

DERRY TOWNSHIP SCHOOL DISTRICT HERSHEY ECC / ELEMENTARY SCHOOL



DERRY TOWNSHIP SCHOOL DISTRICT
OPTIONS PACKAGE
HERSHEY, PA
April 27, 2020

the elementary & ecc school

A COMMUNITY CULTIVATING AN EXTRAORDINARY LEARNING ENVIRONMENT

MOTTO

Every Child Every Day

MISSION

Engaging all students every day to help them achieve their greatest potential as global citizens.

VISION

As parents, staff and community, we will cultivate an extraordinary learning environment that expands the minds and nurtures success for every member of the school community.

OVERVIEW

Derry Township School District is an award-winning public school system located in Hershey, Pennsylvania. Our community enjoys a legacy that began with founder Milton S. Hershey. The district serves approximately 3,400 students in kindergartten through twelfth grade residing in Derry Township, Dauphin County.

The 114-acre campus hosts five schools

- Hershey Early Childhood Center
- Hershey Primary Elementary School
- Hershey Intermediate Elementary School
- Hershey Middle School
- Hershey High School

Derry Township School District is also a member district of the Dauphin County Technical School.

All of our schools have exemplary facilities, curriculum, faculty, administrators, co-curricular and extra-curricular programs. Annually more than 90% of our graduating seniors pursue post-secondary education. Our collective goal is to be a model for how public education should - and can - function.,

SCHOOL SUMMARIES

EARLY CHILDHOOD CENTER (ECC) Lindsey Schmidt, Assistant Principal Early Childhood Center

Opened in 2002, the Early Childhood Center (ECC) commences the educational process in Derry Township School District. The 72,000 square foot facility serves students in kindergarten and first grade.

PRIMARY ELEMENTARY SCHOOL (ES) Heidi Stine, Assistant Principal Hershey Primary

The Primary Elementary School serves children in second and third grades. The school building was originally constructed in 1954 and renovated in 1991. Today the facility offers more than 154,000 square feet dedicated to meeting the needs of young learners.

INTERMEDIATE ELEMENTARY SCHOOL (ES) Anna Gawel, Assistant Principal Hershey Intermediate

The Intermediate Elementary School serves children in fourth and fifth grades. The school building was originally constructed in 1954 and renovated in 1991. Today the facility offers more than 154,000 square feet dedicated to meeting the needs of young learners.

EARLY CHILDHOOD CENTER

- Grades K - 1
- 600 Students

PRIMARY ELEMENTARY SCHOOL

- Grades 2-3
- 600 Students

INTERMEDIATE ELEMENTARY SCHOOL

- Grades 4-5
- 600 Students

SCHOOL LEADERSHIP

Joseph E. Mc Farland, Superintendent

Michael Frentz, Business Manager

Jason Reifsnyder, Assistant to Superintendent

Dr. Stacy Winslow, Assistant to Superintendent

Kirsten Scheurich, Director of Special Education

Jena Funck, Principal Hershey Elementary

Lindsey Schmidt, Assistant Principal Early Childhood Center

Heidi Stine, Assistant Principal Hershey Primary

Anna Gawel, Assistant Principal Hershey Intermediate

Mark Anderson, Director of Buildings and Grounds

Shh... Learning in Progress

BUILDING EXPRESSES THE VALUE OF LEARNING WITHIN

THEMES

- Building as a tool to facilitate learning
- One Building (Building Organization)
- Supporting Faculty
- Integrating Learning Support
- Safety and Security
- Support Spaces that Help the School Function





BUILDING AS A TOOL TO FACILITATE LEARNING

- *Can the building be 100% utilized for teaching? Both inside and outside the classroom?*
- *How can we express the functions of the space as a tool for learning?*
 - *Painting Warm & Cold Water Pipes?*
 - *Wayfinding that can be integrated into learning?*
- *Daylighting is a great natural teaching tool.*
 - *Not to mention, numerous studies indicate a positive impact on test scores when students are exposed to natural light.*

ONE BUILDING BUILDING ORGANIZATION

Primary goal is to create a more connected school across all grades K-5

With 1800+ students spanning various grades:

- *How do we organize into knowable communities?*
- *How do we minimize travel distances to maximize learning time?*
- *How do we make space intuitive?*
- *Can we reinforce community through space?*



SUPPORTING FACULTY

With a growing student population it is important to support the staff in a way that allows them to focus on creating great learning moments for students.

- *It is important to develop professional learning spaces for faculty.*
- *Creating the right spaces for teacher collaboration can foster growth for staff and students.*



INTEGRATING LEARNING SUPPORT

- *Calming corners in classrooms*
- *Integrating learning support spaces in each academic house*
- *Integrating special education among the general population (avoiding seperation)*

SAFETY AND SECURITY

Focusing on security can help provide a safety for students and staff by:

- Providing seamless security measures from entry points to exits.
- Creating visibility vs transparency.
- Defining public and private spaces.
- Creating "zones" or schools within a school.

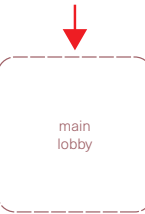


SUPPORT SPACES THAT HELP SCHOOL FUNCTION

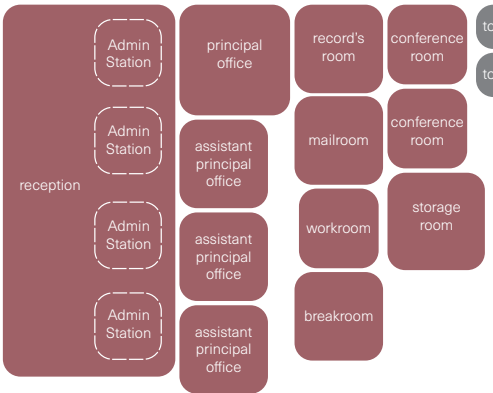
- Adequate storage throughout.
- Single use toilets.
- Structure and Flexibility within spaces.

DERRY TOWNSHIP ELEMENTARY SCHOOL PROGRAM - 'ONE BUILDING'

