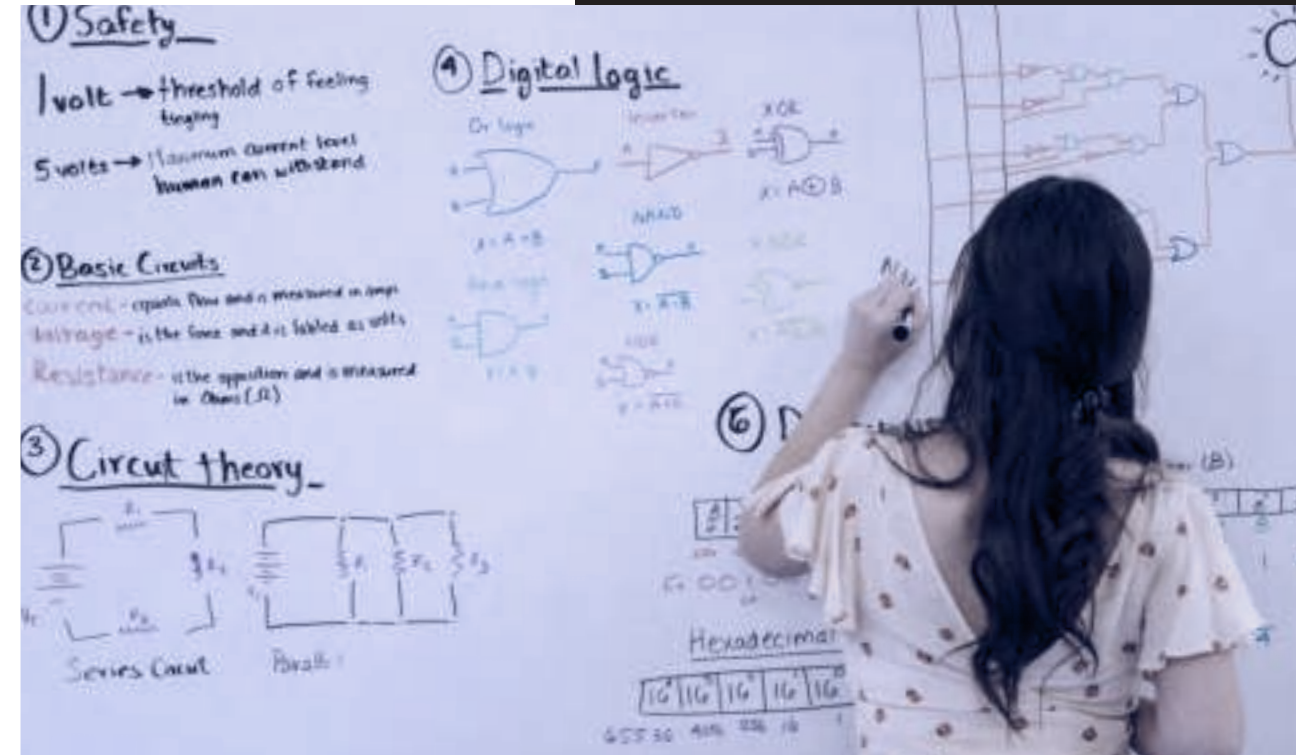


DESIGN PLAYBOOK

COMSTOCK STEM ACADEMY | DESIGN DEVELOPMENT
FEBRUARY 15, 2024



CONTENTS

06	Phases of Design
08	Team Norms
10	Guiding Principles
12	Program
16	Concept
21	Planning
38	Appendix



PROJECT TEAM MEMBERS

Comstock Public Schools

Dr. Jeffery Thoenes	Superintendent	Chris Chopp	STEM Academy Principal
Jill Ansel	Assistant Superintendent	Danielle Perez	STEM Academy Teacher
Michelle Darnell	Finance Director	Danielle Tennant	STEM Academy Teacher
Sean Gillette	Director of Facilities	Jeannine Roys	STEM Academy Teacher
Paul Lamphear	Comstock Board of Education	Kim Sandefur	STEM Academy Teacher
Saralyn Brown	Comstock Board of Education	Mackenzie Skalski	STEM Academy Teacher

Miller-Davis Company

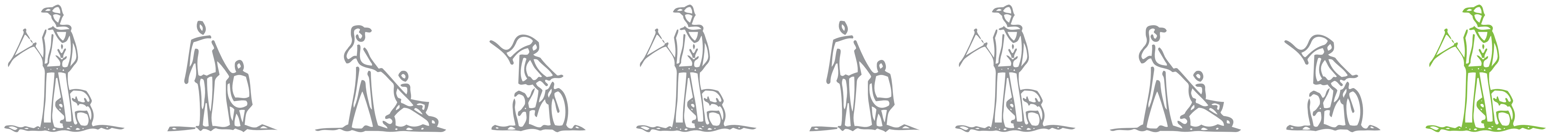
Howard Williams	Project Executive
Josh Henry	Project Manager
Nate Barton	Project Superintendent

AE Tech

Evan Cain	Project Manager
-----------	-----------------

GMB Core Team

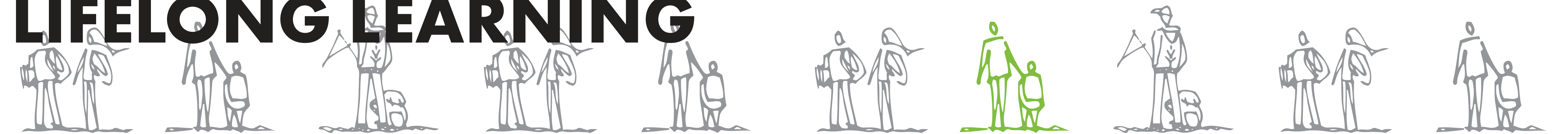
Travis Vrugink	Project Lead	Kyle Callaway	Civil Engineering
Amy Broersma	Landscape Architect	Larry Boerman	Construction Administrator
David Smoes	Design Lead	Leah Nagy	Architectural Intern
Jared DeVisser	Architectural Designer	Matt Heidloff	Landscape Architect
Jeff Twiest	Mechanical Engineer	Meeghan Mooney	Interior Designer
Jorge Benitez	Electrical Engineer	Nick VonMyhr	Plumbing Engineer
Karlene Robich	Electrical Engineer	Pam Brink	Structural Engineer
Kristen Horine	Landscape Architect		



GENERATE MORE FOR THE WORLD BY

**WORKING WITH COMMUNITIES
TO EQUIP STUDENTS FOR**

LIFELONG LEARNING



Current State

- Dedicated STEM program is a signature asset of the District
- STEM not viewed as Integrated
- Building adapted over time for the STEM Academy, not purpose-built
- Tight Site - Poor Traffic Flow
- Connection to the Kalamazoo River Watershed
- Consideration of an alternate site next to the elementary school is a possibility

Mission & Vision

The MISSION of Comstock Public Schools is to serve our community by empowering, inspiring, and challenging every person within the school district to reach their full potential, and to ensure all students learn and thrive in a safe and healthy environment.

The VISION of Comstock Public Schools is to be an inclusive, high performing learning community where we foster dreams, explore possibilities, and create futures.

Core Values

- | | | |
|---------------------|---------------|-----------------------|
| Academic Excellence | Integrity | Stewardship |
| Equity | Collaboration | Data-driven decisions |
| Inclusivity | Innovation | Safety |





PHASES OF DESIGN

DESIGN PROCESS





TEAM NORMS

TEAM NORMS

MEETINGS

- Hybrid meeting options for all meetings
- Early Meetings in person transitioning to virtual
- Virtual Meetings to always be an option to help with teams schedule
- Round Table at the end of every meeting to ensure all voices are heard

ATTENDANCE

- How to handle meeting conflicts with larger group when people cant attend?
- Meeting Notes (Design Playbook) to be shared following all meetings
- Design Playbooks to be available for all staff meetings
- Looking for student engagement opportunities

PROJECT GOAL PRIORITIZATION

- What to do when we are stuck?
- How will tough decisions get made?
- Guiding Principles are important to keep in focus
- Paul and Saralyn to be conduit to the board.



GUIDING PRINCIPLES

GUIDING PRINCIPLES



1. INSPIRE STUDENTS IN A SAFE COMMUNITY

Build a safe and secure environment for STEM education giving students room to explore booming fields and find their passions. Provide a comfortable space for kids to be inquisitive and curious where they can develop a love of learning.

2. AREA LEADERS IN STEM EDUCATION

Attract and retain families, staff, and students by offering state-of-the-art programs and technology. Become the area's go-to facility for STEM and cultivate relationships with local businesses that could one day assist in employment, scholarship, or investment opportunities.

3. FOSTER INNOVATION

Design functional and flexible spaces that evolve and adapt to the ever-changing student need. Ensure the programming is thoughtful, inclusive, and relevant to today's technology and resources.

4. COMPELLING AND FUTURE-PROOF

With a strong vision for sustaining the growing interest in STEM fields, create a purposeful design that celebrates the future of STEM and the future of Comstock Public Schools.

PROGRAM

STEM ACADEMY PROGRAM

10.11.2023

Program Summary		BOND PROGRAM			REVISED PROGRAM			Remarks	Difference
	Program Area	Qty.	Total Program Area	Program Area	Qty.	Total Program Area			
ADMINISTRATION			3,450 SF			2,925 SF		(525) SF	
	Principal Office	1	200	175	1	175			
	General Office / Reception / Records	1	750	750	1	750			
	Work Room	1	200	200	1	200			
	Health Room w/ Toilet	1	175	175	1	175			
	Counselor	1	175	175	1	175			
	Itinerant Offices	1	150	150	1	150			
	In-House Room	1	150	150	1	150			
	Conference Room	1	300	300	1	300			
	Circulation	1	350	350	1	350			
	Staff Lounge	1	1000	500	1	500	Renamed from Planning Room		
CLASSROOMS			26,190 SF			24,930 SF		(1,260) SF	
	Kindergarten	2	2200	1200	2	2400			
	1st Grade	2	1980	990	2	1980			
	2nd Grade	2	1980	990	2	1980			
	3rd Grade	2	1980	900	2	1800			
	4th Grade	2	1980	900	2	1800			
	5th Grade	2	1980	900	2	1800			
	MS General Ed	6	5940	900	5	4500	Reduced by 1, share with STEM Classrooms		
	STEM Classroom with Lab	2	2400	1200	2	2400	1 Lab to be Robotics		
	STEM Prep/Storage Area	2	400	200	2	400			
	Speech	1	200	200	1	200			
	Intervention	1	200	200	1	200			
	Extended Learning	3	3750	950	5	4750			
	Individual Toilet Rooms	4	240	60	4	240			
	Small Group	8	960	120	4	480	Reduced to 3 total		

STEM ACADEMY PROGRAM *(cont.)*

10.11.2023

Program Summary		BOND PROGRAM			REVISED PROGRAM			Remarks	Difference
		Program Area	Qty.	Total Program Area	Program Area	Qty.	Total Program Area		
ART				1,500 SF			1,500 SF	0 SF	
	Classroom	1200	1	1200	1200	1	1200	Matches existing STEM Academy	
	Kiln	100	1	100	100	1	100		
	Storage	200	1	200	200	1	200		
MUSIC				2,100 SF			1,500 SF	(600) SF	
	Music Room	1800	1	1800	1200	1	1200	Reduced to match existing STEM Academy	
	Storage	300	1	300	300	1	300		
MEDIA CENTER				3,430 SF			2,440 SF	(990) SF	
	Resource Center	2000	1	2000	2000	1	2000		
	Office	120	1	120	120	1	120		
	Workroom	120	1	120	120	1	120		
	A/V Media Storage	200	1	200	200	1	200		
	Computer Lab	990	1	990	990	0	0	Not a priority, can use classroom + ELA spaces	
PHYSICAL EDUCATION				8,250 SF			5,850 SF	(2,400) SF	
	Multipurpose Space, combined with Cafeteria, Robotics	5500	1	5500	5500	1	5500		
	Bleachers	800	1	800	800	0	0	Omitted	
	Locker Rooms	800	2	1600	800	0	0	Omitted	
	PE Storage	200	1	200	200	1	200		
	PE Office/Toilet	150	1	150	150	1	150		

STEM ACADEMY PROGRAM *(cont.)*

10.11.2023

Program Summary		BOND PROGRAM			REVISED PROGRAM			Remarks	Difference
		Program Area	Qty.	Total Program Area	Program Area	Qty.	Total Program Area		
CAFETERIA and FOOD SERVICE				2,515 SF			3,600 SF	1,085 SF	
	Cafeteria ***See MULTIPURPOSE space***	0	1	0	2500	1	2500	Added program scope	
	Table / Chair Storage	300	1	300	300	1	300		
	Kitchen / Serving	1500	1	1500	800	1	800	Reduced to warming kitchen	
	Dry/Freeze/Ref. Storage	500	1	500	500	0	0	Omitted. Monitor this need.	
	Office	150	1	150	150	0	0	Omitted	
	Toilet	65	1	65	65	0	0	Omitted. Use General Staff Toilets	
MISCELLANEOUS SPACE				5,595 SF			4,595 SF	(1,000) SF	
	Building Storage	200	1	200	200	1	200		
	Staff Rest Rooms	60	4	240	60	4	240		
	Central Receiving / Loading Dock	150	1	150	150	1	150		
	Central Storage / Maintenance	200	1	200	200	1	200		
	Boiler Room	900	1	900	900	1	900		
	Electrical Room	150	1	150	150	1	150		
	Technology Sever Room	150	1	150	150	1	150		
	IT Closet	75	3	225	75	3	225		
	Air Handling Rooms	1000	2	2000	1000	1	1000	Need to verify. Look at Mezzanine Space	
	Janitors Closet	50	3	150	50	3	150		
	Custodial Office	120	1	120	120	1	120		
	Rest Rooms	370	3	1110	370	3	1110		
TOTAL PROGRAM SQUARE FEET:				53,030 SF			47,340 SF	(5,690) SF	
	Non Assignable SF Factor	0.28		14848 SF	0.3		14202 SF	Revised based on current plan efficiency (646) SF	
TOTAL GROSS SQUARE FEET(GSF):				67,878 SF			61,542 SF	(6,336) SF	

