



# Pierce School Building Committee Agenda

1. Announcements, Updates, and Comments
2. Project Approvals:
  - April 1, 2022 SBC Meeting Minutes
3. Building and Site Design Progress
4. CM at Risk Update
5. Old Business
6. New Business
7. Public Comment

# Pierce School Building Committee Meeting

04/14/2022



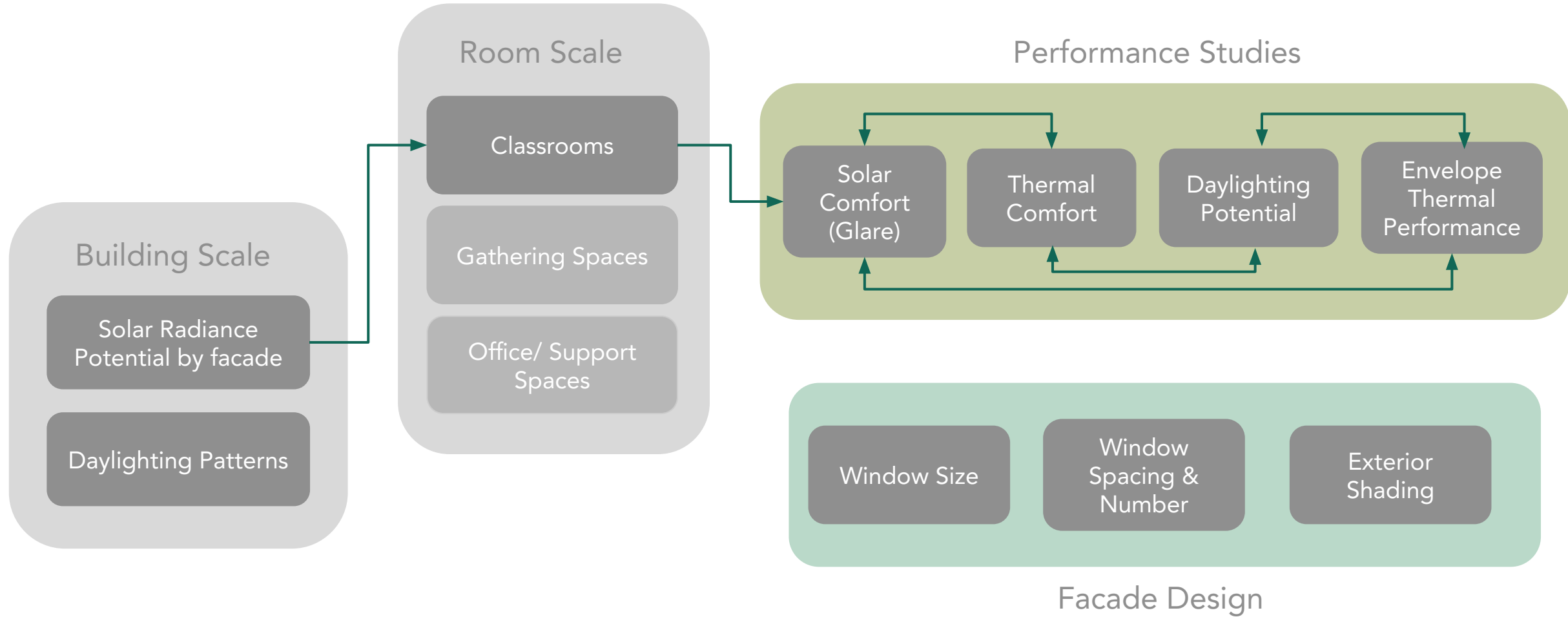
# Agenda: Exterior Design Progress

- Windows + Daylighting
- Exterior Building + Site Design Progress
- Color + Materials
- Discussion + Next Steps

# Windows + Daylighting

Tuning the type, amount, and detailing of the windows

# Balancing Solar Resources



# Performance Metrics: Optimize WWR (Window/Wall Ratio) of 25-35%

Solar  
Comfort  
(Glare)

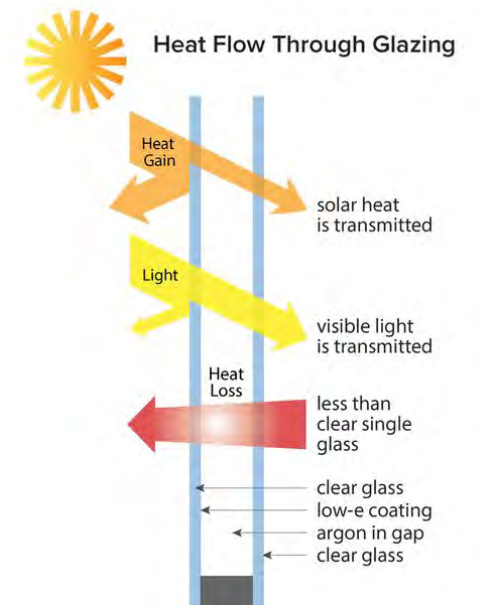
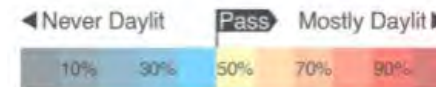
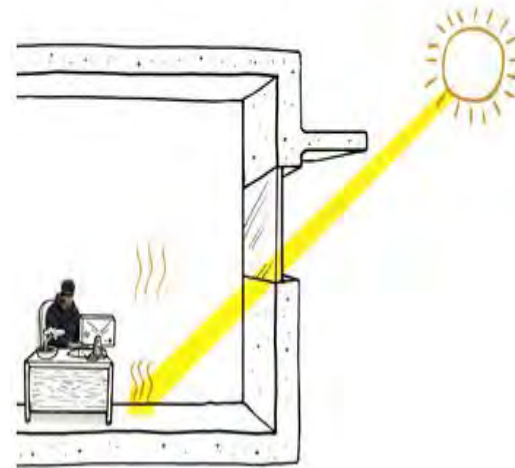
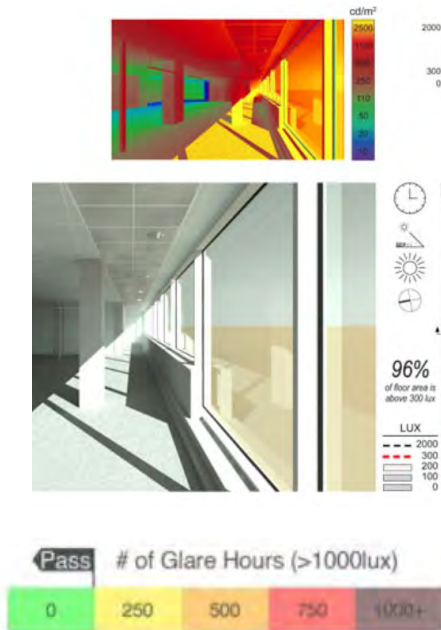
Occupant  
Experience

Thermal  
Comfort

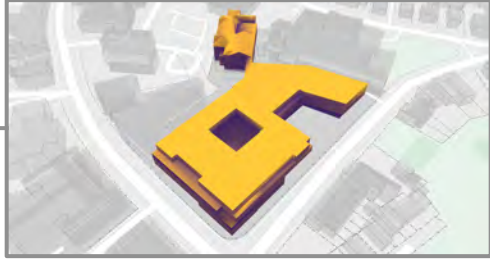
Daylighting  
Potential

Building  
Performance

Envelope  
Thermal  
Performance



# Balancing Solar Resources



## Building Scale

Solar Radiance Potential by facade

Daylighting Patterns

## Room Scale

Classrooms

Gathering Spaces

Office/ Support Spaces

## Performance Studies

Solar Comfort (Glare)

Thermal Comfort

Daylighting Potential

Envelope Thermal Performance

Window Size

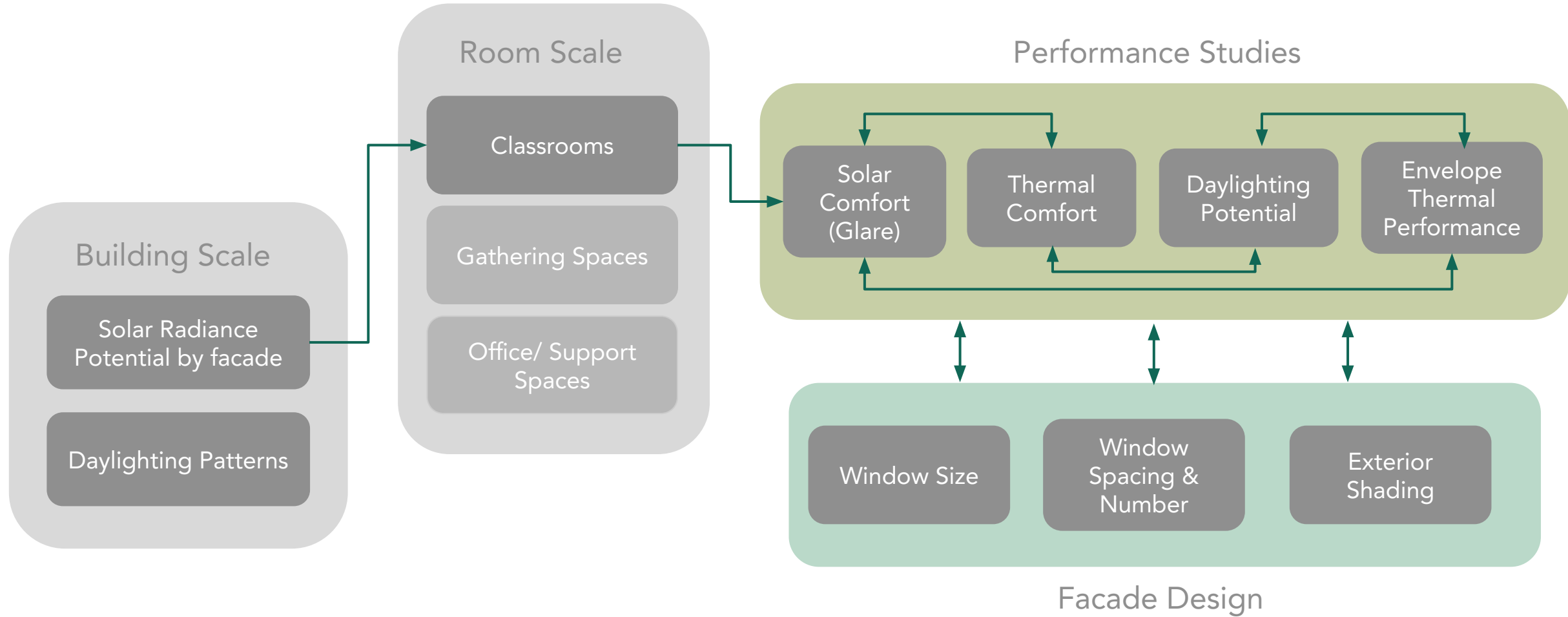
Window Spacing & Number

Exterior Shading

## Facade Design

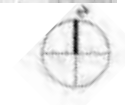
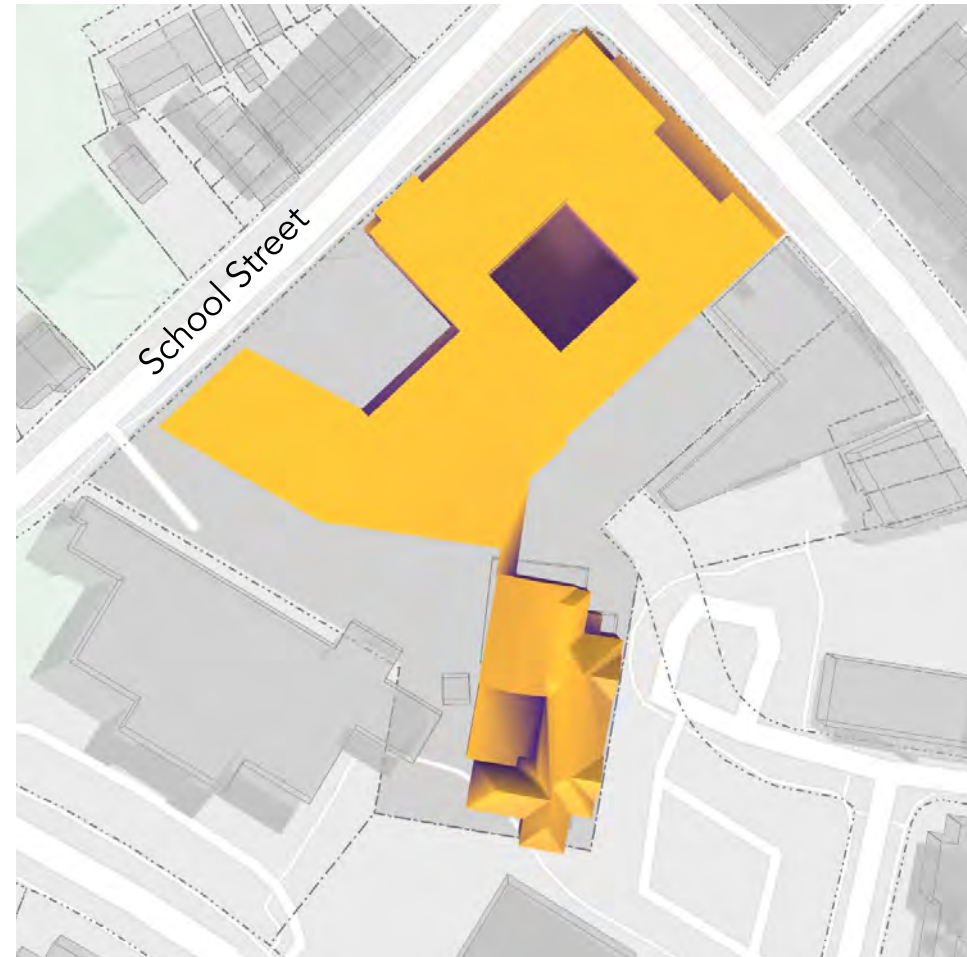
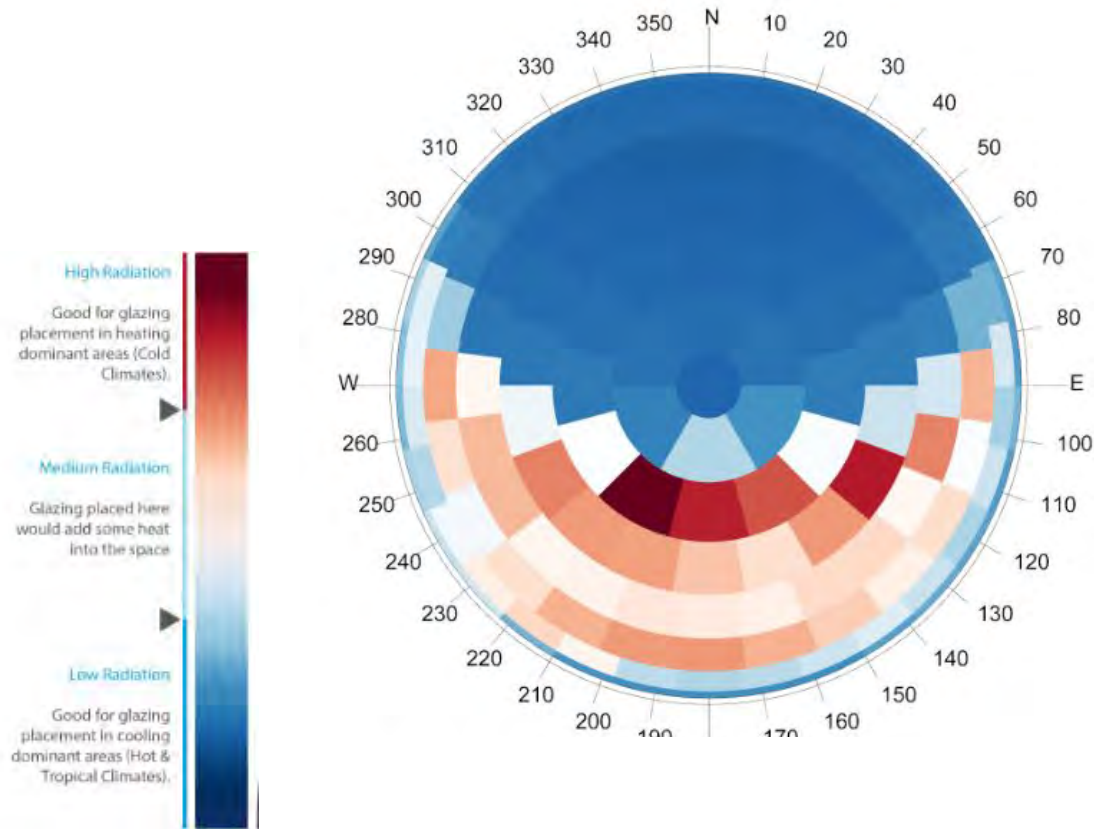