ADMINISTRATION



ADMINISTRATION SUITE



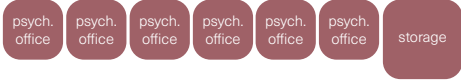
GUIDANCE SUITE



HEALTH SUITE



PSYCHOLOGISTS



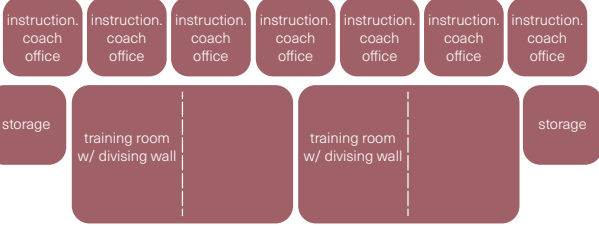
OCCUPATIONAL THERAPY



PARENT/TEACHER ORGANIZATION

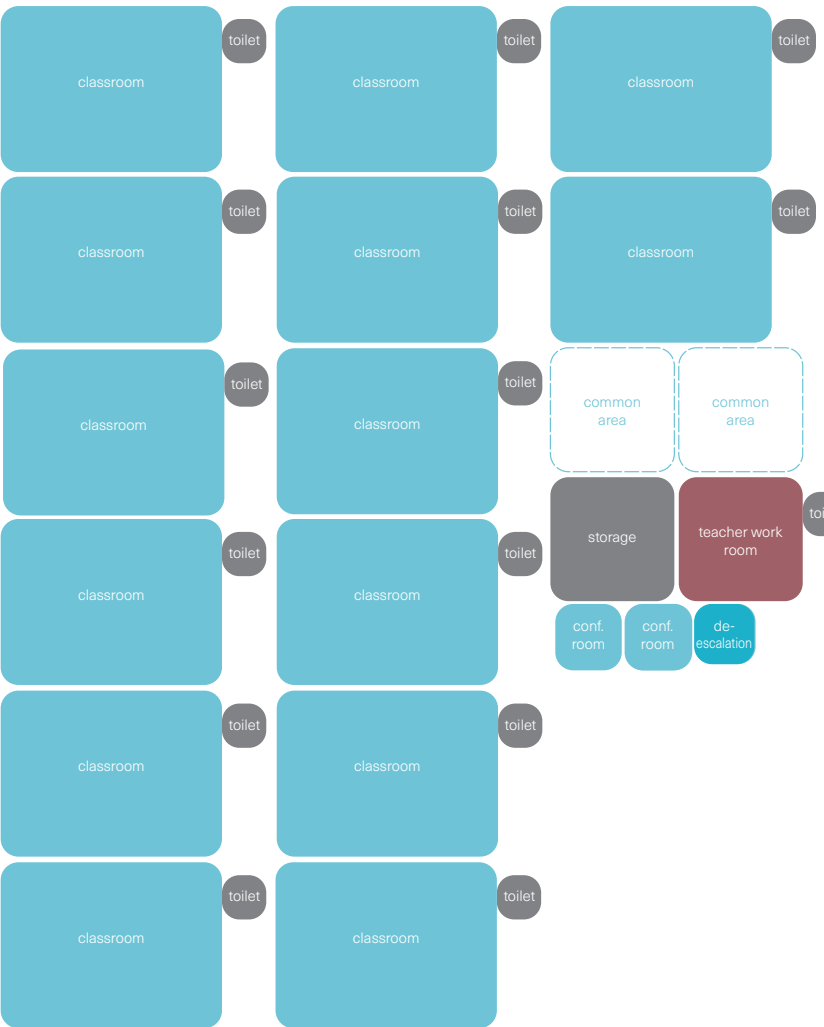


PROFESSIONAL DEVELOPMENT

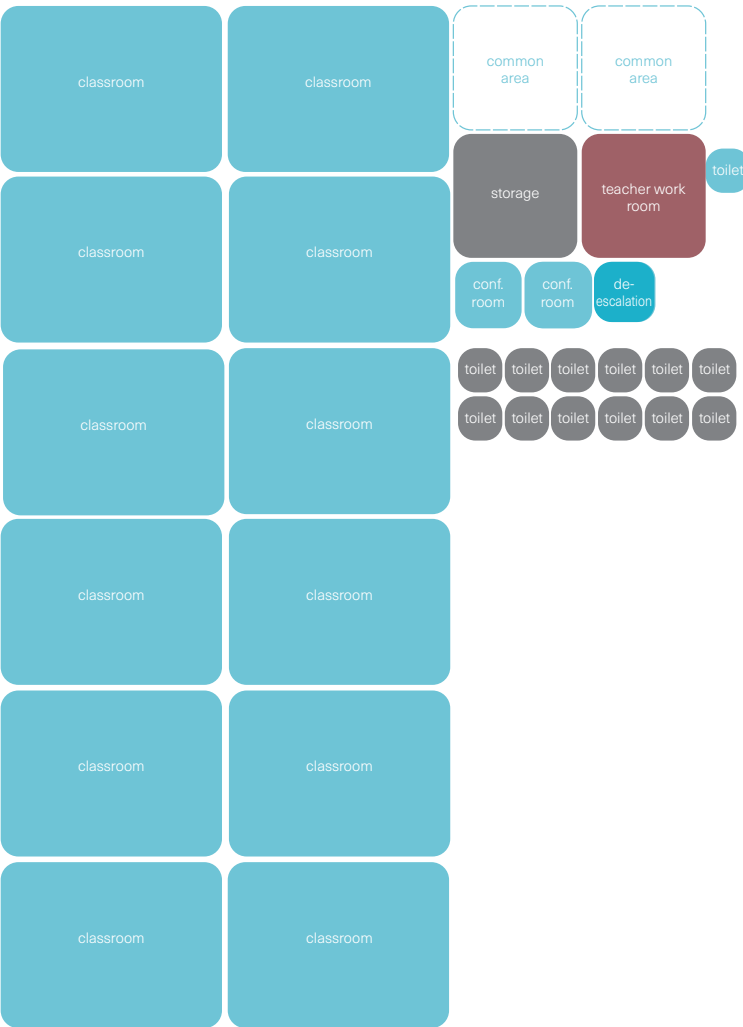


CORE ACADEMIC

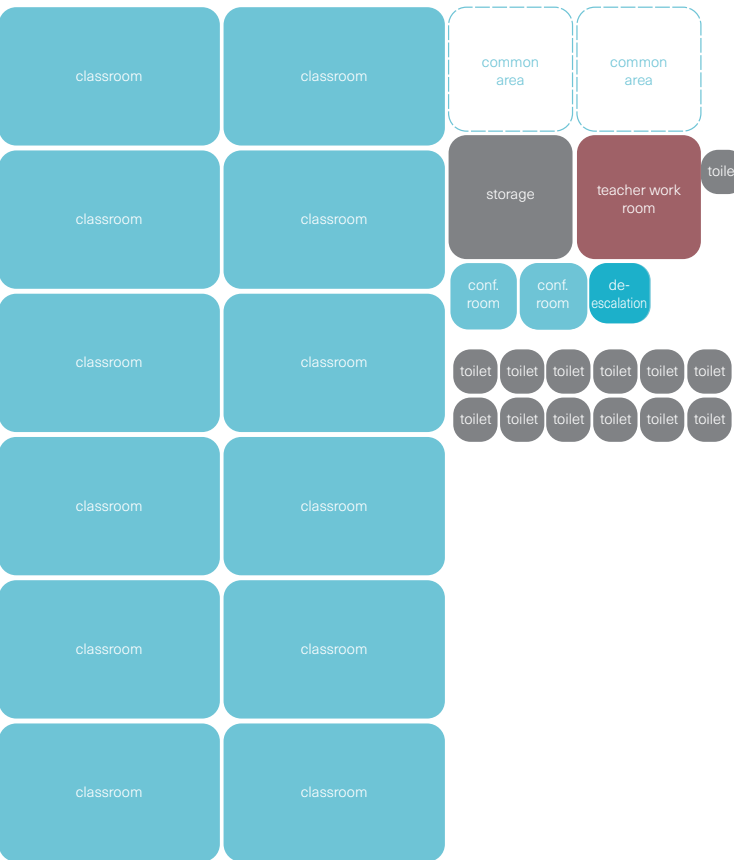
KINDERGARTEN



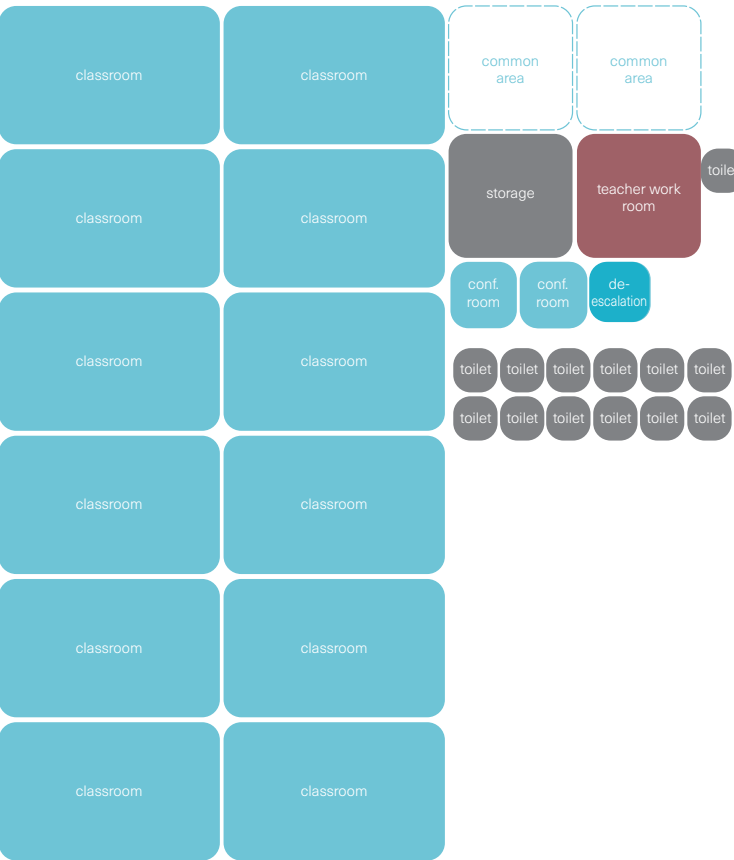
1ST GRADE



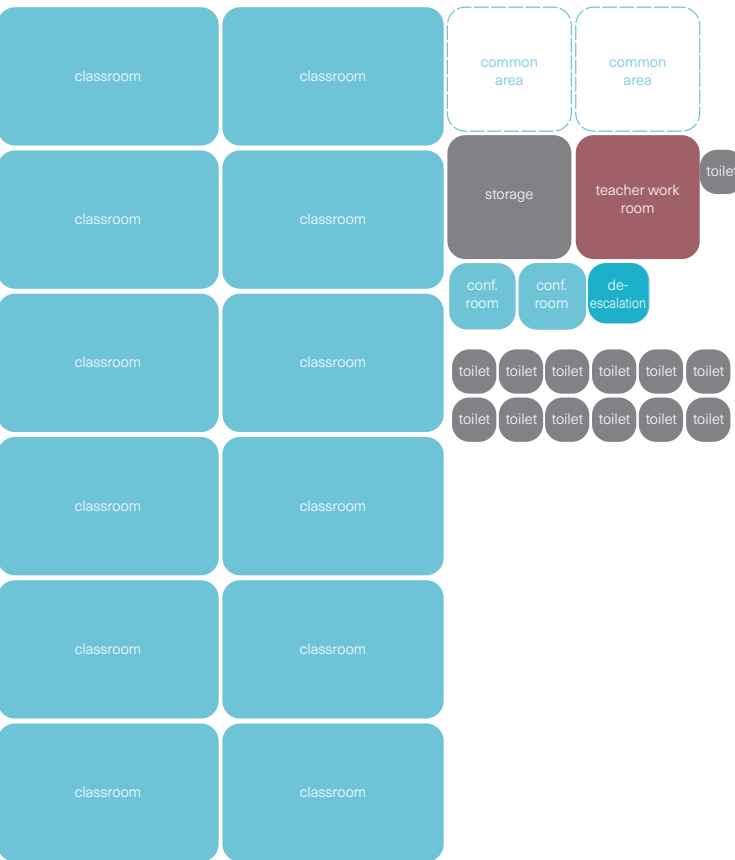
2ND GRADE



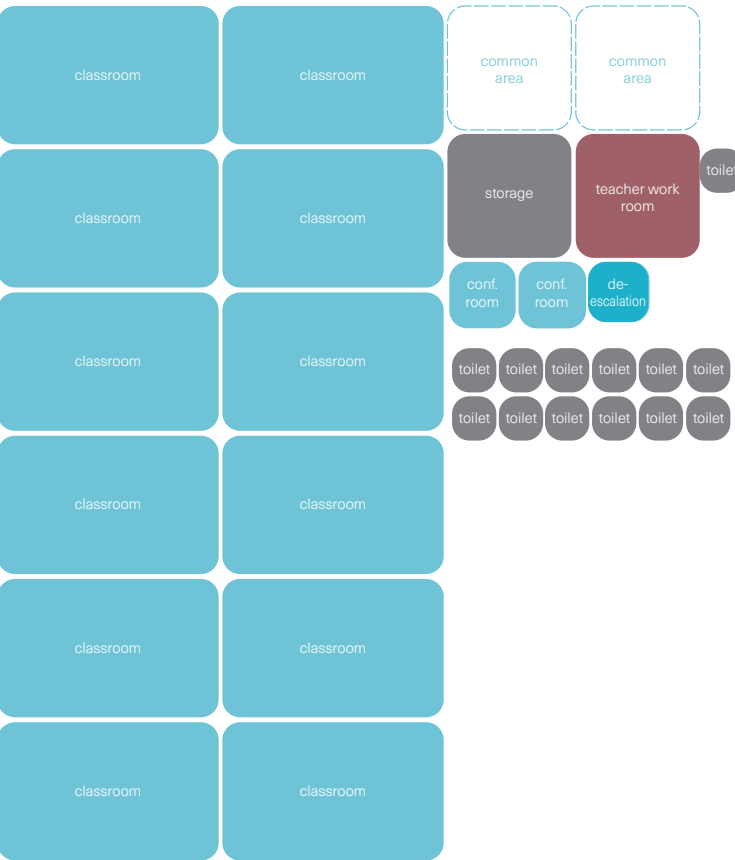
3RD GRADE



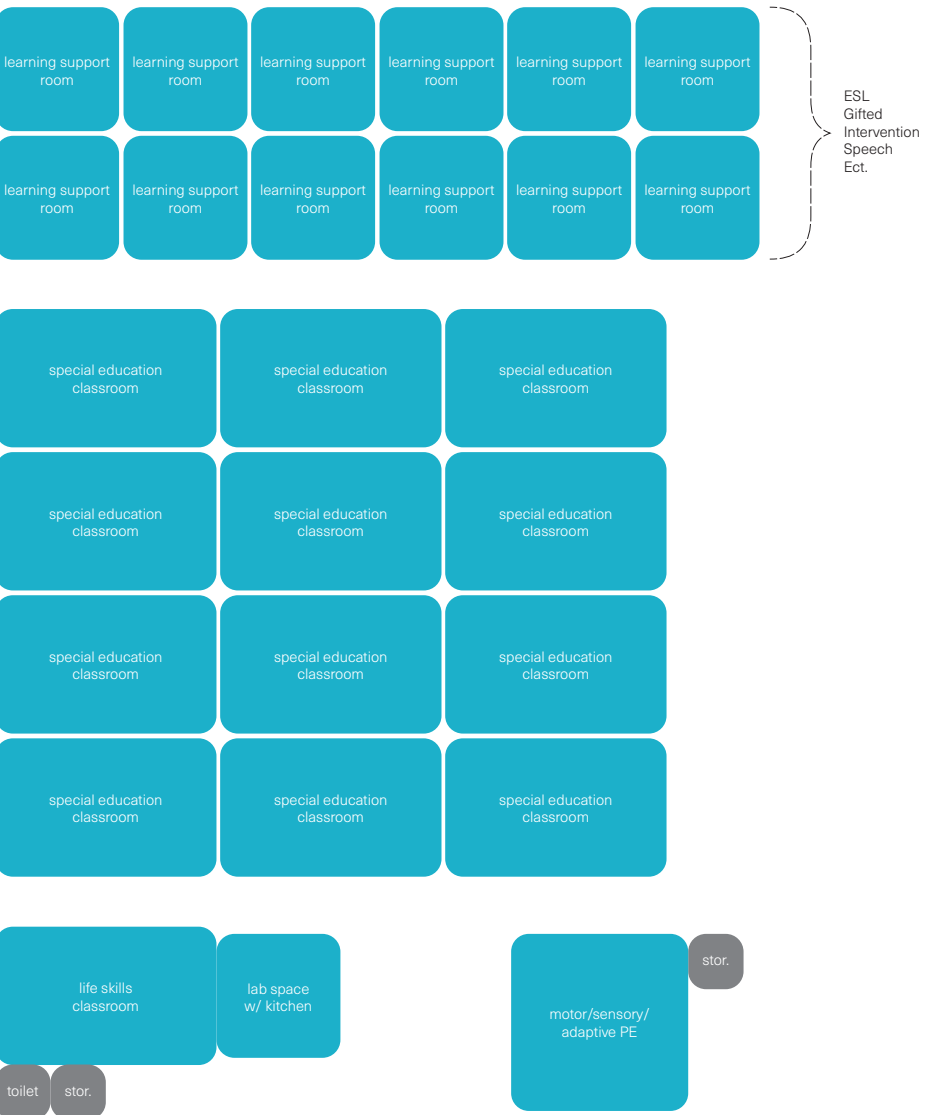
4TH GRADE



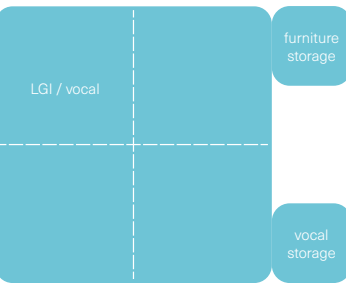
5TH GRADE



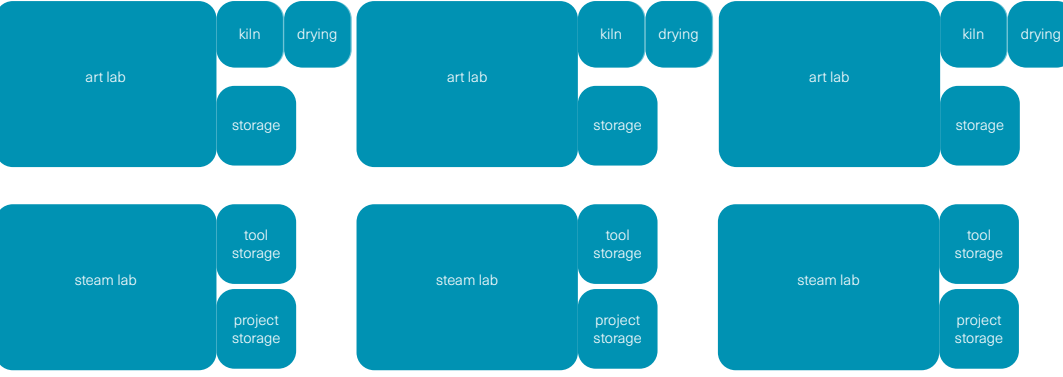
LEARNING SUPPORT



LARGE GROUP INSTRUCTION / VOCAL

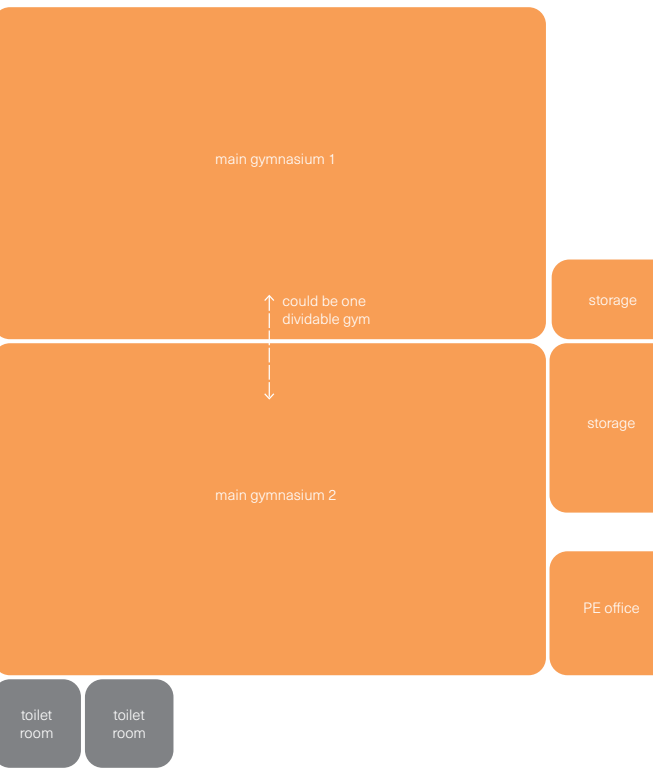


SPECIALTY LABS

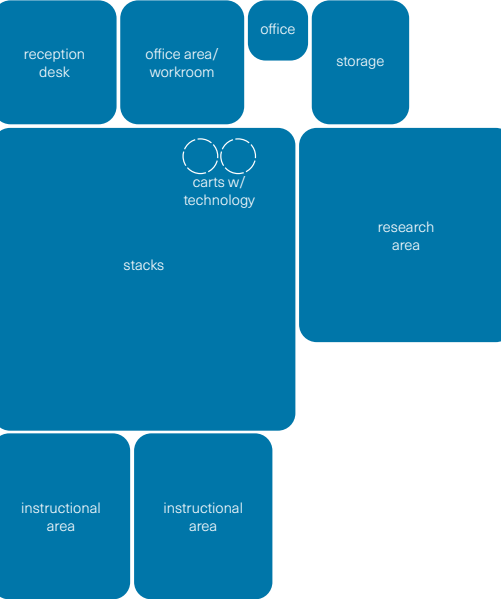


ACADEMIC SPECIALS

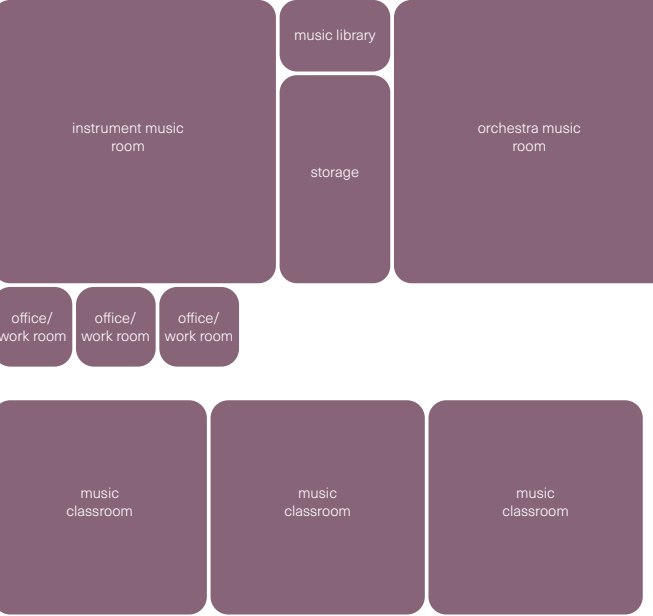
PHYSICAL EDUCATION



LEARNING COMMONS

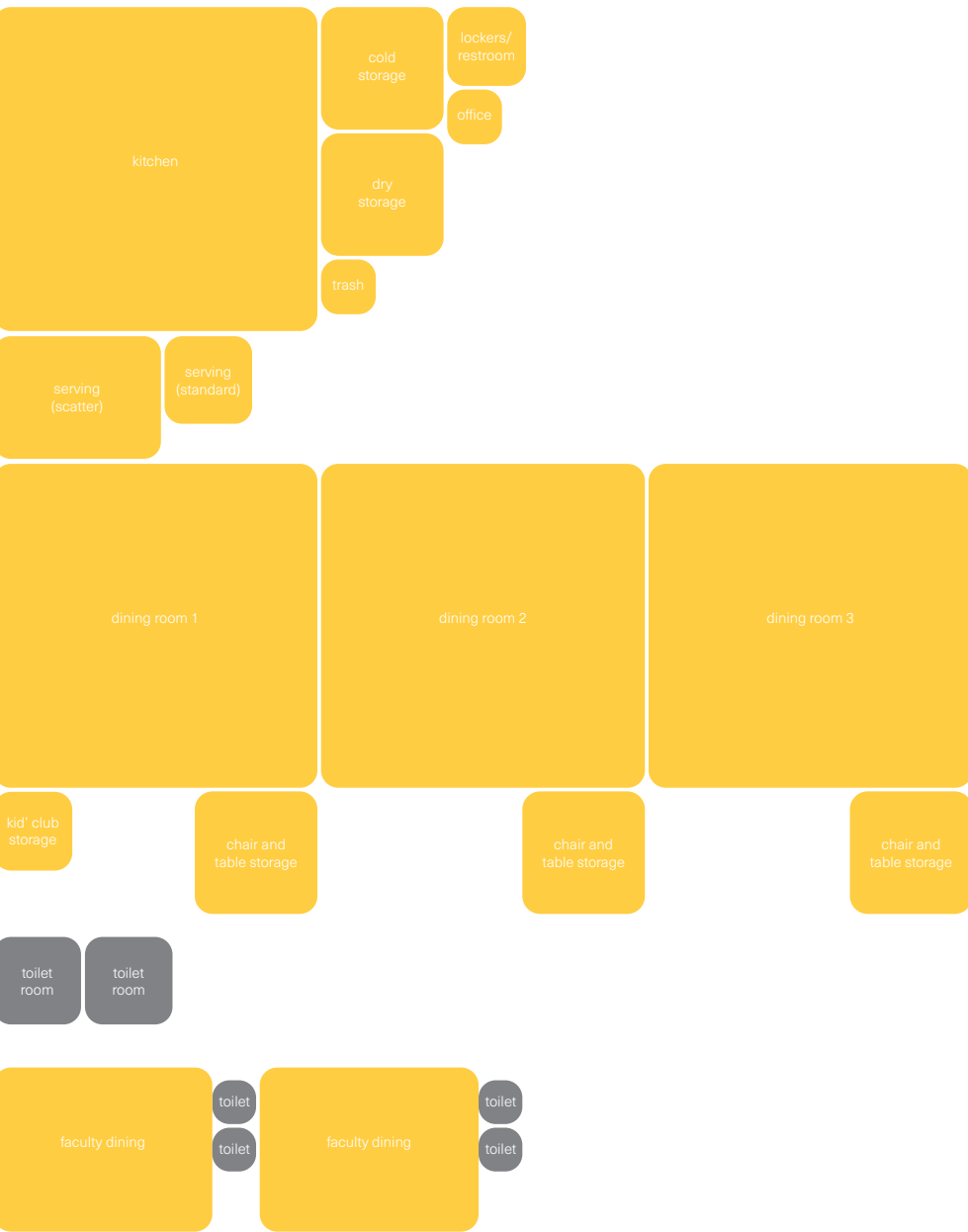


PERFORMING ARTS



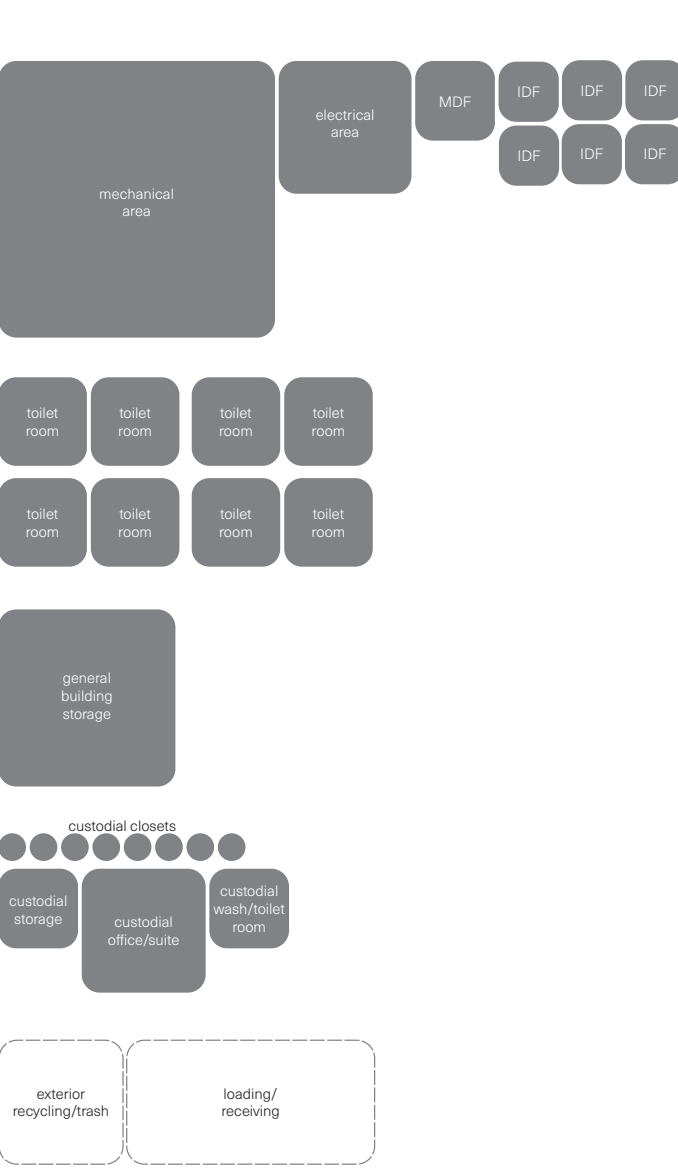
FOOD SERVICE

FOOD SERVICE

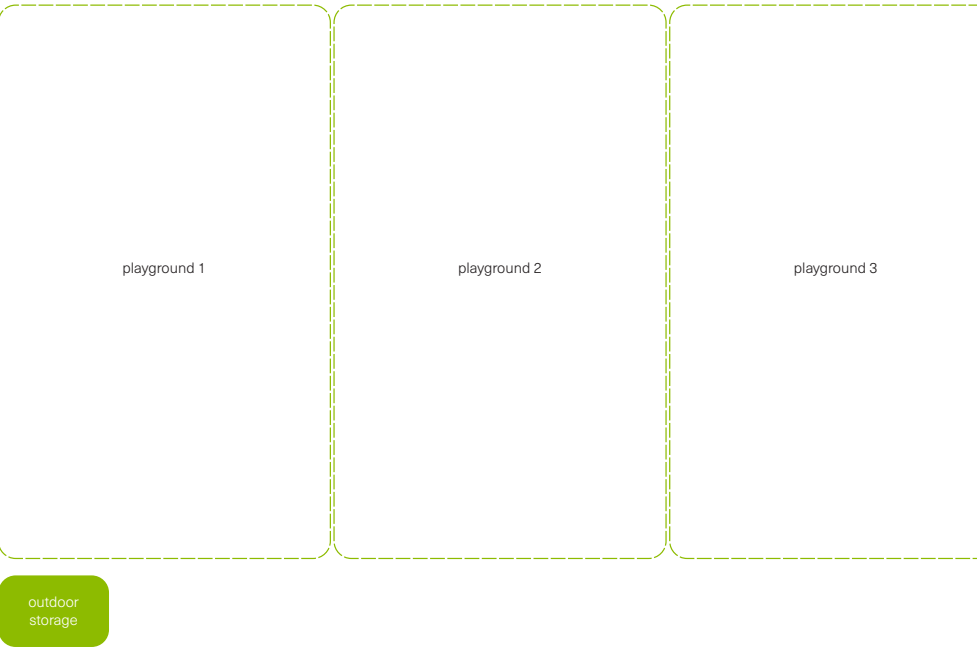


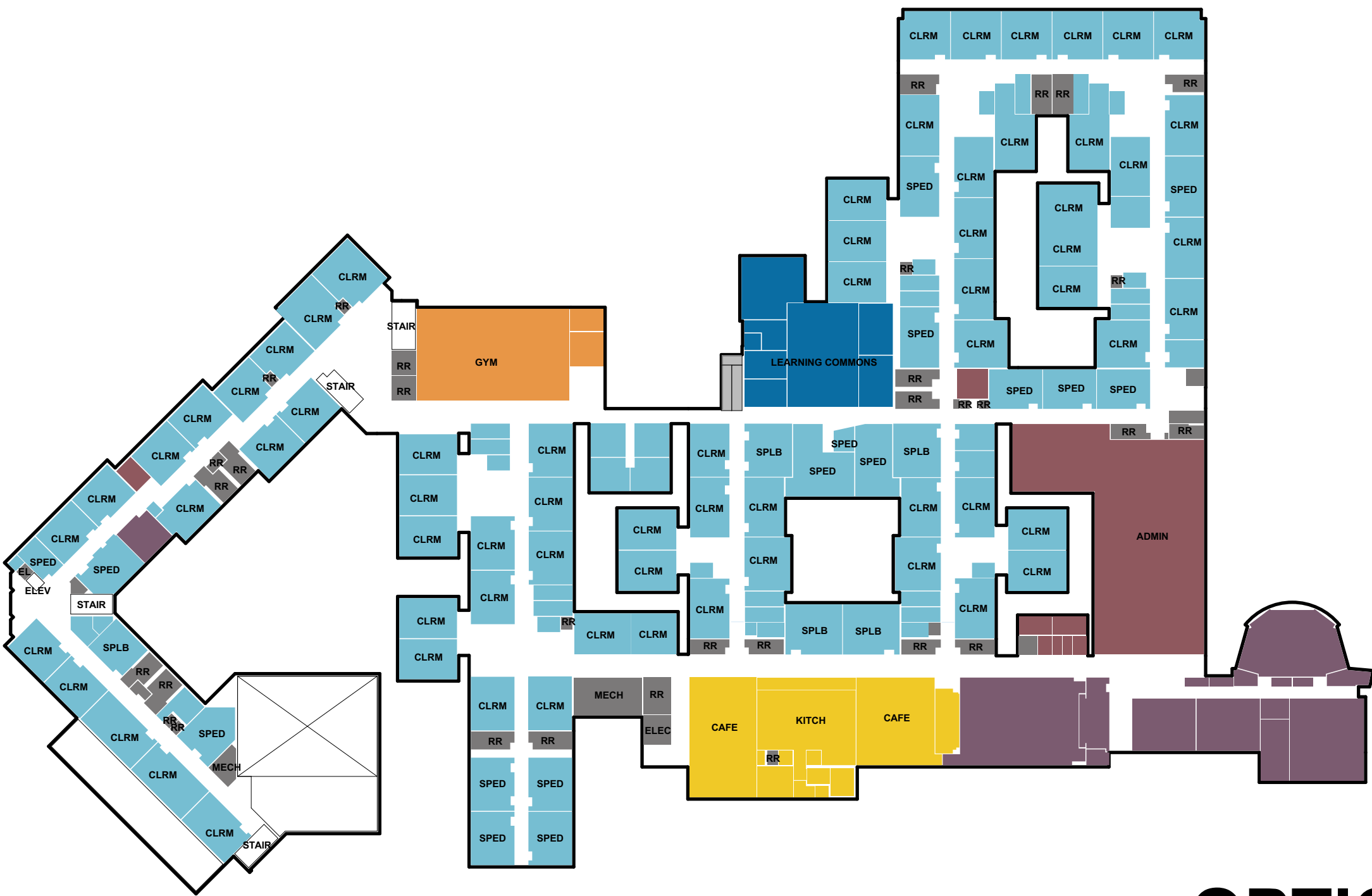
SUPPORT SPACES / PLAYGROUND

SUPPORT SPACES



PLAYGROUND





OPTION 1

GROSS BUILDING AREA - OPTION 1	
ECC - MINOR RENOVATION	
LEVEL	AREA
MAIN	43,260
UPPER	30,094
	73,354
ES - MAJOR RENOVATION	
LEVEL	AREA
MAIN	145,232
MAIN (DEMO)	9,050
ES - ADDITION	
LEVEL	AREA
MAIN	53,984
TOTAL	272,570

Option 1 – Maintain Existing Buildings w/ Additions & Alterations

Pros:

- Maintain existing facilities
- Maintains existing parking, service areas & bus drop off locations for both buildings
- Minimum reconfiguration of site.
- Ability to maintain existing site amenities i.e. parking, sports fields etc....

Cons:

- Long construction period (4+ years)
- Phased construction
- Modular classrooms for students during various phases (safety & security issue)
- Existing building non-compliance code issues will need to be addressed
 - Fire walls
 - Travel distances
 - Egress capacities at doors & stair towers
 - Toilet fixture counts
 - Accessibility
- Client will not get the full program requirements that they have requested due to existing building constraints
- Overlapping systems
- Noise
- Loss of outside play areas for construction layout space
- Periods where primary function spaces are offline
 - Gymnasiums (ECC gymnasium will need to be shared while new ES gymnasium is constructed)
 - Kitchens (meals will need to be prepared in one kitchen while the other is being renovated and transported to the other school)
 - Cafeterias (students will need to eat in classrooms while cafeterias are being renovated)
 - Band Room (band will need to be relocated to the multipurpose room while the performing arts suite is being renovated)
- Potential for structural modifications to existing structure for lateral load analysis
- Impact to existing structure for modifications would require phasing and temporary shoring
- Does not provide for further growth of the school footprint beyond this work at this current site
- Phased mechanical/electrical systems upgrades will take longer and increase costs.
- Mechanical/electrical equipment space constraints due to existing conditions (i.e. ceiling space, pathways, mech/elec room sizes, etc.).
- New central plant equipment to be housed in same location as existing, leading to additional phasing concerns and longer down times during replacement.
- Challenge for constructing in-fill areas.
- Increase in impervious will necessitate new or expanded stormwater management facilities.
- Difficulty getting stormwater from in-fill areas to BMPs.
- Some parking constraints remain.

4/27/2020

Overall Project Budet Worksheet	Option 1		Option 2		Option 3	
	Renovate ECC and ES		Renovate ECC, New ES		New Building	
	272,570		286,017		266,369	
01 Estimated Construction Costs						
Estimated Cost of Construction	\$	258.24	\$	70,387,784	\$	362.47
Escalation to Const Midpoint	15.00%	\$	10,558,168	13.50%	\$	12,807,478
Construction Contingency	10.00%	\$	7,038,778	10.00%	\$	9,487,021
Modular Classrooms		\$	3,405,440		\$	3,059,120
Abatement		\$	4,500,000		\$	4,500,000
Phasing Premium		\$	3,519,389		\$	2,371,755
Gen Conds & Gen Reqs		\$	7,363,135		\$	6,550,068
General Liability Insurance		\$	1,067,727		\$	1,336,456
Builder's Risk Insurance (By Owner)		\$	-		\$	-
P&P Bond		\$	1,348,005		\$	1,687,276
Fee		\$	3,002,682		\$	3,758,408
Total Current Const Cost:		\$	112,191,108		\$	140,427,788
02 Owner Project Contingency						
Owner Contingency @ 10%		\$	11,219,111		\$	14,042,779
Total Owner Contingency:		\$	11,219,111		\$	14,042,779
03 Design Fees						
Architect / Engineers	8.5%	\$	9,536,244	8.0%	\$	11,234,223
Total Design Fees:		\$	9,536,244		\$	11,234,223
04 Furnishings, Fixtures, & Equipment						
Allowance		\$	2,000,000		\$	3,500,000
Total FFE:		\$	2,000,000		\$	3,500,000
05 Related Expenses Allowances						
Builder's Risk Ins (.65% Total Const Cost)		\$	729,242		\$	912,781
Bonds		\$	-		\$	-
Relocation Costs		\$	-		\$	-
Moving and Storage		\$	-		\$	-
Financing Fees		\$	-		\$	-
Permit Fees (\$3.14/\$1,000 of const)		\$	221,018		\$	297,892
Utility Connection Fees		\$	-		\$	-
Utility Consumption Costs		\$	-		\$	-
Other		\$	-		\$	-
Total Related Expenses:		\$	950,260		\$	1,210,673
TOTAL ESTIMATED PROJECT COST:	\$	498.58	\$	135,896,723	\$	595.82

Total Estimated Project Range	Low	\$	129,101,887	Low	\$	161,894,689	Low	\$	153,906,515
	High	\$	146,768,461	High	\$	184,048,699	High	\$	174,967,407

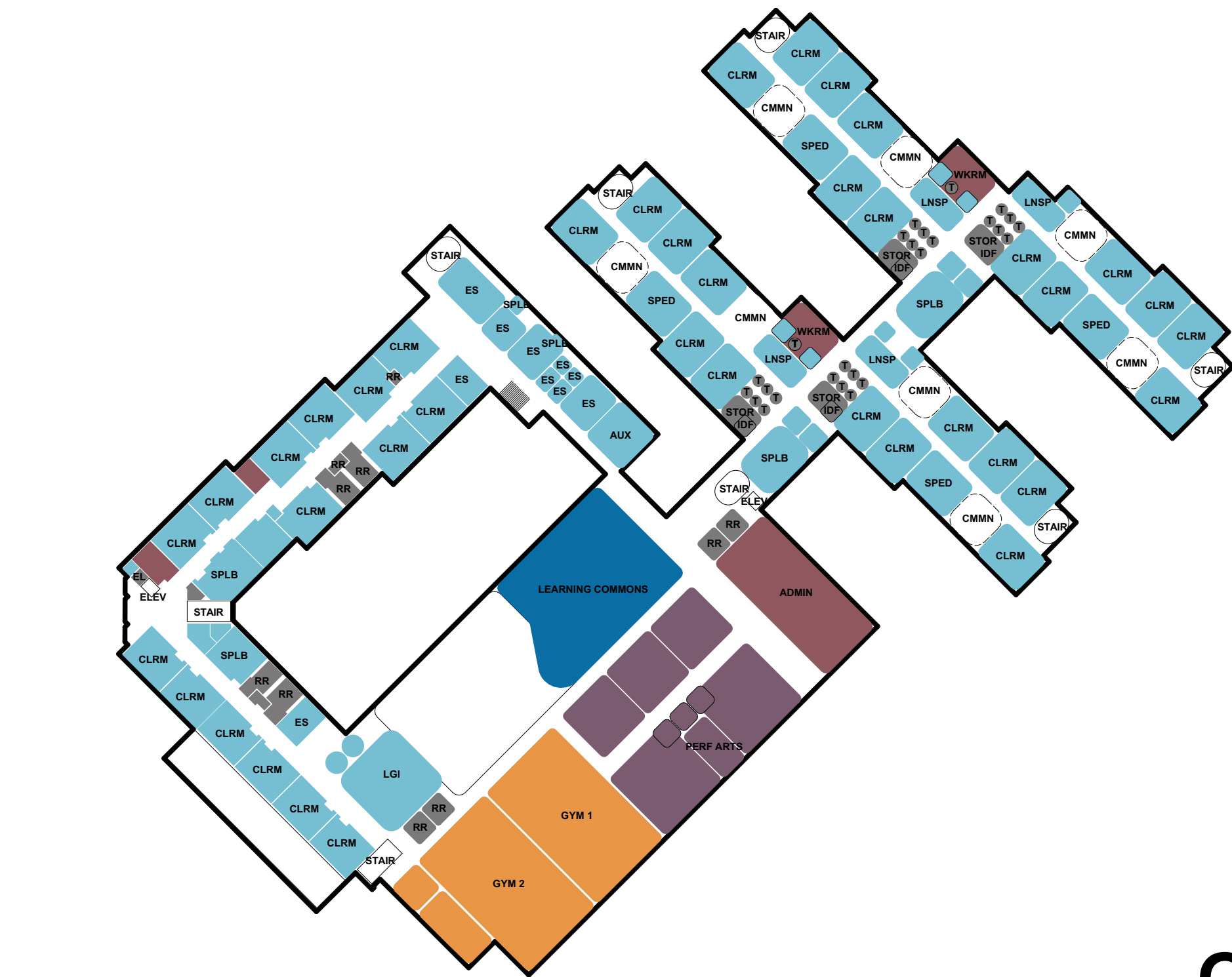
Option 3 – New Building

Pros:

- No modular classroom facilities required
- Shorter construction period (2+ years)
- Owner gets the program spaces & sizes requested
- Building 100% current code compliance
- Provides space for possible future additions at this building site
- Mechanical/electrical systems fully integrated into new building design.
- New parking facility and dropoff/pickup loop to alleviate existing issues.