 Current Revisions
XXX Previous Revisions



CONCEPT

CONCEPT

connection to context + curriculum

HYDRO

hahy-droh

VIDA

vee-duh

TERRA

ter-uh



water



nature



land

CONCEPT

massing inspiration

HYDRO

hahy-droh



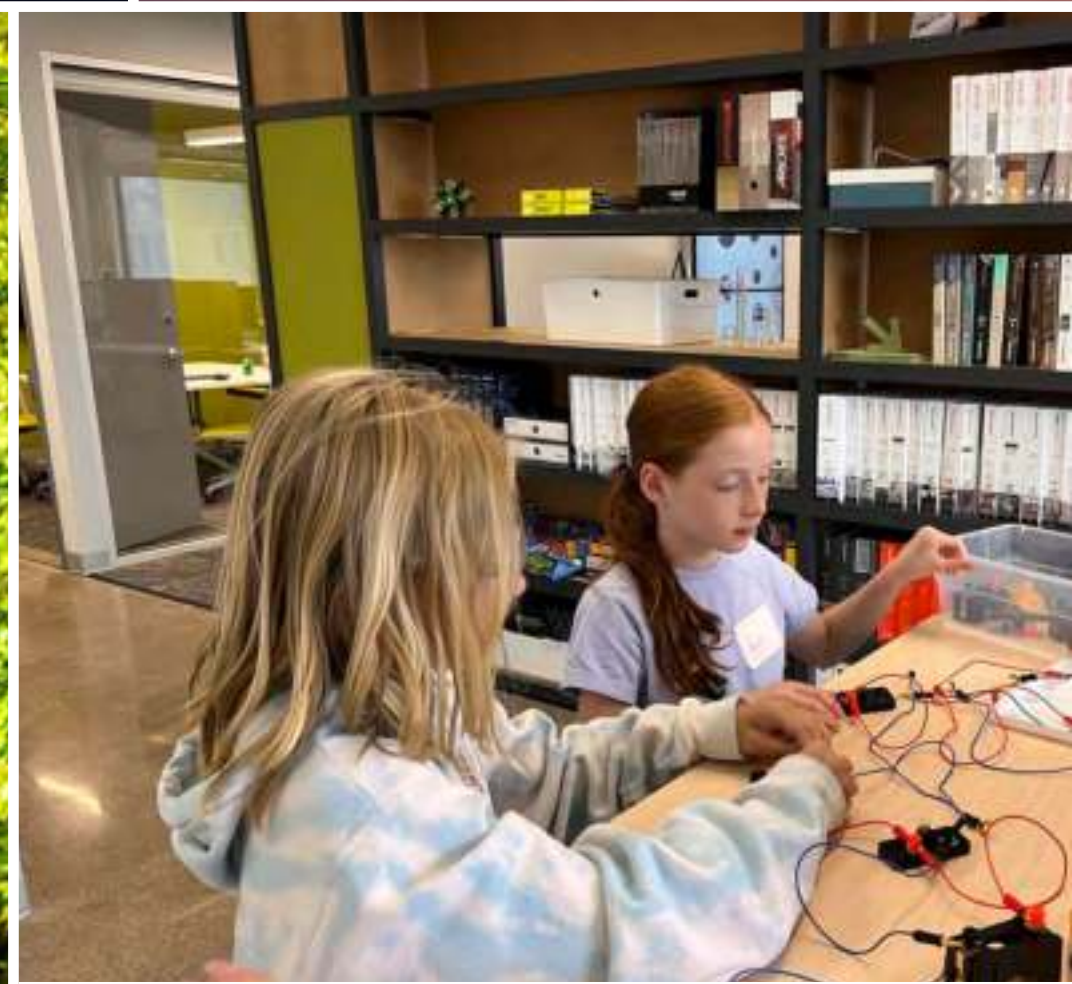
VIDA

vee-duh



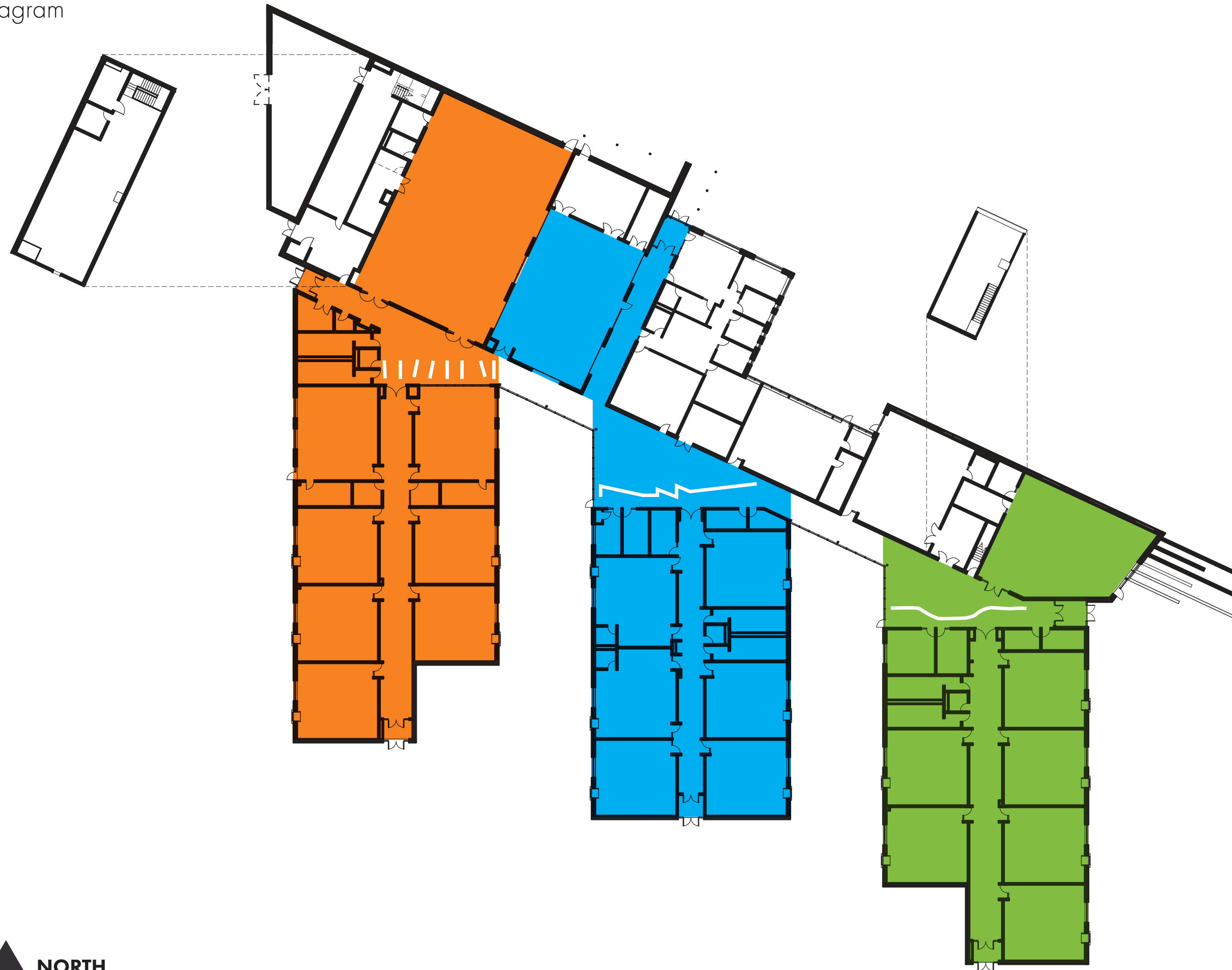
TERRA

ter-uh



CONCEPT

diagram



VIDA

vee-duh

HYDRO

hahy-droh

TERRA

ter-uh



NORTH
SCALE: 1/32" = 1'

