

# **a&m consolidated middle school**

*tucker lang harding*



# ***acknowledgement***

**Marcel Erminy**  
*committee chair* department of architecture

**Michael O'Brien**  
*committee member* department of architecture

**Jennifer Whitfield, PhD**  
*committee member* department of mathematics

**Brian Gibbs, AIA LEED AP**  
*studio professor* department of architecture

**Texas A&M University**  
*College of Architecture*

**James Haliburton, PhD AIA LEED AP**  
*Master of Architecture Associate Department Head*

# ***abstract***

In today's social and cultural climate, students spend less time outside in the natural environment. This can be partially attributed a heavier reliance on cars and busses for transportation, greater distances between destinations making cities less "walkable", and an increased awareness of security needs for children. If technology is added into this equation, these factors culminate in a teen and child population that spends less time outside than previous generations of children. In this project, I will show ways in which I believe thoughtful school design can influence students to utilize the outdoor environment more frequently. I propose that this will result in an increase of student's cognitive, emotional, and moral learning. <sup>1</sup>



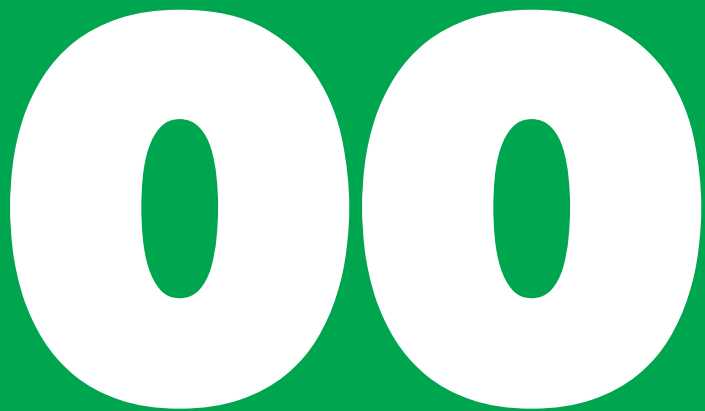
# ***content***

<b>00</b> <i>introduction</i>	08
<b>01</b> <i>site information</i>	14
<b>02</b> <i>design parti</i>	20
<b>03</b> <i>outdoor learning space</i>	26
<b>04</b> <i>indoor learning space</i>	38



# ***dedication***

to my beautiful and devoted wife, Emily Katherine Harding and  
newborn son, William Riley Harding



## ***introduction***

An introduction of the design problem, the project's subject, and a deeper look into the research-based solution that will encourage schools to become focused on interacting with nature within a teaching setting.





## **climate**

### *design challenge 1*



The idea of having class outside in Texas is an intimidating thought for most students and teachers. Weather in College Station is unpredictable which makes it difficult for students to get regularly scheduled time outdoors.

## **change in pedagogy**

### *design challenge 2*



In order to benefit from biophilic design, the way in which teachers instruct their students must change. Outdoor time needs to be incorporated into existing curricula.

## **change in typology**

### *design challenge 3*



One way to get students more time outside starts with the redesign of the current school building's model. Currently, buildings are singular forms that house every programmatic element which makes it difficult for students to find time to spend outside – almost everything a student needs is inside the building's four walls.

## **security**

### *design challenge 4*



Giving students outdoor spaces around the school's campus poses an inherent security risk. When students are allowed to be outside between classes and before and after school, security measures must be in place to prevent breaches in school security and students wandering off-site.

# ***outdoor learning***

*design thesis*

School design can influence students to utilize the outdoor environment more frequently. This will result in an increase in student's cognitive, emotional, and moral learning.<sup>1</sup>



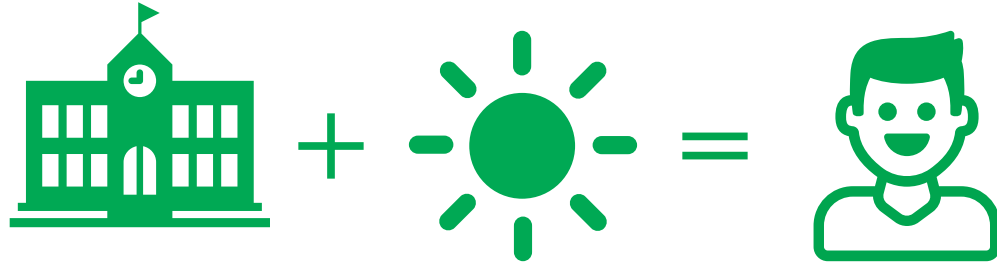
Indian Springs School **Lake Flato**<sup>2</sup>



Indian Springs School **Lake Flato**<sup>3</sup>

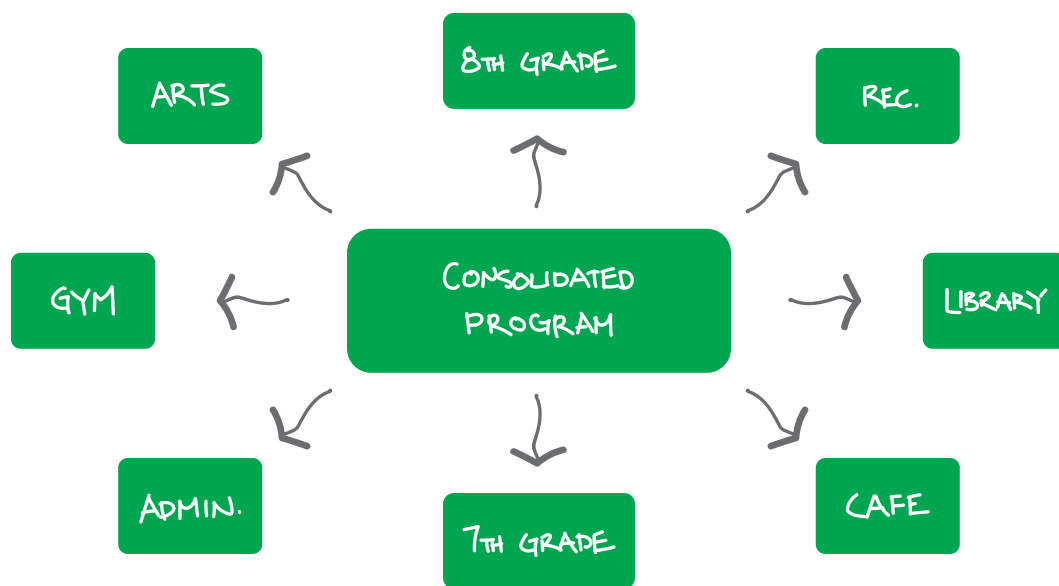


Indian Springs School **Lake Flato**<sup>4</sup>



## **biophilic design** *design strategy*

Biophilia is the use of natural elements to maximize the positive feelings and empirical affects found when humans are in the presence of nature or near nature. Nature has been shown to reduce stress, improve cognitive function and creative ability. This design strategy is used to help students learn at a higher rate than students that have little or no access to nature.



## **decentralization** *design strategy*

In an effort to give students more time in nature between classes, the program has been decentralized and is no longer housed in a singular building. This strategy gives each programmatic section a dedicated building that tailored to specific needs. Breaking apart the building form also creates interstitial spaces between buildings that can be used for outdoor learning, stress relief gardens, and green space.

# 01

## *site information*

A more in-depth description of the current A&M Consolidated Middle School site and a graphically represented master plan for a hypothetical redesign of the campus.



george bush drive

-4

anderson drive

arts building

seventh grade

drop off

admin.

