atrium opening.
- Flr 4, East Side, Inline with circ., Centered between Atrium opening and East window wall.
- Flr 4, Inline with circ., NE corner of atrium opening.
- Flr 4, Inline with circ., Center of atrium opening.
- Flr 4, Inline with circ., NW corner of atrium opening.
- Flr 4, Conference Rm, Centered between partition walls, At Atrium wall.
- Flr 4, Conference Rm, Centered between partition walls, At Corridor wall.
- Flr 4, Small Office, Centered between partition walls, At Atrium wall.
- Flr 4, Small Office, Centered between partition walls, At Corridor wall.
- Exterior Sensor

**Atrium Circulation Comparison, Flrs 2,3,4.**

Sensor #	2A	2B	2C	2D	1C	1D	3A	3B	4A	4B	
10	n/a	6.11	2.76	11.15	4.80	11.76	4.38	5.98	2.42	6.46	2.47
11	n/a	6.05	6.35	11.48	13.28	11.82	11.92	5.92	5.71	6.60	6.20
12	n/a	2.92	3.10	4.53	5.43	4.62	4.96	2.98	2.97	3.38	3.28
6	n/a	1.85	2.05	1.58	1.50	1.56	1.61	1.92	1.92	2.00	1.94
7	n/a	4.39	4.56	3.70	3.19	3.75	3.47	4.51	4.09	4.64	4.15
8	n/a	1.89	2.12	1.47	1.37	1.54	1.54	1.93	1.88	1.88	1.84
2	n/a	0.97	1.10	0.69	0.60	0.74	0.73	1.25	1.27	1.33	1.32
3	n/a	2.41	2.51	1.38	1.01	1.48	1.29	2.74	2.44	2.61	2.31
4	n/a	1.33	1.23	0.52	0.40	0.60	0.55	1.36	1.27	1.00	0.92

**Center of Atrium Comparison, Flr 2.**

Sensor #	2A	2B	2C	2D	1C	1D	3A	3B	4A	4B	
5	n/a	2.71	2.30	2.64	1.84	2.50	2.30	4.05	3.78	4.91	4.31

**Conference and Office Comparison, Flr 4.**

Sensor #	2A	2B	2C	2D	1C	1D	3A	3B	4A	4B	
13	n/a	3.72	2.33	0.57	0.31	0.52	0.33	3.52	2.46	4.61	3.38
14	n/a	0.41	0.33	0.20	0.13	0.22	0.12	0.29	0.17	0.35	0.25
15	n/a	2.09	1.69	0.26	0.17	0.26	0.20	1.87	1.69	2.46	2.37
16	n/a	0.30	0.29	0.14	0.12	0.15	0.12	0.24	0.20	0.29	0.28



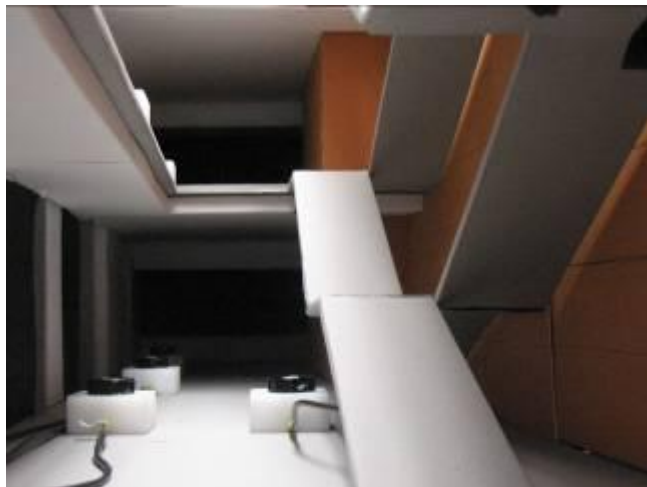
**Assumptions**  
 VT Horizontal Glazing: 70%  
 VT Vertical Glazing: 50%  
 Framing Correction: 85%  
 Horizontal Maintenance Correction: 70%  
 Vertical Maintenance Correction: 90%

"A" = SD Skylight Length  
 "B" = Shortened Skylight

\* Daylight Contribution (for Atrium lighting) from East-facing glazing is minimal but does have an impact on sensor locations #1 and #9. The DF for these locations has been added into the DF shown in the accompanying table.

**DF Rules of Thumb**  
 DF < 1 = Not Daylit  
 DF 2-4 = Daylit Space  
 DF > 7 = Overly Daylit

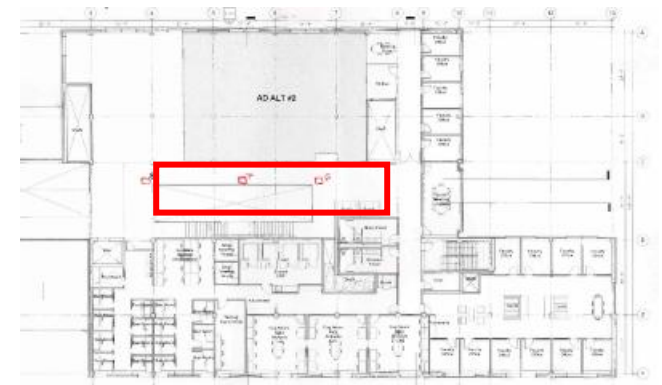
# How do we optimize daylight distribution vertically in the atrium? (DF 2-6 qualifies a space as “Day lit”)



Large skylight aperture: North

## Daylight factors per floor

2C	
11.15	4th floor
<b>11.48</b>	
4.53	
1.58	3rd floor
<b>3.70</b>	
1.47	
0.69	2nd floor
<b>1.38</b>	
0.52	



