



# ALEXANDRIA CITY PUBLIC SCHOOLS

ALEXANDRIA, VA

DOUGLAS MACARTHUR ELEMENTARY SCHOOL  
CONCEPT SUBMISSION  
JANUARY 15, 2020



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01 || EXISTING BUILDING



# 01 EXECUTIVE SUMMARY

## Executive Summary

Douglas MacArthur Elementary School is an existing K-5 school that occupies the majority of an approximately 4.5 acre site located at 1100 Janneys Lane. It was built in 1943 as a school for families hired to work at the Torpedo Factory and transferred into the City Schools in 1947. It has been expanded over the years; however, it has outlived its useful life. Designing and constructing a new Douglas MacArthur for coming generations includes a capacity increase, to approximately 825 students, and creation a future-focused learning environment.

Together, the project's Core Team has undertaken an active community engagement process to assist in the development of concept design options and to support an evaluation of those concepts. The team created several design options, of which, three are being presented in this report. Among those three, the community has expressed preferences for the Forest and Y Concepts. Each Concept meets the Alexandria City Public Schools educational specifications for interior programmed spaces. Even though ACPS acquired an additional parcel adjacent to the school, it is a challenge to locate the required exterior program on the existing site, so each concept includes some compromises to that full outdoor program. In addition, these concepts include an assumption that the majority of the parking on site will be constructed in a below-grade parking structure that will be utilized by ACPS staff only during the school day. Visitor spaces, parent drop-off and bus loop are being provided at grade.

The new Douglas MacArthur is an exciting project. DLR Group, along with the rest of the design team, looks forward to creating an inspiring and enduring school that will serve the community for decades to come.

## Existing Conditions

While the project requirements had already established that the existing building will be replaced, it is still worth studying the existing conditions to inform the future design. DLR visited the building several times through the concept design phase. A few observations were:

- The building footprint expands beyond the current site boundary and extends along the majority of the Janneys Lane frontage.
- Playing fields are wrapped by building.
- Connection to the forest is limited.
- An outdoor classroom with boulders stands out as a special place on site.
- Existing play structures appear to be over taxed.
- The interior feels sprawling, extending across much of the site.
- Several "pod" spaces help to form clustered learning spaces.
- Murals effectively enliven the neutral wall colors and help define areas within the school.
- Interior/ exterior connection is lacking in several parts of the school.

In addition to informal evaluation of the building and site, the team has performed a hazardous materials survey and site survey. These reports are provided under separate cover. As design progresses, the design team will continue to visit the site including doing "A Day in the Life" where team members will shadow sample classes throughout the day, as well as performing a traffic analysis and geotechnical studies of the site.

## Project Design Team

### **Architect: DLR Group**

Sarah Woodhead, AIA, NCARB (Principal-in-Charge)

Erika Lehman, AIA, NCARB (Project Manager)

Jason Lembke, AIA (Design Leader)

Bob Widger, AIA (Senior Project Architect)

Rachel Mihaly (Project Designer)

Kwame Bailey (Community Liaison)

### **Construction Manager: Skanska**

Apryl Webb, LEED AP, AVS, MBA (Preconstruction Director)

Joe Kifus (Senior Project Manager)

### **MEP Engineers: CMTA**

### **Structural Engineer: Fox Associates**

### **Civil and Landscape Engineers: Kimley-Horn**

### **Food Service Designer: Nyikos Associates**

### **IT/AV/Security: Educational Systems Planning**

### **Geotechnical/ Environmental: ECS Mid-Atlantic**

### **Traffic Engineer: Wells Associates**

## 03 || PARTICIPANTS



## Acknowledgements & Study Participants

This Douglas MacArthur ES Concept Design was conducted for Alexandria City Public Schools (ACPS) by DLR Group architects. The new elementary school design was performed under the direction of the ACPS Operations Department, including the offices of Facilities, Nutrition, Transportation and Safety. Through a series of public meetings, community input has helped establish the priorities of the Douglas MacArthur Elementary School community as the site and building design options for the new school were developed. The proposed plans presented herein were developed based on study participant input. The design team would like to thank all participants for their essential role in developing the project.

### Alexandria City School Board

Cindy Anderson, District B, Chair

Veronica Nolan, District B, Vice Chair

Jancita Greene, District A

Michelle Rief, District A

Christopher Suarez, District A

Margaret Lorber, District B

Meagan Alderton, District C

Ramee Gentry, District C

Heather Thornton, District C

Wilmer Carranza, Student Representative

Amiya Chislom, Student Representative



Core Team

### Core Team

Paul Youmbi, ACPS (Project Manager)

Erika Gulick, ACPS (Senior Planner)

Tiffany Pache, ACPS (Communications)

Jack Browand, City of Alexandria, RPCA (Division Chief)

Katherine Carraway, City of Alexandria, Planning & Zoning (Urban Planner)

Megan Oleynik, City of Alexandria (Urban Planner)

Dana Wedeles, City of Alexandria, RPCA (Principal Planner)

Dirk Geratz, City of Alexandria, Planning & Zoning (Principal Planner)

Margaret Orlando, City of Alexandria, Recreation Services (Division Chief)

DLR Group (Architecture)

Skanska (Construction Management)

### Extended Core Team

Dr. Gregory Hutchings, Jr., ACPS (Superintendent)

Mignon Anthony, ACPS (Chief Operating Officer)

Dr. Terri Mazingo, ACPS (Chief Academic Officer)

Dr. Lisa Piehota, ACPS (Executive Director of Elementary Instruction)

Helen Lloyd, ACPS (Director of Communications)



Advisory Group

### Advisory Group

The Advisory Group is composed of representatives from surrounding Civic Associations, Alexandria City Council, Alexandria School Board, Alexandria Planning Commission and parents and community members who serve as At-Large members. After the initial meeting, members from both the Park and Recreation Commission and Campagna Center were added to the Advisory Group. This group meets regularly with the Core Team to provide feedback and share perspectives from their representative coalitions.



School Team

### School Team

The School Team is composed of the school principal and other administrators; Early Childhood, Upper Elementary, Resource, Encore and Resource teachers; and school support staff. This group meets regularly with the Core Team and is essential to defining the school's point of view in the design process.



Community

### Community

The community is represented by Douglas MacArthur families, neighbors, staff, and the general public.





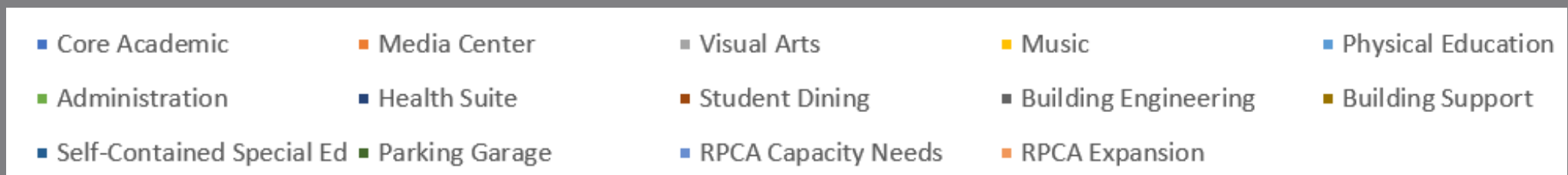
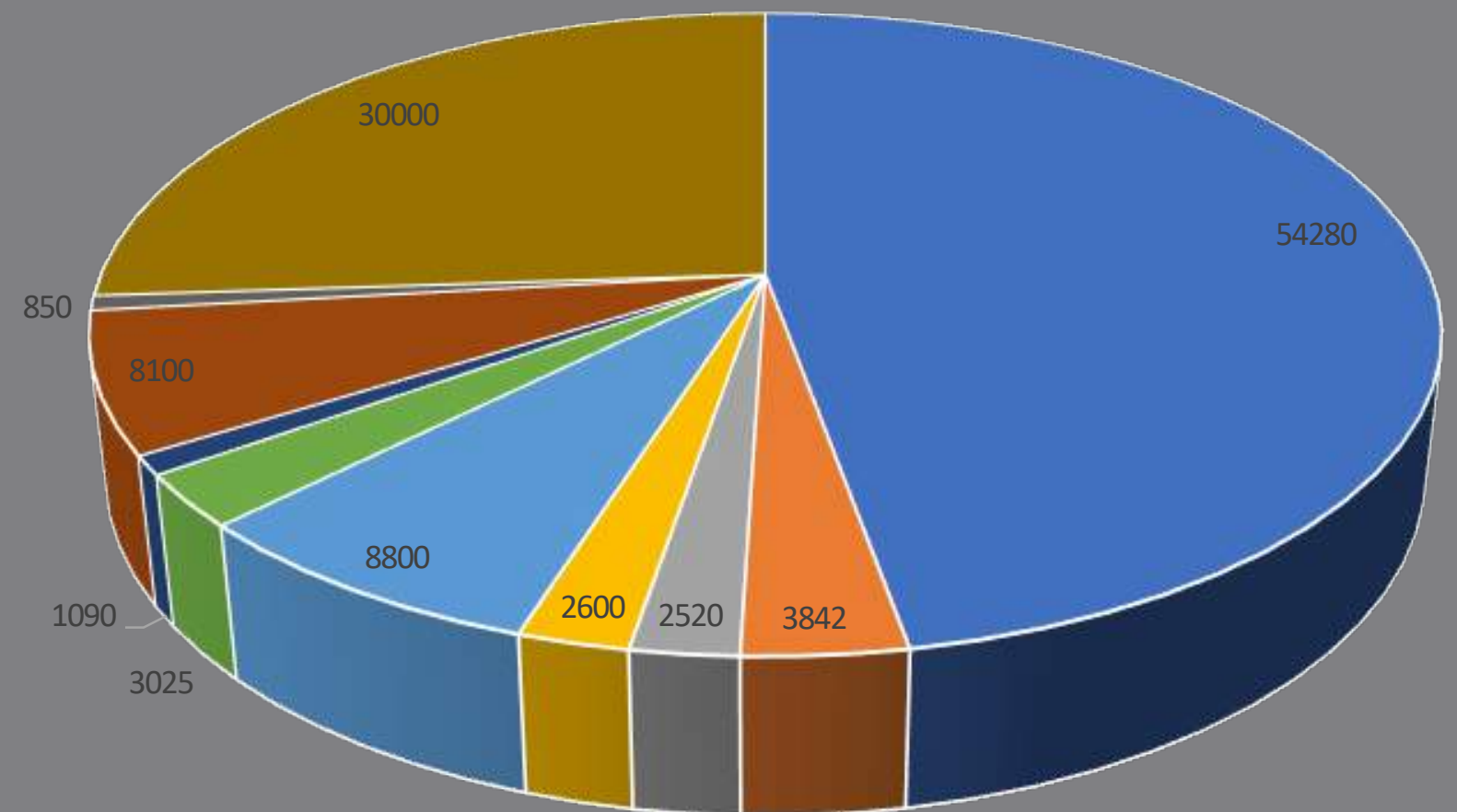
# 02 PROGRAM NARRATIVE

The Douglas MacArthur ES project kicked-off with an evaluation of the existing ACPS Ed Specs based on a 710 student model. DLR Group evaluated necessary program increases to expand the school to an 825 student model. This included the addition of a Pre-k program not currently located at Douglas MacArthur. In addition, the capacity of each shared-use space was considered to determine if its size should increase based on the increased enrollment. This analysis also included consideration of the quantity of specialty classrooms (art, music, PE) that would be needed for a 825 student school.

The chart at right shows the distribution of program areas based on school department. The major spaces included in each project concept are as follows:

Major Ed Spec Spaces Included	
16 Early Childhood classrooms (Pre-K, K & 1st Grade)	2 Music
22 Upper Elementary classrooms	Gym & Multi-purpose
Media	Administration & Health
2 Visual Arts	Cafetorium

Ed Spec Program



# Educational Specifications Expansion

As the potential of site and building design options were evaluated, the opportunity to add a special education program emerged as a benefit to the school system due to the geographic location of the school. This program has been incorporated into the current building design options. A below-grade parking structure was incorporated into each concept to respond to the need to maintain green space while accommodating parking for the full staff.

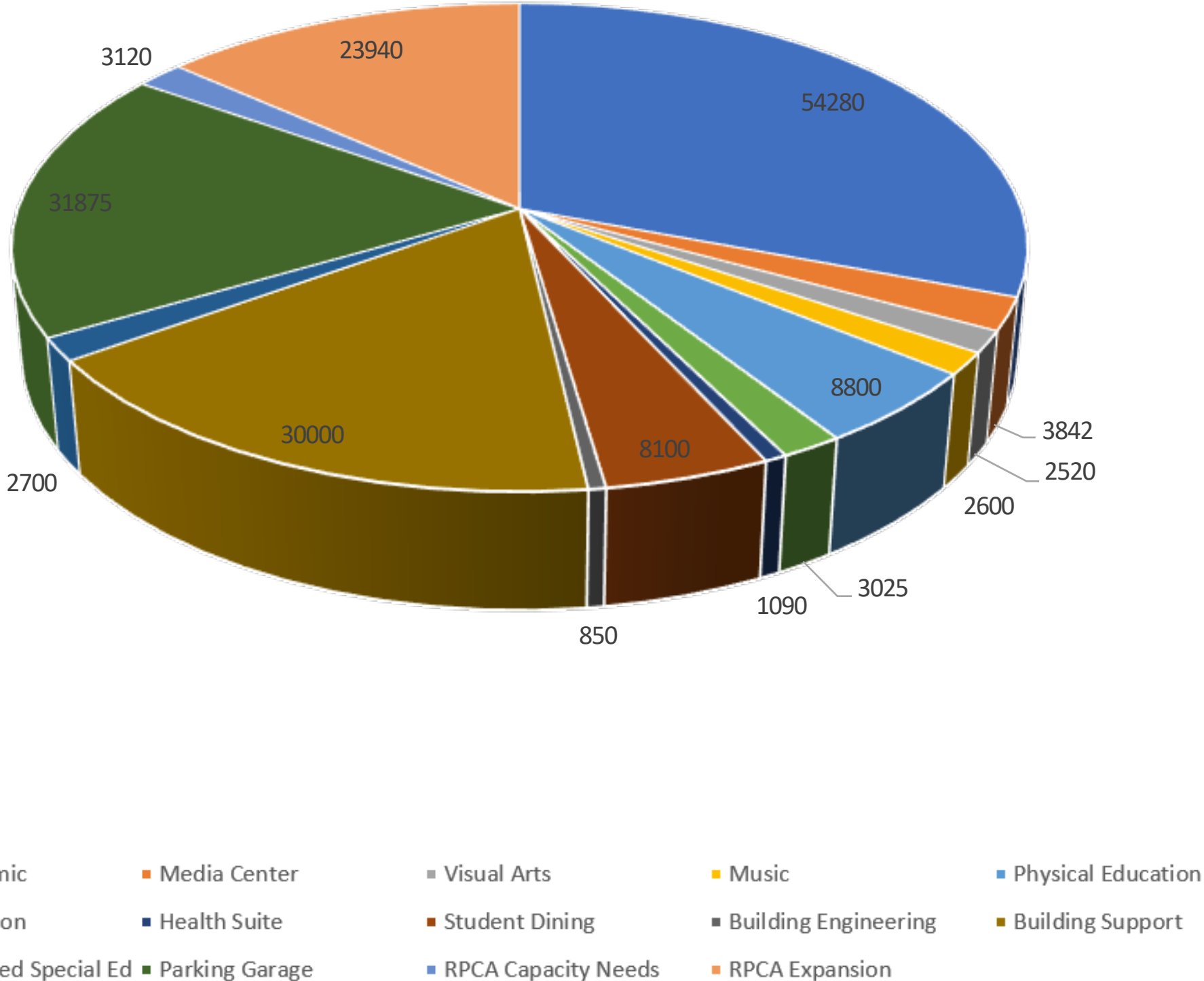
In addition, Alexandria City has been undergoing an evaluation of the potential to co-locate other city services on school properties. During the Concept phase of Douglas MacArthur, DLR participated in some inter-agency initial discussions regarding potential co-location. The resulting most likely option of expansion of an increased Recreation, Parks and Cultural Administration presence at the site was considered on the site. The results of that study are indicated below.

The chart at right shows the distribution of program areas based on school department as well as including expanded program options.

Expansion Spaces		
Currently Included	Easily Accommodated	Optional Expansion
3 Self-Contained Special Ed classrooms	RPCA Offices	RPCA Bleacher Seating
85 Below-grade Parking spaces	RPCA Restrooms	RPCA Flex Court
2 Visual Arts	RPCA Storage	

\*Not shown, but considered, were other City Services such as Housing, Health, Day Care

Expanded Program



# Space Program

The full proposed space program is included and each concept's ability to meet that program is incorporated in the program summary below.

	Space Name	Edspec v1.1			"Y" Concept			"Forest" Concept			"Coil" Concept		
		Size	#		Size	#		Size	#		Size	#	
<b>E-ACA</b>	<b>Core Academic</b>			<b>54280</b>			<b>48820</b>			<b>50720</b>			<b>50645</b>
E-ACA-A	Pre-K/Pre-S	1175	4	4700	1260	4	5040	1320	4	5280	1260	4	5040
E-ACA-B	Kindergarten	1175	6	7050	1260	6	7560	1320	6	7920	1260	6	7560
E-ACA-C	Grade 1	1175	6	7050	1260	6	7560	1320	6	7920	1270	6	7620
E-ACA-D	Grade 2	900	6	5400	960	6	5760	960	6	5760	1025	6	6150
E-ACA-E	Grade 3	900	6	5400	960	6	5760	960	6	5760	990	6	5940
E-ACA-F	Grade 4	900	5	4500	960	5	4800	960	5	4800	1015	5	5075
E-ACA-G	Grade 5	900	5	4500	960	5	4800	960	5	4800	970	5	4850
	<b>Total Teaching Stations/Design Capacity</b>		<b>38</b>										
E-ACA-J	Outdoor Storage Early Childhood	200	1	200	Inc. in CR sizes			Inc. in CR sizes			Inc. in CR sizes		
E-ACA-K	Extended Learning Area	600	8	4560	1520	3	4560	2280	2	4560	1790	3	5370
E-ACA-L	Classroom Bathroom	130	14	1820	Inc. in CR sizes			Inc. in CR sizes			Inc. in CR sizes		
E-ACA-M	Resource Classroom (SpEd)	250	4	1000	Inc. in SPED			Inc. in SPED			Inc. in SPED		
E-ACA-N	Resource Classroom (other)	250	4	1000	Inc. in CR sizes			Inc. in CR sizes			Inc. in CR sizes		
E-ACA-O	TAG Classroom	900	1	900	960	1	960	960	2	1920	1040	1	1040
E-ACA-P	Student Project Storage	150	1	150	Inc. in CR sizes			Inc. in CR sizes			Inc. in CR sizes		
E-ACA-Q	ELL	0		0	0		0	0		0	0		0
E-ACA-R	Student Services	100	6	600	Inc. in CR sizes			Inc. in CR sizes			Inc. in CR sizes		
E-ACA-S	Occupational/Physical/Itinerant Hoteling	600	2	1200	Inc. in SPED			Inc. in SPED			Inc. in SPED		
E-ACA-T	Storage	200	4	800	Inc. in CR sizes			Inc. in CR sizes			Inc. in CR sizes		
E-ACA-U	Teacher Collaboration Room	250	5	1250	Inc. in CR sizes			Inc. in CR sizes			Inc. in CR sizes		
E-ACA-V	Early Childhood ELA: 190 children incr to 228 (Ed Sp says 150)	2000	1	2000	2020	1	2020	2000	1	2000	2000	1	2000
E-ACA-W	Art Storage (adj to Early Childhood ELA)	200	1	200	Inc. in CR sizes			Inc. in CR sizes			Inc. in CR sizes		
<b>E-MC</b>	<b>Media Center</b>		<b>1</b>	<b>3842</b>			<b>3530</b>			<b>3440</b>			<b>4200</b>
	Reading/Learning/Circulation	2792	1	2792									
	Technical Processing Room	200	1	200									
	Combined Office/Workroom	200	1	200	3530	1	3530	3440	1	3440	4200	1	4200
	Device Charging Room	150	1	150									
	Storage	200	1	200									
	Small Group Room	150	2	300									
<b>E-VA</b>	<b>Visual Arts</b>			<b>2520</b>			<b>2560</b>			<b>2520</b>			<b>2520</b>
	Art Lab	1200	2	2400	1280	2	2560	1260	2	2520	1260	2	2520
	Kiln Room	120	1	120	Inc. in Art Lab			Inc. in Art Lab			Inc. in Art Lab		
<b>E-MU</b>	<b>Music</b>			<b>2600</b>			<b>2560</b>			<b>3490</b>			<b>2620</b>
	General Music Room	1200	1	1200	1280	2	2560	1745	2	3490	1310	2	2620
	Instrumental Music Room (Band & Orchestra)	1000	1	1000									
	General Music Storage	150	1	150	Inc. In Music Room			Inc. In Music Room			Inc. In Music Room		
	Instrument Storage	250	1	250									
<b>E-PE</b>	<b>Physical Education</b>			<b>8800</b>			<b>8800</b>			<b>11780</b>			<b>9800</b>
	Gymnasium	6500	1	6500									
	PE Office	150	2	300	8800	1	8800	11780	1	11780	9800	1	9800
	PE Storage	250	2	500									
	Multi-Purpose/ After School Space	1500	1	1500									
<b>E-AD</b>	<b>Administration</b>			<b>3025</b>			<b>3010</b>			<b>3440</b>			<b>3990</b>
	Lobby/Gathering Area	700	1	700									
	Welcome Center	450	1	450									
	Conference Room	250	1	250									
	Principal's Office	180	1	180									
	Assistant Principal's Office	150	1	150									
	Administrative Workroom	20	1	20	3010	1	3010	3440	1	3440	3990	1	3990
	Mailroom	125	1	125									
	Records Room	150	1	150									
	Family and Community Engagement Center	300	1	300									
	Staff Toilet	50	1	50									
	Student Services Office	150	3	450									
	Student Services Conference	200	1	200									
<b>E-HS</b>	<b>Health Suite</b>			<b>1090</b>			<b>1000</b>			<b>570</b>			<b>0</b>
	Office Area	100	1	100									
	Waiting/Treatment Area (Combined?)	300	1	300									
	Cots	225	1	225									
	Storage	25	1	25									
	Toilet	70	1	70	1000	1	1000	570	1	570	Inc. in Admin		0
	Separate Exam Room (Shown on layout p145)	1	120	120									
	Second office (Shown on layout p145)	0	0	0									
	Dental Room (Shown on layout p145)	0	0	0									
	After School Office & Storage	250	1	250									

Douglas MacArthur ES

Douglas MacArthur ES

Douglas MacArthur ES

# Space Program Cont'd

		Edspec v1.1		"Y" Concept		"Forest" Concept		"Coil" Concept													
Douglas MacArthur ES	<b>E-SD Student Dining</b>	8100		8100		8170		8140													
	Student Dining Area/Multi-purpose	3400	1	3400	8100	1	8100	8170	1	8140											
	Chair & Table Storage	400	1	400																	
	Serving Area	800	1	800																	
	Kitchen Suite	2400	1	2400																	
	Stage w Storage	1100	1	1100																	
	<b>E-ME Building Engineering</b>	850																			
	Supply Storage / Receiving	600	1	600	Inc. In Building Support		Inc. In Building Support		Inc. In Building Support												
	Toilet / Showers / Lockers	150	1	150																	
	Custodial Office	100	1	100																	
<b>E-BS Building Support</b>	30000		31190		31770		30930														
Large Group Rest Rooms	250	4	1000	Assumed same SF		Assumed same SF	10,000	Assumed same SF	10,000												
Custodial Closet	6	60	360																		
Electrical Closet	6	120	720																		
Telecom Room	6	120	720																		
Corridors	10000	1	10000																		
Mechanical/Electrical Space Deck	15000	1	15000																		
Storage Area	800	1	800																		
Loading/Receiving Area	500	1	500																		
Staff Restroom	70	6	420							3280	1	3280	2270	1	2270	3020	1	3020			
Family restroom	80	1	80																		
Technology Storage (also called Computer Storage)	400	1	400																		
<b>Net Subtotal</b>	85107		109570		115900		112845														
<b>Gross Factor 0.082 cited in Standard, p41; incld E-BS for new model</b>	36979		40175		41274		40183														
<b>Total Gross Area</b>	122086		149745		157174		153028														
Douglas MacArthur ES	<b>Outdoor Areas</b>	169500		79610		73065		69860													
	Playgrounds Summary	169500		22480		2		44960		12805		3		38415		7042		5		35210	
	Playgrounds: Pre-K																				
	Hard surface Fitness w Group Games	12000																			
	Soft Surface w Modular Play Structure etc.	14500																			
	Playgrounds: Primary																				
	Hard surface Fitness w Group Games & Tables	12000																			
	Soft Surface w Modular Play Structure etc.	18500																			
	Playgrounds: Intermediate																				
	Hard surface Fitness & Group Games	12000																			
	Soft Surface w Modular Play Structure etc. & Tables	26500																			
	Multi-use Hard Surface (incl Basketball courts)																				
	2 @ 12,000 SF Each	24000																			
	Multi-purpose Fields																				
	2 @ 25,000 SF Each	50000				17325	2	34650	17325	2	34650	17325	2	34650							
Total Staff Parking			In Garage																		
Total Visitor Parking			In Garage																		
Bike racks																					

# Space Program

		Edspec v1.1			"Y" Concept			"Forest" Concept			"Coil" Concept						
ACPS Exp'n	<b>E-ACA</b>	<b>Self-Contained Special Ed</b>			2700			5060			6350			5090			
	<b>E-ACA-X</b>	Self-Contained SE Classroom			900	3	2700	5060	1	5060	6350	1	6350	5090	1	5090	
			* Includes SE support rooms														
			<b>Revised Total Teaching Stations/Design Capacity</b>			<b>41</b>											
			Parking Garage			31875											
			Automobile Parking Spaces (undeground)			375	85	31875	375	85	31875	375	85	31875	375	85	31875
			<b>Net Subtotal</b>			119682			146505			154125			149810		
		<b>Gross Factor</b> 0.082 cited in Standard, p41; incld E-BS for new model			39814			43203			44408			43214			
		<b>Total Gross Area</b>			159496			189708			198533			193024			
RPCA			<b>RPCA Capacity Needs</b>			3120											
			Large Group Spaces (50-100): Use Gym with options to divide each of these spaces (2 Total)														
			Quite Spaces: Use either Dining or Music Rooms.														
			Youth Basketball: Enlarge Gym to allow for seating/ larger court			2500											
			Teen Program (use gym when not basketball season)														
			Dedicated Storage (10 x 10 min)			100											
			Dedicated Admin (OSTP Site Supervisor)			120											
			Dedicated Adult Restrooms w Changing Stations			240											
			Dedicated Outdoor Restrooms (two single use)			160											
			<b>RPCA Expansion</b>			23940											
			Flex Court (75'x110')			8250											
			Dedicated Storage (10 x 20 min)			200											
			Dedicated Admin (OSTP Site Supervisor)			240											
		Lobby			250												
		Parking (Assume 40 added spaces)			375	40	15000										
		<b>Net Subtotal</b>			146742												
		<b>Gross Factor</b> 0.082 cited in Standard, p41; incld E-BS for new model			45033												
		<b>Total Gross Area</b>			191775												
		<b>Exterior Spaces</b>															
		MS Soccer Field			49500												

## Educational Trends

In addition to understanding the programmatic needs of the school, the design team initiated discussions in regard to current educational trends and ways they might impact the design. DLR Group defined four “Readiness Tiers” that can be considered as a design overlay in the concepts as they move into the next phases of design.

