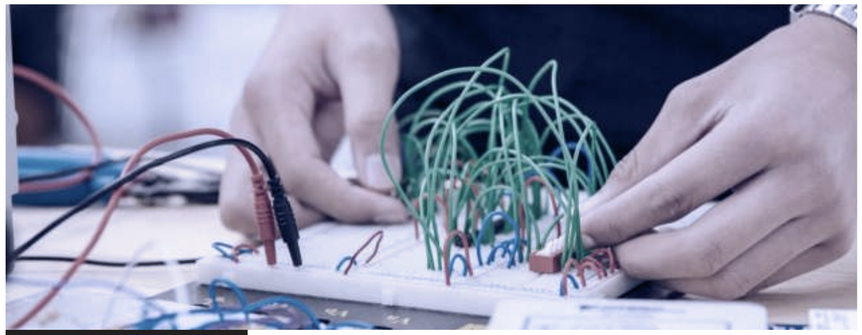
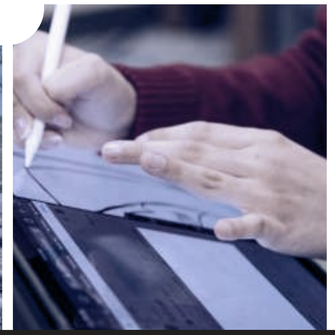
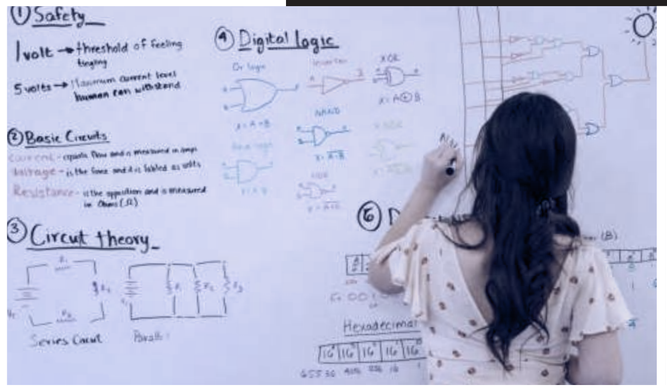





DESIGN PLAYBOOK

COMSTOCK STEM ACADEMY | DESIGN DEVELOPMENT
FEBRUARY 15, 2024

GMB

CONTENTS

PROJECT TEAM MEMBERS

Comstock Public Schools

Dr. Jeffery Thoenes	Superintendent
Jill Ansel	Assistant Superintendent
Michelle Darnell	Finance Director
Sean Gillette	Director of Facilities
Paul Lamphear	Comstock Board of Education
Saralyn Brown	Comstock Board of Education
Chris Chopp	STEM Academy Principal
Danielle Perez	STEM Academy Teacher
Danielle Tennant	STEM Academy Teacher
Jeannine Roys	STEM Academy Teacher
Kim Sandefur	STEM Academy Teacher
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 Vruggink	Project Lead
Amy Broersma	Landscape Architect
David Smoes	Design Lead
Jared DeVisser	Architectural Designer
Jeff Twiest	Mechanical Engineer
Jorge Benitez	Electrical Engineer
Karlene Robich	Electrical Engineer
Kristen Horine	Landscape Architect
Kyle Callaway	Civil Engineering
Larry Boerman	Construction Administrator
Leah Nagy	Architectural Intern
Matt Heidloff	Landscape Architect
Meeghan Mooney	Interior Designer
Nick VonMyhr	Plumbing Engineer
Pam Brink	Structural Engineer

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

WE ARE HERE

MEET

Marketing

LEARN

Programming

EXPLORE

Schematic Design (SD)

11.30.2023

FOCUS

Design Development (DD)

02.15.2024

IMPLEMENT

Construction Documents (CD)

SUPPORT

Construction Administration (CA)

CARE

Follow Thru / Construction

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				
	Program Area	Qty.	Total Program Area	Program Area	Qty.	Total Program Area	Remarks	Difference
ADMINISTRATION			**3,450 SF**			**2,925 SF**		**(525) SF**
Principal Office	200	1	200	***175***	1	175		
General Office / Reception / Records	750	1	750	750	1	750		
Work Room	200	1	200	200	1	200		
Health Room w/ Toilet	175	1	175	175	1	175		
Counselor	175	1	175	175	1	175		
Itinerant Offices	150	1	150	150	1	150		
In-House Room	150	1	150	150	1	150		
Conference Room	300	1	300	300	1	300		
Circulation	350	1	350	350	1	350		
Staff Lounge	1000	1	1000	***500***	1	500	Renamed from Planning Room	
CLASSROOMS			**26,190 SF**			**24,930 SF**		**(1,260) SF**
Kindergarten	1100	2	2200	***1200***	2	2400		
1st Grade	990	2	1980	***990***	2	1980		
2nd Grade	990	2	1980	***990***	2	1980		
3rd Grade	990	2	1980	***900***	2	1800		
4th Grade	990	2	1980	***900***	2	1800		
5th Grade	990	2	1980	***900***	2	1800		
MS General Ed	990	6	5940	***900***	***5***	4500	***Reduced by 1, share with STEM Classrooms***	
STEM Classroom with Lab	1200	2	2400	1200	2	2400	***1 Lab to be Robotics***	
STEM Prep/Storage Area	200	2	400	200	2	400		
Speech	200	1	200	200	1	200		
Intervention	200	1	200	200	1	200		
Extended Learning	1250	3	3750	***950***	***5***	4750		
Individual Toilet Rooms	60	4	240	60	4	240		
Small Group	120	8	960	120	***4***	480	Reduced to 3 total	

STEM ACADEMY PROGRAM *(cont.)*

10.11.2023

Program Summary	BOND PROGRAM			REVISED PROGRAM				
	Program Area	Qty.	Total Program Area	Program Area	Qty.	Total Program Area	Remarks	Difference
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				
		Program Area	Qty.	Total Program Area	Program Area	Qty.	Total Program Area	Remarks	Difference
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 effeciency***	(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

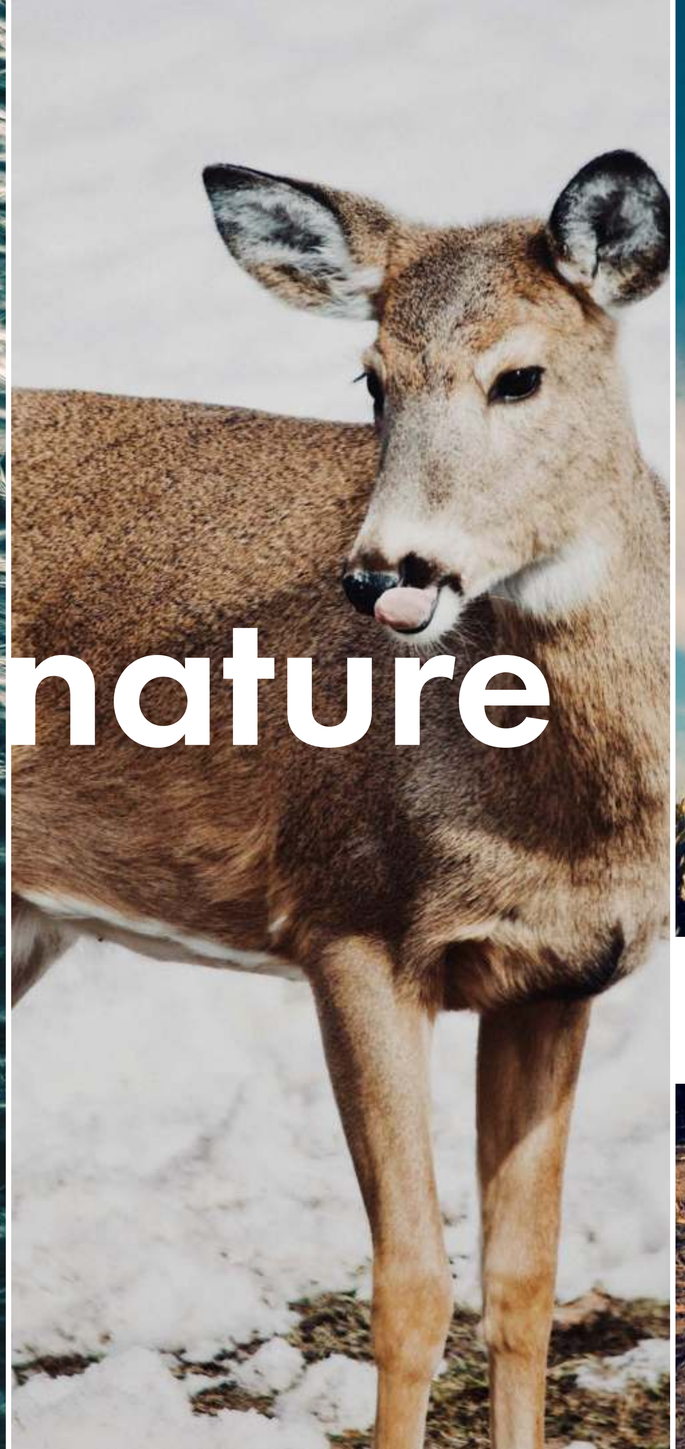
hahy-droh

VIDA

vee-duh

TERRA

ter-uh



CONCEPT

massing inspiration

HYDRO

hahy-droh

VIDA

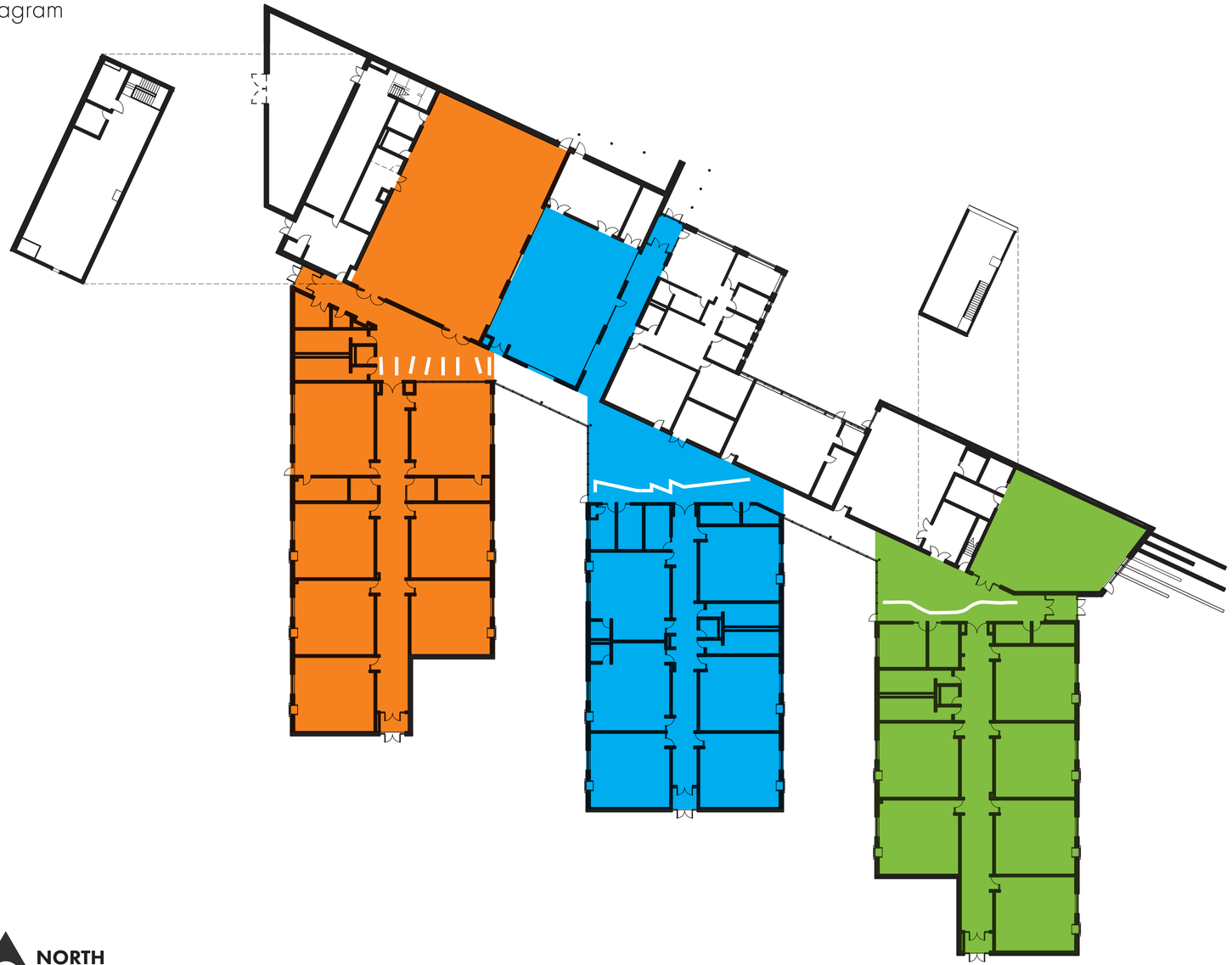
vee-duh

TERRA

ter-uh

CONCEPT

diagram



NORTH
SCALE: 1/32" = 1'