cafe

eighth grade

gym

holik drive

eighth drop-off

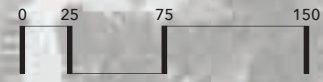
soccer field

tennis 1

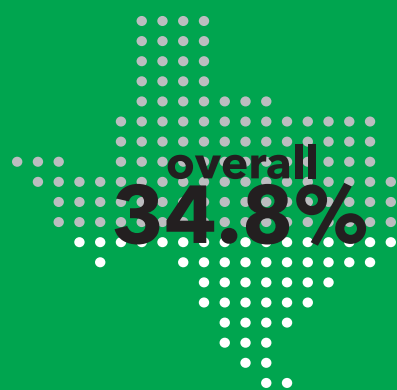
tennis 2

park place

+10







**obesity**



**1 in 3 active**  
per day



**activity**  
(in children)



**3 times per week**



**activity needs**  
(in children)





**usage heat map**



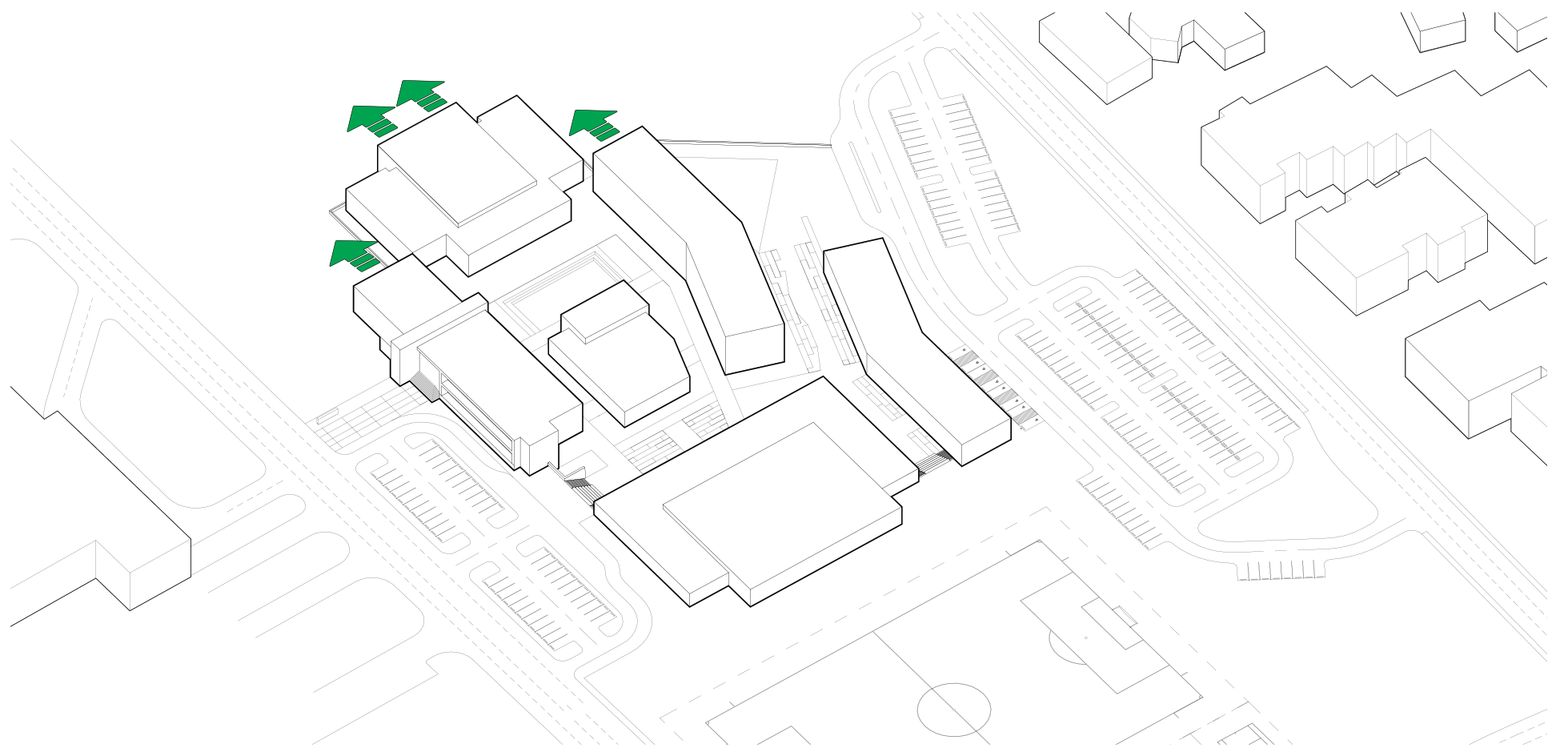
**proximity map**

# 02

## *design parti*

The beginning of design thinking and a framework that informs the design decisions made throughout the remainder of the project.

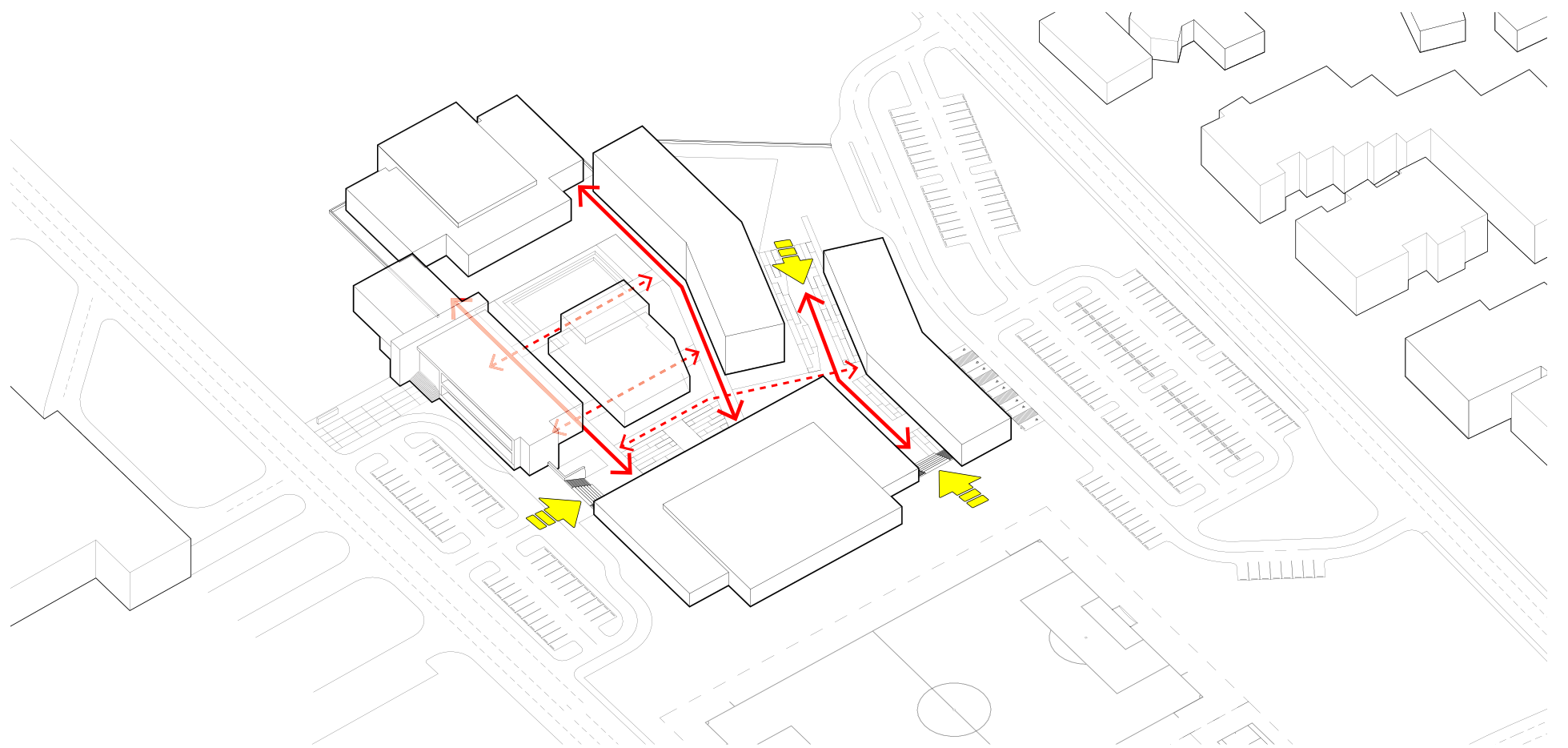




# ***controlled views***

*design parti*

On the north side of the site, there is a natural creek and wooded area that the current building configuration is ignoring. This diagram show one of the main focuses of the project is to use this existing nature on the site to the advantage of the new buildings instead of ignoring the creek (green arrows).





# ***controlled paths***

*design parti*

This diagram depicts the importance of delineating paths of travel within the campus (red arrows) and furthermore defining a set number of access points to the interior of the buildings (yellow arrows). These pathways are critical in a project using this biophilic methodology because these pathways are the routes in which students are encouraged to be and remain outside.

# 03

## *outdoor learning spaces*

Highlights of the outdoor spaces converted into learning spaces through outdoor learning and biophilic techniques.