CONCEPT

overlay



HYDRO
hahy-droh

VIDA
vee-duh

TERRA
ter-uh





PLANNING

SITE PLAN

11.30.2023 | SCHEMATIC DESIGN



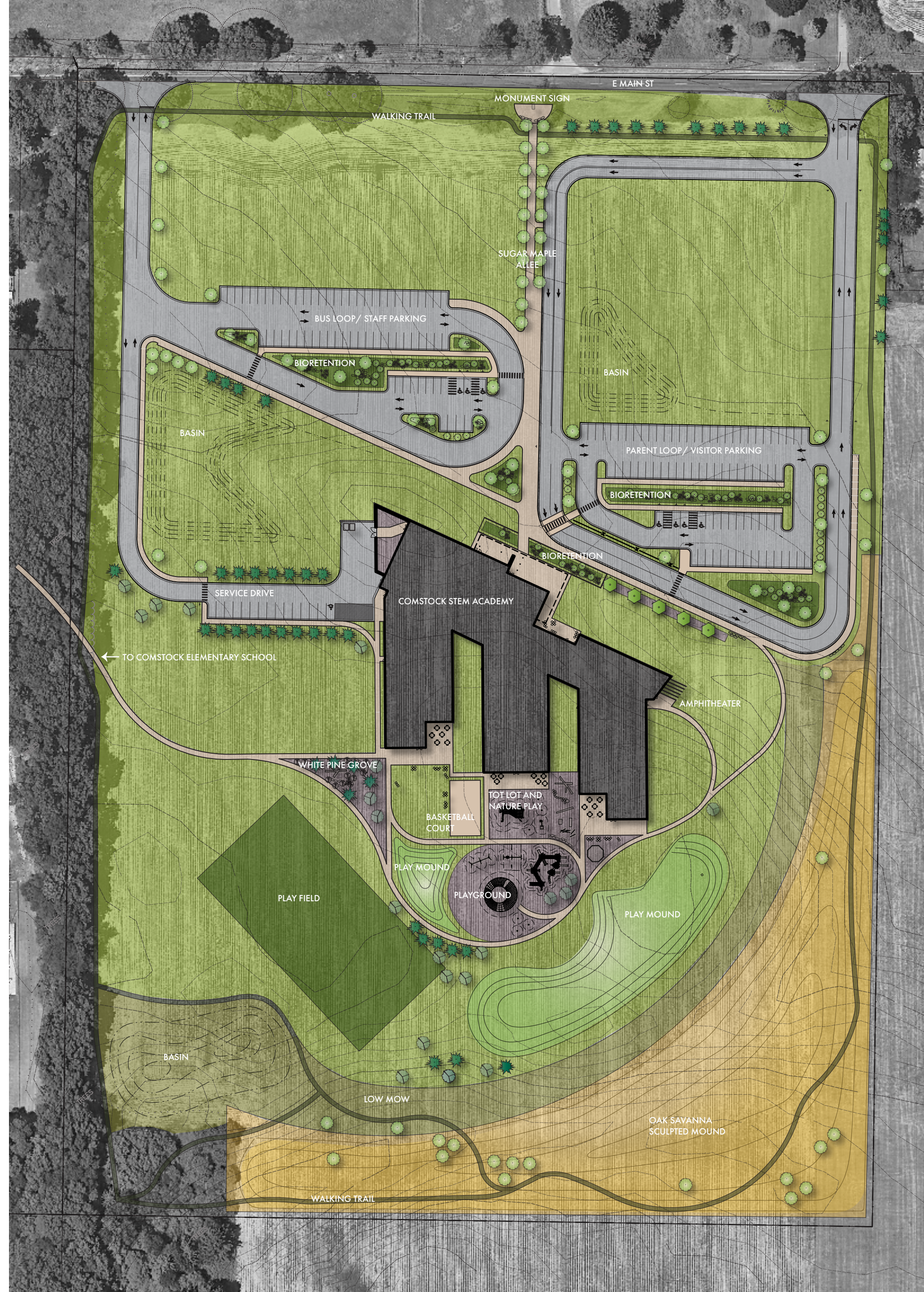
SITE PLAN

01.10.2024 | VE DIAGRAM



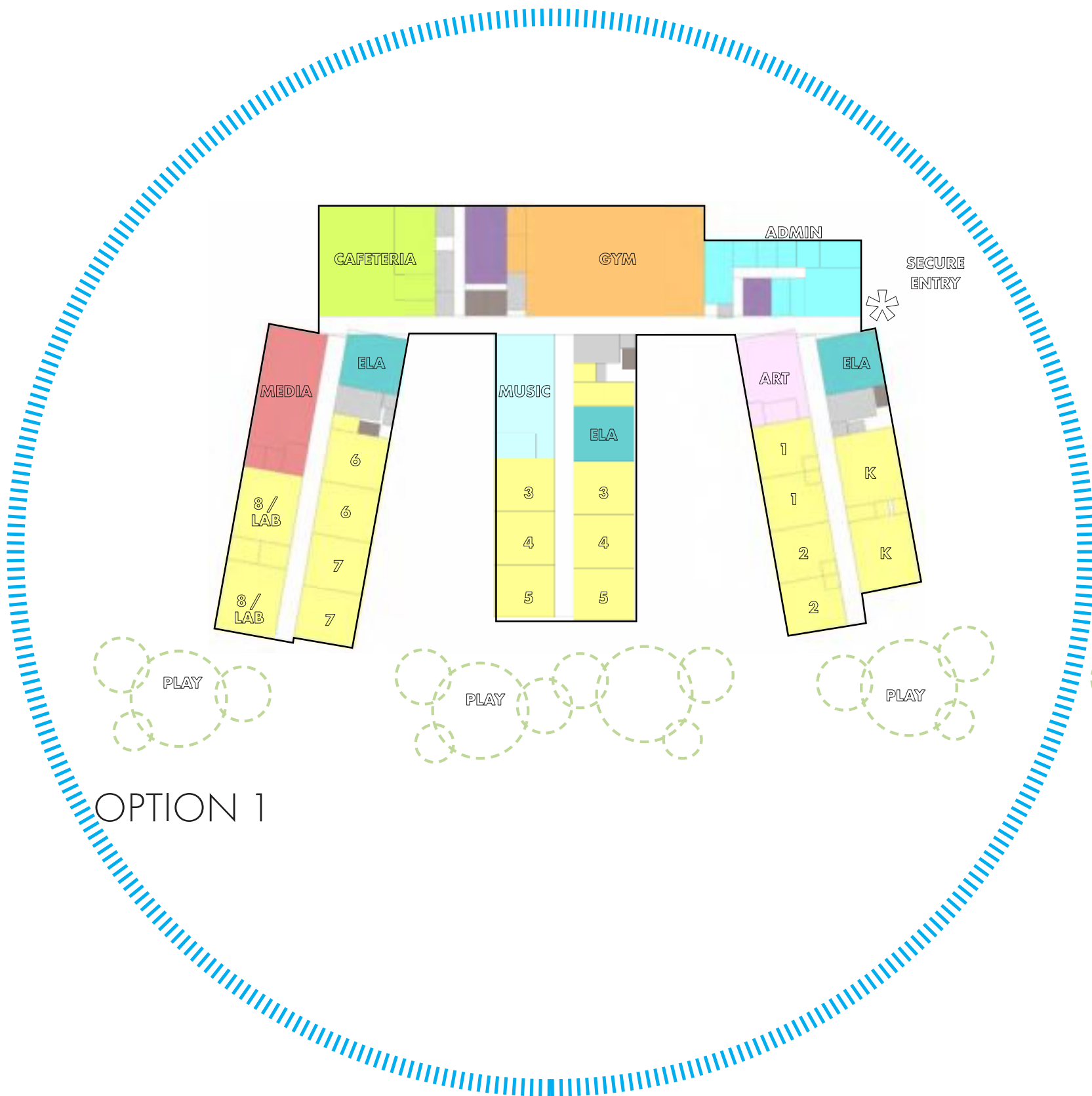
SITE PLAN

02.15.2024 | DESIGN DEVELOPMENT



ADJACENCY DIAGRAMS

09.27.2023 | SUMMARY



OPTION 1



OPTION 2



OPTION 3

FLOOR PLAN

11.30.2023 | SCHEMATIC DESIGN

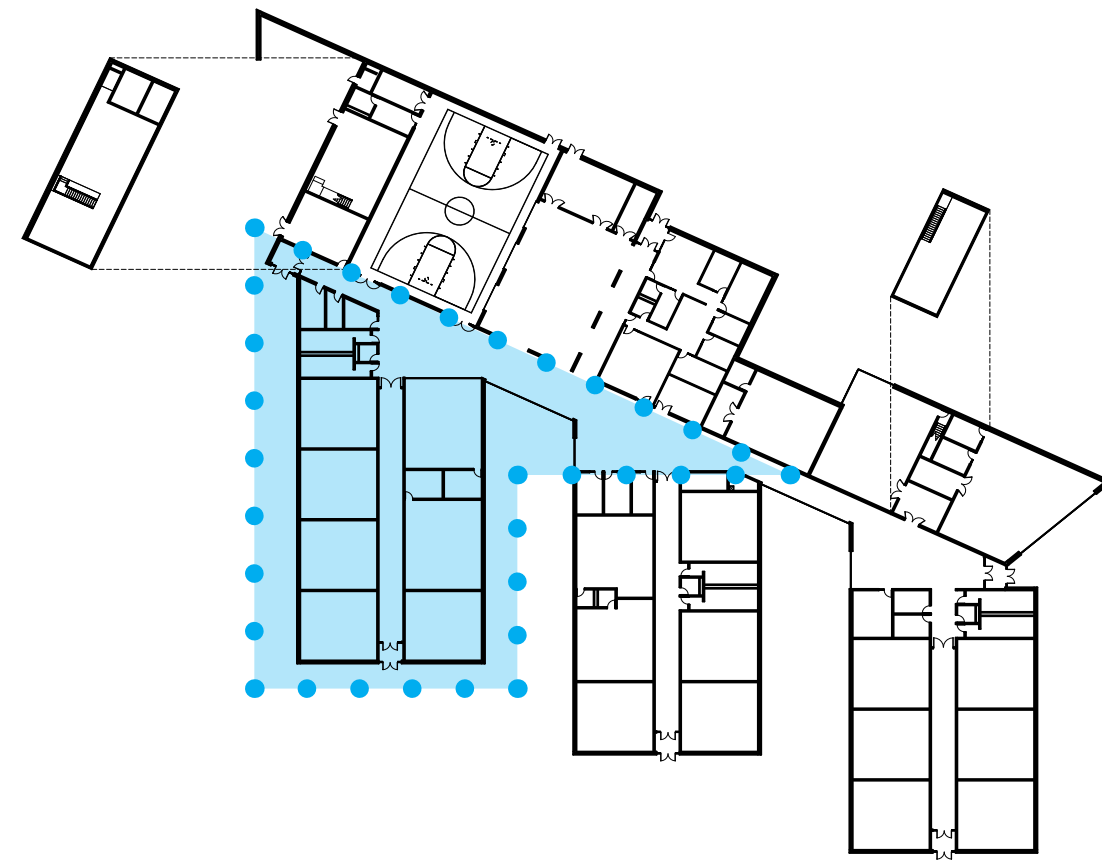


62,325 SF

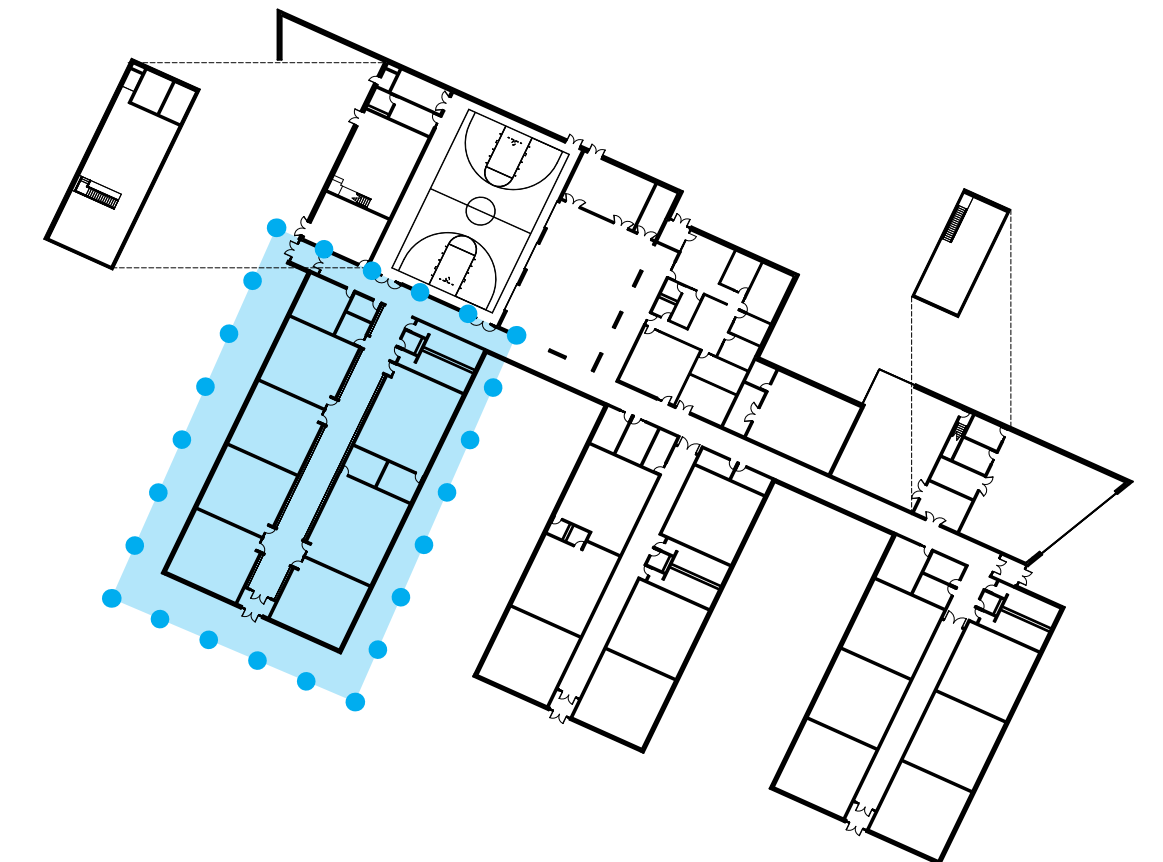


FLOOR PLAN

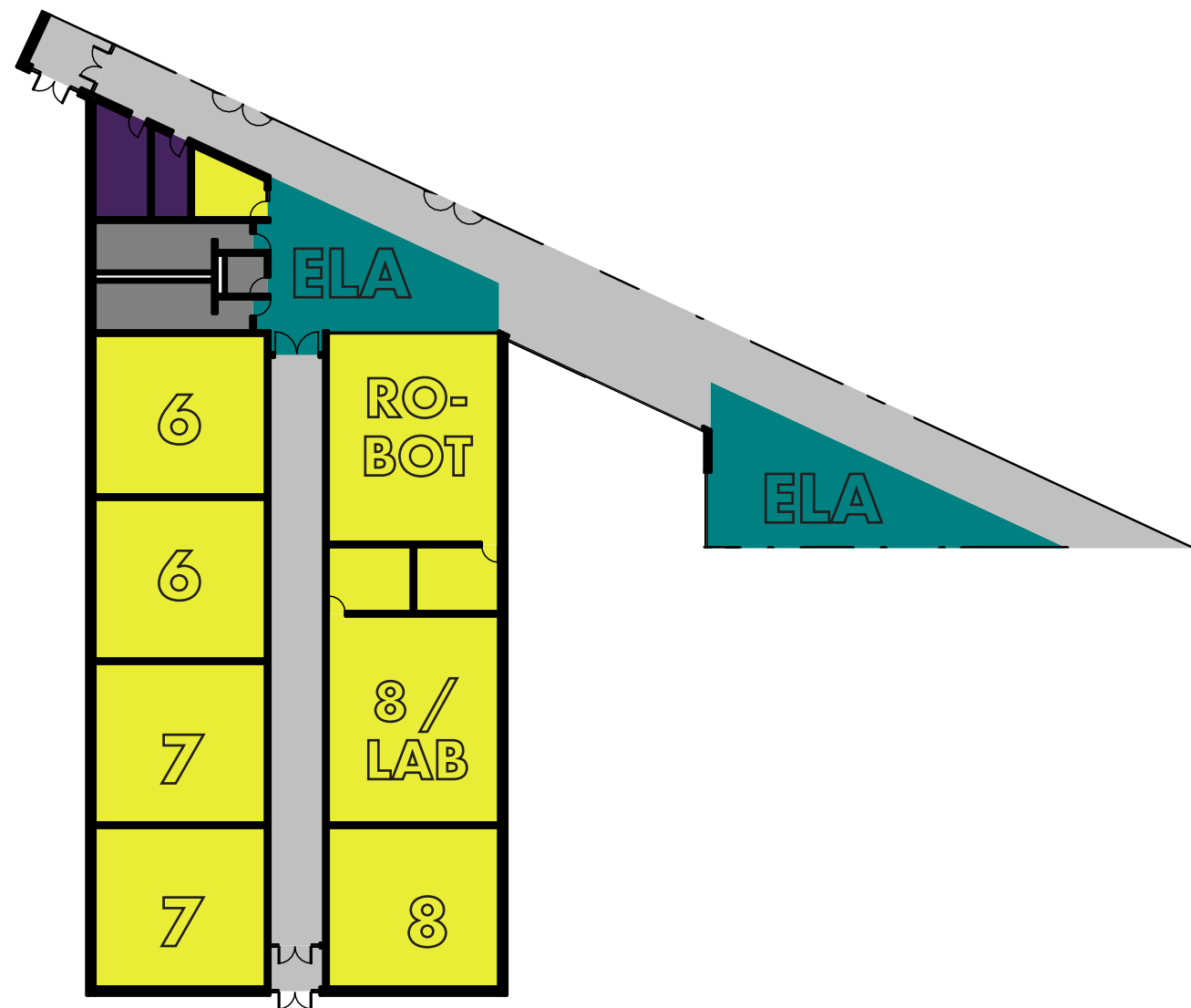
ELA study



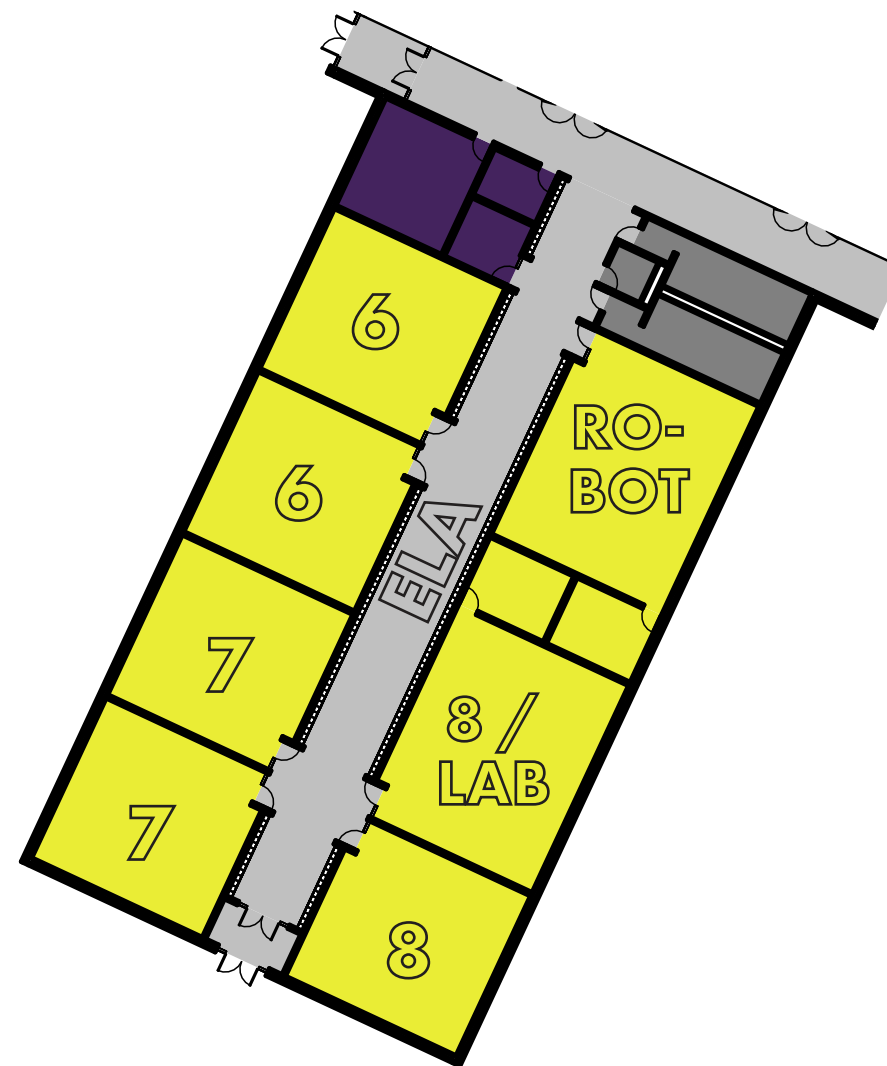
PLAN OPTION 01



PLAN OPTION 02



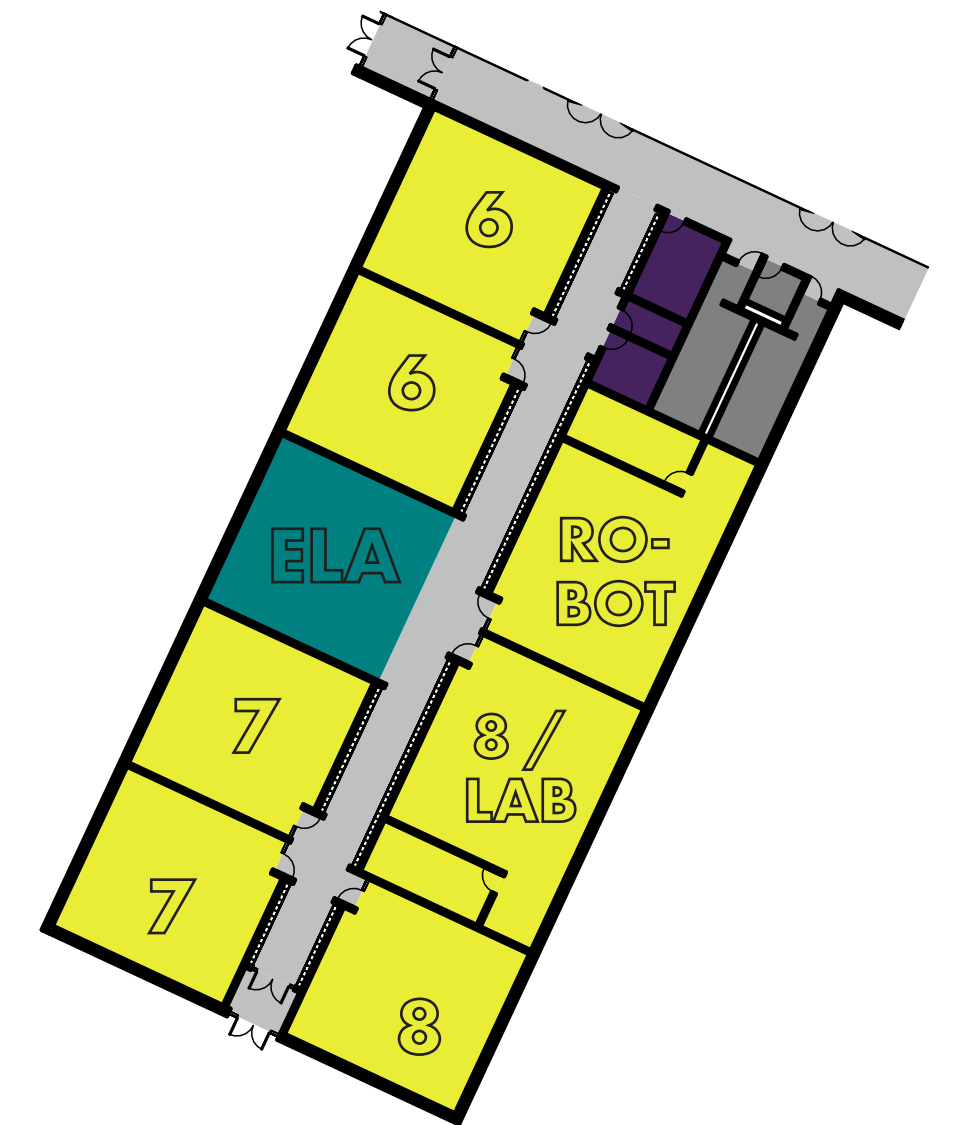
ELA : SPINE POCKETS



ELA : WIDENED CORRIDOR



ELA : CORRIDOR POCKET



ELA : NEIGHBORHOOD POCKET



IDEATION IMAGERY

option 01



Psychological studies show "scale" affects students comfort & hence their feeling of security. An ELA can help organize Small Learning Communities (SLC), that help break down the scale of the facility, which improves student comfort, which improves their learning.



IDEATION IMAGERY

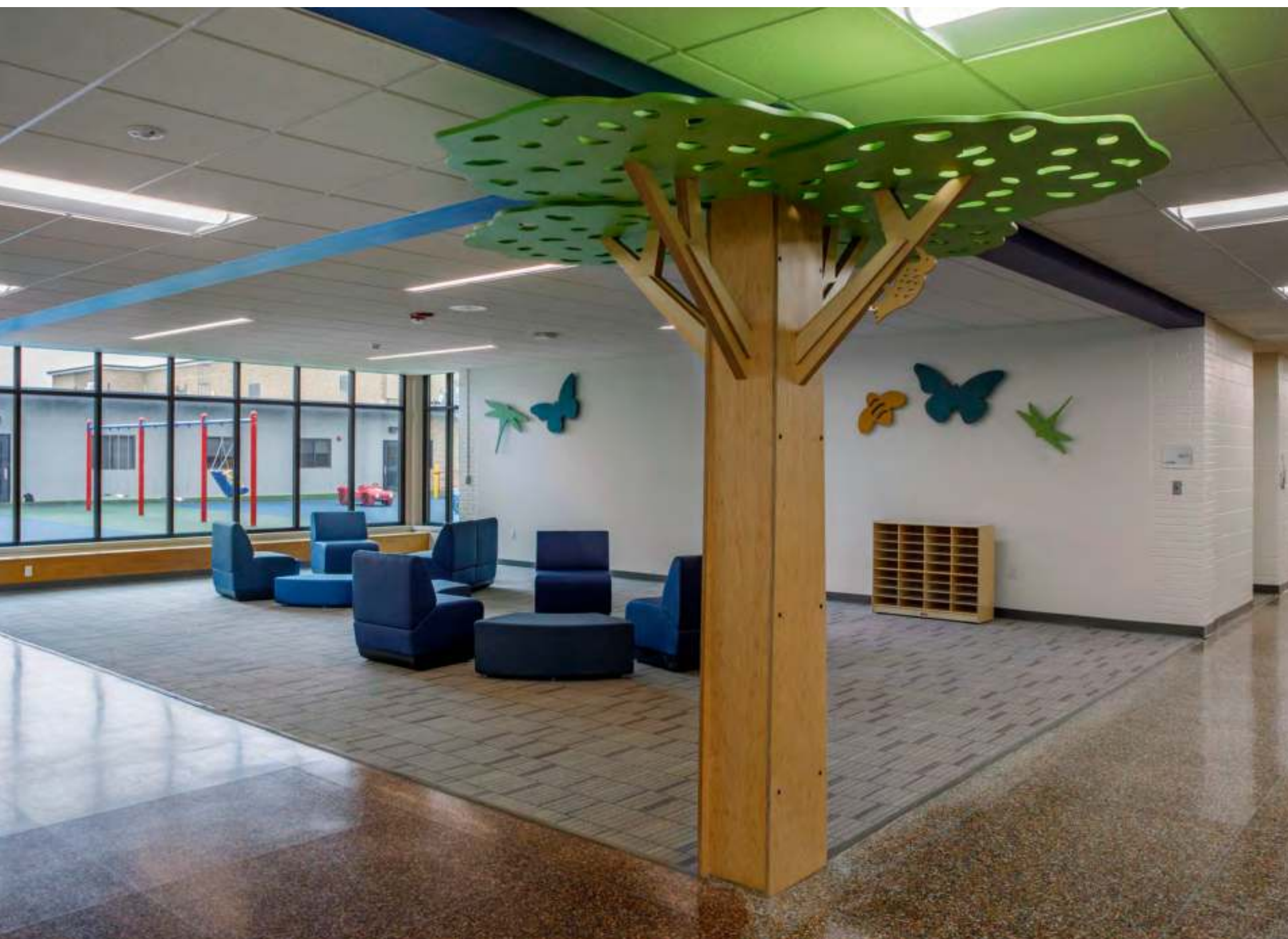
ELA study: widened corridor



Project based learning requires more square footage per student than a traditional classroom. An ELA let's you be more efficient on square footage by providing a space that multiple classrooms can share vs. making every classroom larger. It also lets you develop unique details once for multiple classrooms to share saving the cost of providing it for every classroom.

IDEATION IMAGERY

ELA study: neighborhood pocket



Neuroscience studies show learning/presenting the same subject/topic in multiple environments helps comprehension & memory retention. An ELA gives provides a different environment immediately adjacent to the classroom.

FLOOR PLAN

02.15.2024 | DESIGN DEVELOPMENT



60,951 SF



CONCEPT

exterior massing | 01.10.2024



CONCEPT

exterior massing | 02.15.2024



CONCEPT

exterior massing | 02.15.2024



CONCEPT

exterior massing | 02.15.2024



Opportunity **for all**

That's the world GMB strives to see. We are just one part of the learning ecosystem that will make that happen.



APPENDIX

NEW SITE STUDY

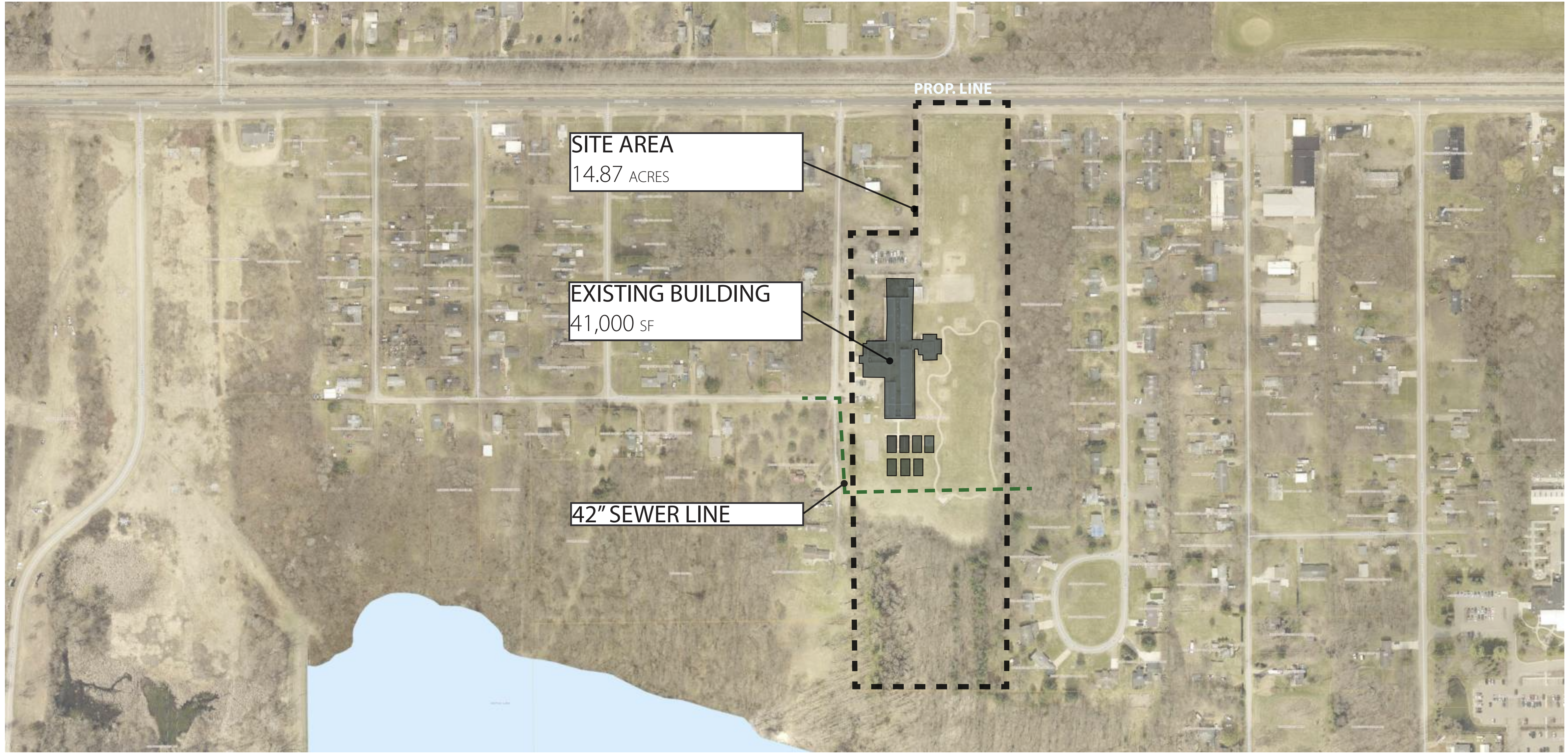
COUNTY GIS



EXISTING PLAN(S)