VIDA
vee-duh

HYDRO
hahy-droh

TERRA
ter-uh

CONCEPT

overlay

HYDRO

hahy-droh

VIDA

vee-duh

TERRA

ter-uh

PLANNING

SITE PLAN

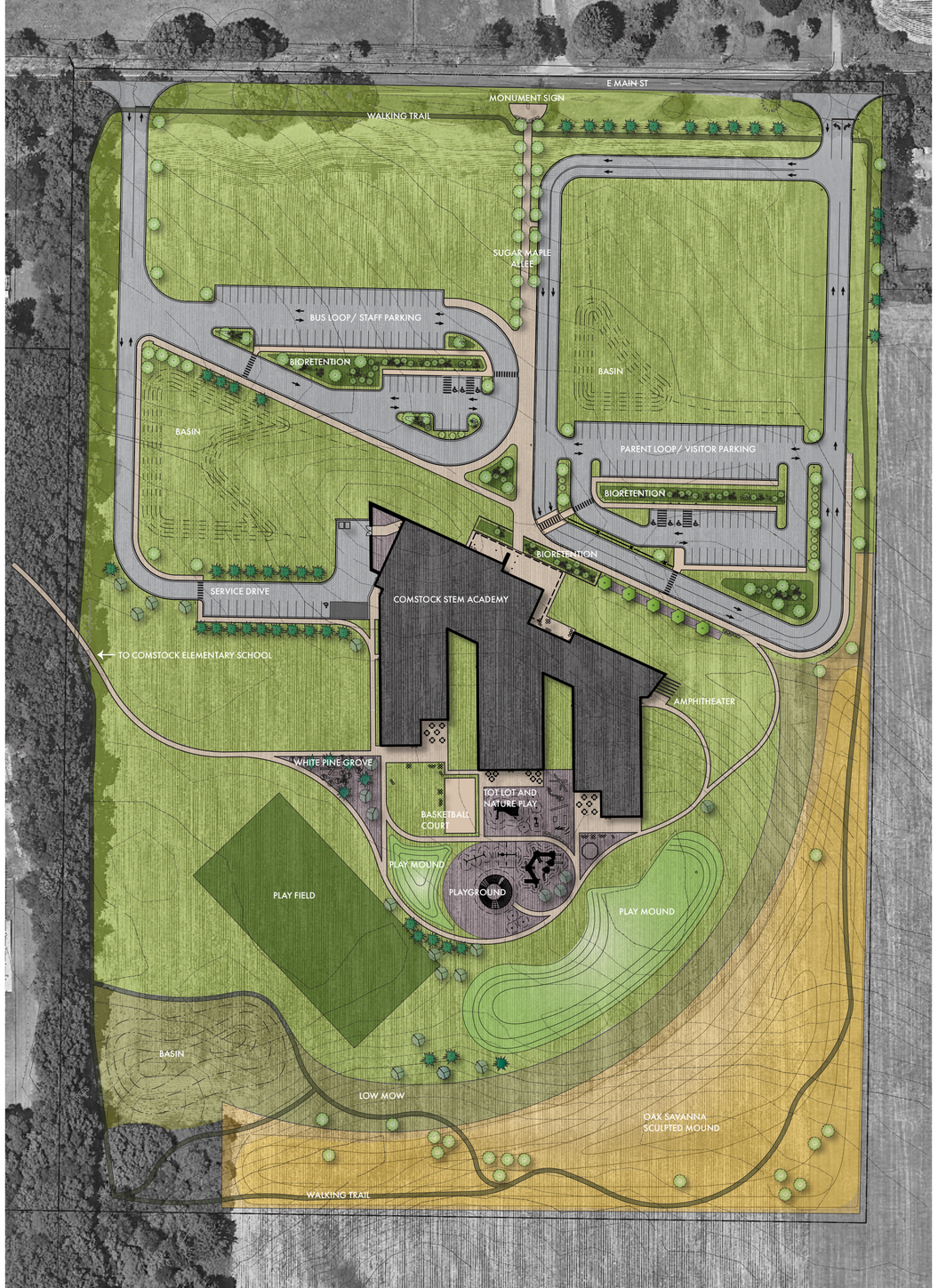
11.30.2023 | SCHEMATIC DESIGN

SITE PLAN

01.10.2024 | VE DIAGRAM

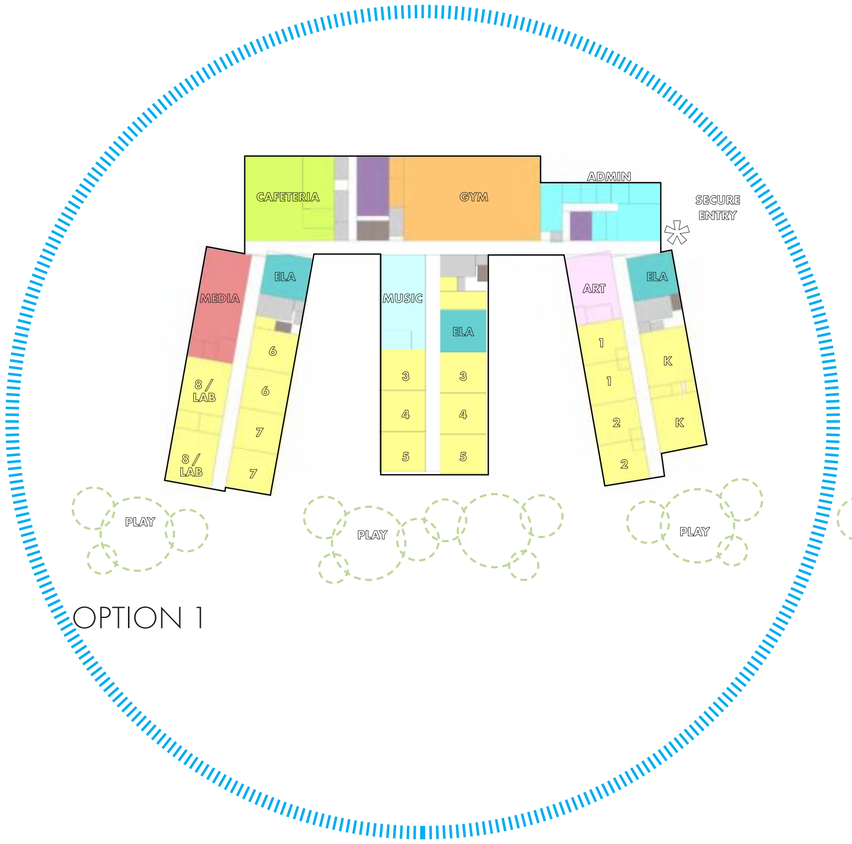
SITE PLAN

02.15.2024 | DESIGN DEVELOPMENT



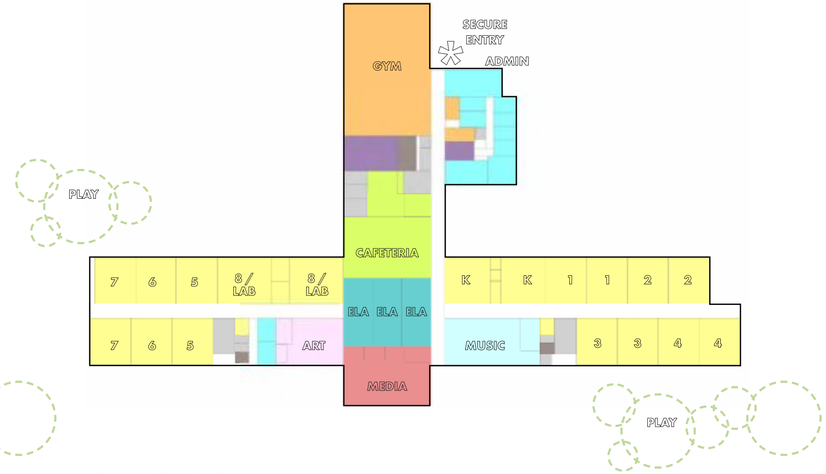
ADJACENCY DIAGRAMS

09.27.2023 | SUMMARY



OPTION 1

OPTION 2



OPTION 3

FLOOR PLAN

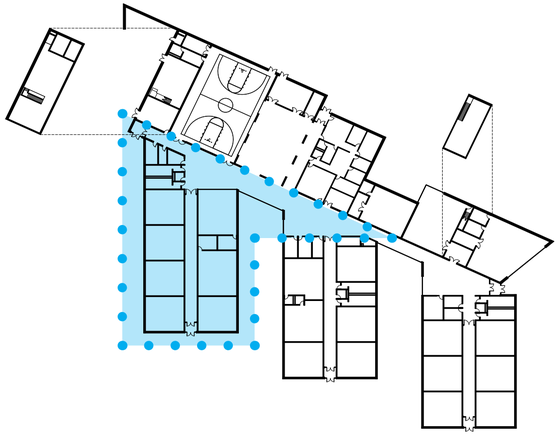
11.30.2023 | SCHEMATIC DESIGN

62,325 SF

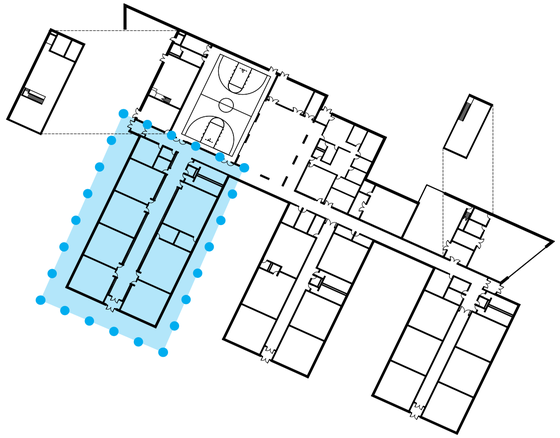
NORTH
SCALE: 1/32" = 1'