# Balancing Solar Resources

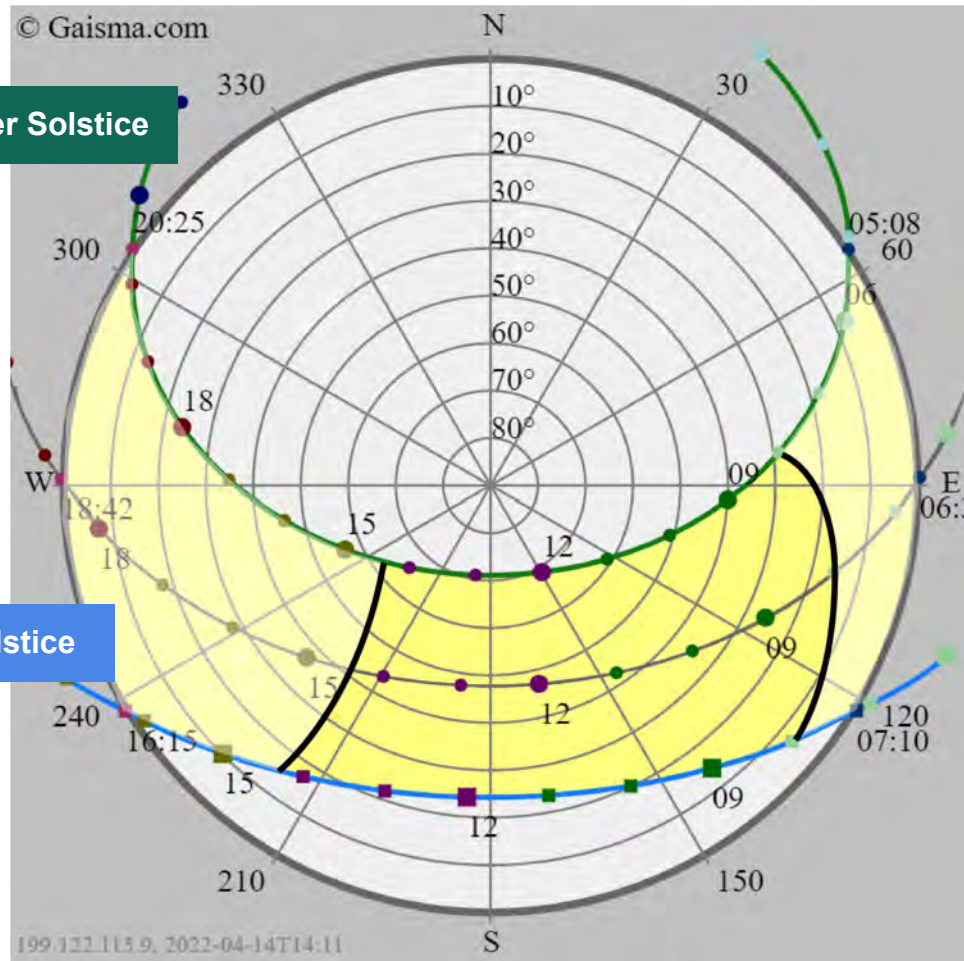




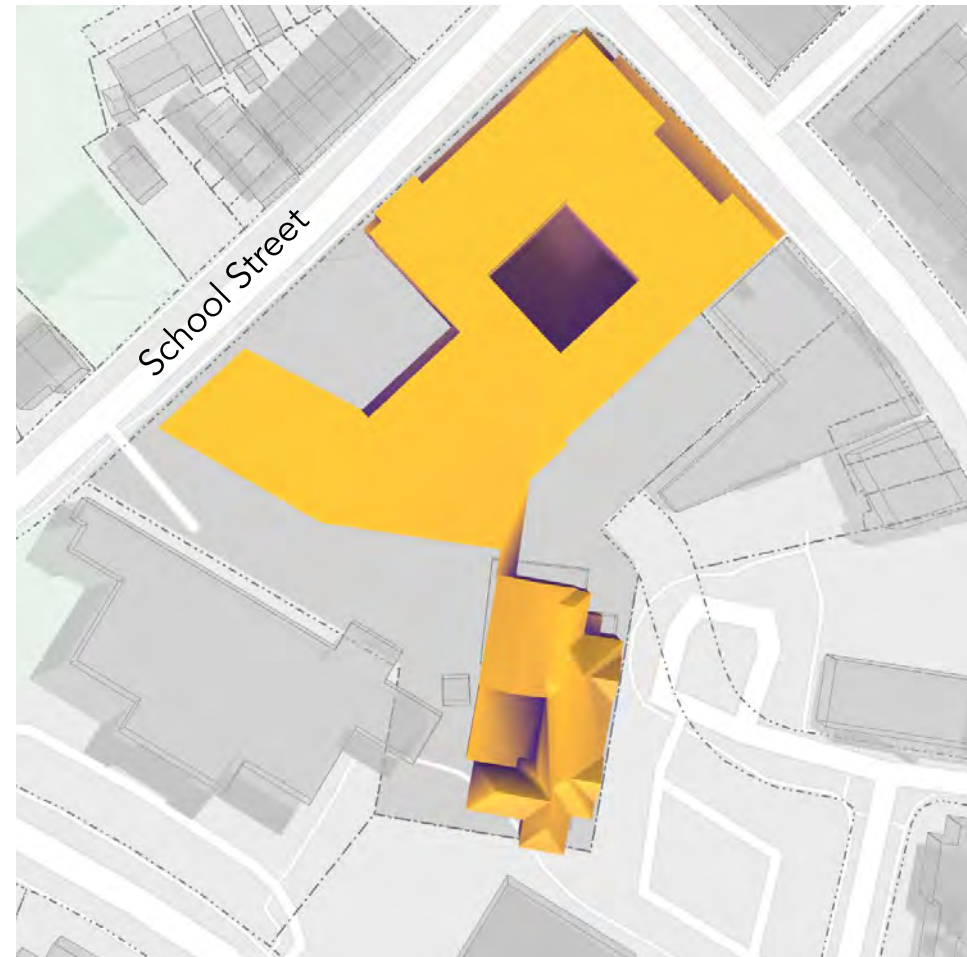
# Building Scale- Solar Radiance Potential



# Building Scale- Solar Radiance Potential



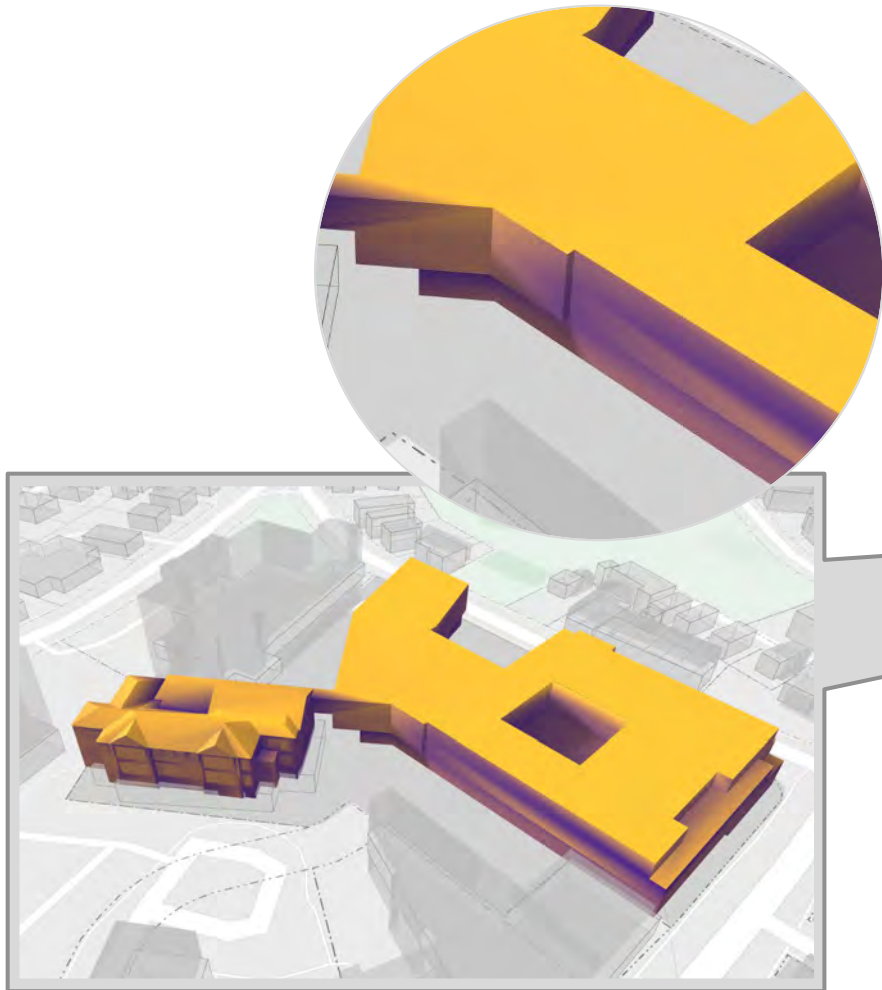
Sun Path Diagram  
(School hours 8:00-2:30)



Legend



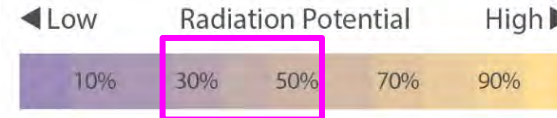
# Building Scale- Solar Radiance Potential



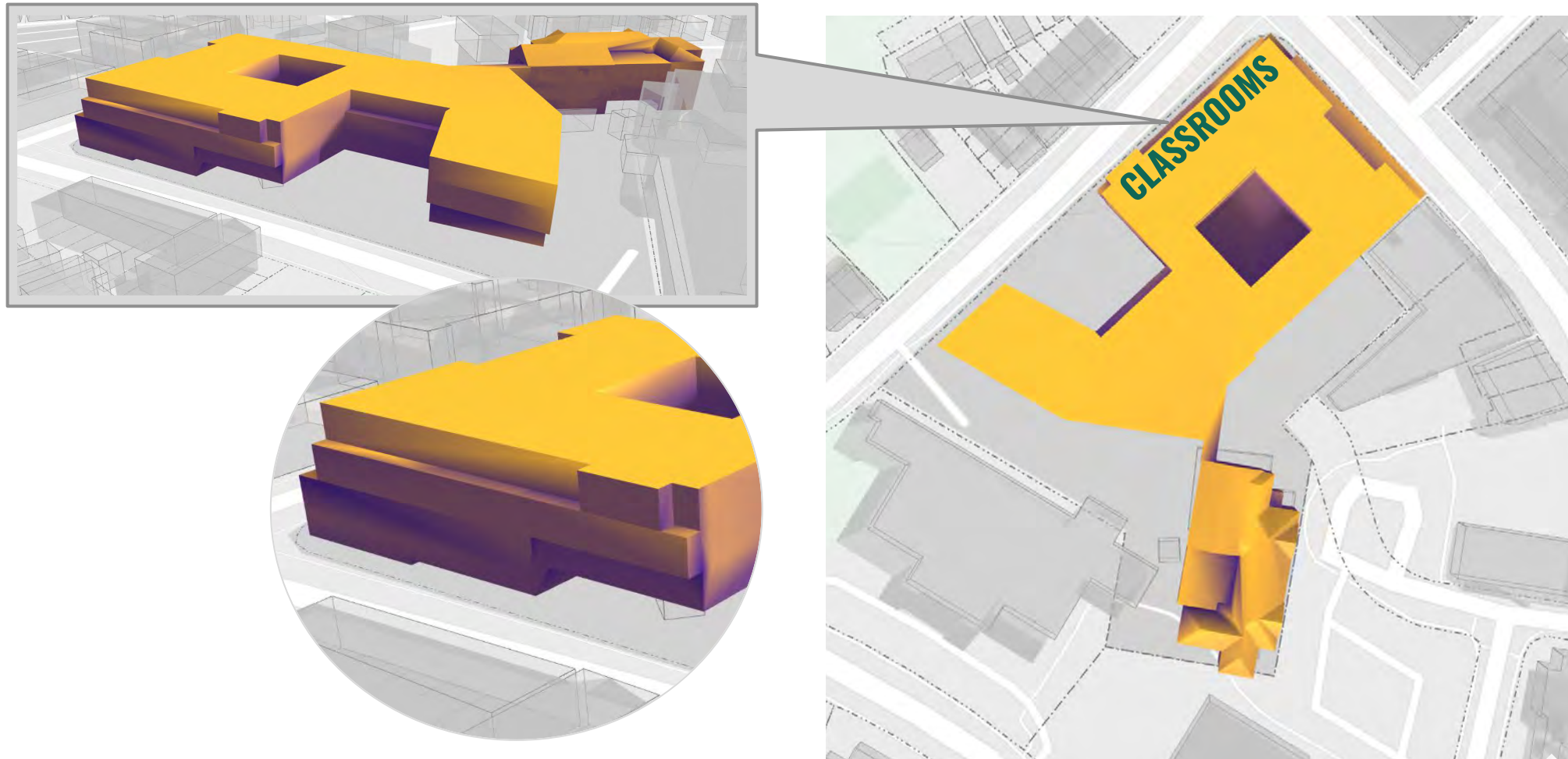
South-East: Classrooms/ Offices



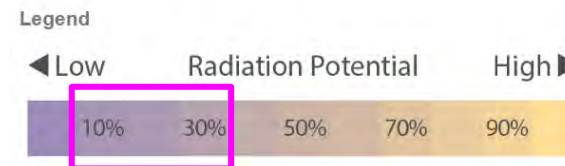
Legend



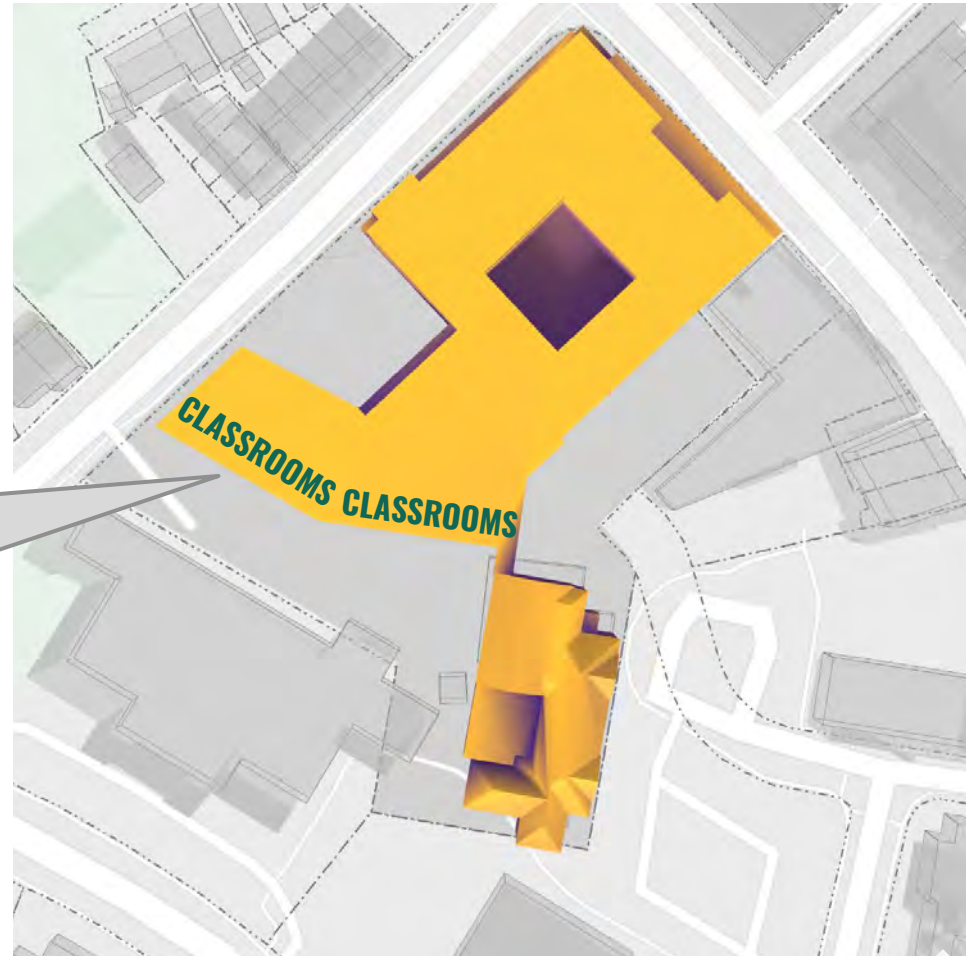
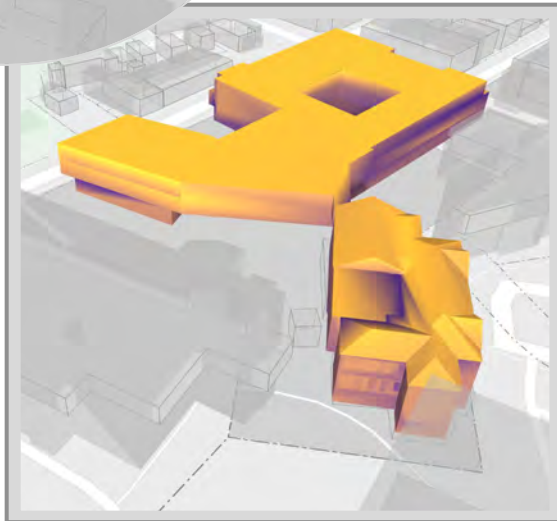
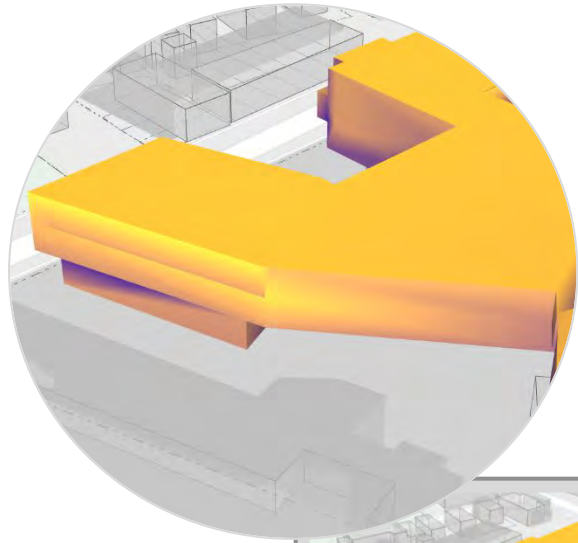
# Building Scale- Solar Radiance Potential



North-West Classrooms



# Building Scale- Solar Radiance Potential

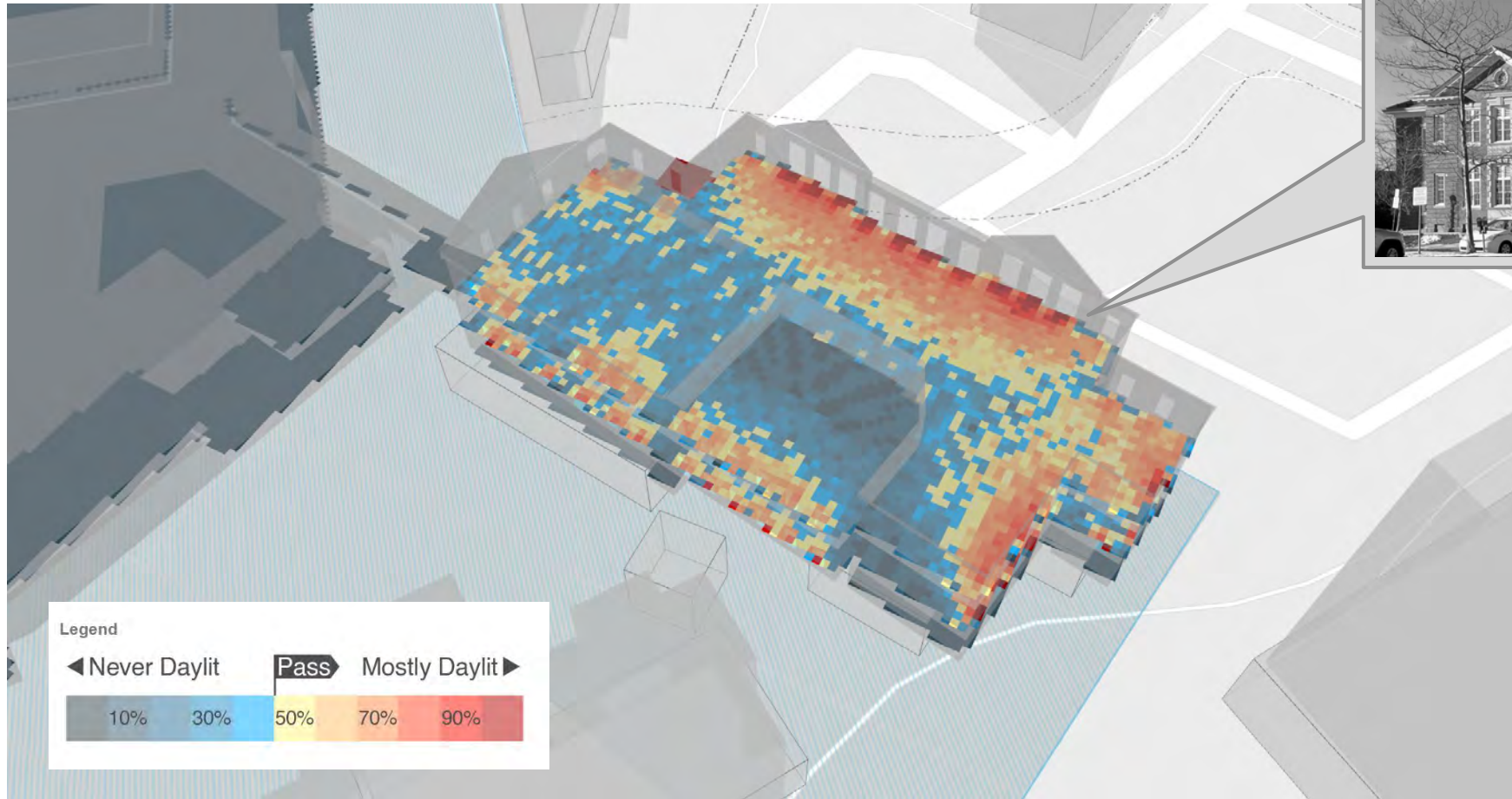


South Classrooms

Legend



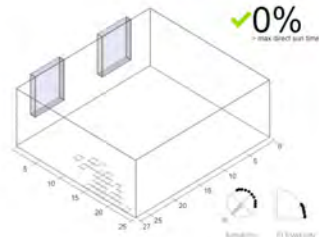
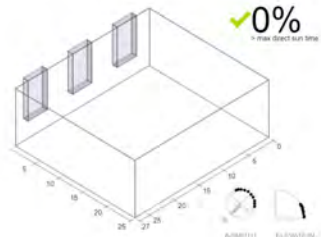
# North West, East, South Classrooms - Daylight Pattern



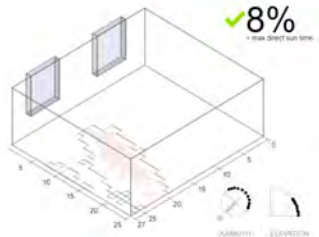
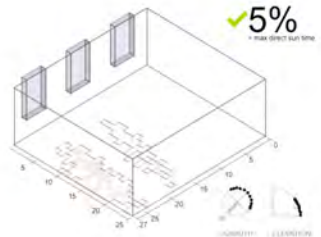
Solar Comfort (Glare)    Thermal Comfort    **Daylighting Potential**    Envelope Thermal Performance

# East Classrooms/ Offices - Performance Studies

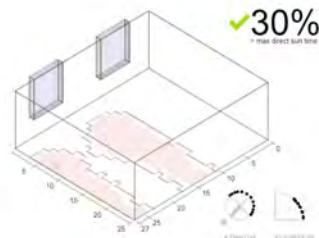
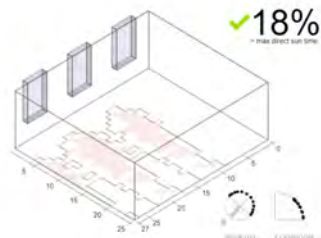
This tool shows the impact of shade and glazing geometry on indoor occupant discomfort from direct sun.