Cons:

- Loss of parking lot between ES and MS
 - Construction site
- Loss of play fields behind MS (some permanent & some temporary)
 - Construction site
 - New parking for MS staff
 - Staging area for construction
- Parking & bus drop off for new building cannot be constructed until existing ES is demolished
- ECC is mothballed or repurposed
- ECC should still have roof replaced if 50 mothballs or repurposes
 - \$250k - \$350k range if membrane only
 - \$500k - \$600k range if membrane & new code compliant R30 roof insulation
- Loss off centralized parking, displaced parking for middle school, need for new middle school parking lot.
- Loss of sports fields
- Extensive area of disturbance.
- Significant increase in impervious area necessitates new stormwater BMPs and possible revision to existing BMPs.



OPTION 2

GROSS BUILDING AREA - OPTION 2	
ECC - MINOR RENOVATION	
LEVEL	AREA
MAIN	28,985
UPPER	20,163
	49,148
ECC - MAJOR RENOVATION	
LEVEL	AREA
MAIN	14,275
UPPER	9,931
	24,206
ES - DEMOLITION	
LEVEL	AREA
MAIN	154,282
ES - NEW BUILDING	
LEVEL	AREA
LOWER	29,364
MAIN	114,138
UPPER	69,161
	212,663
TOTAL:	286,017



OPTION 3

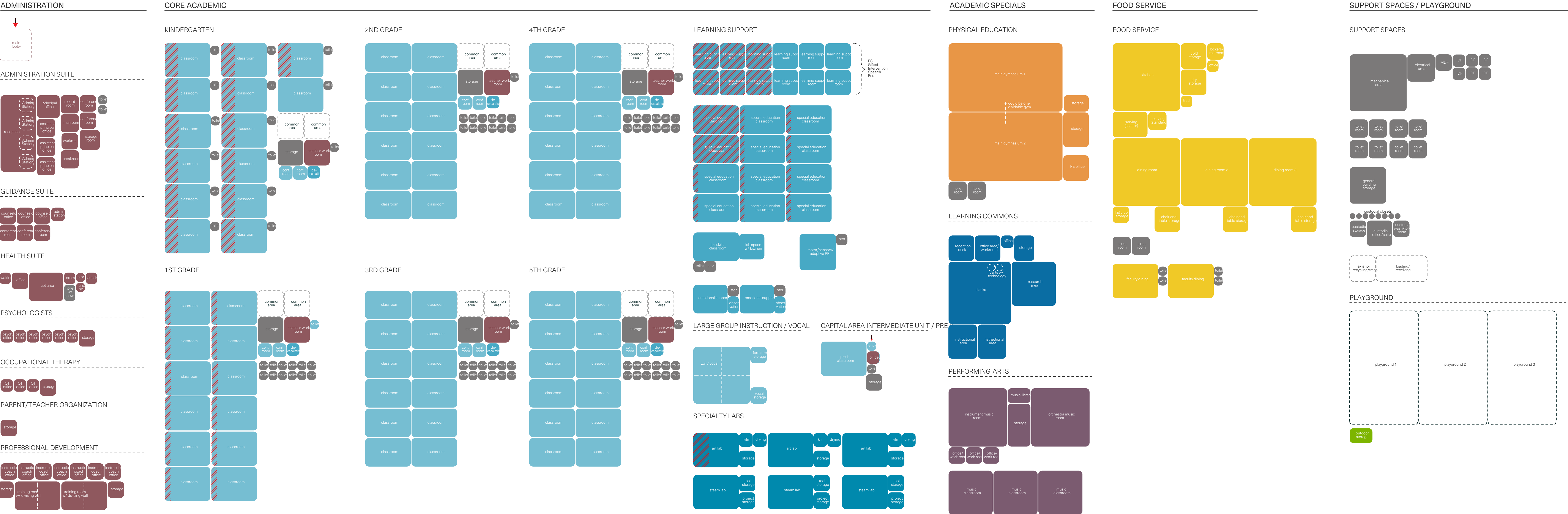
GROSS BUILDING AREA - OPTION 3	
NEW BUILDING	
LEVEL	AREA
LOWER	40,136
MAIN	132,170
UPPER	94,063
	266,369
TOTAL:	266,369

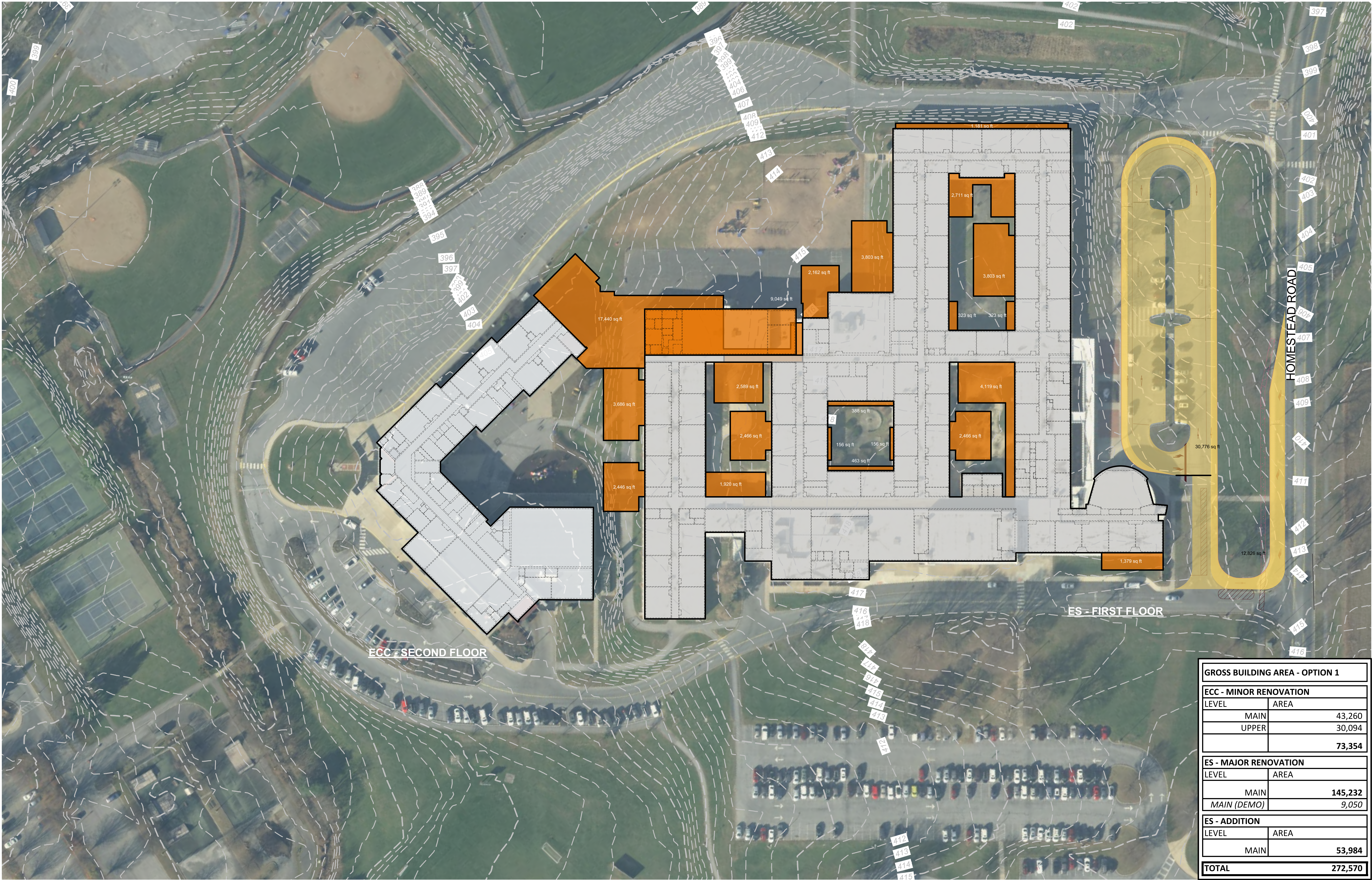
OPTION 1

DERRY TOWNSHIP ELEMENTARY SCHOOL PROGRAM

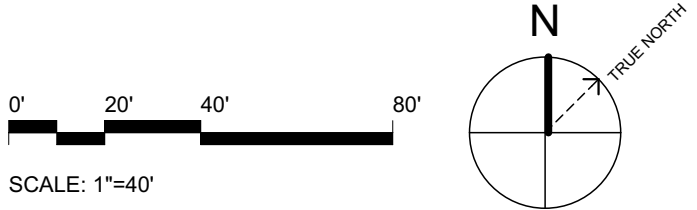
INDICATES AREAS EXCLUDED

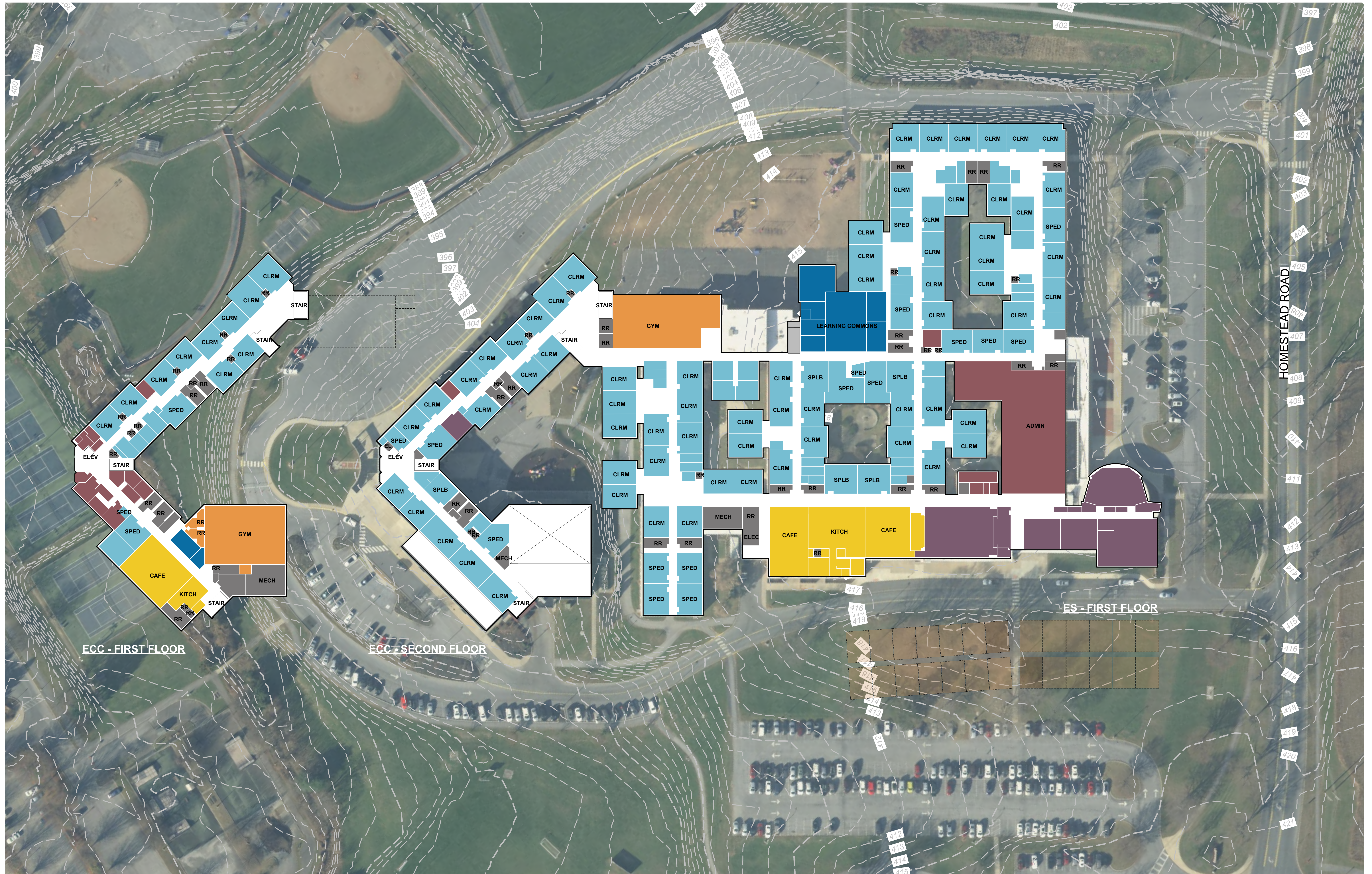
WARE HAUS





GROSS BUILDING AREA - OPTION 1	
ECC - MINOR RENOVATION	
LEVEL	AREA
MAIN	43,260
UPPER	30,094
	73,354
ES - MAJOR RENOVATION	
LEVEL	AREA
MAIN	145,232
MAIN (DEMO)	9,050
ES - ADDITION	
LEVEL	AREA
MAIN	53,984
TOTAL	272,570

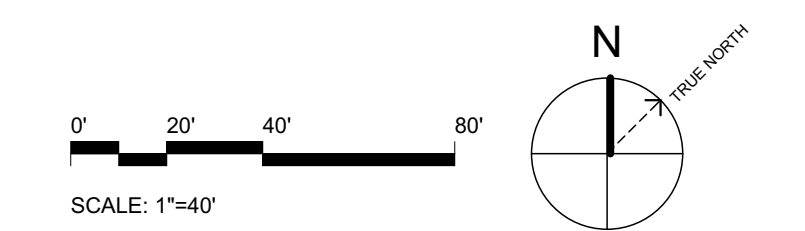


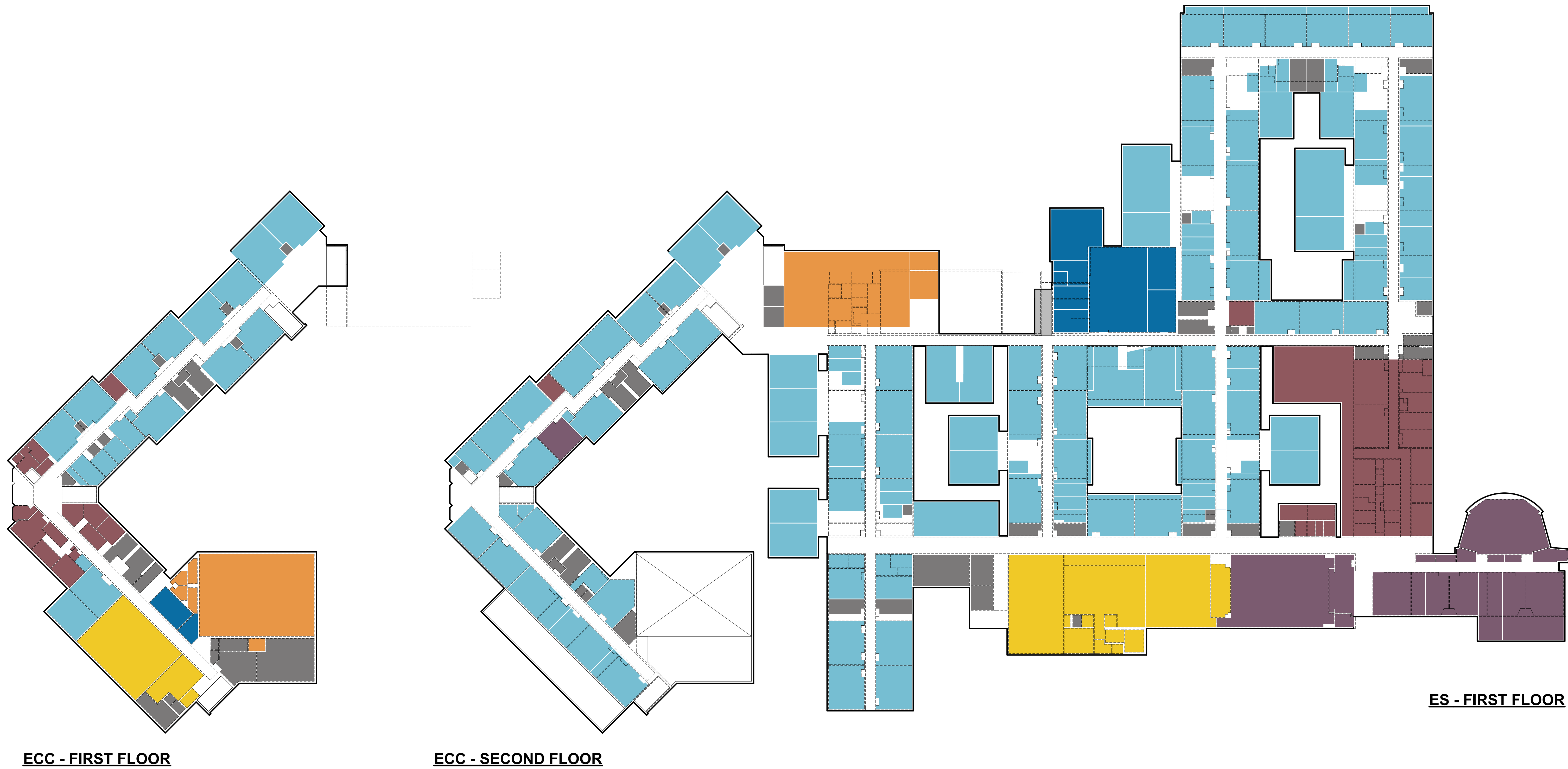


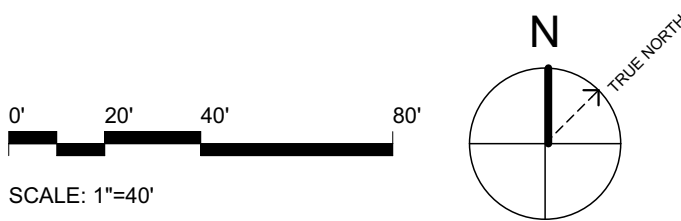
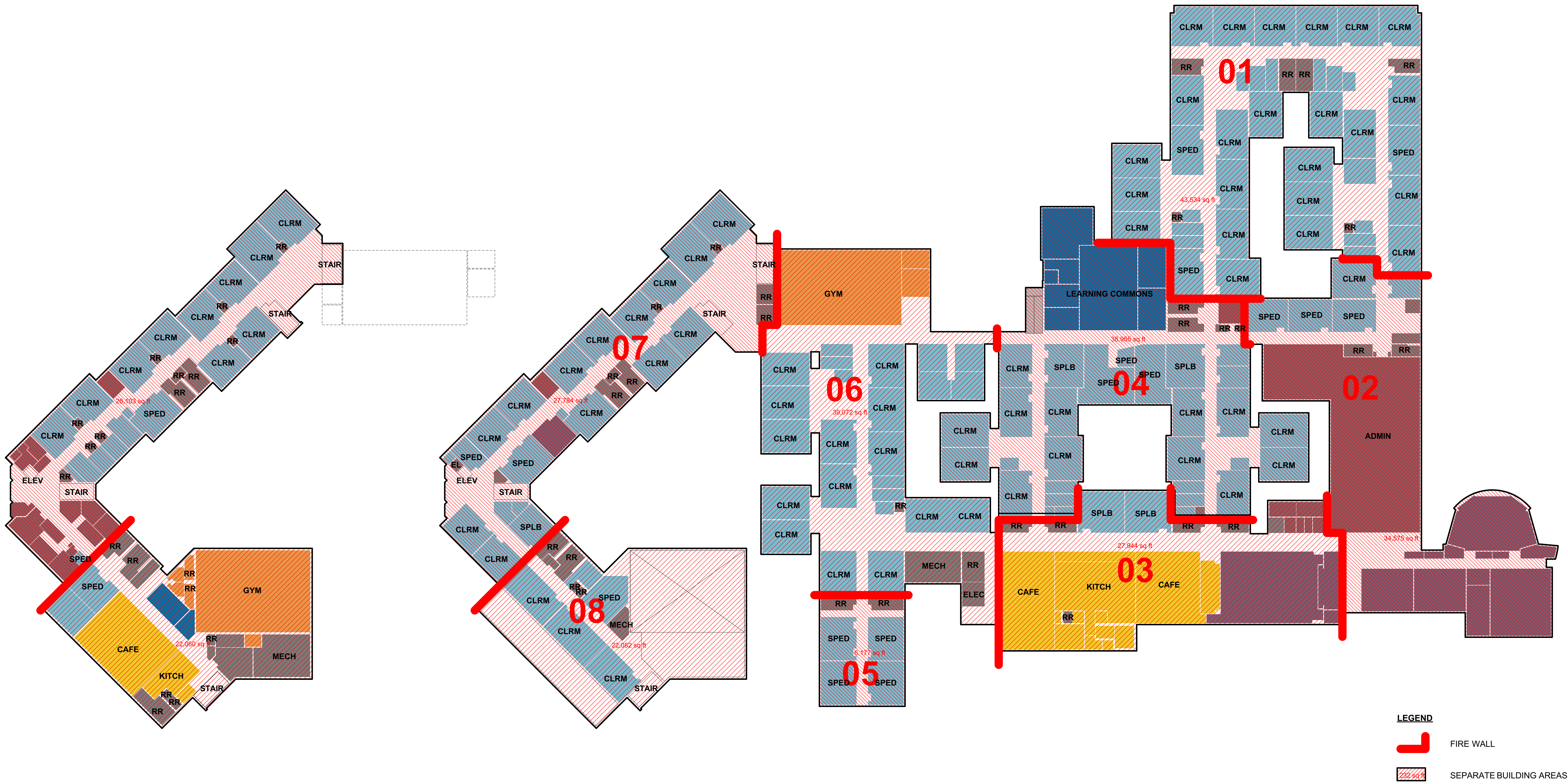
ECC - FIRST FLOOR

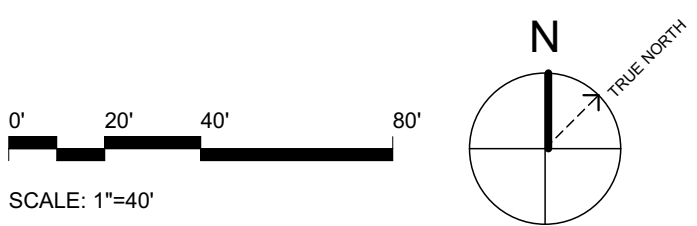
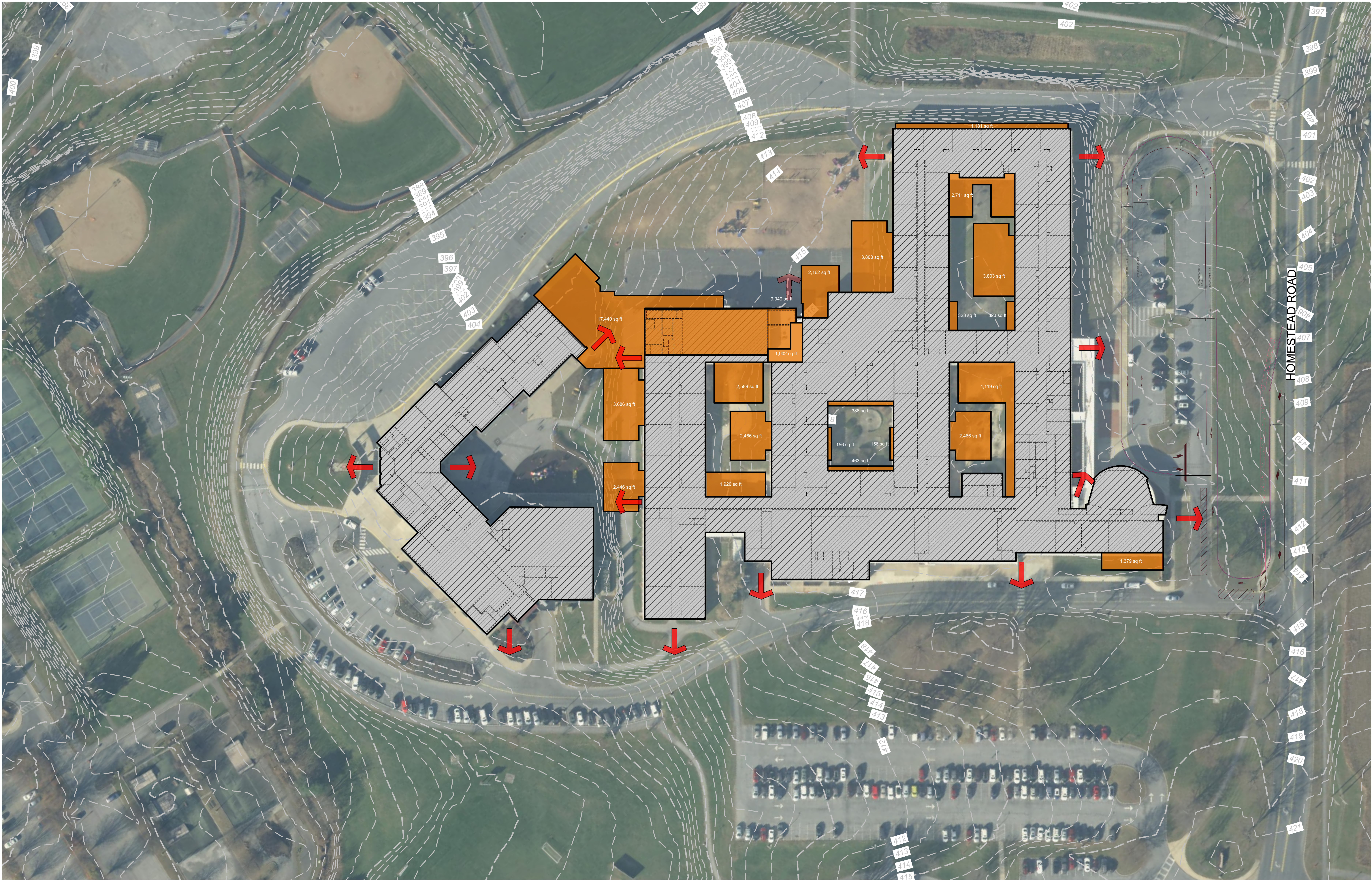
ECC - SECOND FLOOR