5



6

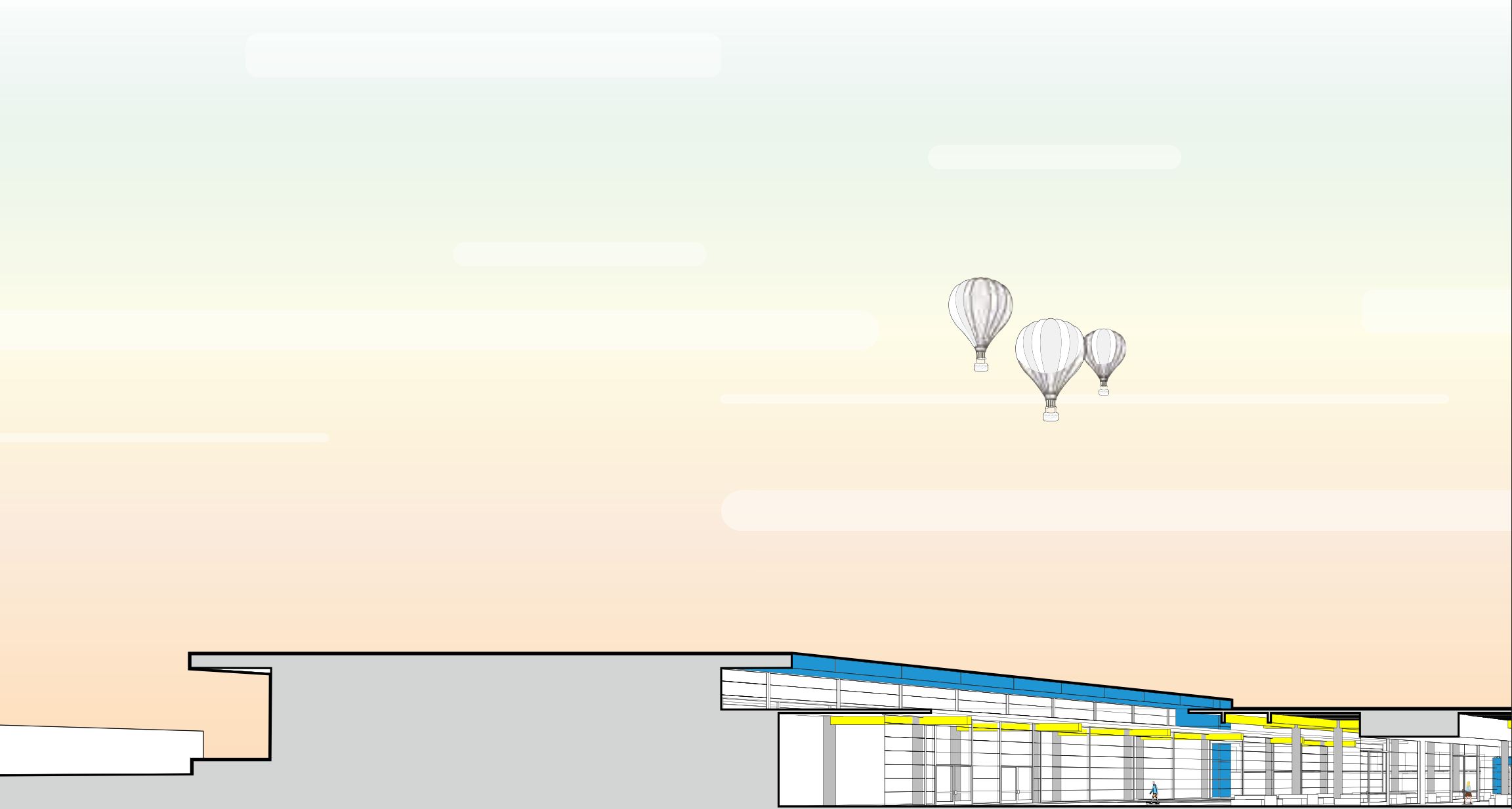


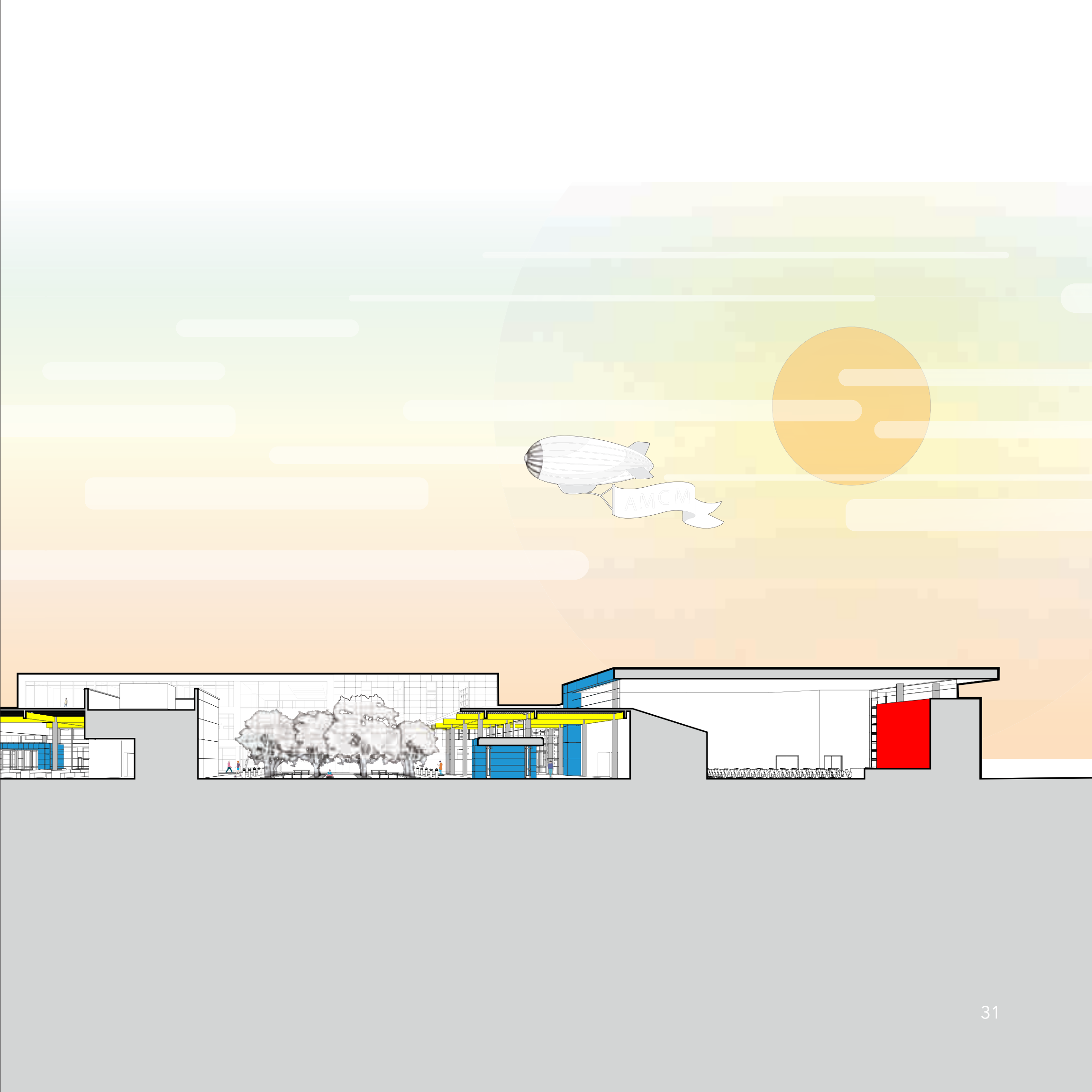
7

Outdoor and natural spaces can act as an appendage to the classroom; acting in harmony instead of remaining separate. Outdoor learning can give students effective new ways to learn while incorporating the beneficial elements of biophilia such as stress reduction and an increase of attentional depth. These positive outcomes are frequently seen when students are given the opportunity to learn in nature.