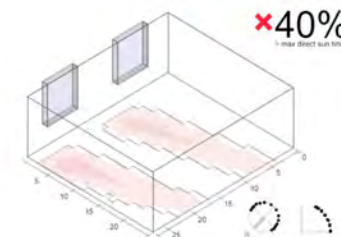
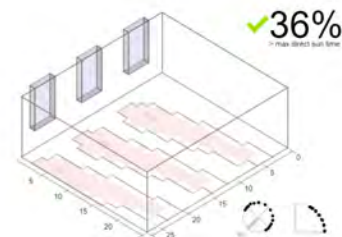
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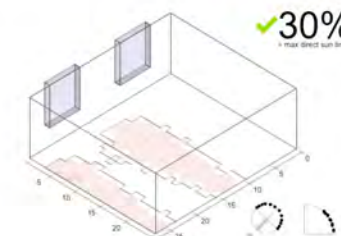
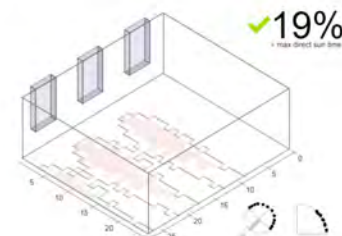
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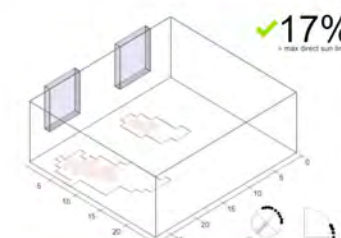
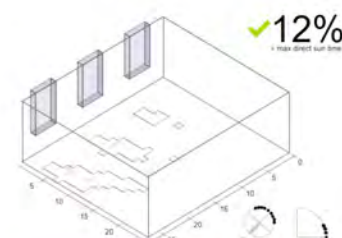
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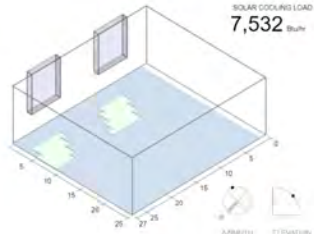
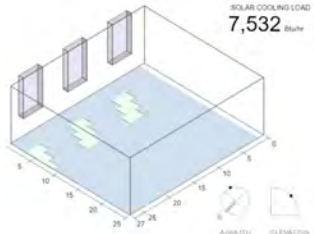
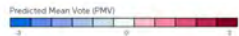
Takeaway:  
Low - Med Glare Potential  
Low LEED Daylighting Potential (40% sDA)



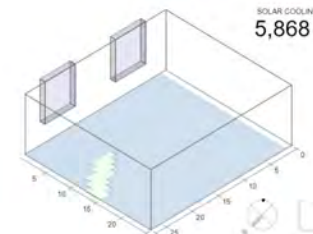
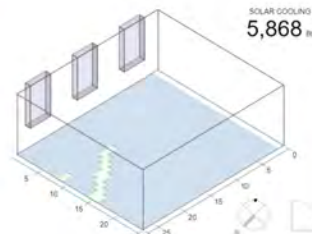
Solar Comfort (Glare) Thermal Comfort Daylighting Potential Envelope Thermal Performance

# East Classrooms/ Offices - Performance Studies

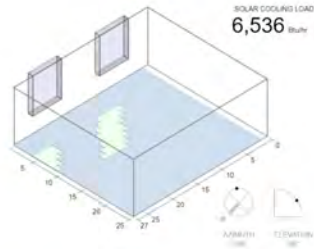
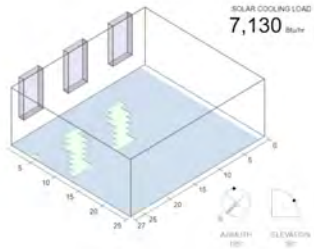
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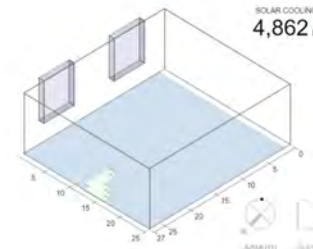
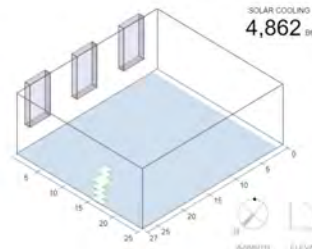
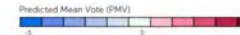
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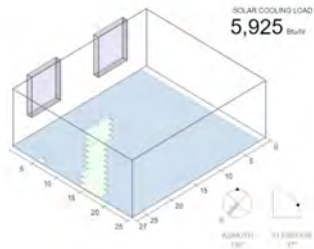
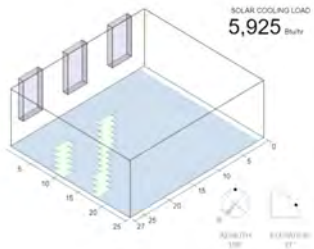
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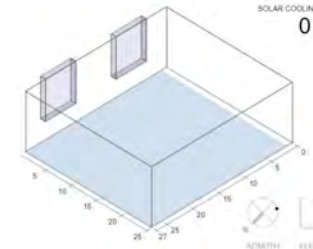
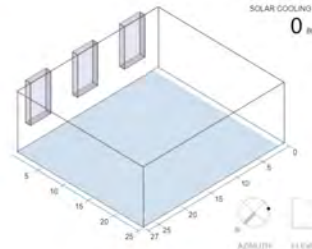
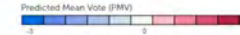
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Takeaway:  
Low risk of occupant discomfort from direct sun



Solar Comfort (Glare)

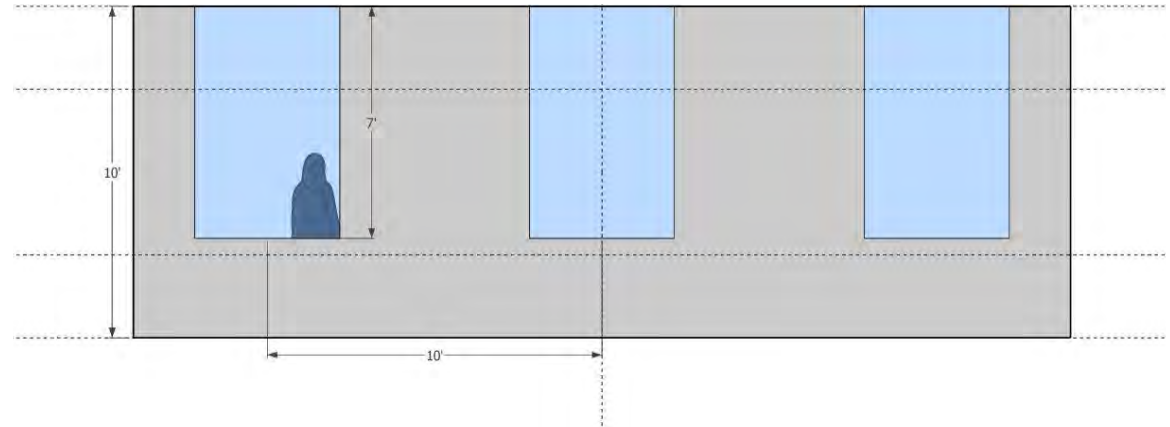
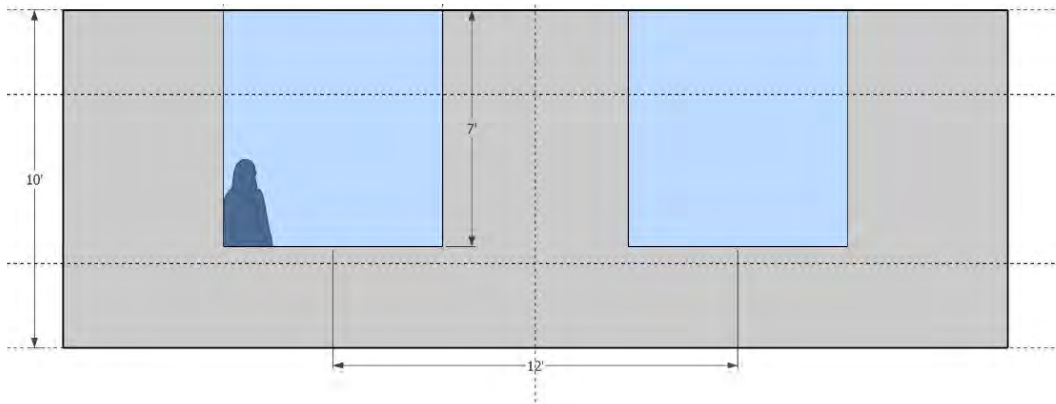
Thermal Comfort

Daylighting Potential

Envelope Thermal Performance



# East Classrooms - Daylight Pattern



Window head above 7 ft increases daylighting potential

(2) Windows ~ 6ft width or (3) Windows ~ 4 ft width

Low - Med Glare Shading needed with (2) windows

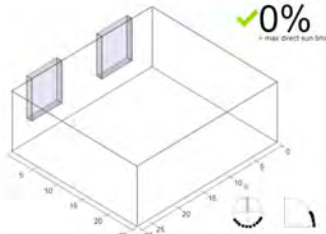
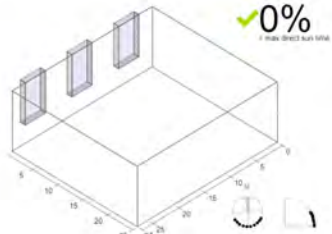


Facade Design

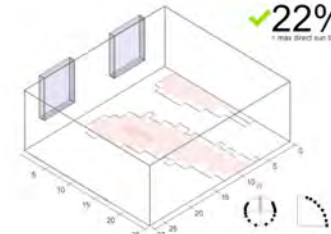
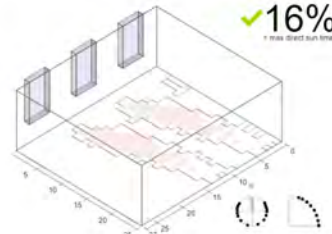
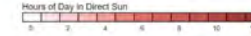


# North West Classrooms - Performance Studies

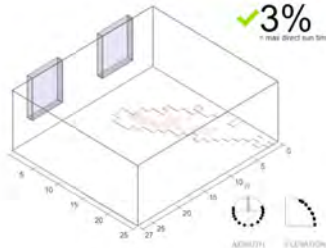
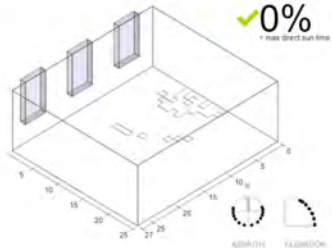
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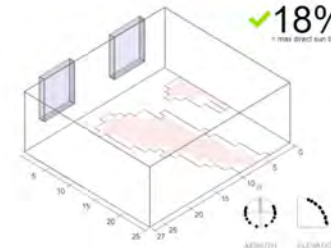
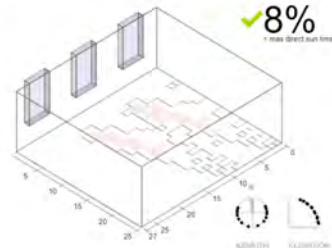
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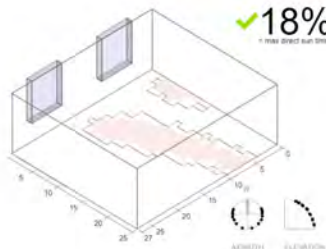
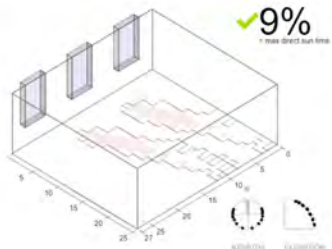
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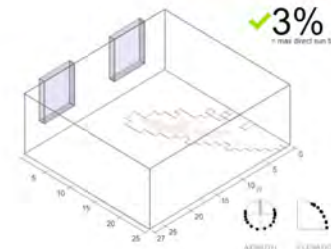
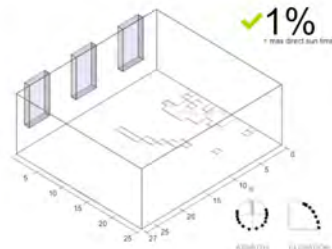
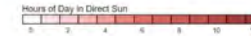
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Takeaway:  
Low Glare Potential  
Low LEED Daylighting  
Potential (40% sDA)



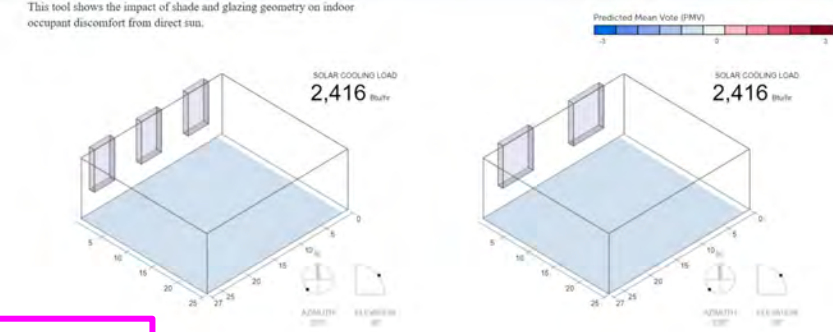
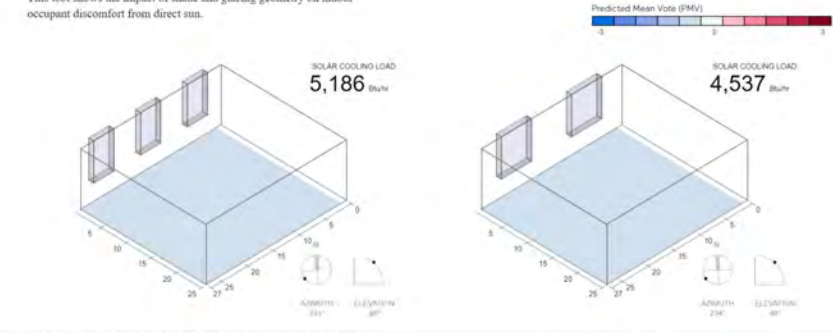
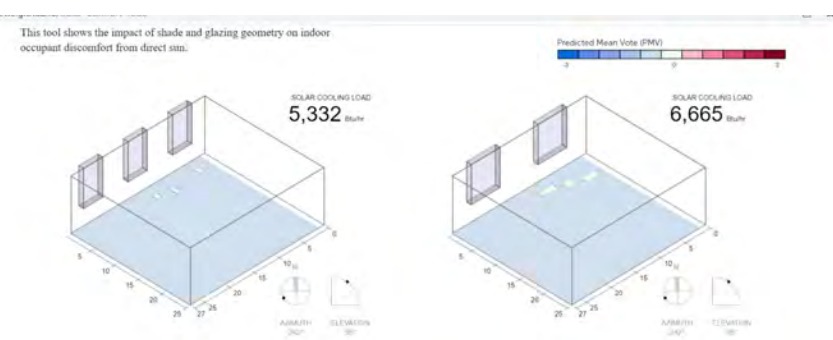
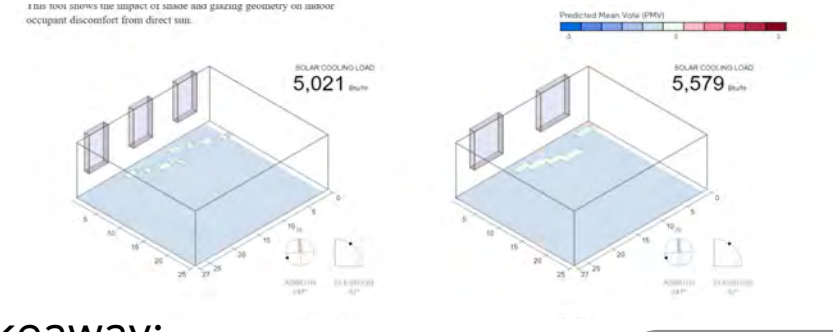
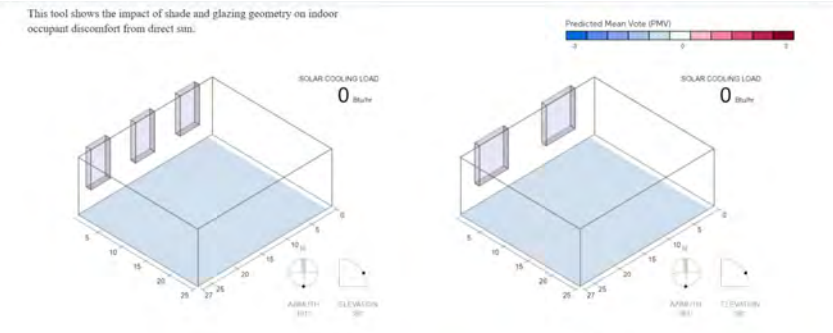
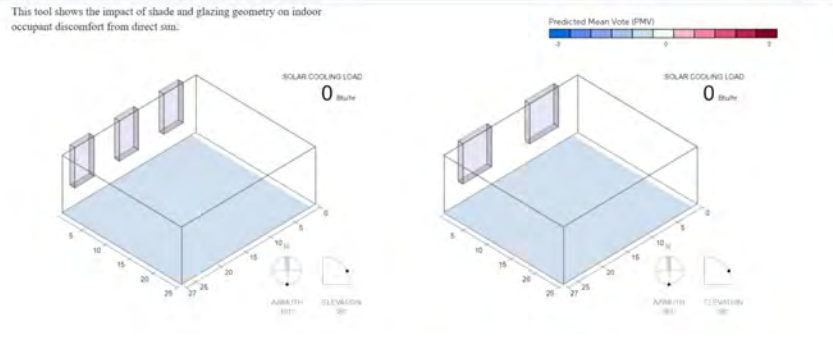
Solar  
Comfort  
(Glare)