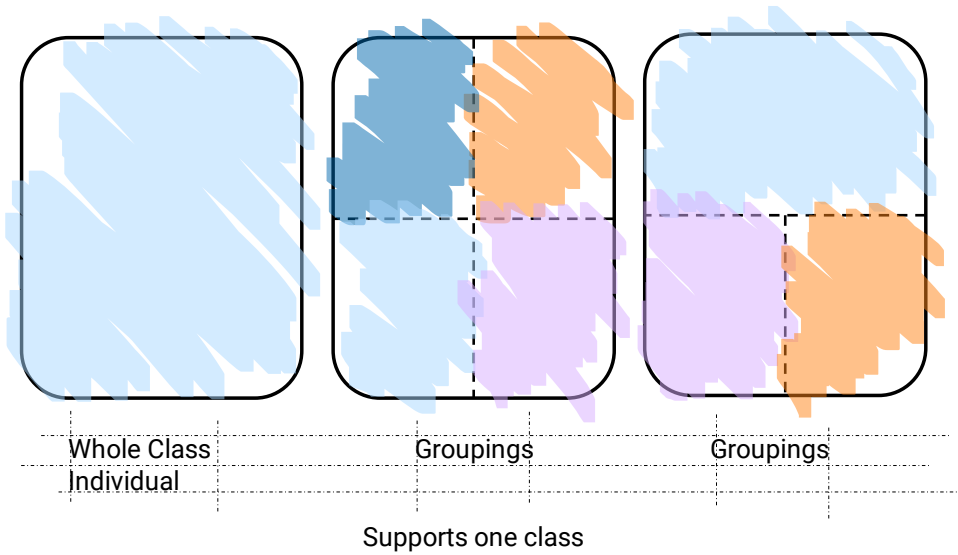
To begin the conversation about how innovative the school and school system want the new learning environment to be, DLR is using the Readiness Tiers to create a common basis of understanding. The diagrams at right describe some possible components that represent relationships between classrooms and additional program elements. In Tier 1, where components of the learning environment allow the room to be broken down to support various groupings but are fully contained within the room; a single classroom is self-sufficient. In Tier 2, pairs (or small groups) of rooms share break-out spaces which expand the variety of learning environments that may be available to those students. The key feature of readiness Tier 3 is that it is built around cohort-based learning where a larger group (grade-leveled or other cohort) shares a variety of learning environments to support the needs of the full cohort. Tier 4 describes an immersive environment where multimedia is used to create the variety of learning environments needed for the classroom.

The Readiness Tiers, as well as other educational trends, will continue to be explored as the design progresses and the school community, and ACPS leadership will participate in defining goals for the Douglas MacArthur learning environment.



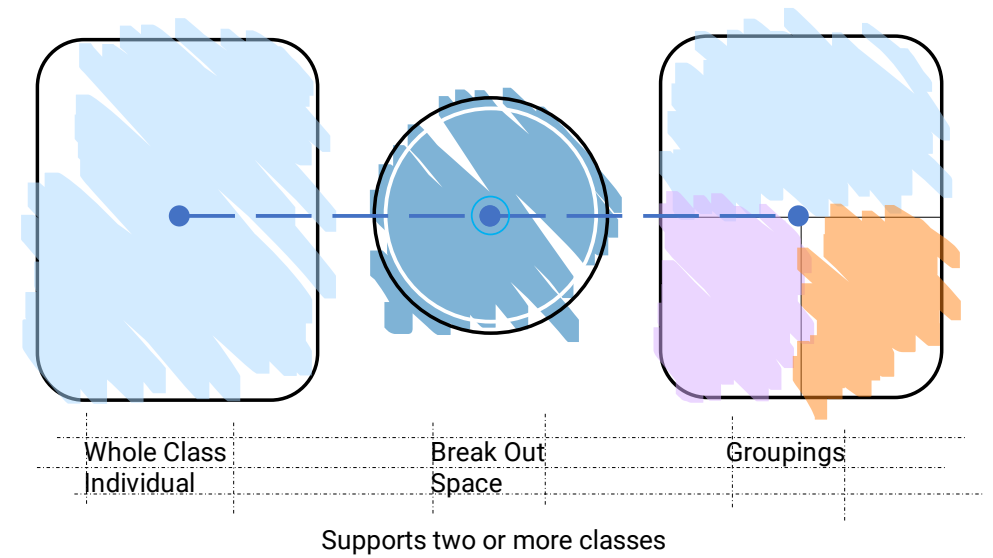
# READINESS TIER ONE

EVOLVED TRADITIONAL



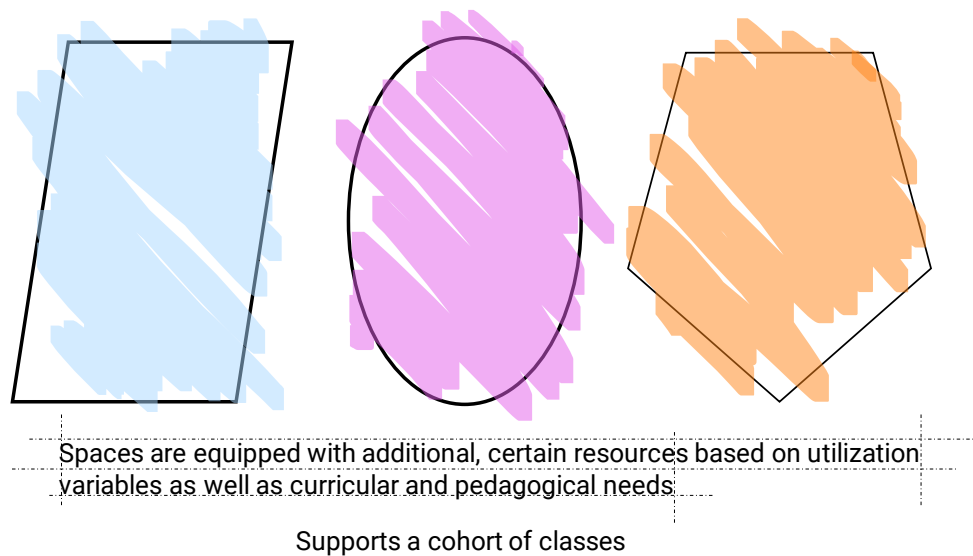
# READINESS TIER TWO

DIFFERENTIATION (NEAR)



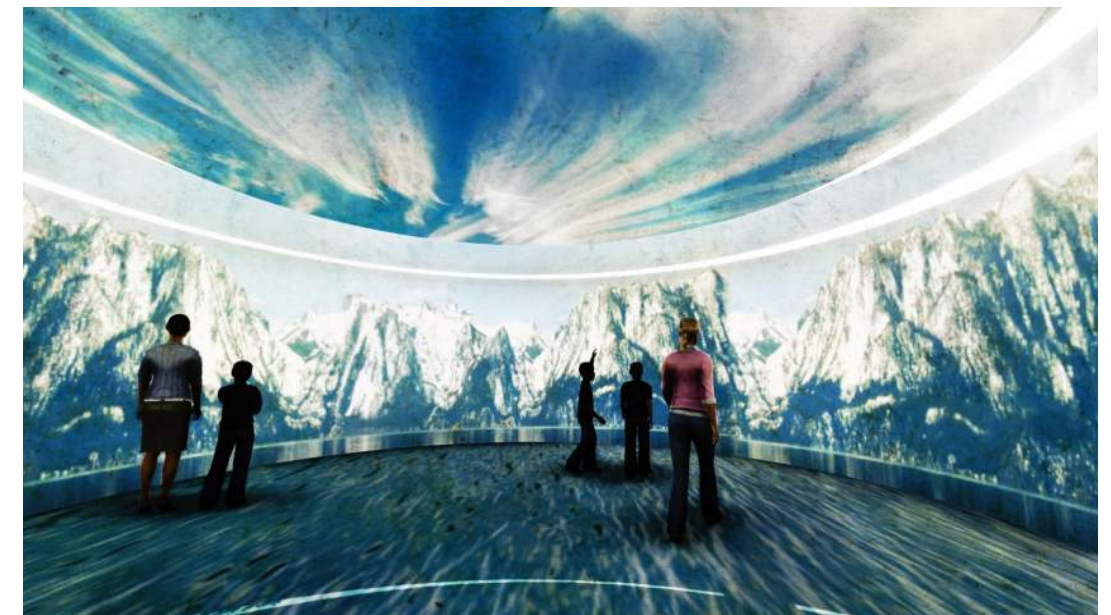
# READINESS TIER THREE

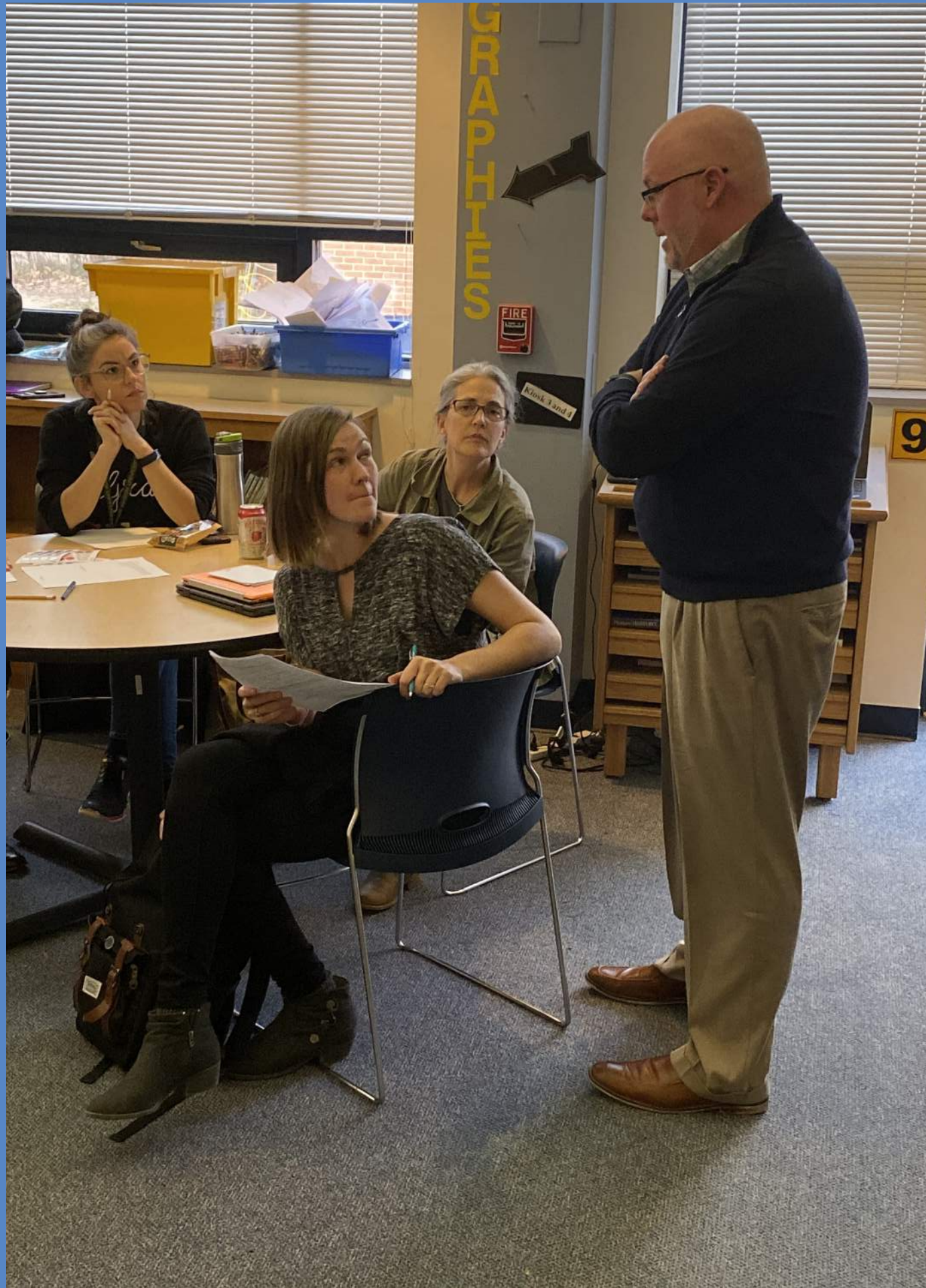
PLURALITY



# READINESS TIER FOUR

IMMERSIVE







# 03 COMMUNITY ENGAGEMENT

## COMMUNITY ENGAGEMENT RECAP

Between October 2019 and January 2020, an intensive community engagement process took place with the various segments of the Douglas MacArthur Community. The following pages describe the activities and meetings. Some activities were replicated with multiple groups so that a comparison can be made between their feedback.



**Community**

Four Community Meetings included presentations and activities to engage the community, either individually or in groups to establish a vision and guiding principles for the design. Highlights of those activities are listed below. The attendance at meetings ranged from around 20 - 40 participants which included parents, neighbors, administrators, teachers, after-care staff, advisory committee members and students.

### Visioning activities

- Hopes and Concerns
- Mind, Body, Spirit
- Community Continuum
- Keep, Toss, Create
- Image Walk
- Readiness Tiers
- VALUES

### Concept Reviews

- Pros/ Cons



**School Team**

We were able to meet with the School Team twice during the concept phase. Activities included:

### Visioning activities

- Readiness Tiers
- I See/ We See
- Cultural Continuum
- Keep, Toss, Create
- Image Walk

### Concept Reviews

- Pros/ Cons



**Advisory Group**

Advisory Group Meetings started in November, 2019 and occurred monthly for the past three months. These meetings began with a focus on establishing the procedures, protocols and processes for the functioning of the group. Each AG meeting included a recap of School Team and Community meetings as well as Concept reviews.

### Visioning activities

- 2023 Success

Douglas MacArthur Elementary School  
Community Meeting Roll Call

Name (optional):

What is your role(s) in the community?

What is your greatest hope for your new school?

What is your greatest concern for your new school?

## Greatest Hopes

Future Proof (Growth)	7	
Flexible   Adaptable	5	
Size   Right-Size	4	
Community Asset	10	
Warm   Welcoming (Community)	2	
Sensitive to Traffic	1	
Sustainability	4	
Light (lots of)	3	
Respectful to the Environment	2	
Healthy Space	2	
Net Zero	1	
Climate Friendly	1	
Safety	8	
Innovative Spaces (Creative Learning)	6	
After School Space	1	
Modern (State of the Art) (Beautiful)	5	
Glass   Windows	1	
K-8	5	
Outdoor Space (Green   Playground)	2	

## Greatest Concerns

Timeline   Planning (How Long, Swing, On Schedule)	11
Staff Retention (Teachers Staying)	3
Too Crowded   Big	5
Won't Last (Future Growth)	2
Spaces not built for flexibility	1
Wont be Different (Looks like all ACPS)	3
A Box   Lack of Innovation	3
Storage (Capacity)	1
Parking   Traffic	4
User Friendly	1
Losing the Community	1
Safety	4
Lack of Concern for Sustainability	1
Lack of Daylight	1
Not Efficient Use of Fields	1

## VISIONING ACTIVITIES

One tenet of the design process at DLR Group is that everyone has a design voice. Visioning activities are one technique that the design team uses to help school communities find their voice and express their desires.

## HOPES AND CONCERNS

The first introduction to the Douglas MacArthur design process was designed to inform us a bit about who was with us and how were they feeling relative to the new school design. The chart above shows a tally of the consolidated answers to the or questions about Hopes and Concerns.

# Mind

## Teaching and Learning

- Space to collaborate\*\*
- Independent/Separation/Personalization\*\*\*
- Fun Space
- Outdoor Classroom Space\*\*\*
- Movement – Inside and Out\*\*
- Flexible outdoor environment\*\*
- Flexible furniture
- Art room (Big)\*\*
- Something that inspires “creativity” / curiosity
- Cool Library w/ Open Space\*\*
- Changes to the format of teaching\*\*\*
- Technology
- Pre-k through 8\*\*
- Right size/classroom (not a factory)\*\*
- Diversity of spaces/levels
- Sustainable teaching tools / active learning\*\*
- OT/PT – private attention when pull out

## Environment

- Places for plants
- Green space
- Welcoming/inviting “community”
- Safety
- Keep the woods\*\*\*
- Interactive Gardens\*\*\*
- Compost
- Rainwater Harvesting

## Philosophy

- Future Proof “100 years”
- Inspiration
- Outreach to Amazon
- Net-Zero

# MIND, BODY, SPIRIT

The Mind, Body, Spirit activity is intended to get participants in touch with a softer, more personal side of their design goals. The questions below inquire how a new school might feel, not just how it might look.

Mind: How can the new school support students intellectual growth?

Body: How can the new school provide a welcoming, healthy environment for each student and visitor?

Spirit: When you walk into the school, how do you envision the feel of the school community?

Community responses have been grouped by responses related to teaching and learning, environment and philosophy.

# Body

## Teaching and Learning

- Lots of Field Space | Playground away from tech \*\*\*
- Running Club before school | track \*\*
- Farm to Table
- Zoned Outdoor Space | Classroom Outdoor Connection \*\*
- Movement \*\*
- Play for “All” kids / disabilities/ accessibility\*\*\*
- Adult spaces\*\*
- Social Emotional | Morning Meeting
- Display of Student Work
- Student Centric
- Rooms that Foster Community
- Indoor Play Space
- Transparent | Daylight\*\*\*
- Building as Teaching Tool
- Flexible Age cohort | Age appropriate\*\*
- Roof Space | {Play Area Green\*\*
- STEM Lab
- Sensory Room
- Quality Materials
- Inclusivity

## Environment

- Organic Materials | Plants
- Lively
- Public Art
- Safety/Secure
- Transparent
- Learning Garden
- Traffic | Creative Parking
- Daylight
- Taller School to Maximize Play Space
- Temperature | Ventilation
- Link back Trail and Park

## Philosophy

- Timeless
- Colors – Patrick Henry
- Community Magnet | Weekend Pantry\*\*\*\*
- Civic Building
- Dignified Presence
- Health and Wellness
- Zero Emissions
- Inclusivity

## Teaching and Learning

- Collaboration
- Students Love Coming | Pride \*\*
- Outdoor Meeting Spaces | Atrium \*\*\*
- Music Space
- Maker Space
- Support Teachers and Staff
- Showcase Student Work
- Art Space | Celebrate Children's Art \*\*
- Preparing students for the future
- Transparent | Views between spaces and Halls
- Technology
- Pods | Scale is Managed | Right Size (Not too big) \*\*
- Child-scaled\*\*
- Lab Spaces
- Teacher Space
- Easy Wayfinding
- Diversity is celebrated

## Environment

- Vibrant but not loud | Noise chaos reduction\*\*
- Murals\*\*\*\*
- Welcoming Environment | Joyful | Whole Community\*\*\*\*
- Safety\*\*\*\*
- Open | Welcoming
- Recycling Bins
- Easy to Navigate
- Caring People
- Thermal Comfort
- Community Playground
- Lounge
- No Long Corridors
- Environmental Psychology

## Philosophy

- Updated “Live
- Colors | Colorful | Light | Variety\*\*\*\*
- Community Feel | Meet the Neighborhood\*\*
- Clean
- Learning is Happening
- Site Orientation
- Positive Energy

## Keep, Toss, Create

This activity is focused on an assessment of the existing school building, program, features and culture. We asked the following:

Think about the values, rituals, cultures, unique places as well as the mundane aspects that contribute to Douglas MacArthur:

What would you like to keep, toss (or tweak), or create?