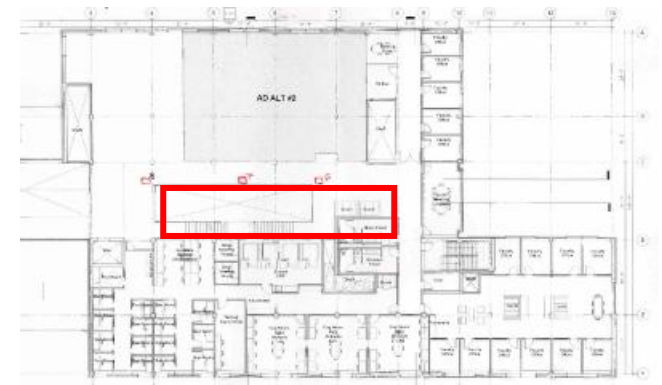
# How do we optimize daylight distribution vertically in the atrium? (DF 2-6 qualifies a space as "Day lit")



Large skylight aperture: South

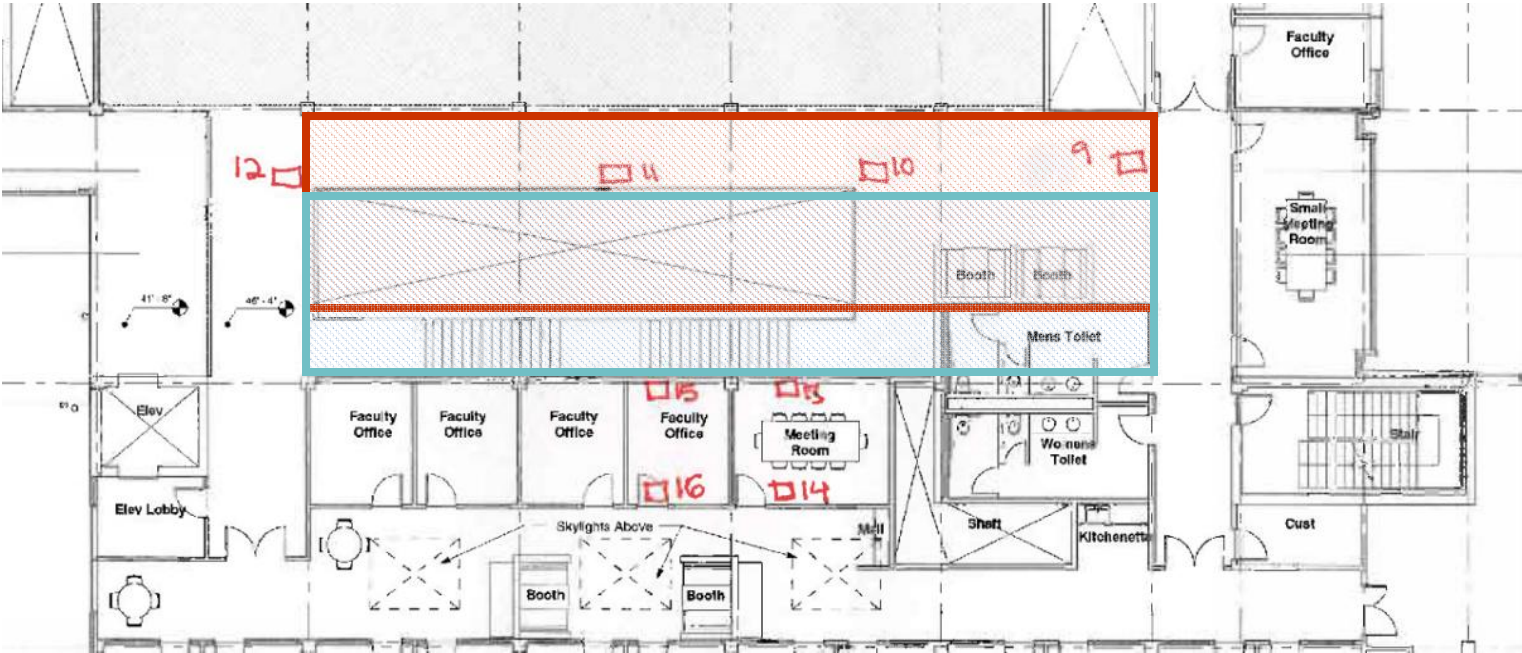
## Daylight factors per floor

2A	
6.11	
<b>6.05</b>	
2.92	
4th floor	
1.85	
<b>4.39</b>	
1.89	
3rd floor	
0.97	
<b>2.41</b>	
1.33	
2nd floor	