Thermal  
Comfort

Daylighting  
Potential

Envelope  
Thermal  
Performance

# North West Classrooms - Performance Studies



Takeaway:  
Low risk of occupant discomfort from direct sun

Takeaway:  
Low Glare Potential  
Low LEED Daylighting Potential (40% sDA)

Solar Comfort (Glare)

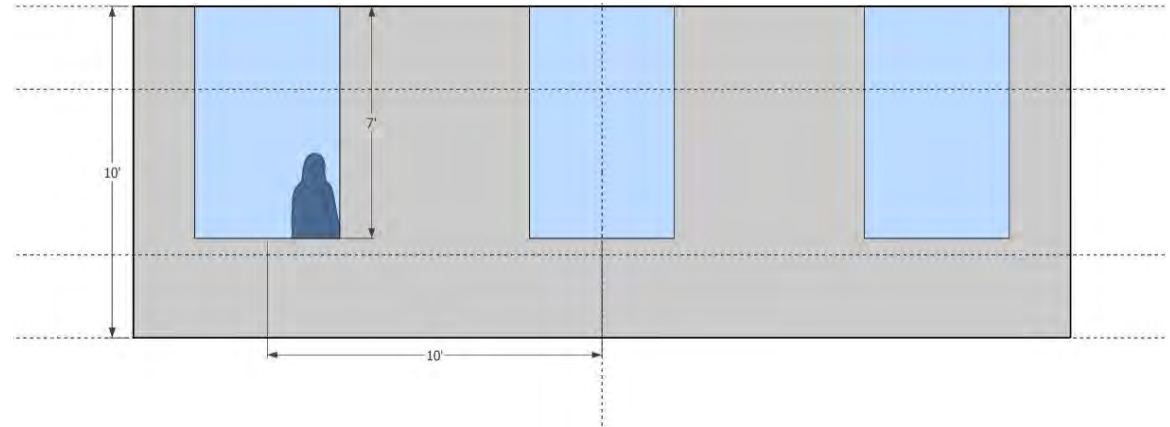
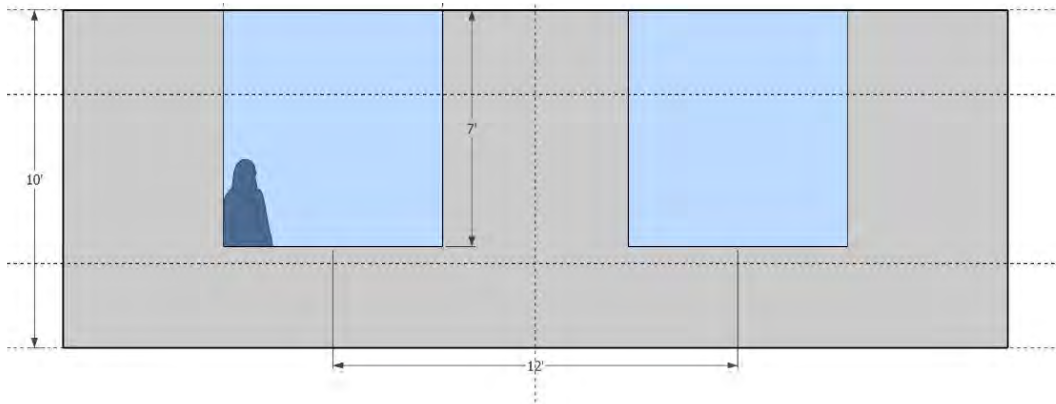
Thermal Comfort

Daylighting Potential

Envelope Thermal Performance



# North West Classrooms - Daylight Pattern



Window head above 7 ft increases daylighting potential

(2) Windows ~ 6ft width or (3) Windows ~ 4 ft width

Low/Min. Glare potential: Less need for shading for on North West\*

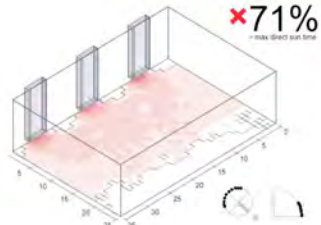
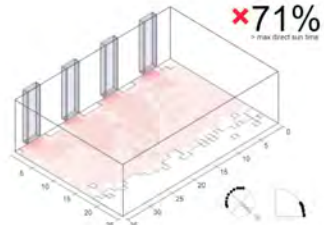


Facade Design

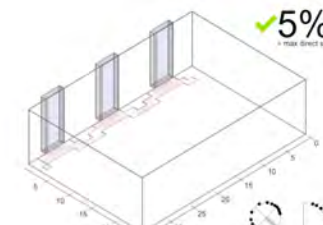
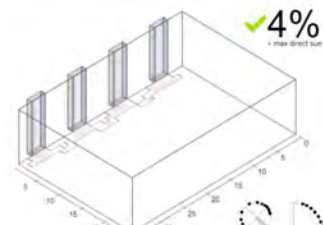


# South Classrooms - Performance Studies

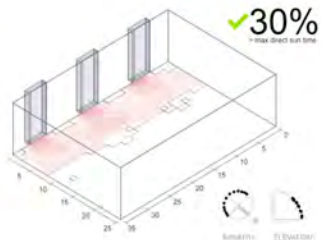
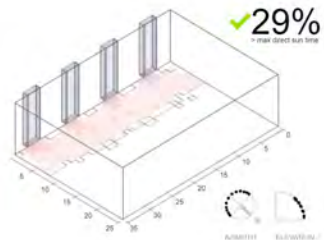
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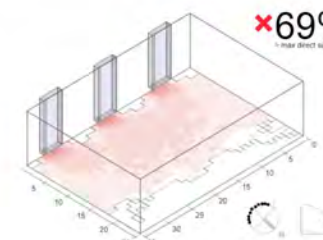
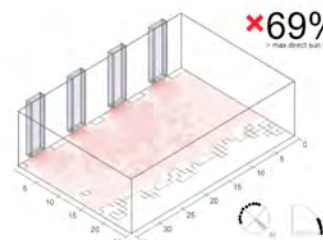
This tool shows the impact of shade and glazing geometry on indoor occupant discomfort from direct sun.



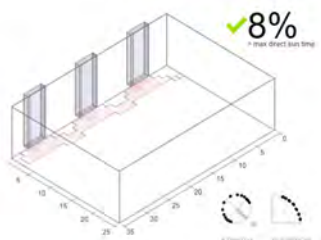
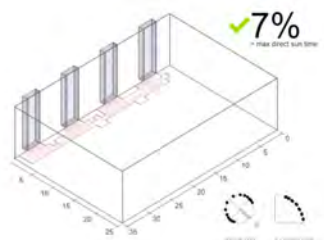
This tool shows the impact of shade and glazing geometry on indoor occupant discomfort from direct sun.



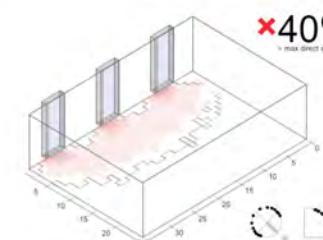
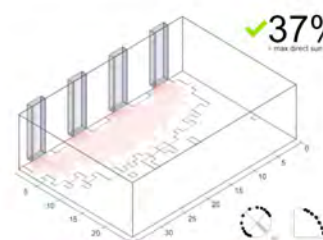
This tool shows the impact of shade and glazing geometry on indoor occupant discomfort from direct sun.



This tool shows the impact of shade and glazing geometry on indoor occupant discomfort from direct sun.



This tool shows the impact of shade and glazing geometry on indoor occupant discomfort from direct sun.



Takeaway:  
High Glare Potential  
Med-High LEED  
Daylighting Potential  
(40% sDA)



Solar Comfort (Glare)

Thermal Comfort

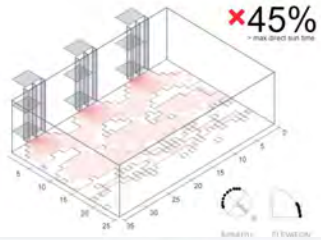
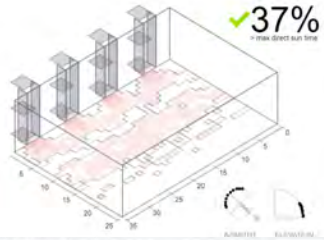
Daylighting Potential

Envelope Thermal Performance

# South Classrooms - Shading Studies

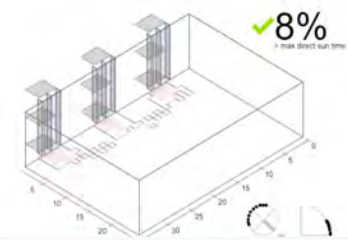
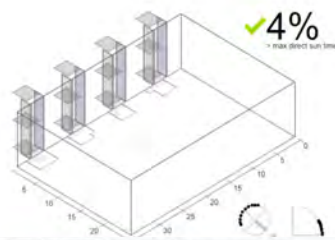
This tool shows the impact of shade and glazing geometry on indoor occupant discomfort from direct sun.

Hours of Day in Direct Sun



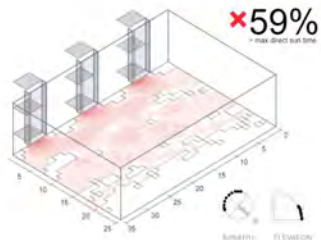
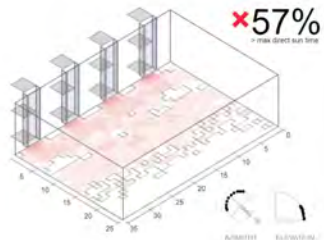
This tool shows the impact of shade and glazing geometry on indoor occupant discomfort from direct sun.

Hours of Day in Direct Sun



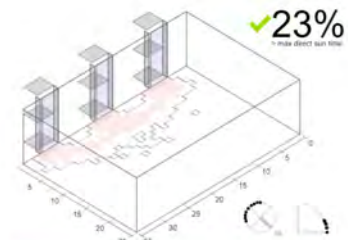
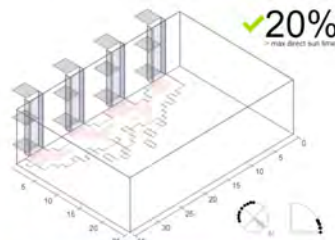
This tool shows the impact of shade and glazing geometry on indoor occupant discomfort from direct sun.

Hours of Day in Direct Sun



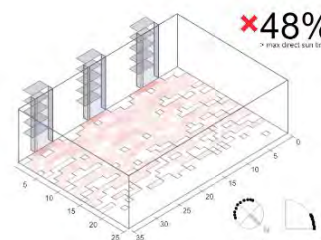
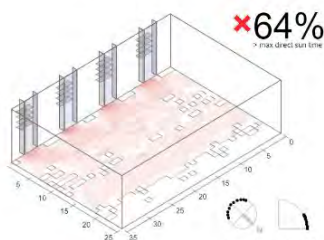
This tool shows the impact of shade and glazing geometry on indoor occupant discomfort from direct sun.

Hours of Day in Direct Sun



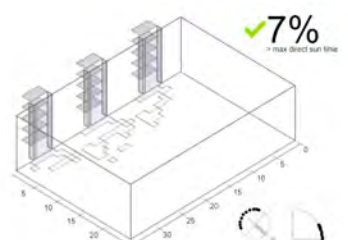
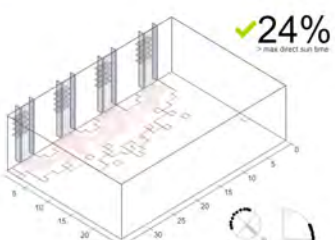
This tool shows the impact of shade and glazing geometry on indoor occupant discomfort from direct sun.

Hours of Day in Direct Sun



This tool shows the impact of shade and glazing geometry on indoor occupant discomfort from direct sun.

Hours of Day in Direct Sun

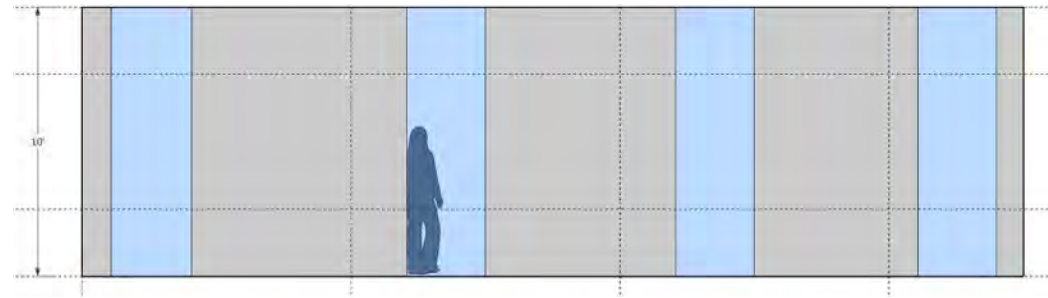
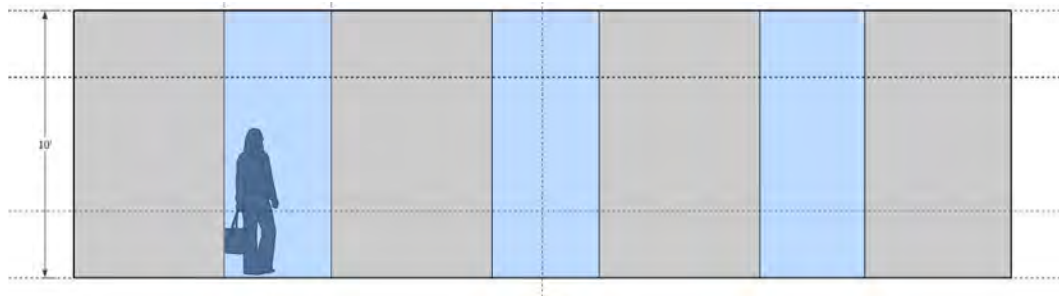


Takeaway:  
Horizontal louvers combined with vertical shading for (4) windows or Multiple horizontal louvers for (3) windows

Solar Comfort (Glare) Thermal Comfort Daylighting Potential Envelope Thermal Performance



# South Classrooms - Daylight Pattern



Window head above 7 ft increases daylighting potential

(3) ~ 4 ft or (4) ~ 3 ft windows per classroom

High Glare potential - Shading required to mitigate solar discomfort

Window Size

Window Spacing & Number

Exterior Shading

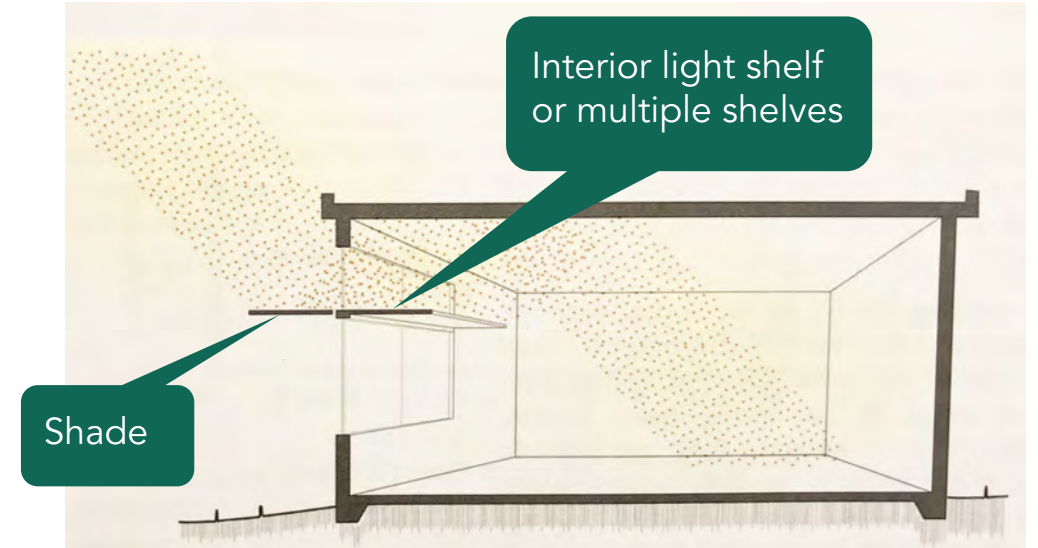
Facade Design



# Light Shelves Shading Strategies - With or Without PV



Thurston Elementary School  
Mahlum Architects Inc.  
Springfield, Oregon, United States  
Credit: Lincoln Barbour ([www.lincolnbarbour.com](http://www.lincolnbarbour.com))





# Exterior Design Progress

# What we heard

LAST TIME

## DETAILS

Simplify patterning/detailing  
Sun shading only where needed  
Be mindful of constructability + maintenance

## WINDOWS

Prioritize classroom daylighting  
Show operable windows  
Sun shading only where needed

## CHARACTER

Be bold, but relate to the neighborhood  
Nod to the current building's personality  
Glad to see some lightness

## MATERIALS

Balance scale + variety  
Are there too many materials?  
Color would be interesting

## SPECIFIC FEEDBACK

Specific comments on each part of the building



School St. at Library

UPDATED

**WINDOWS**

Prioritize classroom daylighting  
Show operable windows  
Sun shading only where needed



School St.

LAST TIME

**DETAILS**

Simplify patterning/detailing  
Sun shading only where needed  
Be mindful of constructability + maintenance

Welcoming courtyards are successful  
Trees in courtyards for further study  
Universal design → everyone uses the ramp  
Talk to Parks about maintenance

Unsure about the three columns  
& the space they create



School St.

UPDATED - 1



School St.

UPDATED - 2



School St. Crossing

UPDATED



School St. entrance

UPDATED





# Harvard St. + School St.

LAST TIME



Metal panel seems over-articulated

Consider clerestory windows at gym(s)

## CHARACTER

Be bold, but relate to the neighborhood  
Nod to the current building's personality  
Glad to see some lightness

Consider articulation between two-story performance spaces vs. classrooms

Harvard St. + School St.