# *master plan*

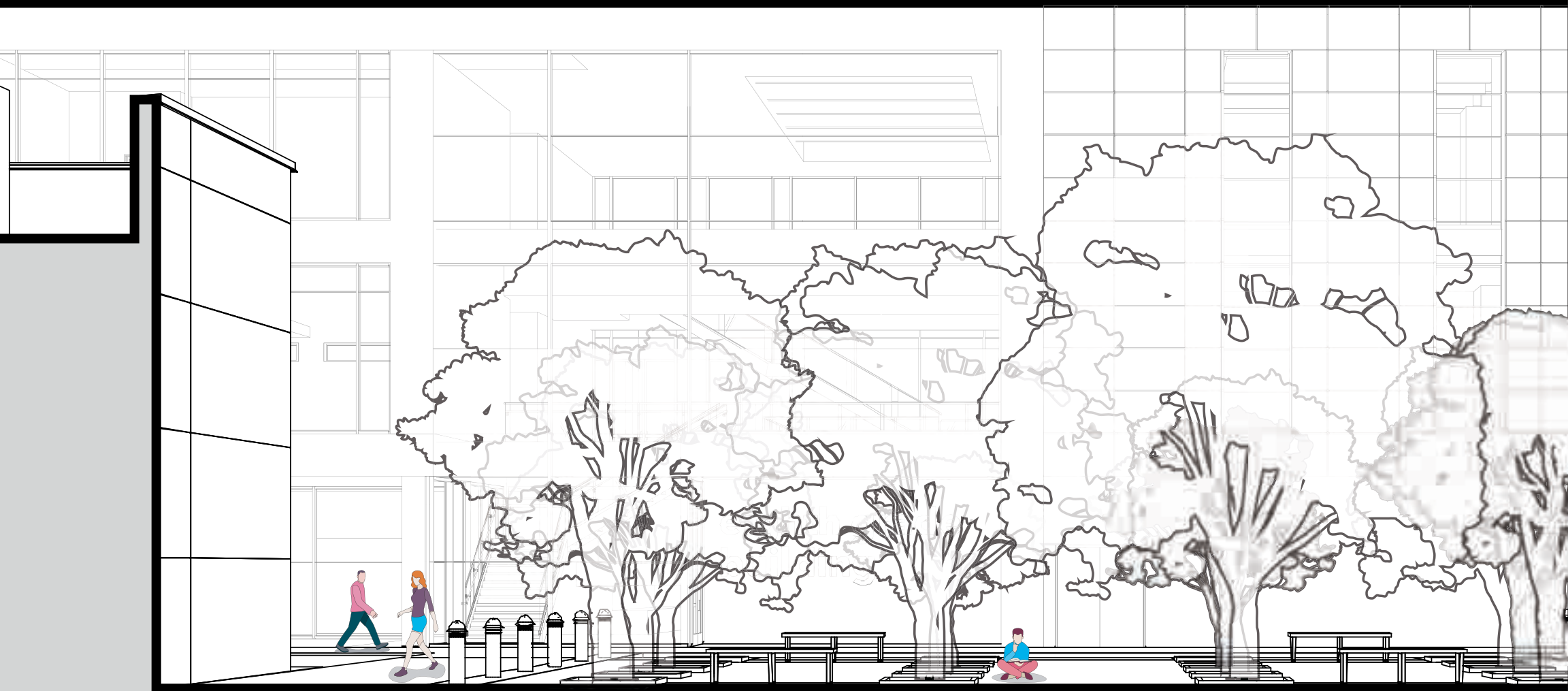
*site section*



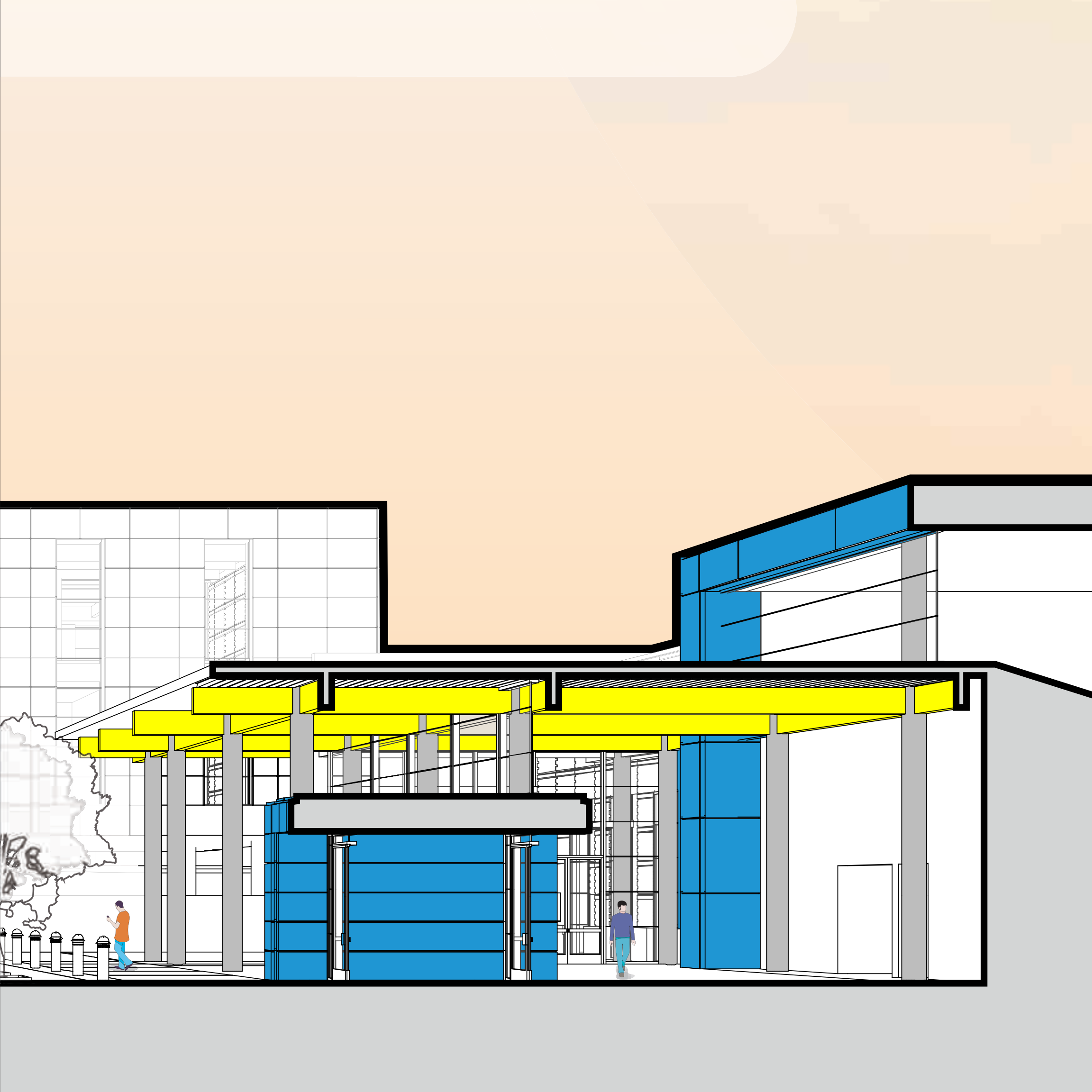


# *master plan*

*enlarged site section*

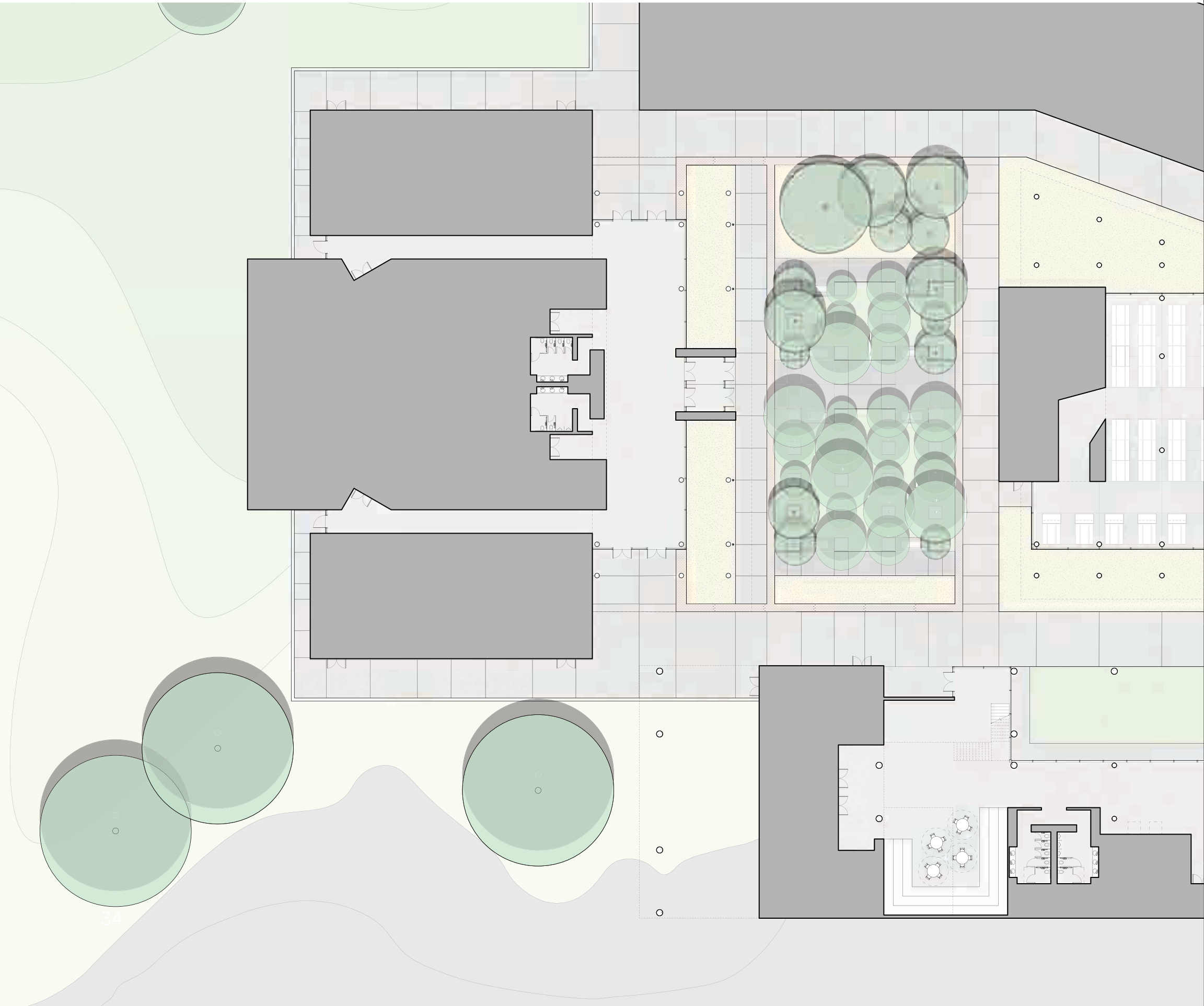


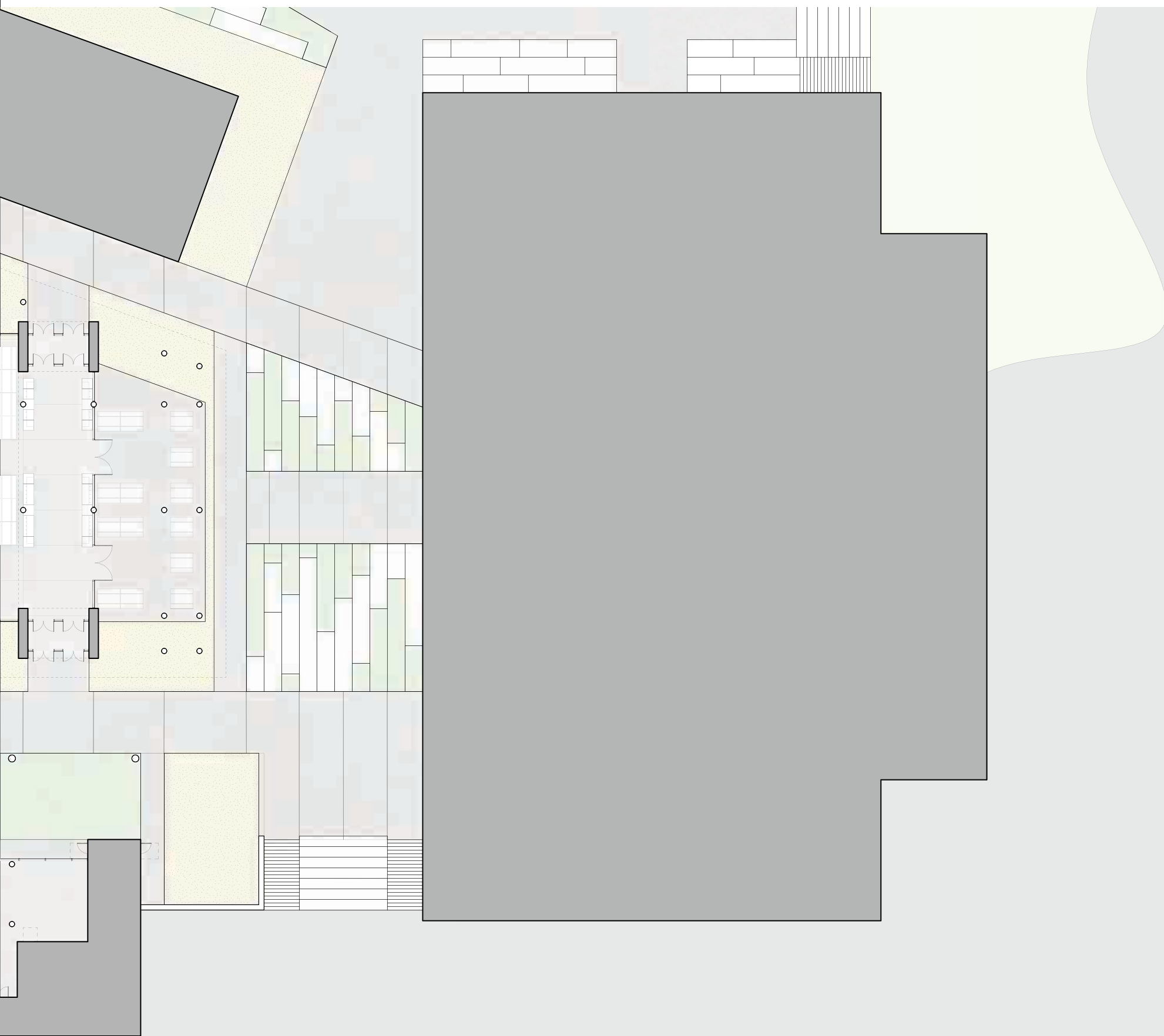




# *interstitial plaza*

*enlarged site plan*





***interstitial plaza***  
*render*





**04**

***indoor learning spaces***

Highlights of the indoor spaces used for learning with an emphasis on the incorporation of green design techniques.





Reeds Spring Middle School **Dake Wells Architecture**<sup>8</sup>