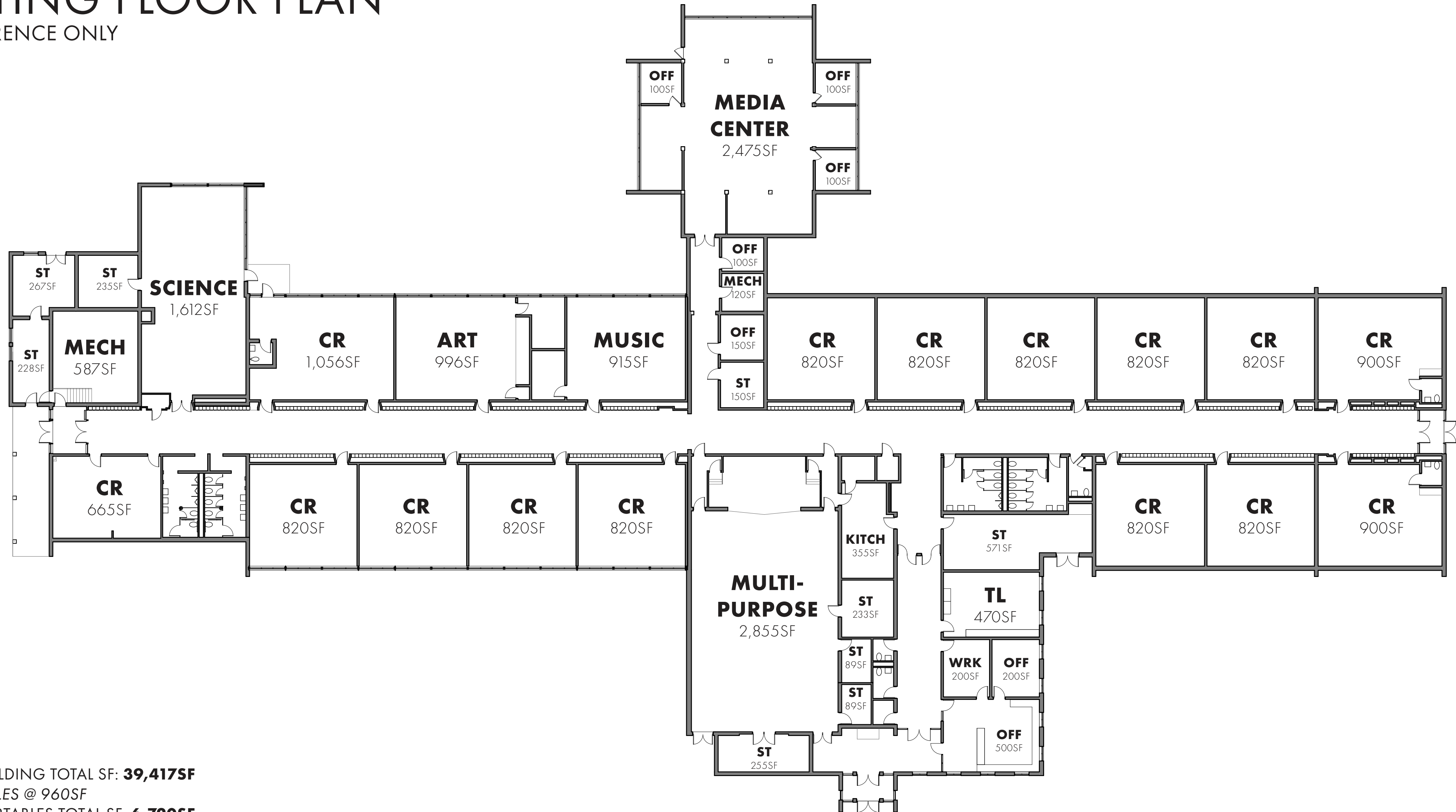
EXISTING SITE PLAN

FOR REFERENCE ONLY



EXISTING FLOOR PLAN

FOR REFERENCE ONLY

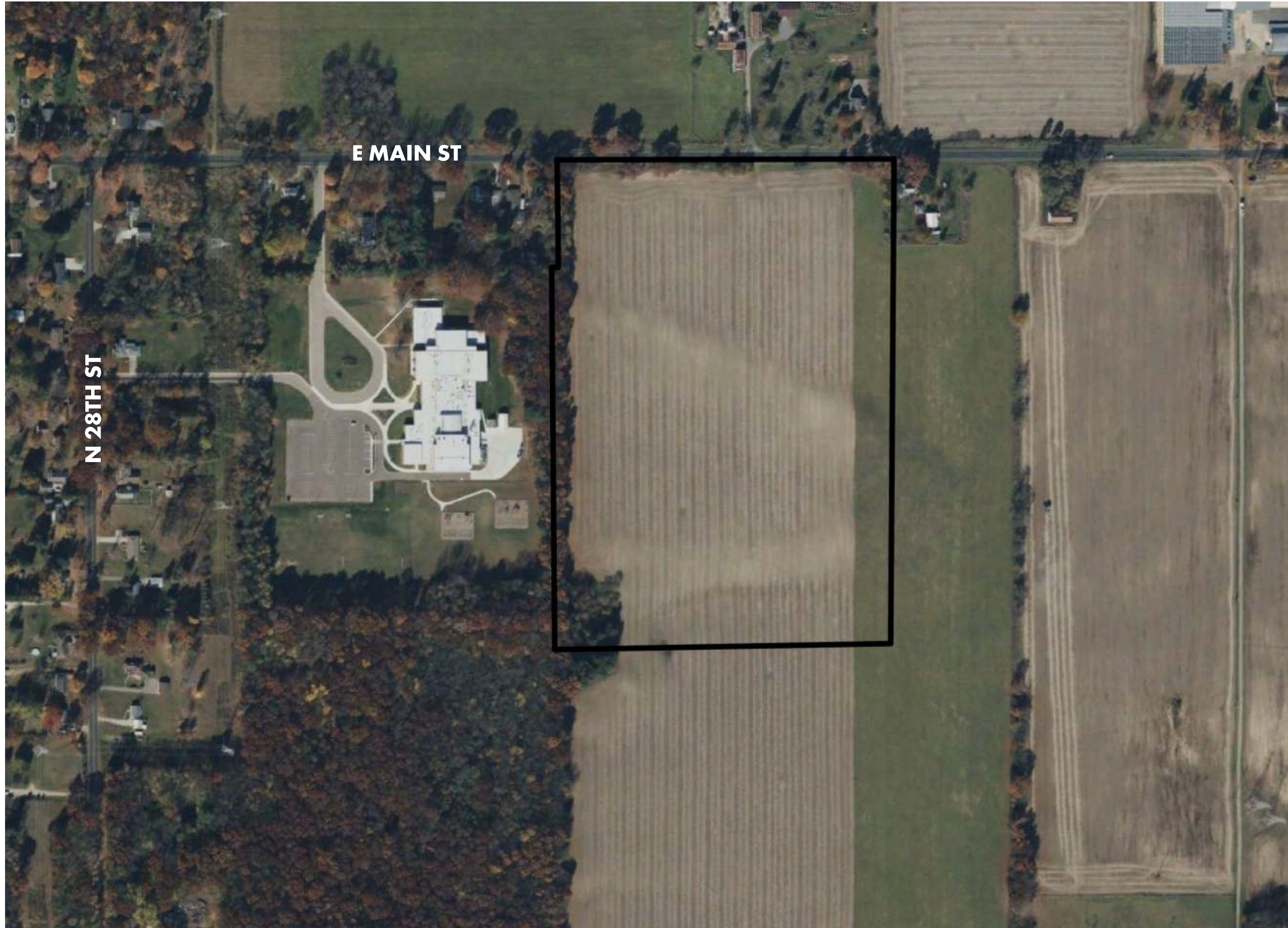


EXISTING BUILDING TOTAL SF: **39,417SF**
 + (7) PORTABLES @ 960SF
 EXISTING PORTABLES TOTAL SF: **6,720SF**
TOTAL AVAILABLE SF: 46,137SF



INVENTORY AND ANALYSIS

COMSTOCK STEM ACADEMY PROJECT SITE



COMSTOCK STEM ACADEMY SOILS



Oshtemo sandy loam

Slope: 0 to 6 percent
 Drainage class: Well drained
 Runoff class: Very low
 Hydric: No
 Depth to water table: More than 80 inches
 Frequency of flooding: None
 Frequency of ponding: None
 Available water supply, 0 to 60 inches:
 Moderate (about 6.3 inches)

Oshtemo sandy loam

Slope: 6 to 12 percent
 Drainage class: Well drained
 Runoff class: Low
 Hydric: No
 Depth to water table: More than 80 inches
 Frequency of flooding: None
 Frequency of ponding: None
 Available water supply, 0 to 60 inches:
 Moderate (about 6.3 inches)

Kalamazoo loam

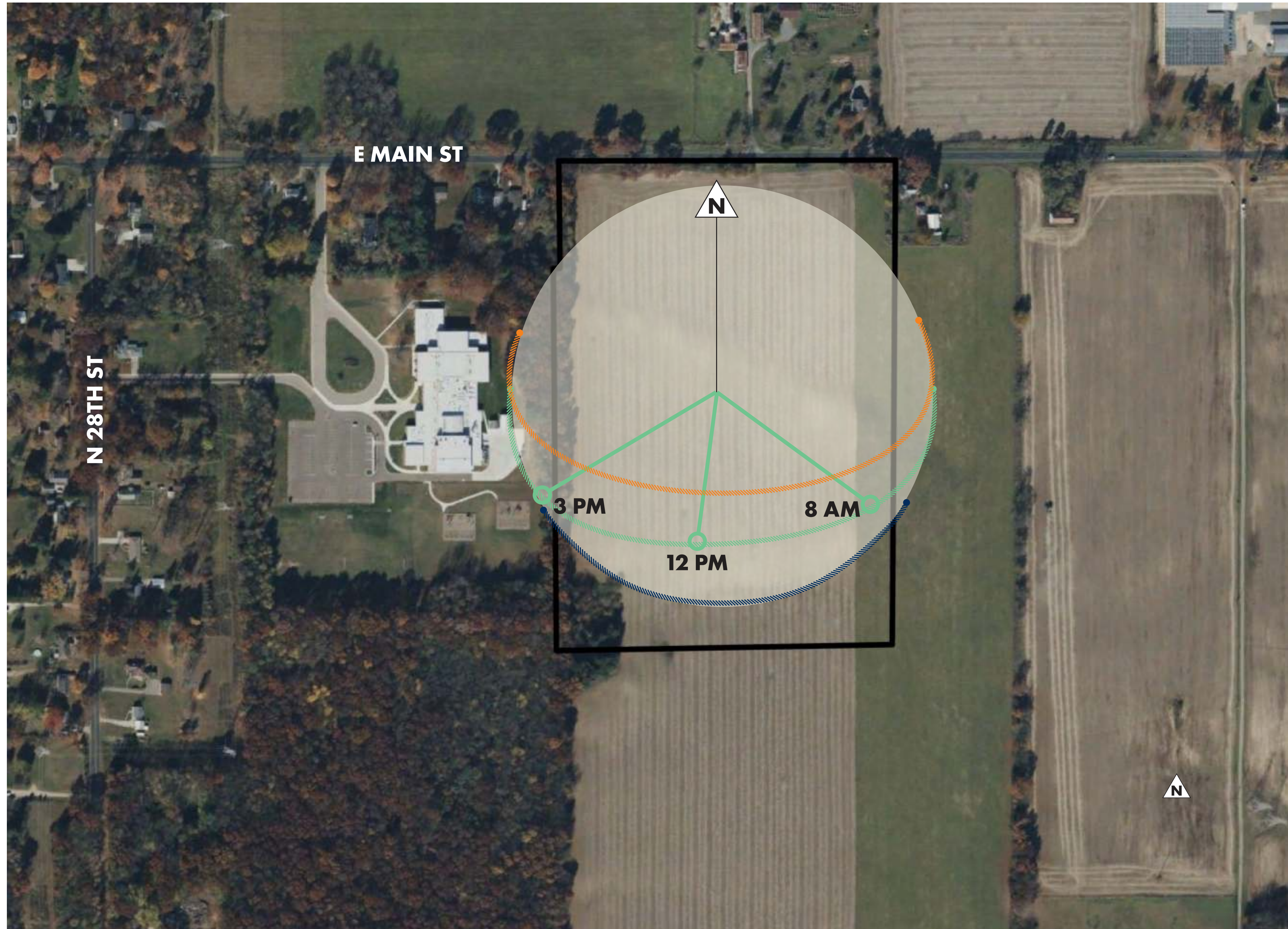
Slope: 2 to 6 percent
 Drainage class: Well drained
 Runoff class: Medium
 Hydric: No
 Depth to water table: More than 80 inches
 Frequency of flooding: None
 Frequency of ponding: None
 Available water supply, 0 to 60 inches:
 Moderate (about 7.6 inches)