UPDATED



Harvard Street

UPDATED



Pierce entrance

LAST TIME

**MATERIALS**

Balance scale + variety  
Are there too many materials?  
Color would be interesting

Approach is welcoming  
Unsure about the sun shading  
gesture on this glass facade



Pierce entrance

UPDATED  
Colored Fins + Glass



Pierce entrance

UPDATED  
Colored Fins



Pierce entrance

UPDATED



Pierce entrance

UPDATED





School St. aerial

UPDATED



Aerial

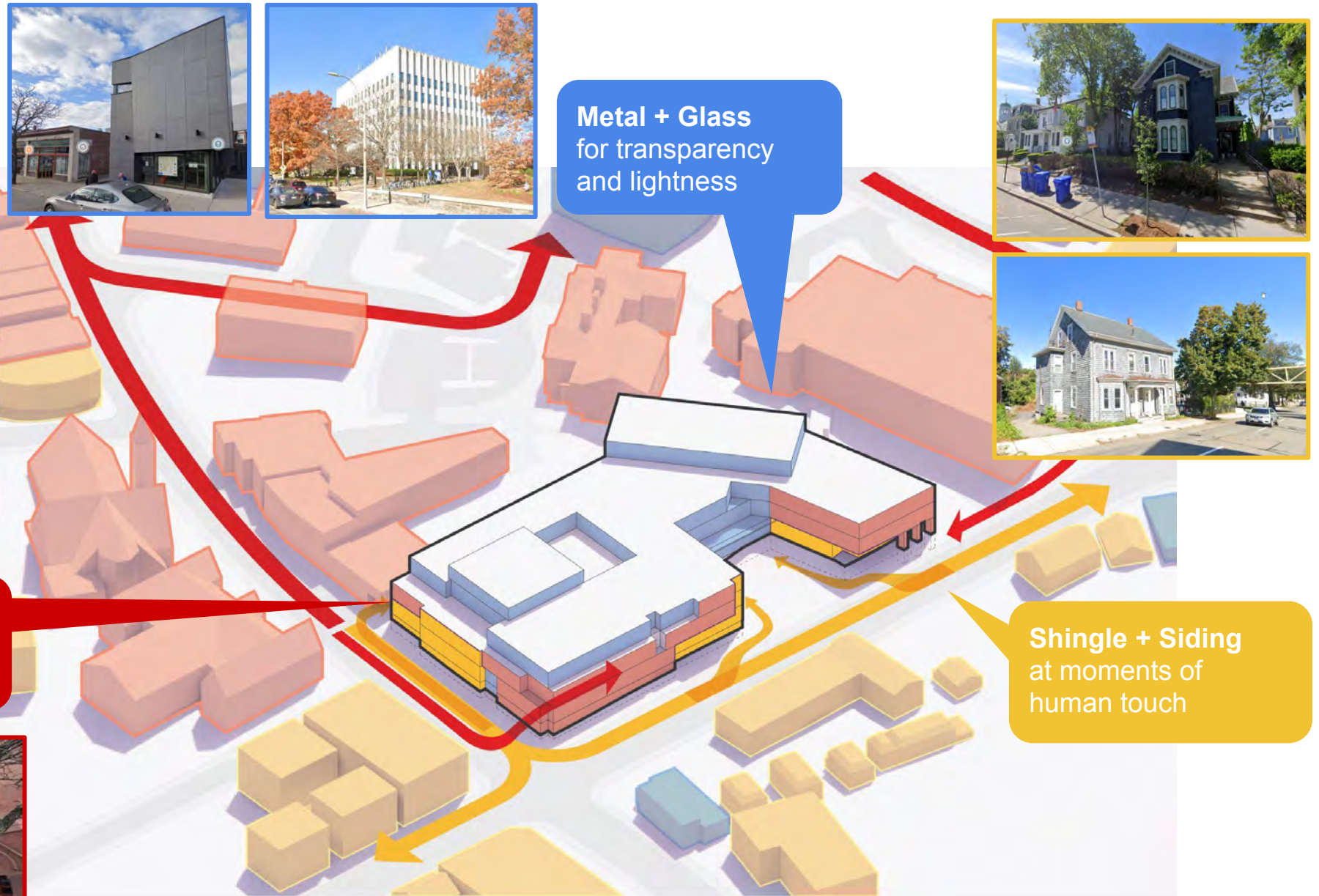
UPDATED



# Material Palette

Responding to Context, Sustainability, and Budget

# Materials informed by context



# Materials Palette



Masonry



Zinc



Slate Shingle

# Color Inspiration

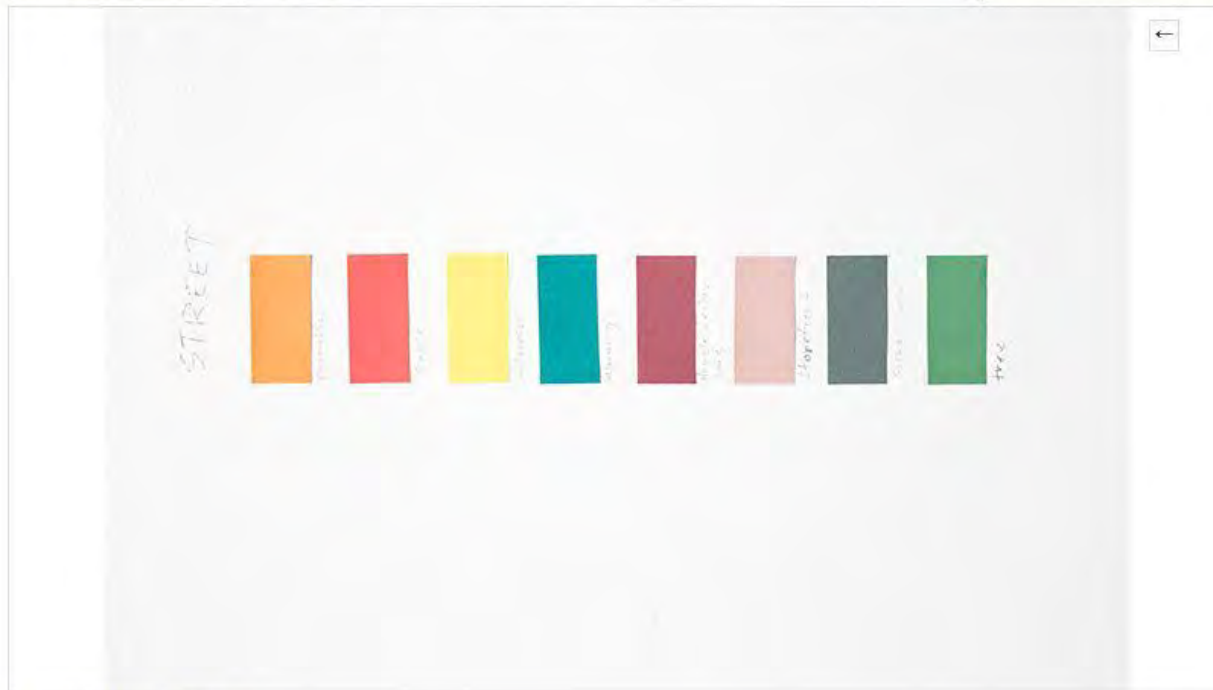


# Color Inspiration

## SPENCER FINCH

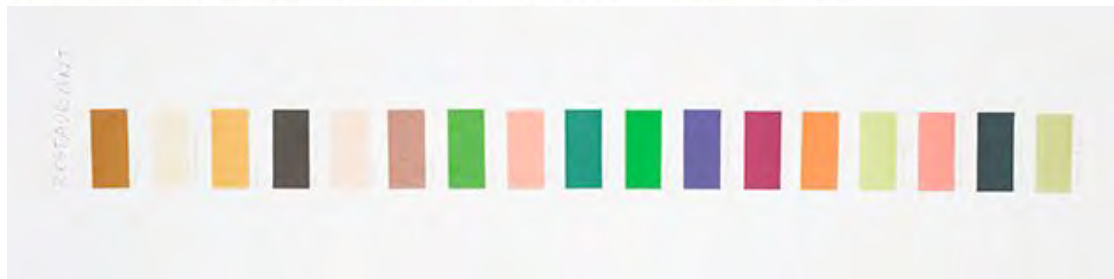
Amuse-Bouche Catalogue Information

[« Installations](#) [« Previous](#) [Next Project »](#)



ULYSSES (SEPTEMBER 19, 2014)  
2014

Pantone chips and pencil. Titled after James Joyce's novel, whose events take place on a single day, this installation is a visual record of a day of walking in Brooklyn and Manhattan, in which about 1,400 colors of various objects were recorded using a Pantone color book.



# Color Inspiration





# Discussion + Next Steps



# Masonry

**Human Scale**  
**Visual Weight**  
**Rhythm + Order**  
**Natural Texture**  
**Color**



# Shingle + Siding

- Human Scale
- Texture
- Color
- Local Vernacular



# Metal + Glass

- Visual Lightness
- Modularity
- Texture
- Reflectivity
- Color



Painted Aluminum



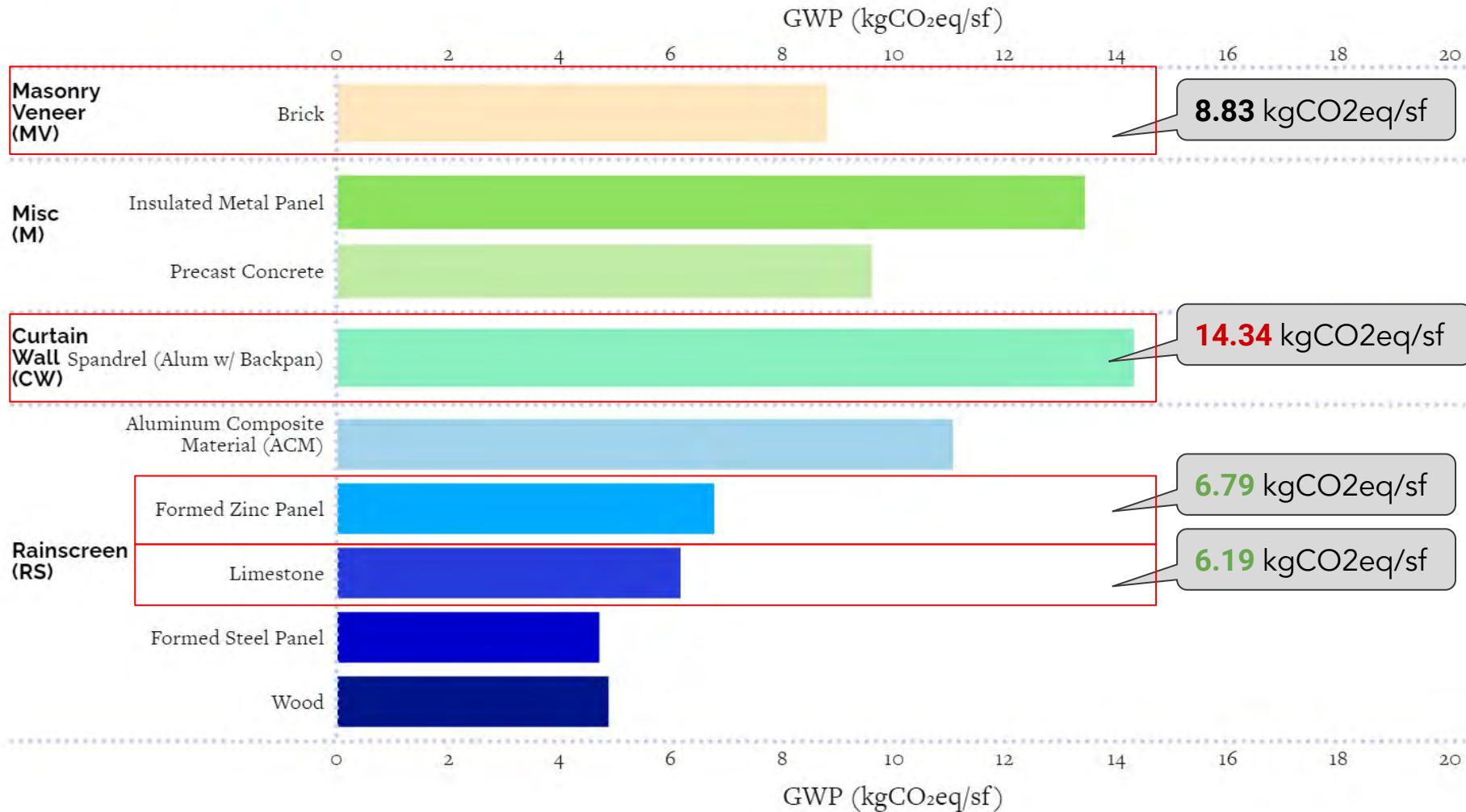
Integrated Sunshades  
Connection to Outdoors



Zinc + Aluminum

# Materiality - Initial Impacts (2030 Paris Targets)

## Global Warming Potential



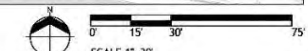
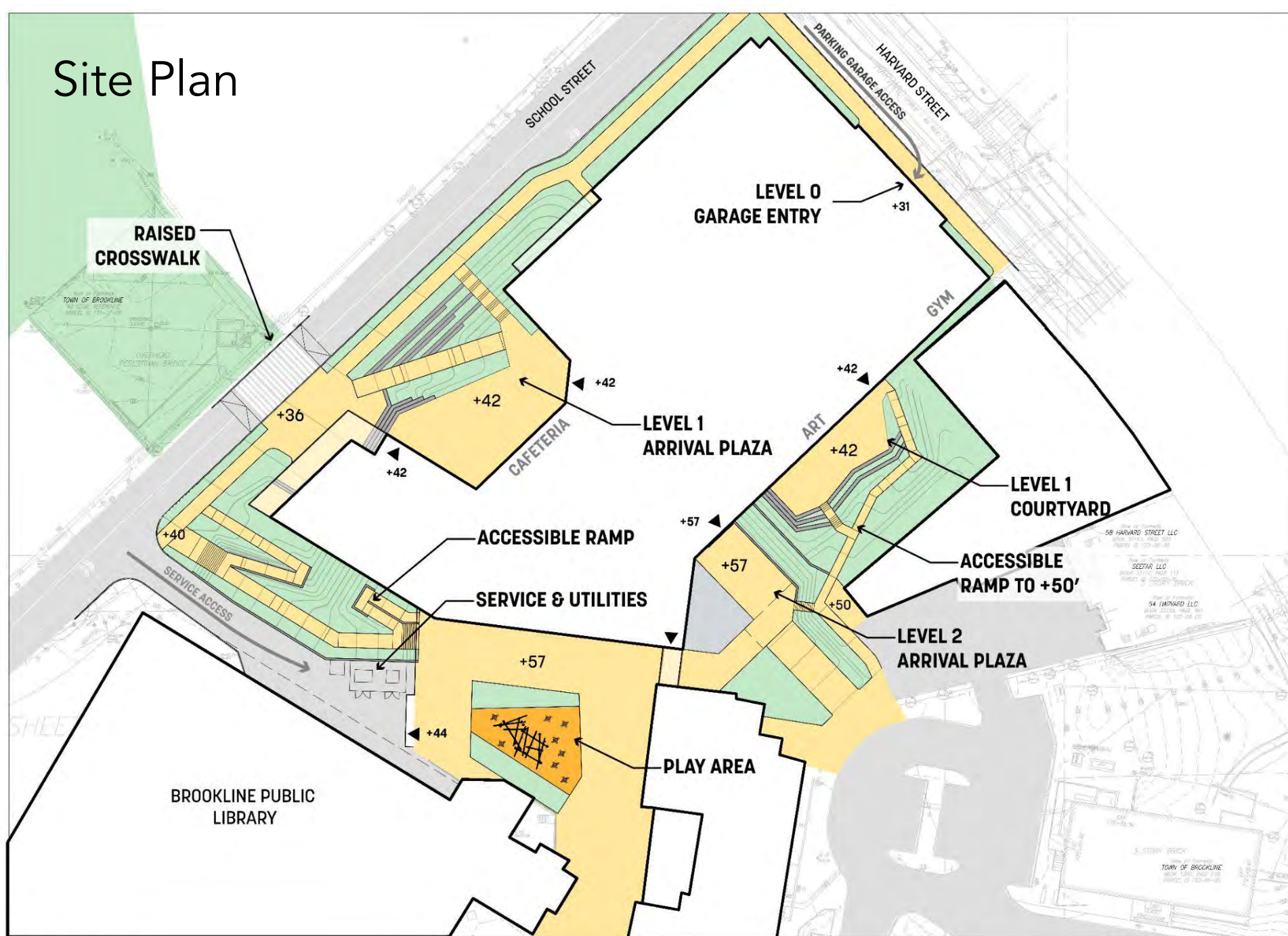
# Material Palette Impacts - For Further Study

- Balance masonry (brick) with lighter-weight rainscreen materials
- Minimize glazing while allowing ample daylighting
  - Glass where it's needed, not where it isn't
- Metal: explore zinc, steel, and other single-material formed panel options
  - Color + variation
  - Texture
  - Cost
  - Detailing options
- Shingle: explore stone shingle rainscreen
  - Slate is a thin alternative to limestone
  - Minimize weight