FLOOR PLAN

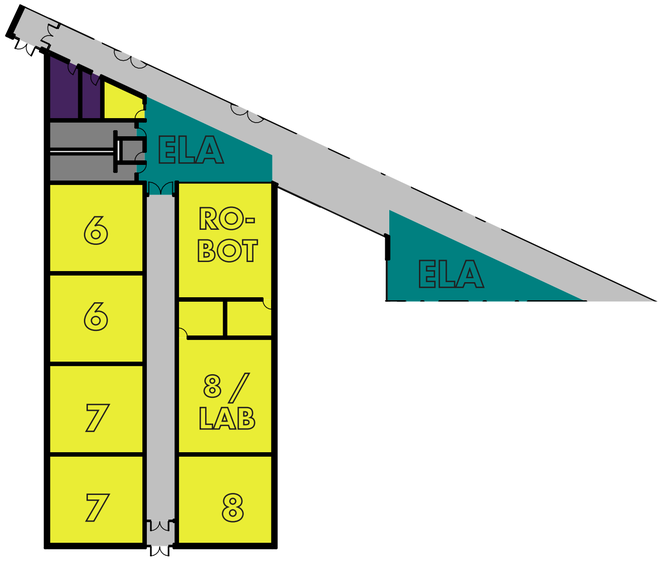
ELA study



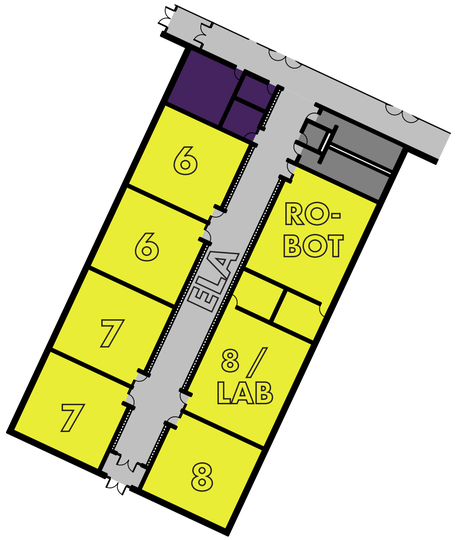
PLAN OPTION 01



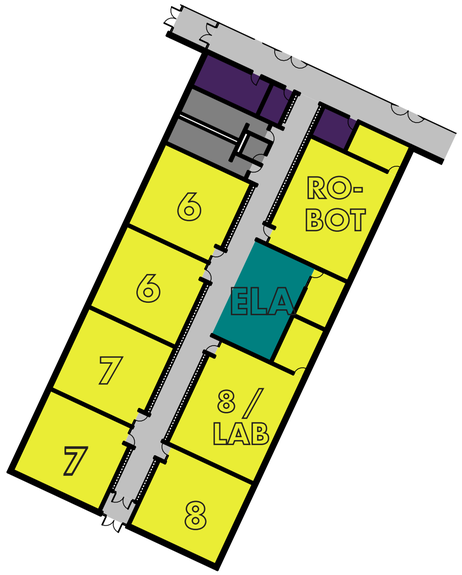
PLAN OPTION 02



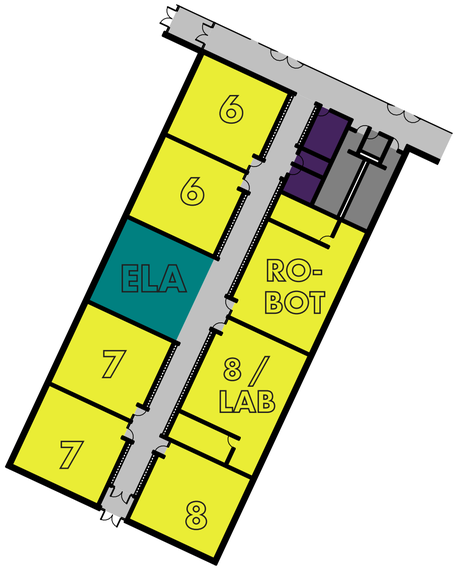
ELA : SPINE POCKETS



ELA : WIDENED CORRIDOR



ELA : CORRIDOR POCKET



ELA : NEIGHBORHOOD POCKET

NORTH
SCALE: 1/32" = 1'

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.

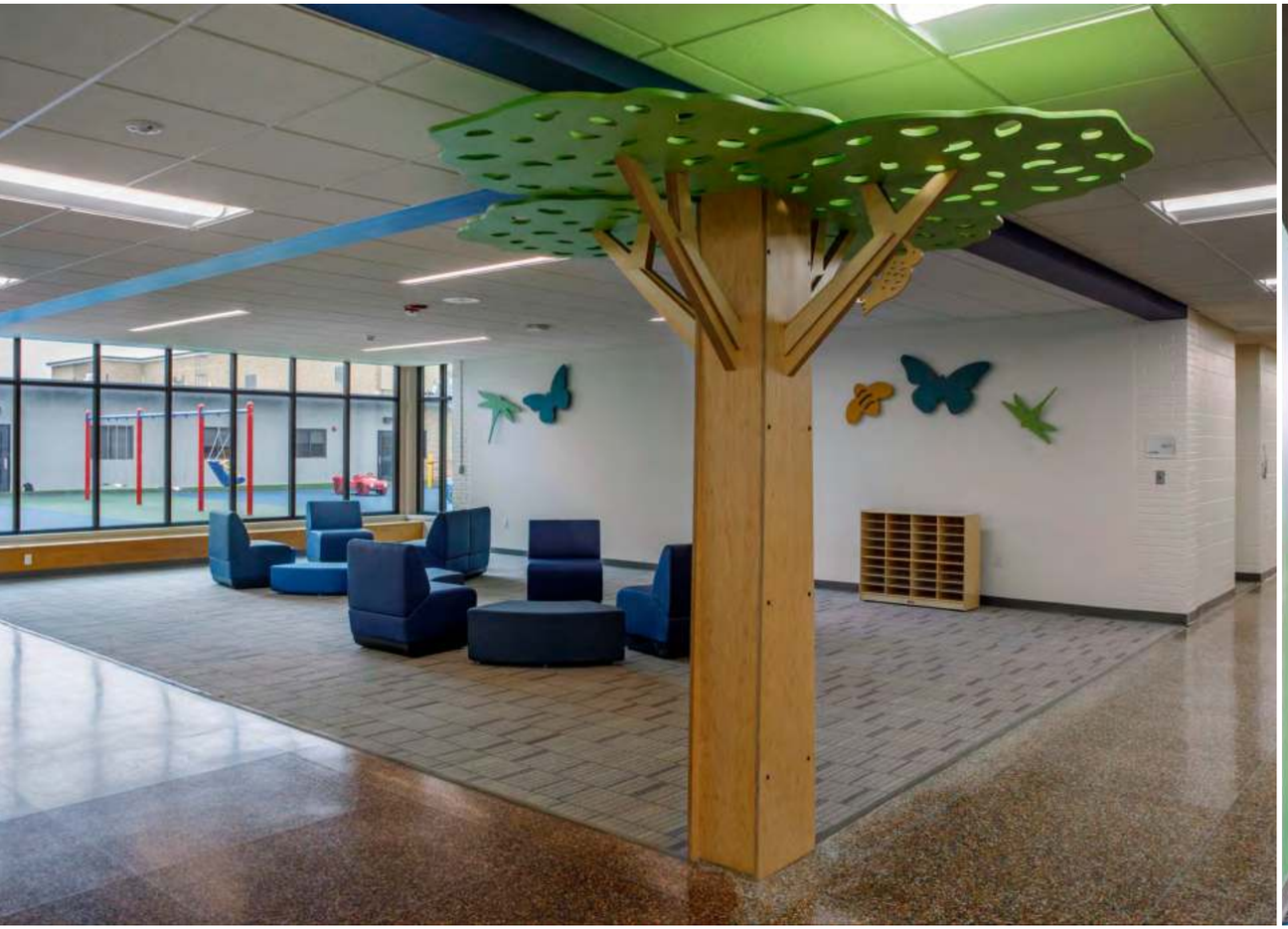
IDEATION IMAGERY

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

NORTH
SCALE: 1/32" = 1'

CONCEPT

exterior massing | 01.10.2024

CONCEPT

exterior massing | 02.15.2024

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.

GMB

APPENDIX

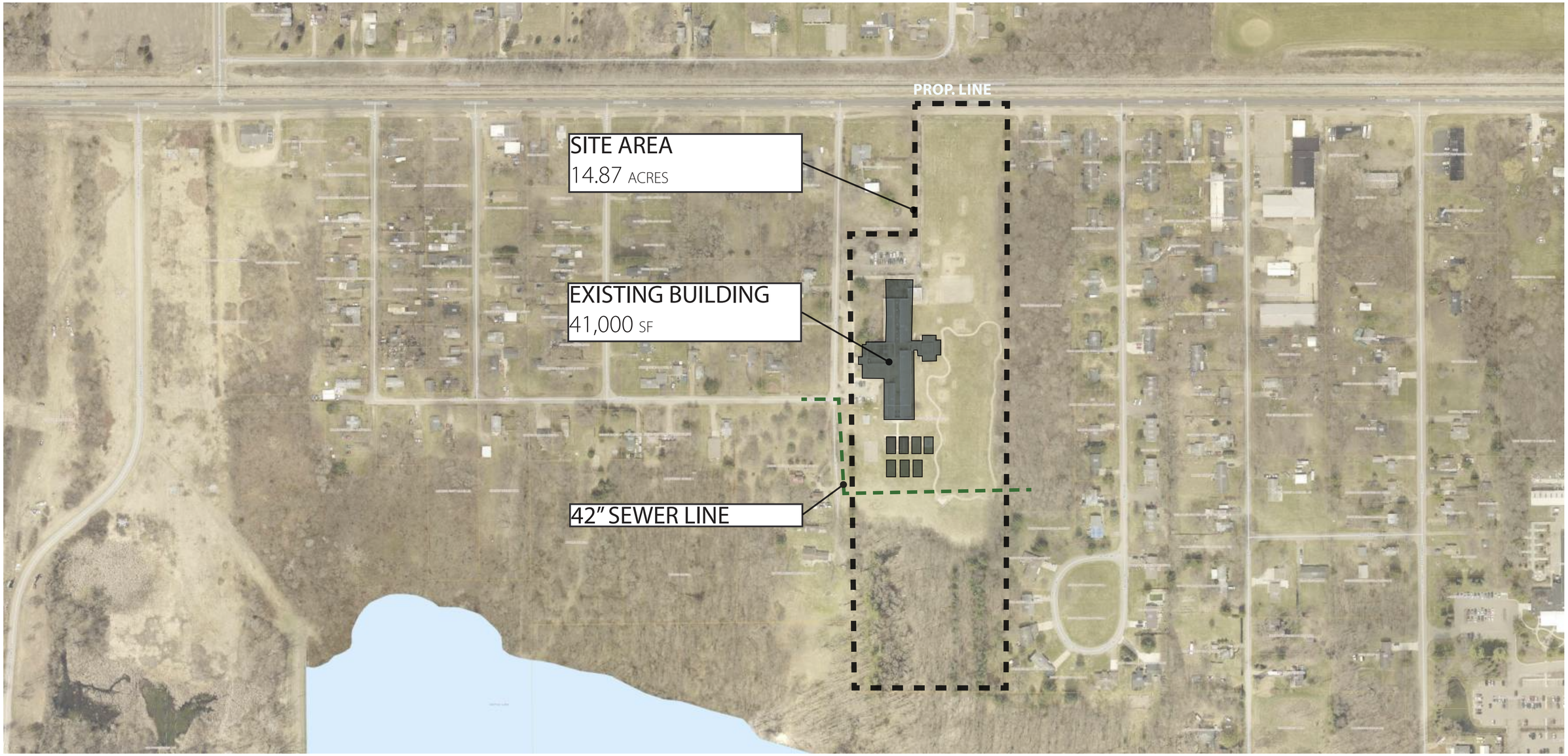
NEW SITE STUDY

COUNTY GIS

EXISTING PLAN(S)