# How do we optimize daylight distribution to the 4th level offices and conference rooms?

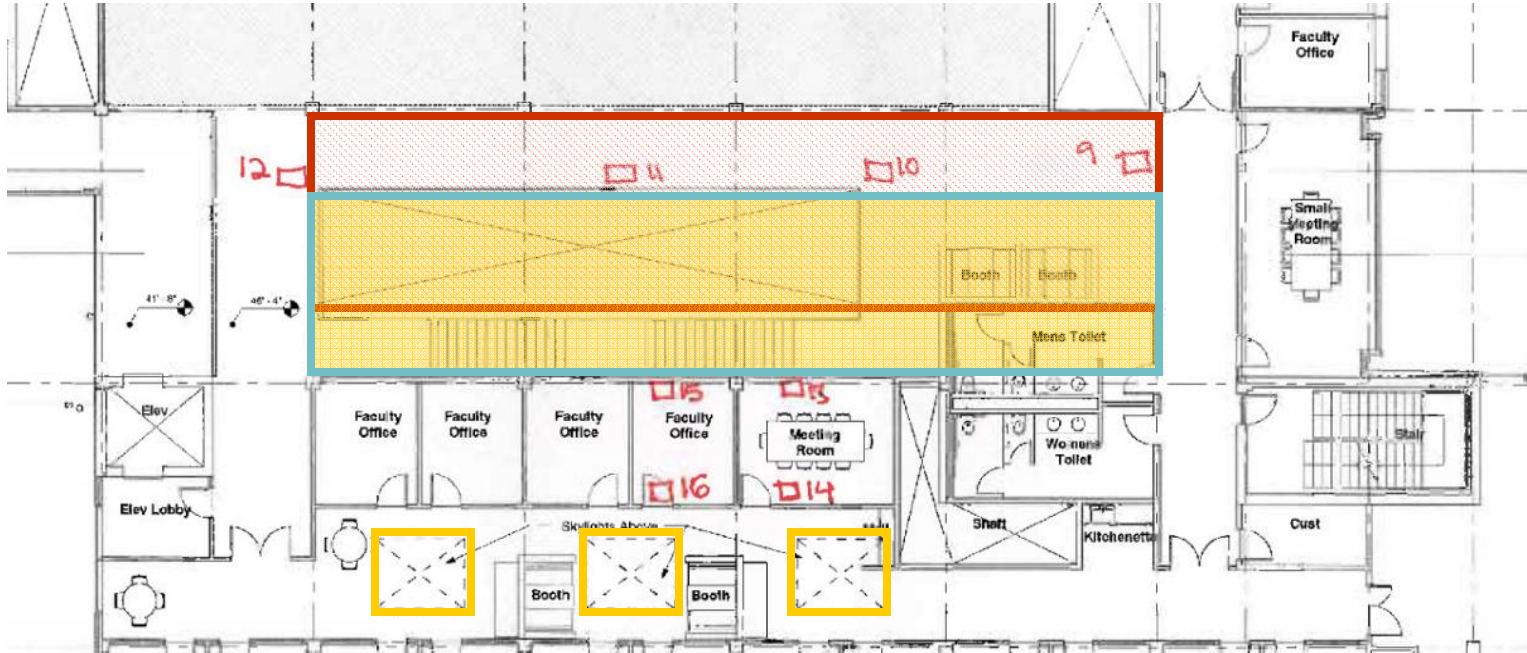


	Sensor #	2A	2B	2C	2D	
Daylight factors: 4th floor conf. room	13	n/a	3.72	2.33	0.57	0.31
	14	n/a	0.41	0.33	0.20	0.13
Daylight factors: 4th floor TYP office	15	n/a	2.09	1.69	0.26	0.17
	16	n/a	0.30	0.29	0.14	0.12

Skylight South

Skylight North

# How do we optimize daylight distribution to the 4th level offices and conference rooms?



	Sensor #	2A	2B	2C	2D	
Daylight factors: 4th floor conf. room	13	n/a	3.72	2.33	0.57	0.31
	14	n/a	0.41	0.33	0.20	0.13
Daylight factors: 4th floor TYP office	15	n/a	2.09	1.69	0.26	0.17
	16	n/a	0.30	0.29	0.14	0.12

Skylight South

Skylight North

# What is the optimal skylight size to daylight the 4th level?

Skylight Aperture: **North**



Long



Short

Skylight Aperture: **South**



Long



Short



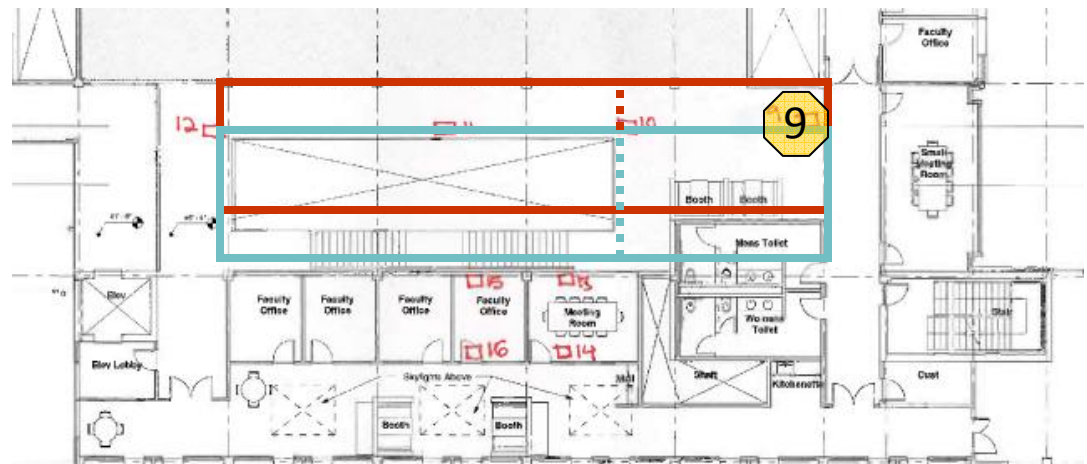
# What is the optimal skylight size to daylight the 4th level?



Large skylight aperture: South



Small skylight aperture: North



4th floor

Sensor	North		South	
9	9.57	0.66	4.72	0.57
	Long	Short	Long	Short



Which stair configuration optimizes daylight vertically in the atrium?



Scissor Stair



Stacked Stair



Straight then Switchback Stair



Switchback Stair

# Which stair configuration optimizes daylight vertically in the atrium?



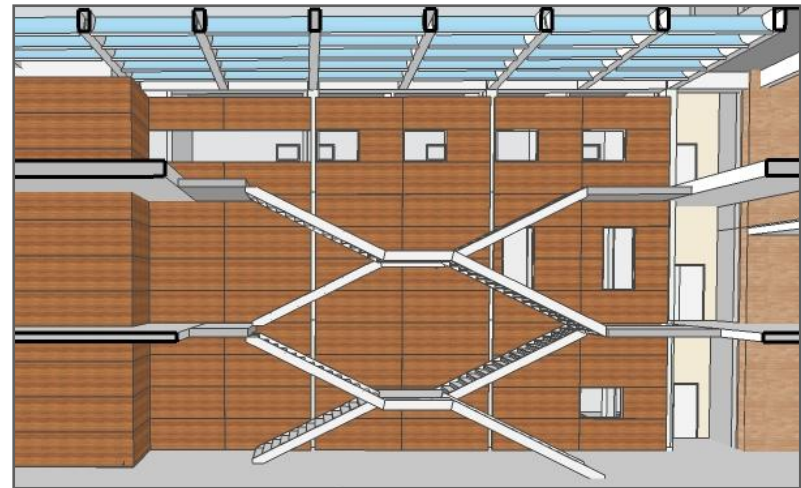
Sensor #	2A	2B	2C	2D	1C	1D	3A	3B	4A	4B	
<b>5</b>	n/a	2.71	2.30	2.64	1.84	2.50	2.30	4.05	3.78	4.91	4.31
	Scissor Stair				Stacked Stair		Straight/ Switchback Stair		Switchback Stair		