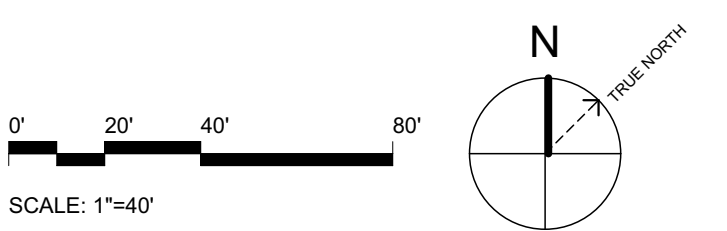
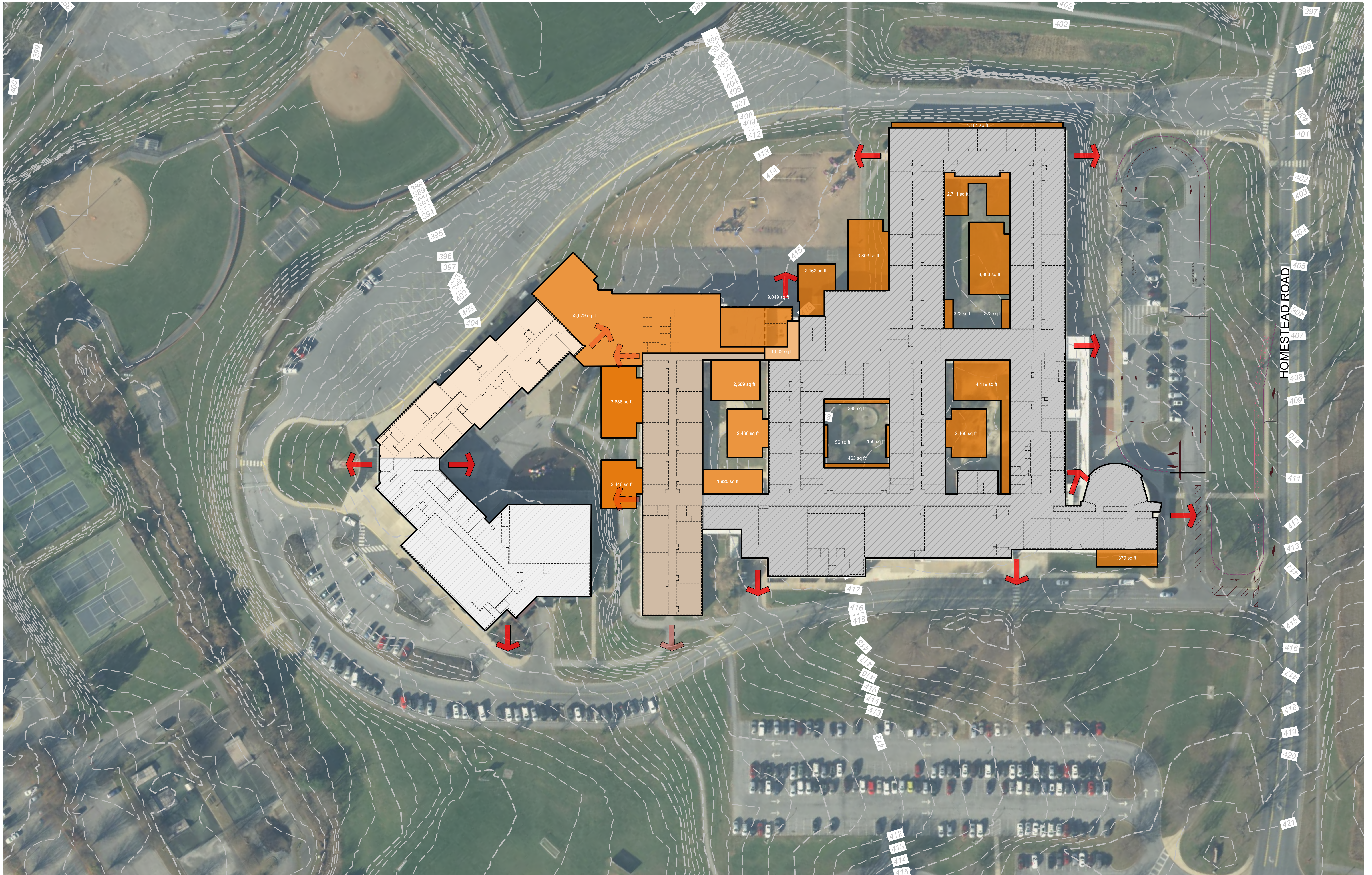
ES - FIRST FLOOR

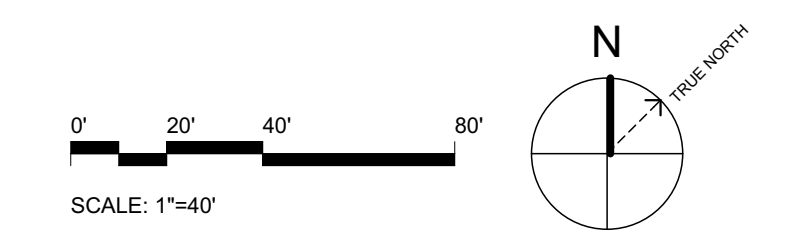
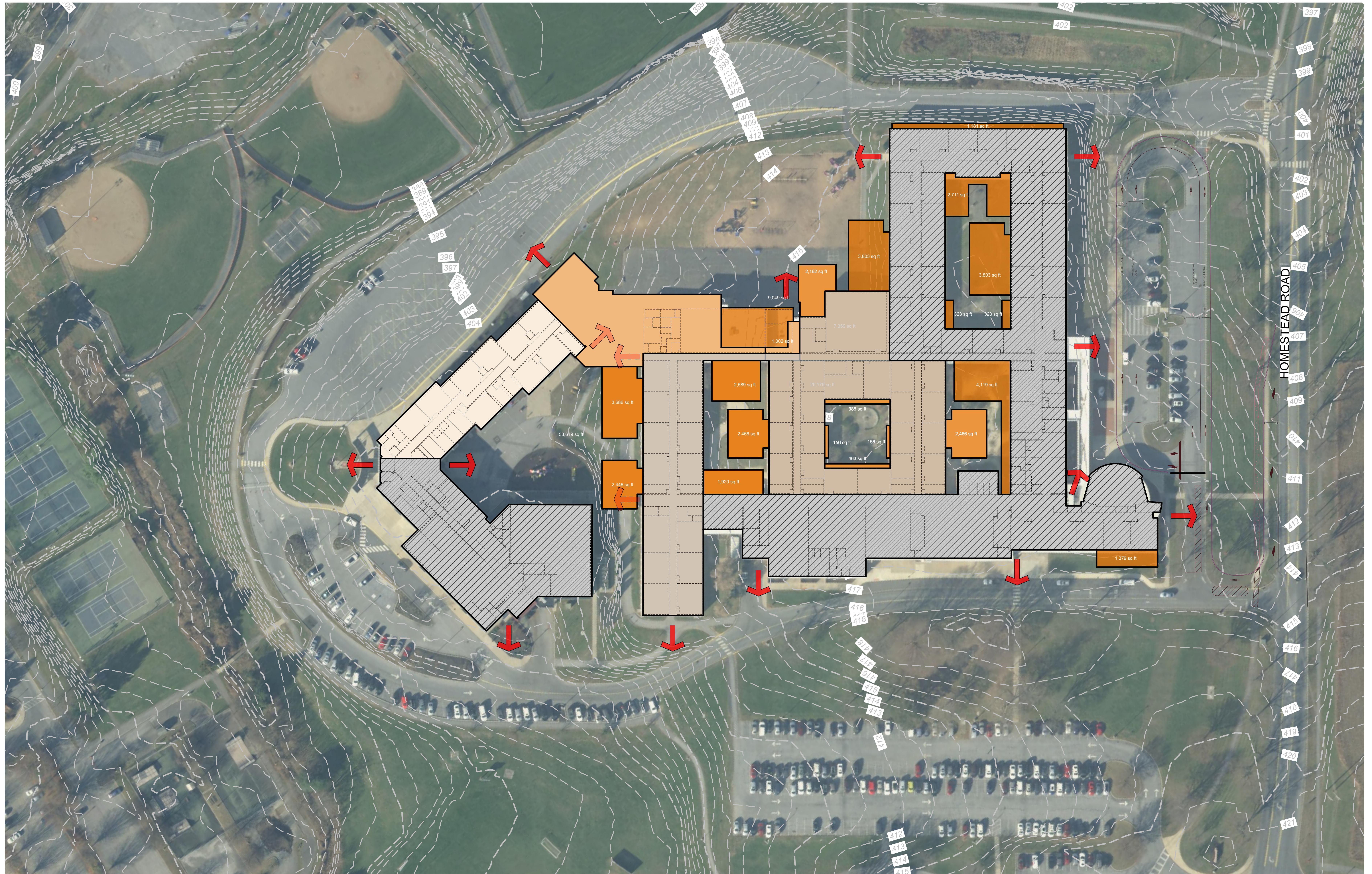


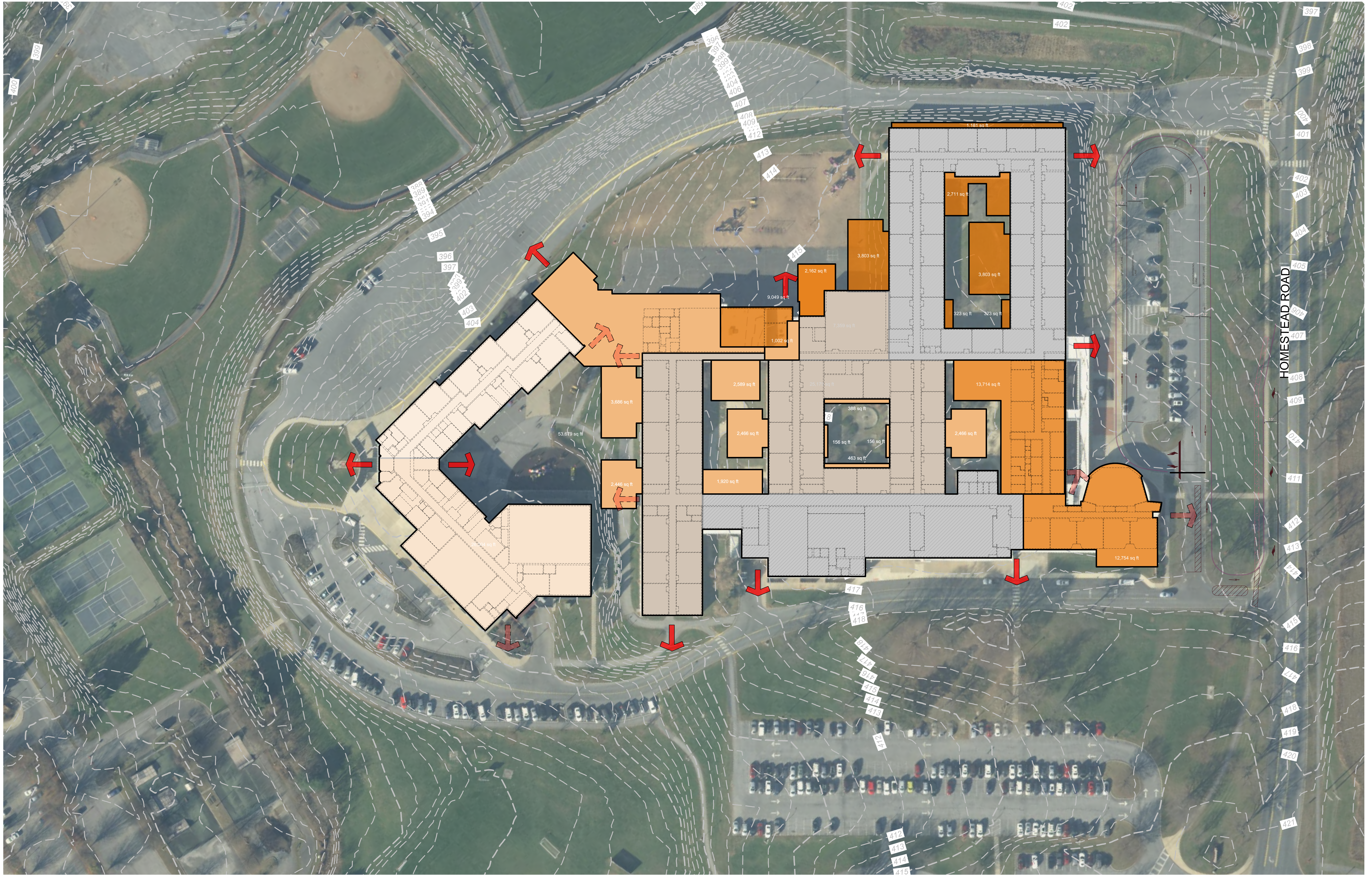


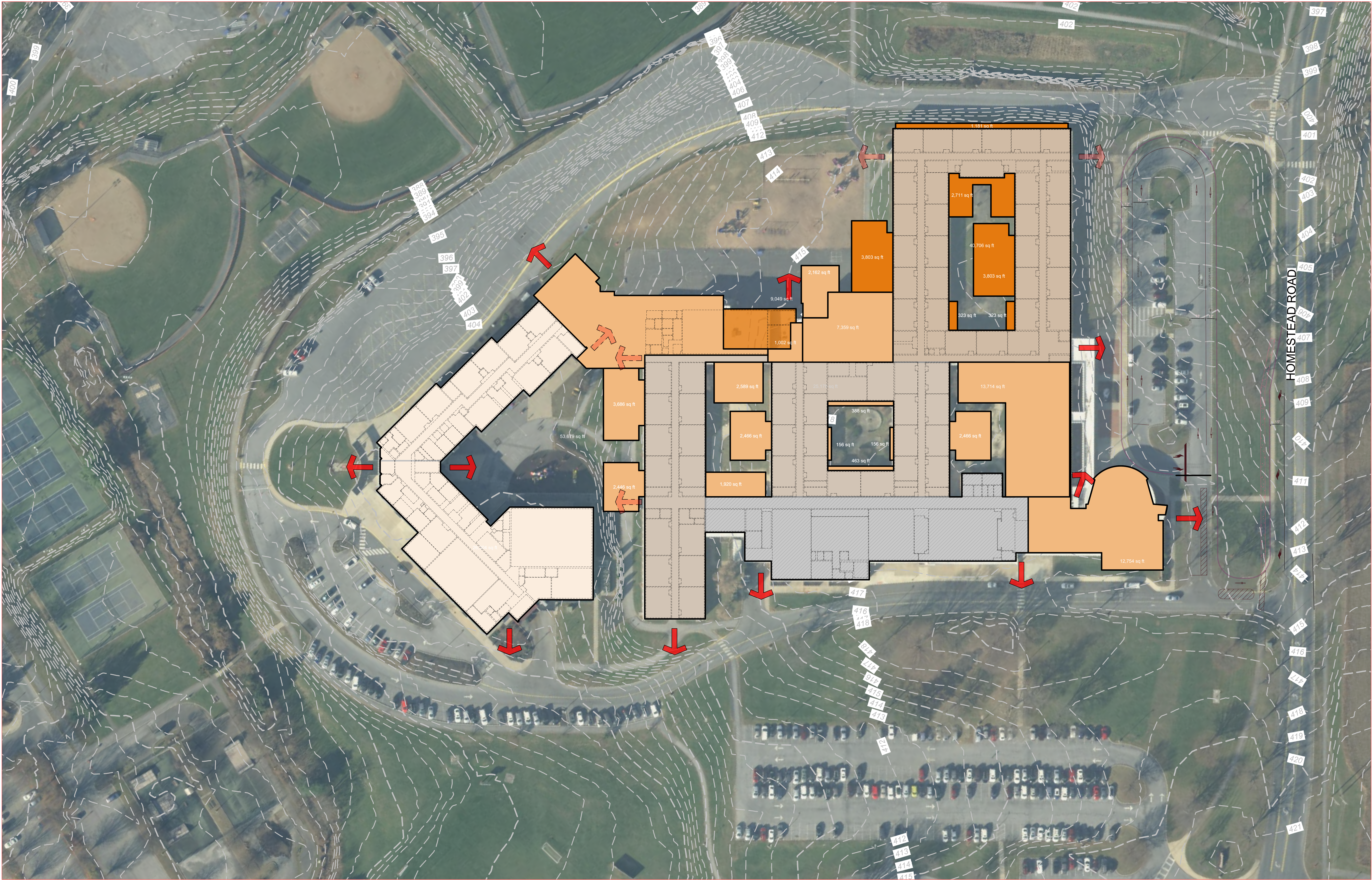


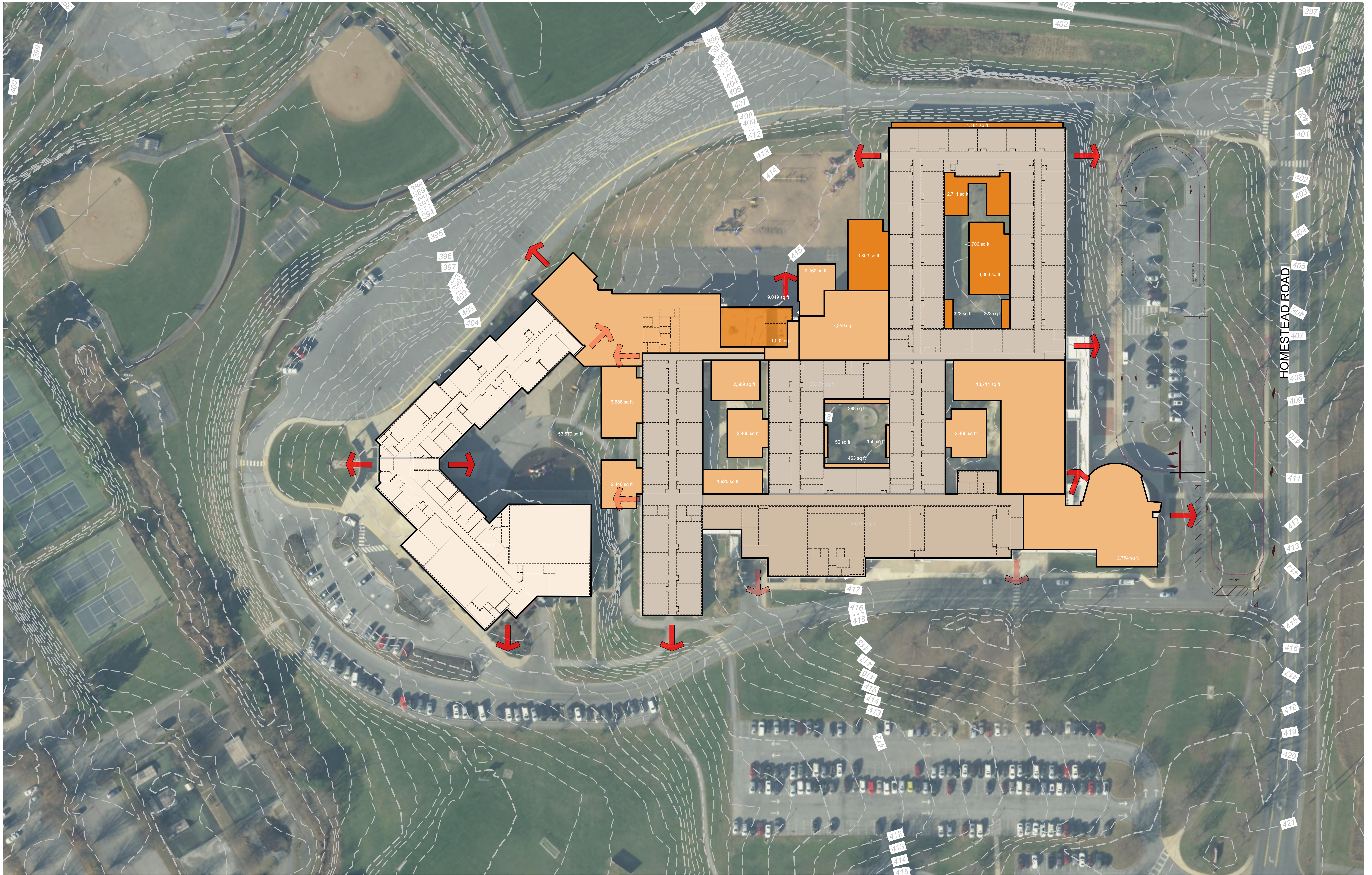


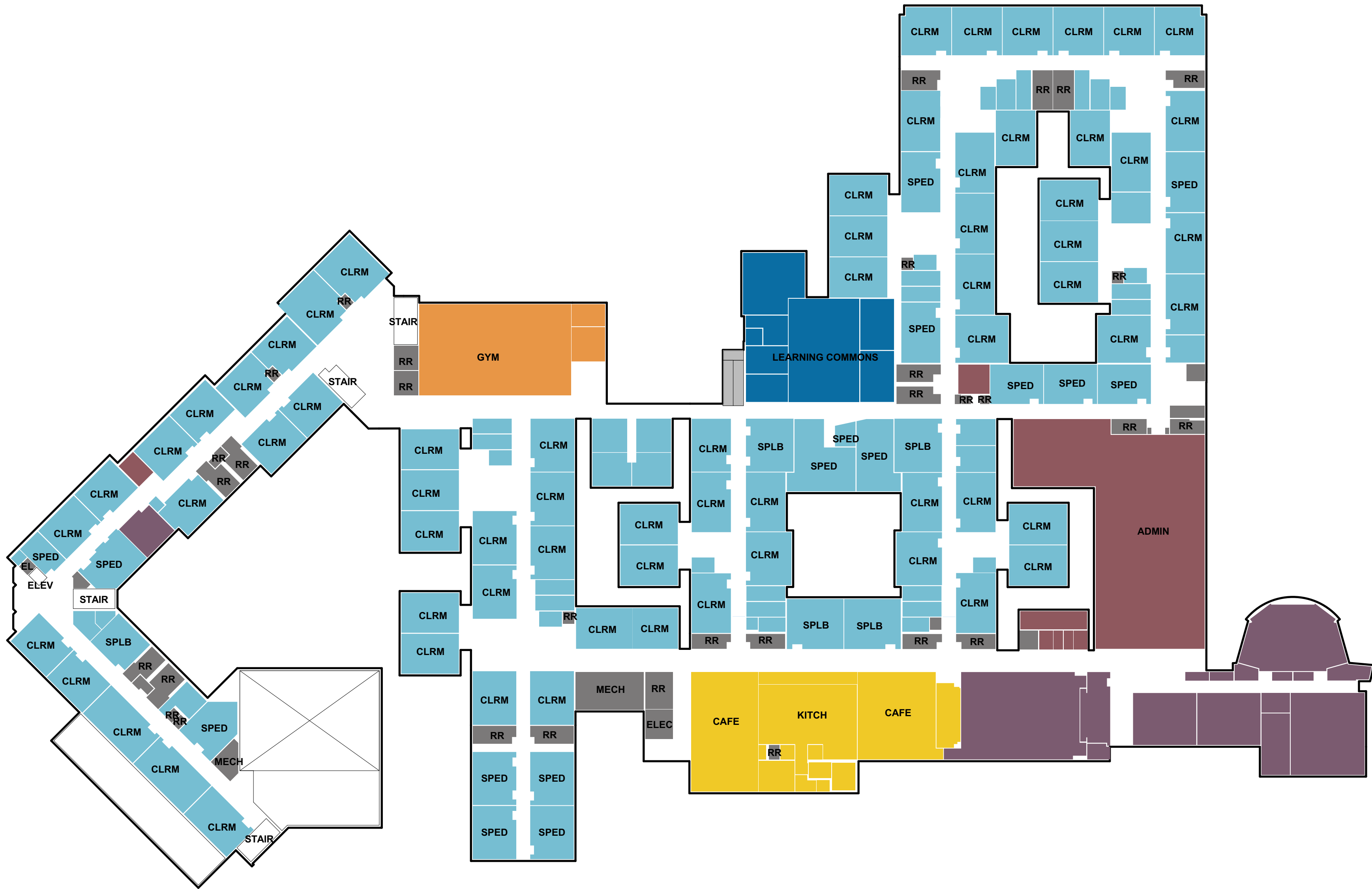












GROSS BUILDING AREA - OPTION 1	
ECC - MINOR RENOVATION	
LEVEL	AREA
MAIN	43,260
UPPER	30,094
	73,354
ES - MAJOR RENOVATION	
LEVEL	AREA
MAIN	145,232
MAIN (DEMO)	9,050
ES - ADDITION	
LEVEL	AREA
MAIN	53,984
TOTAL	272,570

Option 1 – Maintain Existing Buildings w/ Additions & Alterations

Pros:

- Maintain existing facilities
- Maintains existing parking, service areas & bus drop off locations for both buildings
- Minimum reconfiguration of site.
- Ability to maintain existing site amenities i.e. parking, sports fields etc....