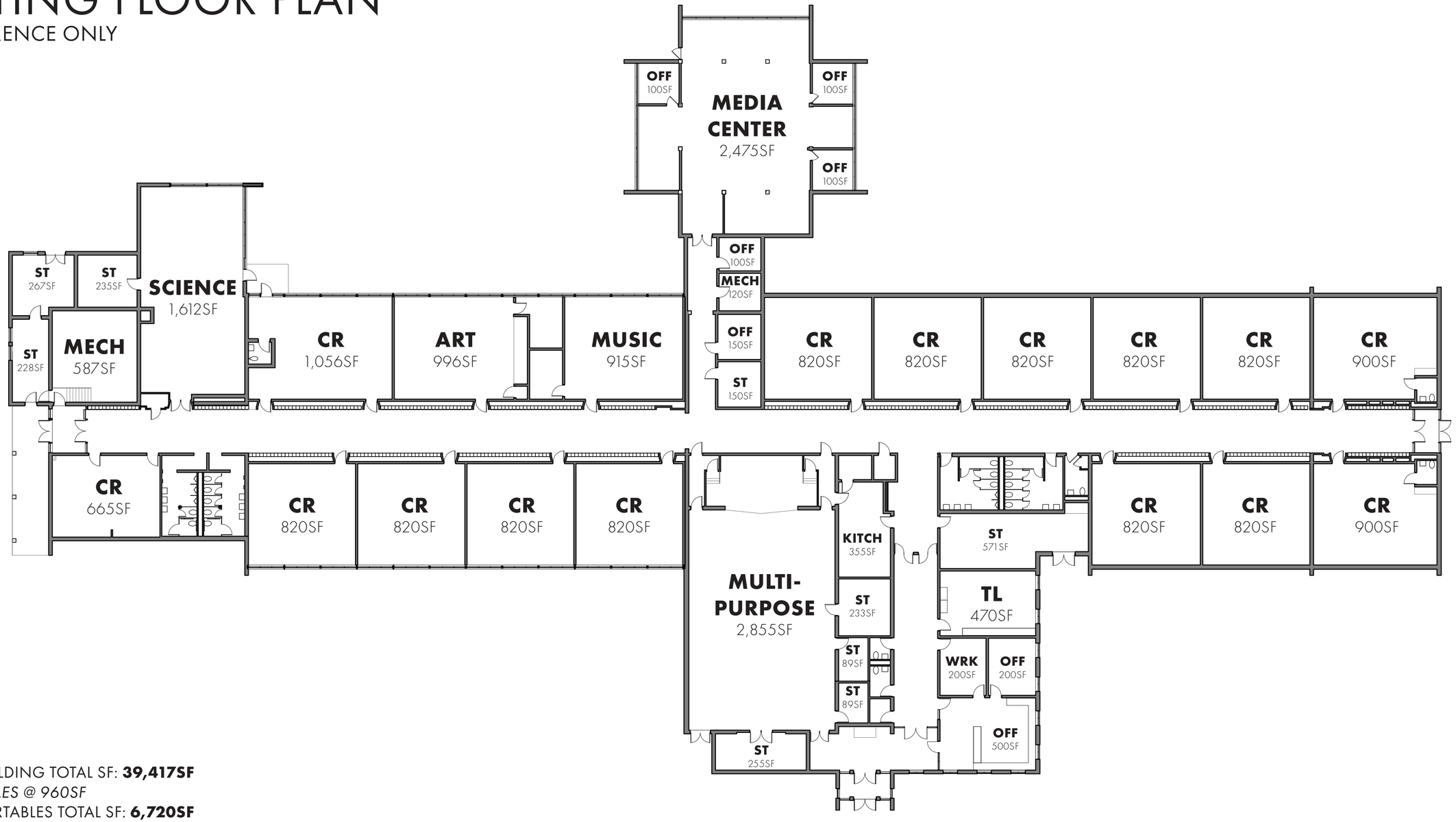
EXISTING SITE PLAN

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)

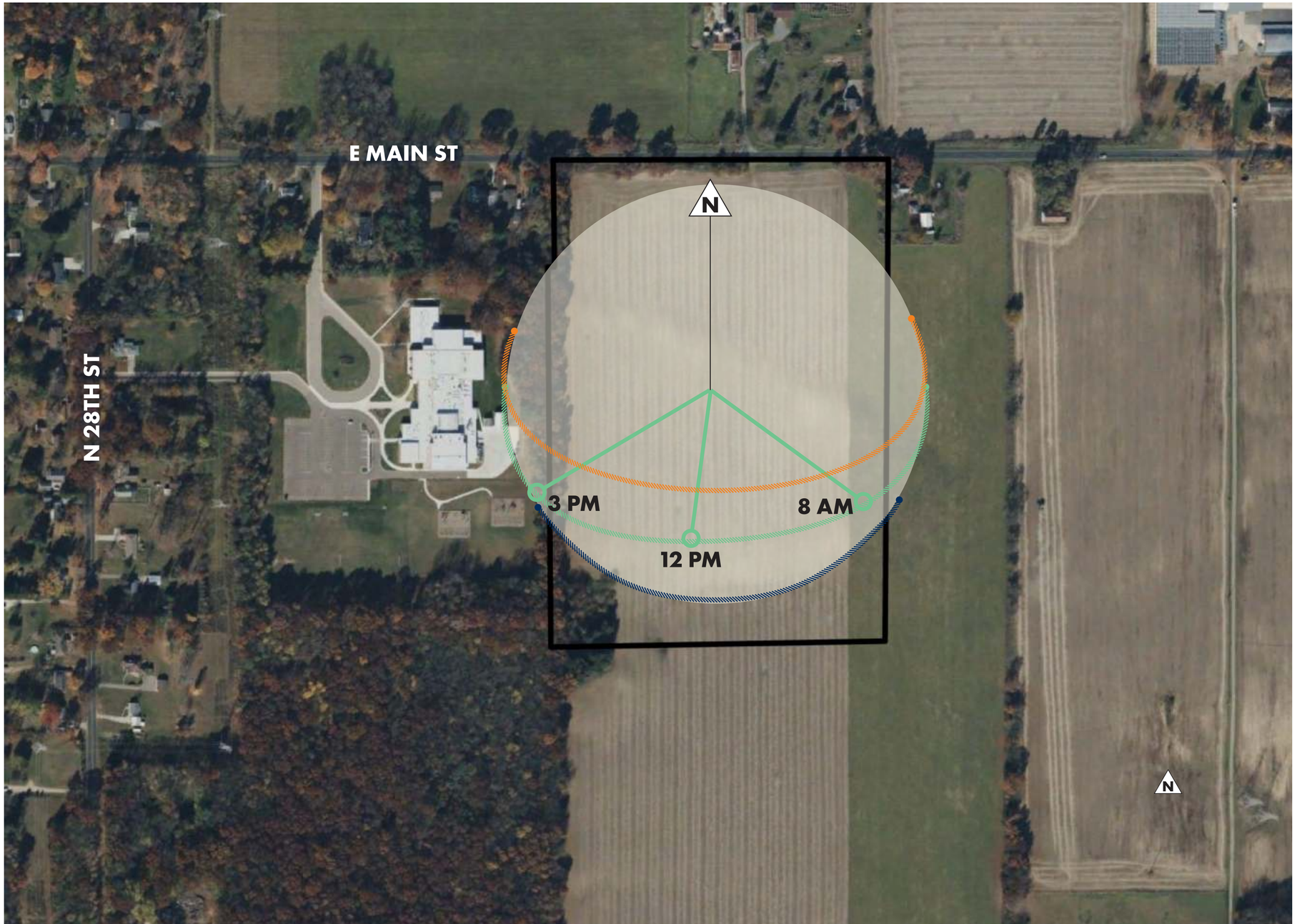
Oshtemo sandy loam
Slope: 6 to 12 percent
Drainage class: Well drained
Runoff class: Low
Hydric: No
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 6.3 inches)

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

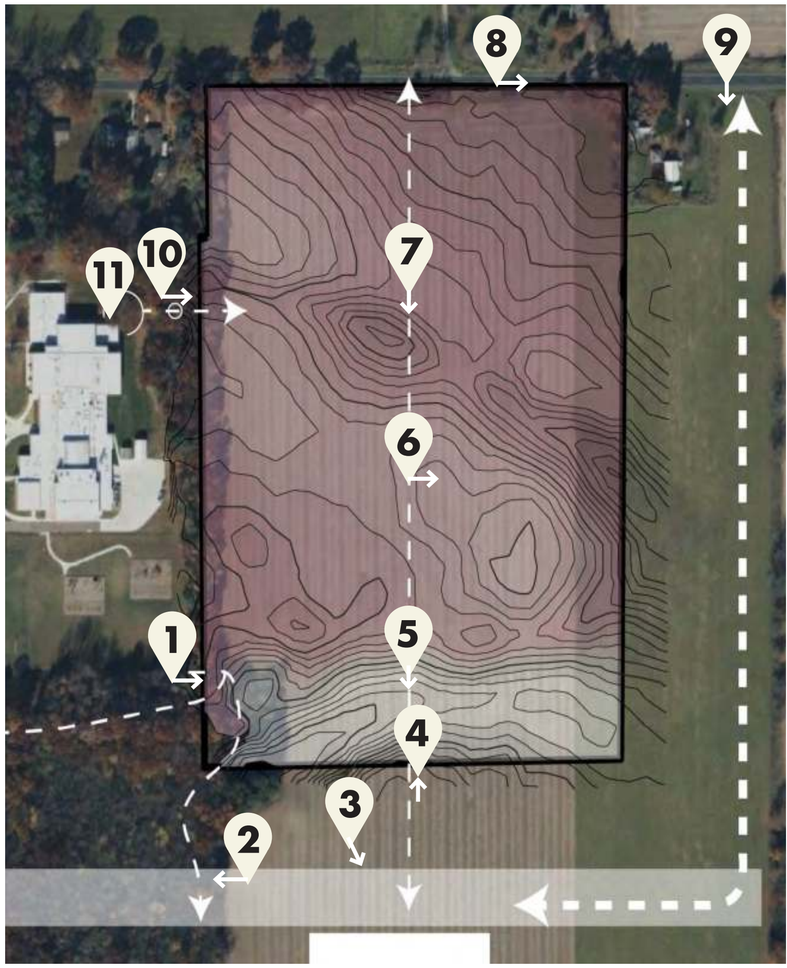
COMSTOCK STEM ACADEMY TOPO RELIEF AND SOILS