# Stair Options Tested:

Variations in position and configuration



Stacked Stair (SD Stair)



Scissor Stair



Straight then Switchback Stair



Switchback Stair

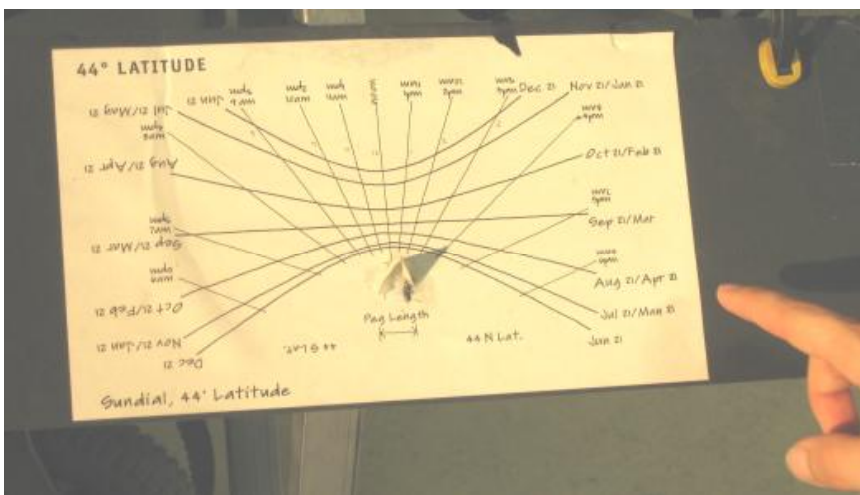
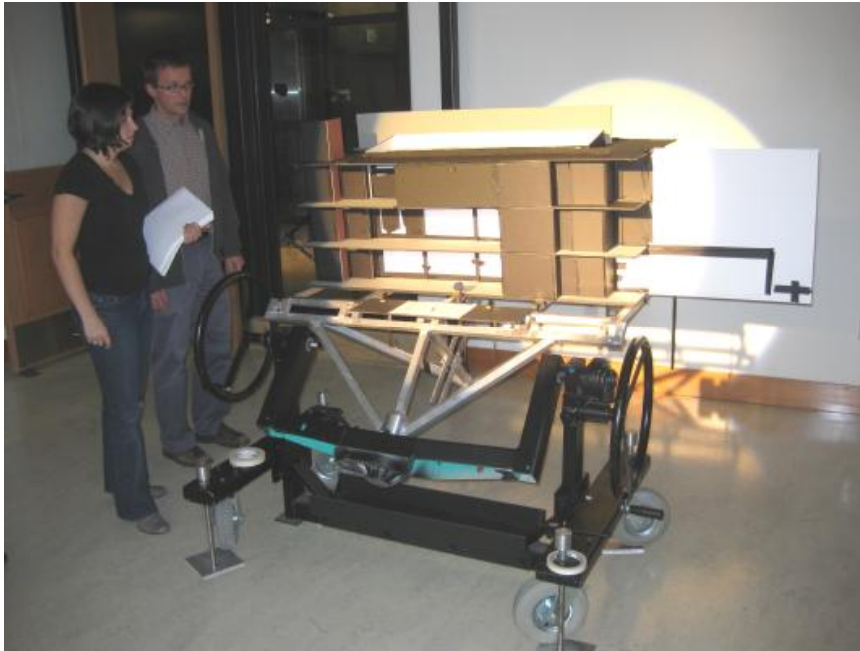