### Keep

- Outstanding teachers + staff + families
- Community Environment
- Track Area
- Student Garden
- TV Studio
- Book Fair
- Running Club
- Access to Chinquapin Trail

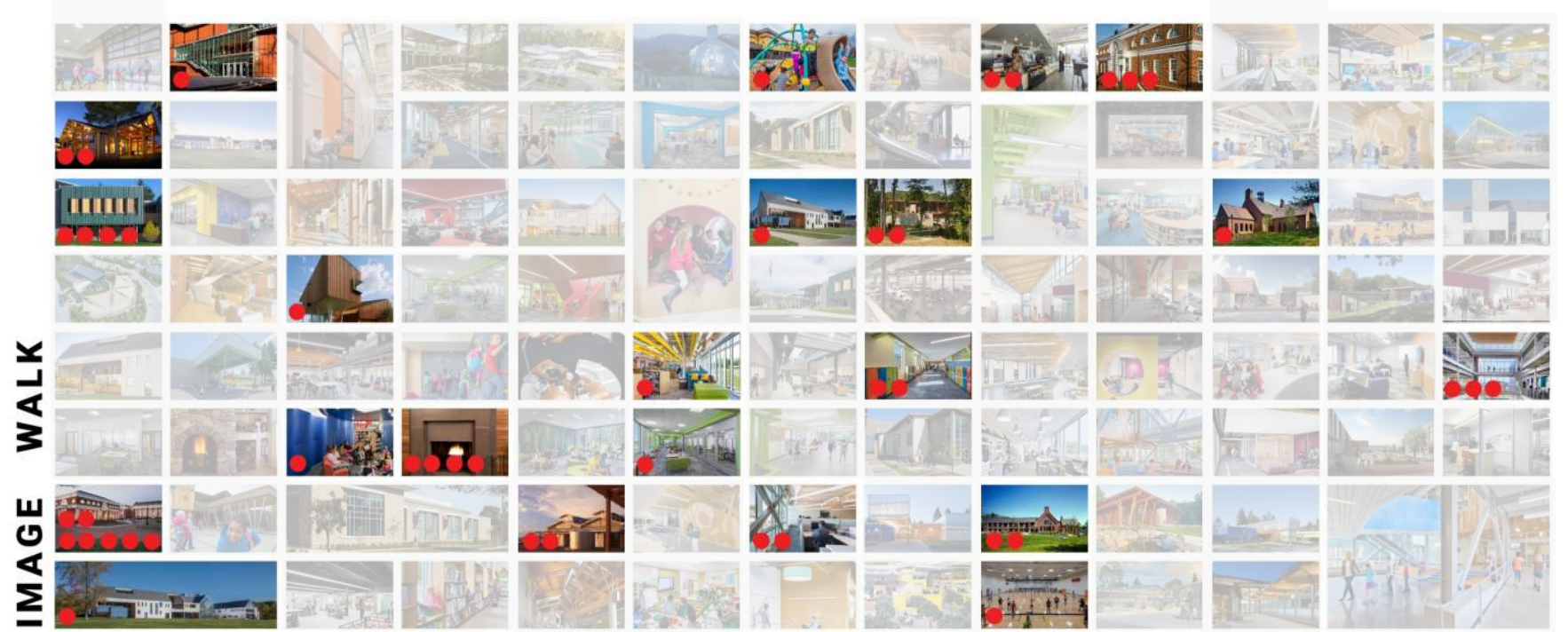
### Toss

- Playground Equipment
- Windowless Classrooms
- Playground Equipment
- Triangle out front

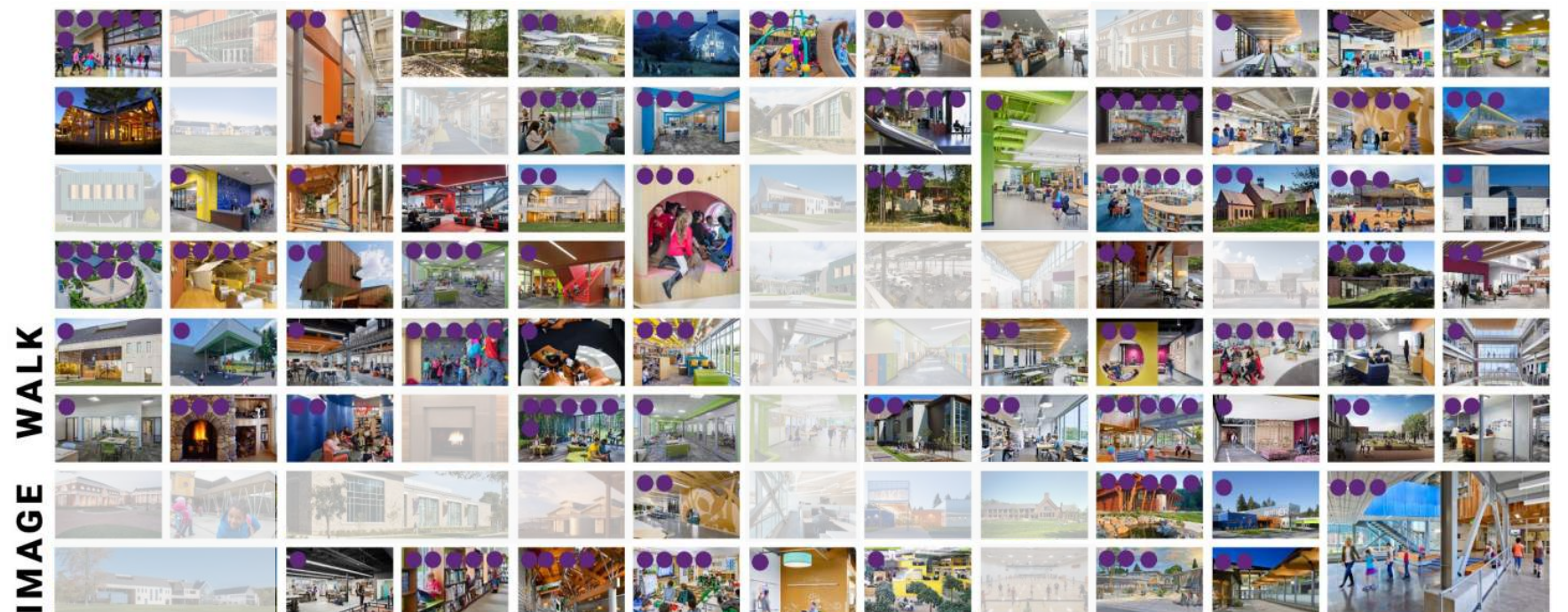
### Create

- Performing Arts | Gathering for the School
- Outdoor Education Space
- Security – Students | Teachers | Parents
- Adequate Parking
- Outdoor Spaces
- Farm to table
- Trails to TC
- Storage: Teachers, Afterschool, PTA, etc
- Underground Parking
- Community Outdoor + Indoor Space

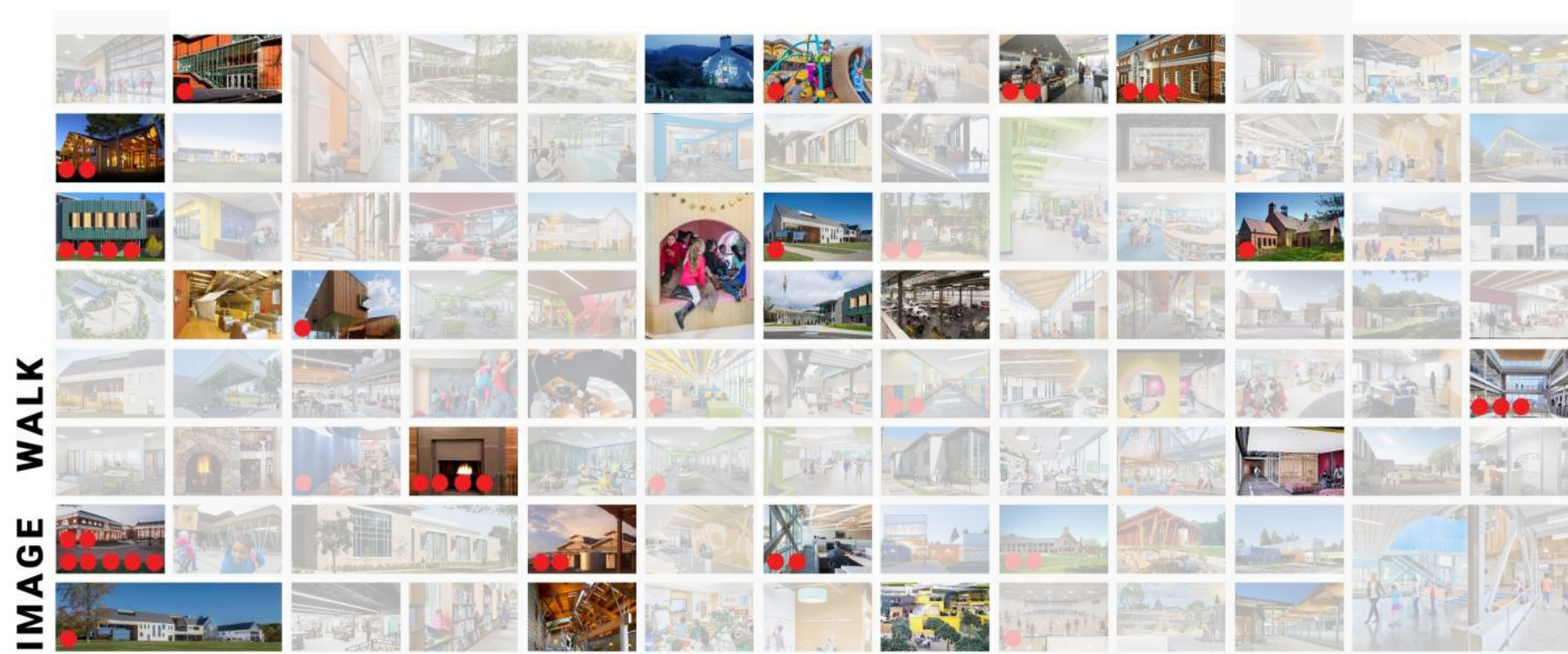
## Image walk dislikes - community



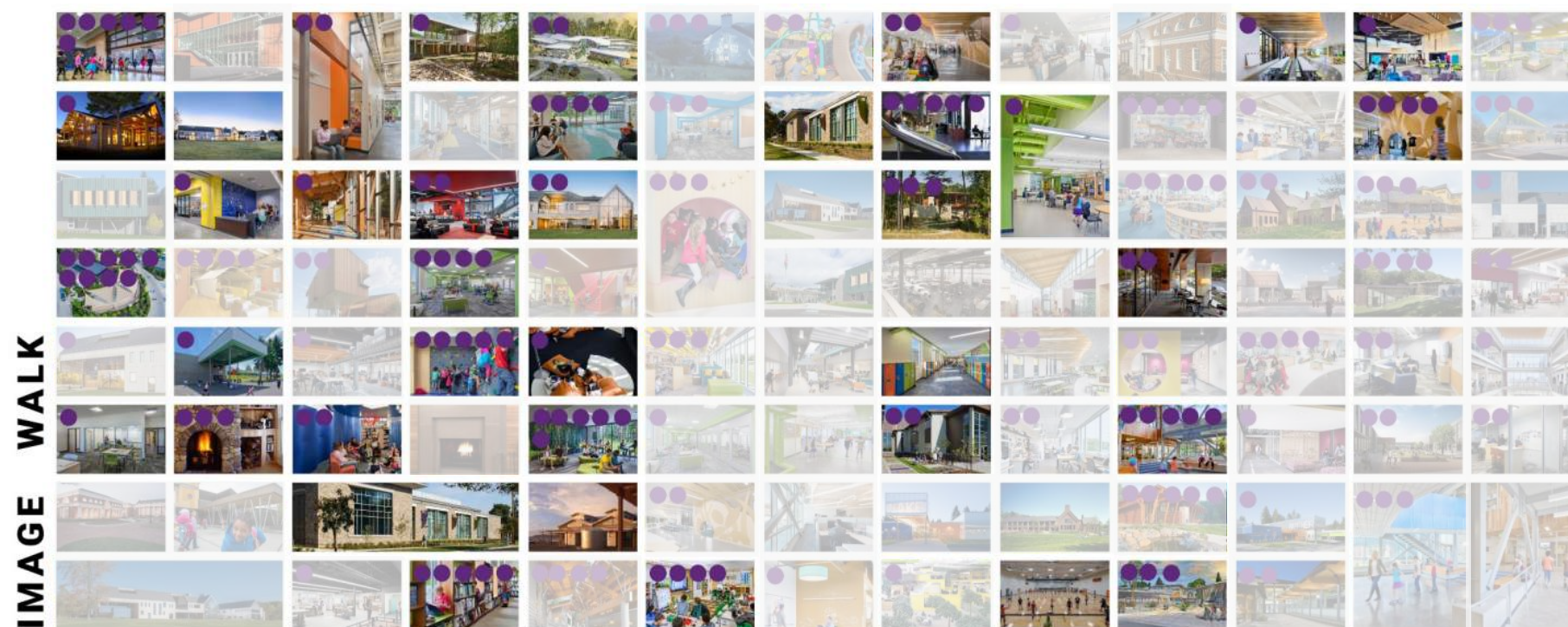
## Image walk likes - community



# Image walk dislikes – school team



# Image walk likes – school team



## IMAGE WALKS

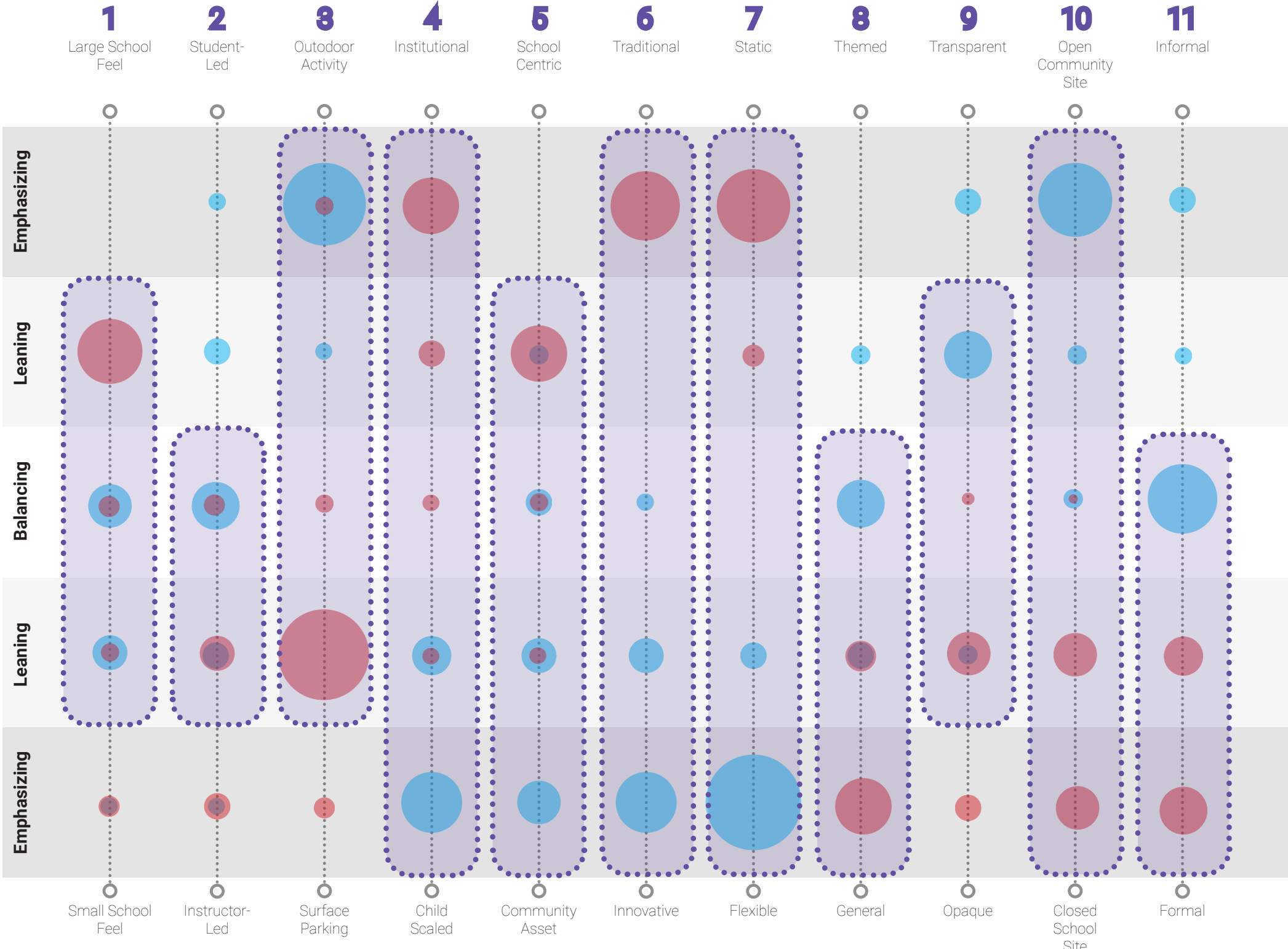
In preparation for discussions about aesthetic character at the new Douglas MacArthur, we held a few Image Walks where participants were asked to indicate likes and dislikes on a matching set of images. While the Concept Phase is not focused on specific design components, this will prepare us well for entering into the next phase of design.

## CULTURAL CONTINUUM

This activity compares how respondents would rate the current status of various aspects of the school. They placed a red dot to represent where the school is today relative to the diad of descriptors (e.g. Traditional vs Innovative) and a blue dot representing where they would like the school to be in the future.

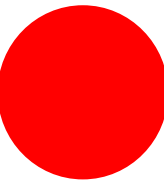
Two sessions were held: one with the community and one with the teachers, administrators and staff. The staff exercise added some additional topics more specifically related to teaching and learning however, a direct comparison can be drawn between the first eleven topics. One potential take-away from this exercise is that the community supports more change or transition from the current to the future Douglas MacArthur. These topics will continue to inform the design process. Diagrams for each continuum are located on the following page.

# CULTURAL CONTINUUM - COMMUNITY

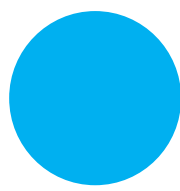


Based on the expressed change of the Community Continuum, it is reasonable to:

- 1** Lean, slightly, towards a small school feel
- 2** Balance Instructor-led and Student led
- 3** Emphasize outdoor activity
- 4** Emphasize child-scaled
- 5** Emphasize community asset
- 6** Emphasize innovation over tradition
- 7** Emphasize flexibility
- 8** Balance general to themed
- 9** Lean towards transparency over opaqueness
- 10** Emphasize an open community site
- 11** Balance informal and formal

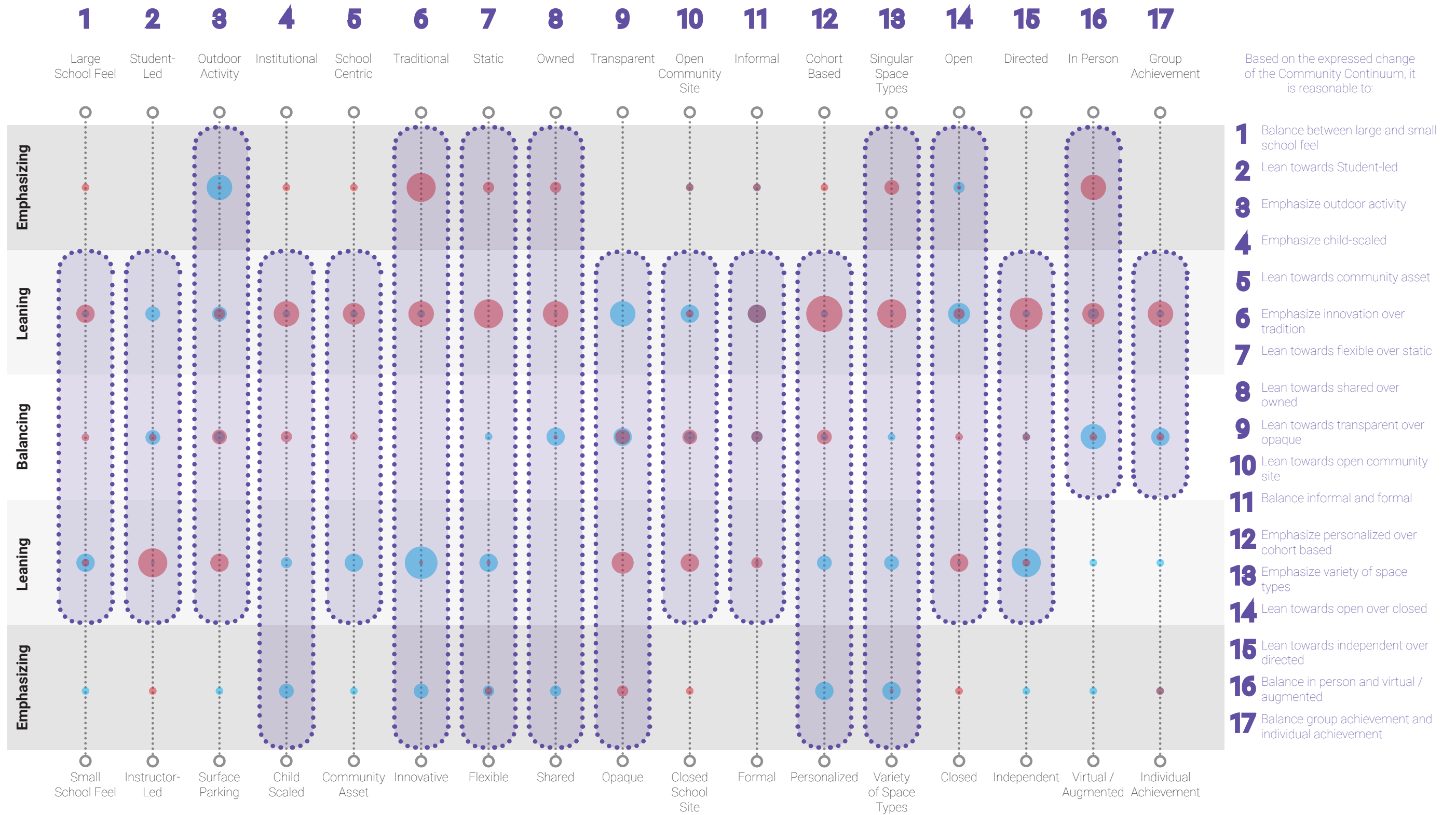


**Red Dot:**  
Where are you *today*?



**Blue Dot:**  
Where do you want to be in the *future*?

# CULTURAL CONTINUUM - TEACHERS & ADMINISTRATORS



# VALUES WORKSHOP

DLR Group has created a community engagement tool that allows participants to play a game that helps in prioritizing and providing measurable data that supports decision making throughout the design process.

VALUES: Viewing Architecture through the Lens of User Experience and Sustainability presents about 80 factors that influence design and building occupancy and allows users to 'vote' with chips for their choices. This game is played in teams so the results reflect some consensus building among those groups. The results below show a

top eleven (there was a tie for ten) "Best in Class" that establish significant characteristics related to the project that should be studied and measured against in the subsequent phases of design.

## Diversity – 2.6

**Di** DIVERSITY

What aspects and programs in the facility promote diversity?

**Di** Why is this important for:

- human health**  
Distribution of resources, division of expertise and an inclusive environment promote creativity and innovation.
- learning benefits**  
Application of diverse learning strategies increase success for all.
- social justice**  
Celebrating diversity creates an inclusive learning environment.

DLR Group  
VALUES  
workshop flashcards

## Energy – 2.6

**En** ENERGY

What is the long term energy need for the facility and how can it be reduced through out the life of the facility?

**En** Why is this important for:

- resource conservation**  
An ultra-low energy use building and capable facility management team can lower energy resource needs and energy costs.
- ecological future**  
Decarbonized building operations reduces global warming.

DLR Group  
VALUES  
workshop flashcards

# Best in Class

## Community Activation – 2.6

**CA** COMMUNITY ACTIVATION

How can a building help infuse its neighborhood with vibrancy and life throughout the day and night, seven days a week?

**CA** Why is this important for:

- human health**  
Considering the greater potential. A walkable community with active street life, varied uses and unique character encourages a sense of place, economic vitality, and enhances the quality of life through diverse experiences.
- social justice**  
An educational and community anchor can provide meaningful opportunities for people of all ages to gather and to learn.

DLR Group  
VALUES  
workshop flashcards



## Equity – 2.7

### Eq EQUITY

How can the facility exemplify inclusion?



**Eq** Why is this important for:

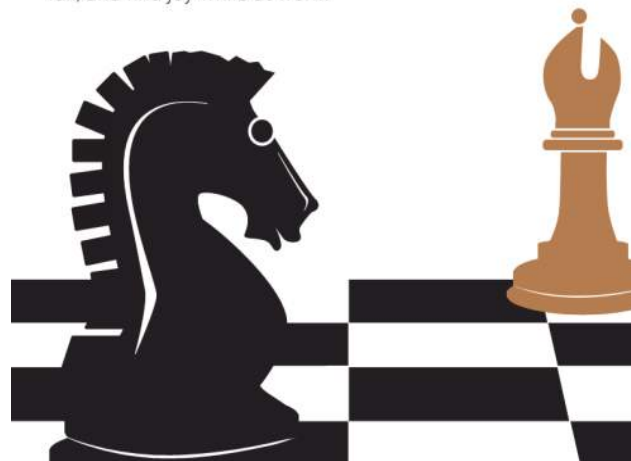
- human health**  
Universal access to majority of spaces can foster a community that is just and equitable.
- ecological future**  
Universal access to fresh air, sunlight and natural waterways promotes protecting and restoring the natural environment.
- social justice**  
Harnessing the power of quality education as a resource available to all.