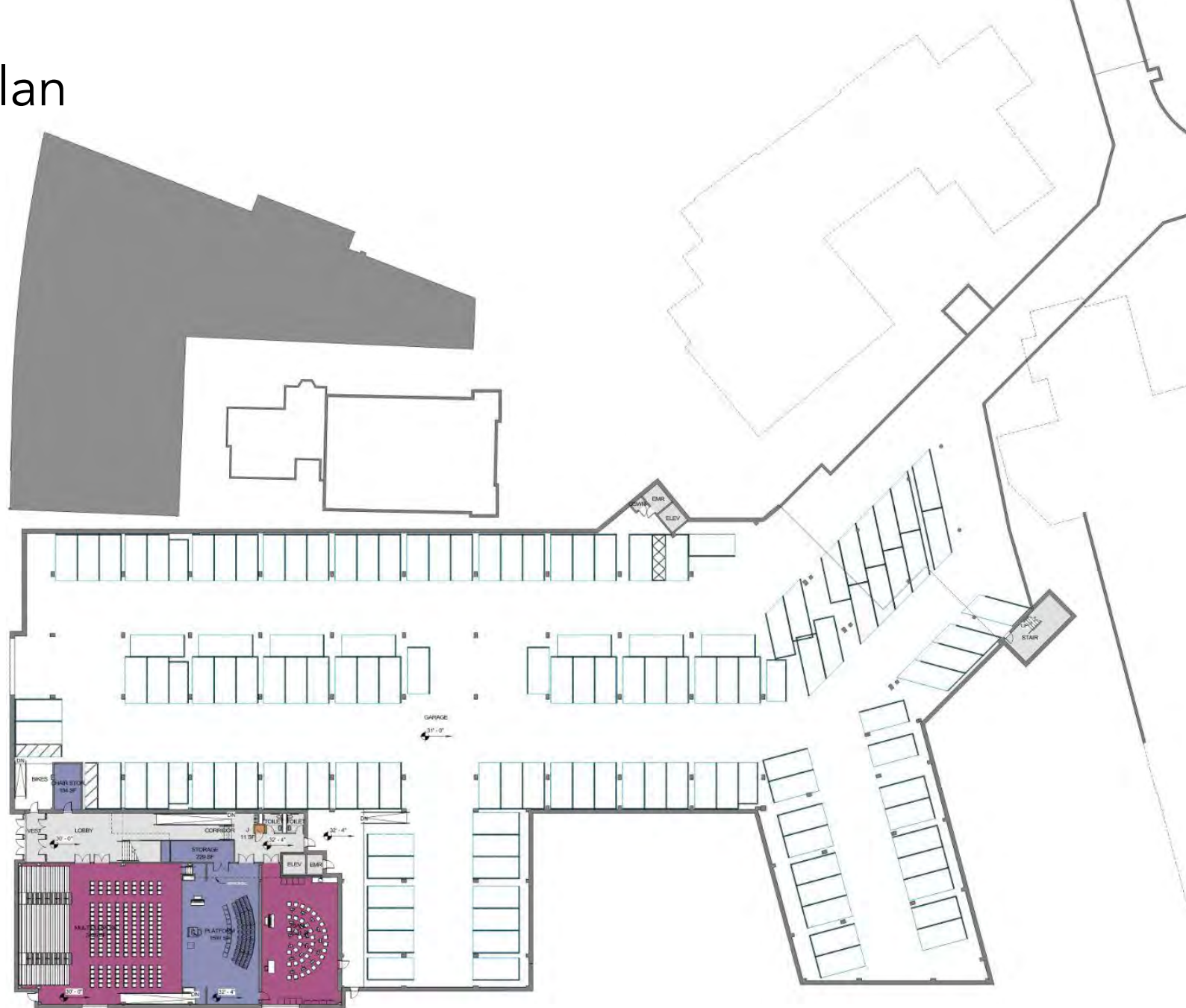
# Plans



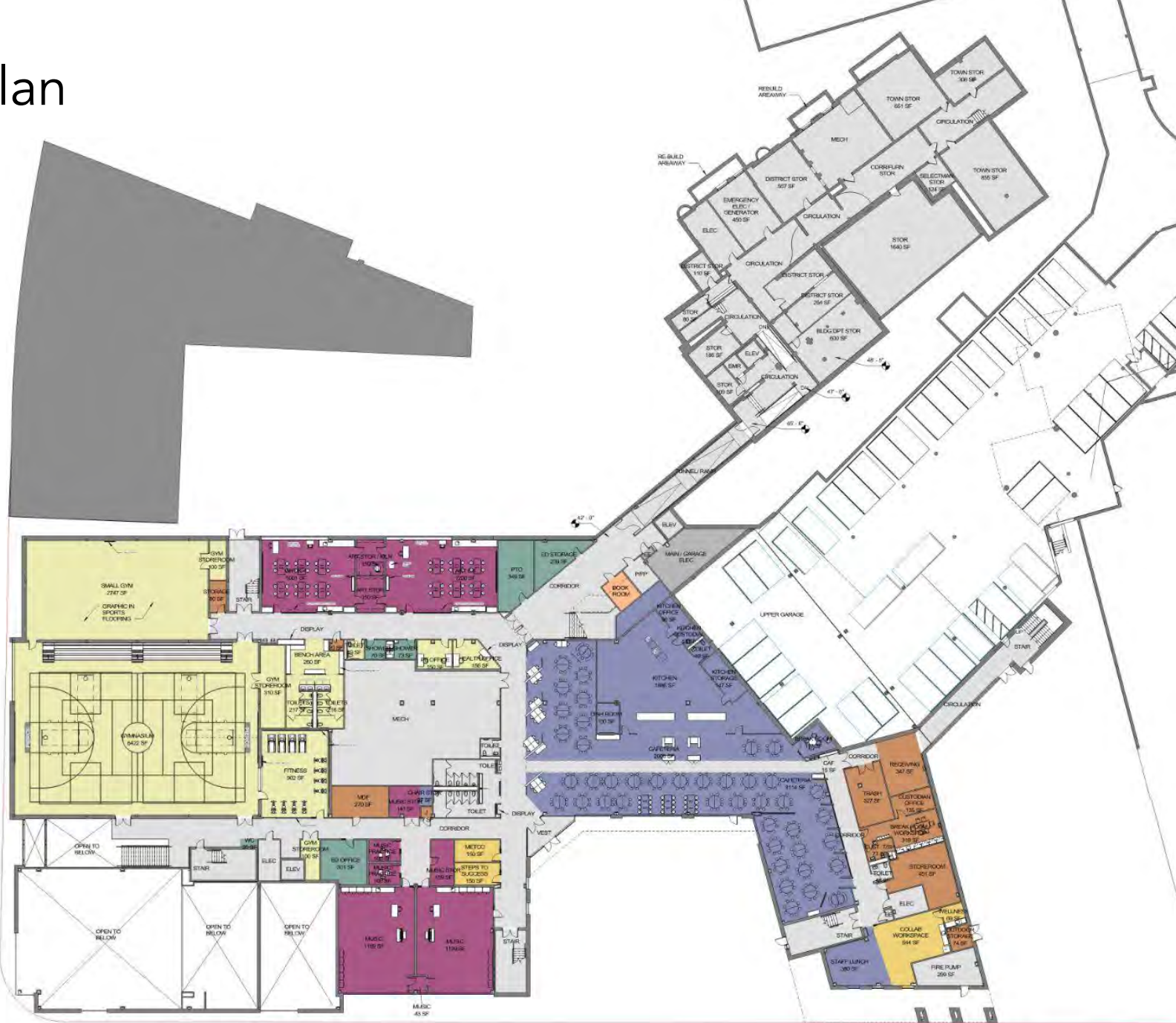
# Site Plan



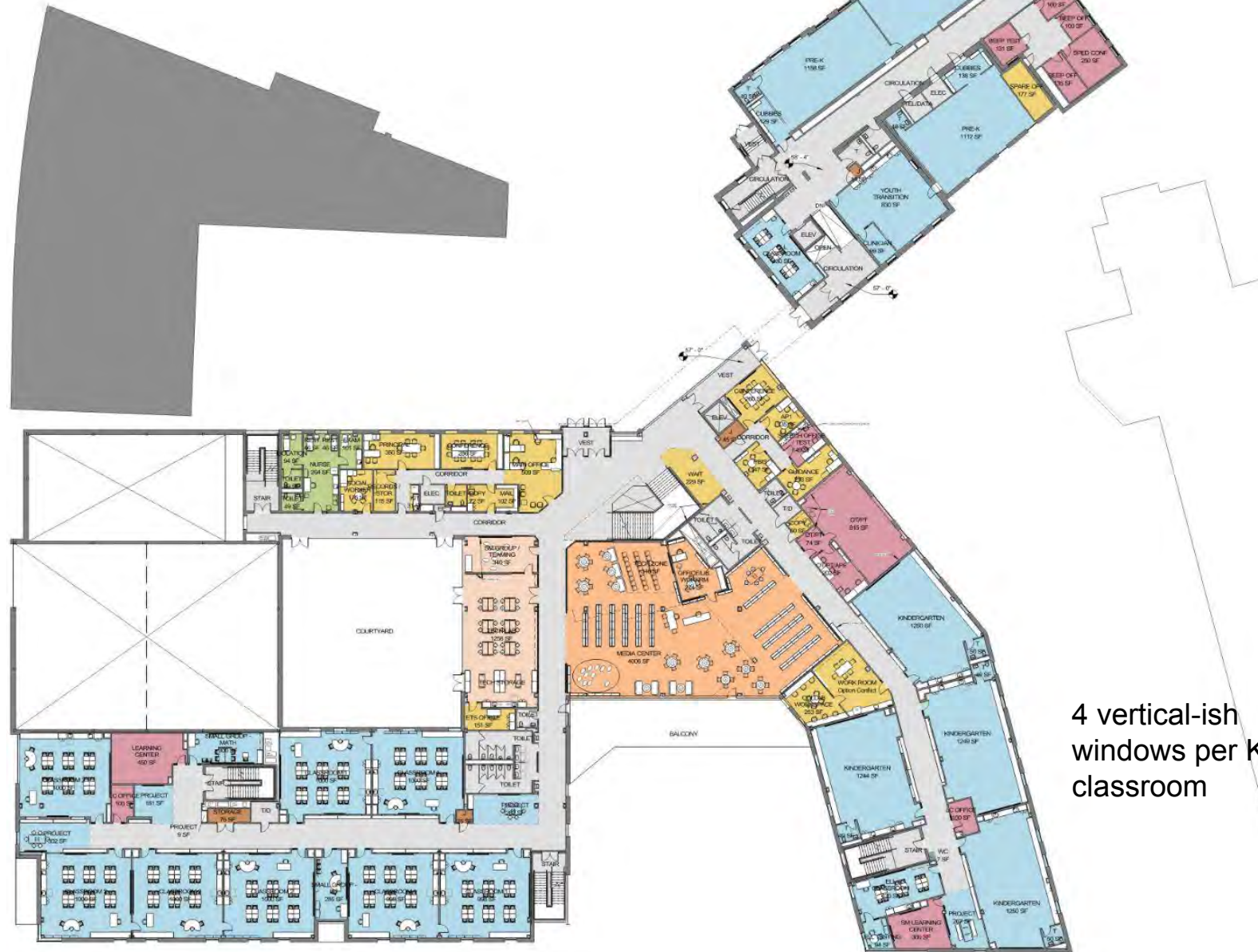
# Level 0 Plan



# Level 1 Plan



# Level 2 Plan



4 vertical-ish windows per K classroom

3 vertical-ish or 2 wide windows per typical classroom



# Level 3 Plan



# PV Shading Strategies - South



# Additional View tests 1 - S Facade View Option A

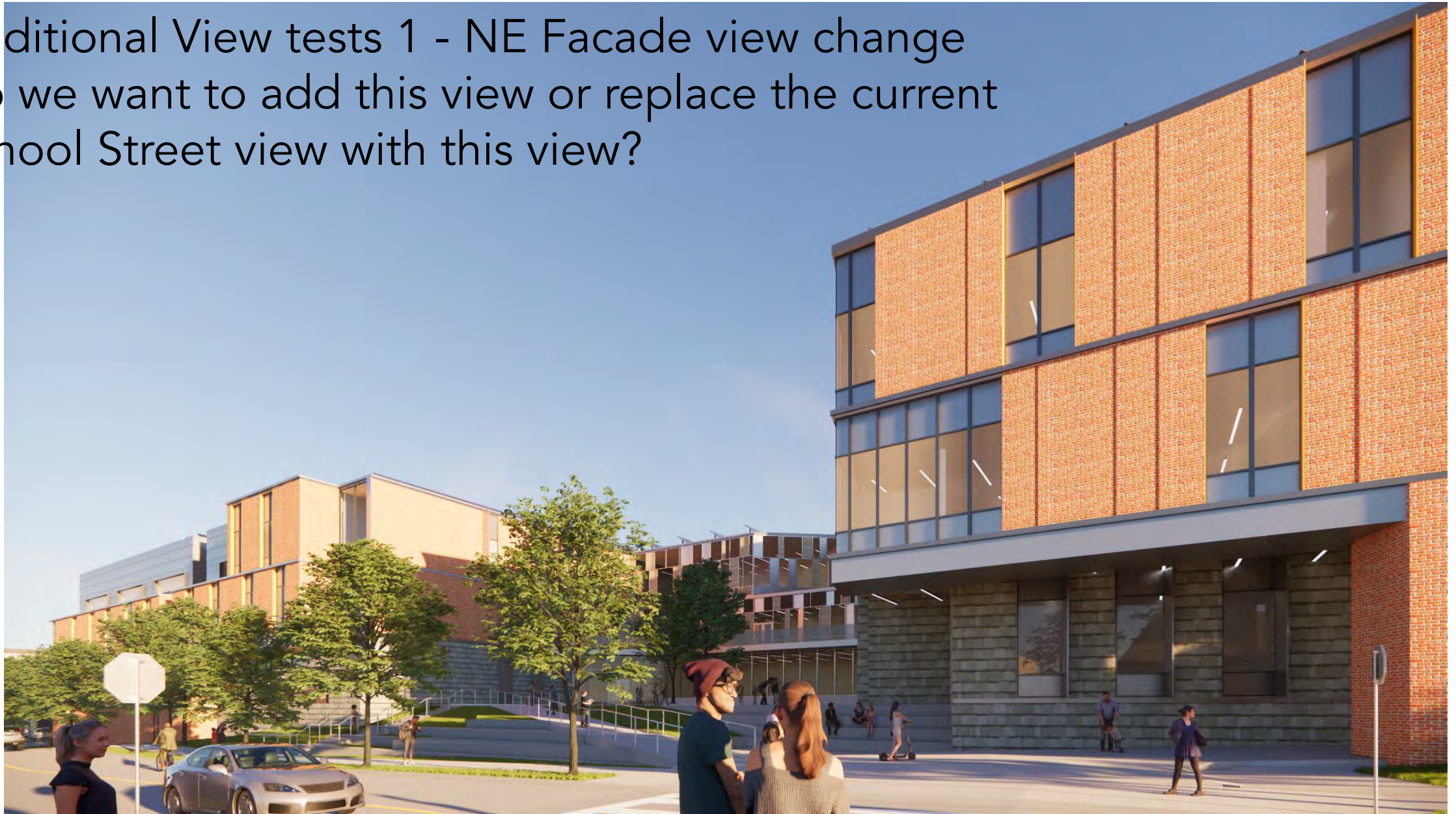


Additional View tests 2 - S Facade View  
Option B -- best (adjust lighting - not so much shade  
in foreground)





Additional View tests 1 - NE Facade view change  
Do we want to add this view or replace the current  
School Street view with this view?



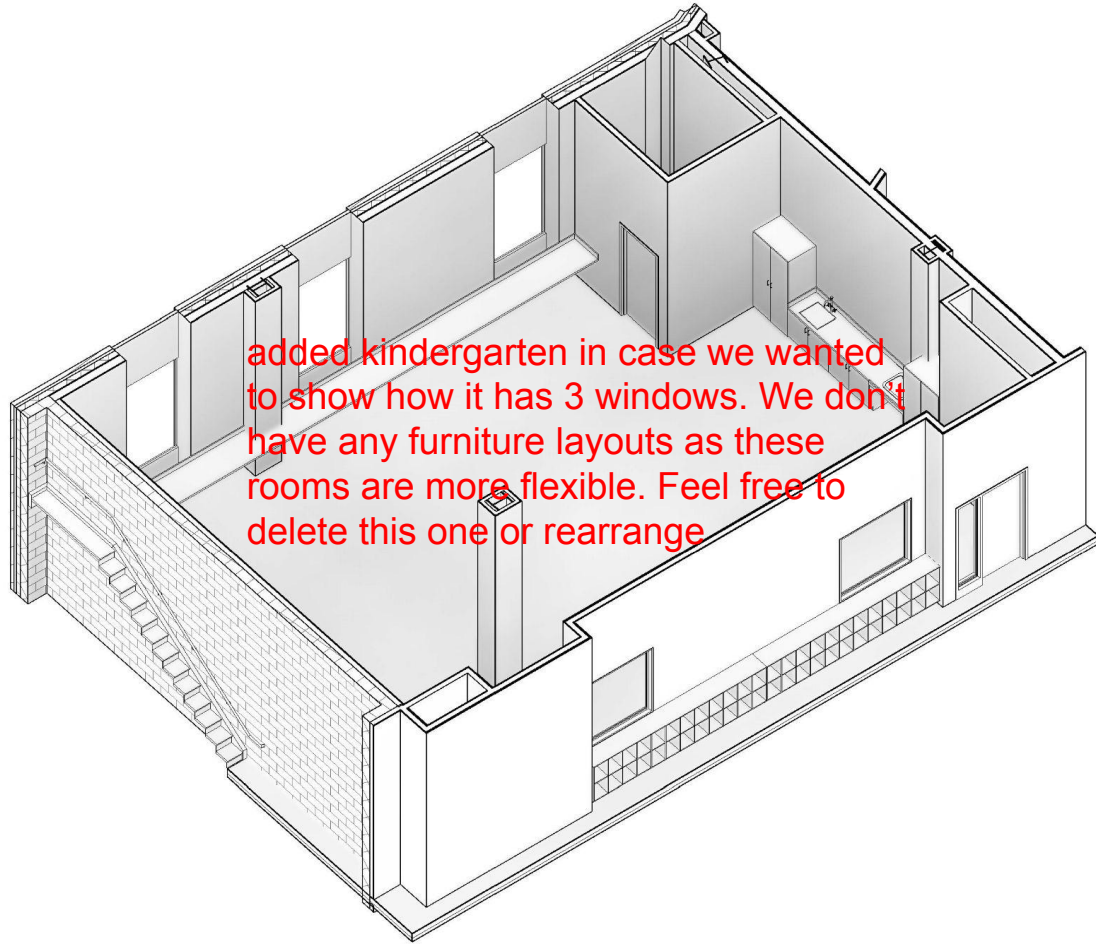
# Additional View tests 2 - Courtyard View Option B



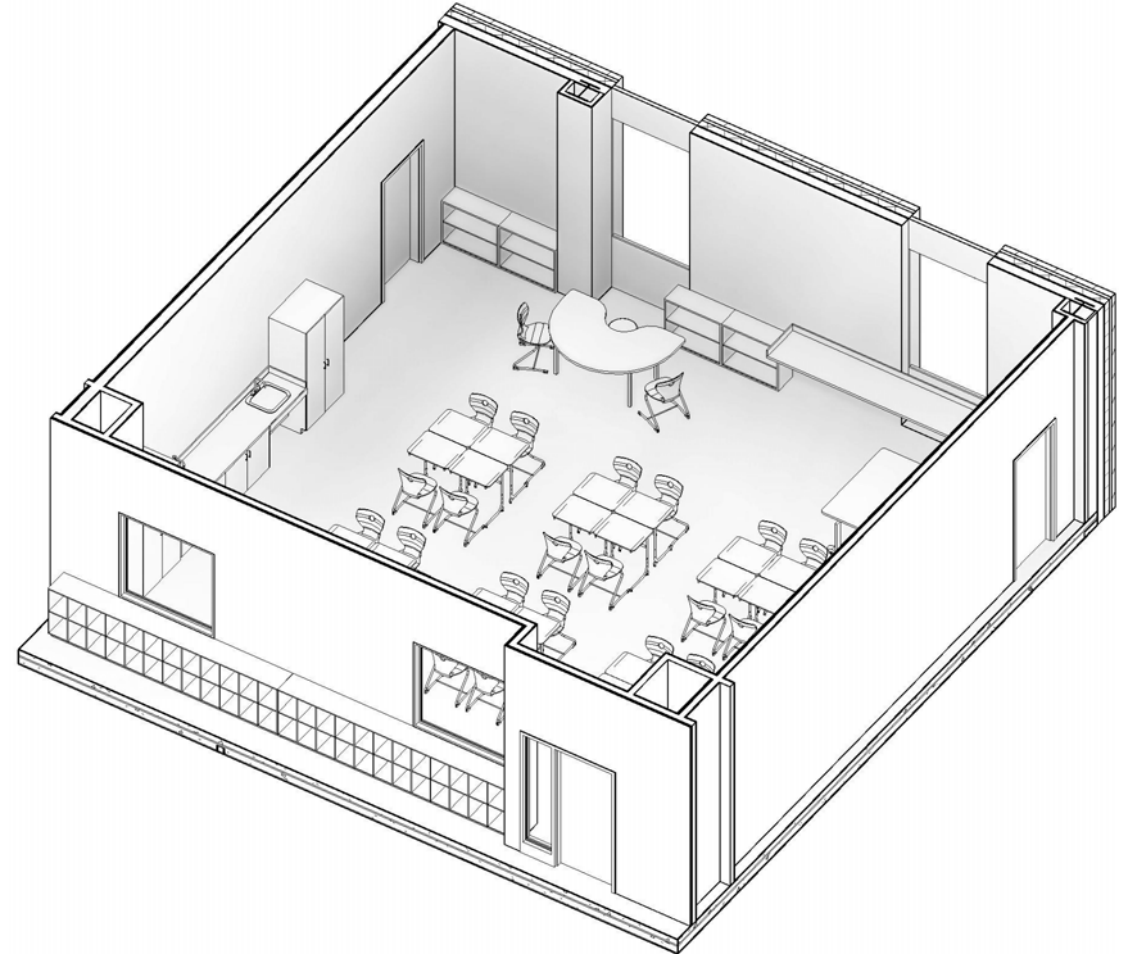
# Additional View tests 3 - Courtyard View Option C



# Typical + Kindergarten classrooms



added kindergarten in case we wanted to show how it has 3 windows. We don't have any furniture layouts as these rooms are more flexible. Feel free to delete this one or rearrange



School St. at Library

LIGHT SHELF OPTION

**WINDOWS**

Prioritize classroom daylighting  
Show operable windows  
Sun shading only where needed



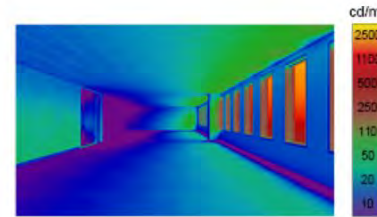
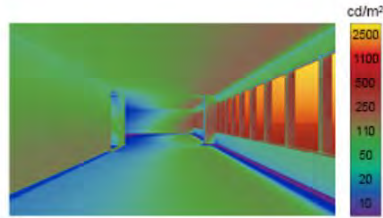
Pierce entrance



TODAY



# North West, East, South Classrooms - Daylight Pattern



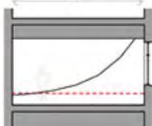
95%  
of floor area is  
above 300 lux

LUX

— Horiz.  
— illum.