COMSTOCK STEM ACADEMY TOPO



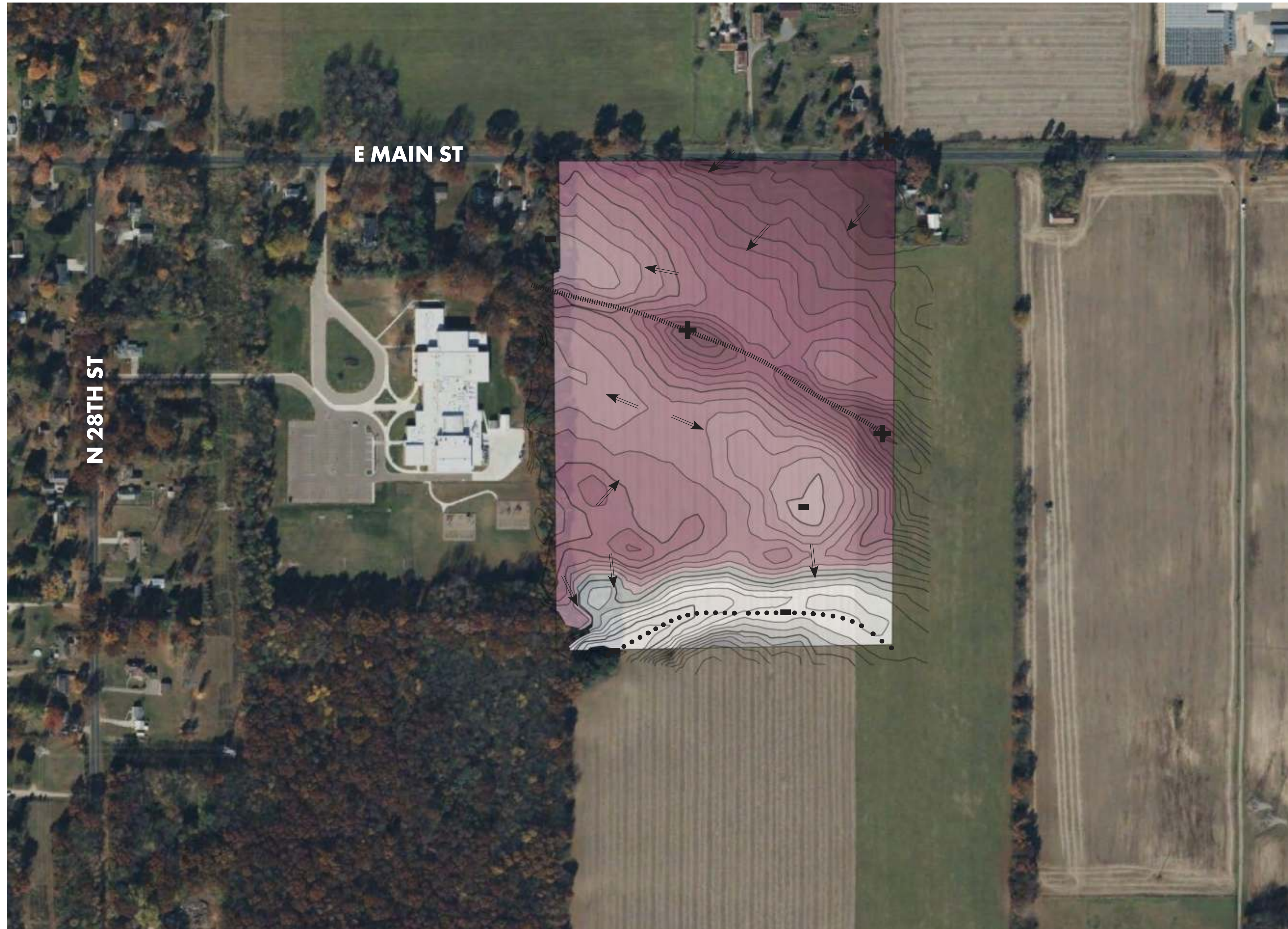
————— **2' Contours**







COMSTOCK STEM ACADEMY SUN STUDY



-  **MARCH**
-  **SEPTEMBER**
-  **JANUARY**



COMSTOCK STEM ACADEMY TOPO RELIEF



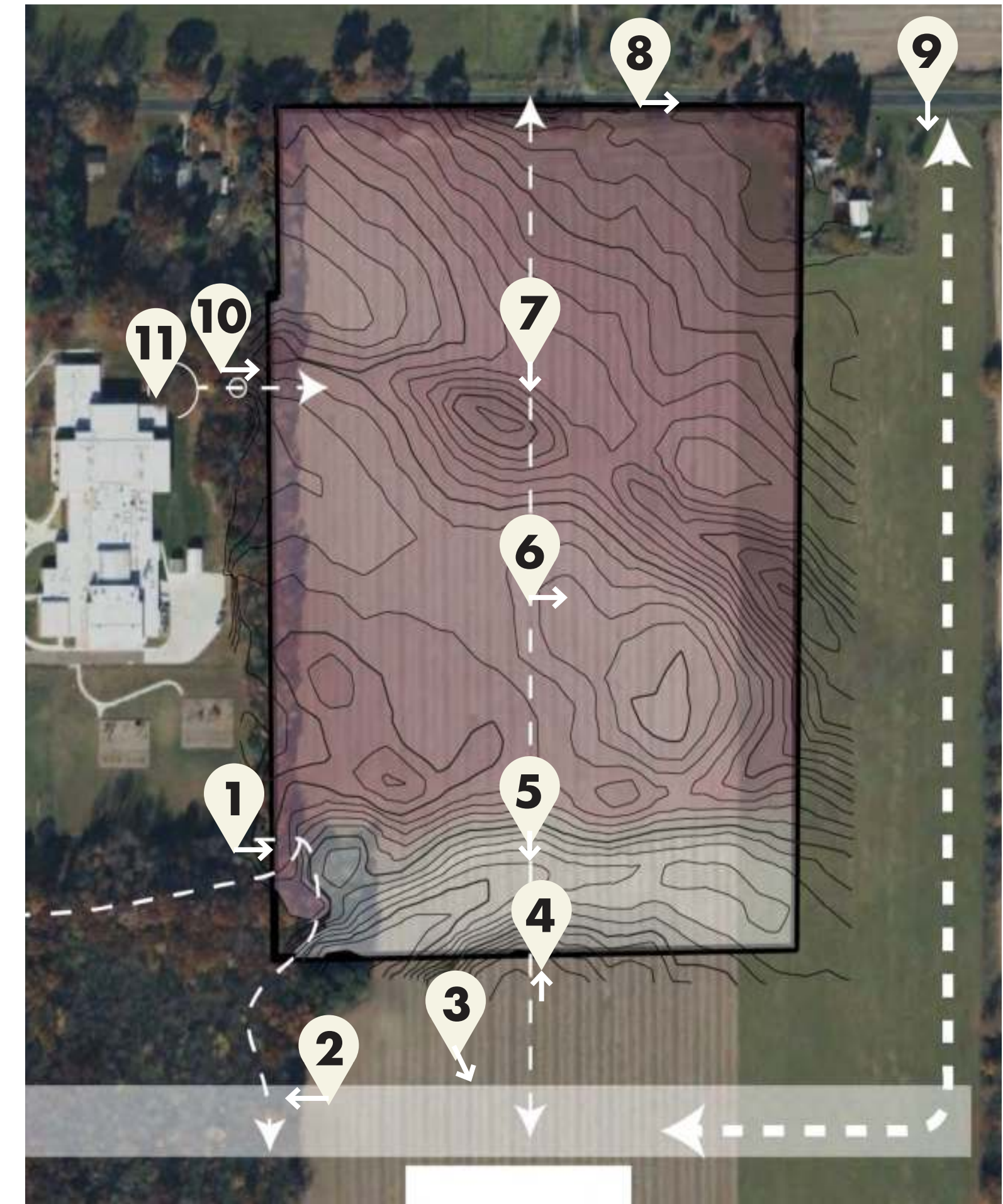
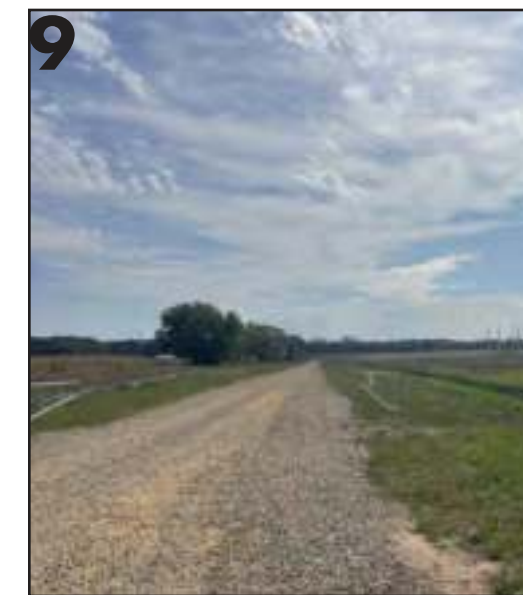
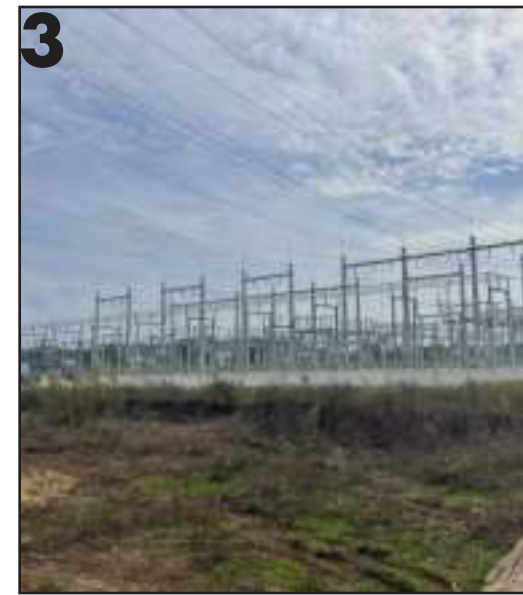
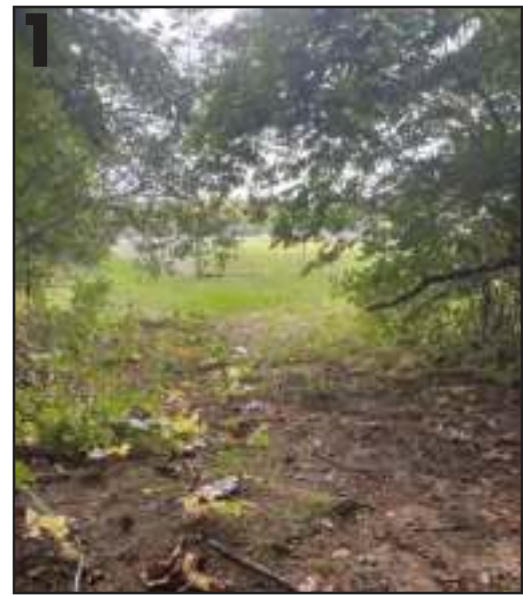
-  **HIGHEST POINT**
-  **LOWEST POINT**
-  **RIDGE**
-  **SWALE**
-  **1' CONTOUR**
-  **WATER FLOW**

COMSTOCK STEM ACADEMY TOPO RELIEF AND SOILS

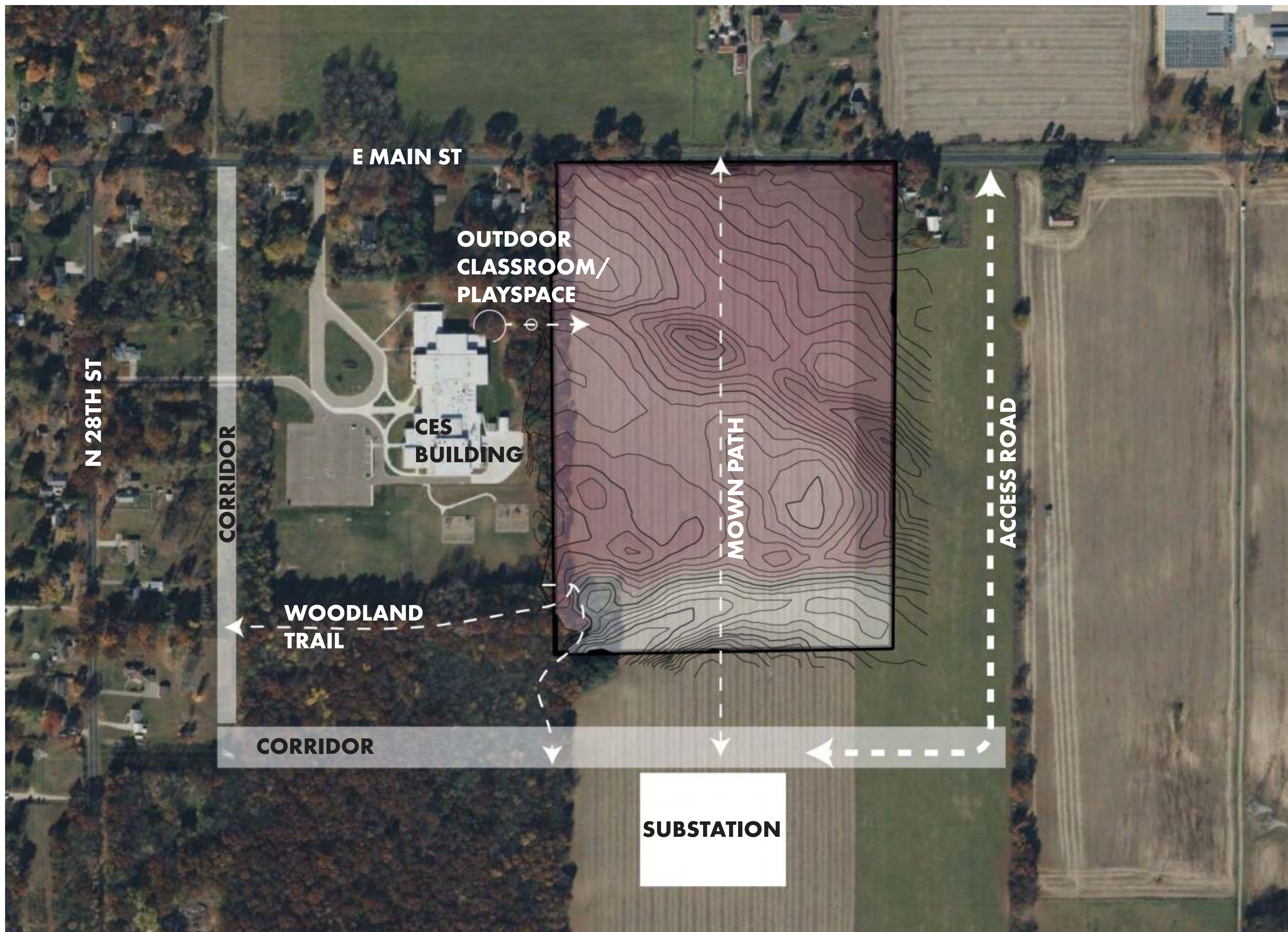


-  **HIGHEST POINT**
-  **LOWEST POINT**
- OsB** **Oshtemo sandy loam 0 - 6%**
- OsC** **Oshtemo sandy loam 6 - 12%**
- KaB** **Kalamazoo loam**

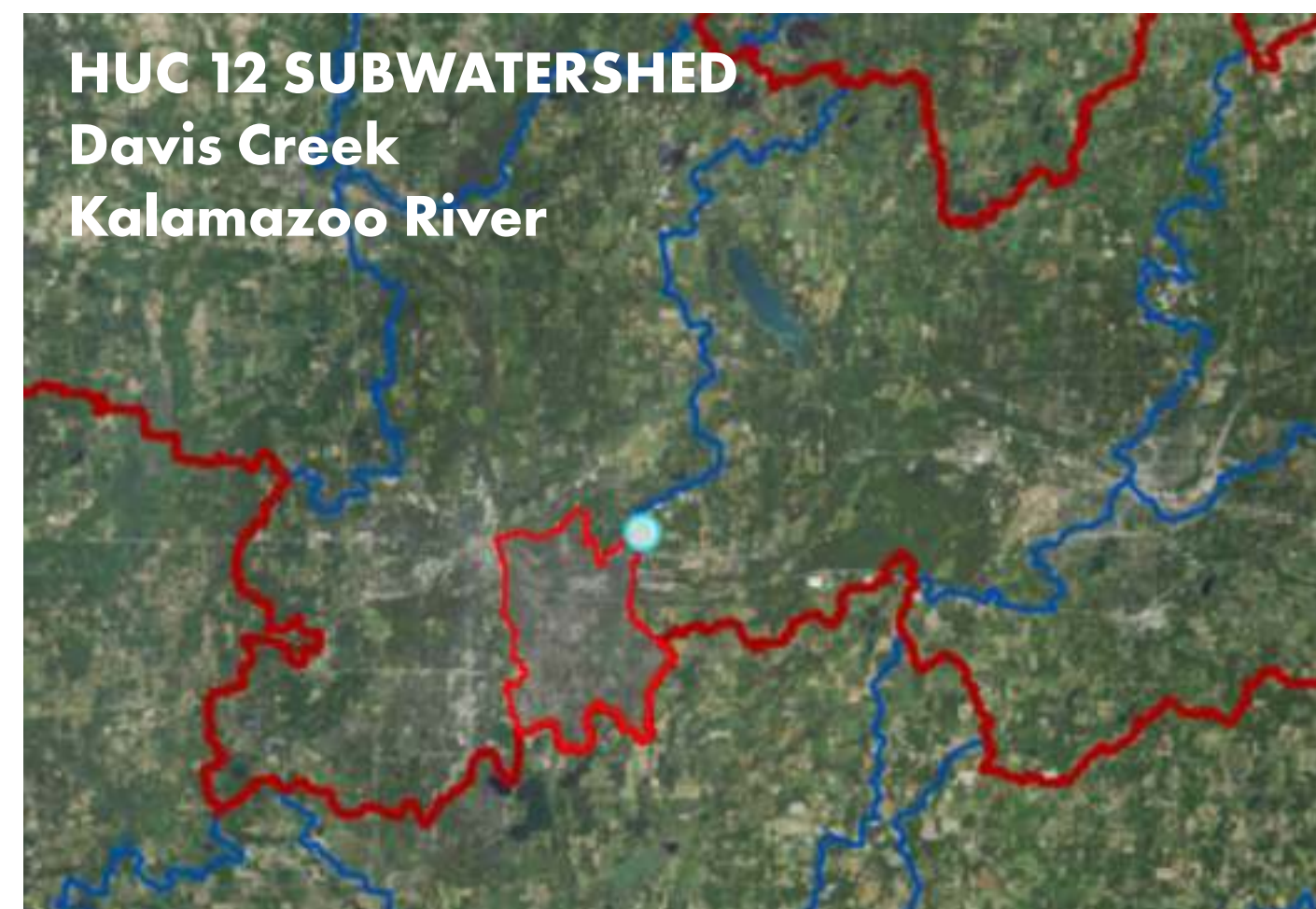
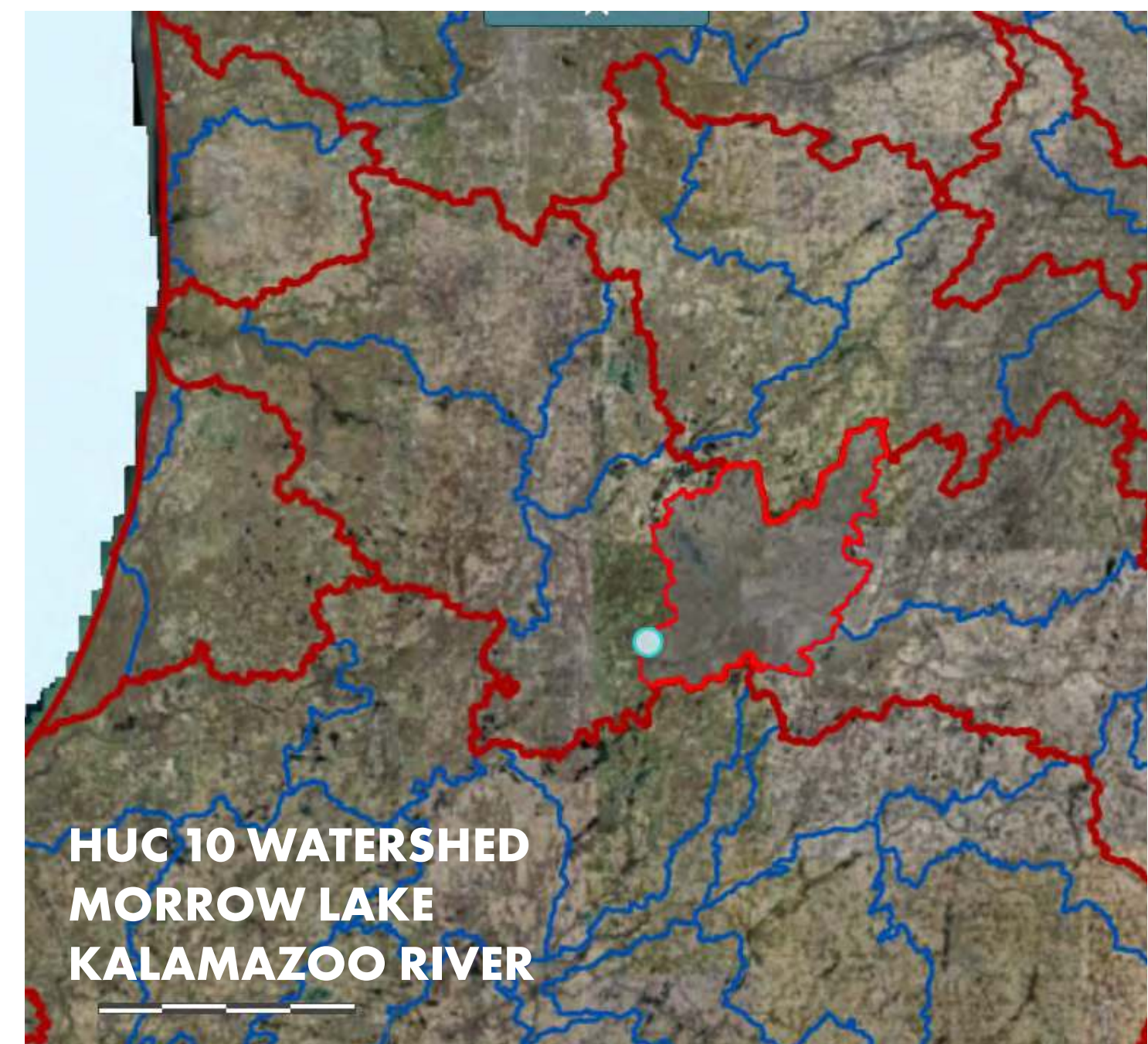
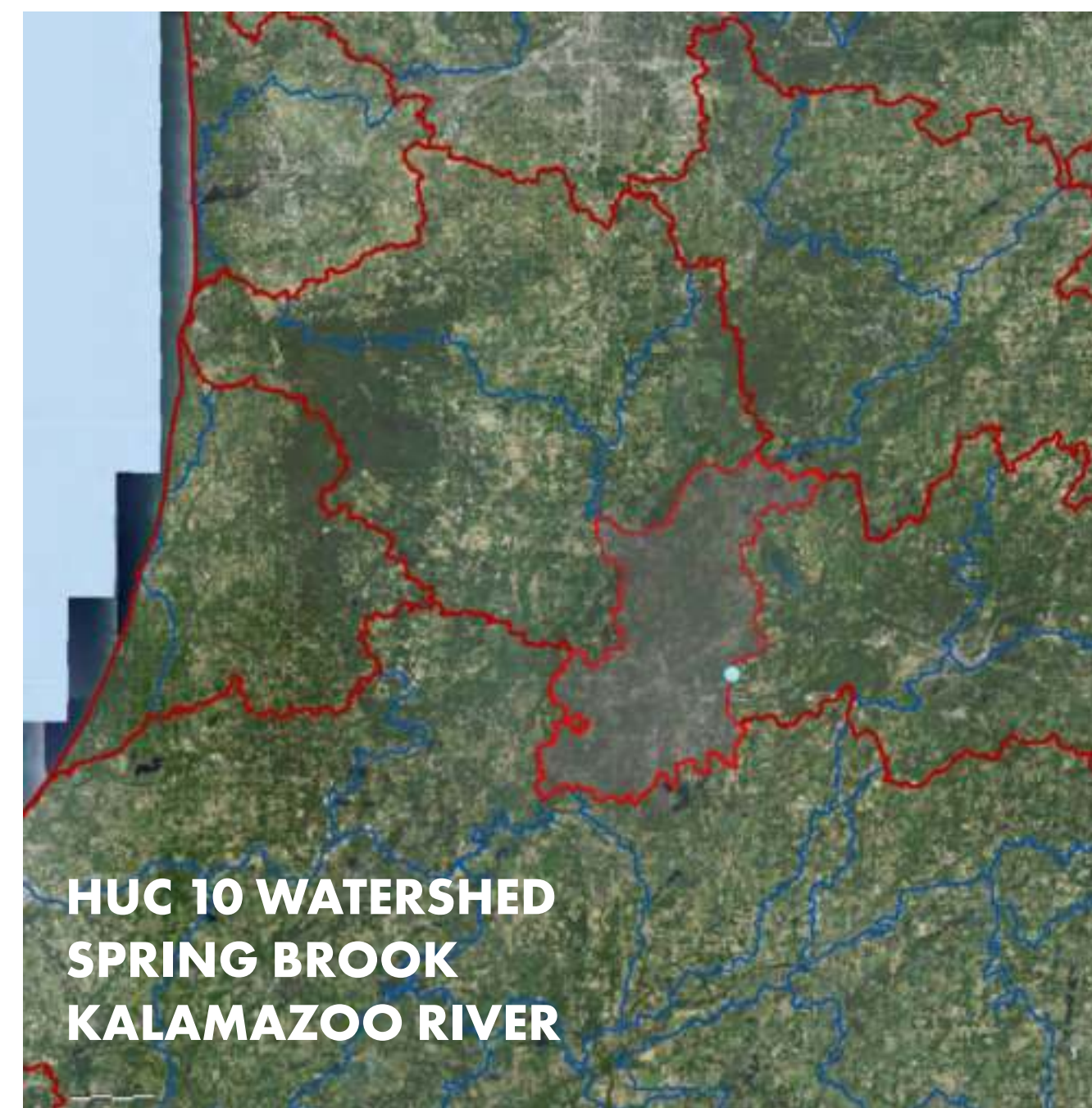
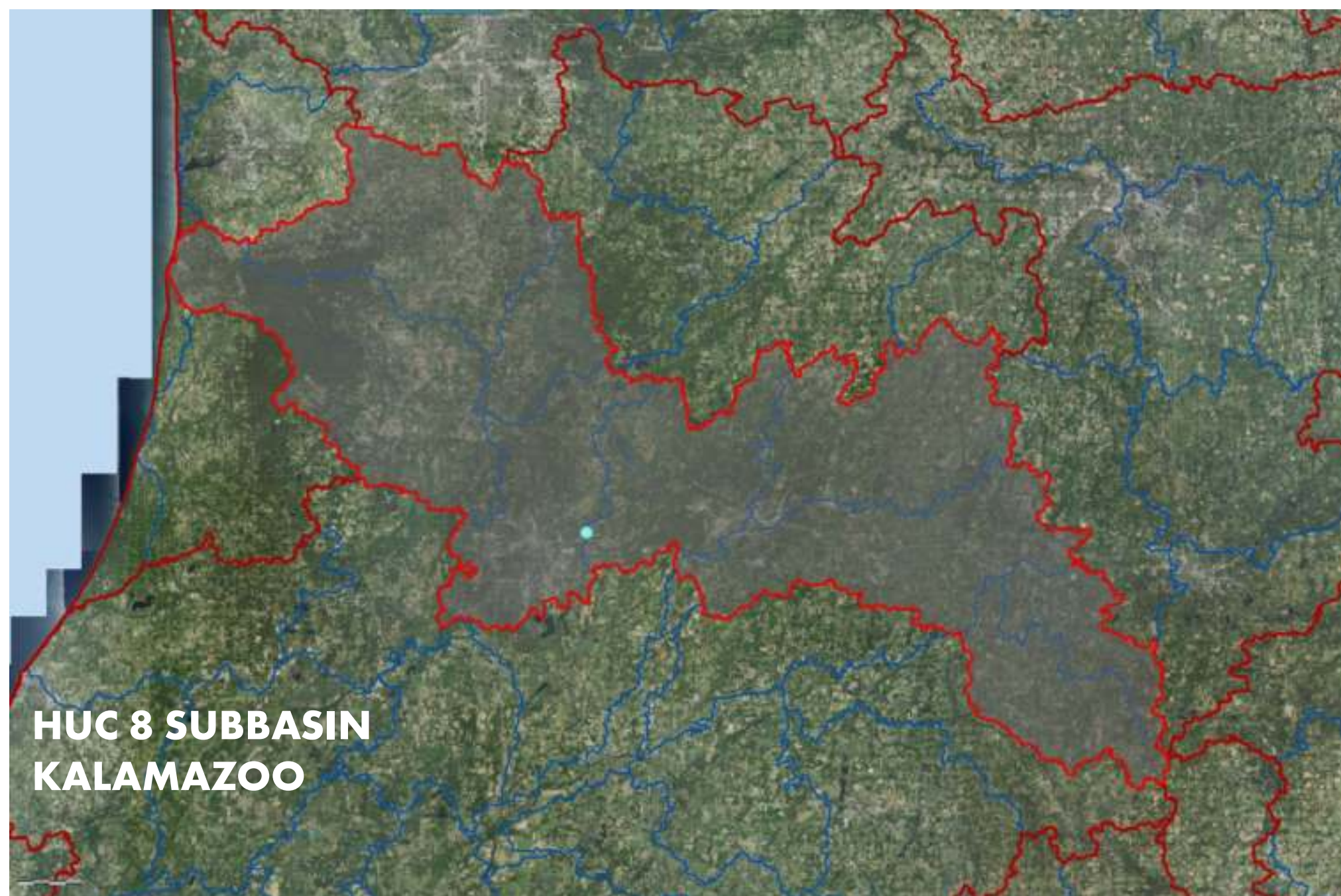
COMSTOCK STEM ACADEMY PHOTO INVENTORY