Reeds Spring Middle School **Dake Wells Architecture**<sup>9</sup>



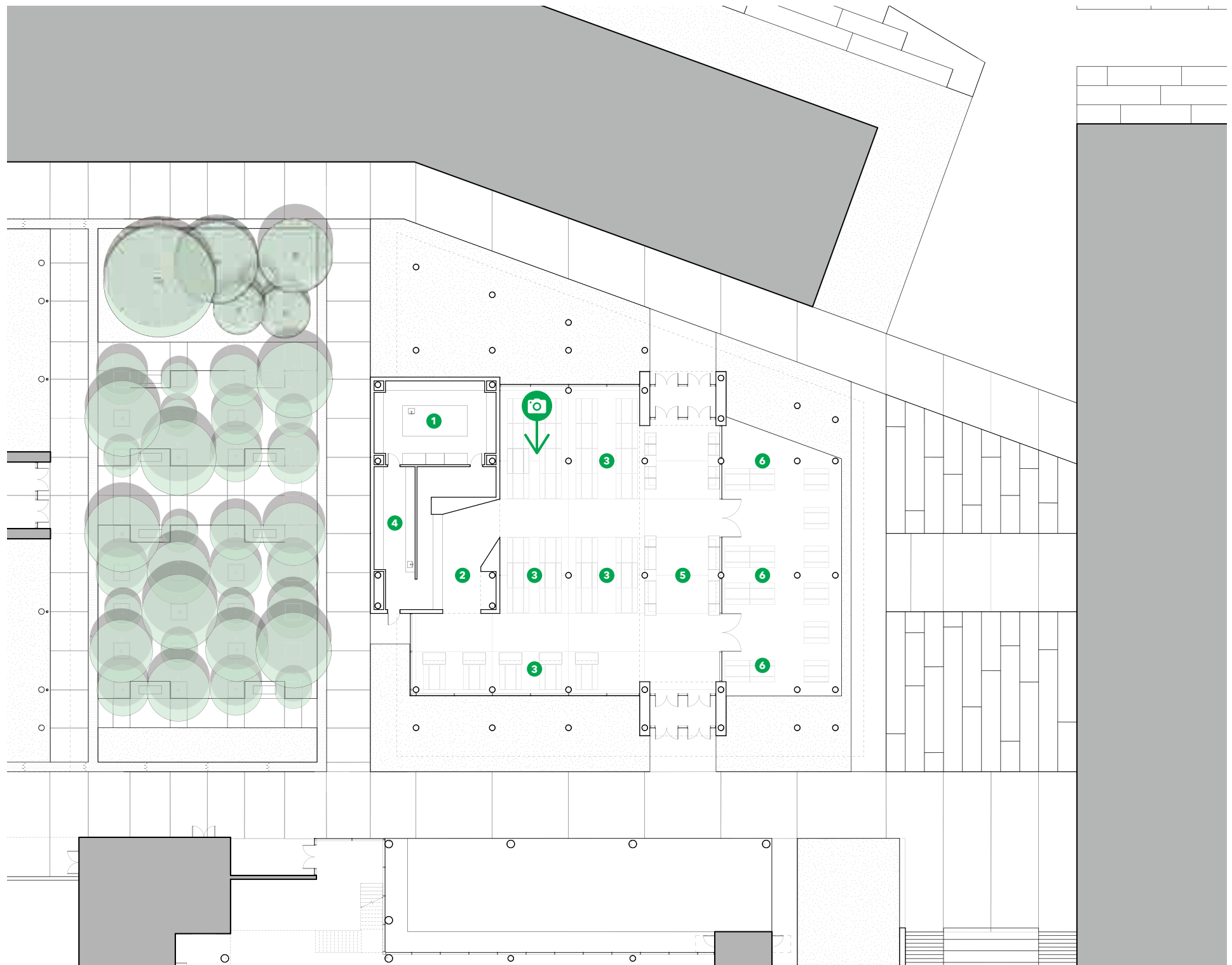
Reeds Spring Middle School **Dake Wells Architecture**<sup>10</sup>



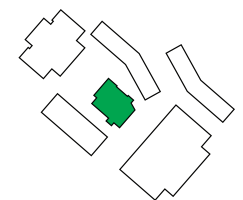
When trying to implement theories of biophilia, nature induced stress reduction, and prospect and refuge, it is critical to allow for ample views to the natural exterior from the interior of the building. This means that designers must greatly take into consideration the orientation of the building on a new site as to not overlook key opportunities to onlook nature.