HIGHEST POINT

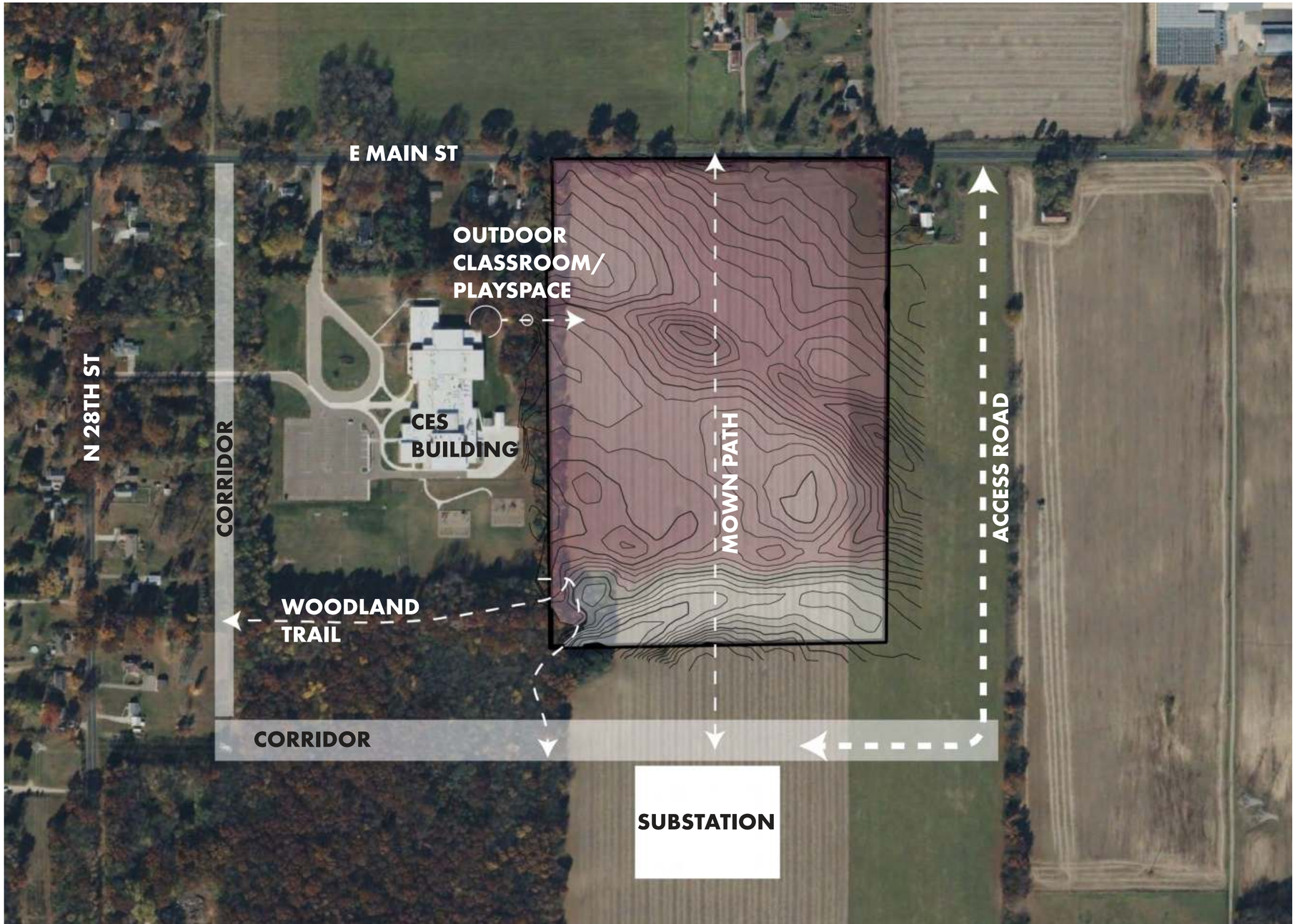
LOWEST POINT

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

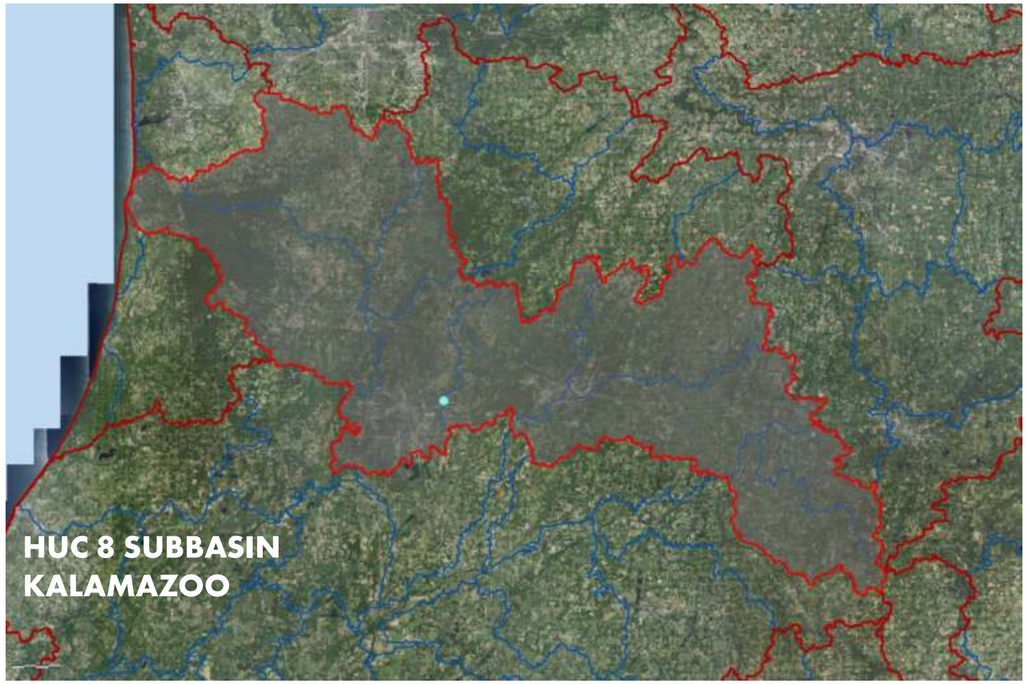
COMSTOCK STEM ACADEMY PHOTO INVENTORY

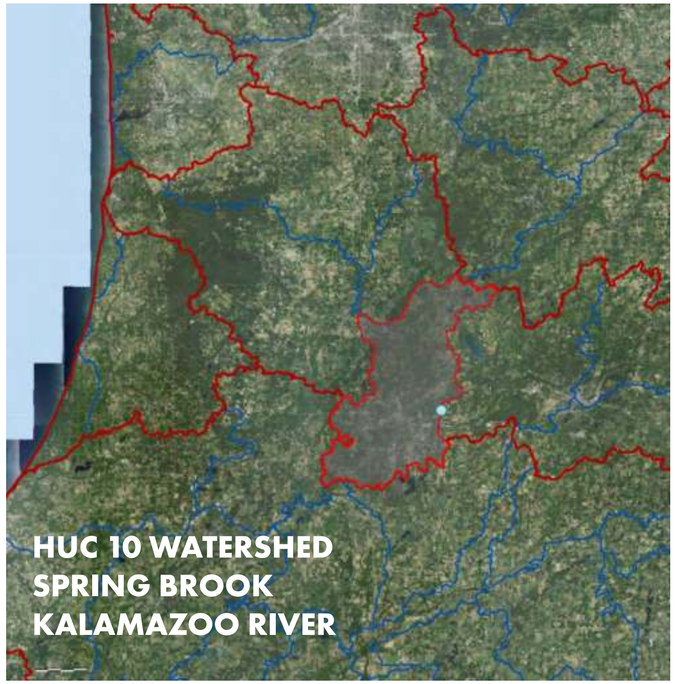


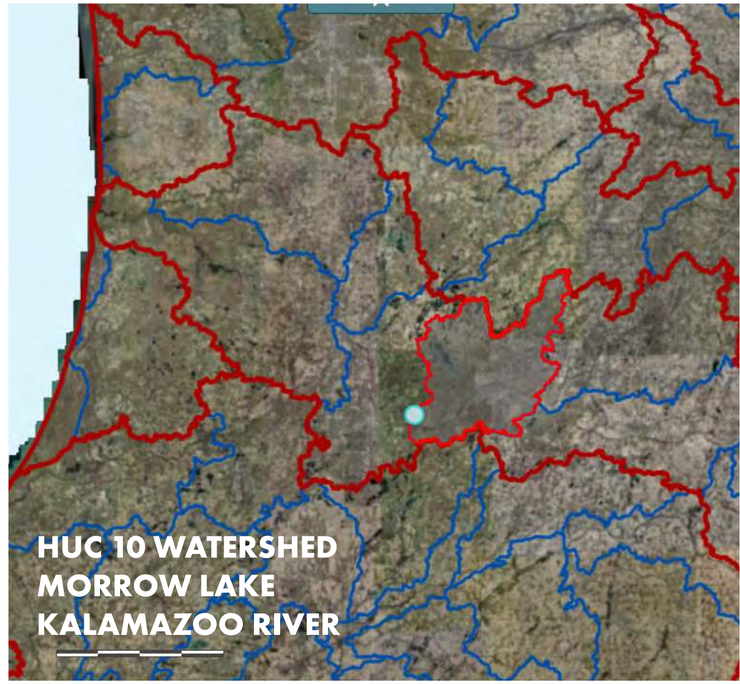
COMSTOCK STEM ACADEMY SITE VISIT

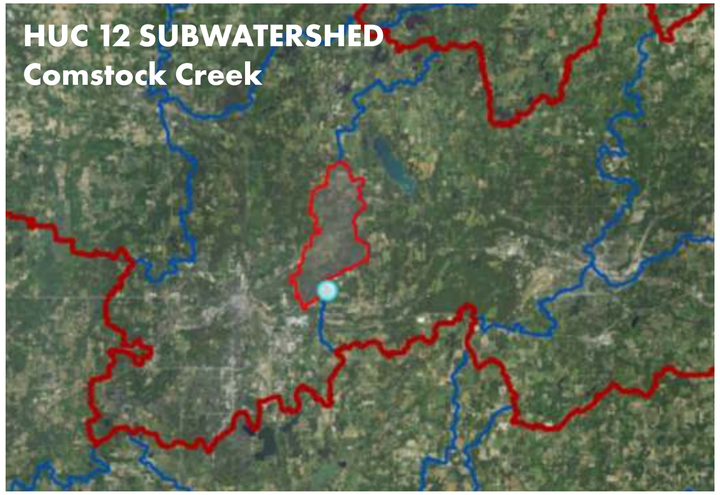


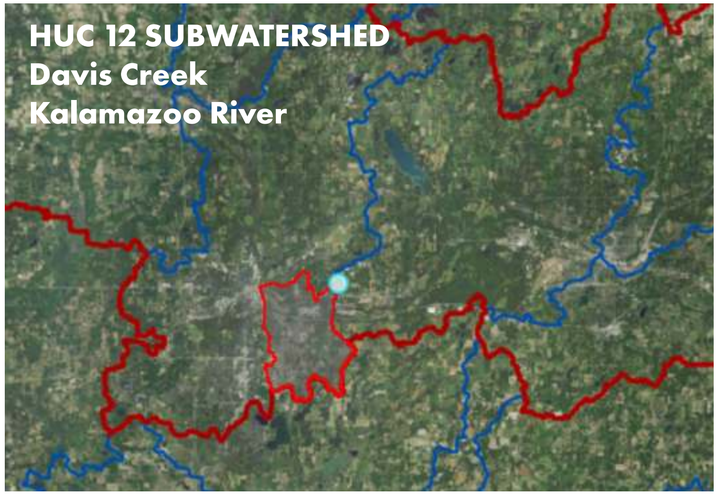
COMSTOCK STEM ACADEMY WATERSHED STUDY

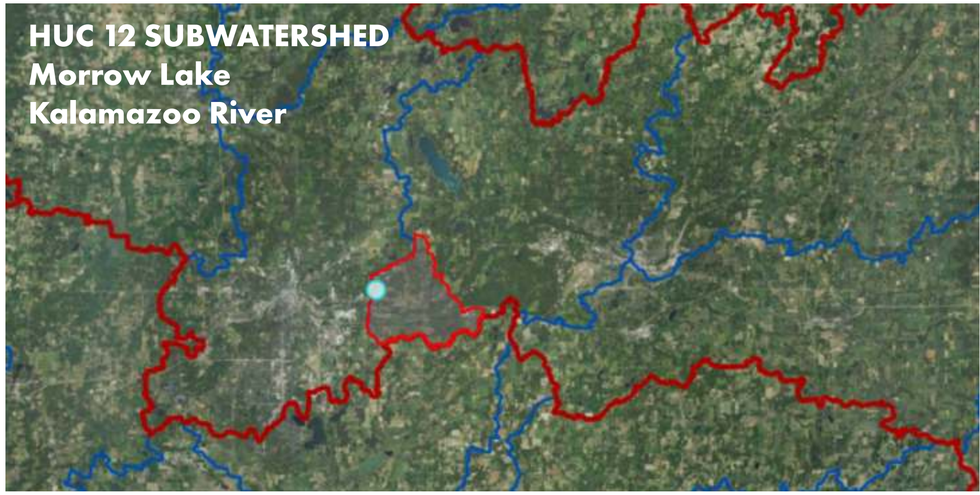






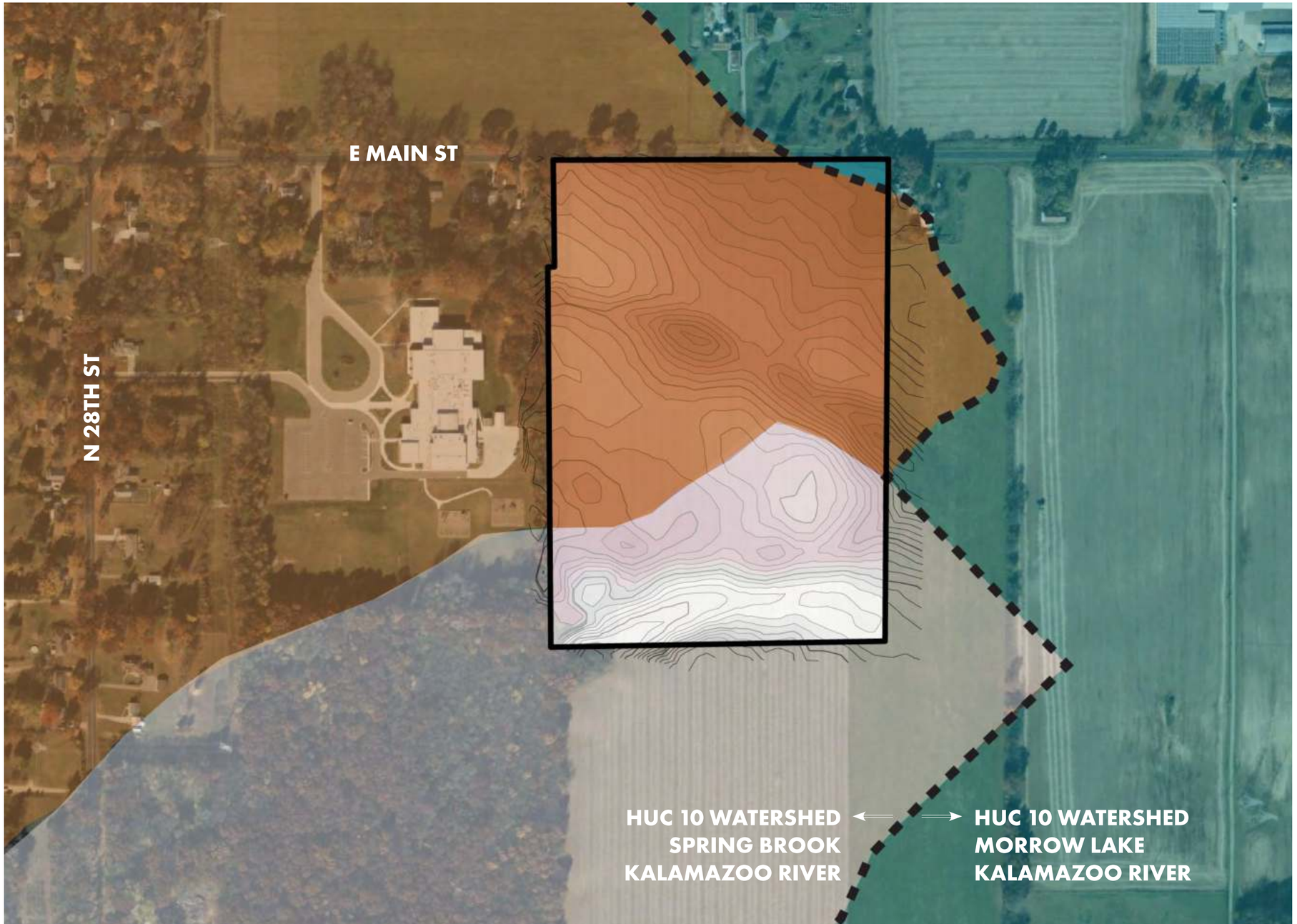






Data: EGLE Wetlands Viewer HUC 8, 10, 12

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

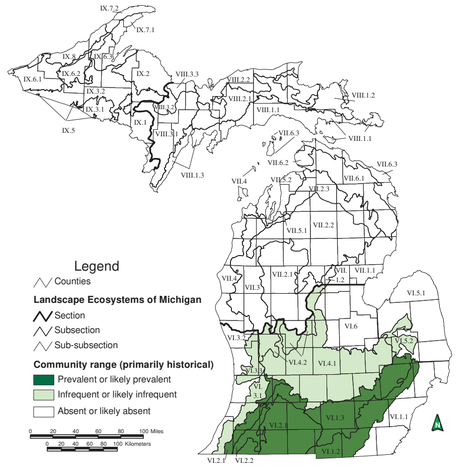
MIXED OAK SAVANNA

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)

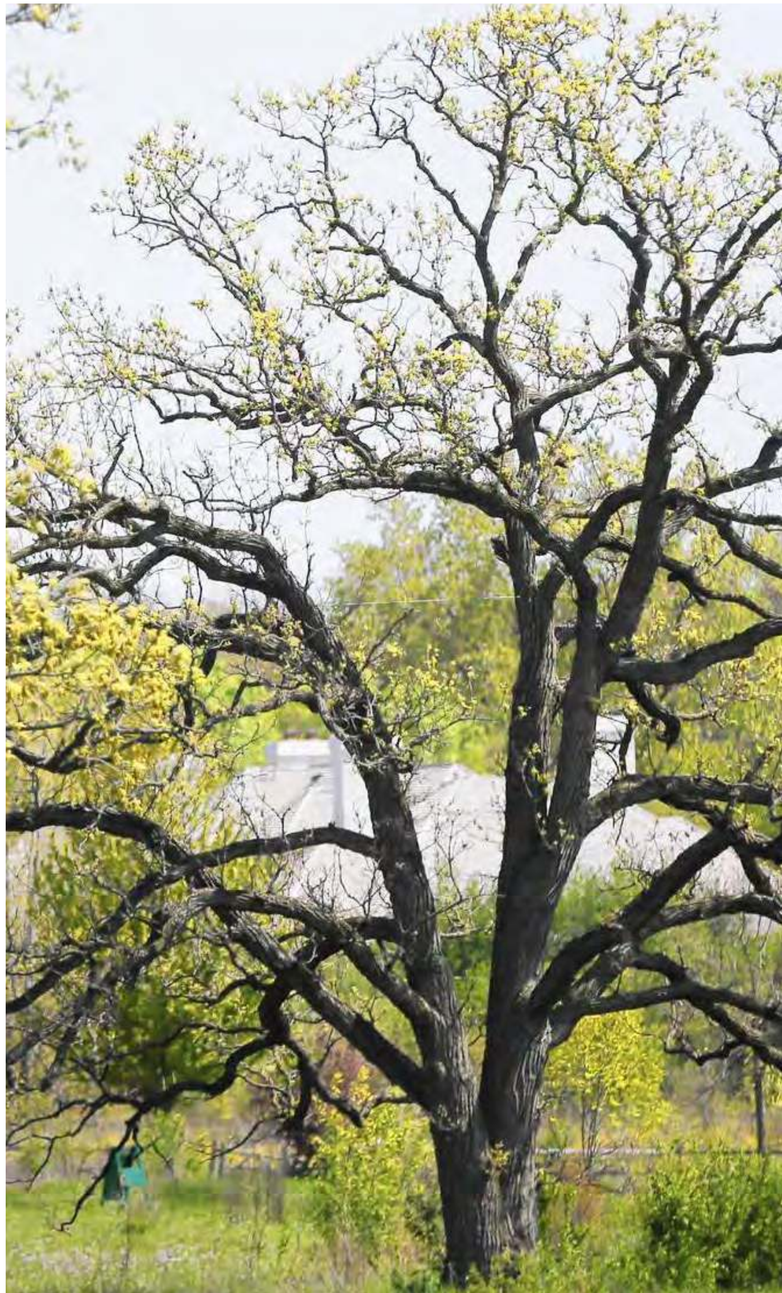
Forbs
milkweeds (Asclepias purpurascens, A. syriaca, A. tuberosa, A.
tall coreopsis (Coreopsis tripteris)
tick-trefoils (Desmodium spp.)
daisy fleabane (Erigeron strigosus)
western sunflower (Helianthus occidentalis)
pale-leaved sunflower (Helianthus strumosus)