Cons:

- Long construction period (4+ years)
- Phased construction
- Modular classrooms for students during various phases (safety & security issue)
- Existing building non-compliance code issues will need to be addressed
 - Fire walls
 - Travel distances
 - Egress capacities at doors & stair towers
 - Toilet fixture counts
 - Accessibility
- Client will not get the full program requirements that they have requested due to existing building constraints
- Overlapping systems
- Noise
- Loss of outside play areas for construction layout space
- Periods where primary function spaces are offline
 - Gymnasiums (ECC gymnasium will need to be shared while new ES gymnasium is constructed)
 - Kitchens (meals will need to be prepared in one kitchen while the other is being renovated and transported to the other school)
 - Cafeterias (students will need to eat in classrooms while cafeterias are being renovated)
 - Band Room (band will need to be relocated to the multipurpose room while the performing arts suite is being renovated)
- Potential for structural modifications to existing structure for lateral load analysis
- Impact to existing structure for modifications would require phasing and temporary shoring
- Does not provide for further growth of the school footprint beyond this work at this current site
- Phased mechanical/electrical systems upgrades will take longer and increase costs.
- Mechanical/electrical equipment space constraints due to existing conditions (i.e. ceiling space, pathways, mech/elec room sizes, etc.).
- New central plant equipment to be housed in same location as existing, leading to additional phasing concerns and longer down times during replacement.
- Challenge for constructing in-fill areas.
- Increase in impervious will necessitate new or expanded stormwater management facilities.
- Difficulty getting stormwater from in-fill areas to BMPs.
- Some parking constraints remain.

Overall Project Budget Worksheet		Option 1 Renovate ECC and ES	
			272,570
01	Estimated Construction Costs		
	Estimated Cost of Construction	\$ 258,24	\$ 70,387,784
	Escalation to Const Midpoint	15.00%	\$ 10,558,168
	Construction Contingency	10.00%	\$ 7,038,778
	Modular Classrooms		\$ 3,405,449
	Abatement		\$ 4,500,000
	Phasing Premium		\$ 3,519,389
	Gen Conds & Gen Resp		\$ 7,363,135
	General Liability Insurance		\$ 1,987,727
	Builder's Risk Insurance (By Owner)		\$ -
	P&P Bond		\$ 1,348,005
	Fee		\$ 3,002,662
Total Current Const Cost:		\$	112,191,108
02	Owner Project Contingency		
	Owner Contingency @ 10%	\$	11,219,111
Total Owner Contingency:		\$	11,219,111
03	Design Fees		
	Architect / Engineers	8.5%	\$ 9,536,244
Total Design Fees:		\$	9,536,244
04	Furnishings, Fixtures, & Equipment		
	Allowance	\$	2,000,000
Total FFE:		\$	2,000,000
05	Related Expenses Allowances		
	Builder's Risk Ins (.65% Total Const Cost)	\$	729,242
	Bonds	\$	-
	Relocation Costs	\$	-
	Moving and Storage	\$	-
	Financing Fees	\$	-
	Permit Fees (\$3.14/\$1,000 of const)	\$	22,018
	Utility Connection Fees	\$	-
	Utility Consumption Costs	\$	-
	Other	\$	-
Total Related Expenses:		\$	950,260
TOTAL ESTIMATED PROJECT COST:		\$ 498.58	\$ 135,896,723
Total Estimated Project Range		Low	\$ 129,101,887
		High	\$ 146,768,461

OPTION 1

OPTION 2

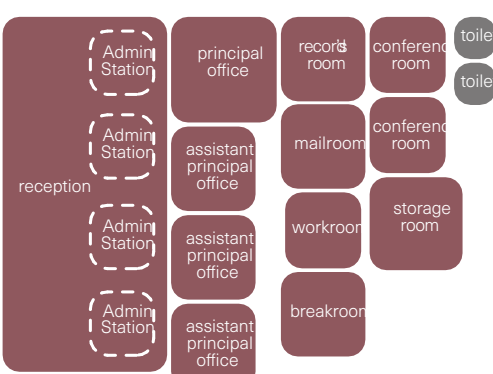
DERRY TOWNSHIP ELEMENTARY SCHOOL PROGRAM