DLR Group  
VALUES  
workshop flashcards

## Play -2.9

### PI PLAY

What benefits do teams realize by having the opportunity to play, explore, fail, and find joy while at work?



**PI** Why is this important for:

- human health**  
By engaging in different types of playful activities - from structured play to exploratory activities - people can restore mental energy, experience their own personal limits, and gain an understanding of how their actions affect their own self and others around them.
- learning benefit**  
Learning is acquired and retained at higher rates when students are fully engaged.

DLR Group  
VALUES  
workshop flashcards

# Best in Class

## Maintenance Programs – 3.1

### MP MAINTENANCE PROGRAMS

What aspects and programs can reduce maintenance efforts for the life of the facility?



**MP** Why is this important for:

- human health**  
Environmentally-friendly maintenance programs contribute to improving human health.
- resource conservation**  
Preventative maintenance programs will prolong the life of the components in the facility.

DLR Group  
VALUES  
workshop flashcards



# Best in Class

## Safety -3.2

**Sa** SAFETY  
Question?

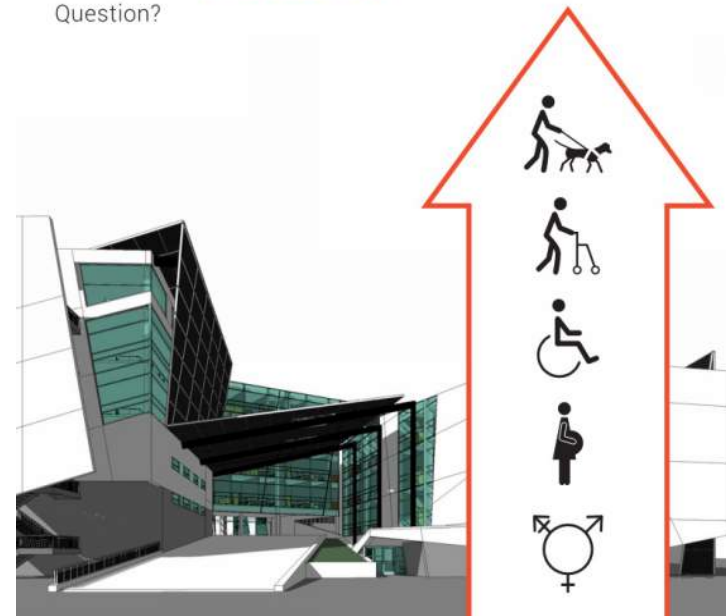


**Sa** Why is this important for:

-  **human health**  
A safe environment supports social, emotional, and physical well-being
-  **learning behavior**  
Children learn best when they feel safe and nurtured
-  **social justice**  
All children are entitled to feel safe, including (though not only) at school

## Universal Accessibility 3.2

**UA** UNIVERSAL ACCESSIBILITY  
Question?

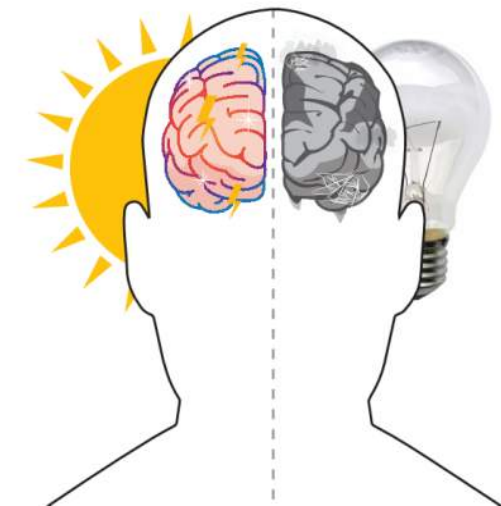


**UA** Why is this important for:



-  **learning benefit**  
Universal access allows for all students to participate fully and to learn from one another
-  **social justice**  
Full access to education is a right

## Natural v. Artificial Light -3.7

**NVAL** NATURAL VS. ARTIFICIAL LIGHT  
What if we treat daylight with the same significance as air or water?



**NVAL** Why is this important for:

-  **human health**  
Experiencing daylight throughout the workspace is beneficial for both mental and physical health. Daylight sets the body's circadian rhythms, keeping sleep and hormones on track. Seeing hints of daylight also helps people orient themselves within the building, and to conditions outside, keeping stress lower and boosting mood throughout the day.
-  **resource conservation**  
Harvesting Daylight and space planning according to lighting needs and availability can reduce electrical loads.

# Best in Class

## Active Spaces – 4.0

### AS ACTIVE SPACES

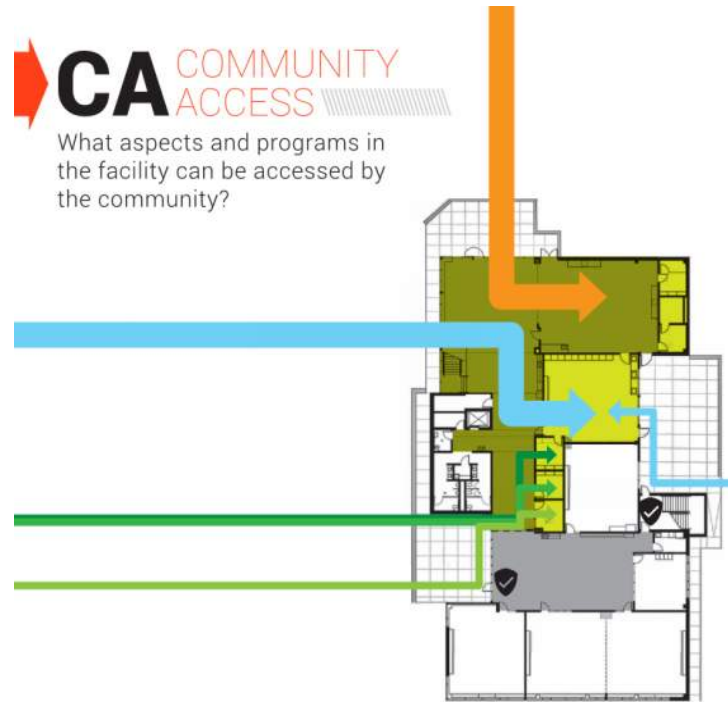
What aspects of the facility can promote health and fitness-related activities?



## Community Access – 4.2

### CA COMMUNITY ACCESS

What aspects and programs in the facility can be accessed by the community?



### AS Why is this important for:

- human health**  
Active lifestyle improves individual's decisions and behaviors.
- resource conservation**  
Adequate lighting that can be controlled based on activity and climate minimizes energy consumption.
- learning benefit**  
Students' ability to move, whether in a PE-focused activity or in an academic pursuit, maintains interest and energy.

### CA Why is this important for:

- resource conservation**  
Reduces resource needs for the larger community and provides connected communities.
- social justice**  
Helps to equalize access to quality programs through shared use.



# Site Zoning

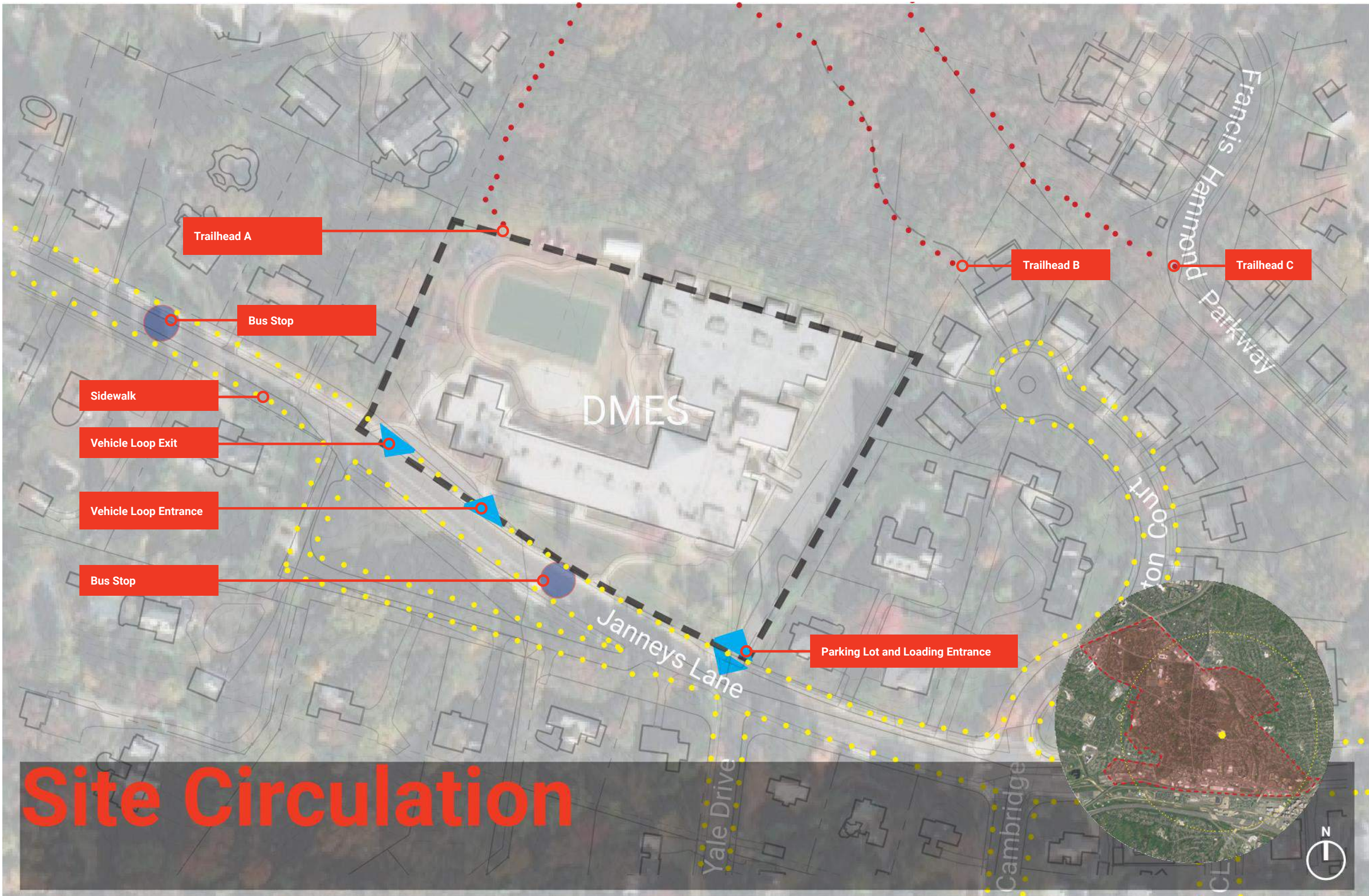
# 04

## SITE ANALYSIS

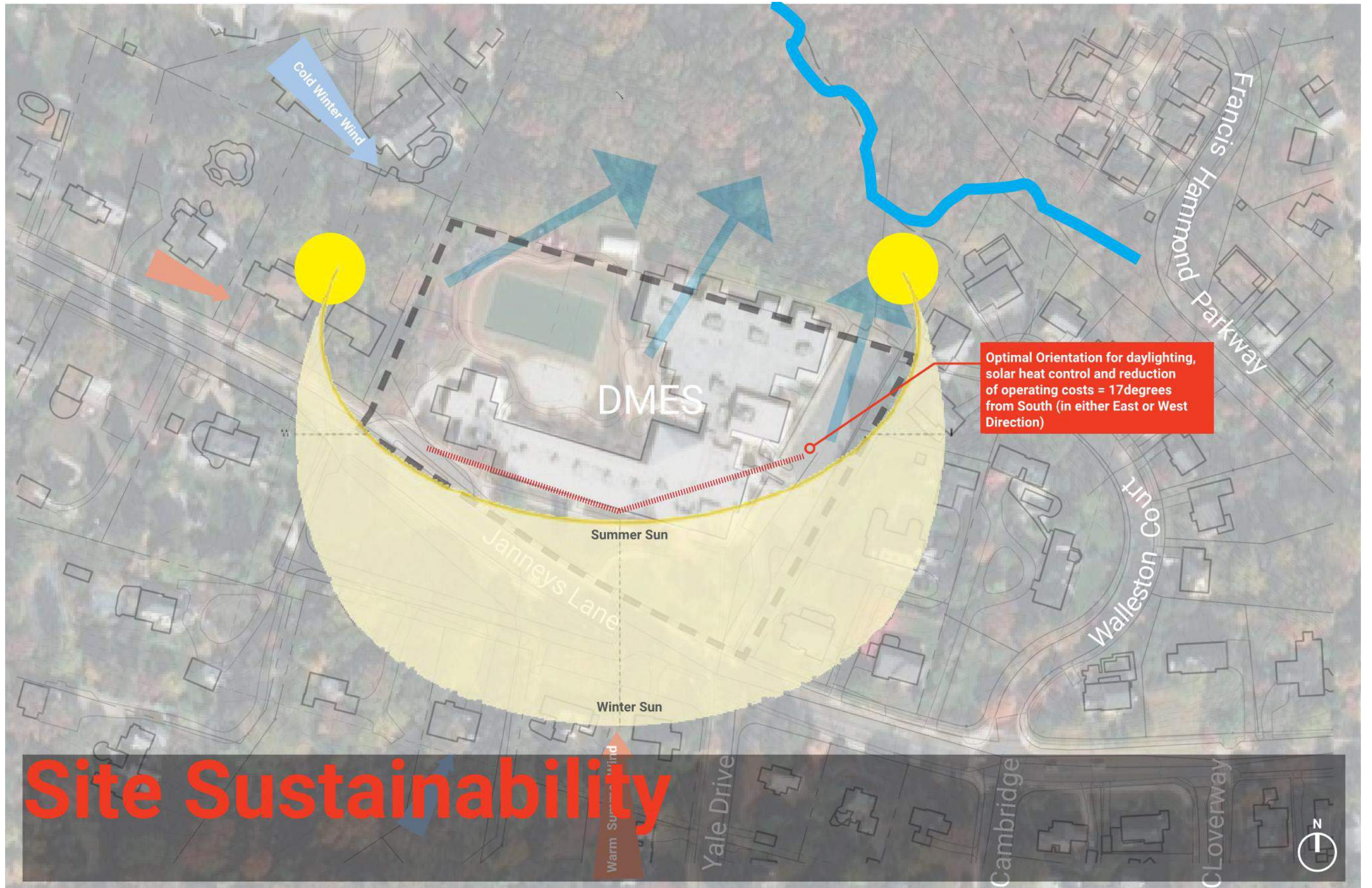
# EXISTING

SITE ZONING  
SITE CIRCULATION  
SITE SUSTAINABILITY

AN ANALYSIS OF THE EXISTING SITE IS INCLUDED IN THIS SECTION. THESE DIAGRAMS DEPICT SOME ESSENTIAL ELEMENTS OF THE CURRENT CONFIGURATION AND HAVE HELPED INFORM THE SITE PLANNING PROCESS.



# Site Circulation



# Site Sustainability







THE FOLLOWING DRAWING DEPICT THE Y CONCEPT. THIS THREE STORY CONCEPT IS THE SMALLEST FOOTPRINT AND IS PARALLEL TO JANNEYS LANE; ROUGHLY IN THE SAME LOCATION OF THE EXISTING DOUGLAS MACARTHUR SCHOOL MAIN FACADE. THE DOUBLE LOADED CORRIDORS CREATE AN EFFICIENT PLAN WITH THE OPPORTUNITY FOR CLUSTERED LEARNING. SOME KEY CONCEPTS THAT WERE EMPHASIZED IN THE Y CONCEPT ARE:

- MINIMIZE BUILDING FOOTPRINT
- MAXIMIZE OPEN SPACE
- CREATE AN URBAN EDGE ALONG JANNEYS LANE
- SEPARATE BUS DROP-OFF FROM OTHER VEHICULAR TRAFFIC

ALL EDUCATIONAL SPACES ARE ACCOMMODATED IN THIS CONCEPT WITH EACH FLOOR CONTAINING 2-3 GRADE LEVEL COHORTS. PUBLIC-USE SPACE, SUCH AS GYMNASIUM AND MULTIPURPOSE ROOM, ARE LOCATED ON THE WEST END OF THE BUILDING AND ARE EASILY SEPARATED FOR OUT-OF-SCHOOL TIME COMMUNITY USE. THE MEDIA CENTER, LOCATED ON THE SECOND LEVEL WOULD BE CONNECTED VIA PROPOSED "MONUMENTAL STAIR" WHICH MAKES IT A MORE AVAILABLE COMMUNITY ASSET. EXTENDED LEARNING AREA OPPORTUNITIES EXIST WITHIN THE EXPANDED

CORRIDORS AT ALL FLOOR LEVELS. POTENTIAL ADVANTAGES AND DISADVANTAGES OF THE Y CONCEPT RELATED TO SPECIFIC TOPICS ARE DISCUSSED BELOW.

#### ECONOMIC COST SAVINGS

- THIS IS THE MOST COST EFFICIENT CONCEPT
  - MAXIMUM SPACE UTILIZATION THAT CAN BE ACHIEVED
  - ACHIEVES THE LARGEST CONTIGUOUS PLAY AREA
  - BUILDING MASS ON THE STREET IS LARGER THAN THE NEIGHBORHOOD IS ACCUSTOMED TO
  - IMPACT ON PEDESTRIAN AND VEHICULAR TRAFFIC WITHIN THE SCHOOL PERIMETER AND THE NEIGHBORHOOD
  - BUS LOOP ENLARGED TO ALLOW SPACE FOR ALL BUSES, IMPROVING CONGESTION ON JANNEYS LANE
  - PARENT DROP OFF HAS POTENTIAL FOR BACK-UP ON TO JANNEYS LANE
  - SHARED DRIVE AISLE WITH TEACHERS AND PARENTS IS SUB-OPTIMAL
- #### VISUAL APPEAL
- SIGNIFICANT CHANGE IN MASSING ON JANNEYS LANE MAY BE A NEGATIVE
  - URBAN-EDGE SCHOOL COULD CREATE AN ATTRACTIVE PRESENCE FOR THE SCHOOL WITHIN THE COMMUNITY

# 05

## CONCEPT OPTIONS

# Y CONCEPT

SITE PLANS  
FLOOR PLANS  
MASSING & PRECEDENTS

- MANY ARCHITECTURAL STYLES CAN BE ACHIEVED
- #### FLEXIBILITY OF THE CONCEPT
- ALLOWS FOR (MINIMAL) FUTURE GROWTH
  - POTENTIAL FOR NET-ZERO ENERGY/GREEN
  - GOOD SOLAR ORIENTATION
  - MAXIMUM SITE AVAILABLE FOR GEOTHERMAL HOWEVER SMALL ROOFTOP MAY LIMIT EXTENT OF PHOTOVOLTAICS

# “Y” CONCEPT PROS / CONS

## SCHOOL TEAM

### PROS

- PLAY SPACE AT BACK OF BUILDING
- BUS ACCESS VERY DIRECT
- GYM CLOSE TO PLAY AREA
- AMPLE FIELD SPACE
- LARGEST CONTIGUOUS PLAY SPACE

### CONS

- PRE-K 2ND ENTRY OPTION IS FAR FROM DROP-OFF
- ENTRANCES FAR FROM DROP-OFF
- TALL BUILDING CLOSE TO THE ROAD
- COMMUNITY NEEDS TO GO THROUGH PLAY SPACE TO GET FIELDS
- TRAFFIC:
- PARENT & STAFF SHARED DRIVE
- TRAFFIC SPILL-OUT ON TO STREET

## ADVISORY GROUP

### PROS

- LARGE PLAY SPACE IS BUFFERED
- OUTDOOR SPACE ON ROOF
- MOST OPTIMAL USE OF SPACE
- SEPARATION OF SHARED-USE FROM ACADEMIC SPACE
- LIKE SCHOOL ENTRY AWAY FROM JANNEYS & YALE
- GYM CLOSE TO PLAY AREA
- AMPLE FIELD SPACE
- LARGEST CONTIGUOUS PLAY SPACE
- CLASSROOMS MORE “CLUSTERED”

### CONS

- GLASS - COURTYARD/SOUND ISSUES
- NOT BEST USE OF SPACE
- GYM NOT CLOSE TO FIELD
- EXTERIOR DOES NOT FIT NEIGHBORHOOD
- TRAFFIC : PARENT & STAFF SHARED DRIVE
- TRAFFIC : SPILL - OUT ON TO STREET

## COMMUNITY MTG

### PROS

- PROGRAM
- ENTRANCE / OPPOSITE EXIT (PLAY AREAS)
- SEE THROUGH / PASSAGE THROUGH
- CONNECTIONS BETWEEN PLAYGROUND SPACE
- PLAY SPACE IN BACK - EASIER SUPERVISION
- DROP OFF
- CONTIGUOUS PLAY SPACE
- AMPLE GREEN SPACE AT ENTRY

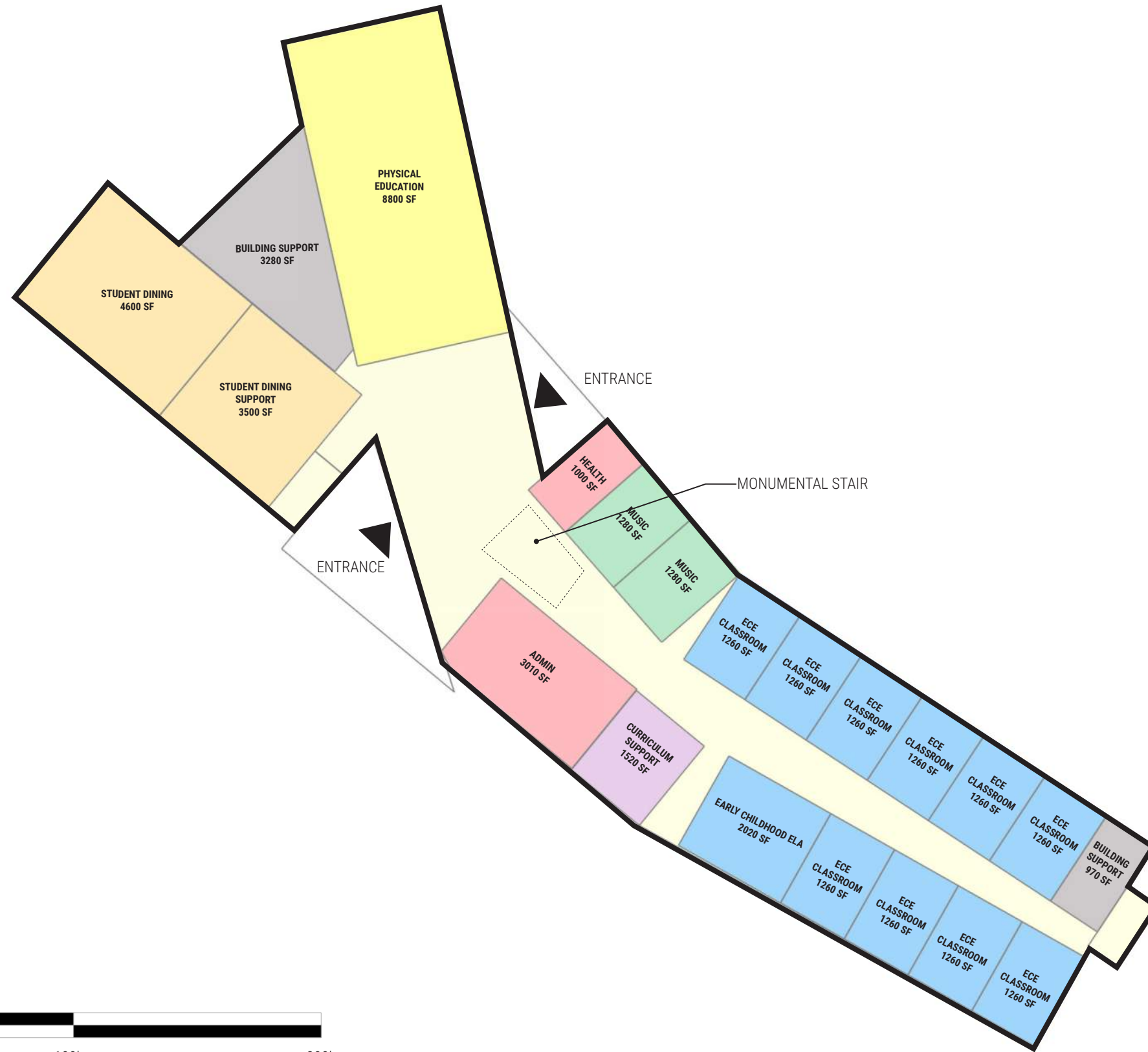
### CONS

- FRONT LAWN MISSING - NEED GREEN BETWEEN BUS LOOP / MORE WELCOMING
- TOO TALL RIGHT OFF JANNEYS
- NO PARENT TEACHER GATHERING SPACE IN FRONT
- UNDER UTILIZATION OF FOREST
- PARKING AND TRAFFIC FLOW SEMINARY RD