Straight then Switchback Stair



# Heliodon: Simulates direct sunlight by time of day and season



## Heliodon: Straight / Switchback Stair, June 21



9 am



11 am



1 pm



3 pm

## Heliodon: Straight / Switchback Stair, Sep 21



9 am



11 am



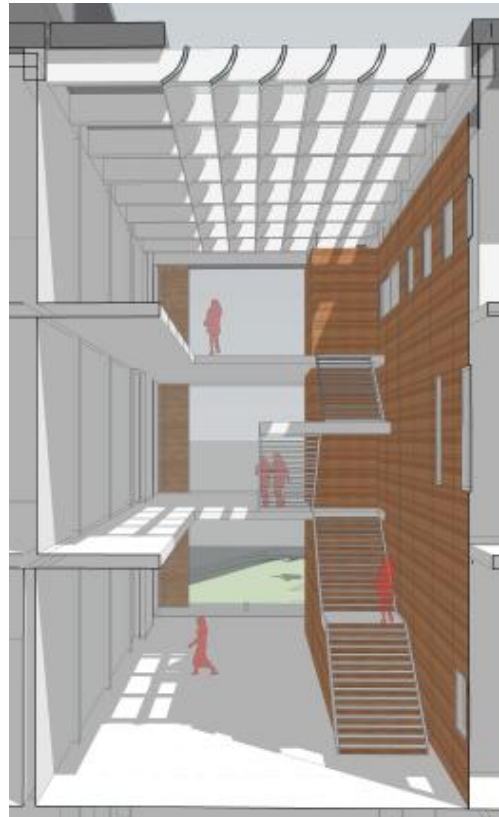
1 pm