COMSTOCK STEM ACADEMY SITE VISIT








COMSTOCK STEM ACADEMY WATERSHED STUDY



COMSTOCK STEM ACADEMY WATERSHED STUDY



-  **HUC 12 SUBWATERSHED Comstock Creek**
-  **HUC 12 SUBWATERSHED Davis Creek Kalamazoo River**
-  **HUC 12 SUBWATERSHED Morrow Lake Kalamazoo River**
-  **HUC 10 WATERSHED BOUNDARY**
-  **1' CONTOUR**



COMSTOCK STEM ACADEMY HISTORIC LAND COVER



MIXED OAK SAVANNA

Graminoids

- big bluestem (*Andropogon gerardii*)
- sedges (*Carex bicknellii*, *C. brevior*, *C. meadii*, and others)
- panic grasses (*Dichanthelium* spp.)
- switch grass (*Panicum virgatum*)
- little bluestem (*Schizachyrium scoparium*)
- Indian grass (*Sorghastrum nutans*)

Forbs

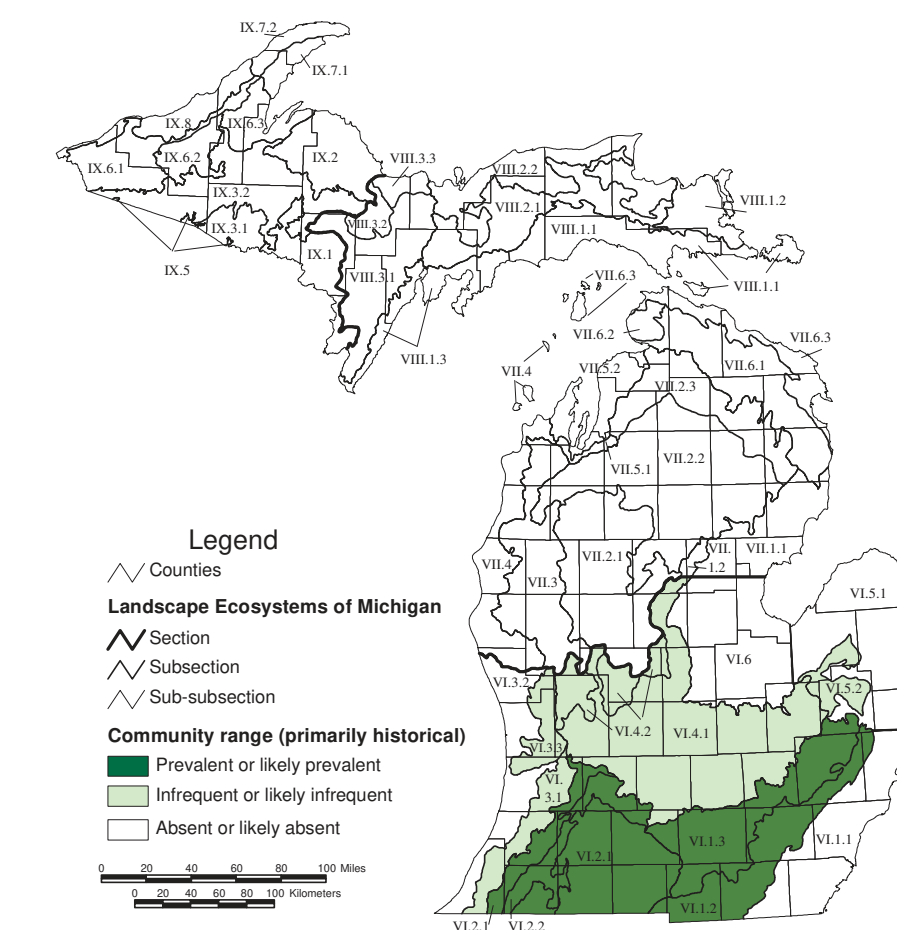
- milkweeds (*Asclepias purpurascens*, *A. syriaca*, *A. tuberosa*, *A. tall coreopsis* (*Coreopsis tripteris*)
- tick-trefoils (*Desmodium* spp.)
- daisy fleabane (*Erigeron strigosus*)
- western sunflower (*Helianthus occidentalis*)
- pale-leaved sunflower (*Helianthus strumosus*)
- common mountain mint (*Pycnanthemum virginianum*)
- yellow coneflower (*Ratibida pinnata*)
- black-eyed Susan (*Rudbeckia hirta*)
- goldenrods (*Solidago caesia*, *S. juncea*, *S. nemoralis*, *S. rigida*, and *S. speciosa*)
- asters (*Symphotrichum laeve*, *S. oolentangiense*, and *S. pilosum*)
- Culver's root (*Veronicastrum virginicum*)

Shrubs

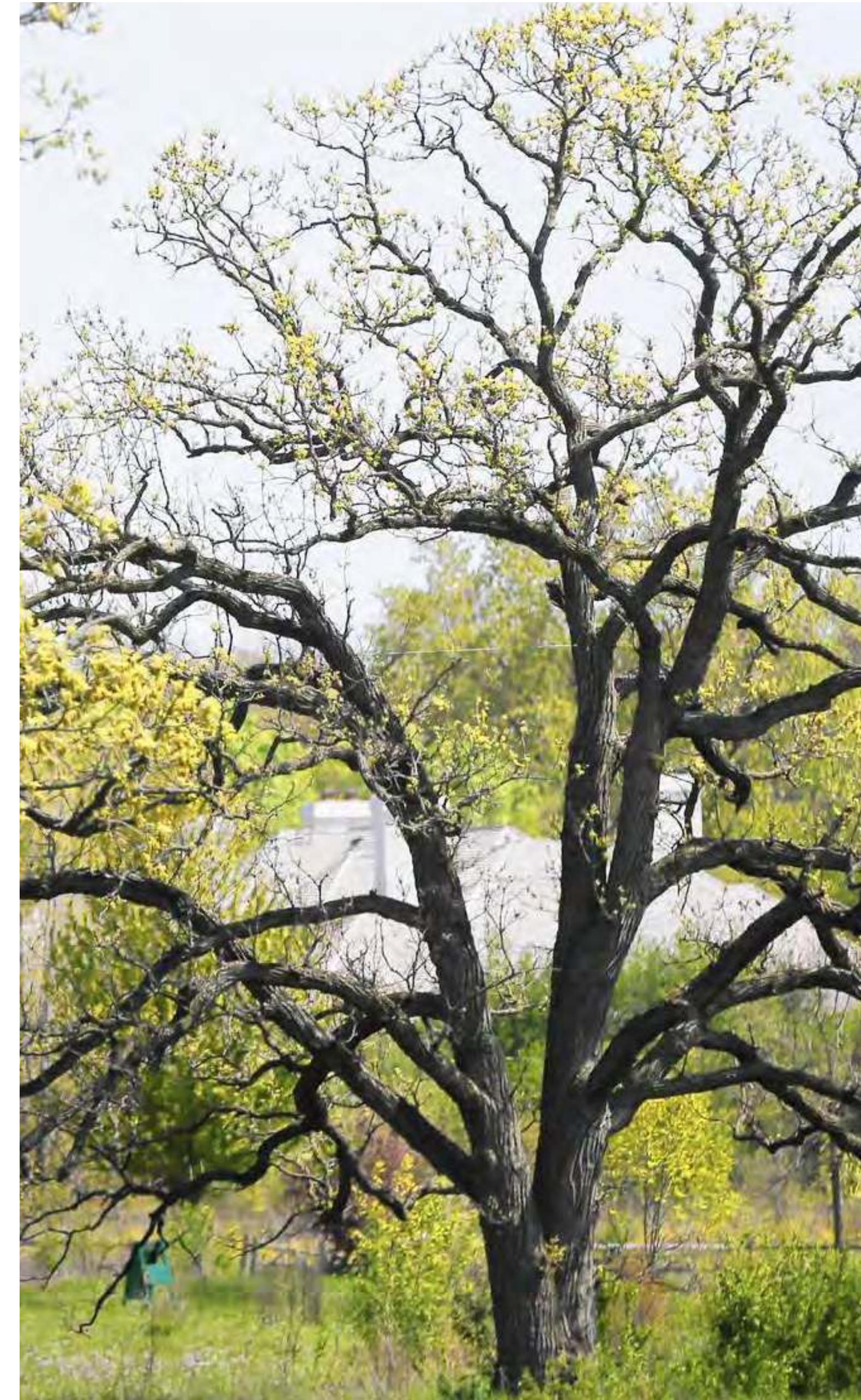
- New Jersey tea (*Ceanothus americanus*)
- gray dogwood (*Cornus foemina*)
- American hazelnut (*Corylus americana*)
- sumacs (*Rhus copallina*, *R. glabra*, and *R. typhina*)

Trees

- pignut hickory (*Carya glabra*)
- shagbark hickory (*Carya ovata*)
- white oak (*Quercus alba*)
- bur oak (*Quercus macrocarpa*)
- chinquapin oak (*Quercus muehlenbergii*)
- dwarf chinquapin oak (*Quercus prinoides*)
- red oak (*Quercus rubra*)
- black oak (*Quercus velutina*)