# CONCEPT "Y" SITE PLAN



# CONCEPT "Y" FIRST FLOOR

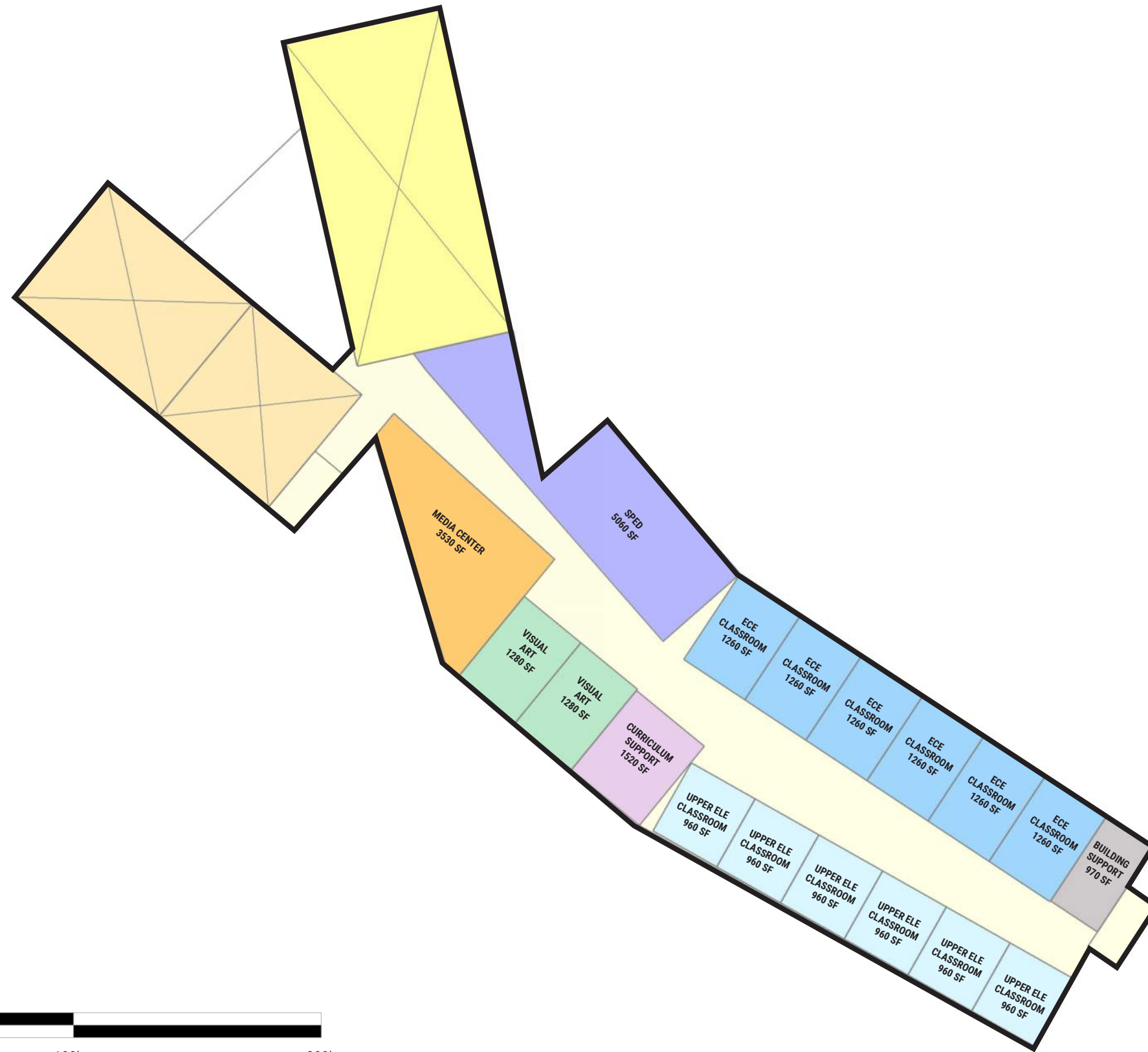


## KEY PLAN

- CIRCULATION
- ECE CORE LEARNING
- UPPER E CORE LEARNING
- SPED
- CURRICULUM SUPPORT
- SHARED LEARNING
- ADMIN
- DINING
- LIBRARY COMMONS
- GYMNASIUM
- OUTDOOR PLAY
- STORAGE + SUPPORT



# CONCEPT "Y" SECOND FLOOR

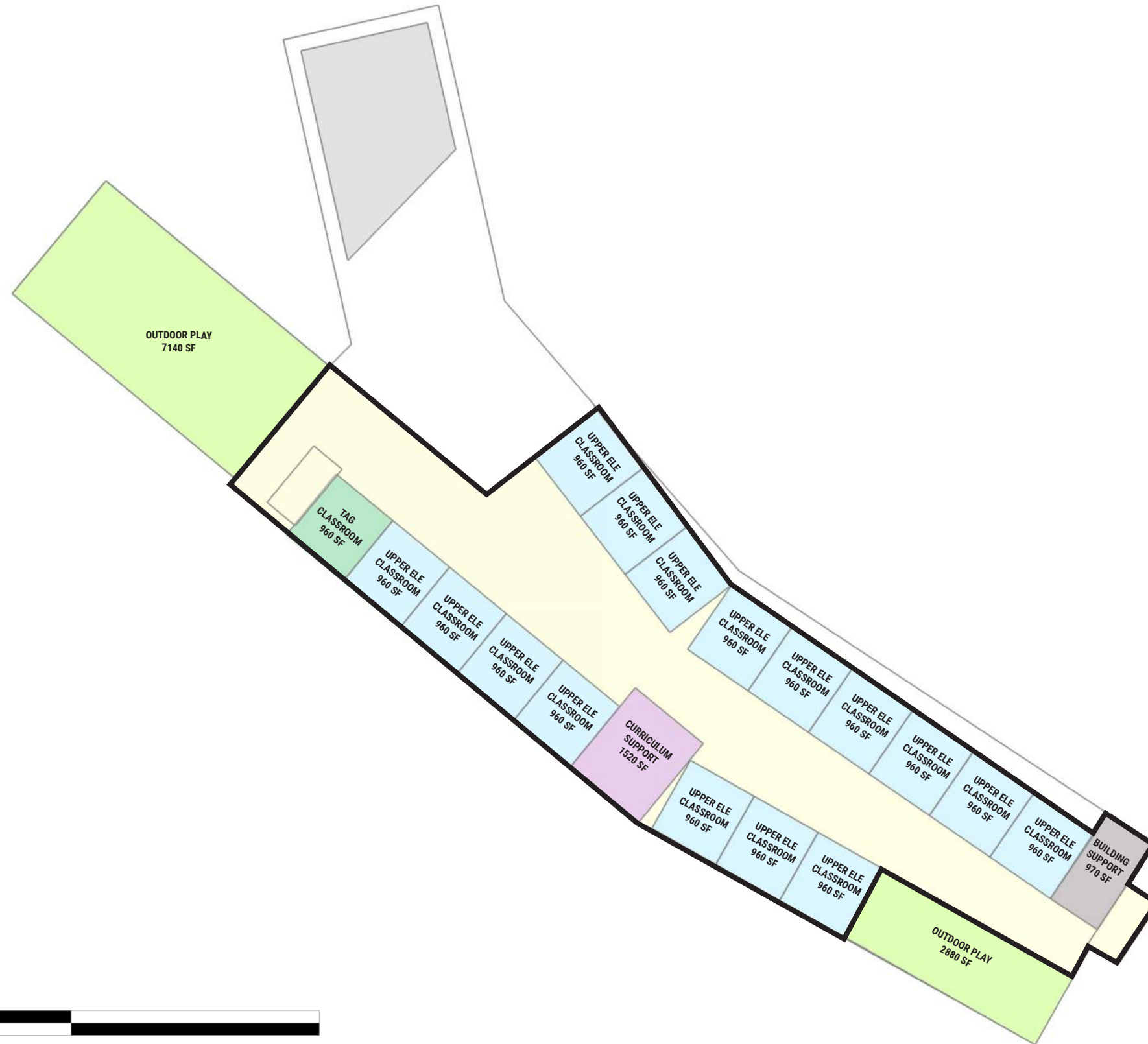


## KEY PLAN

- CIRCULATION
- ECE CORE LEARNING
- UPPER E CORE LEARNING
- SPED
- CURRICULUM SUPPORT
- SHARED LEARNING
- ADMIN
- DINING
- LIBRARY COMMONS
- GYMNASIUM
- OUTDOOR PLAY
- STORAGE + SUPPORT



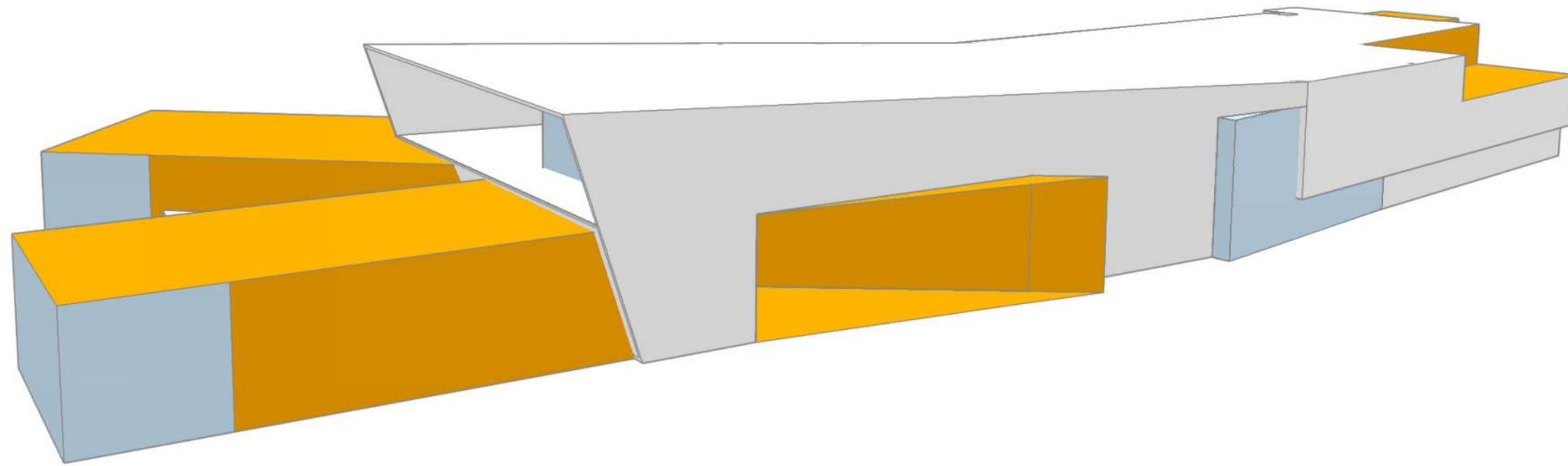
# CONCEPT "Y" THIRD FLOOR



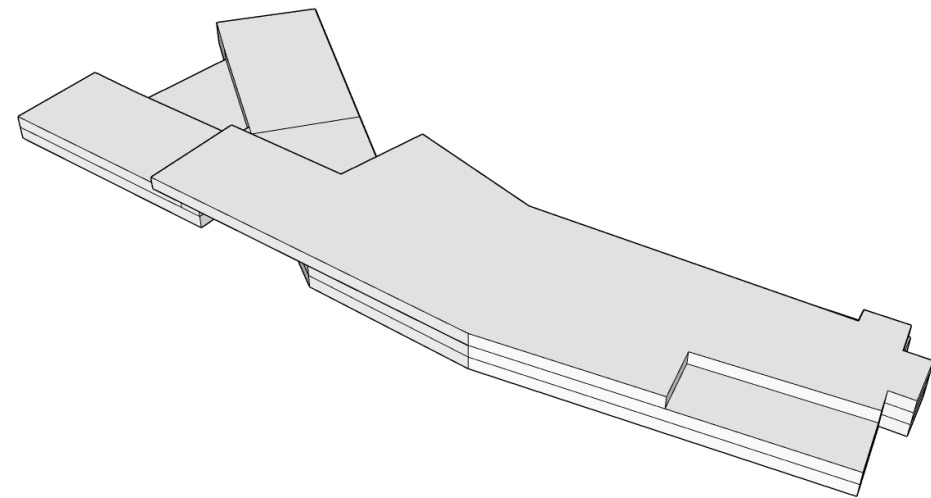
## KEY PLAN

- CIRCULATION
- ECE CORE LEARNING
- UPPER E CORE LEARNING
- SPED
- CURRICULUM SUPPORT
- SHARED LEARNING
- ADMIN
- DINING
- LIBRARY COMMONS
- GYMNASIUM
- OUTDOOR PLAY
- STORAGE + SUPPORT

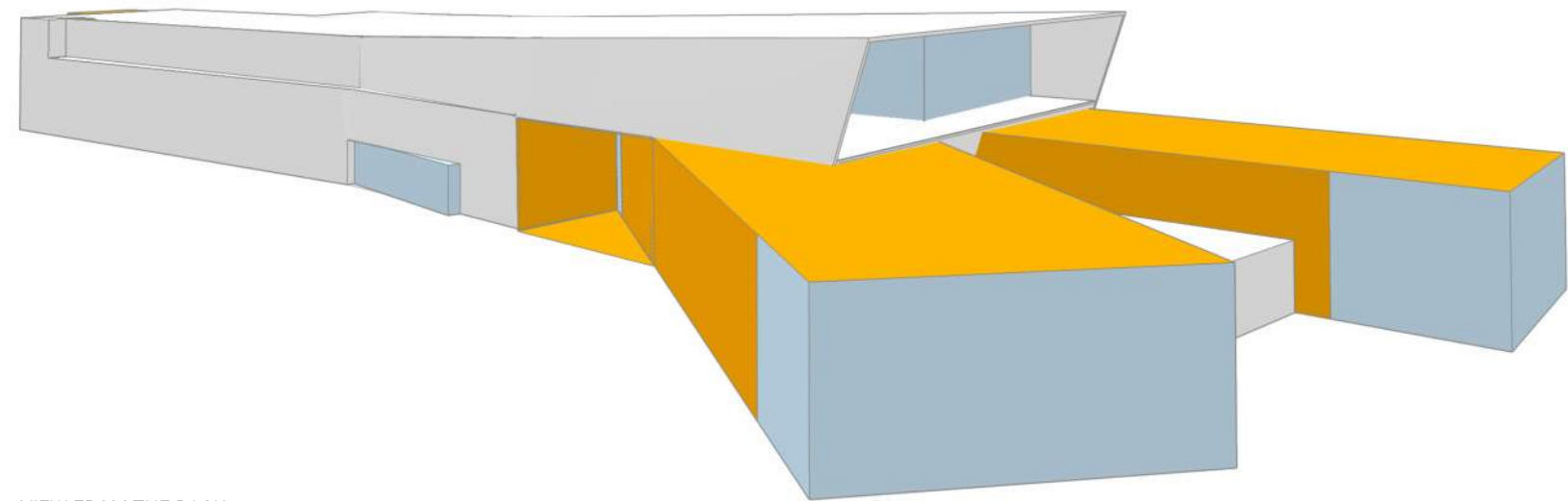




VIEW FROM THE FRONT



AERIAL VIEW



VIEW FROM THE BACK

## CONCEPT "Y" 3D DIAGRAMMATIC VIEW



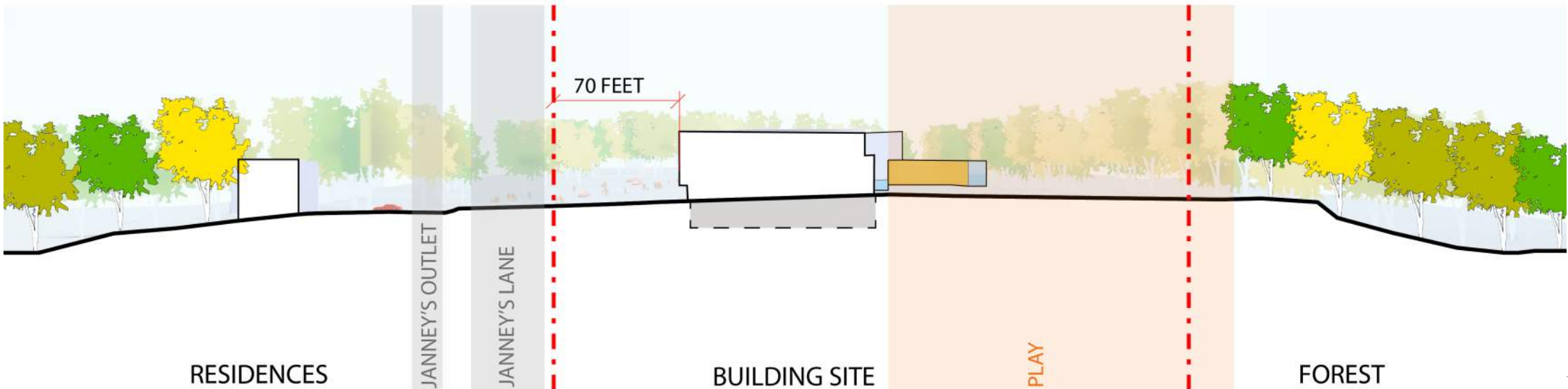
VIEW FROM INTERSECTION AT JANNEYS LANE



VIEW FROM YALE DR



CONCEPT "Y" PRECEDENTS / SITE SECTION





# 05

## CONCEPT OPTIONS

# FOREST CONCEPT

SITE PLANS  
FLOOR PLANS  
MASSING & PRECEDENTS

THE FOLLOWING DRAWINGS DEPICT THE FOREST CONCEPT WHOSE PRIMARY DESIGN FOCUS IS MAKING A CONNECTION TO FOREST PARK; PROVIDING A VIEW OF THE FOREST FROM THE MAJORITY OF CLASSROOMS. A THREE STORY ACADEMIC BAR IS PUSHED TO THE BACK OF THE SITE. THIS STEPS DOWN FROM THREE TO TWO TO ONE STORY AS IT APPROACHES JANNEYS LANE. SOME KEY CONCEPTS THAT WERE EMPHASIZED IN THE FORREST CONCEPT ARE:

- FOCUS BUILDING MASS TO NORTH OF SITE
- MAXIMIZE VIEWS FOR CLASSROOMS WHILE CREATING A FOREST VIEW FROM JANNEYS LANE
- ZONE SHARED-USE FACILITIES TO THE SOUTH
- SEPARATE BUS DROP-OFF FROM OTHER VEHICULAR TRAFFIC

ALL EDUCATIONAL SPACES ARE ACCOMMODATED IN THIS CONCEPT WITH EACH FLOOR CONTAINING 2-3 GRADE LEVEL COHORTS. PUBLIC-USE SPACE, SUCH AS GYMNASIUM AND MULTIPURPOSE ROOM ARE LOCATED TO THE SOUTH OF THE BUILDING AND ARE EASILY SEPARATED FOR OUT-OF-SCHOOL TIME COMMUNITY USE. THE MEDIA CENTER, LOCATED ON THE SECOND LEVEL WOULD BE CONNECTED VIA PROPOSED "MONUMENTAL

STAIR" WHICH MAKES IT A MORE ACCESSIBLE COMMUNITY ASSET. EXTENDED LEARNING AREA OPPORTUNITIES EXIST WITHIN THE EXPANDED CORRIDORS AT ALL FLOOR LEVELS AND IN THE CONNECTOR.

POTENTIAL ADVANTAGES AND DISADVANTAGES OF THE FOREST CONCEPT RELATED TO SPECIFIC TOPICS ARE DISCUSSED BELOW.

### ECONOMIC COST SAVINGS

- THIS IS THE MIDDLE RELATIVE COST MAXIMUM SPACE UTILIZATION THAT CAN BE ACHIEVED
  - ACHIEVES A LARGE FIELD SPACE BUT PLAY AREAS ARE SEPARATED (FIELDS AND PLAY AREA CAN BE SWITCHED FOR A MORE CONSOILDATED PLAY AREA
  - WIDTH OF BUILDING LIMITS SITE FEATURE TO THE WEST
  - SINGLE STORY ELEMENTS AT SOUTH ARE NOT AS EFFICIENT AS Y CONCEPT
- IMPACT ON PEDESTRIAN AND VEHICULAR TRAFFIC WITHIN THE SCHOOL PERIMETER AND THE NEIGHBORHOOD
- ANGLED BUS LOOP ACCOMMODATES 10 BUSES, IMPROVING CONGESTION ON JANNEYS LANE
  - PARENT DROP OFF HAS POTENTIAL FOR BACK-UP ON TO JANNEYS LANE

- SHARED DRIVE AISLE WITH TEACHERS AND PARENTS IS SUB-OPTIMAL
- VISUAL APPEAL
- SET-BACK OF BUILDING HEIGHT MINIMIZES MASSING ON JANNEYS LANE
  - THREE STORY BAR CAN BE AN ATTRACTIVE BACKDROP TO SHARED USE SPACES AND ENTRY
  - MANY ARCHITECTURAL STYLES CAN BE ACHIEVED
- FLEXIBILITY OF THE CONCEPT
- ALLOWS FOR FUTURE VERTICAL GROWTH POTENTIAL FOR NET-ZERO ENERGY/GREEN
  - GOOD SOLAR ORIENTATION
  - SIGNIFICANT SITE AND ROOFTOP AVAILABLE FOR GEOTHERMAL AND PHOTOVOLTAICS

# “FOREST” CONCEPT

## PROS / CONS

### SCHOOL TEAM

#### PROS

- “LOVE THE REST”
- 3/2 STORY TIERED APPROACH
- POTENTIAL ARTICULATION OF FOREST FAÇADE
- SEPARATED ENTRANCES
- FURTHER FROM ROAD
- LIKE ENTRANCE
- CAPTURES CONNECTION TO FOREST
- IF PLAY AND FIELDS SWAP: PLAY SPACE EASIER TO SUPERVISE AND FIELDS NEAR STREET ARE GOOF FOR COMMUNITY ACCESS

#### CONS

- PLAY AREA TOO CLOSE TO STREET
- LESS CONTIGUOUS PLAY SPACE
- ONE PLAY SPACE IS ISOLATED
- TRAFFIC:
- PARENT & STAFF SHARED DRIVE
- TRAFFIC SPILL-OUT ON TO STREET

### ADVISORY GROUP

#### PROS

- TIERED/ STEP UP AT BACK
- MASSING
- SHADED PLAY AREA
- FOREST VIEW
- ORGANIZATION OF OPEN SPACE INCLUDING COMMUNITY USE AND CONNECTION TO PARK
- GATHERING AREA AT ENTRANCE
- SEQUESTERED PRE-K PLAY AREA

#### CONS

- LONG HALLWAYS
- LACK OF CLUSTERING
- LACK OF VISUAL CONNECTION TO PLAY SPACE
- ENTRANCE LOCATION ON WEST; HIDDEN FROM JANNEYS & YALE
- NOT ENOUGH BUFFER ON WEST SIDE
- LIMITED OUTDOOR PLAY AT ROOFTOP

### COMMUNITY MTG

#### PROS

- PLAY SPACE AT FRONT
- GLASS BAR IN BACK - CLASSROOM SPACE IN BACK
- COMMUNITY FEEL (MAURY / MT. VERNON) ABLE TO SEE CHILDREN IN THE FRONT
- PUSHING BUILDING TO BACK MORE COMPLIMENTARY OF NEIGHBORHOOD - BUILDING STEPS BACK
- FOREST AS PART OF PLAY AREA
- AMPLE GREEN SPACE AT ENTRY
- SHIFT OF VEHICULAR ACCESS