3 pm

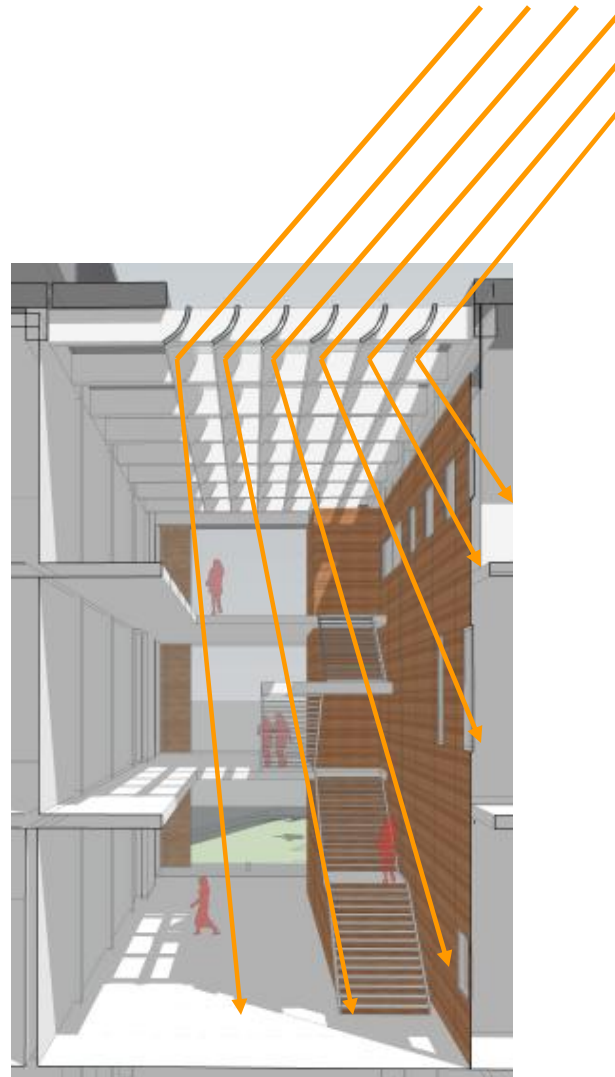


# Heliodon: Reflector test Sept 21st



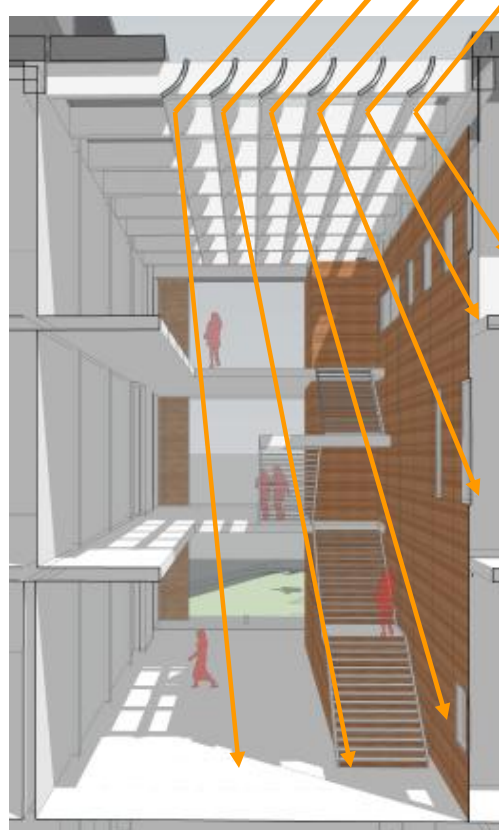
# Heliodon: Reflector test

Sept 21st



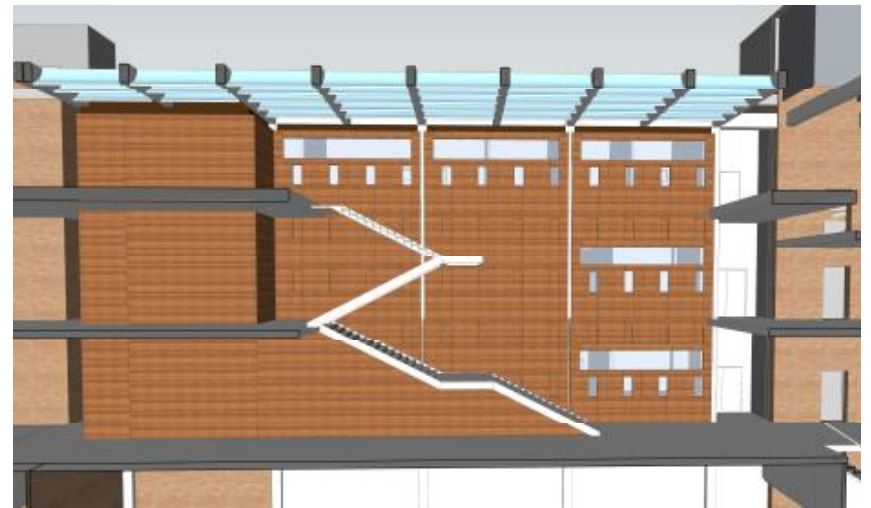
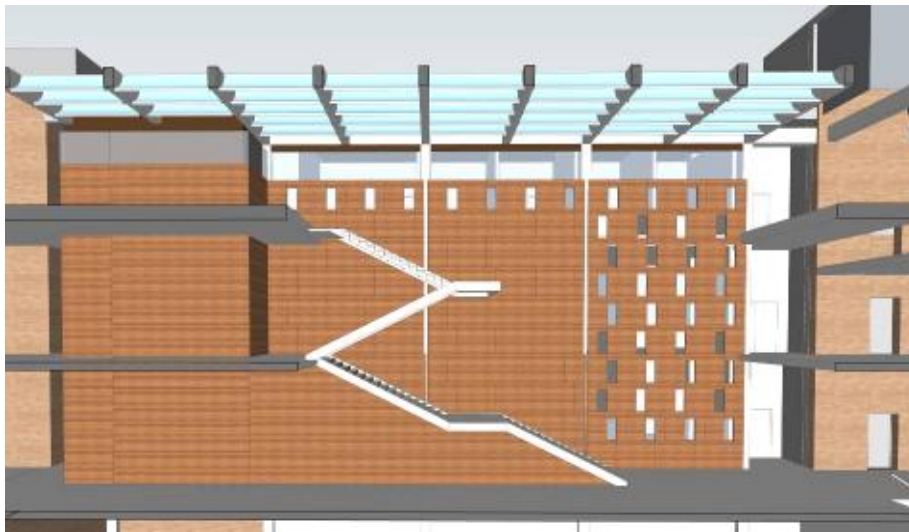
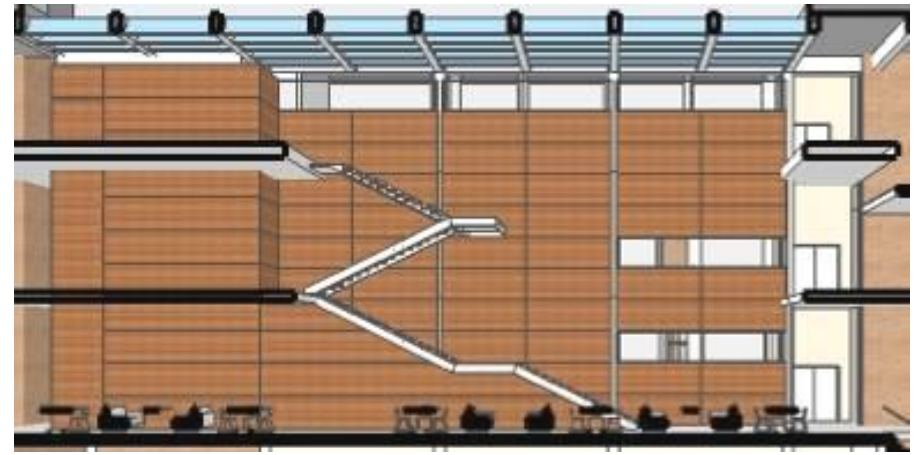