INDICATES AREAS EXCLUDED

ADMINISTRATION



ADMINISTRATION SUITE



GUIDANCE SUITE



HEALTH SUITE



PSYCHOLOGISTS



OCCUPATIONAL THERAPY



PARENT/TEACHER ORGANIZATION

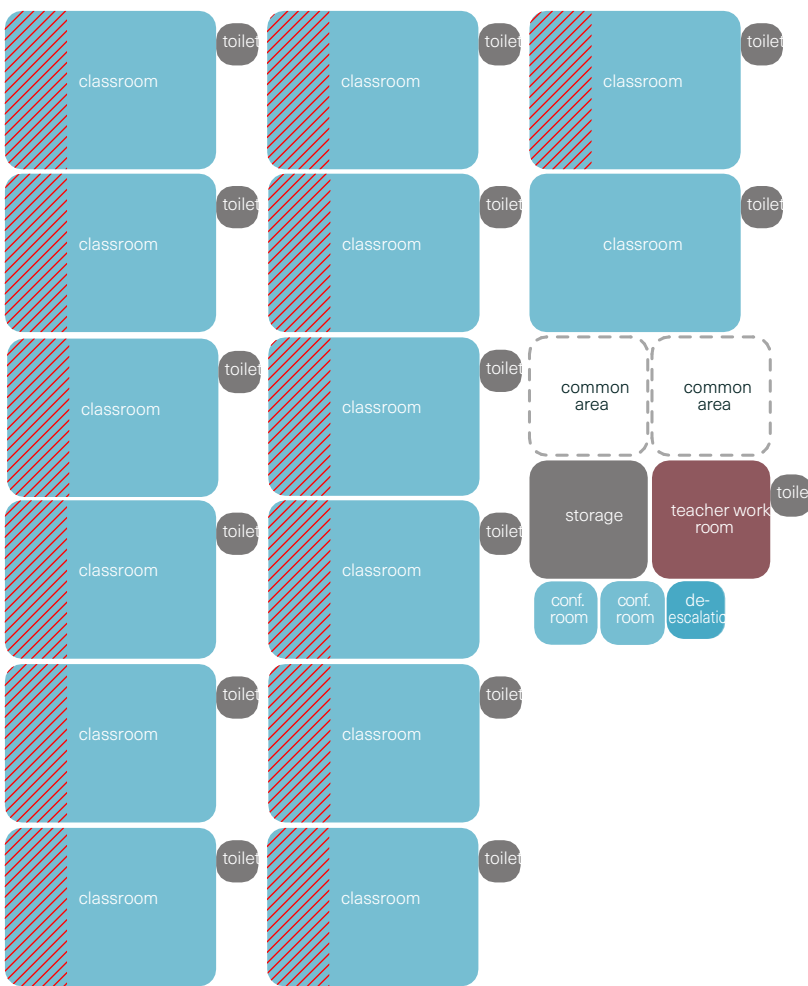


PROFESSIONAL DEVELOPMENT

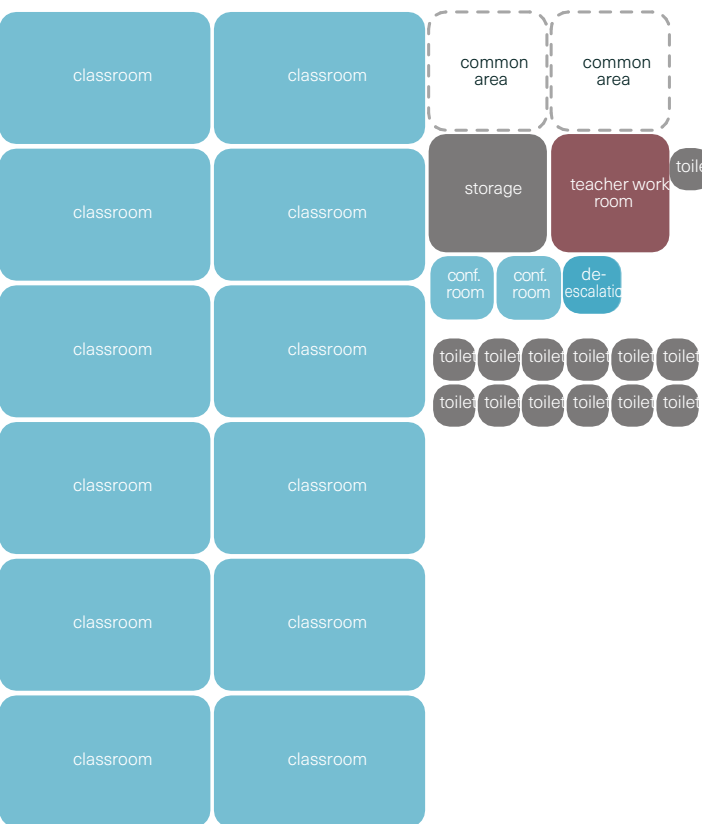


CORE ACADEMIC

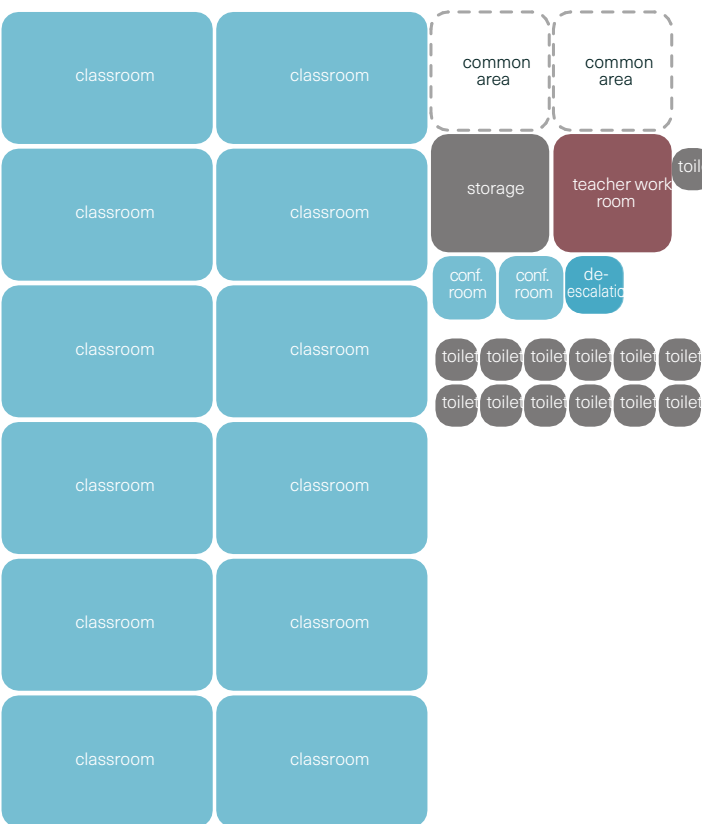
KINDERGARTEN



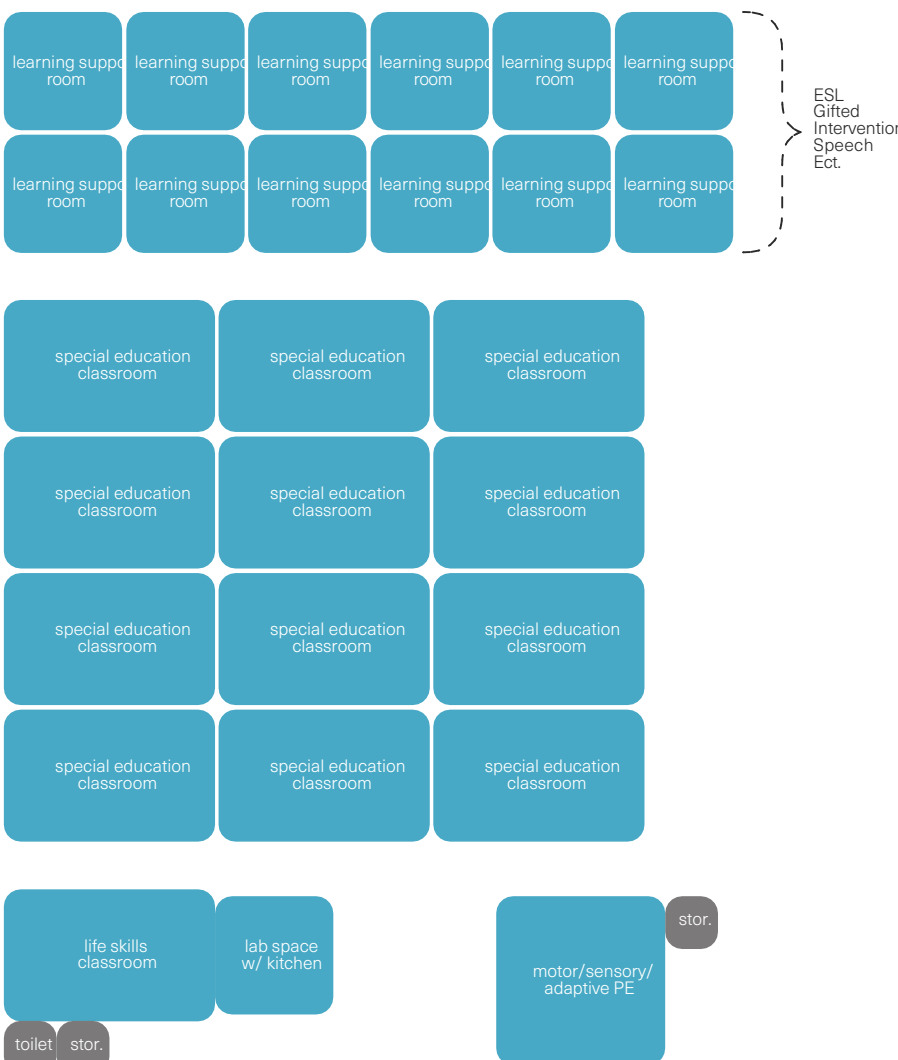
2ND GRADE



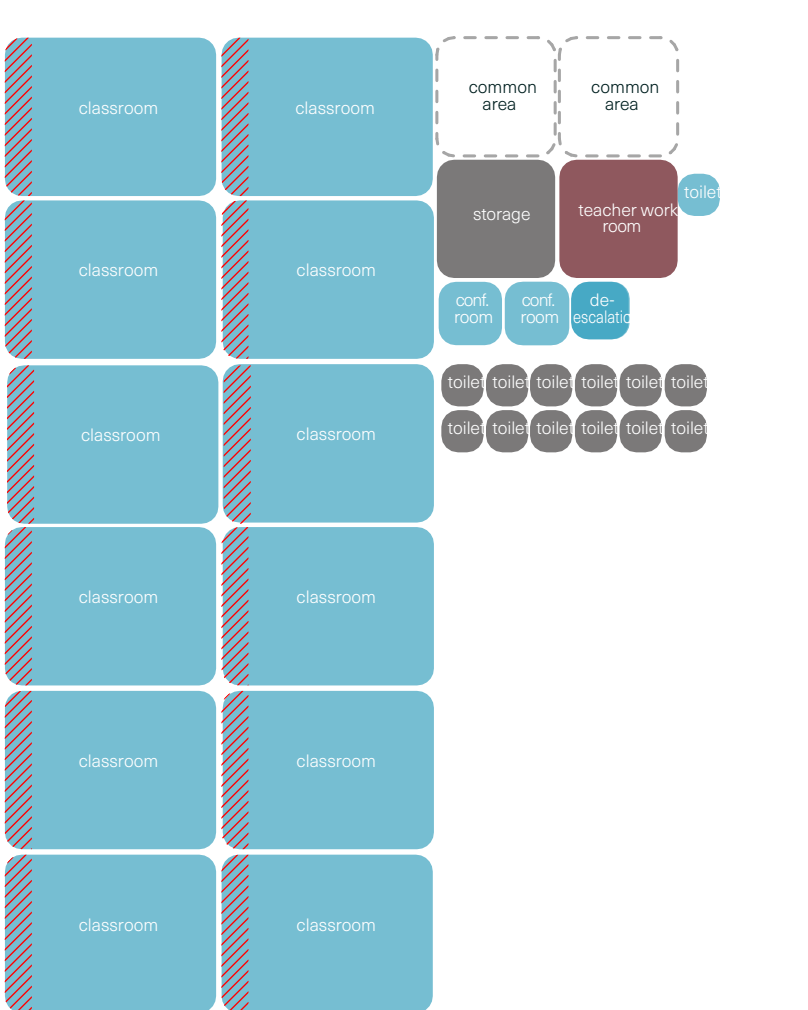
4TH GRADE



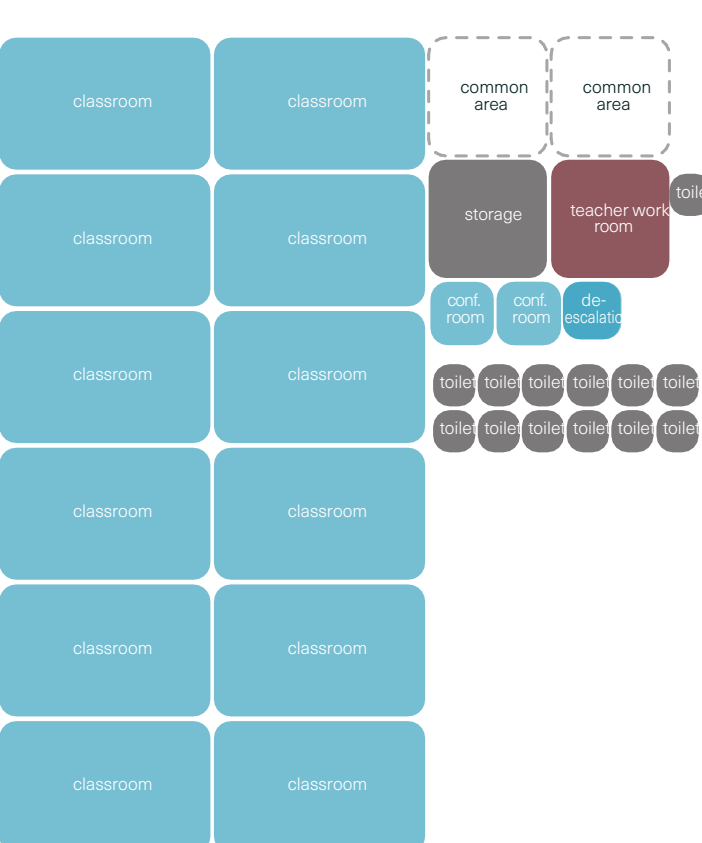
LEARNING SUPPORT



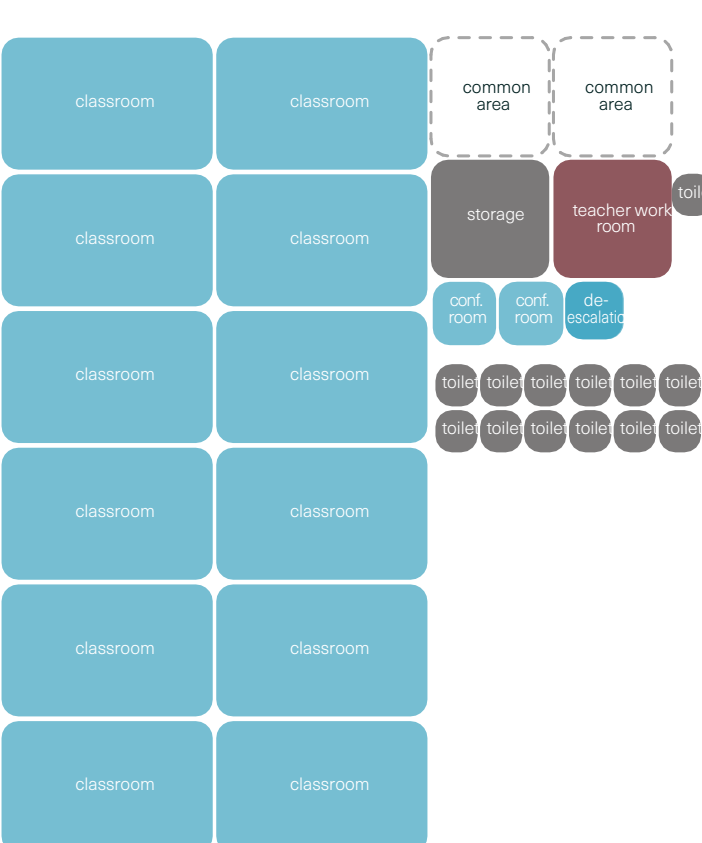
1ST GRADE



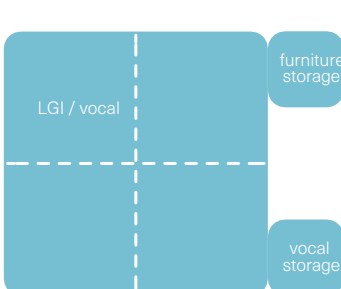
3RD GRADE



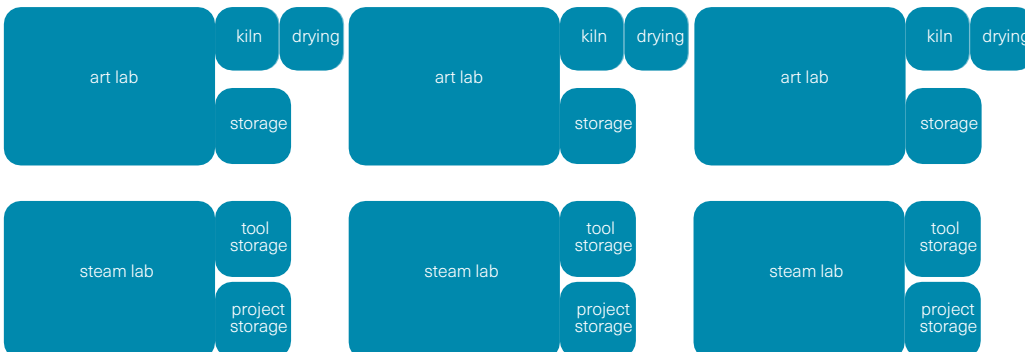
5TH GRADE



LARGE GROUP INSTRUCTION / VOCAL

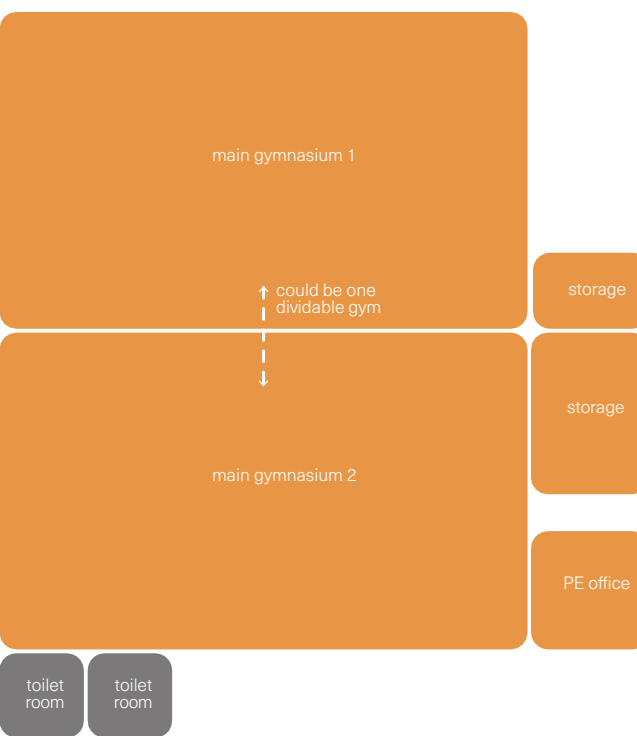


SPECIALTY LABS

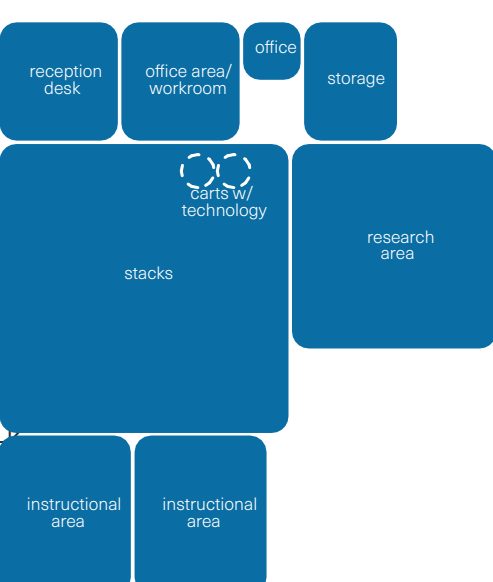


ACADEMIC SPECIALS

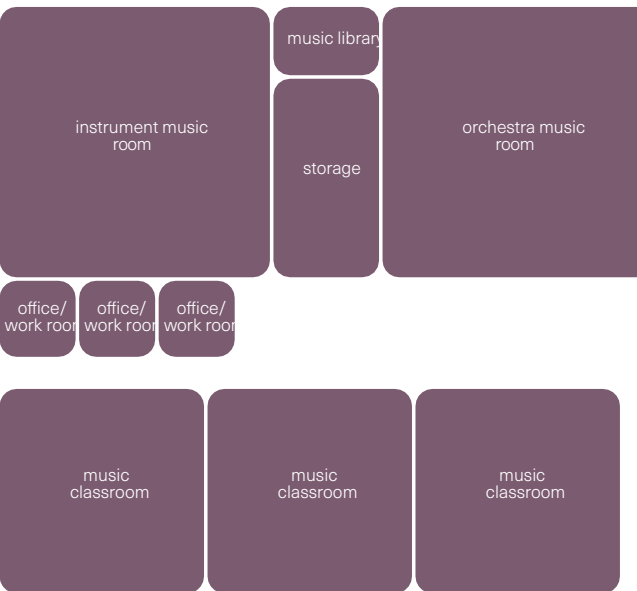
PHYSICAL EDUCATION



LEARNING COMMONS

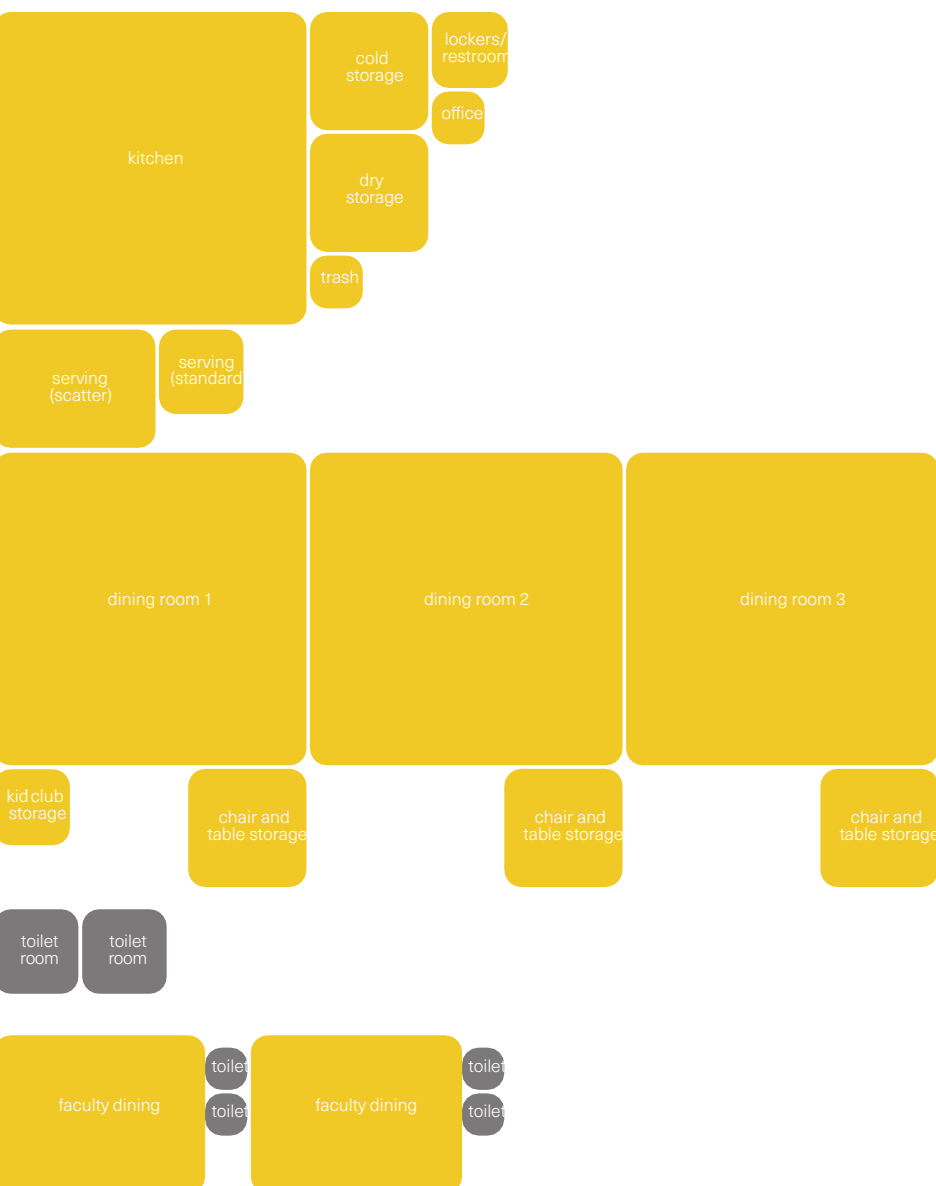


PERFORMING ARTS



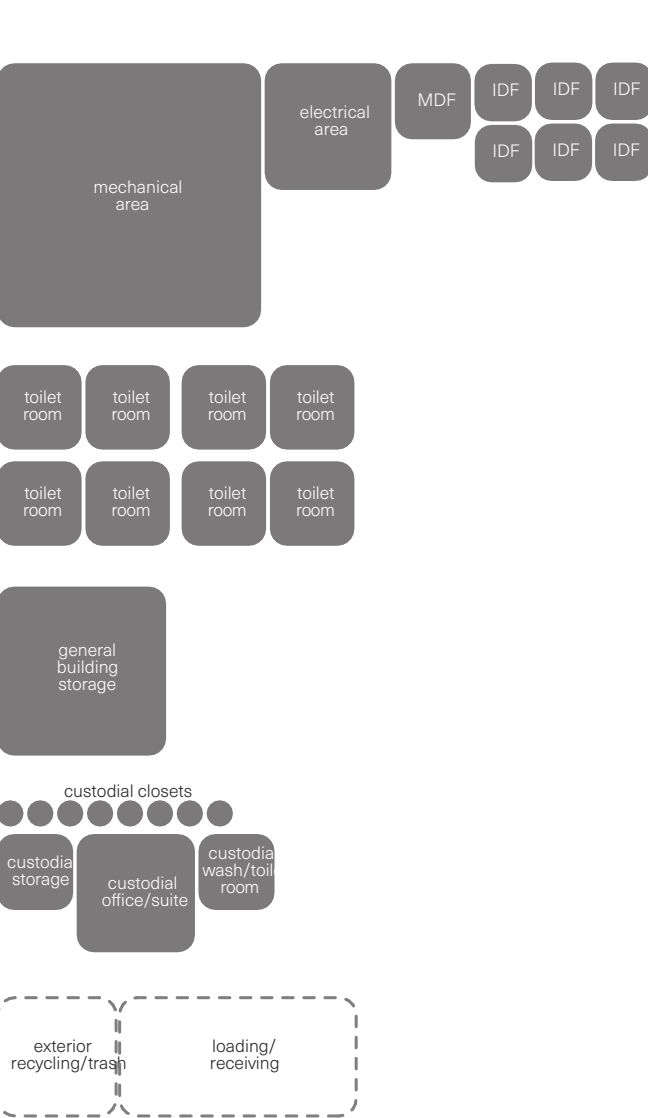
FOOD SERVICE

FOOD SERVICE

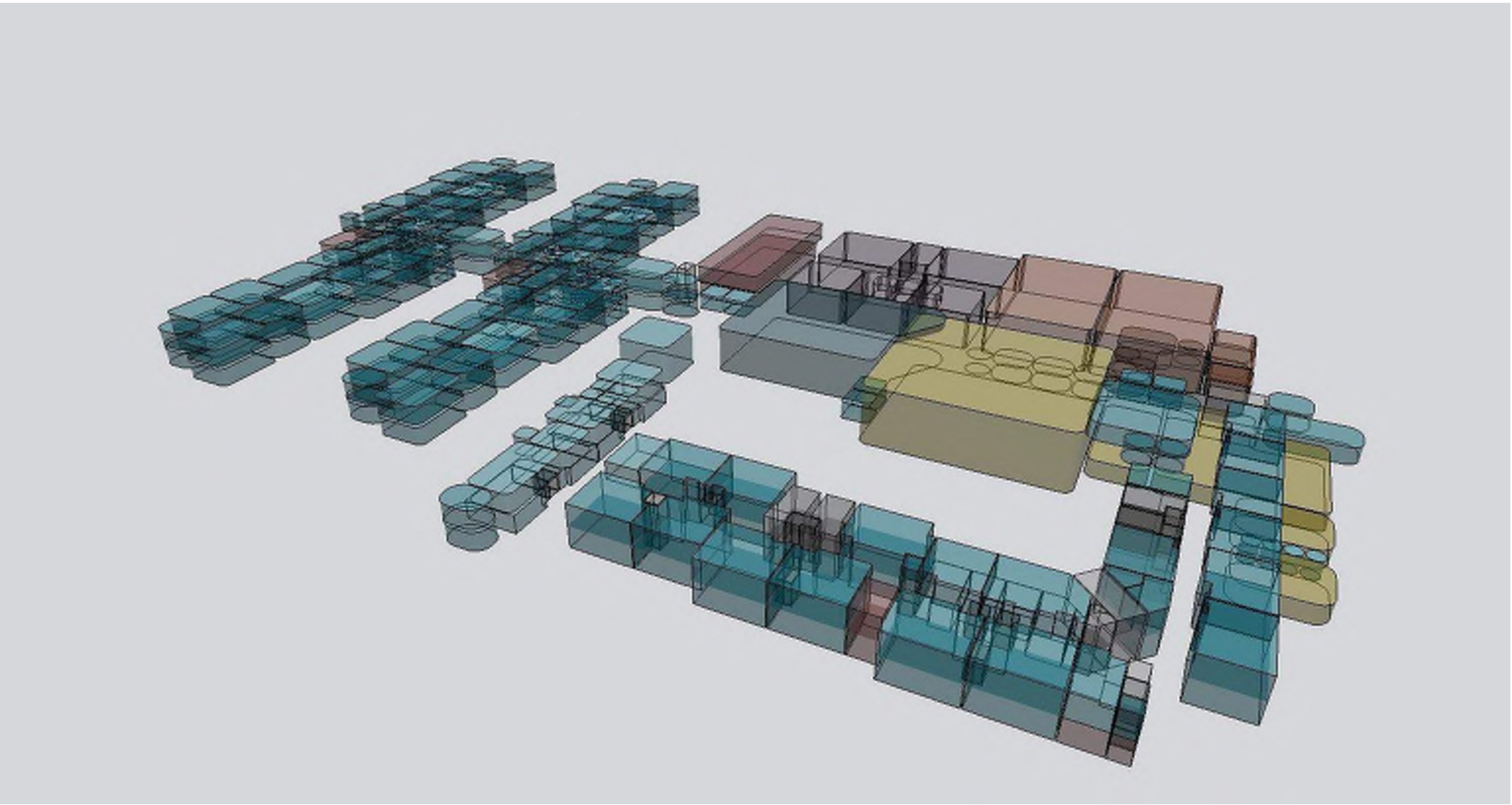
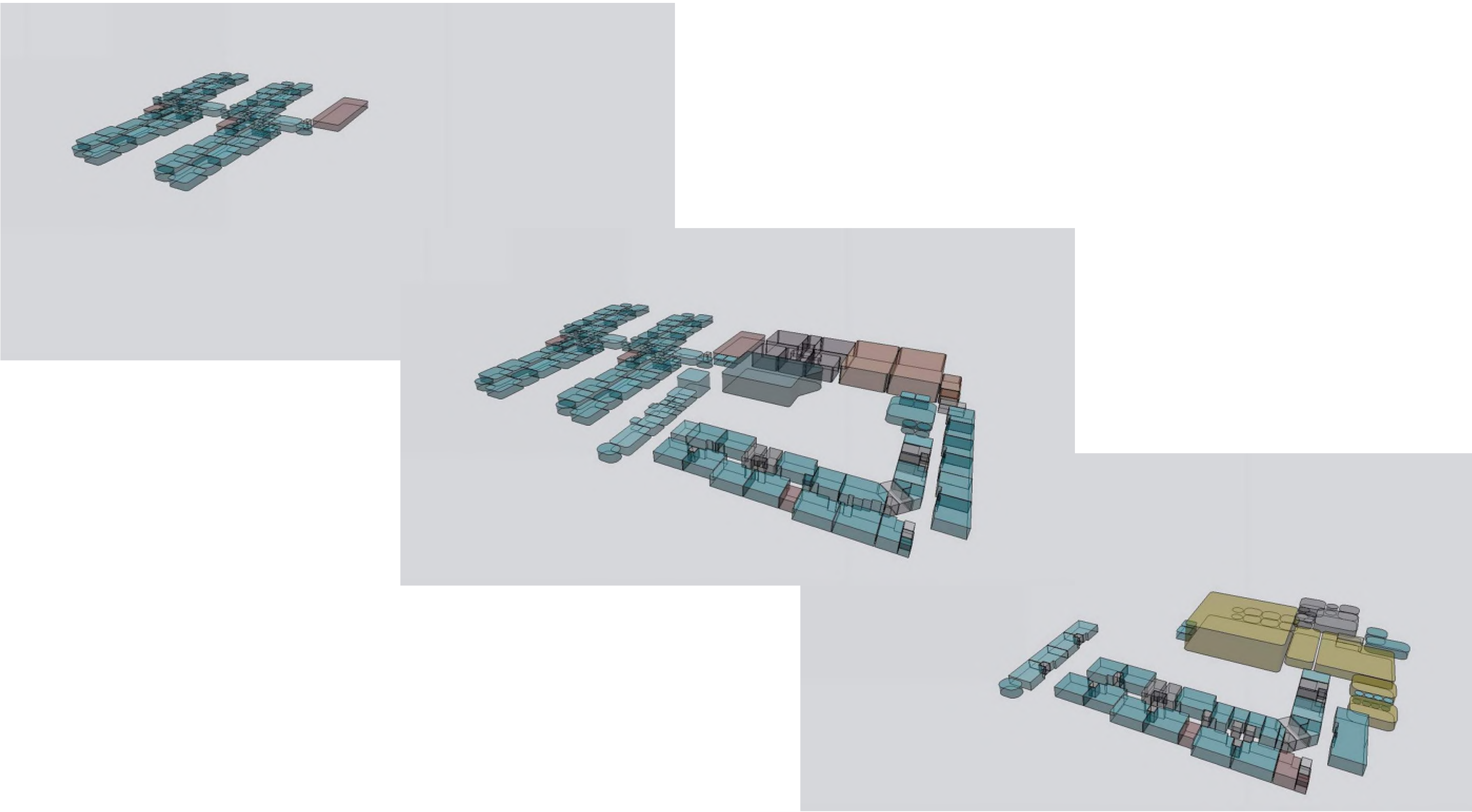
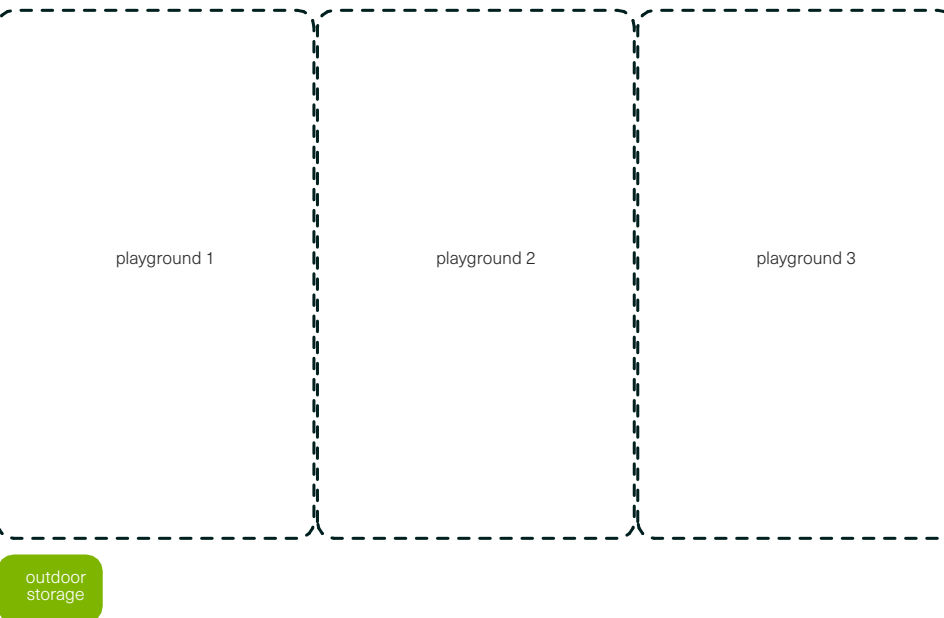


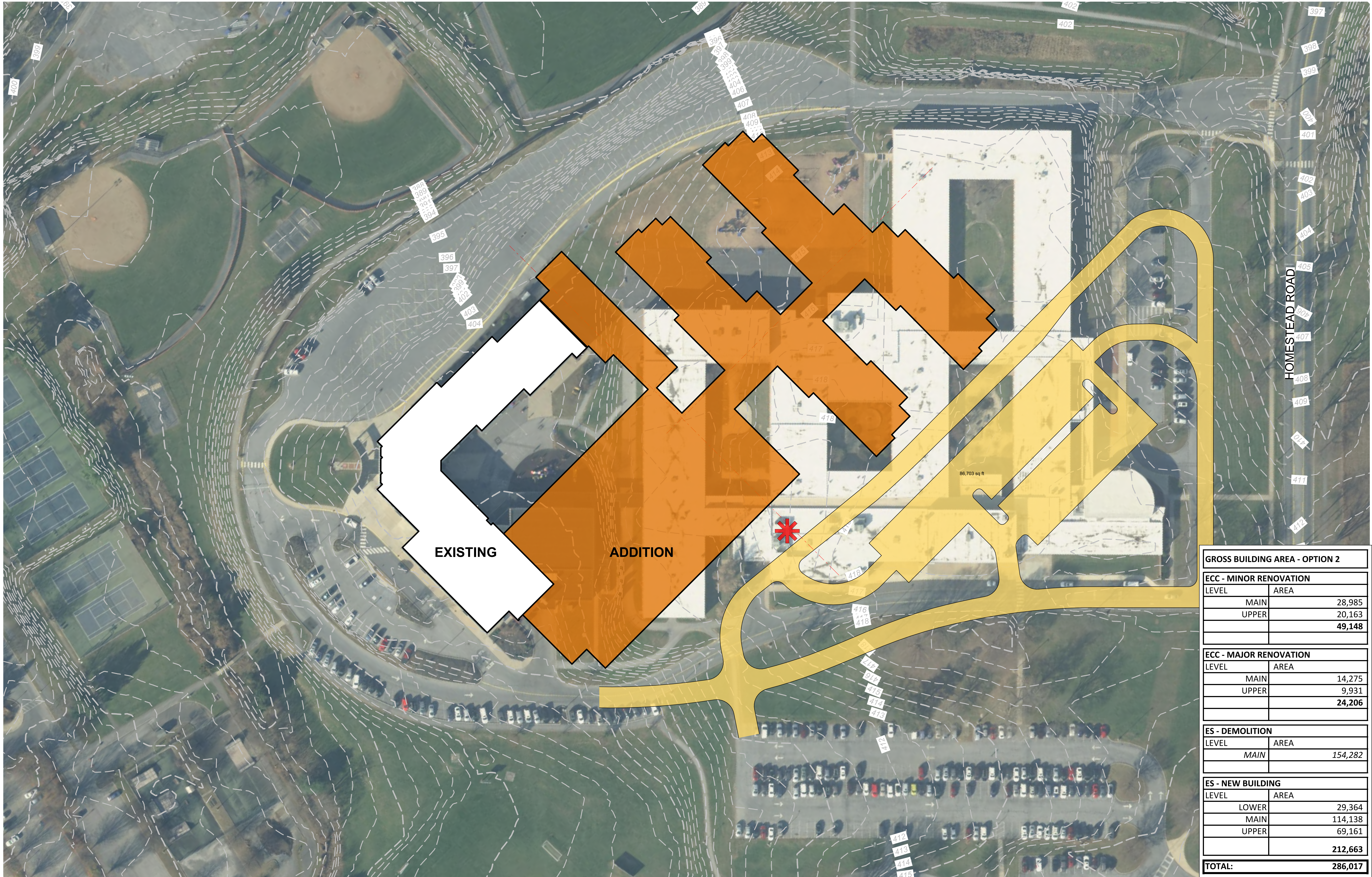
SUPPORT SPACES / PLAYGROUND

SUPPORT SPACES

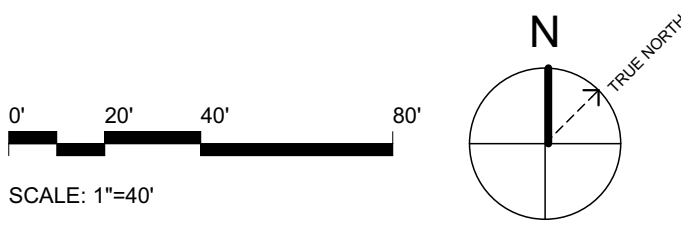
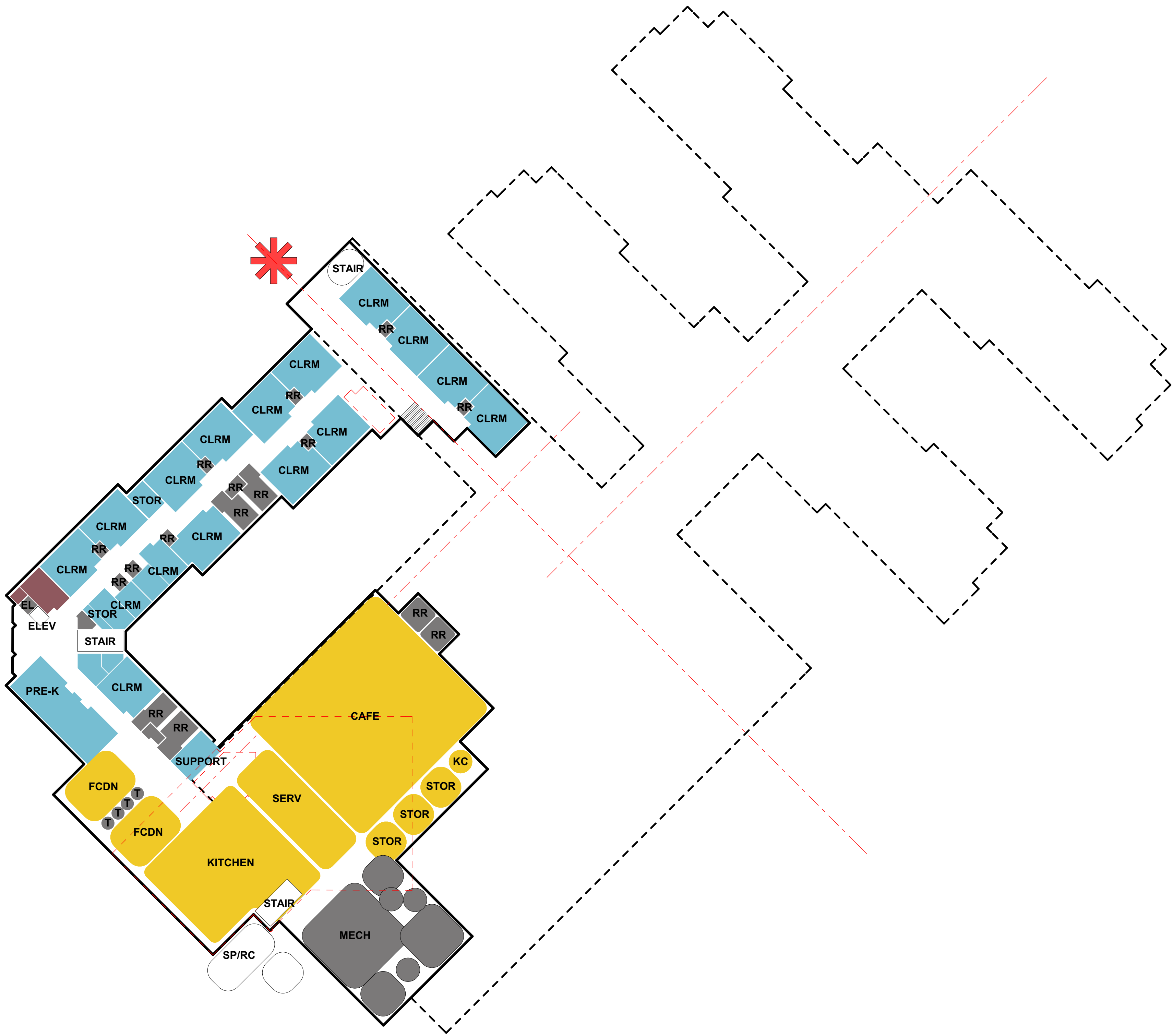