#### CONS

- 3 STORY BAR SEPARATED FUNCTIONALITY - ISOLATED CLASSROOMS
- BAR BLOCKS VIEWS TO THE FOREST
- BIG ASPHALT AREAS IN FRONT
- PLAYGROUND NEXT TO STREET - ALL PLAY AREAS TOGETHER SO PARENTS CAN SUPERVISE CHILDREN OF DIFFERENT AGES
- PARKING AND TRAFFIC FLOW SEMINARY RD

# CONCEPT "FOREST" SITE PLAN



# CONCEPT "FOREST" FIRST FLOOR



## KEY PLAN

- CIRCULATION
- ECE CORE LEARNING
- UPPER E CORE LEARNING
- SPED
- CURRICULUM SUPPORT
- SHARED LEARNING
- ADMIN
- DINING
- LIBRARY COMMONS
- GYMNASIUM
- OUTDOOR PLAY
- STORAGE + SUPPORT



# CONCEPT "FOREST" SECOND FLOOR

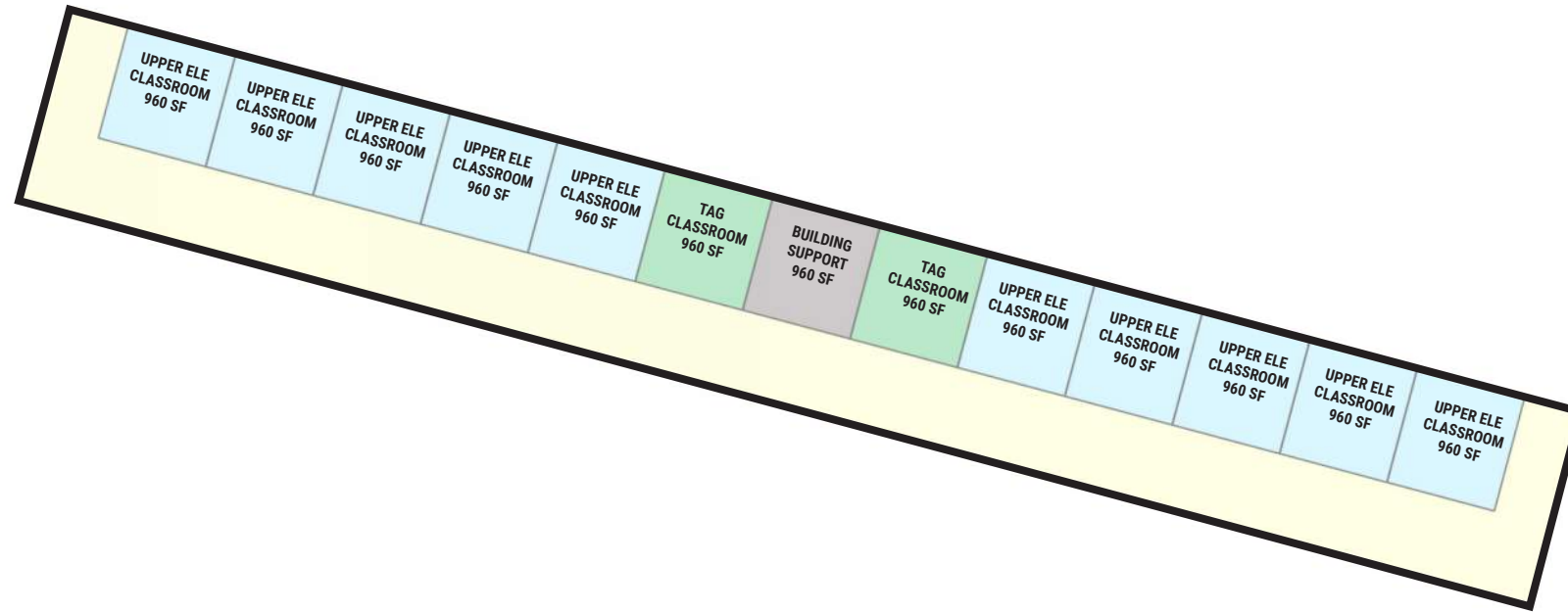


**KEY PLAN**

- CIRCULATION
- ECE CORE LEARNING
- UPPER E CORE LEARNING
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- CURRICULUM SUPPORT
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# CONCEPT "FOREST" MASSING



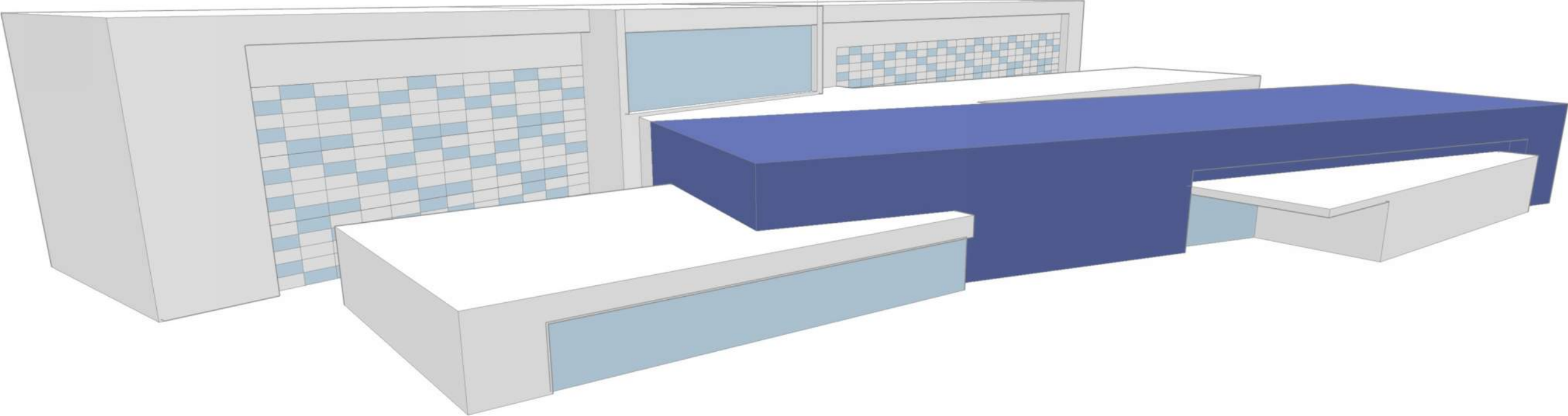
## KEY PLAN

- CIRCULATION
- ECE CORE LEARNING
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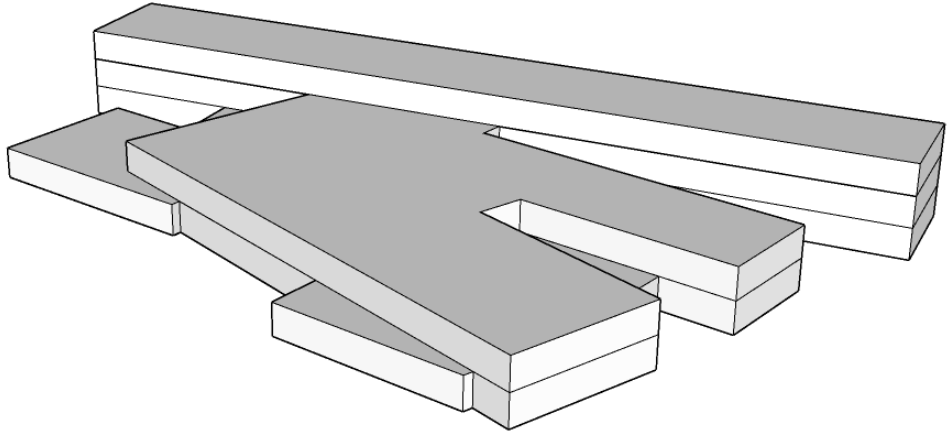




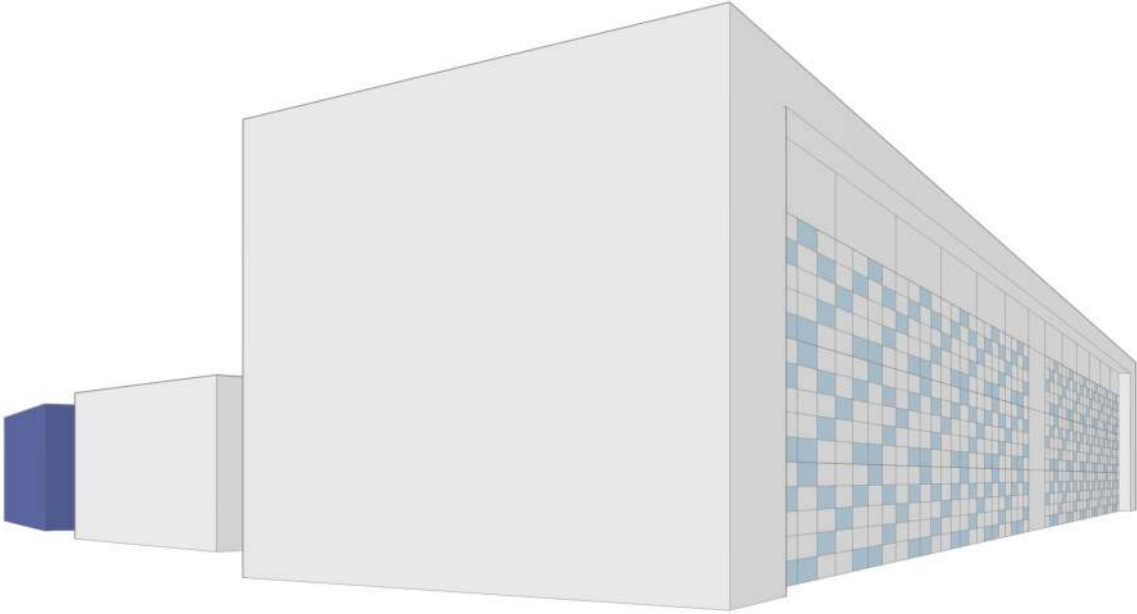
CONCEPT "FOREST" MASSING



VIEW FROM THE FRONT



AERIAL VIEW



VIEW FROM THE BACK

CONCEPT "FOREST" 3D DIAGRAMMATIC VIEW

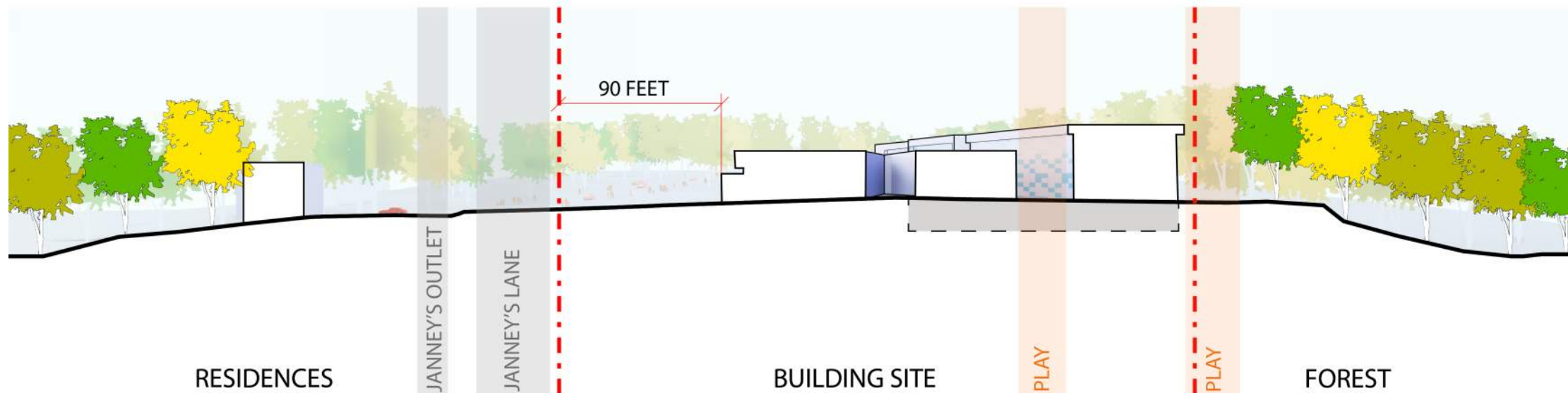
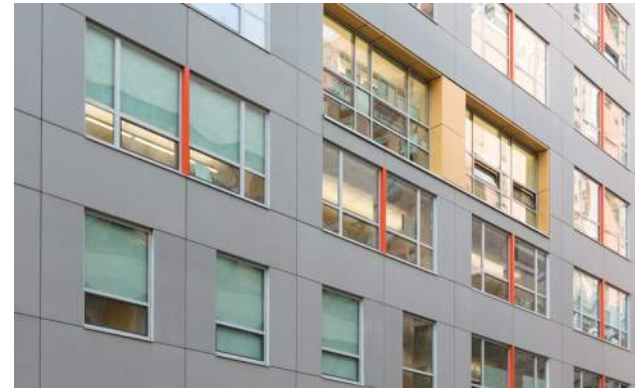


VIEW FROM INTERSECTION AT JANNEYS LANE



VIEW FROM YALE DR

# CONCEPT "FOREST" PRECEDENTS / SITE SECTION





# 05

## CONCEPT OPTIONS

# COIL CONCEPT

SITE PLANS

FLOOR PLANS

MASSING & PRECEDENTS

THE FOLLOWING DRAWINGS DEPICT THE COIL CONCEPT. THIS THREE STORY CONCEPT IS PREDICATED ON CREATING AN INTERNAL RELATIONSHIP OF ACADEMIC SPACE SURROUNDING AN EXTENDED LEARNING AREA WITH A TOP-LIT MEDIA CENTER AT THE HEART OF THE BUILDING. TWO INTERNAL COURTS INCREASE THE FOOTPRINT WHICH EXTENDS ALONG NORTH-SOUTH AXIS. THE GYM END SITS CLOSE TO JANNEYS LANE. SOME KEY CONCEPTS THAT WERE EMPHASIZED IN THE COIL CONCEPT ARE:

- CREATE A CENTRALIZED FOCAL POINT FOR SCHOOL
- MAXIMIZE INNOVATIVE TEACHING SPACE
- CREATE AN ICONIC PRESENCE WITHIN THE COMMUNITY
- SEPARATE BUS DROP-OFF FROM OTHER VEHICULAR TRAFFIC

ALL EDUCATIONAL SPACES ARE ACCOMMODATED IN THIS CONCEPT WITH EACH FLOOR CONTAINING CLASSROOMS AND SPECIALS SPACES. PUBLIC-USE SPACE, SUCH AS GYMNASIUM AND MULTIPURPOSE ROOM ARE LOCATED TO THE SOUTH AND EAST OF THE BUILDING. THE CENTRALLY-LOCATED MEDIA CENTER IS THE HEART OF THE SCHOOL AND THE ENTIRE FIRST FLOOR COULD BE USED AS A COMMUNITY ASSET AFTER HOURS. EXTENDED

LEARNING AREAS ARE MAXIMIZED IN THIS INNOVATIVE DESIGN. POTENTIAL ADVANTAGES AND DISADVANTAGES OF THE Y CONCEPT RELATED TO SPECIFIC TOPICS ARE DISCUSSED BELOW.

### ECONOMIC COST SAVINGS

- THIS IS THE LEAST COST EFFICIENT MAXIMUM SPACE UTILIZATION THAT CAN BE ACHIEVED
- CURVED SHAPE AND MEDIA ON THE FIRST FLOOR MAKE THIS THE LARGEST FOOTPRINT ON SITE
- BUILDING MASS STEPS UP SOUTH TO NORTH IMPACT ON PEDESTRIAN AND VEHICULAR TRAFFIC WITHIN THE SCHOOL PERIMETER AND THE NEIGHBORHOOD
- BUS LOOP ENLARGED TO ALLOW SPACE FOR ALL BUSES, IMPROVING CONGESTION ON JANNEYS LANE

- PARENT DROP OFF HAS POTENTIAL FOR BACK-UP ON TO JANNEYS LANE
- SHARED DRIVE AISLE WITH TEACHERS AND PARENTS IS SUB-OPTIMAL

### VISUAL APPEAL

- UNIQUE BUILDING FORM CREATES OPPORTUNITY FOR A SIGNATURE BUILDING
- CURVED FORM IS OPPORTUNITY FOR BIOPHILIC DESIGN

### FLEXIBILITY OF THE CONCEPT

- FUTURE GROWTH IS MINIMAL
- INTERIOR COULD HAVE MANY TYPES OF LEARNING SPACES

### POTENTIAL FOR NET-ZERO ENERGY/GREEN

- SOLAR ORIENTATION IS FAIR
- SIGNIFICANT SITE AVAILABLE FOR GEOTHERMAL AND ROOFTOP ALLOWS FOR PHOTOVOLTAICS BUT MAY BE LIMITED BY CURVED FORM

# “COIL” CONCEPT PROS / CONS

## SCHOOL TEAM PROS

- INNOVATIVE

## CONS

- GLASS – COURTYARD/ SOUND ISSUES
- NOT BEST USE OF SPACE
- GYM NOT CLOSE TO FIELD
- EXTERIOR DOES NOT FIT NEIGHBORHOOD
- TRAFFIC:
- PARENT & STAFF SHARED DRIVE
- TRAFFIC SPILL-OUT ON TO STREET

## ADVISORY GROUP PROS

- INNOVATIVE
- GOOD FLOOR PLAN
- FUN TO BE IN AS A KID
- BIG BUS LOOP
- ENTRY PLAZA
- 2ND FLOOR OUTDOOR CLASSROOM

## CONS

- SEPARATED PLAY AREAS
- DOES NOT ‘FIT’ THE NEIGHBORHOOD
- COST – ‘WHAT DIDN’T WE GET BECAUSE WE PAID FOR THE CURVE?’
- NO GROWTH POTENTIAL
- PARENT IN/OUT AT JANNEYS
- LACK OF FLEXIBILITY
- INEFFICIENT USE OF SPACE
- SOUND BOUNCING IN CIRCLE
- POOR LINES OF SIGHT TO PLAY AREAS

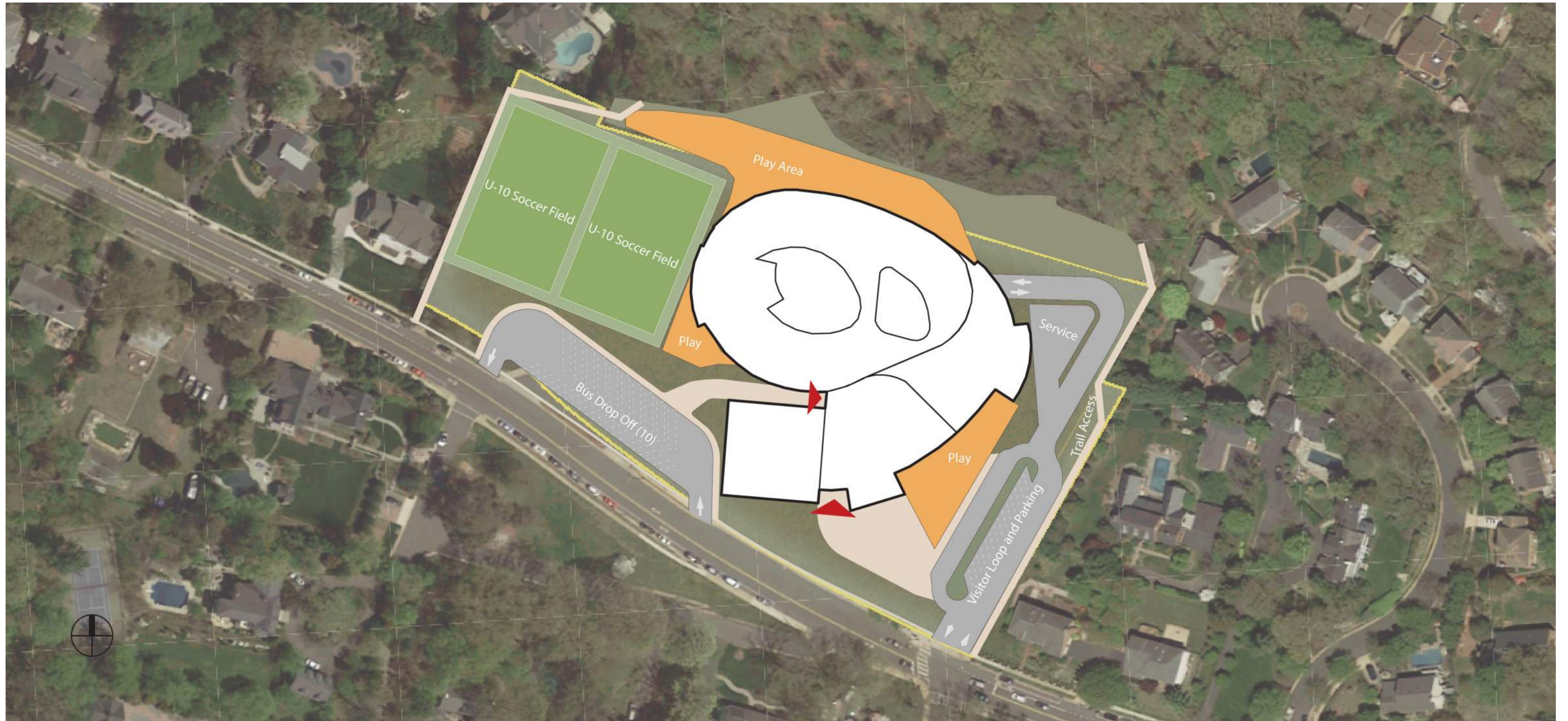
## COMMUNITY MTG PROS

- INNOVATIVE
- VISUAL APPEAL
- COOL / FUTURISTIC
- BETTER WELCOMING AREA FOR WALKERS
- OUTDOOR SPACE IN THE BUILDING
- “I LIKE THE INTERIOR OUTDOOR SPACE”
- AMPLE GREEN SPACE AT ENTRY AREAS

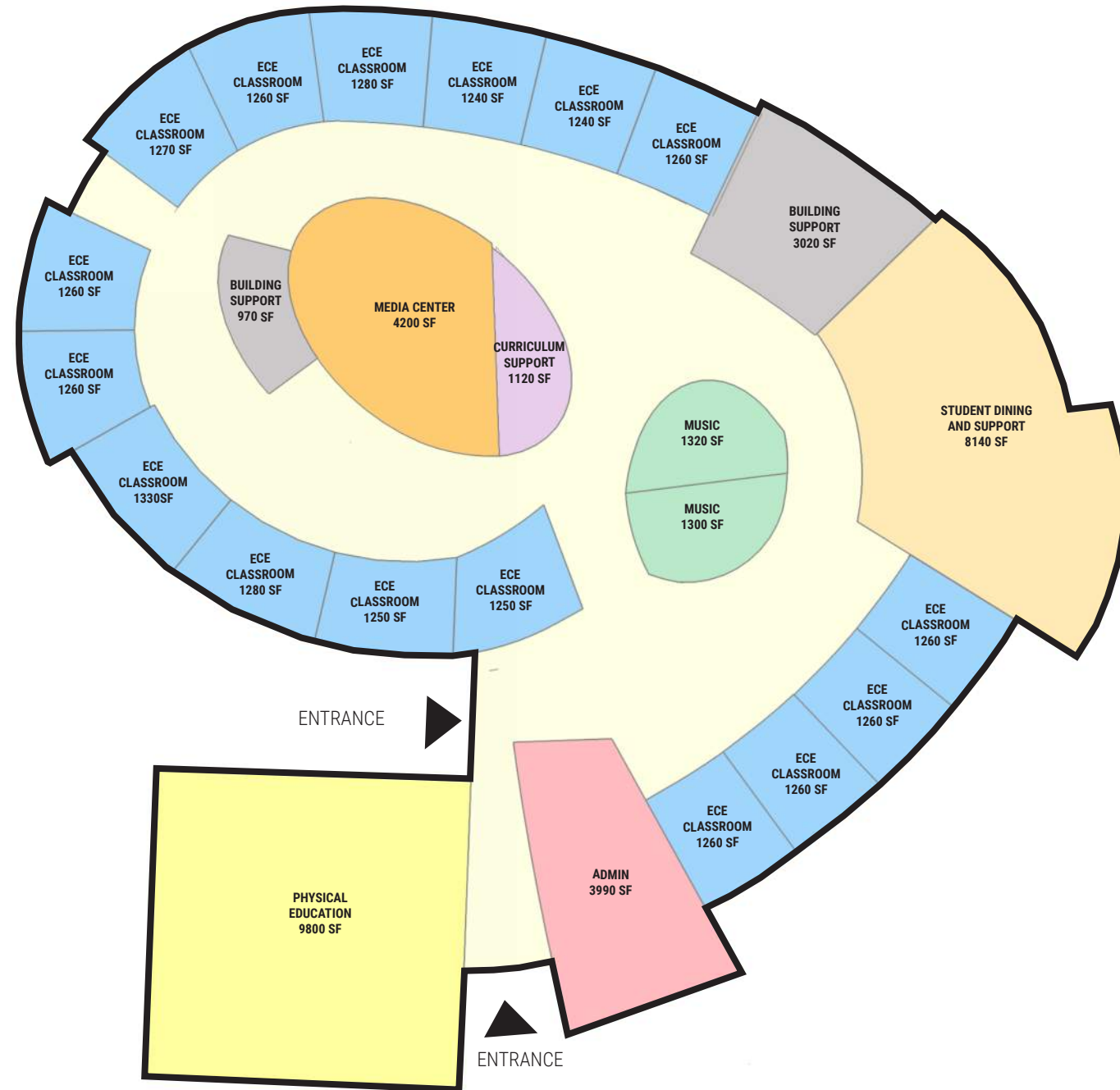
## CONS

- SEPARATED PLAY SPACE
- IN / OUT PARENT DROP @ YALE / JANNEYS
- FRONT LAWN MISSING
- VEHICULAR MOBILITY TAKES PRIORITY OVER PEDESTRIAN
- PARKING AND TRAFFIC FLOW SEMINARY RD