- - - 300

20'



40%  
of floor area is  
above 300 lux

LUX

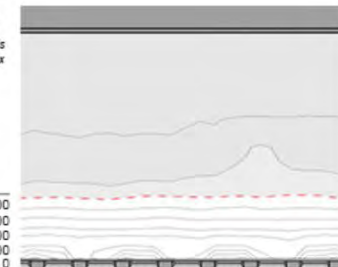
- - - 2000

- - - 300

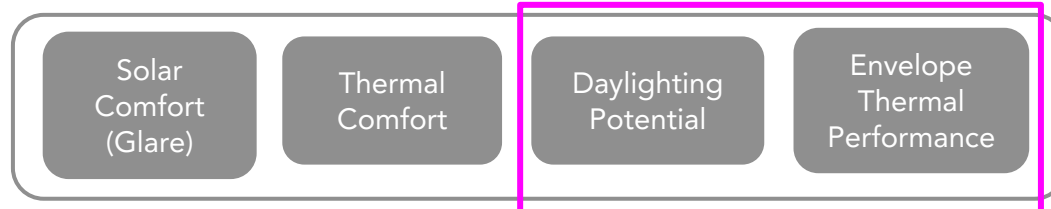
- - - 200

- - - 100

- - - 0



- 11 HOMEWORK
- 12 SPECIAL EDUCATION
- 13 ART & MUSIC
- 14 SCIENCE & TECHNOLOGY
- 15 HEALTH & PHYSICAL EDUCATION
- 16 MEDIA CENTER
- 17 LIBRARY
- 18 COMMUNITY SPACE
- 19 MEDICAL
- 20 ADMINISTRATION & GUIDANCE
- 21 OFFICIAL & MANAGEMENT
- 22 OTHER
- 23 EXISTING OCCUPIED
- 24 EXISTING OCCUPIED
- 25 NEW PROPOSED SPACE



# Goals + Priorities

from Feasibility to Schematic Design

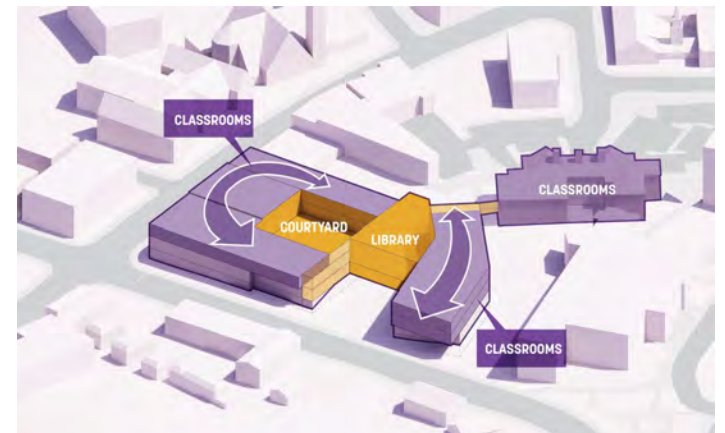
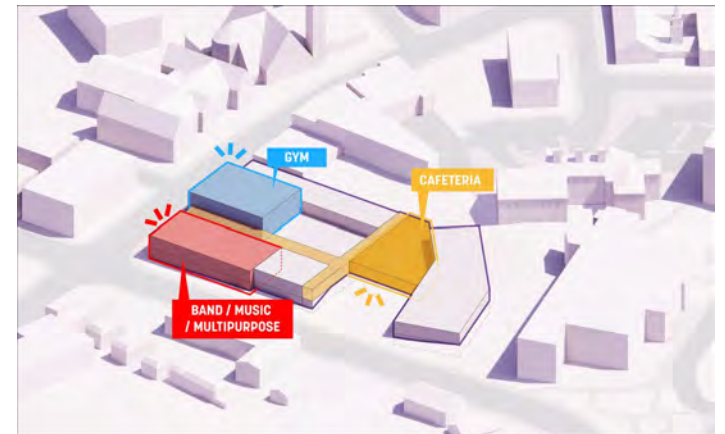
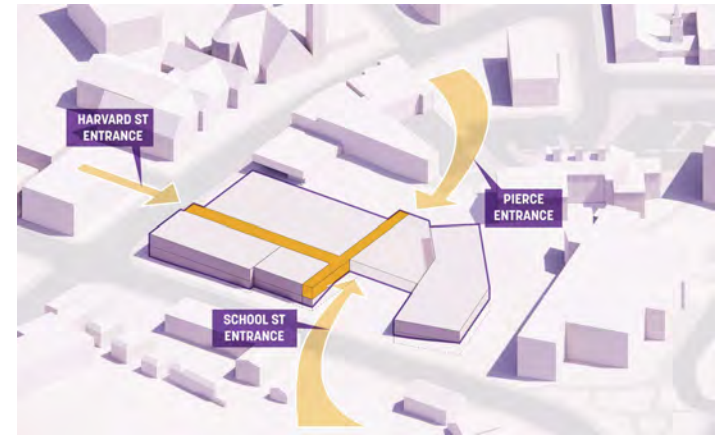


# Exterior Design Goals + Priorities

- Responds to neighborhood context
- Responds to Educational Plan
  - Facades that make learning visible
  - Outdoor learning
  - Indoor-outdoor connections + views
  - Sense of whimsy
- Welcoming site + exterior
  - Inviting, accessible entrances
  - Safe, intuitive, pleasant pedestrian flow
- Design is forward-looking and exciting, expressing sustainability
- Sustainably designed
  - More detail on this next time!

# Exterior Design Strategies

- Neighborhood context informs the massing + material palette
- “Building blocks” composed to evoke a sense of whimsy and maintain a child-appropriate scale
- Welcoming, transparent ground floor(s) and entrances
- Window strategy balances daylight, views, shading, and insulation needs
- Accessible, inviting, welcoming, safe site



# Performance Metrics

Solar  
Comfort  
(Glare)

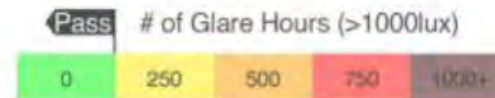
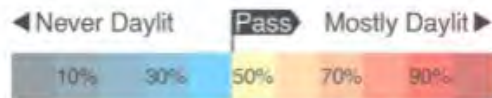
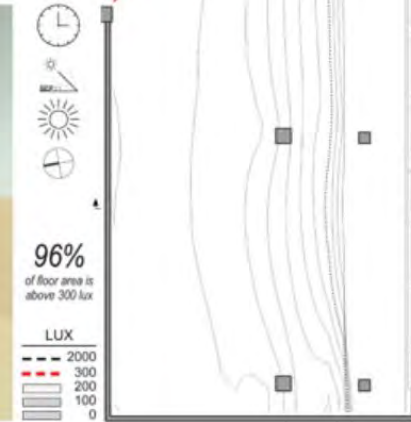
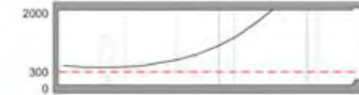
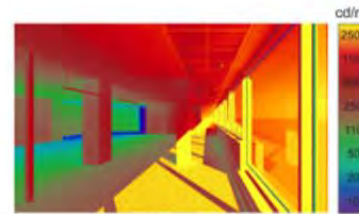
Thermal  
Comfort

Daylighting  
Potential

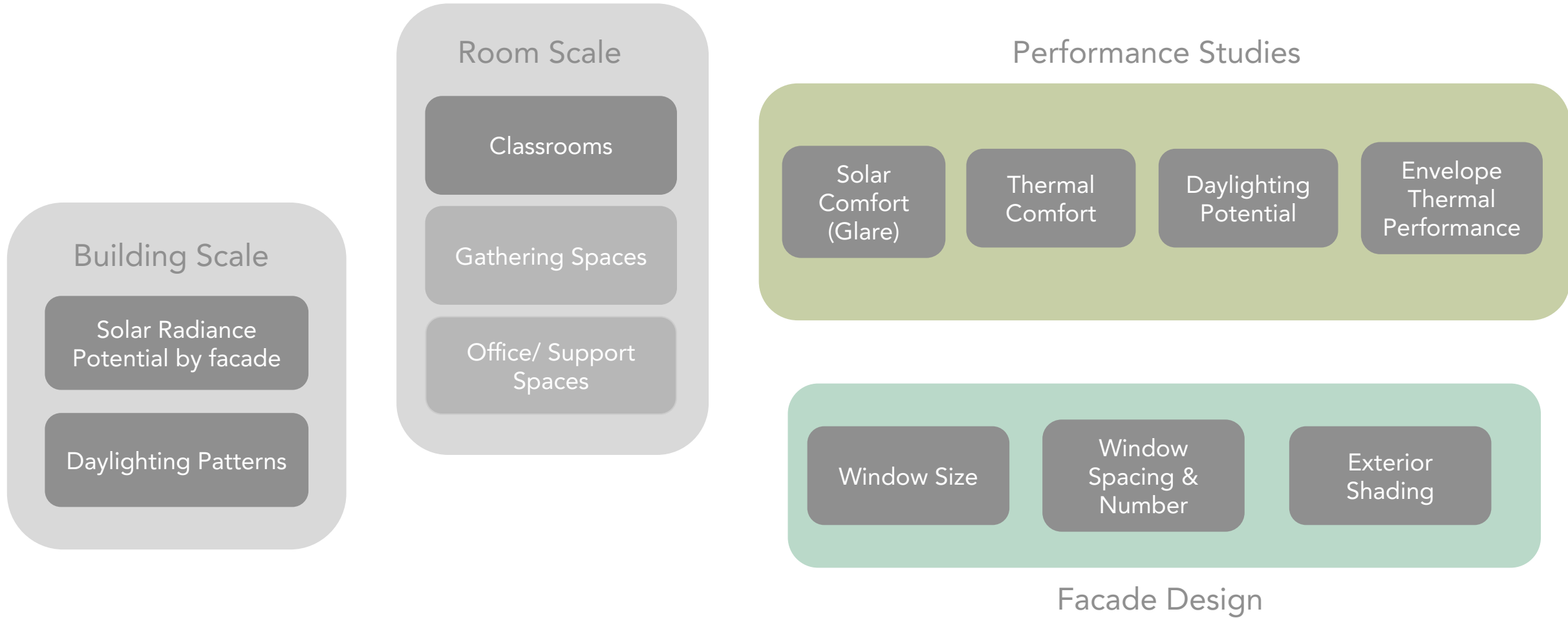
Envelope  
Thermal  
Performance



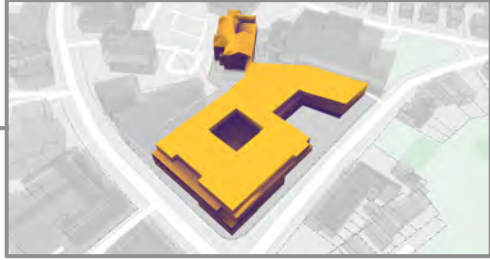
Phipps Conservatory Center for Sustainable Landscapes  
The Design Alliance Architects  
Pittsburgh, Pennsylvania, United States  
Credit: Denmark Photography, Inc. (www.denmarsh.com)



# Balancing Solar Resources



# Balancing Solar Resources



## Building Scale

Solar Radiance Potential by facade

Daylighting Patterns

## Room Scale

Classrooms

Gathering Spaces

Office/ Support Spaces

## Performance Studies

Solar Comfort (Glare)

Thermal Comfort

Daylighting Potential

Envelope Thermal Performance

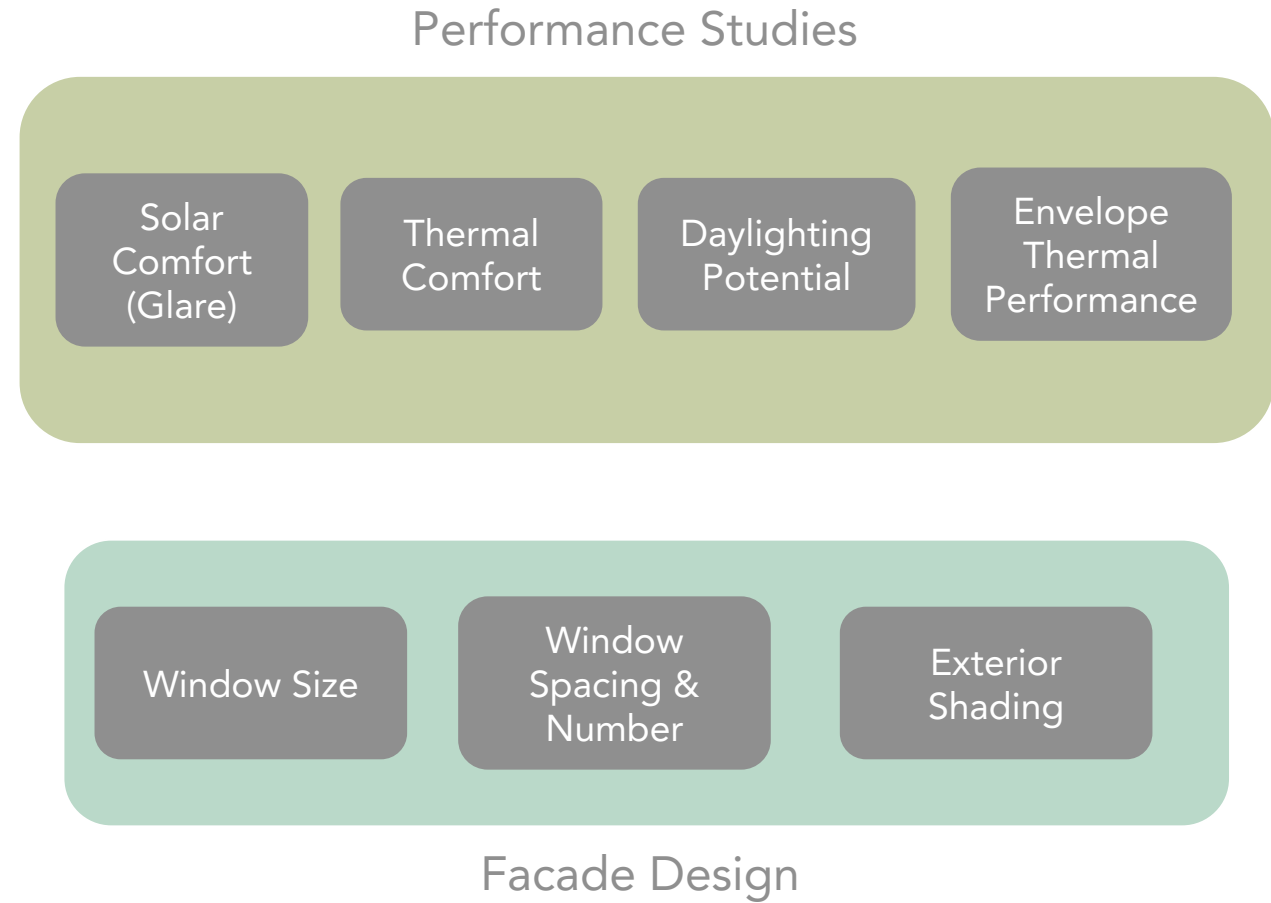
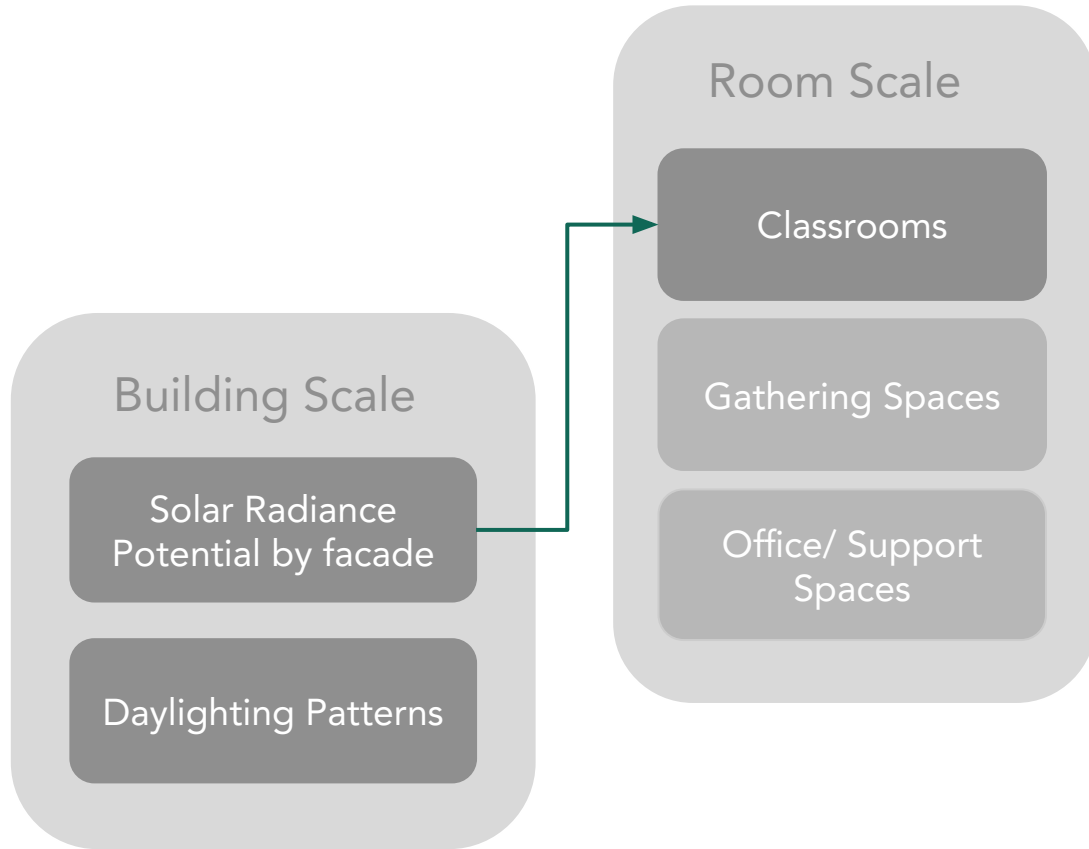
Window Size