# cafeteria building

floor plan level 1



- 1 kitchen
- 2 lunch line
- 3 indoor seating
- 4 dry storage
- 5 lounge space
- 6 outdoor seating

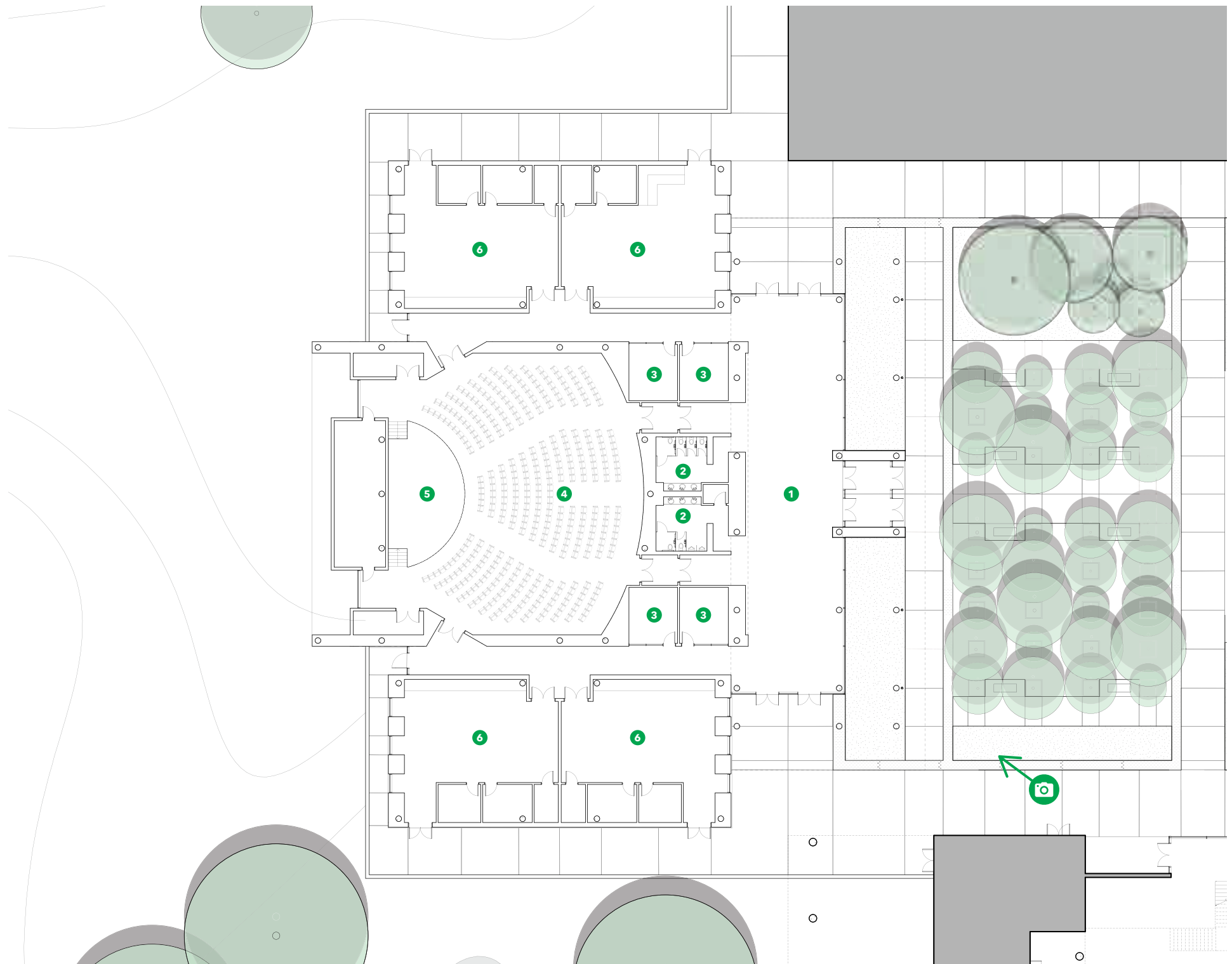
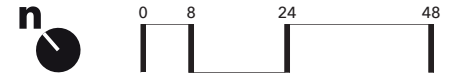


42 *indoor learning spaces*

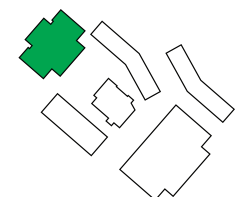


# arts building

floor plan level 1



- 1 lobby
- 2 restrooms
- 3 practice room
- 4 auditorium
- 5 platform
- 6 classroom

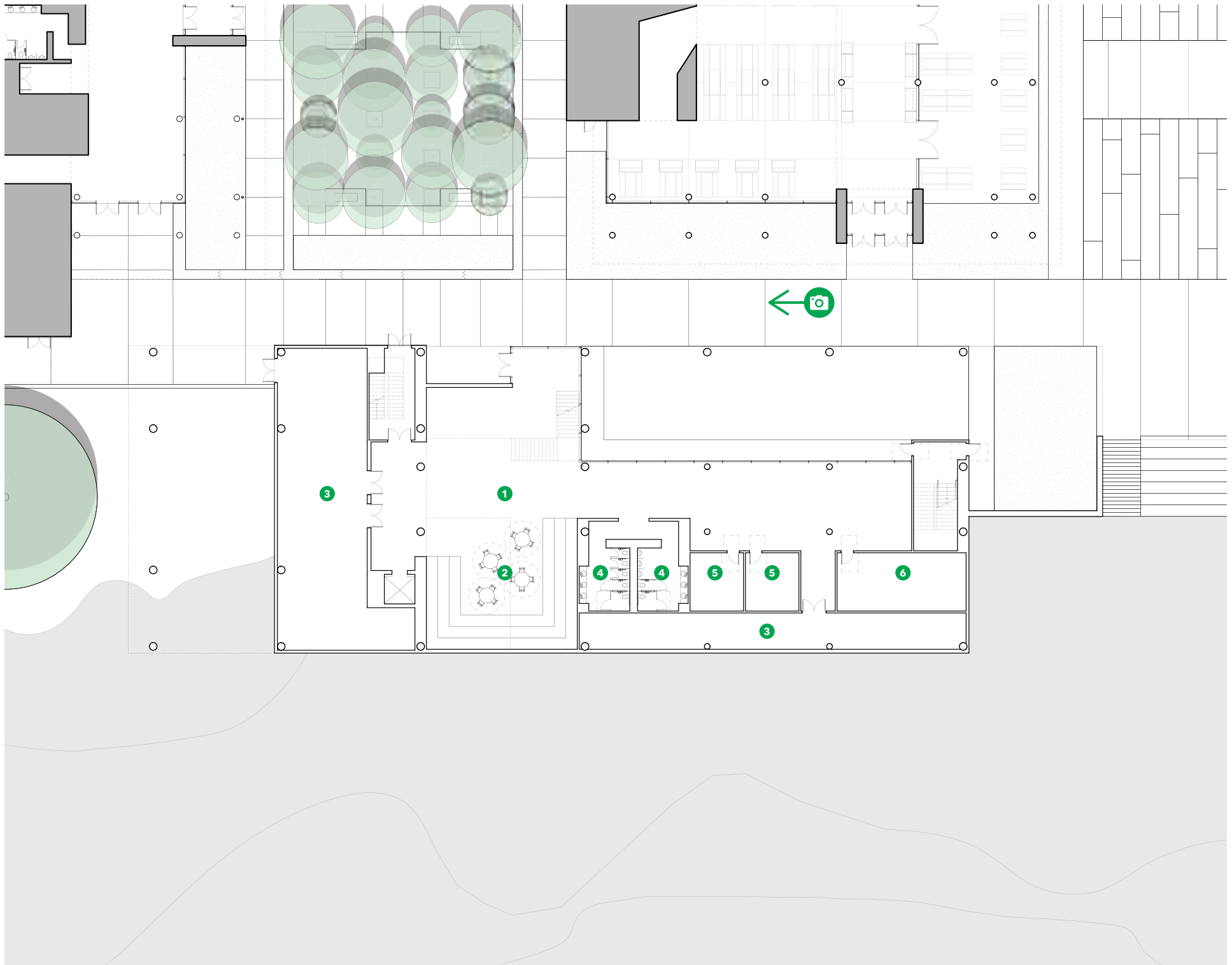
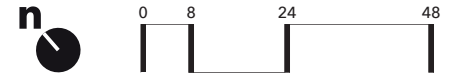