# Heliodon: Reflector test Sept 21st





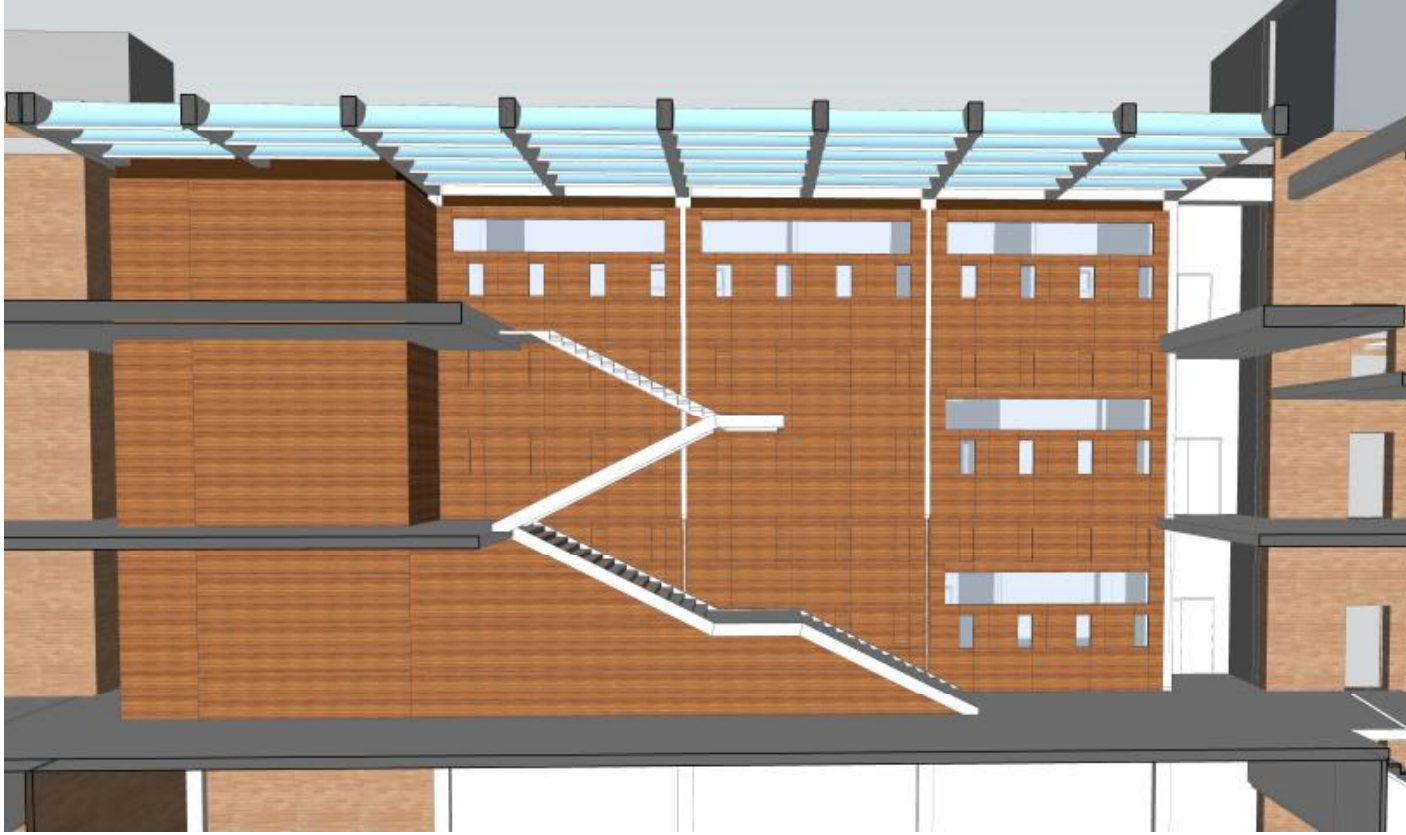
Design Update: **Atrium Openings**



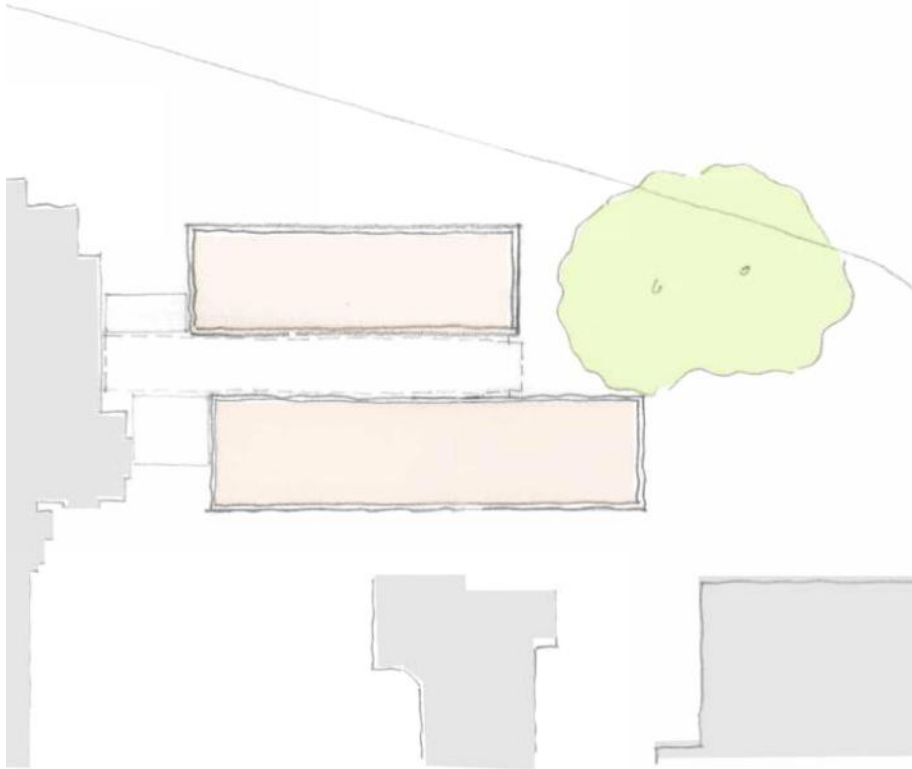
Atrium opening studies

END





## Exterior Elevations: Building Organization

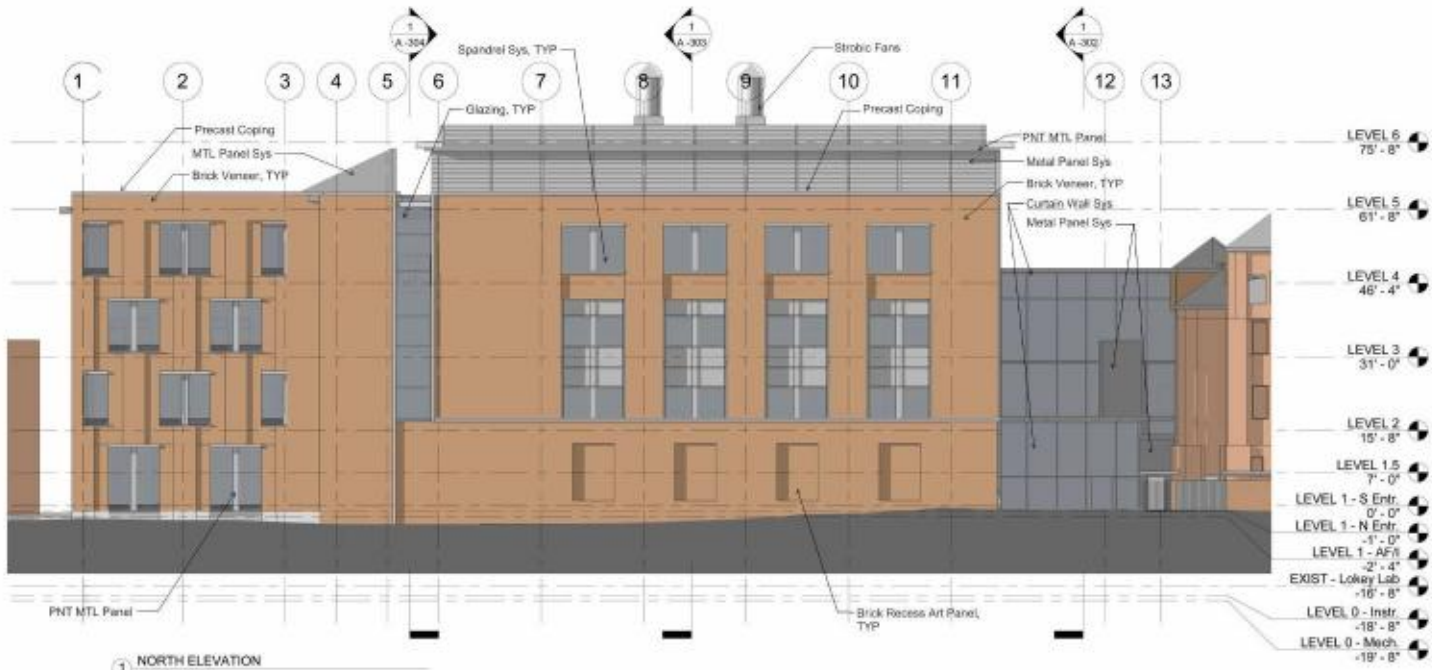


Two Flexible Primary Spaces