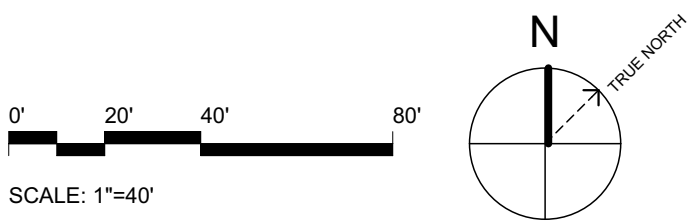
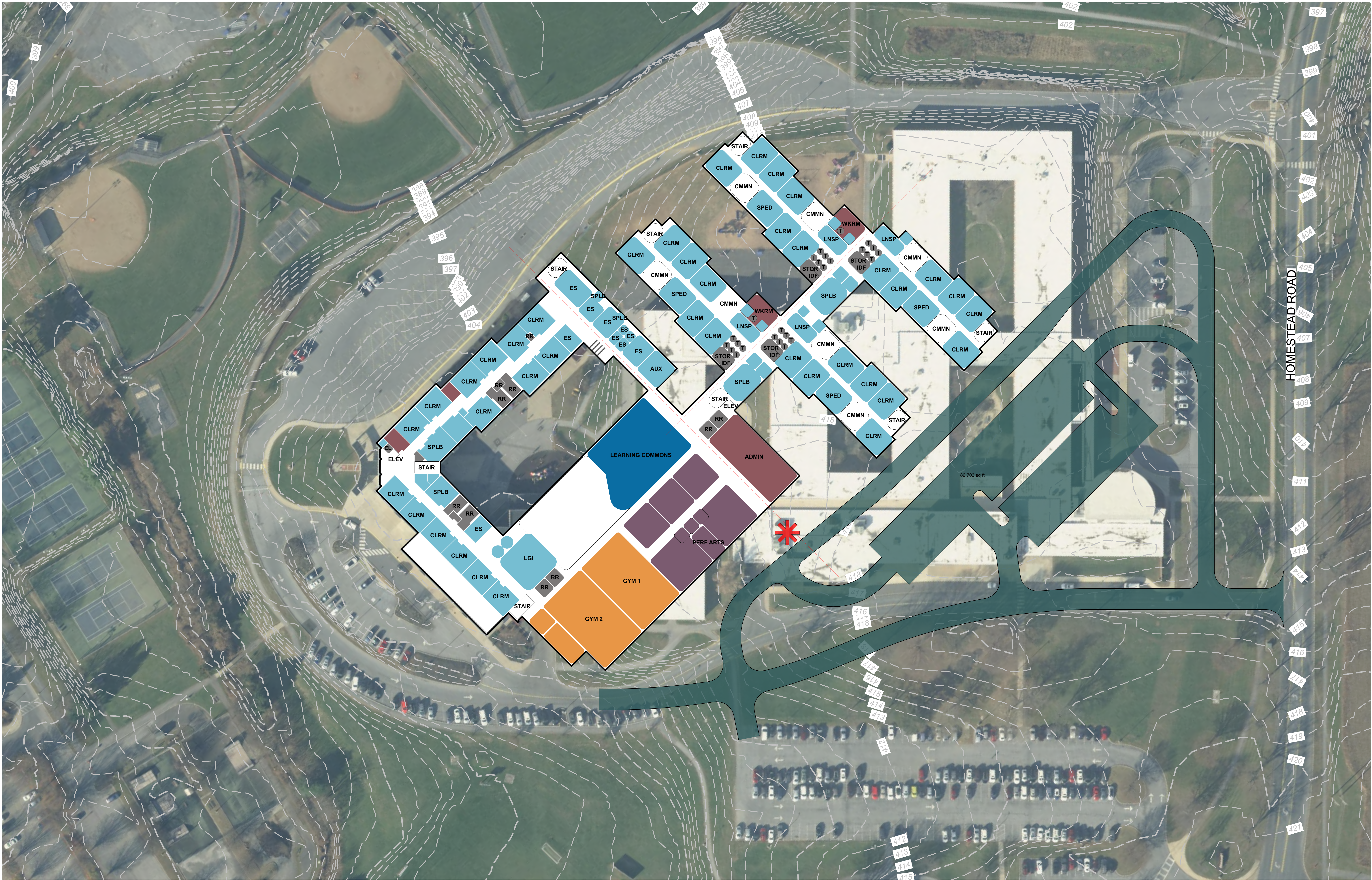
PLAYGROUND

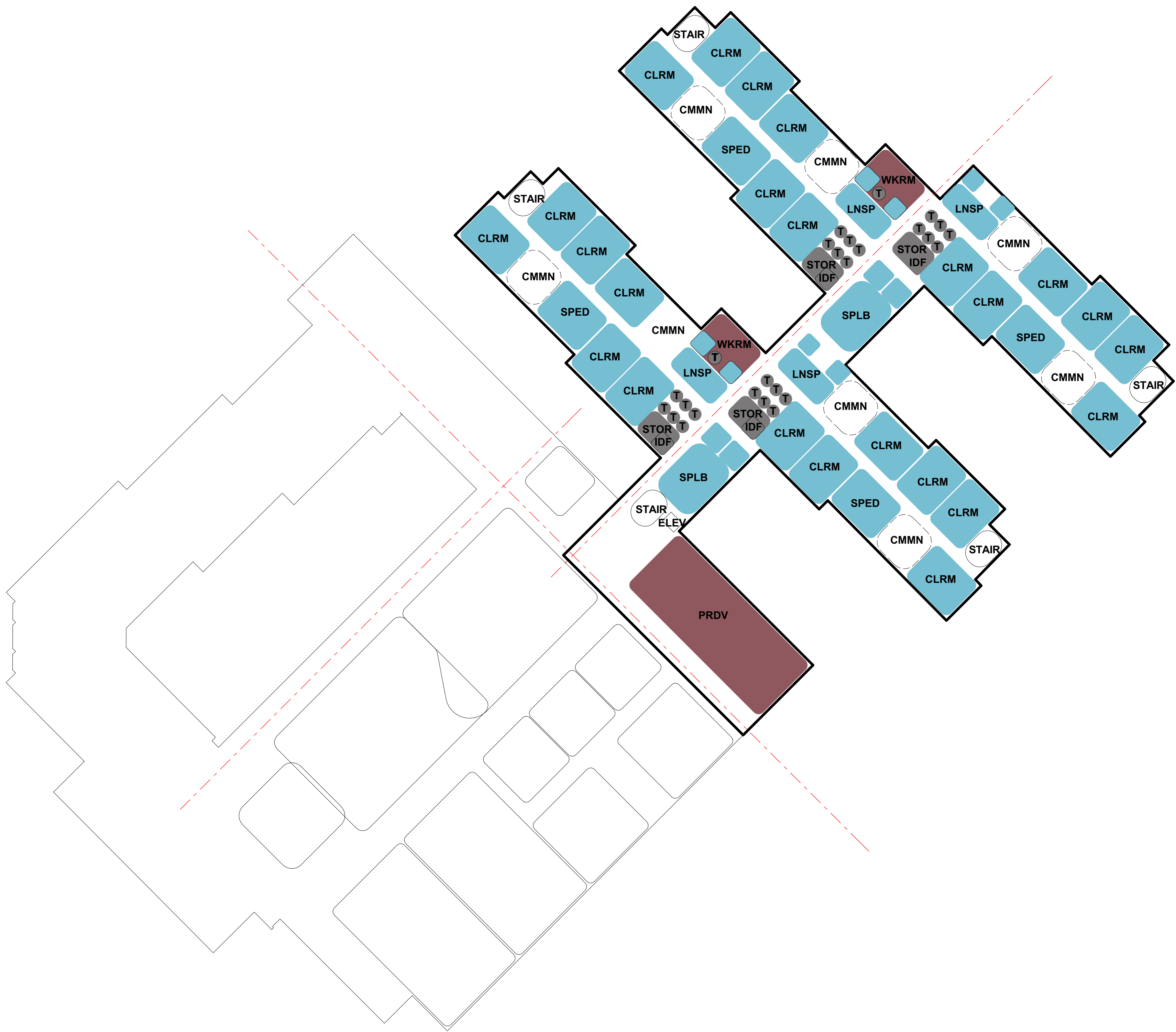


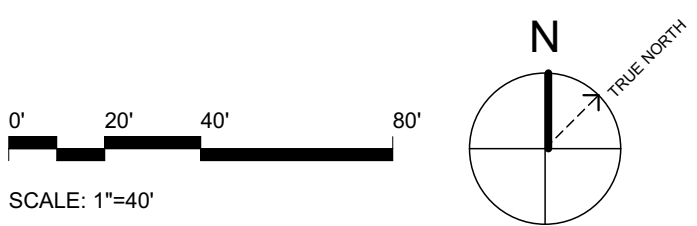
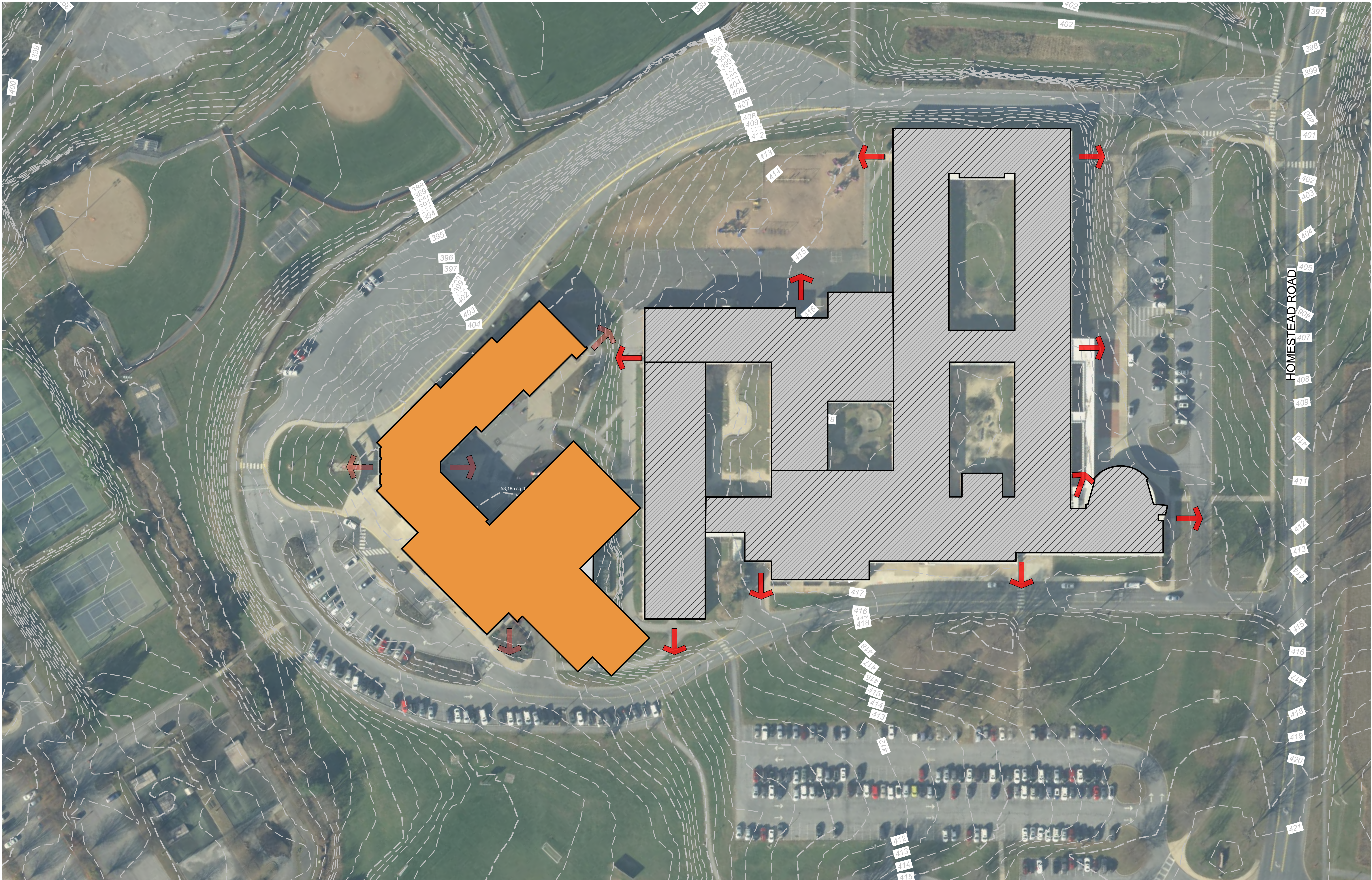


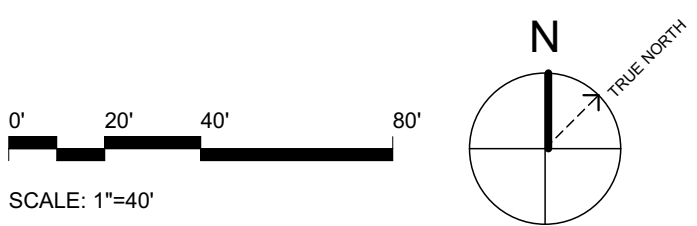
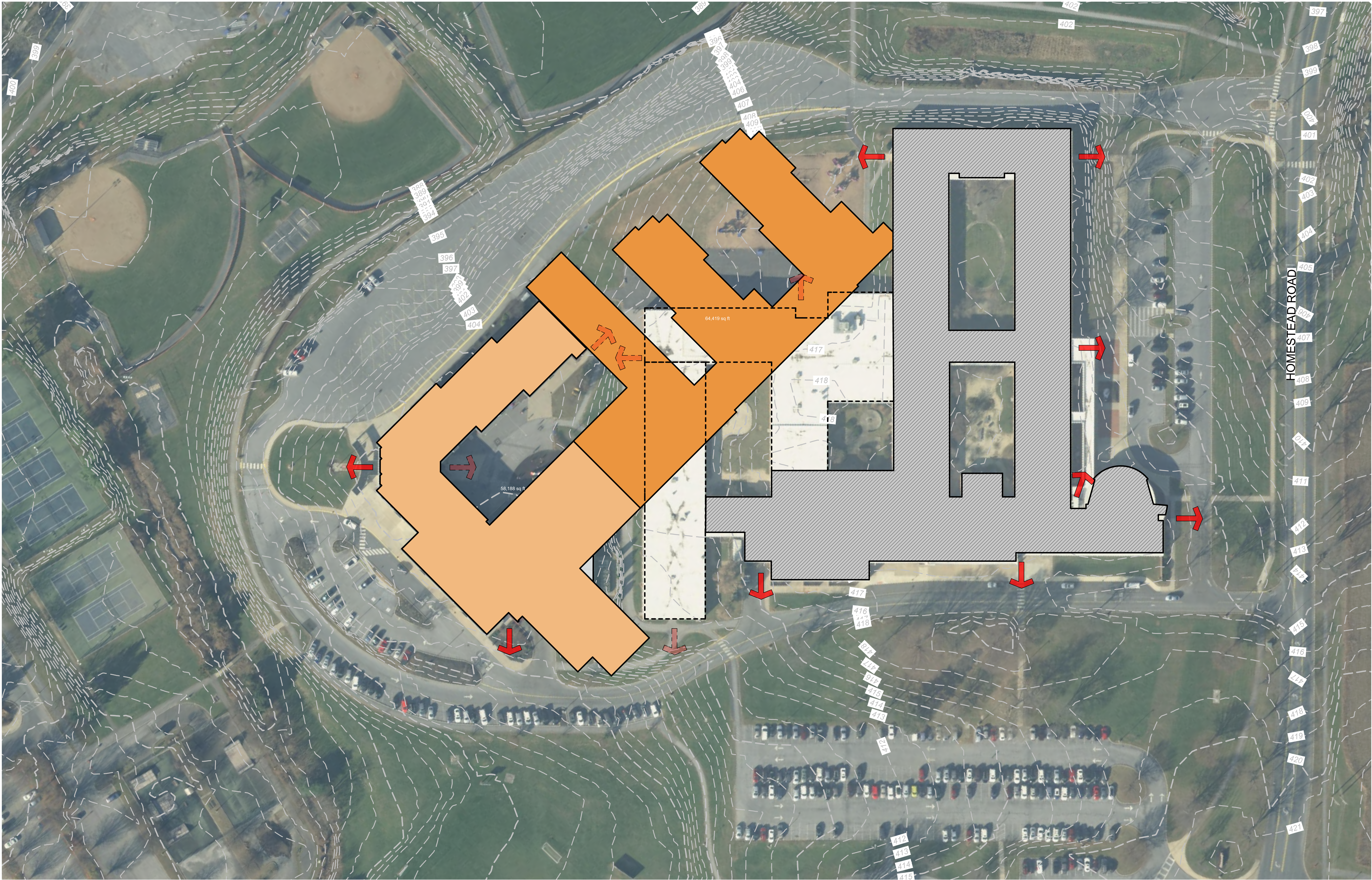
GROSS BUILDING AREA - OPTION 2	
ECC - MINOR RENOVATION	
LEVEL	AREA
MAIN	28,985
UPPER	20,163
	49,148
ECC - MAJOR RENOVATION	
LEVEL	AREA
MAIN	14,275
UPPER	9,931
	24,206
ES - DEMOLITION	
LEVEL	AREA
MAIN	154,282
ES - NEW BUILDING	
LEVEL	AREA
LOWER	29,364
MAIN	114,138
UPPER	69,161
	212,663
TOTAL:	286,017

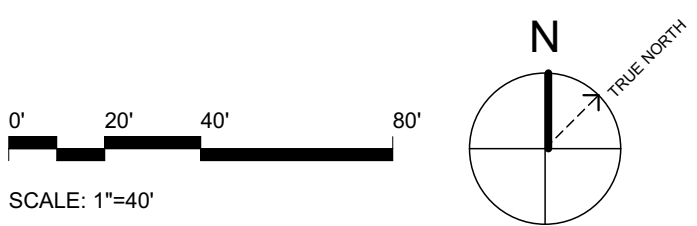
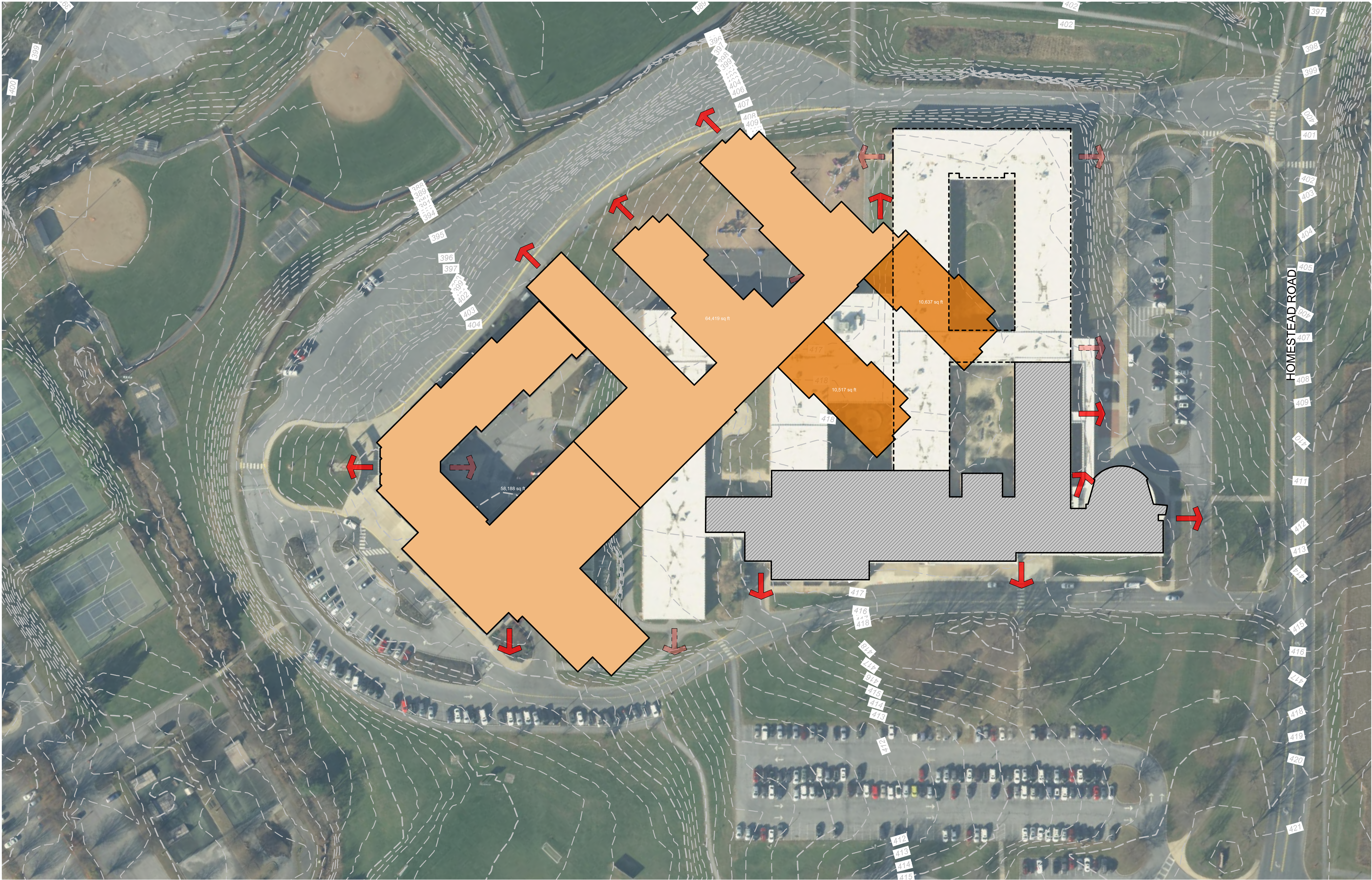


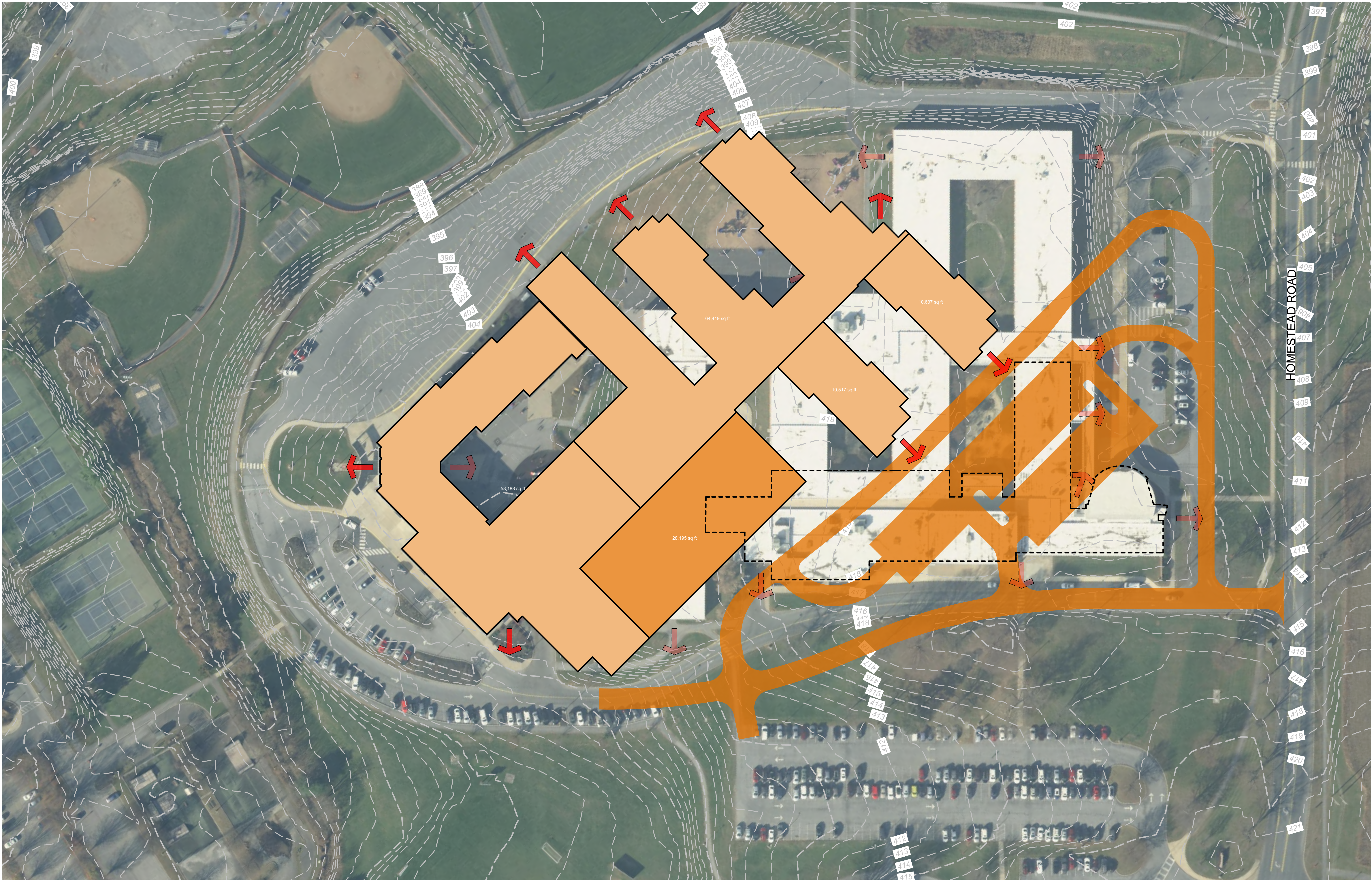


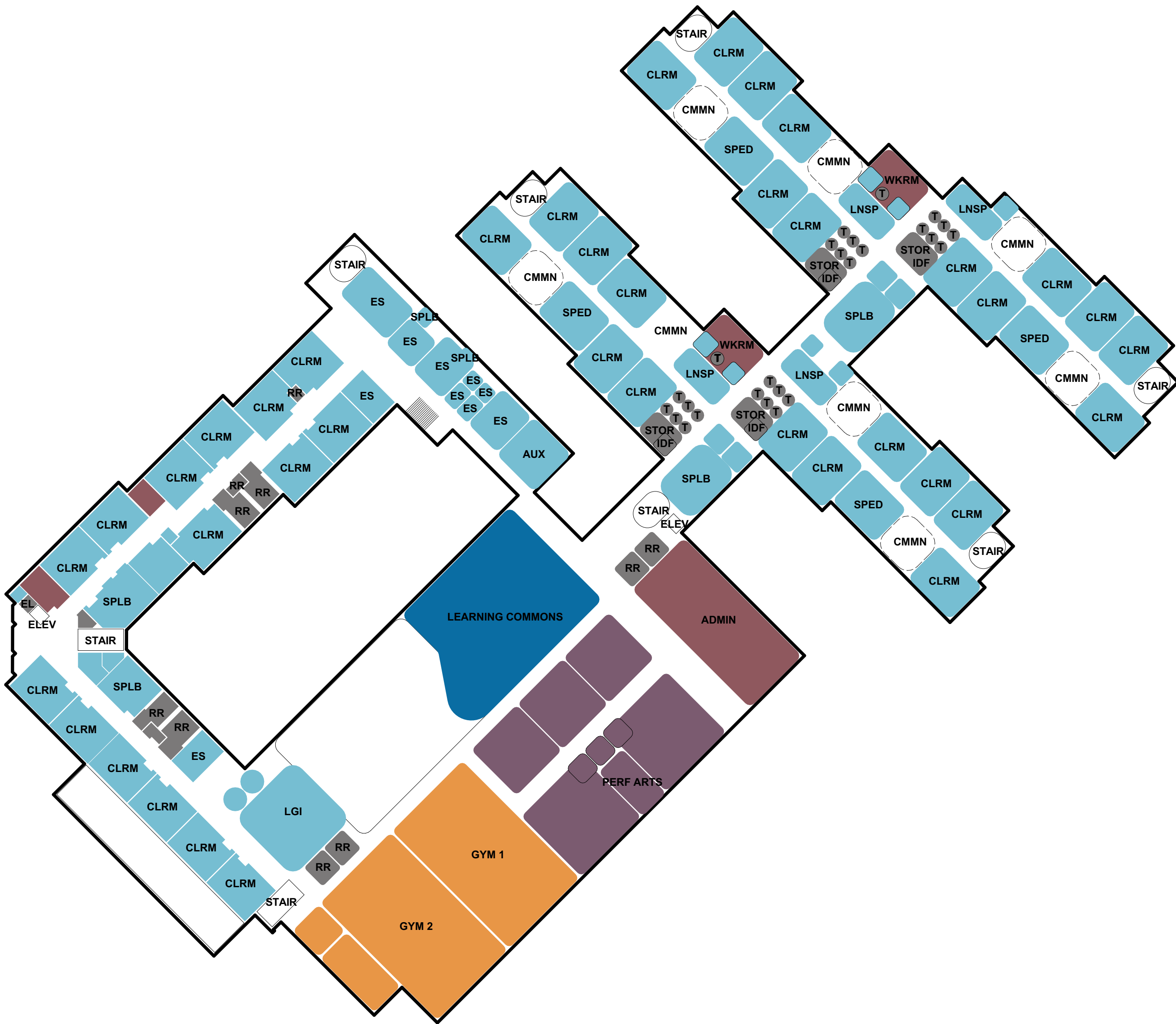












4/27/2020

GROSS BUILDING AREA - OPTION 2	
ECC - MINOR RENOVATION	
LEVEL	AREA
MAIN	28,985
UPPER	20,163
	49,148
ECC - MAJOR RENOVATION	
LEVEL	AREA
MAIN	14,275
UPPER	9,931
	24,206
ES - DEMOLITION	
LEVEL	AREA
MAIN	154,282
ES - NEW BUILDING	
LEVEL	AREA
LOWER	29,364
MAIN	114,138
UPPER	69,161
	212,663
TOTAL:	286,017