44 indoor learning spaces

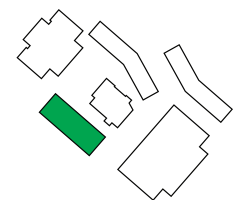


# 8th grade building

floor plan level 1



- 1 lobby
- 2 hangout area
- 3 mechanical
- 4 restroom
- 5 office
- 6 resource

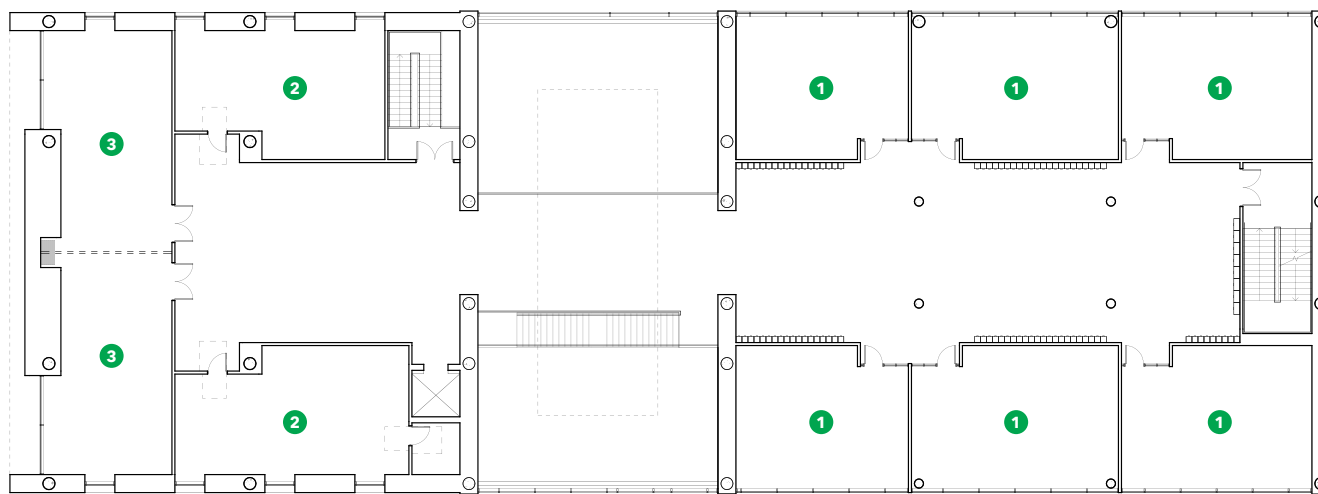
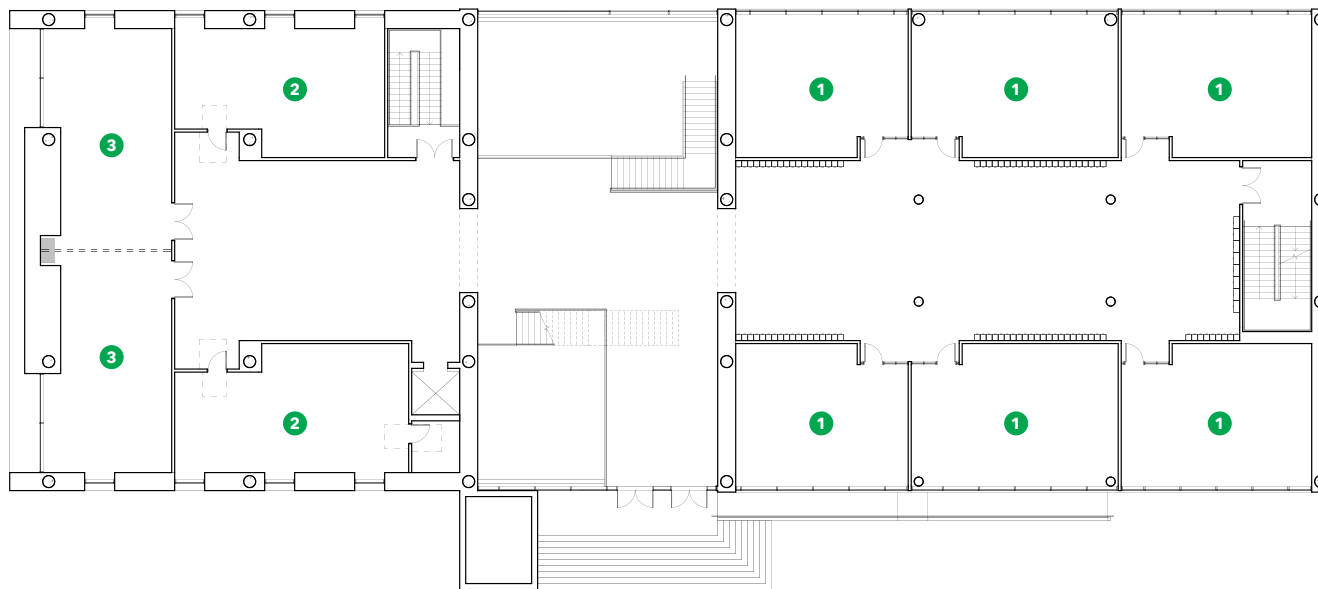
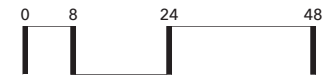


46 indoor learning spaces

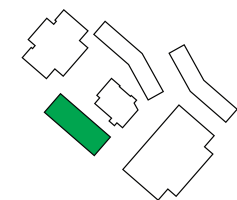


# 8th grade building

floor plan level 2 + 3

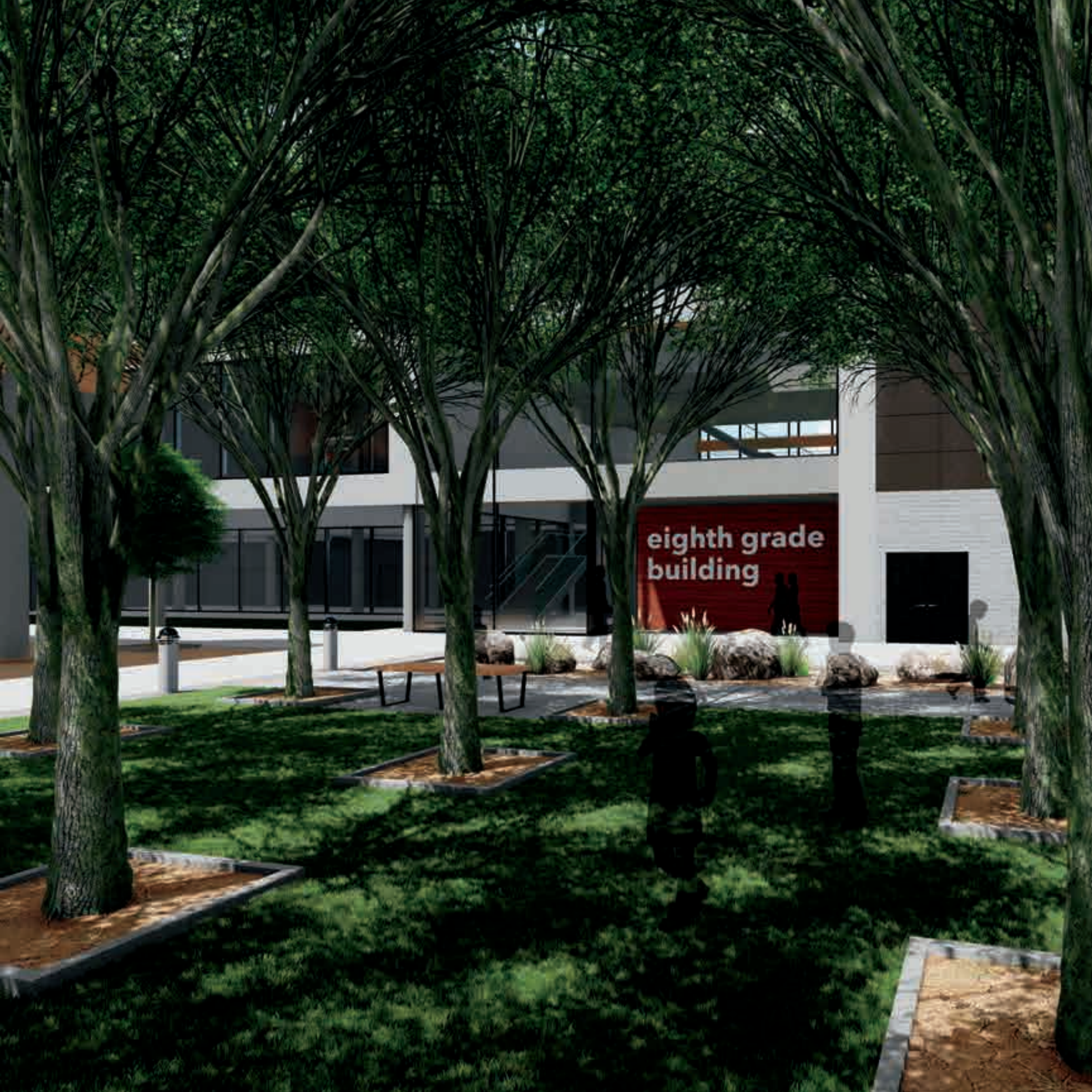


- 1** classroom
- 2** lab
- 3** flex classroom



48 *indoor learning spaces*

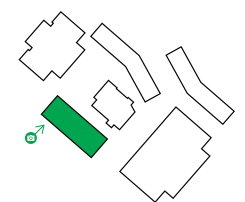
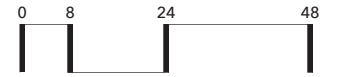