common mountain mint (Pycnanthemum virginianum)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



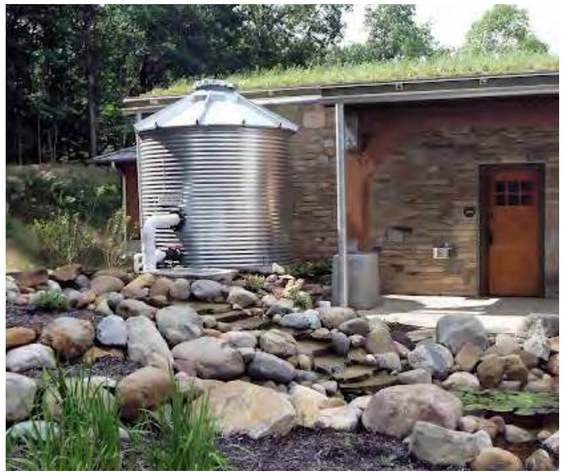
COMSTOCK STEM ACADEMY DESIGNING FOR EDUCATION



COMSTOCK STEM ACADEMY DESIGNING FOR EDUCATION


VISUAL AXIS
WHITE PINE GROVE
FIELD
70 X 100 YARDS
210 X 300 FEET
CAR LINE DROP OFF/
PARKING AND FIELD
BUS DROP OFF/
STAFF PARKING
EXISTING OUTDOOR
CLASSROOM CES
SERVICE DRIVE
BIORETENTION
ART ELA
AMPHITHEATER
OUTDOOR LEARNING
VIDA OELA
HYDRO OELA
TERRA OELA
SOLAR FIELD
FIELD/PLAY/
NATURE BASED
SEPTIC FIELD
SUGAR MAPLE
GROVE
WALKING
LOOP
DETENTION
BASIN
MIXED OAK
SAVANNA
BUFFER

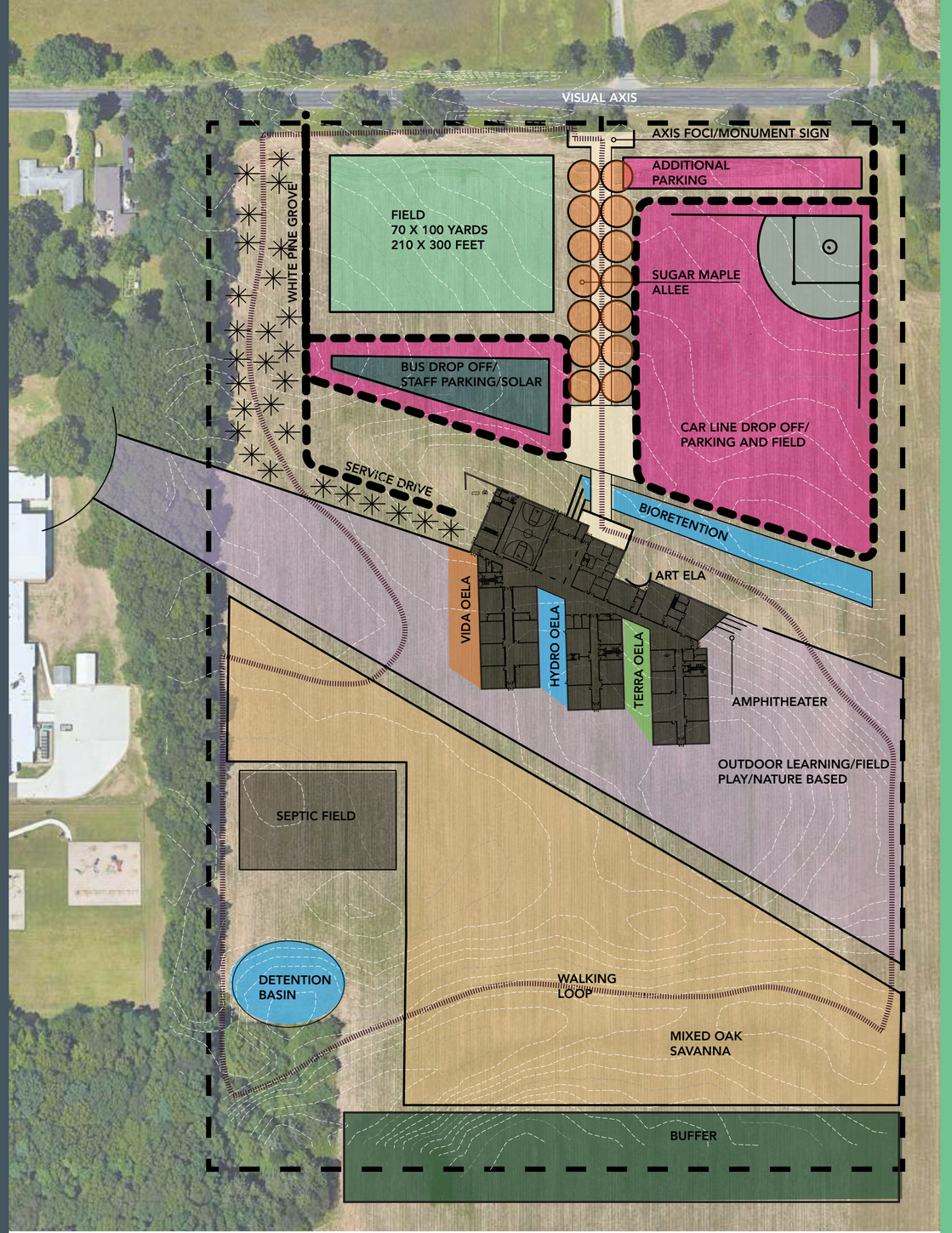
CONCEPT 1




VISUAL AXIS
AXIS FOCI/MONUMENT SIGN
ADDITIONAL PARKING
FIELD
70 X 100 YARDS
210 X 300 FEET
WHITE PINE GROVE
SUGAR MAPLE ALLEE
BUS DROP OFF/
STAFF PARKING/SOLAR
CAR LINE DROP OFF/
PARKING AND FIELD
SERVICE DRIVE
BIORETENTION
ART ELA
VIDA OELA
HYDRO OELA
TERRA OELA
AMPHITHEATER
OUTDOOR LEARNING/FIELD
PLAY/NATURE BASED
SEPTIC FIELD
DETENTION
BASIN
WALKING
LOOP
MIXED OAK
SAVANNA
BUFFER