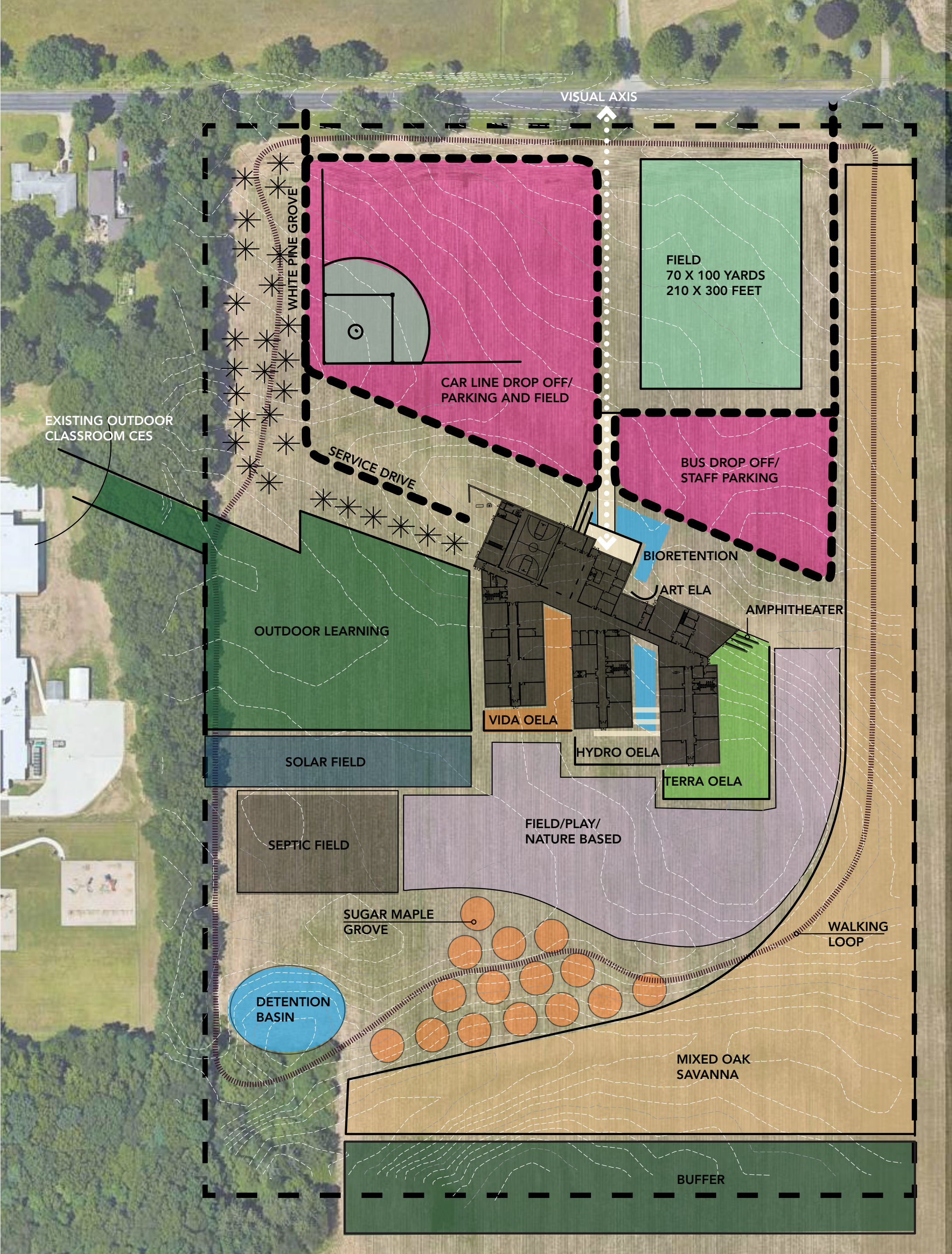


COMSTOCK STEM ACADEMY DESIGNING FOR EDUCATION



COMSTOCK STEM ACADEMY DESIGNING FOR EDUCATION



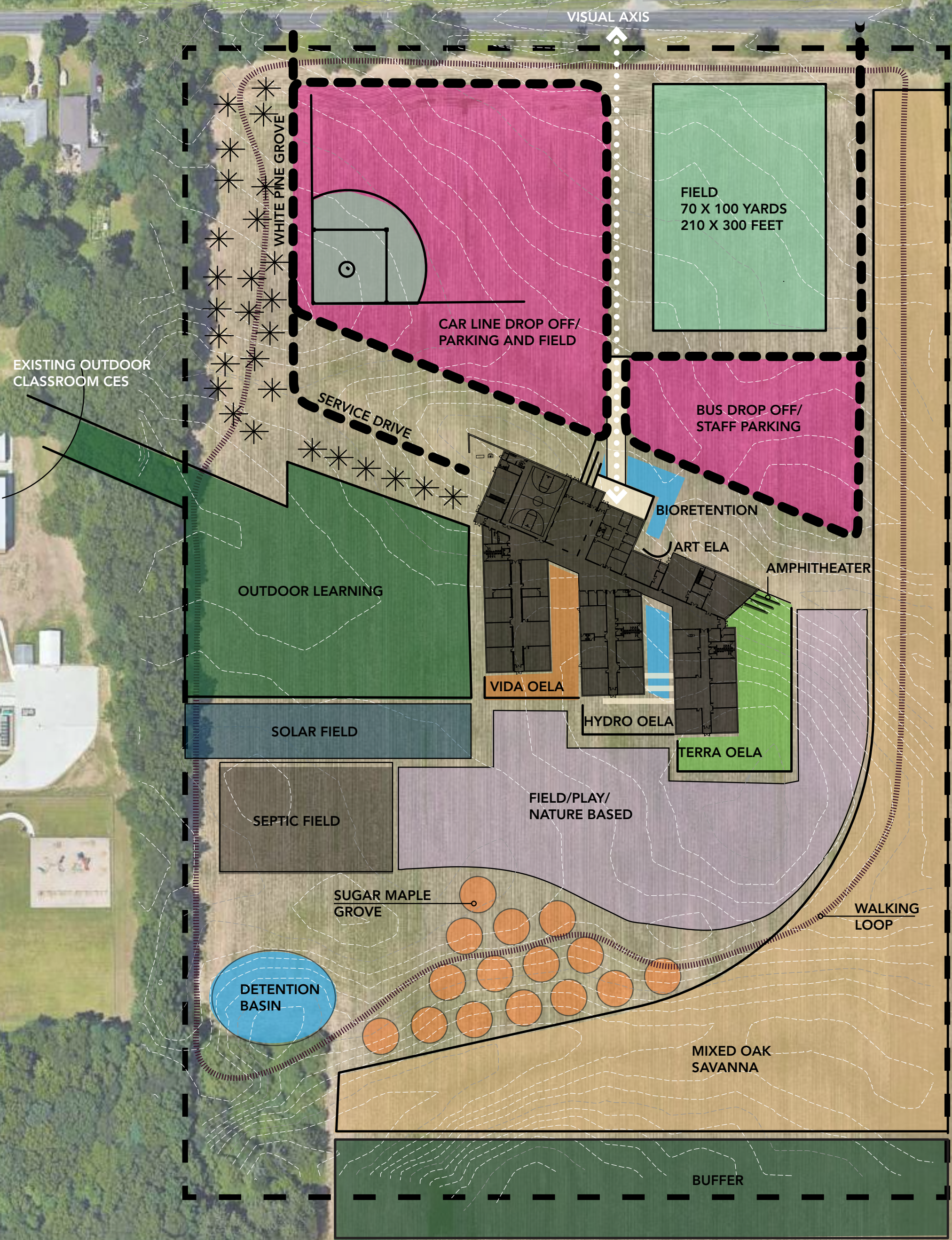


CONCEPT 1

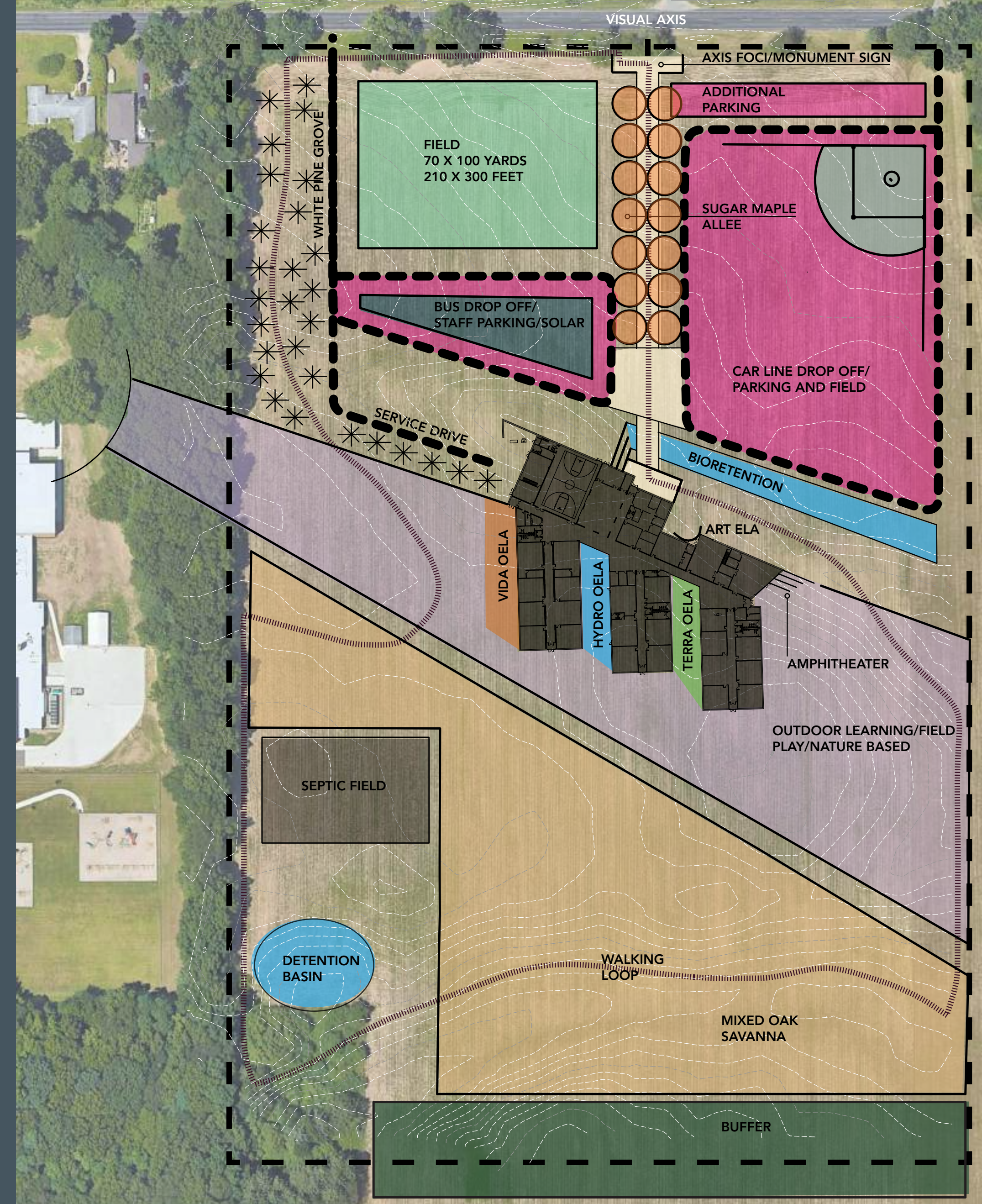




CONCEPT 2



CONCEPT 1












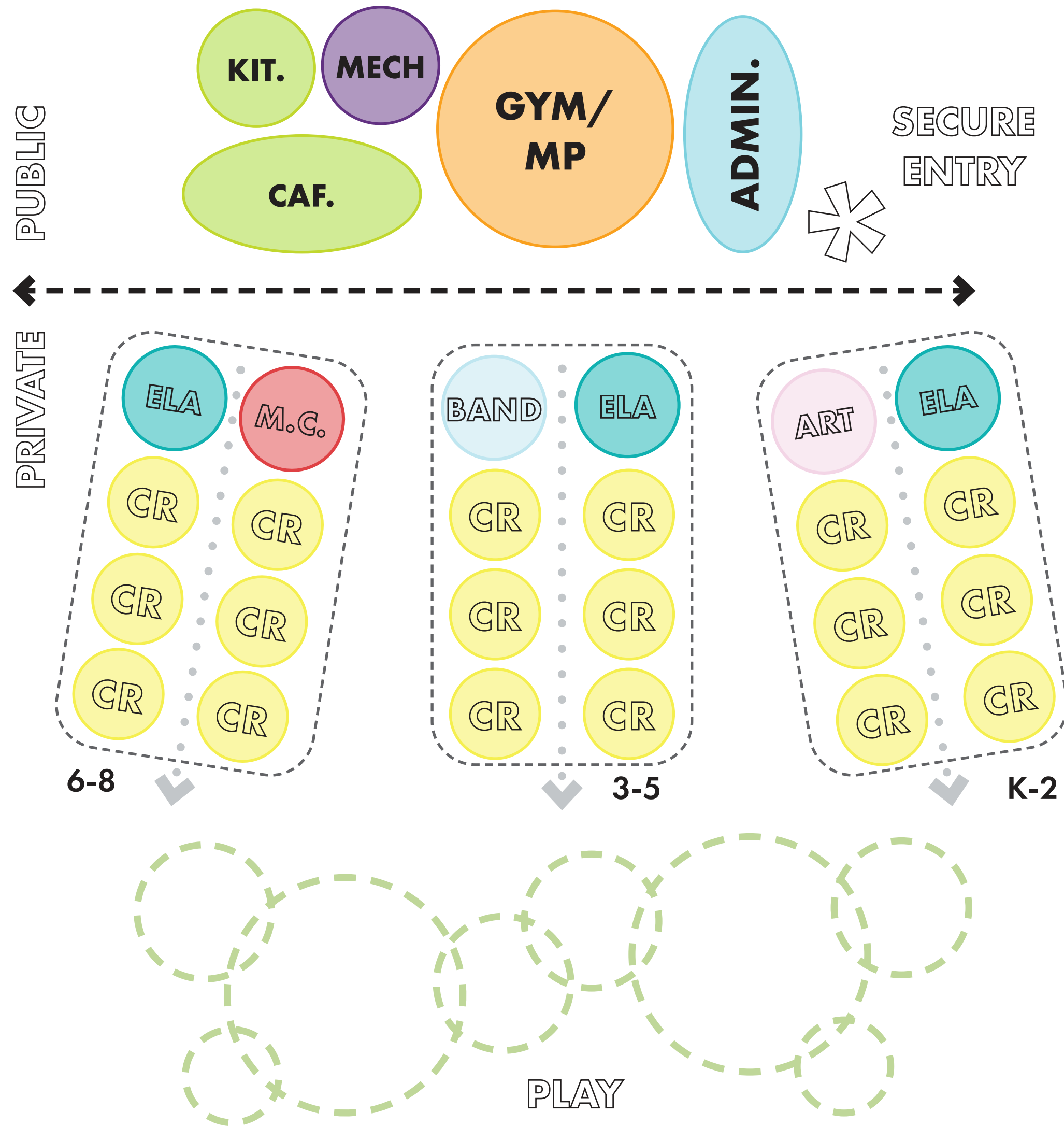
CONCEPT 2

DIAGRAM(S)

PROGRAMMING

RELATIONSHIP DIAGRAM | OPTION 1

-  CLASSROOM
-  ELA
-  ART
-  BAND
-  MEDIA CENTER (M.C.)
-  ADMIN. RECEPTION
-  GYM/MULTI-PURPOSE
-  CAFETERIA
-  SUPPORT
-  PLAYGROUND