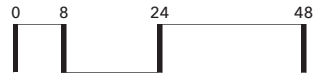
eighth grade  
building

# ***8th grade building***

*elevation*

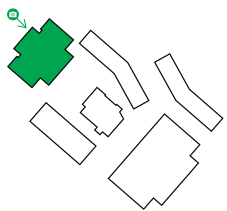
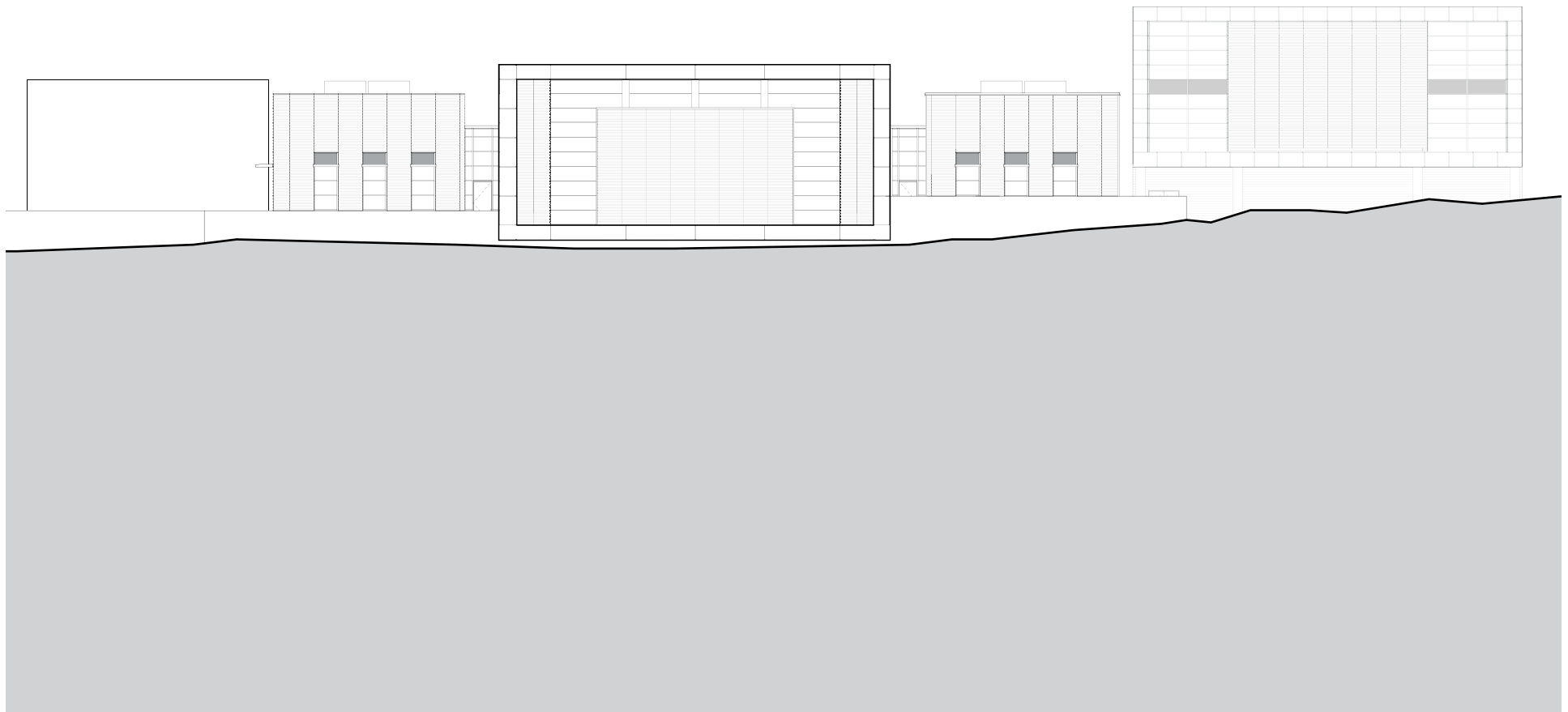


50 ***indoor learning spaces***



# *arts building*

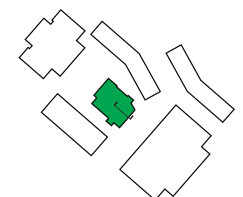
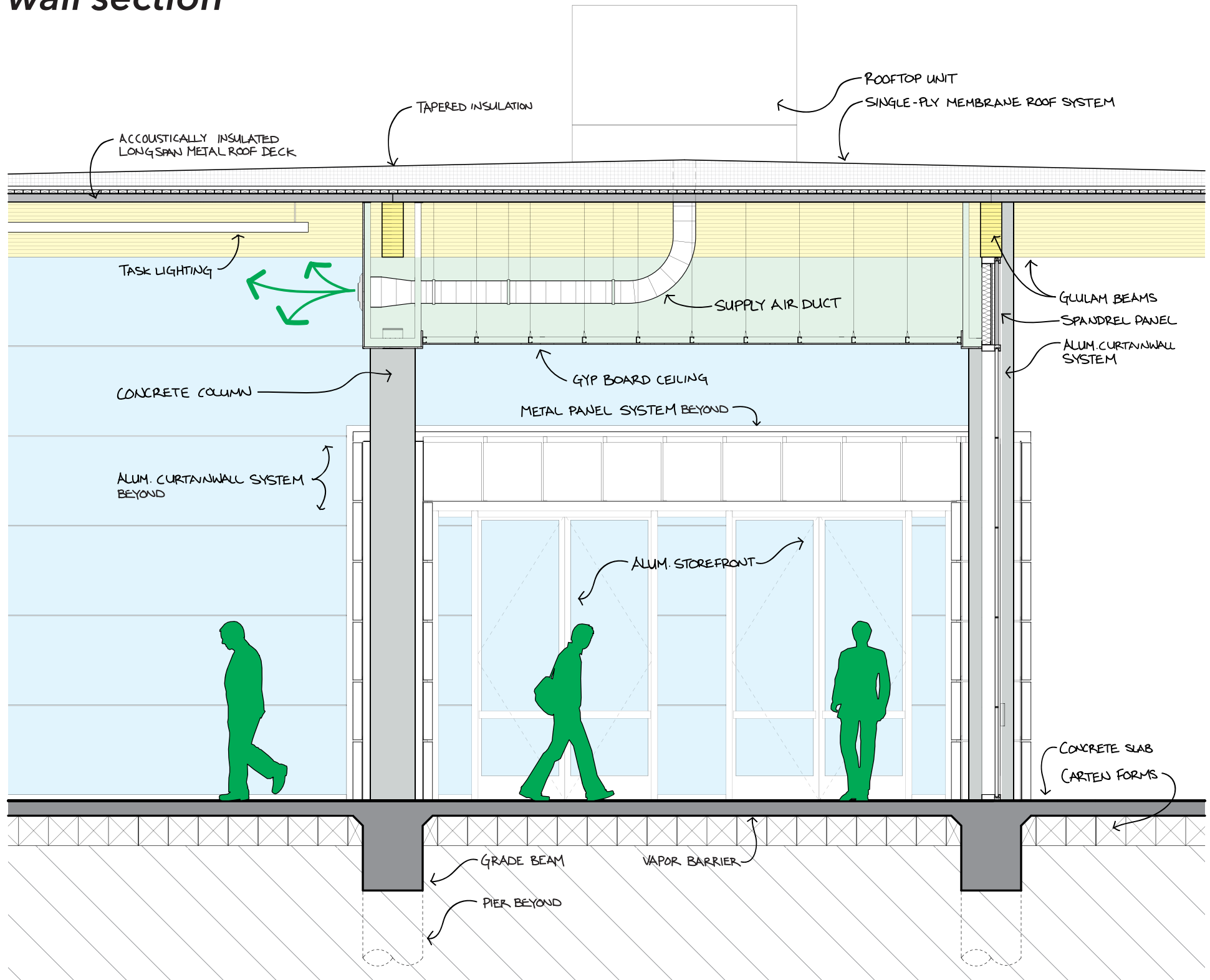
*elevation*



# cafeteria

wall section

3/4" = 1'-0"





# references

1. Acar, H. (2014). Learning Environments for Children in Outdoor Spaces. *Procedia - Social and Behavioral Sciences*, 141, 846-853. doi:10.1016/j.sbspro.2014.05.147
2. <https://www.lakeflato.com/schools/indian-springs-school> - img 1
3. <https://www.lakeflato.com/schools/indian-springs-school> - img 2
4. <https://www.lakeflato.com/schools/indian-springs-school> - img 3
5. <https://home.bt.com/images/forest-school9-ways-children-benefit-from-learning-and-playing-outside-136427678308502601-180608090026.jpg>
6. <https://theseedsofchange.co.uk/wp-content/uploads/2019/05/beautiful-child-female-1634915.jpg>
7. [https://clearingmagazine.org/wp-content/uploads/2018/11/Olympic\\_Forest1.jpg](https://clearingmagazine.org/wp-content/uploads/2018/11/Olympic_Forest1.jpg)
8. [https://images.adsttc.com/media/images/5a97/7f46/f197/cc86/8300/0210/large\\_jpg/Reeds\\_Spring\\_Middle\\_School\\_-\\_DWa\\_11.jpg?1519877938](https://images.adsttc.com/media/images/5a97/7f46/f197/cc86/8300/0210/large_jpg/Reeds_Spring_Middle_School_-_DWa_11.jpg?1519877938)
9. [https://www.dake-wells.com/wp-content/uploads/1980/07/Dake-Wells-Architecture\\_RSMS8-web-1.jpg](https://www.dake-wells.com/wp-content/uploads/1980/07/Dake-Wells-Architecture_RSMS8-web-1.jpg)
10. [https://www.dake-wells.com/wp-content/uploads/1980/07/Dake-Wells-Architecture\\_RSMS7-web-1.jpg](https://www.dake-wells.com/wp-content/uploads/1980/07/Dake-Wells-Architecture_RSMS7-web-1.jpg)