# CONCEPT "COIL" SITE PLAN



# CONCEPT "COIL" FIRST FLOOR



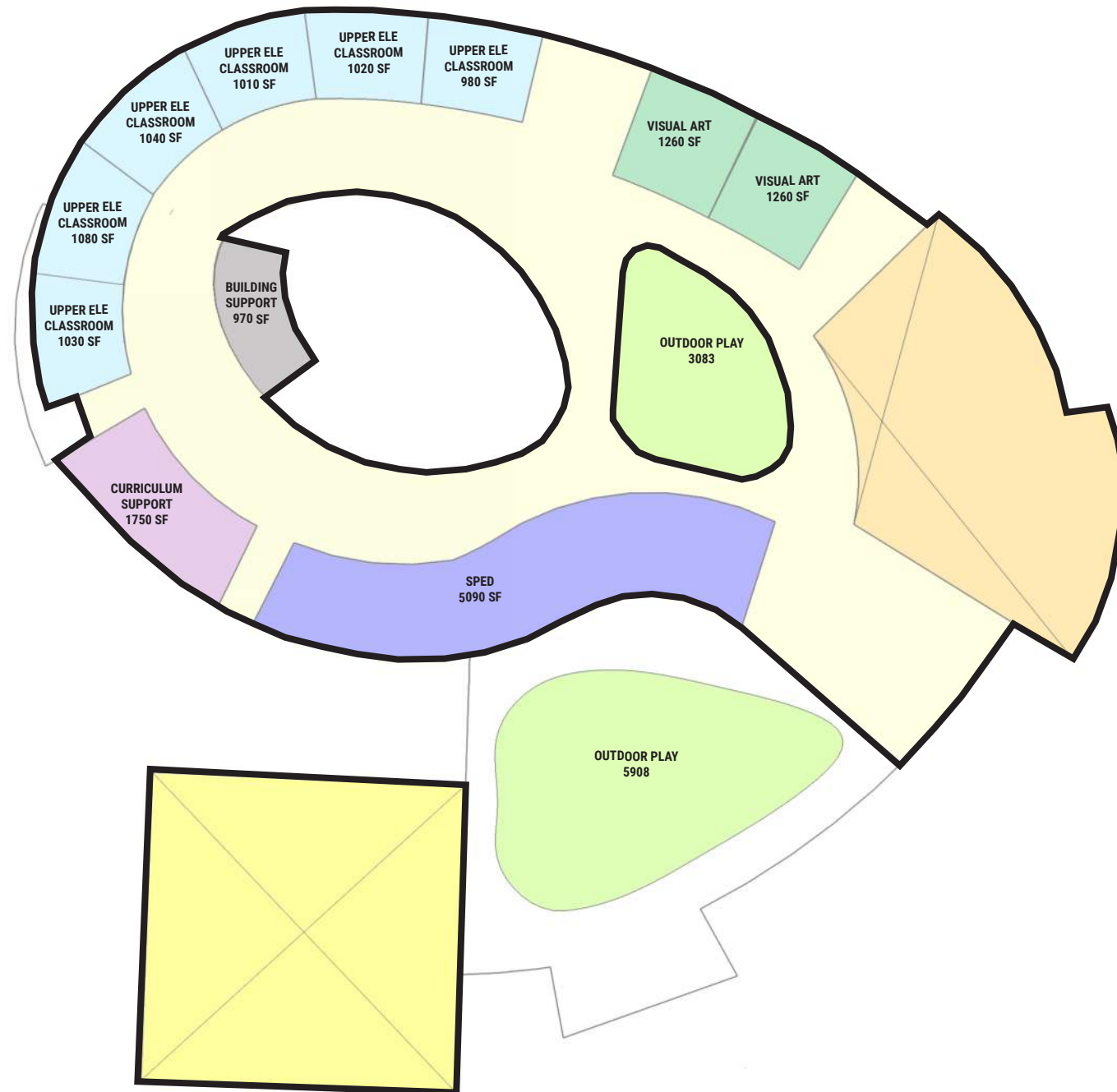
## KEY PLAN

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# CONCEPT "COIL" SECOND FLOOR

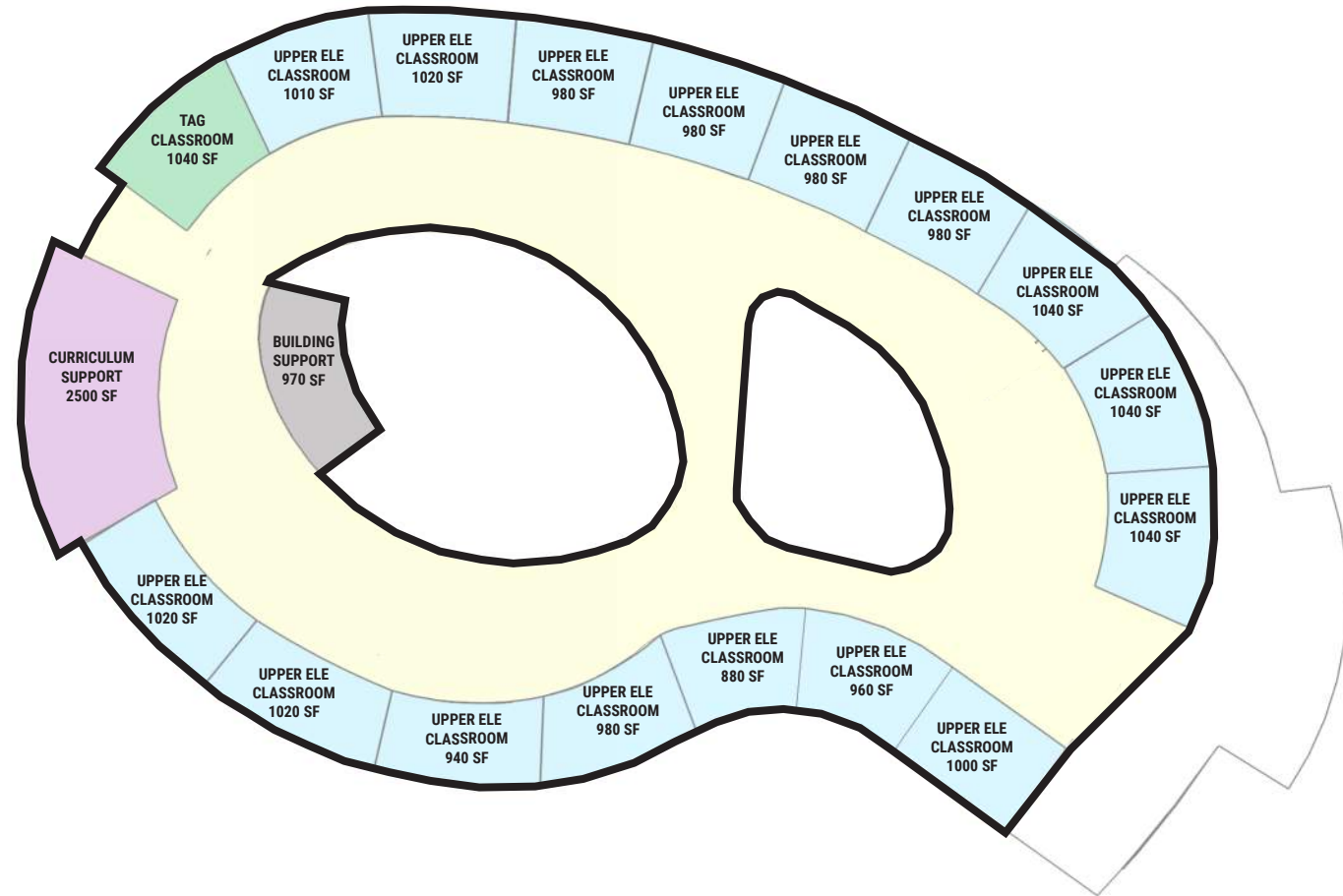


## KEY PLAN

- CIRCULATION
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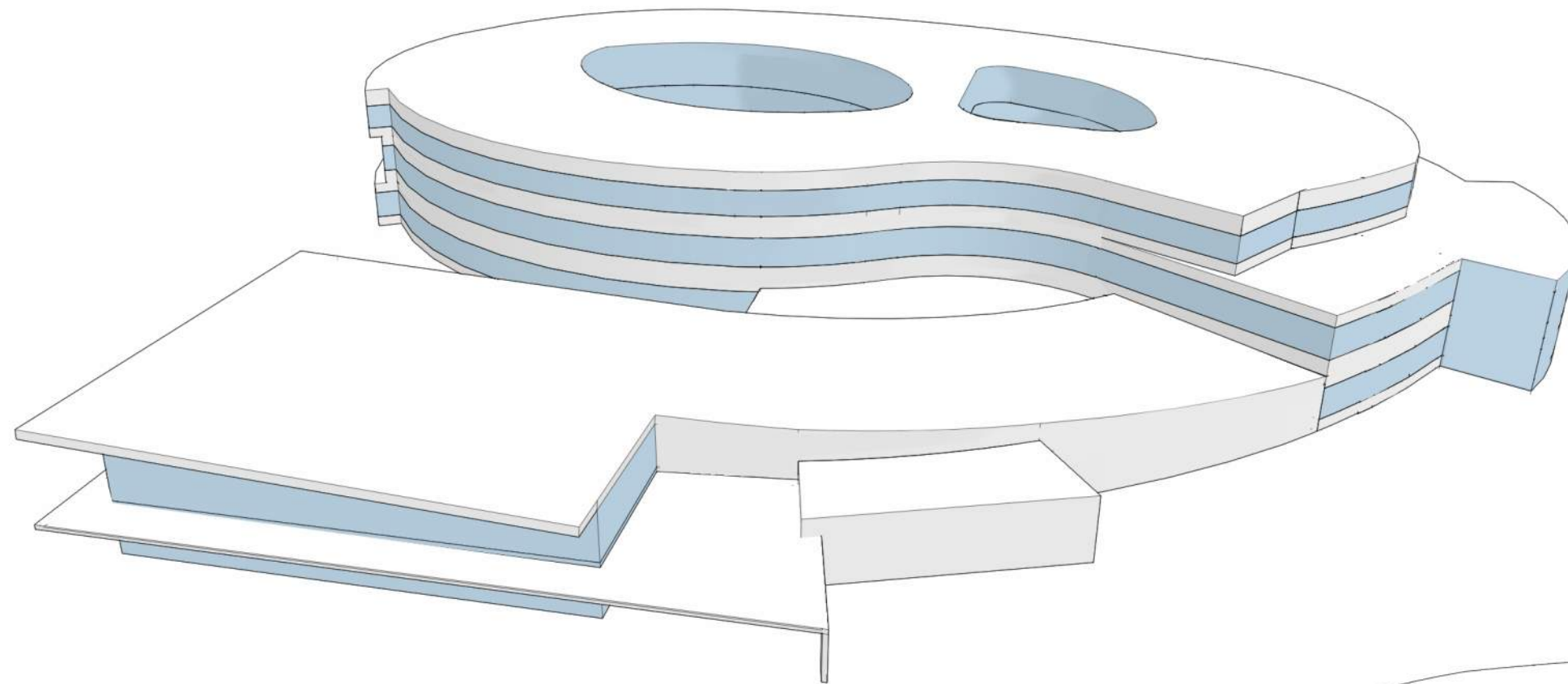
# CONCEPT "COIL" MASSING



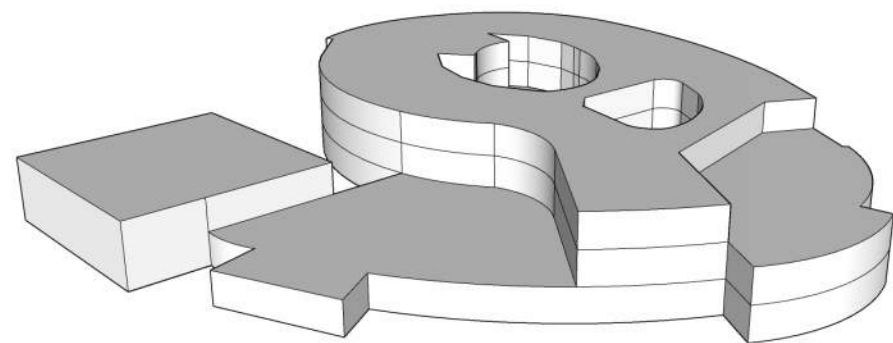
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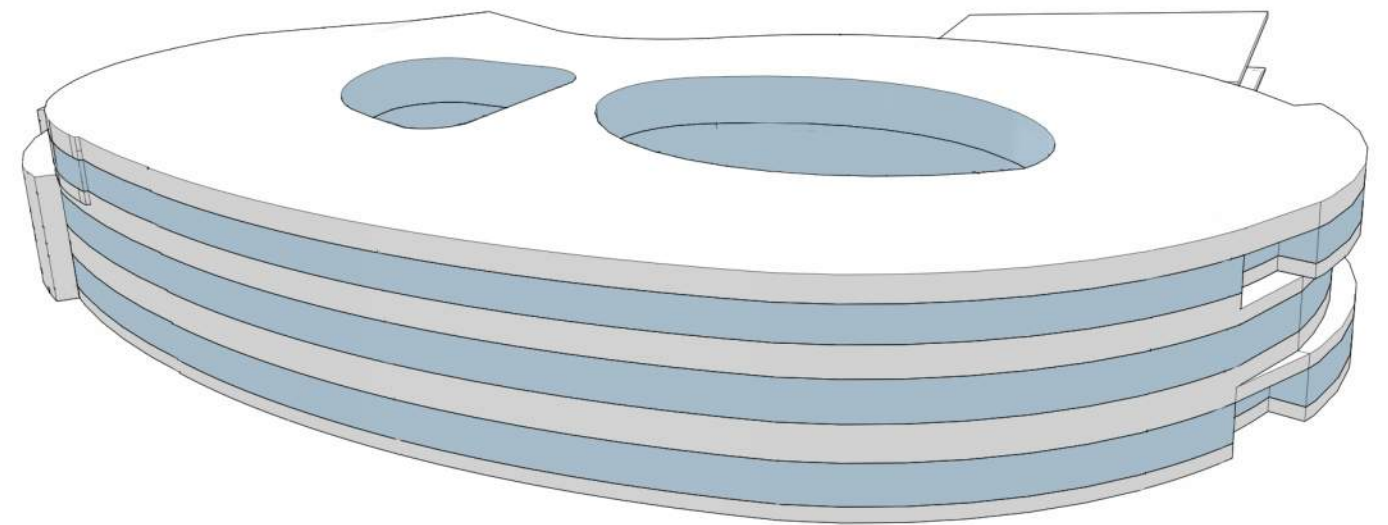




VIEW FROM THE FRONT



AERIAL VIEW



VIEW FROM THE BACK

## CONCEPT "COIL" 3D DIAGRAMMATIC VIEW

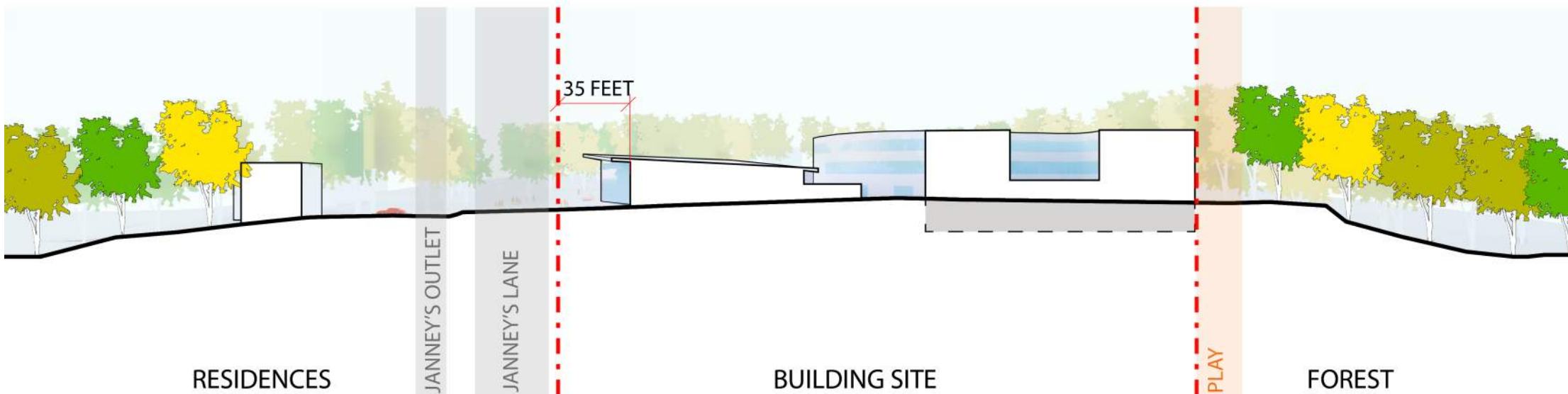


VIEW FROM INTERSECTION AT JANNEYS LANE



VIEW FROM YALE DR

CONCEPT "COIL PRECEDENTS / SITE SECTION





# 06

## CONCEPT SUSTAINABILITY

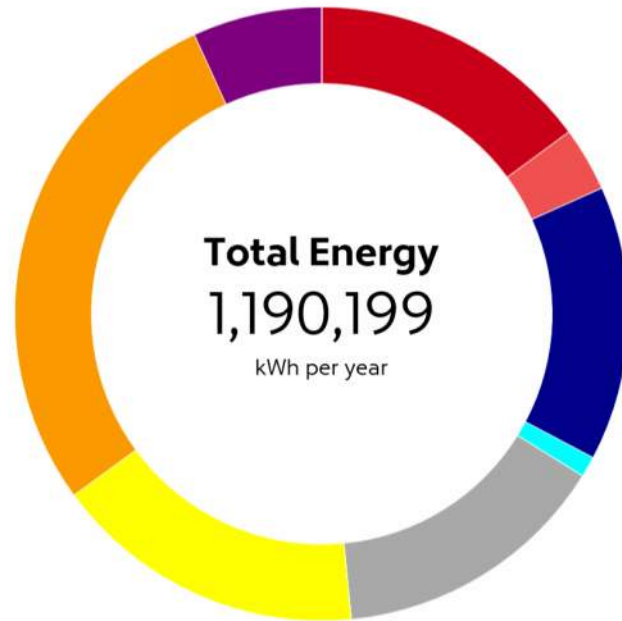
ONE REQUIREMENT OF THE PROJECT IS TO MEET THE ENERGY REQUIREMENTS SO THE DESIGN TEAM HAS TAKEN THE ABILITY TO REACH NET-ZERO ENERGY AND TO MEET THE 2019 CITY OF ALEXANDRIA GREEN BUILDING POLICY STANDARDS INTO CONSIDERATION OF EACH CONCEPT. THE FOLLOWING PAGES SUMMARIZE THE CONCEPTUAL ENERGY ANALYSIS OF THE THREE CONCEPTS.

## PROCESS

The preliminary energy analysis process can be summarized as followed:

- Used SketchUp to create simple massing model for each planning concept
- Tested sensitivity of Window-to-Wall Ratio (WWR) and Building Orientation in Sefaira
- Analyzed the effects of these tests on Peak Heating and Cooling Loads, EUI, and GHG Emissions

## ANNUAL ENERGY USE BREAKDOWN



At a high level, the review of the annual energy use breakdown (shown for Concept "Y", at the baseline condition) indicates that the internal loads created by lighting and equipment will be responsible for approximately half of the building's energy use.

The figure to the right provides a detailed breakout of the major mechanical equipment and processes and their respective effect on annual energy use.

As reflected in the figure above, the majority of energy use will be attributed the load demand required by lighting and the equipment serving the building, and the remainder can be apportioned to heating and cooling the building.

Segment	kWh per year	% of total use
<b>Heating</b>	<b>217,569</b>	<b>18 %</b>
■ AHU	177,296	15 %
■ Zones	40,273	3 %
■ Humidification	0	0 %
<b>Cooling</b>	<b>185,310</b>	<b>16 %</b>
■ AHU	172,290	14 %
■ Heat Rejection	13,020	1 %
■ Zones	0	0 %
<b>Fans</b>	<b>173,994</b>	<b>15 %</b>
■ AHU	173,994	15 %
■ Zones	0	0 %
<b>Interior</b>	<b>532,228</b>	<b>45 %</b>
■ Lighting	196,084	16 %
■ Equipment	336,144	28 %
■ Pumps	81,098	7 %

## ENERGY BENCHMARKING

Preliminary energy use intensity targets were determined based on the following existing databases of peer facilities nationwide.

### ENERGY STAR

EPA ENERGY STAR: The Environmental Protection Agency (EPA) has a well utilized energy benchmarking program for commercial buildings, known as the ENERGY STAR system. Based on measured data through the commercial buildings energy consumption survey (CBECS), a building's actual and proposed energy performance can be benchmarked. Building's with performance in the 75th percentile or greater can apply for designation as an ENERGY STAR certified property. EPA ENERGY STAR Target Finder was used to benchmark the building Energy Use for facilities with similar building and geographical characteristics.

- Use Type: K-12 School
- Median ENERGY STAR Score: 50
- Median Site EUI: 53.9 kBtu/sf/yr
- Median Source EUI: 121.5 kBtu/sf/yr

### AIA 2030 TARGET

Architecture 2030 supported by the American Institute of Architects issued the 2030 challenge in 2006 that invites new buildings, developments, and major renovations to be carbon-neutral by 2030. In order to meet the goals of the challenge, AIA 2030 estimates about a 70% target reduction from the EPA ENERGY STAR Baseline.