PROGRAMMING

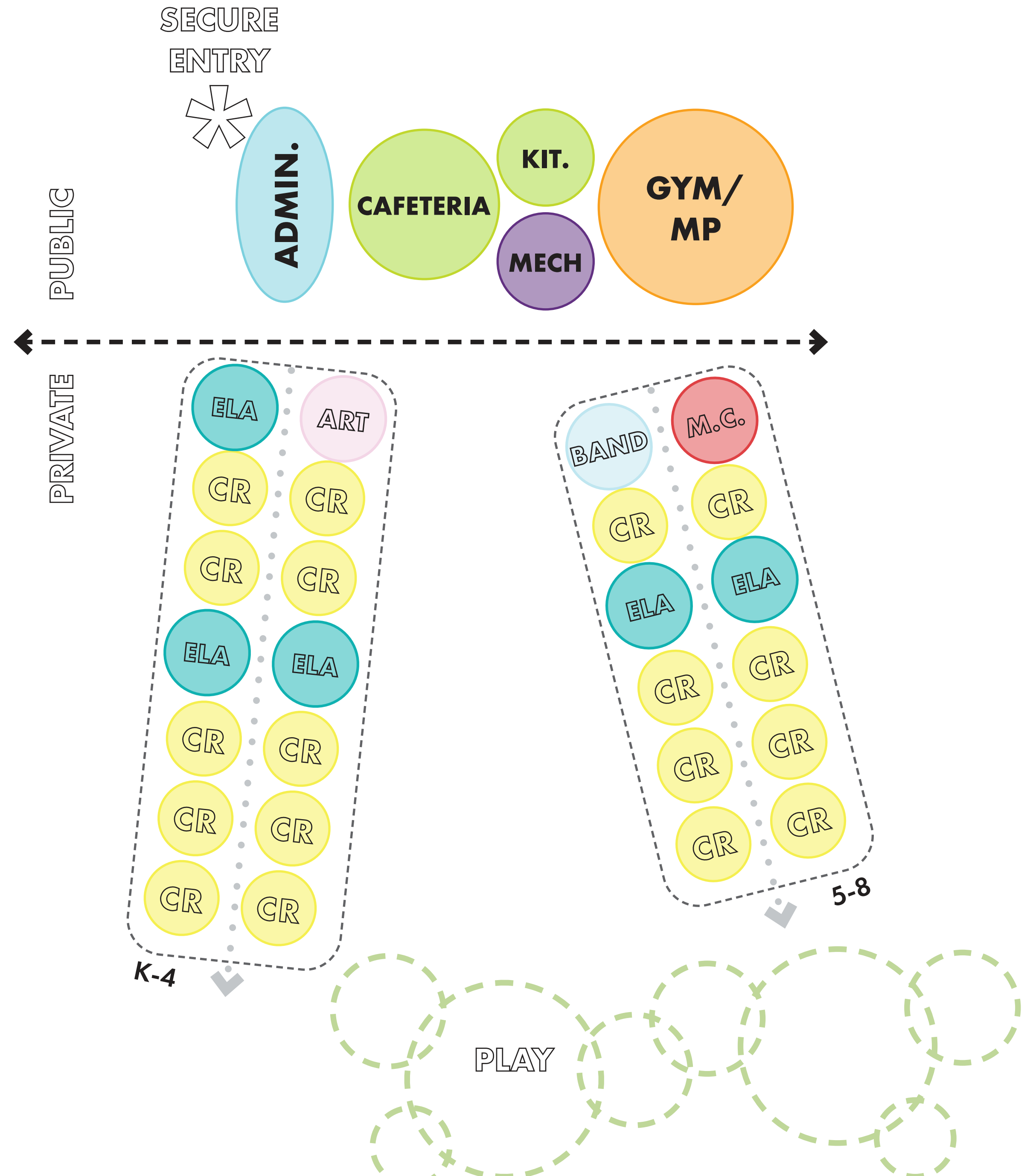
RELATIONSHIP DIAGRAM | OPTION 1



PROGRAMMING

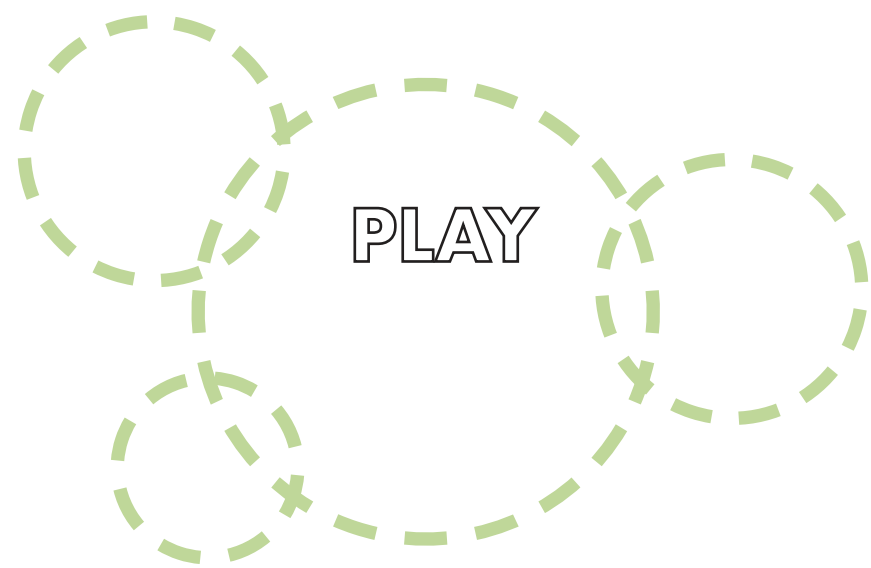
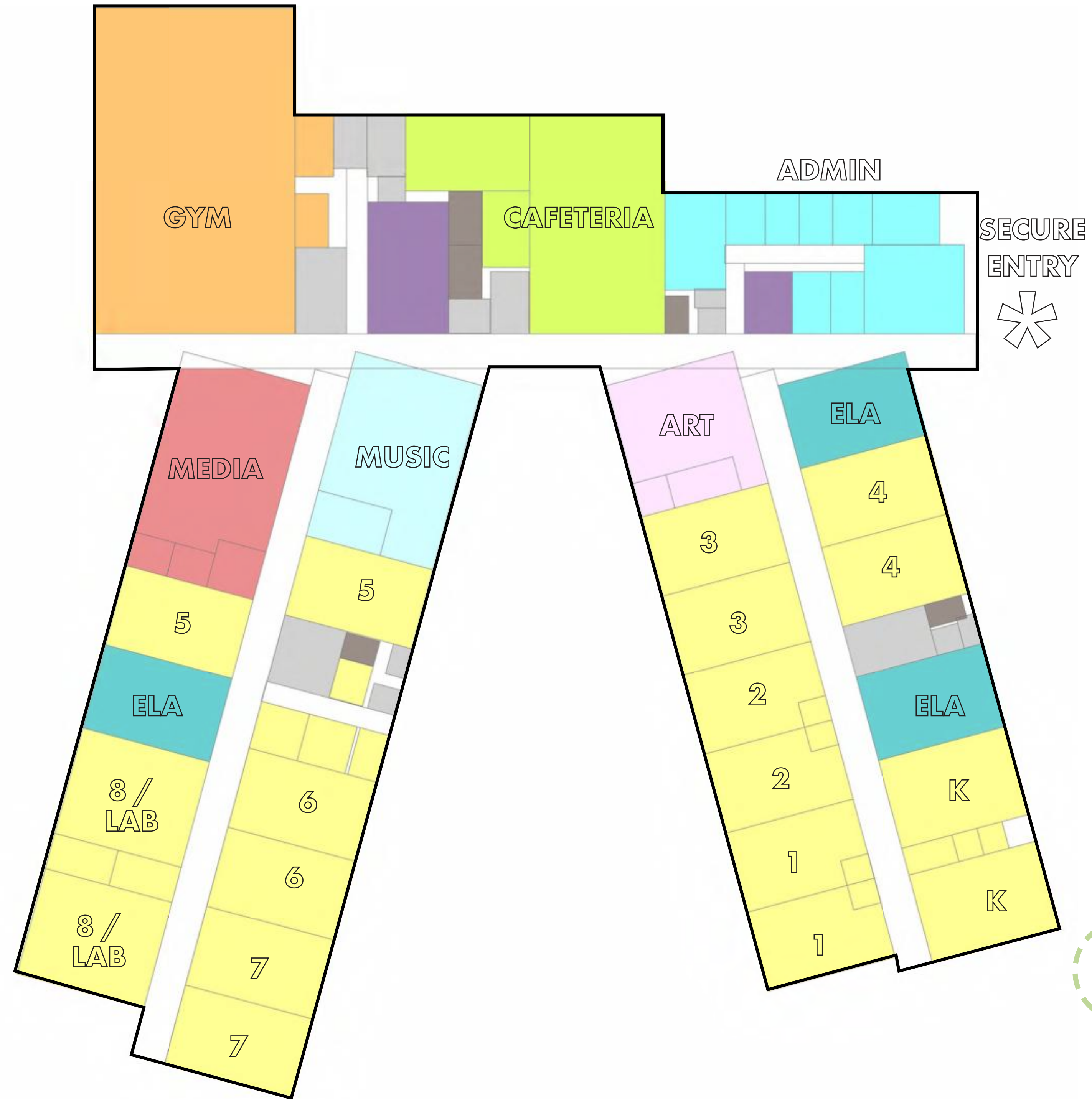
RELATIONSHIP DIAGRAM | OPTION 2

- CLASSROOM
- ELA
- ART
- BAND
- MEDIA CENTER (M.C.)
- ADMIN. RECEPTION
- GYM/MULTI-PURPOSE
- CAFETERIA
- SUPPORT
- PLAYGROUND



PROGRAMMING

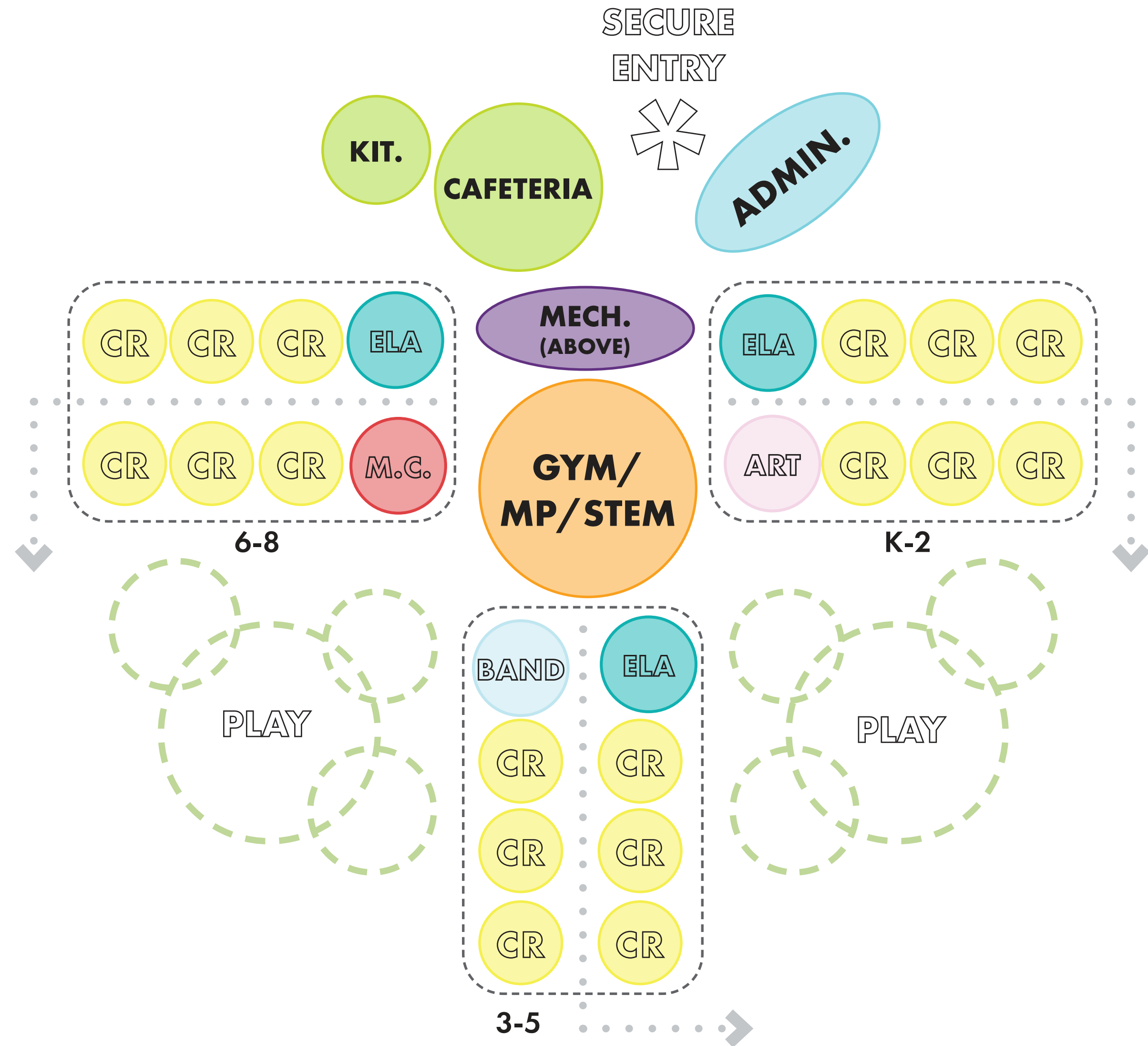
RELATIONSHIP DIAGRAM | OPTION 2



PROGRAMMING

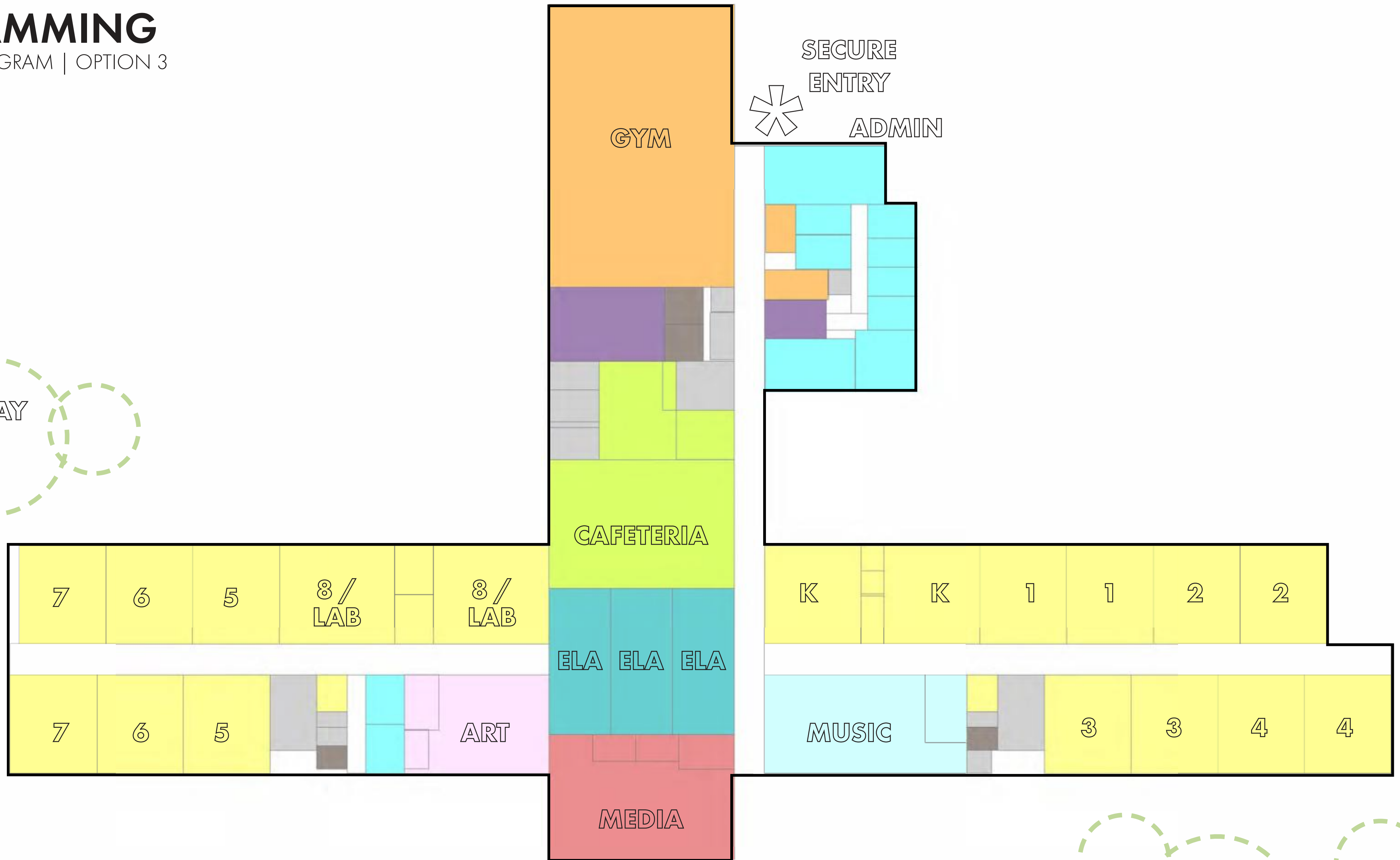
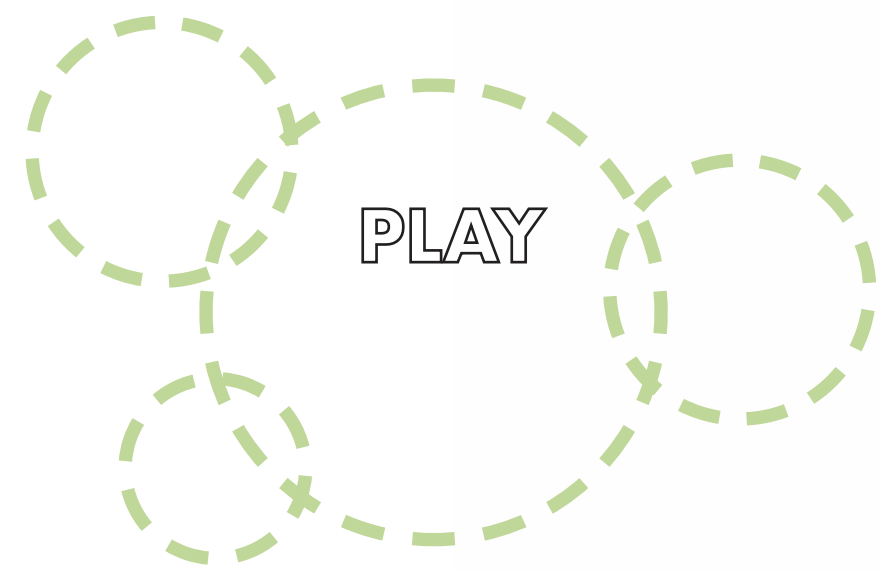
RELATIONSHIP DIAGRAM | OPTION 3

- CLASSROOM
- ELA
- ART
- BAND
- MEDIA CENTER (M.C.)
- ADMIN. RECEPTION
- GYM/MULTI-PURPOSE
- CAFETERIA
- SUPPORT
- PLAYGROUND



PROGRAMMING

RELATIONSHIP DIAGRAM | OPTION 3



FLOOR PLAN

SCHEMATIC DESIGN | VE DIAGRAM 01

VE IDEAS 01
AREAS TO CAPTURE SF -
OPTIONS (AREAS) TO BE PRICED OR REVIEWED SEPARATELY



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1/10/2023 10:18:57 AM



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COMSTOCK PUBLIC SCHOOLS
KALAMAZOO, MICHIGAN

ISSUANCES
11.30.2023 SCHEMATIC DESIGN

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OVERALL FLOOR PLAN

A0.01

FLOOR PLAN

SCHEMATIC DESIGN | VE DIAGRAM 02

VE IDEA 02
REMOVAL OF NEIGHBORHOOD ELA



NORTH
OVERALL FIRST FLOOR
1/8" = 1'-0"

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OVERALL FLOOR PLAN

A0.01

FLOOR PLAN

SCHEMATIC DESIGN | VE DIAGRAM 03

VE IDEA 03
REMOVAL OF 2 CLASSROOMS / NEIGHBORHOOD



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OVERALL FLOOR PLAN

A0.01

FLOOR PLAN

SCHEMATIC DESIGN | VE DIAGRAM 04

Total SF: +/-58,000sf



 NORTH
SCALE: 1/32" = 1'

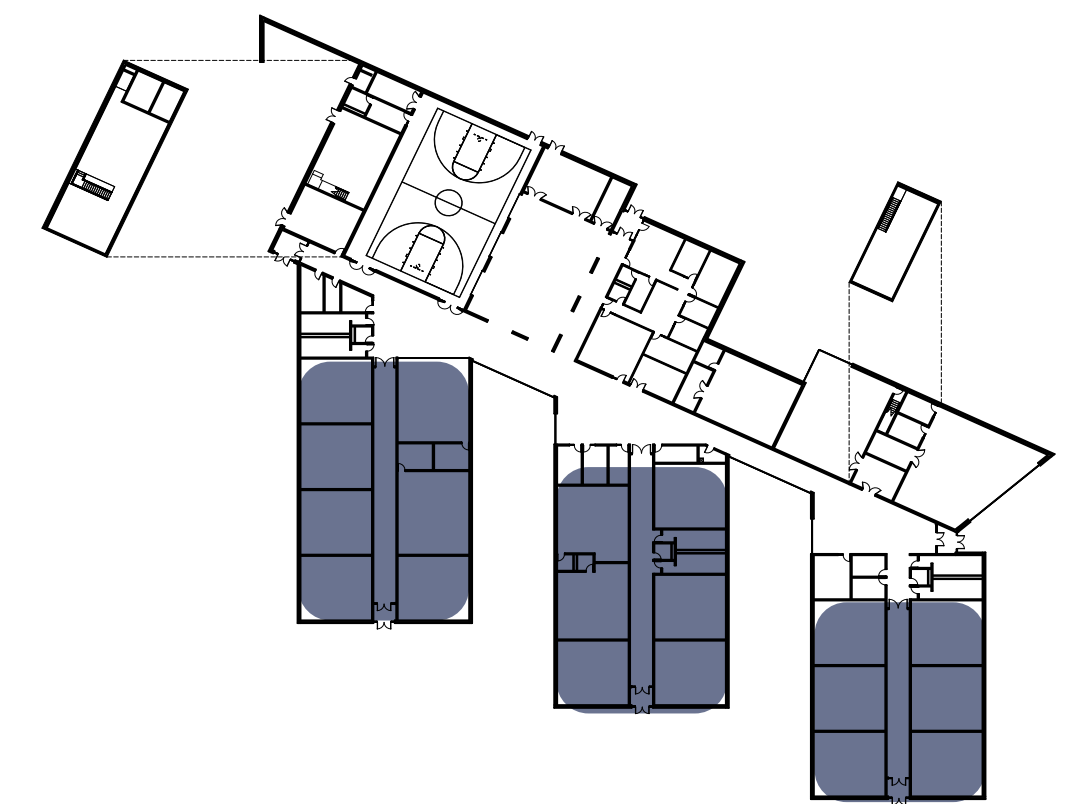
*Plan is for diagrammatic purposes only to show removal of ELA spaces along main spine. Program spaces continued to develop during SD following direction to include ELA wedges along main spine. Plan is not an accurate depiction of where the special classrooms ended up in terms of layout and SF. Do not scale plan.

FLOOR PLAN

10.25.2023 | 57,021 SF



STEM LEARNING ON DISPLAY



STEM LEARNING FOCUSED

 **NORTH**
SCALE: 1/32" = 1'

FLOOR PLAN

01.10.2024 | 57,065 SF



 **NORTH**
SCALE: 1/32" = 1'

CONCEPT

exterior massing | 01.10.2024



CONCEPT

exterior massing | 01.10.2024



CONCEPT

exterior massing | 01.10.2024



FINISHES

TYPICAL FINISHES



ELEMENTARY CORRIDOR



ELEMENTARY CLASSROOM