CONCEPT 2

CONCEPT 1



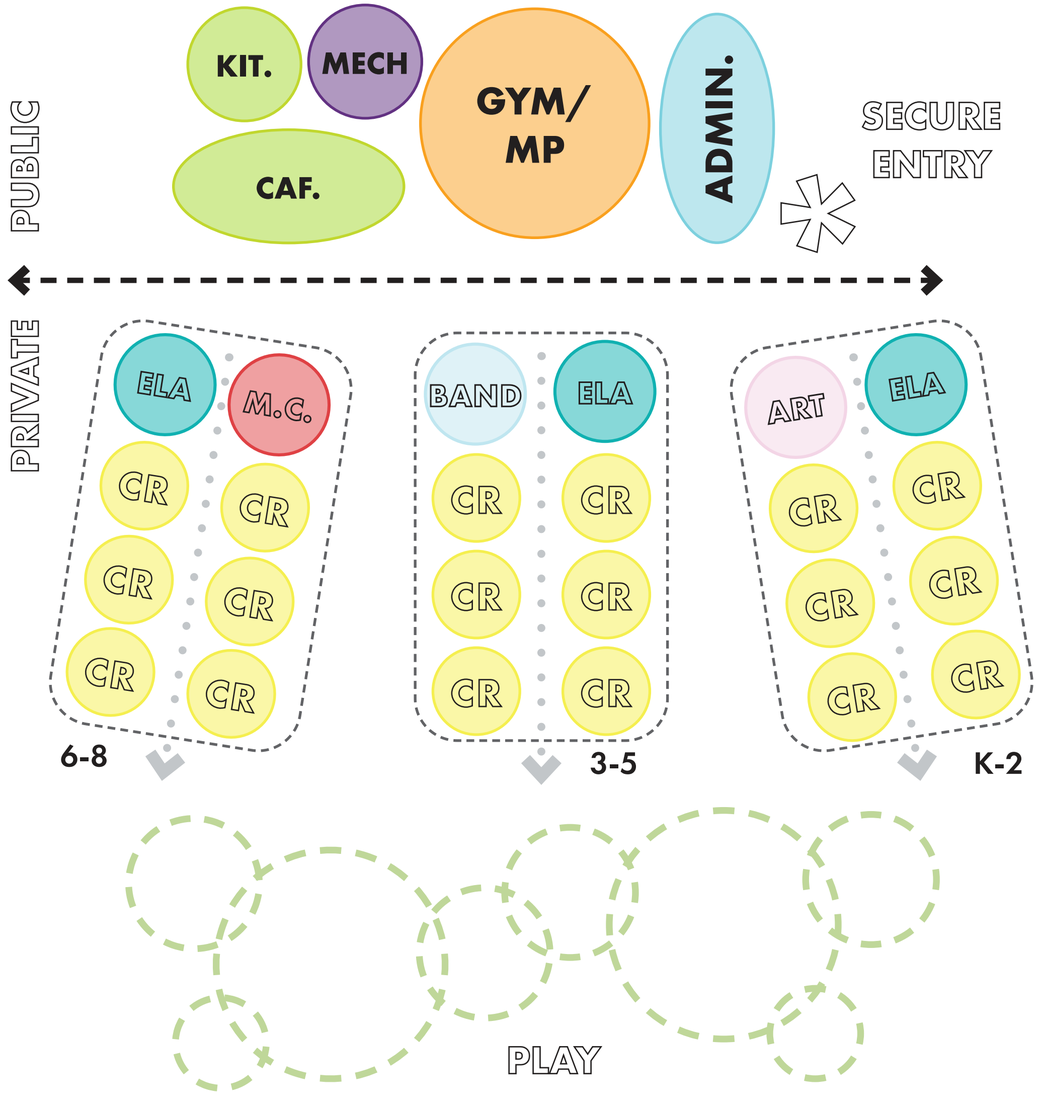
CONCEPT 2

DIAGRAM(S)