Window Spacing & Number

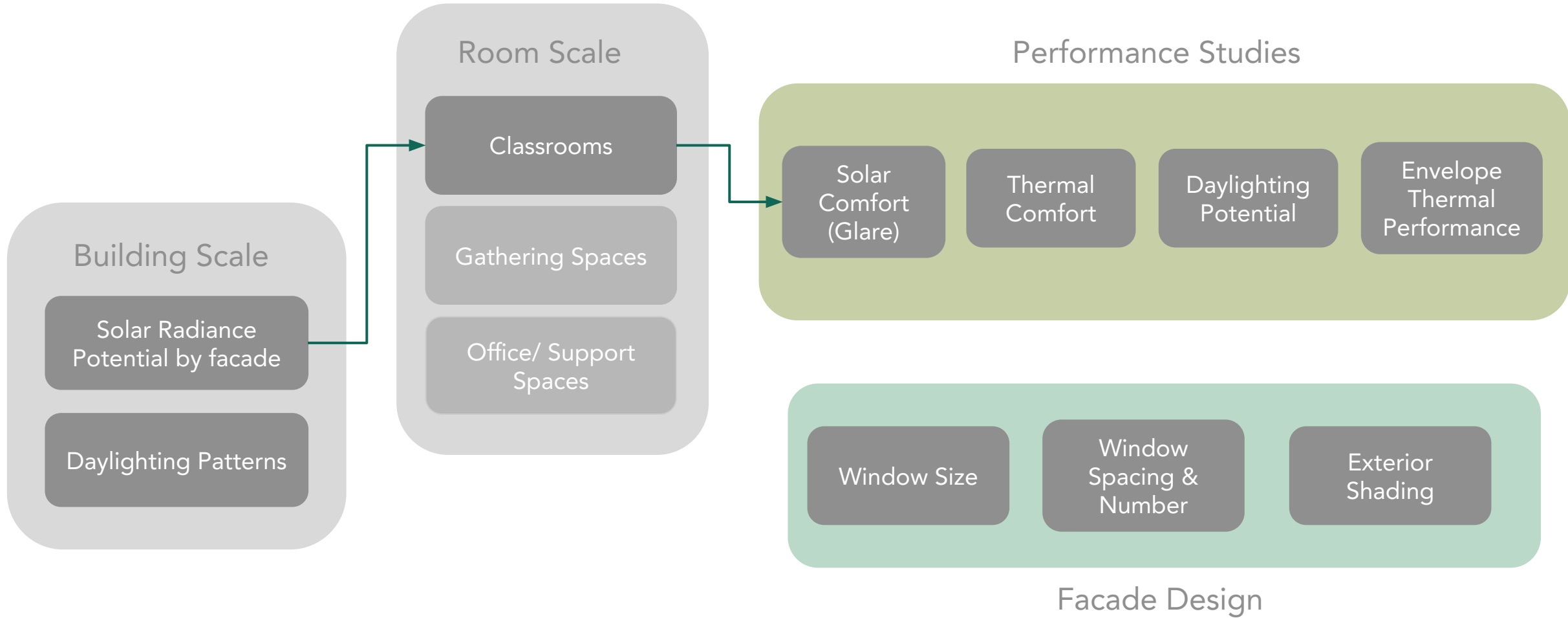
Exterior Shading

## Facade Design

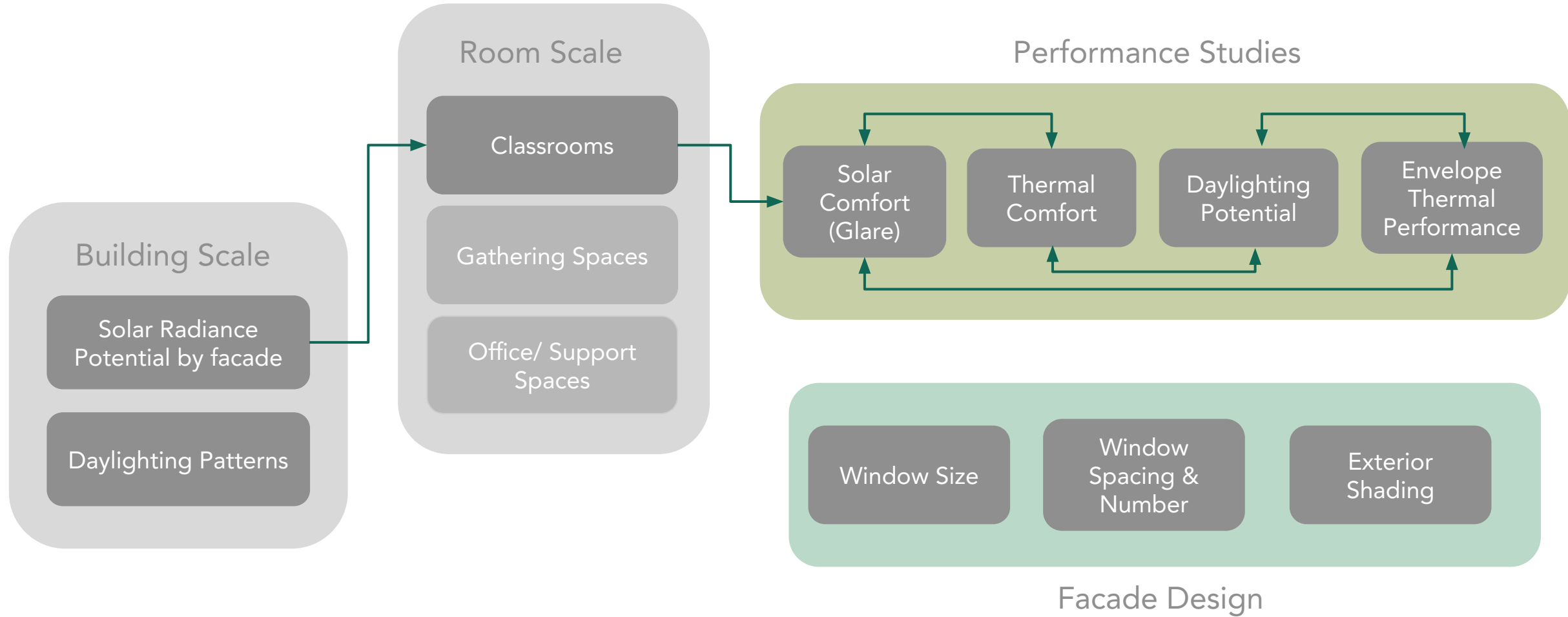
# Balancing Solar Resources



# Balancing Solar Resources

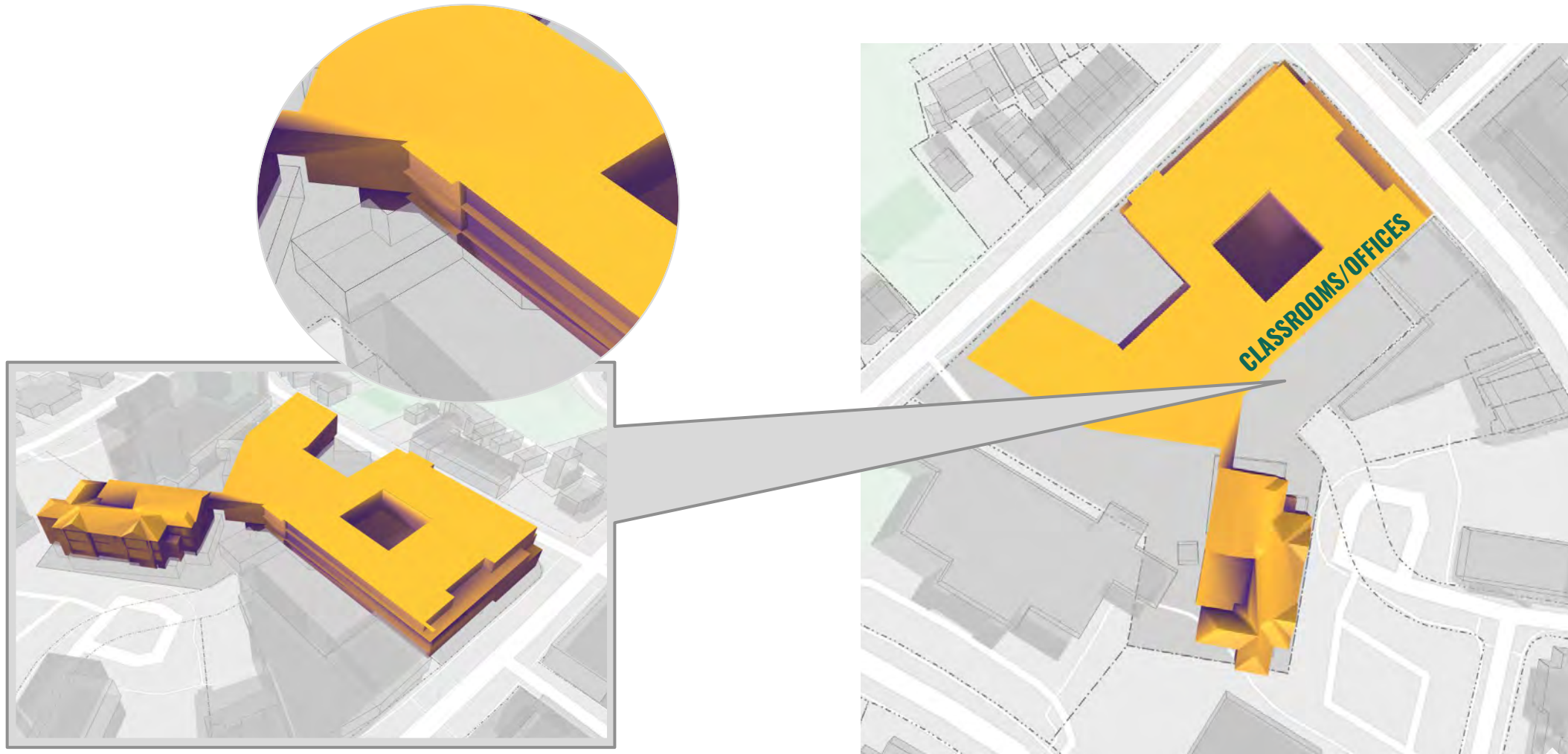


# Balancing Solar Resources

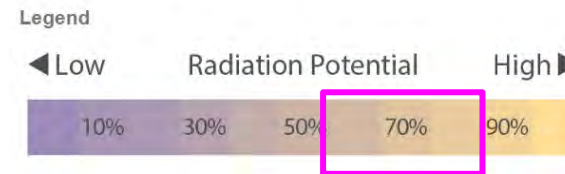




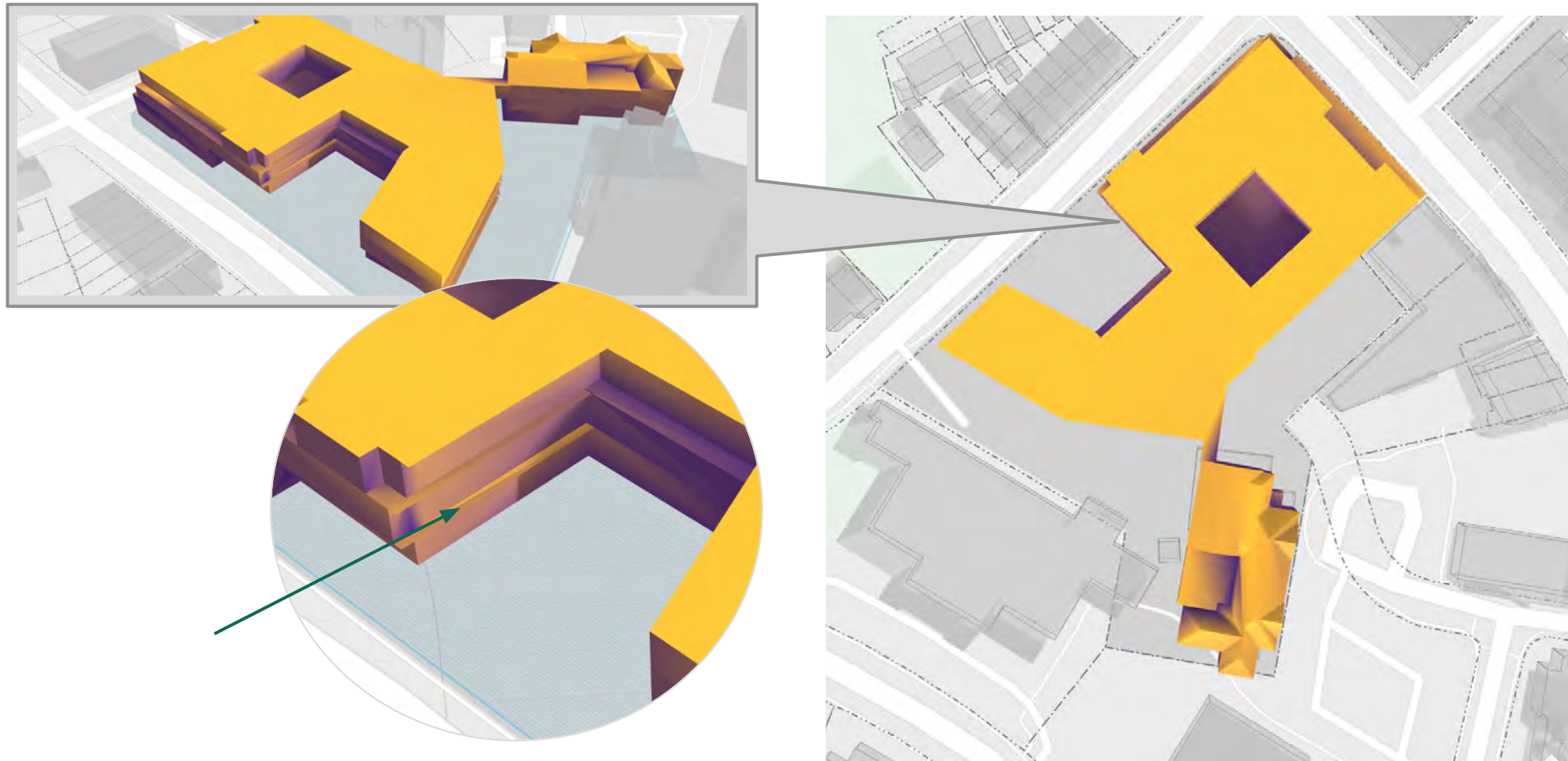
# Building Scale- Solar Radiance Potential



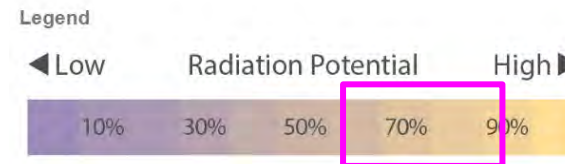
South-East: Classrooms/Offices  
Shading Opportunities



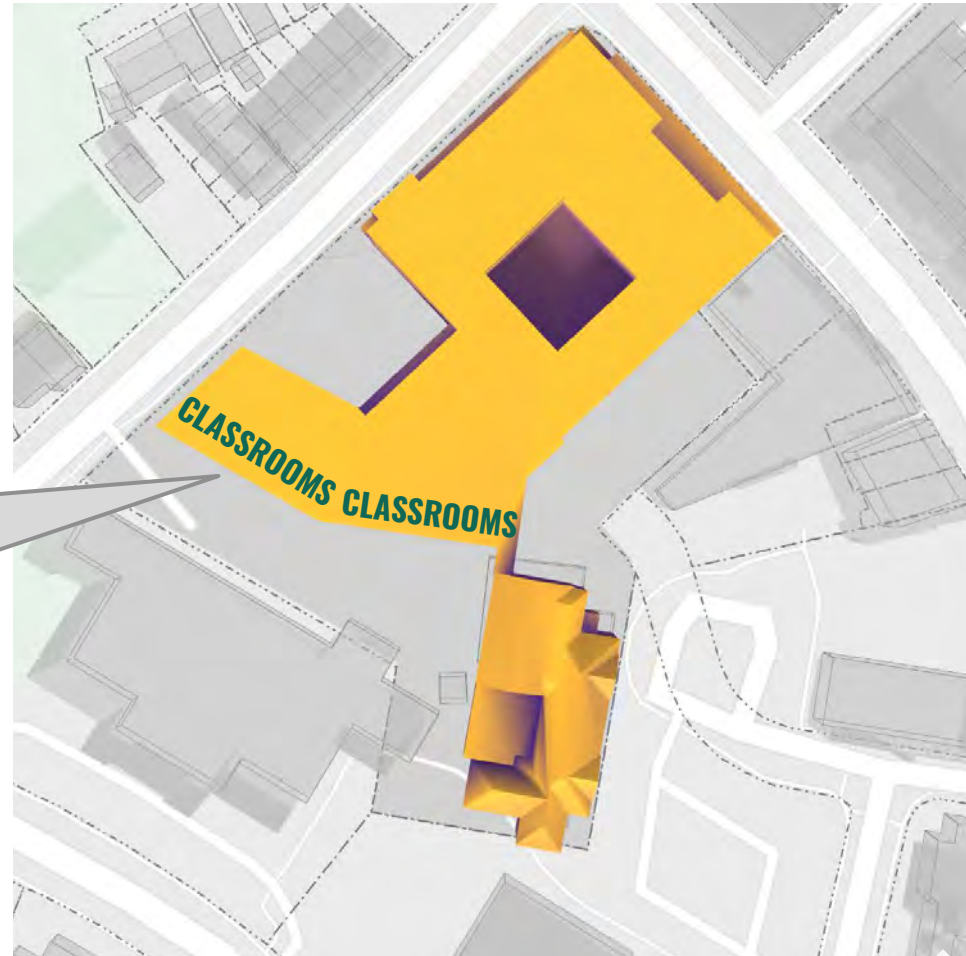
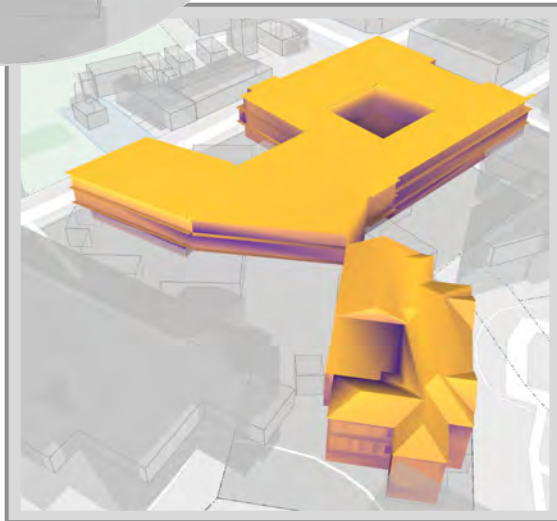
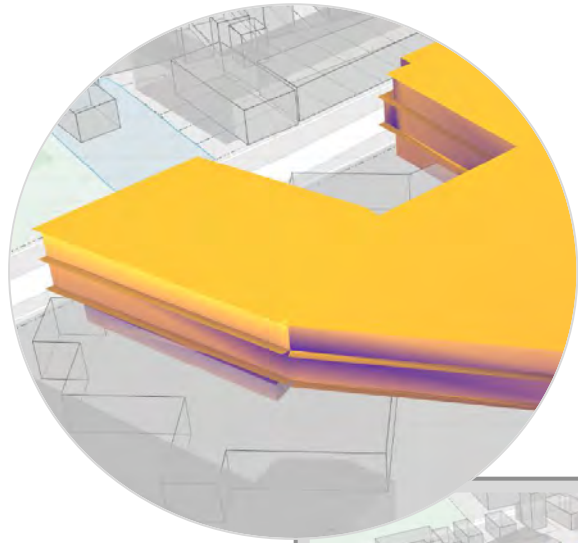
# Building Scale- Solar Radiance Potential



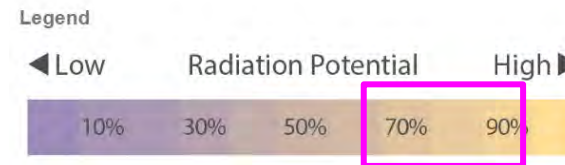
South-East Facade  
Shading Opportunities



# Building Scale- Solar Radiance Potential



South Classrooms  
Shading Opportunities



# Balancing Solar Resources