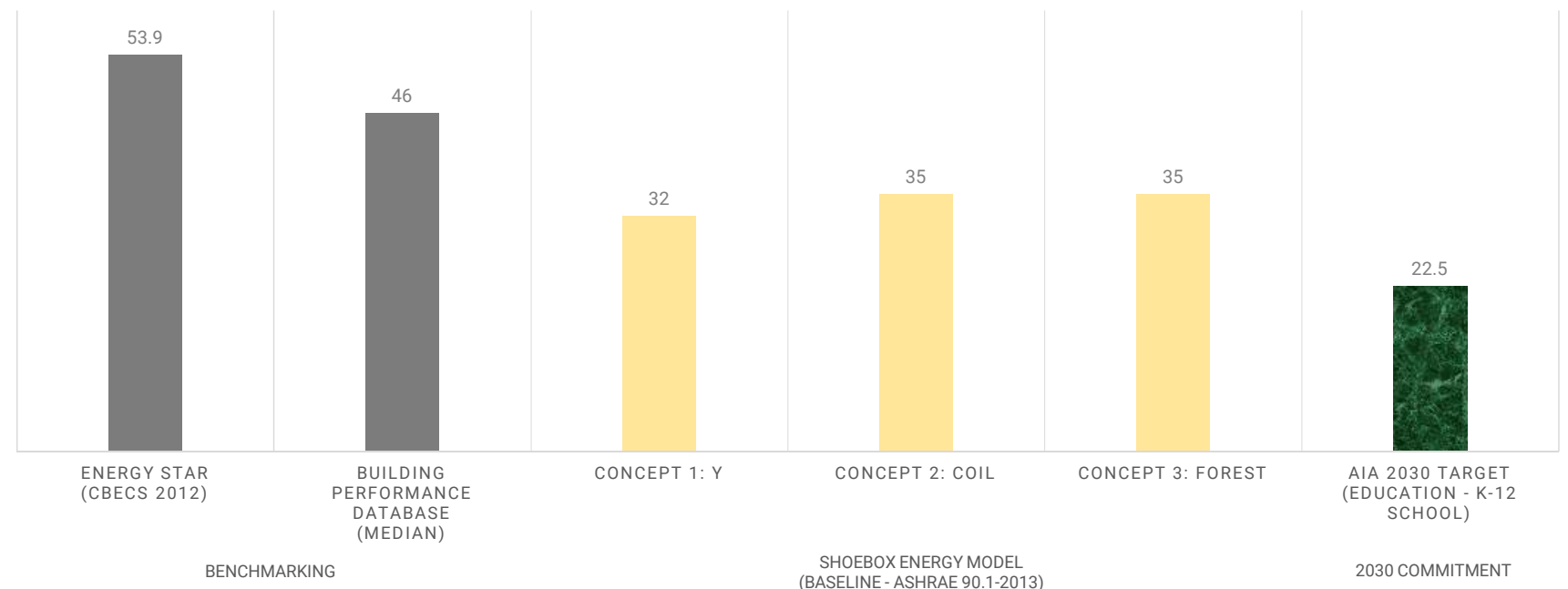
- Use Type: Education – K-12 School
- National Average Baseline: 75 kBtu/sf/yr
- AIA 2030 EUI Target: 22.5 kBtu/sf/yr

### BUILDING PERFORMANCE DATABASE

The Building Performance Database (BPD) is the nation's largest dataset of information about the energy-related characteristics of commercial and residential buildings. The BPD combines, cleanses and anonymizes data collected by Federal, State and local governments, utilities, energy efficiency programs, building owners and private companies, and makes it available to the public. Median EUI of Buildings was identified from the following subset of buildings:

- Use Type: Education - Elementary or middle school
- Climate Zone: 4A
- Floor Area: Less than 350,000 sf
- Number of Buildings in Dataset: 958
- Median Site EUI: 46 kBtu/sf/yr

### ENERGY USE INTENSITY SUMMARY (KBTU/SQ. FT./YR)





## ASSUMPTIONS

The Baseline building Envelope Performance and Lighting assumptions for the were based on ASHRAE 90.1-2013, Climate Zone 4A.

### ENVELOPE

Per ASHRAE 90.1-2013, Zone 4A

Façade Glazing		Roof Glazing	
Assembly U-Value	0.42	Assembly U-Value	0.50
SHGC	0.40	SHGC	0.40
Walls		Roofs	
Assembly Type	Stud	Roof Type	Metal Deck
Assembly R-Value	15.77	Roof R-Value	31.25
Floors		Infiltration	
Floor Finish	Tiles	Infiltration Type	Façade Area @ 75Pa
Ground Floor R-Value	17.74	Design Infiltration Rate	0.1 cfm/ft
Override Glazing Ratio		Building Orientation	
Window to Wall Ratio	Fixed @ 30%	Building Rotation	0

### SPACE USE

Ventilation & OA		Day Schedules	
OA Rate/Person	10	Internal Loads Applied	5 days
OA Rate/Area	0.12	HVAC Operating On	5 days
Design Temperatures		Annual Diversity Factors	
Setpoint Temperatures	68°F - 75°F	12 am to 6 am	0%
Setback Temperatures	65°F - 85°F	6 am to 7 am	10%
HVAC Schedule		7 am to 8 am	50%
Operating Hours	7 am - 5 pm	8 am to 12 pm	90%
Setback-Setpoint Ramp Up Time	1 hr	12 pm to 1 pm	70%
Design Loads		1 pm to 4 pm	90%
Occupant Density	30.0	4 pm to 6 pm	50%
Equipment Power Density	1.2	6 pm to 10 pm	10%
Lighting Power Density	0.7	10 pm to 12 am	0%

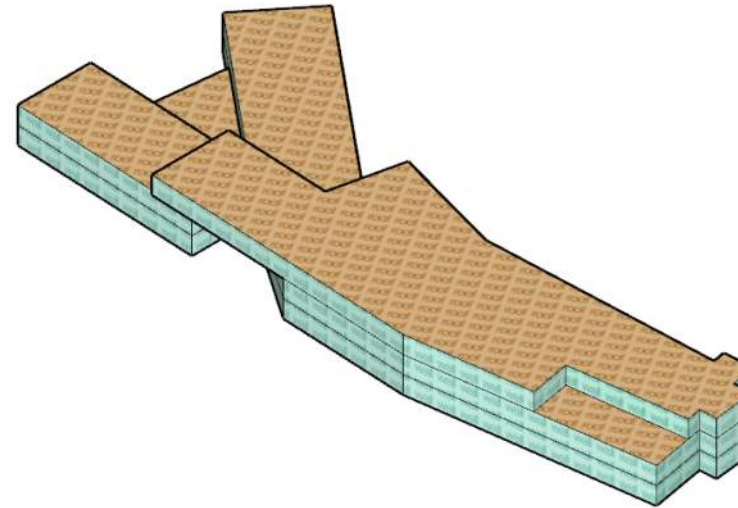
### SYSTEMS

VAV Central Plant - Water Cooled Chiller w/ Cooling Tower

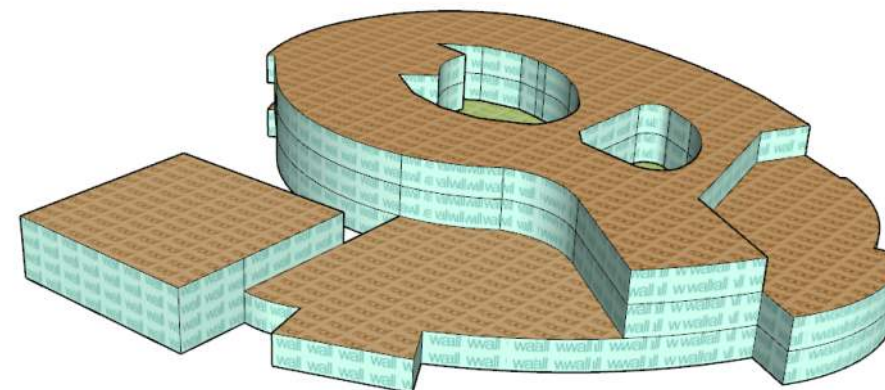
Heating Hot Water Loop		Chilled Water Loop	
Heating Hot Water Source	Gas-Fired Boiler	Chilled Water Source	Water-Cooled Chiller
Boiler Eff./COP	0.90	Chiller COP	5.50
Peak Distr. Eff.	0.85	Peak Distr. Eff.	0.90
Hot Water Temp. (Ret/Sup)	158°F/176°F	Chilled Water Temp. (Sup/Ret)	45°F/55°F
Condenser Water Loop			
Heat Rejection Source	Cooling Tower		
Peak Distr. Eff.	0.95		
Condenser Water Temp. (Sup/Ret)	85°F/95°F		

## SKETCHUP MODELS

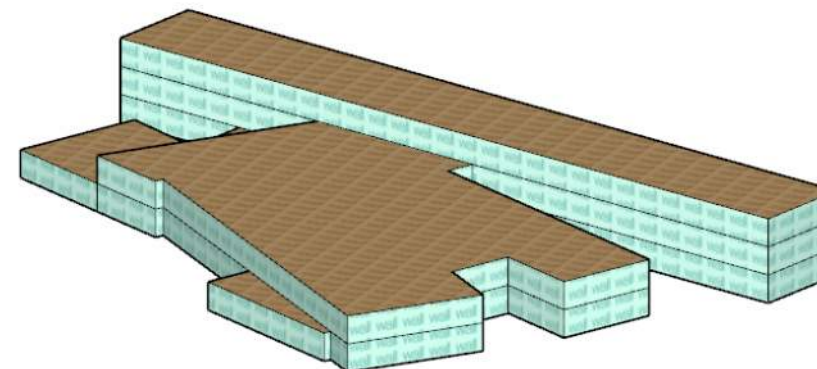
Concept 1: Y



Concept 2: Coil



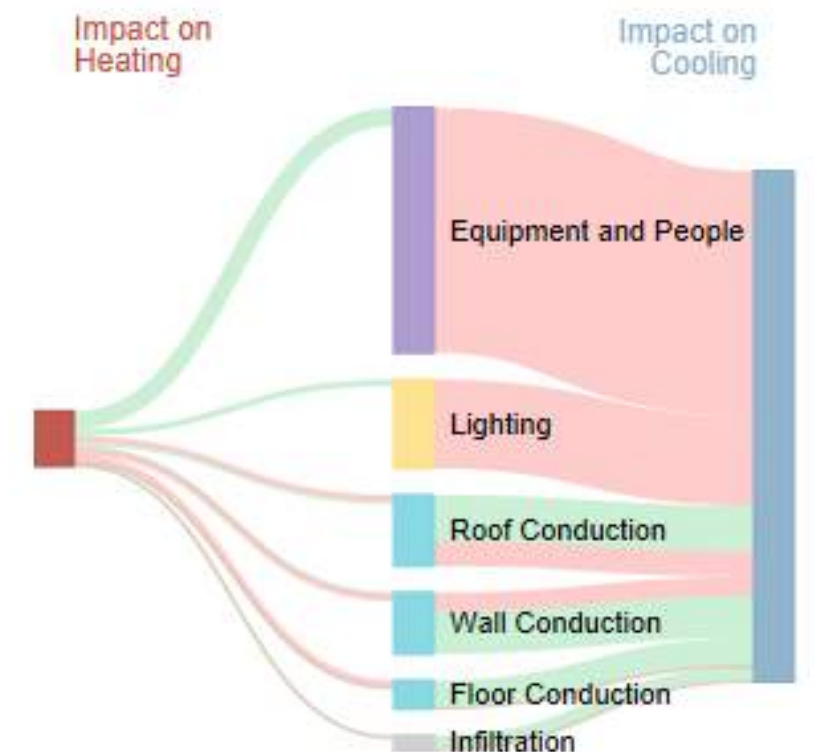
Concept 3: Forest



## PASSIVE HEATING AND COOLING GAINS AND LOSSES

A review of the passive heating/cooling gains and losses across all of the concepts (shown in the image below) indicate that envelope conduction will have the most significant positive impact on cooling loads, while internal loads from equipment and people will have the largest negative impact on cooling.

Alternatively, the opposite is true of heating - internal loads from equipment and people will provide the biggest positive impact on heat loss, where as envelope construction will have the largest negative impact on heat loss.



## SOFTWARE

As a preliminary design analysis tool, Sefaira was used to assist in optimizing energy performance and testing sensitivity of design elements, such as fenestration area and building orientation.

Response Curves generated from Sefaira demonstrate how the Building Orientation and Window-to-Wall Ratio effect the total peak heating and cooling loads, EUI and GHG Emissions. As shown in the figures to the right, WWR can have a significant impact on EUI and heating and cooling loads. Building orientation on the other hand, will have a much less dramatic impact on EUI and heating and cooling loads for this configuration.

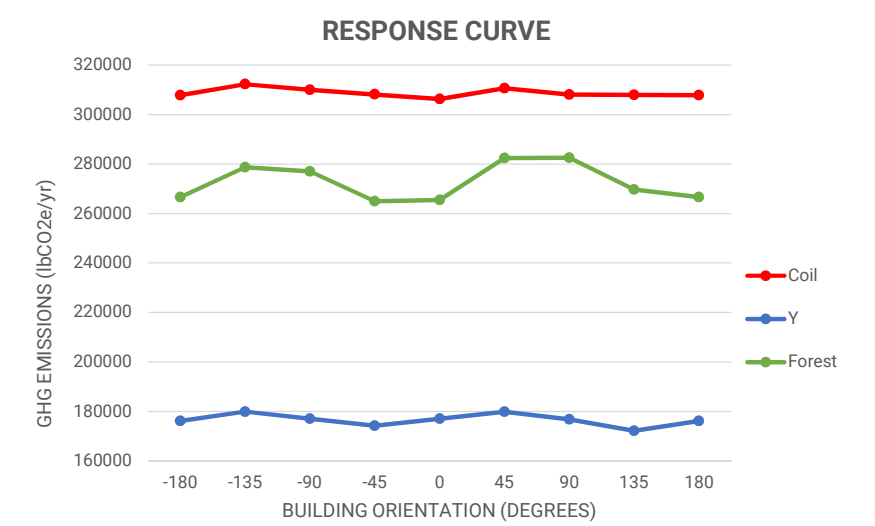
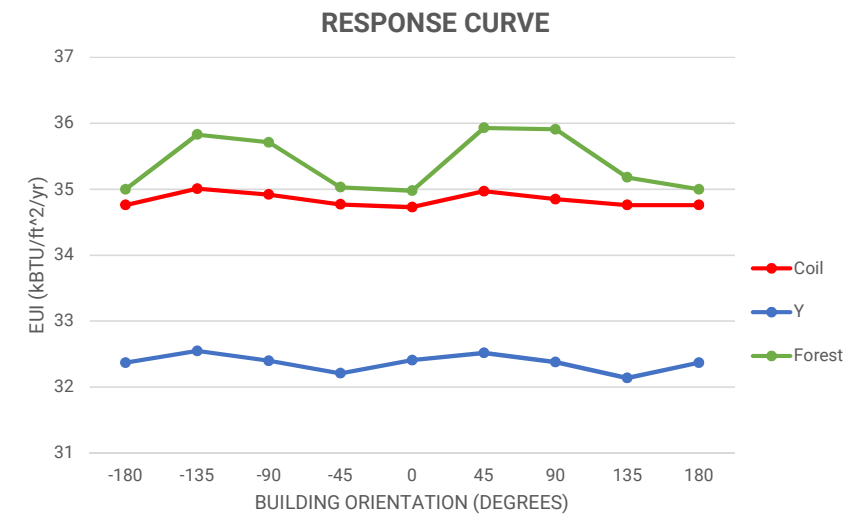
A summary of the outputs for Cooling and Heating Loads, EUI and GHG Emissions, are provided below for each of the concepts. These iterations were run under baseline conditions, where envelope performance, system performance and internal heat gain assumptions align with that of ASHRAE 90.1-2013.

RESULTS SUMMARY					
Iteration	Gross Area	Peak Cooling (tons)	Peak Heating (MBh)	EUI (kBtu/ft <sup>2</sup> /yr)	GHG (lbCO <sub>2</sub> /yr)
Y	125,502 ft <sup>2</sup>	638.4	3470	32	176,993
Coil	171,306 ft <sup>2</sup>	890.5	4413.7	35	306,262
Forest	138,482 ft <sup>2</sup>	700.5	3988.3	35	265,498

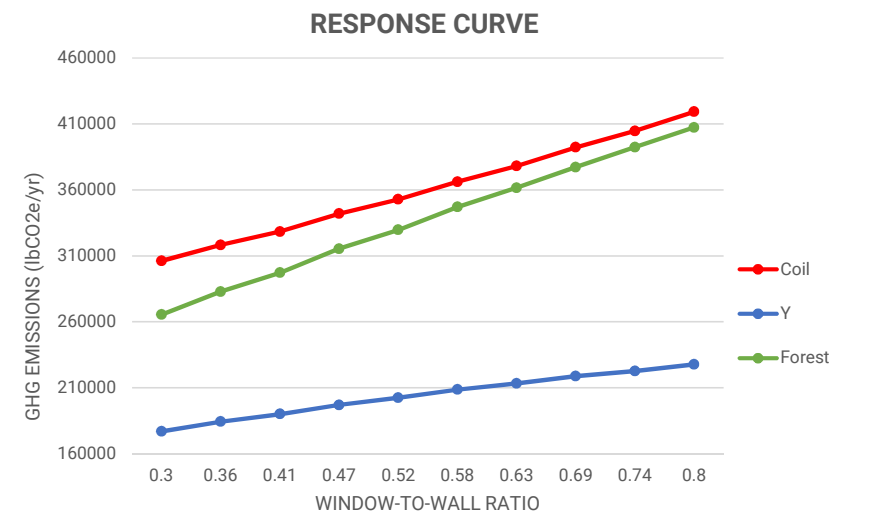
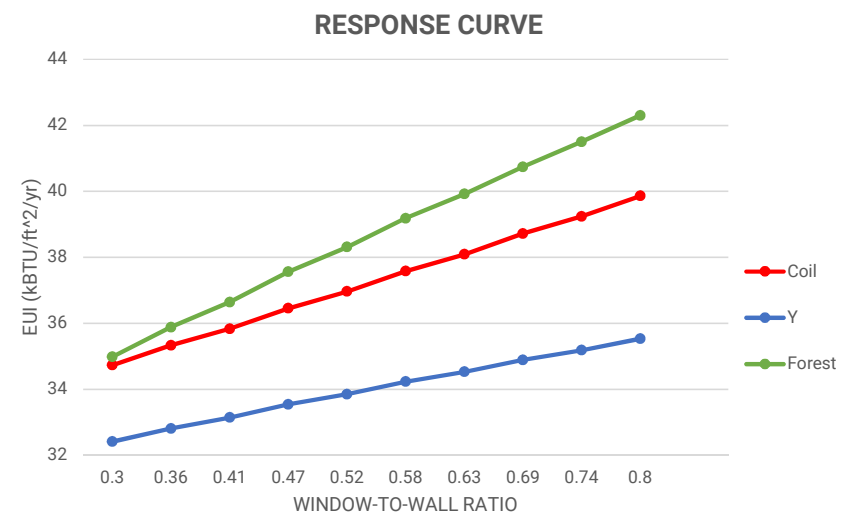
### KEY FINDINGS

- Fenestration design and shading will be important driving factors for energy use in the Coil and Forest concepts.
- The "Y" concept is most passively responsive in fenestration design.
- The Coil concept is most passively responsive in orientation.
- All concepts are comparable in terms of initial EUI predictions.
- Fine tuning of envelope construction and performance will help reduce heat loss and improve EUI

## SENSITIVITY TESTING - BUILDING ORIENTATION

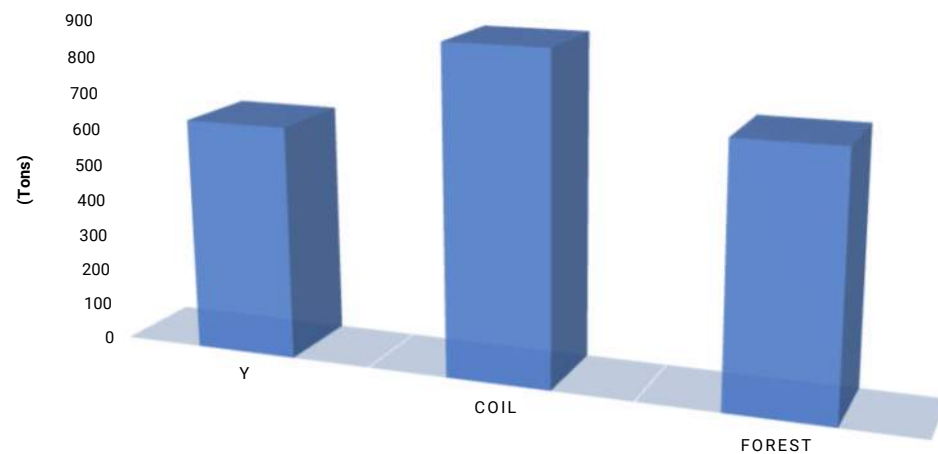


## SENSITIVITY TESTING - WINDOW-TO-WALL RATIO

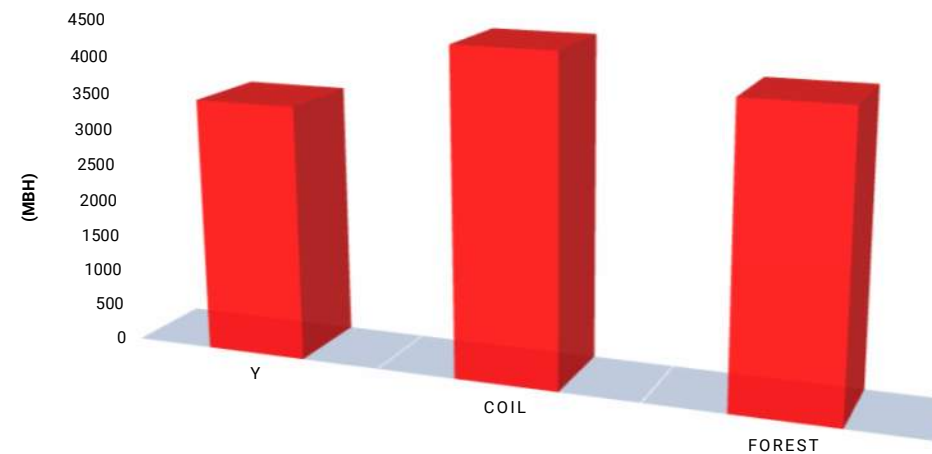


## LOAD COMPARISON - BASELINE CONDITIONS

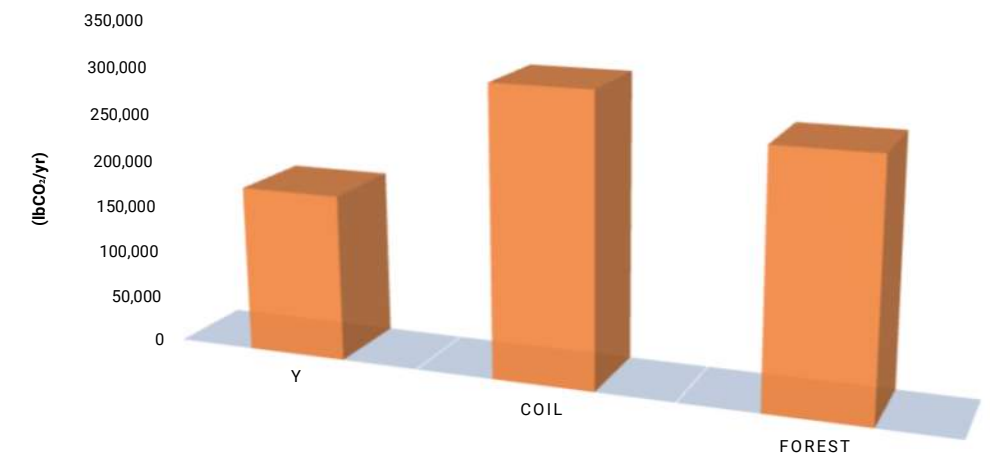
PEAK COOLING LOAD COMPARISON



PEAK HEATING LOAD COMPARISON



ANNUAL NET GREENHOUSE GAS EMISSION COMPARISON



## GETTING TO NET ZERO

As we start examining various paths and strategies towards designing a Net Zero Energy school, it is important to evaluate the value of renewable resources, relative to energy production and their impact on the overall energy usage intensity of the building.

The figure shown to the right, examines the potential effects of a photovoltaic (PV) system on EUI, based on initial roof area and layout for each of the various massing concepts. What we can already start to observe, is that concepts "Y" and "Forest" are better suited for a PV system, based on their usable roof area and roof configuration. The circular form, that represents that massing of the "Coil" concept, is considerably less desirable for solar efficiency.

### Looking Ahead:

The premise of this early energy analysis, heavily focused on passive measures that can assist in optimizing energy performance. As the design progresses, the team will consider HVAC and process load optimization, and continue to dig further into renewable resource opportunities.