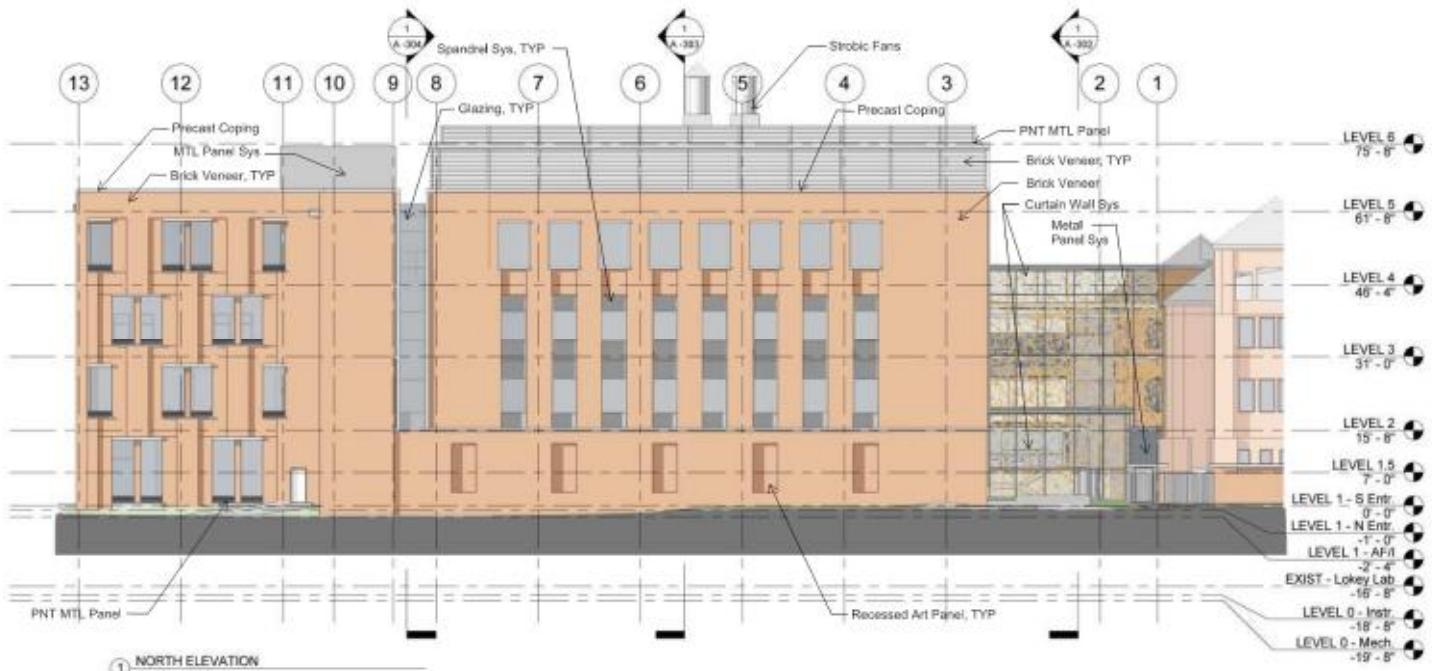


Atrium Starting at the Second Floor

# North Elevation



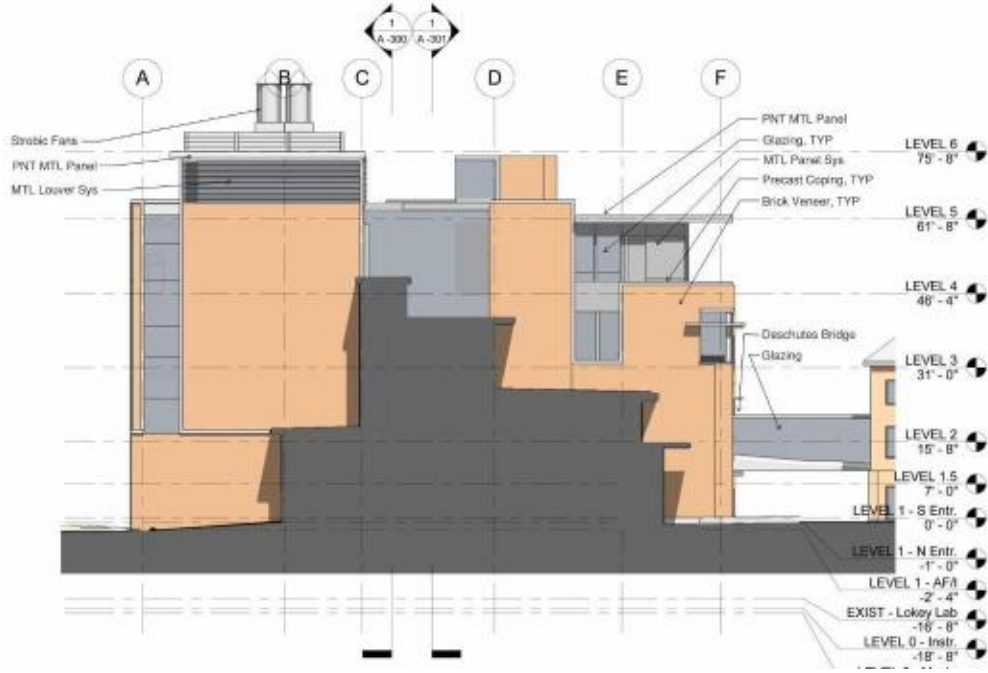
1 NORTH ELEVATION  
1/16" = 1'-0"



1 NORTH ELEVATION  
1/16" = 1'-0"



# West Elevation



# Artificial Sky: skylight position and stair configuration



# Artificial Sky: skylight size and stair configuration