PROGRAMMING

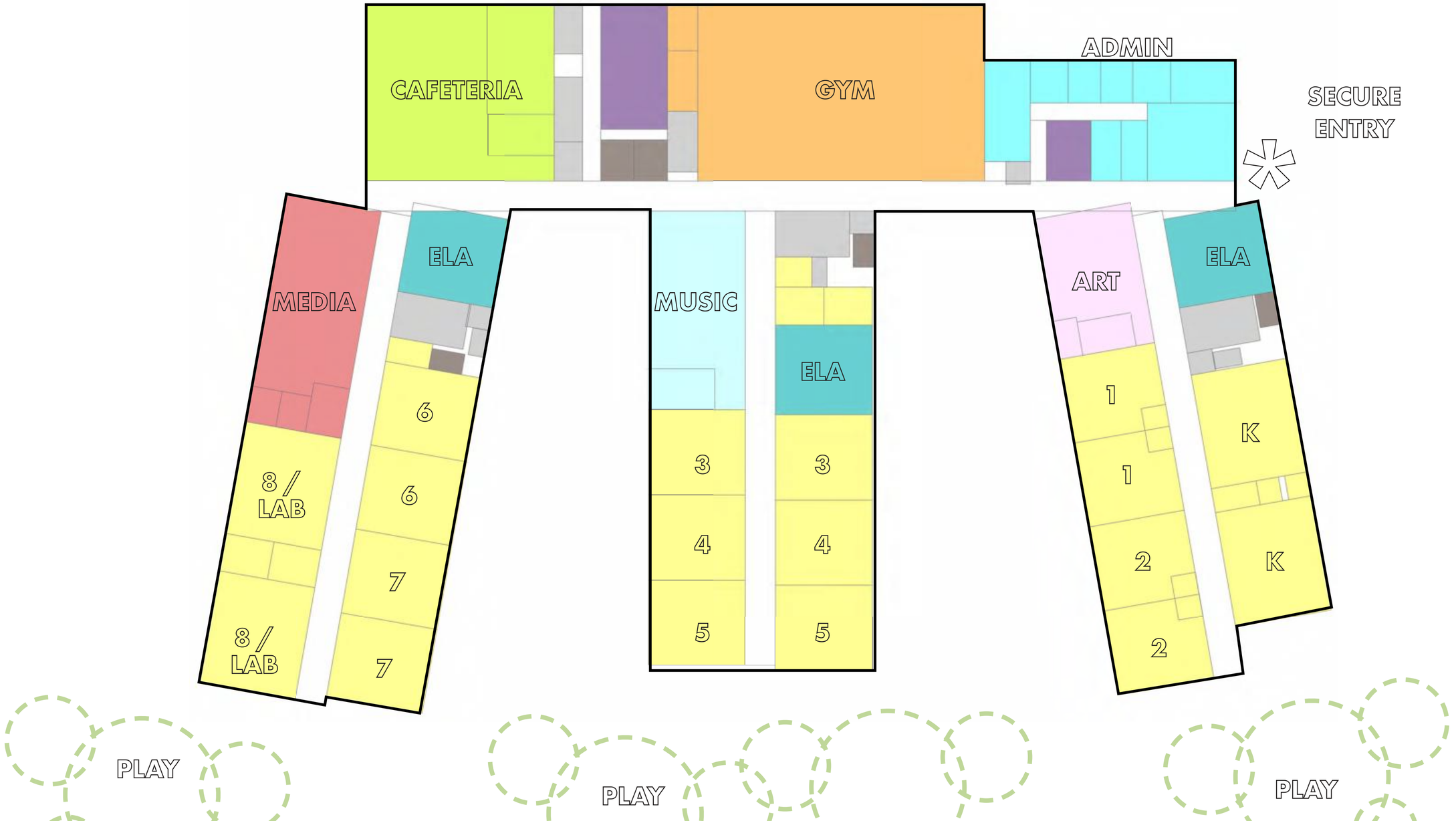
RELATIONSHIP DIAGRAM | OPTION 1

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



PROGRAMMING

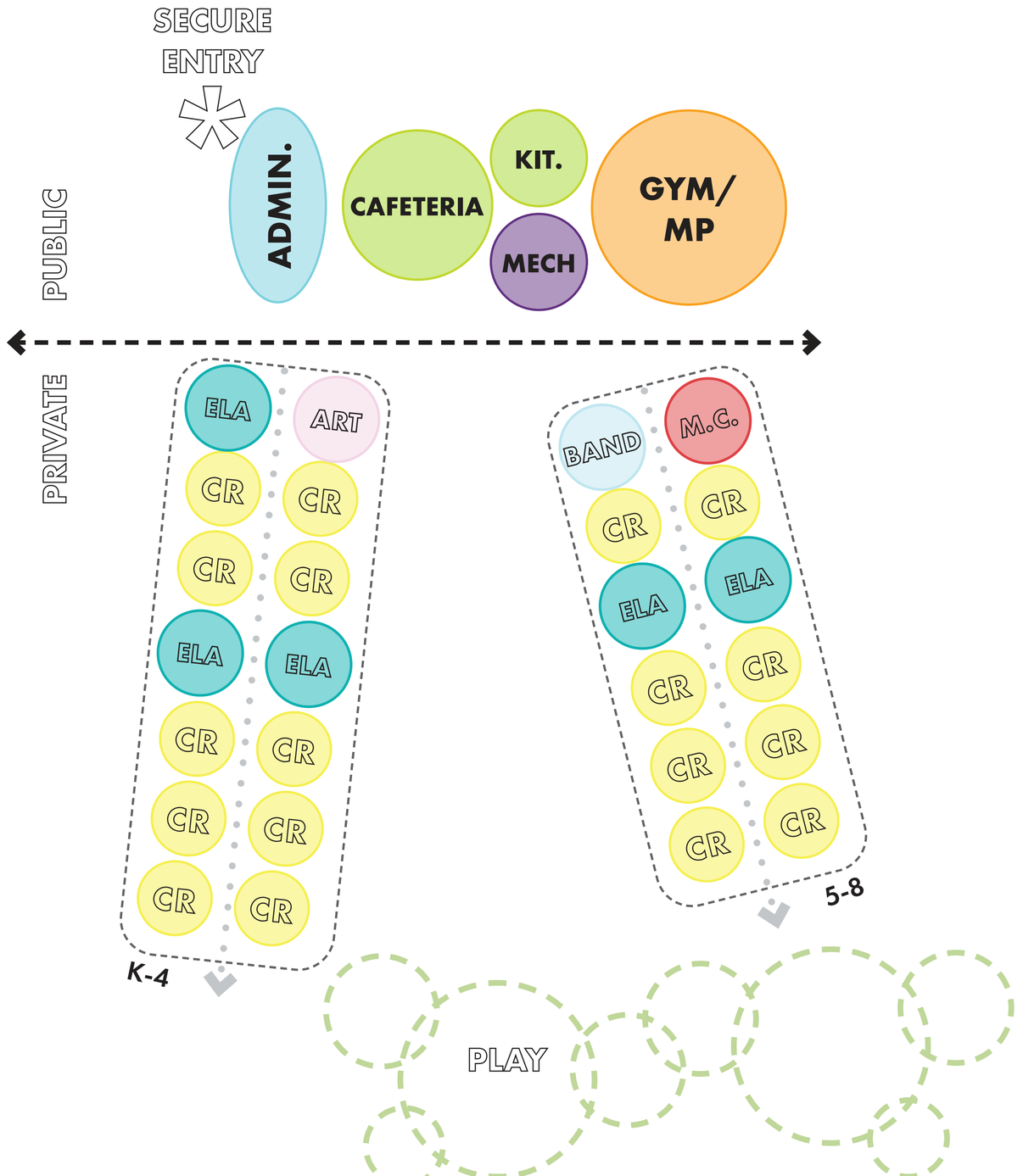
RELATIONSHIP DIAGRAM | OPTION 1



PROGRAMMING

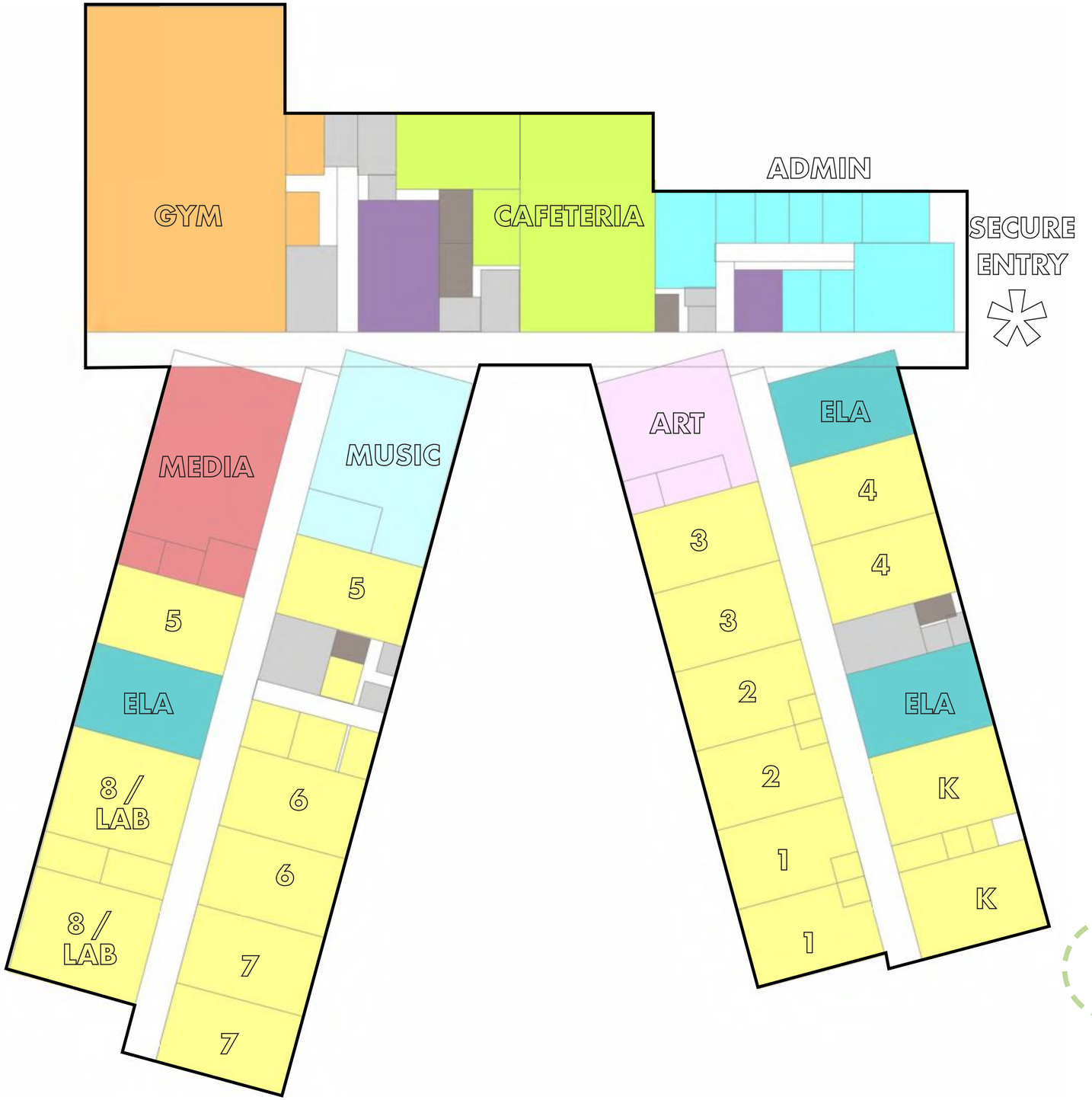
RELATIONSHIP DIAGRAM | OPTION 2

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



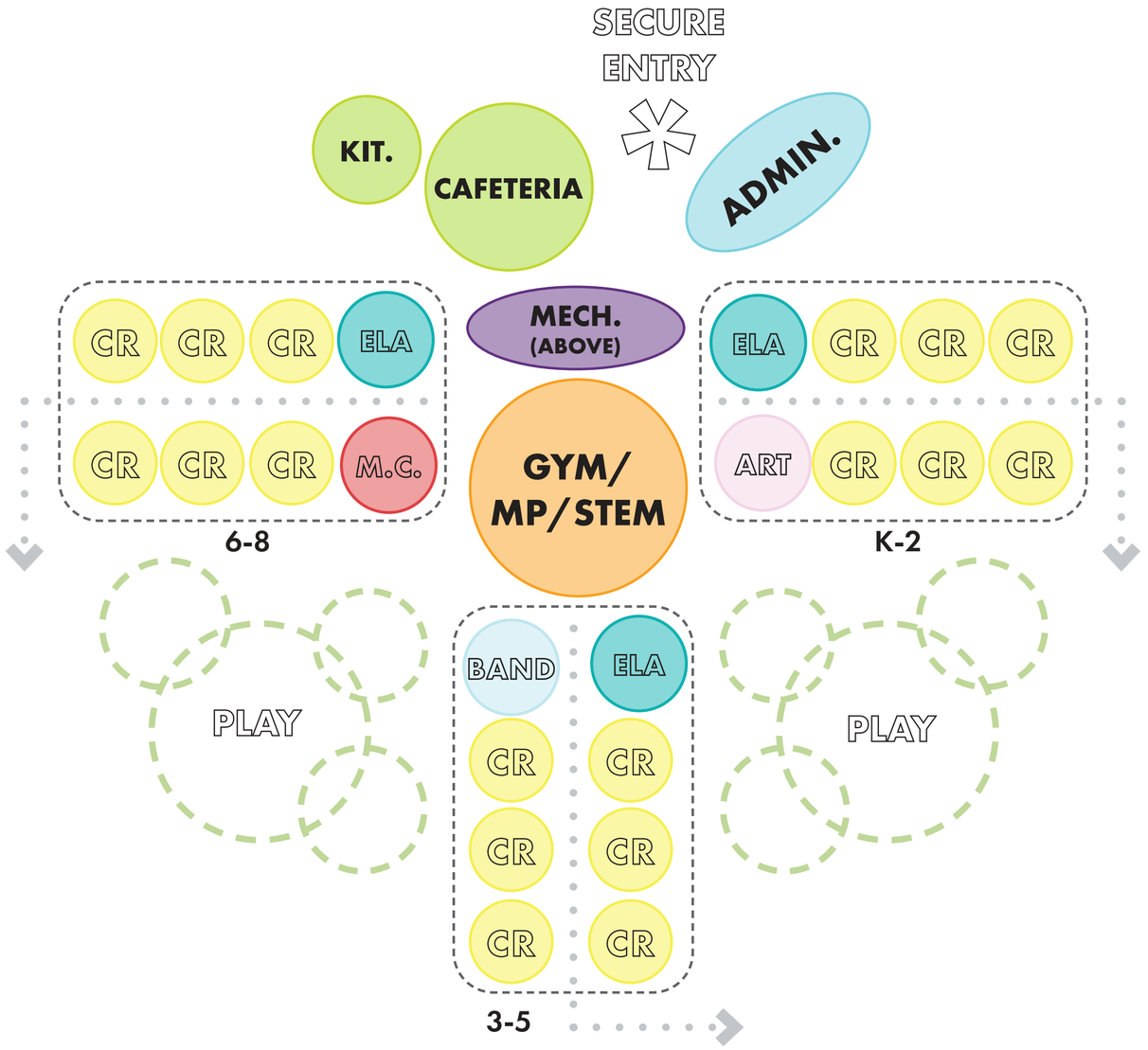
PROGRAMMING

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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COMSTOCK STEM ACADEMY
COMSTOCK PUBLIC SCHOOLS
KALAMAZOO, MICHIGAN

ISSUANCES
11.30.2023 SCHEMATIC DESIGN

DRAWN JTD
REVIEWED DAS

PROJECT NO. 5-5900

OVERALL FLOOR PLAN

A0.01

FLOOR PLAN

SCHEMATIC DESIGN | VE DIAGRAM 02

VE IDEA 02
REMOVAL OF NEIGHBORHOOD ELA

OVERALL FIRST FLOOR
1/16" = 1'-0"

GMB

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KALAMAZOO, MICHIGAN

ISSUANCES
11.30.2023 SCHEMATIC DESIGN

DRAWN JTD
REVIEWED DAS

PROJECT NO. 5-5900

OVERALL FLOOR PLAN

A0.01

FLOOR PLAN

SCHEMATIC DESIGN | VE DIAGRAM 03

VE IDEA 03
REMOVAL OF 2 CLASSROOMS / NEIGHBORHOOD

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DRAWN JTD
REVIEWED DAS

PROJECT NO. 5-5900

OVERALL FLOOR PLAN

A0.01

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FLOOR PLAN

SCHEMATIC DESIGN | VE DIAGRAM 04

Total SF: +/-58,000sf

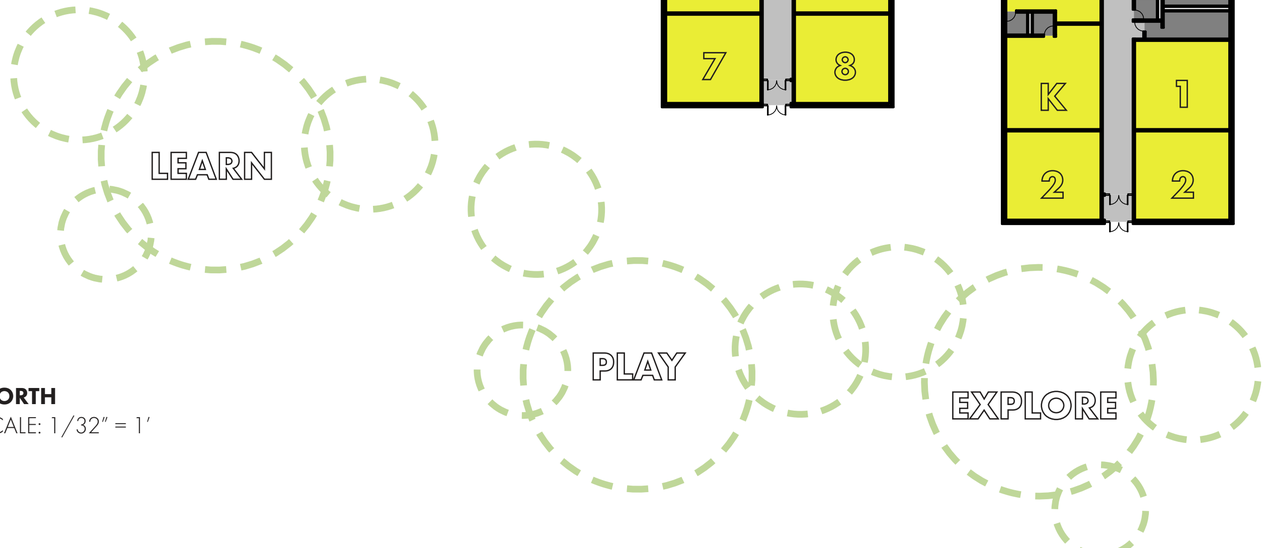
NORTH

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.

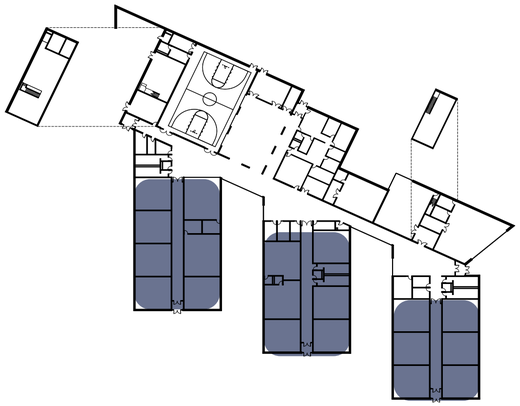
FLOOR PLAN

10.25.2023 | 57,021 SF



NORTH
SCALE: 1/32" = 1'

STEM LEARNING ON DISPLAY



STEM LEARNING FOCUSED

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