Option 2 – Maintain & Renovate Existing ECC & Construct New ES Addition

Pros:

- Maintain ECC (Newest School Building in District)
- Maintains existing ECC bus drop off during construction.
- Opportunity to construct new central mechanical plant prior to removing existing equipment, reducing phasing and down time (vs. Option 1).
- Reduction in site impervious, no stormwater management needed.
- Maintains most site amenities i.e. bus loop, sports fields.
- New parking area alleviates parking constraints, new stacking lanes for parent pickup/dropoff.

Cons:

- Long construction period (3+ years)
- Phased construction
- Modular classrooms for students during various phases (safety & security issue)
- Existing building non-compliance code issues will need to be addressed
 - Fire walls
 - Travel distances
 - Egress capacities at doors & stair towers
 - Toilet fixture counts
 - Accessibility
- Classroom spaces in existing ECC building will remain at existing sizes and will be undersized from program requirements
- ECC kitchen & cafeteria will be offline during Phase 1
 - Meals will need to be prepared at ES (or other building) & transported to ECC
 - Students will need to eat in their classrooms
- No ECC gymnasium in Phase 1
 - Must share existing ES gymnasium
- No ES gymnasium starting in Phase 2
 - ECC & ES grades must share the (1) new gymnasium constructed in Phase 1 until the second new gymnasium is constructed in Phase 4.
- ECC outdoor play area lost in Phase 1
- ES outdoor play area lost in Phase 2
- New permanent outdoor play areas not constructed until Phase 4
- Administration is in modular units in Phase 4
- Performing arts in modular units in Phase 4
- Potential for structural modifications to existing structure for lateral load analysis
- Impact to existing structure for modifications would require phasing and temporary shoring
- Phased mechanical/electrical systems upgrades will take longer and increase costs (vs. Option 3).

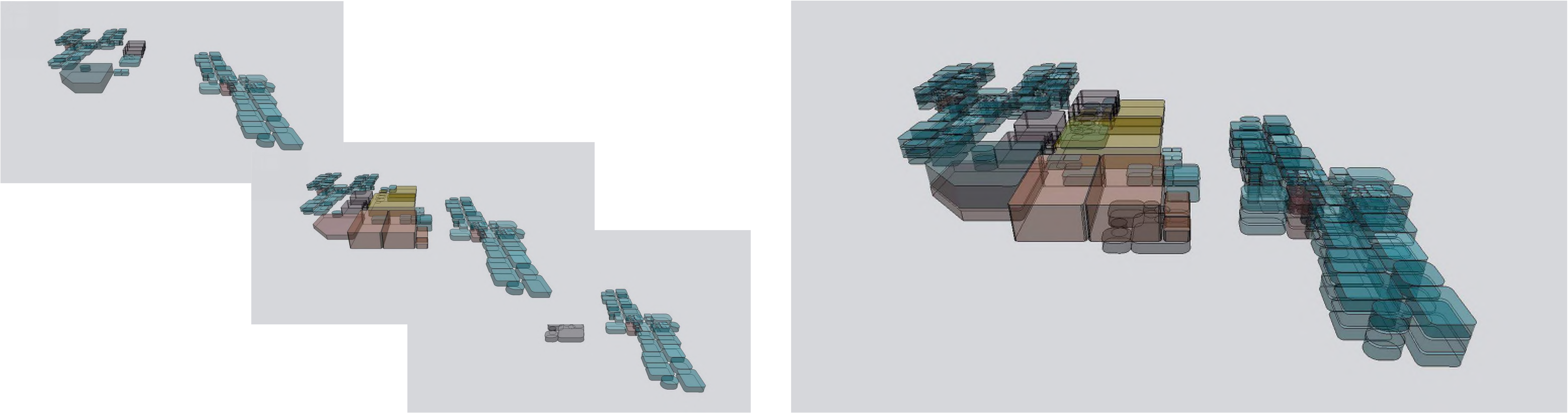
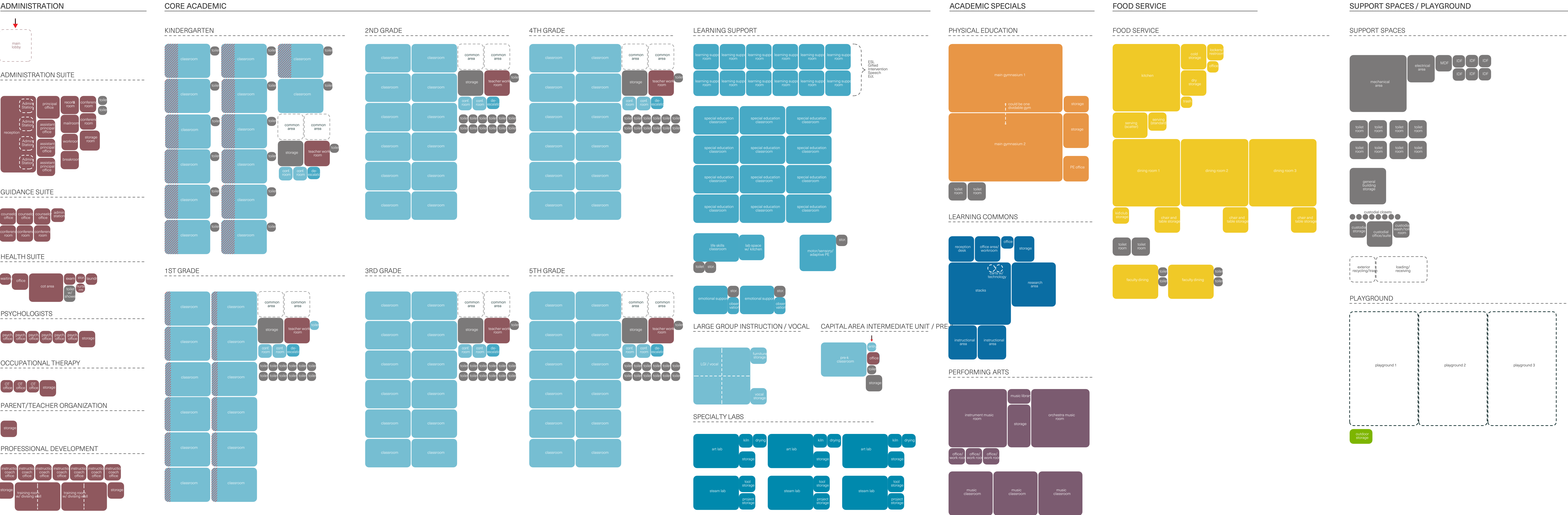
Option 2	
Renovate ECC, New ES	
Overall Project Budget Worksheet	286,017
01 Estimated Construction Costs	
Estimated Cost of Construction	\$ 331.69 \$ 94,870,208
Escalation to Const Midpoint	13.50% \$ 12,807,478
Construction Contingency	10.00% \$ 9,487,021
Modular Classrooms	\$ 3,056,120
Abatement	\$ 4,950,000
Phasing Premium	\$ 2,371,755
Gen Conds & Gen Reqs	\$ 6,550,088
General Liability Insurance	\$ 1,336,456
Builder's Risk Insurance (By Owner)	\$ -
P&P Bond	\$ 1,687,276
Fee	\$ 3,756,408
Total Current Const Cost:	\$ 140,427,788
02 Owner Project Contingency	
Owner Contingency @ 10%	\$ 14,042,779
Total Owner Contingency:	\$ 14,042,779
03 Design Fees	
Architect / Engineers	8.0% \$ 11,234,223
Total Design Fees:	\$ 11,234,223
04 Furnishings, Fixtures, & Equipment	
Allowance	\$ 3,500,000
Total FFE:	\$ 3,500,000
05 Related Expense Allowances	
Builder's Risk Ins (65% Total Const Cost)	\$ 912,781
Bonds	\$ -
Relocation Costs	\$ -
Moving and Storage	\$ -
Financing Fees	\$ -
Permit Fees (03.14/\$1,000 of const)	\$ 297,892
Utility Connection Fees	\$ -
Utility Consumption Costs	\$ -
Other	\$ -
Total Related Expenses:	\$ 1,210,673
TOTAL ESTIMATED PROJECT COST:	\$ 898.82 \$ 170,415,462
Total Estimated Project Range	Low \$ 161,884,699
	High \$ 184,046,699

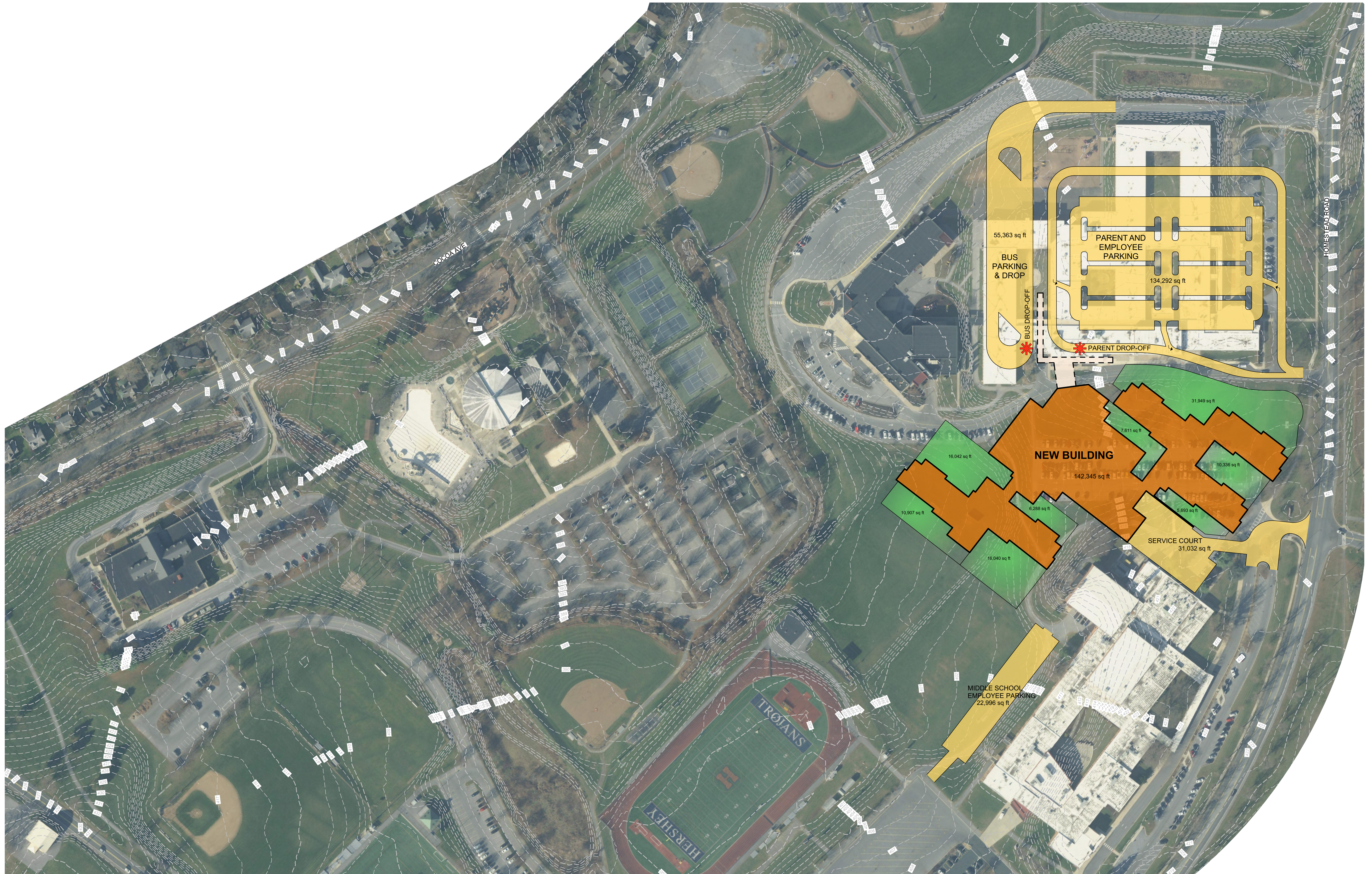
OPTION 2

OPTION 3

DERRY TOWNSHIP ELEMENTARY SCHOOL PROGRAM

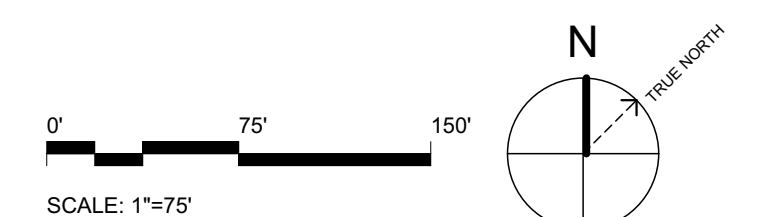
INDICATES AREAS EXCLUDED





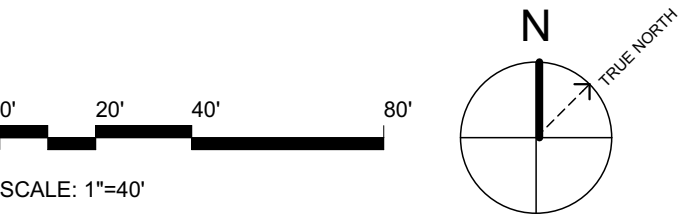
NOTE:

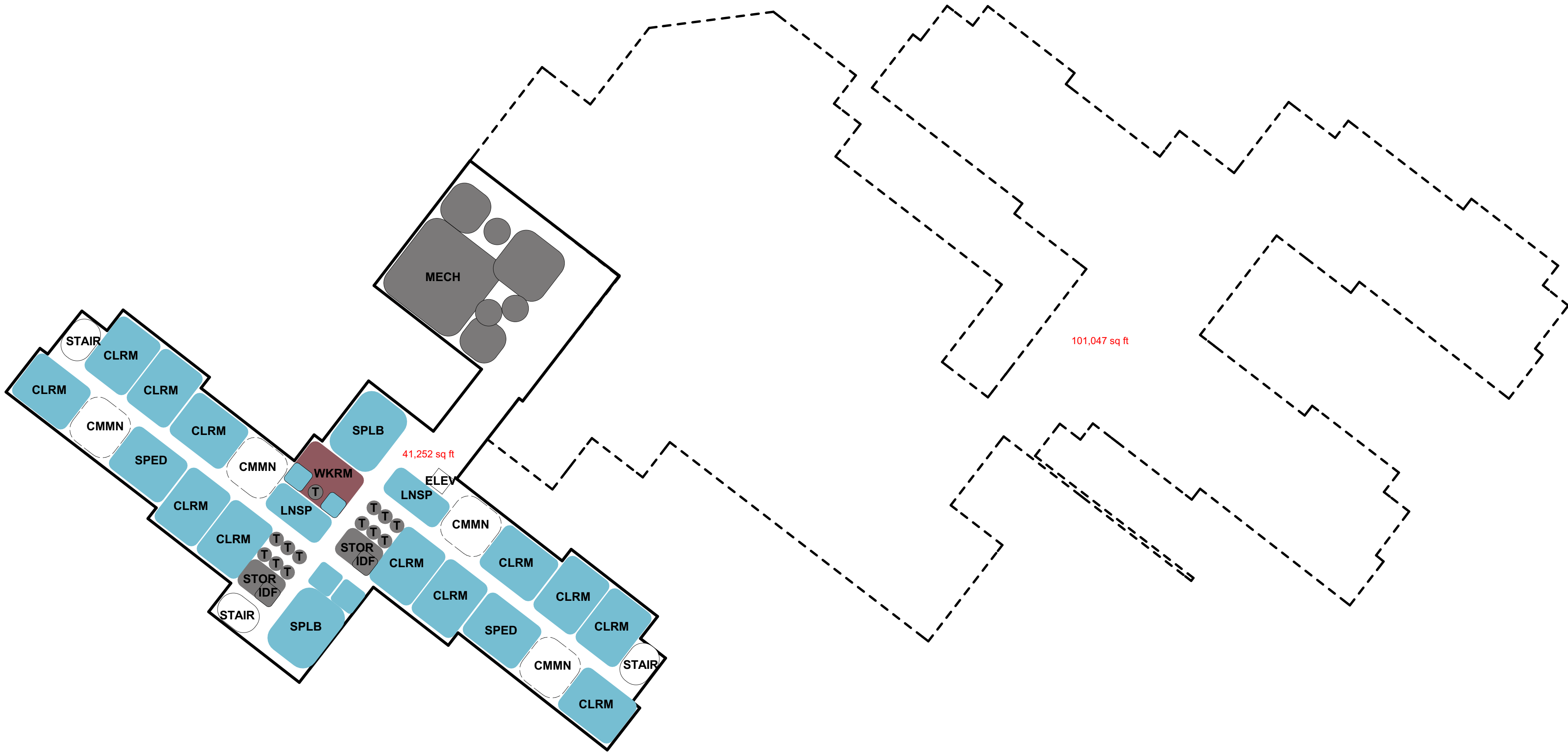
1. EXISTING PLAYGROUND AREA IS APPROXIMATELY 75,000 SF. PROPOSED PLAYGROUND (GREEN) IS APPROXIMATELY 100,000 SF.

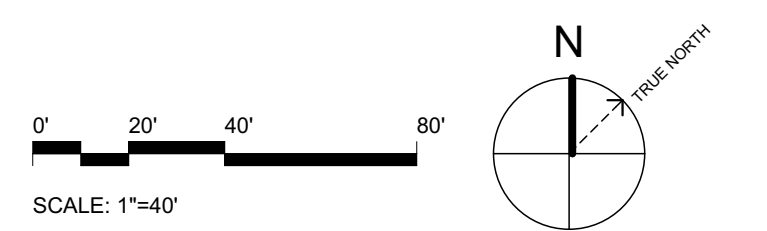
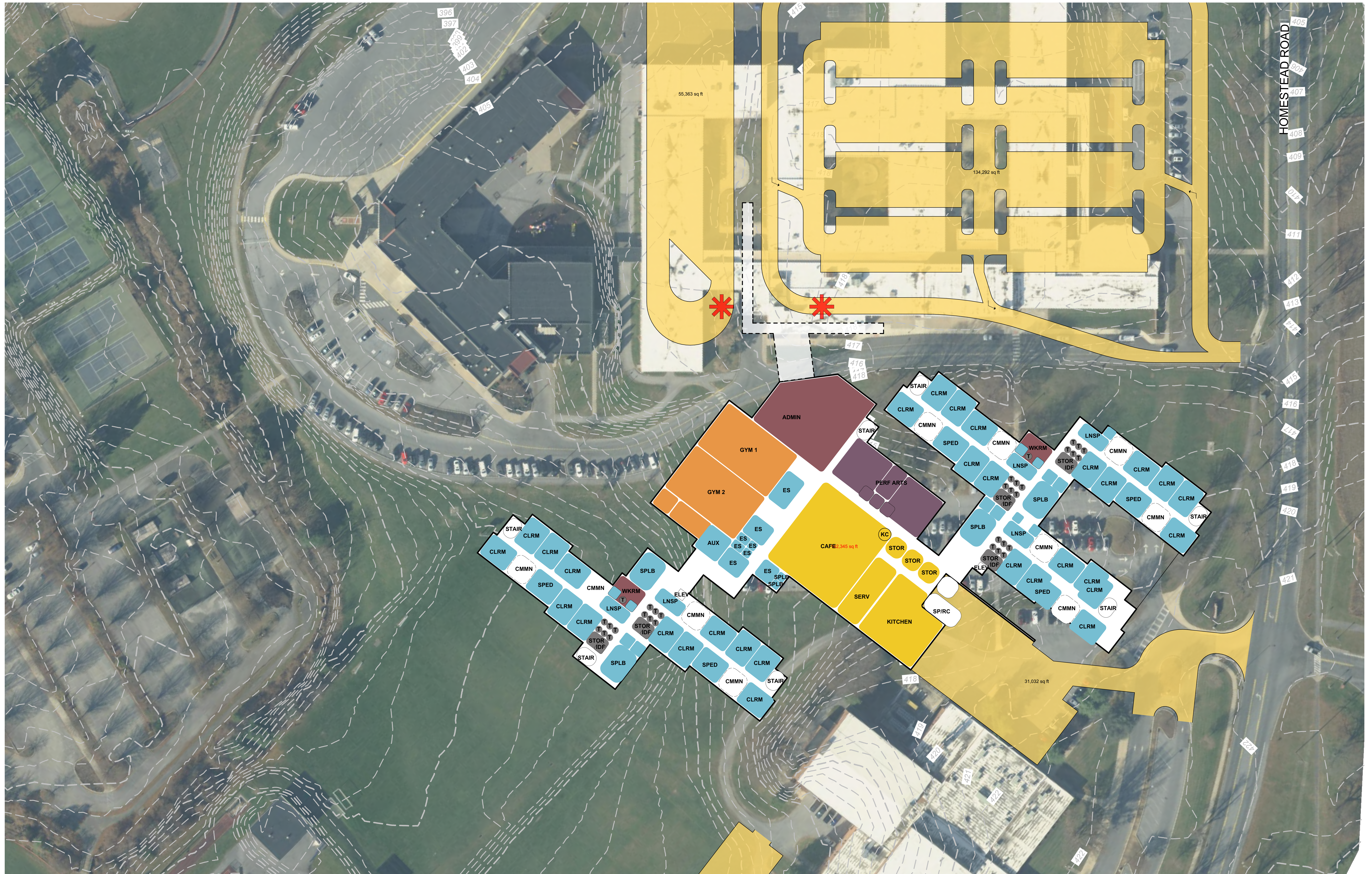


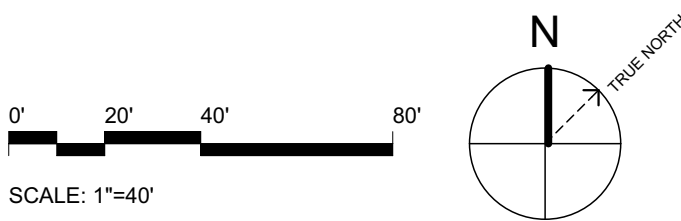
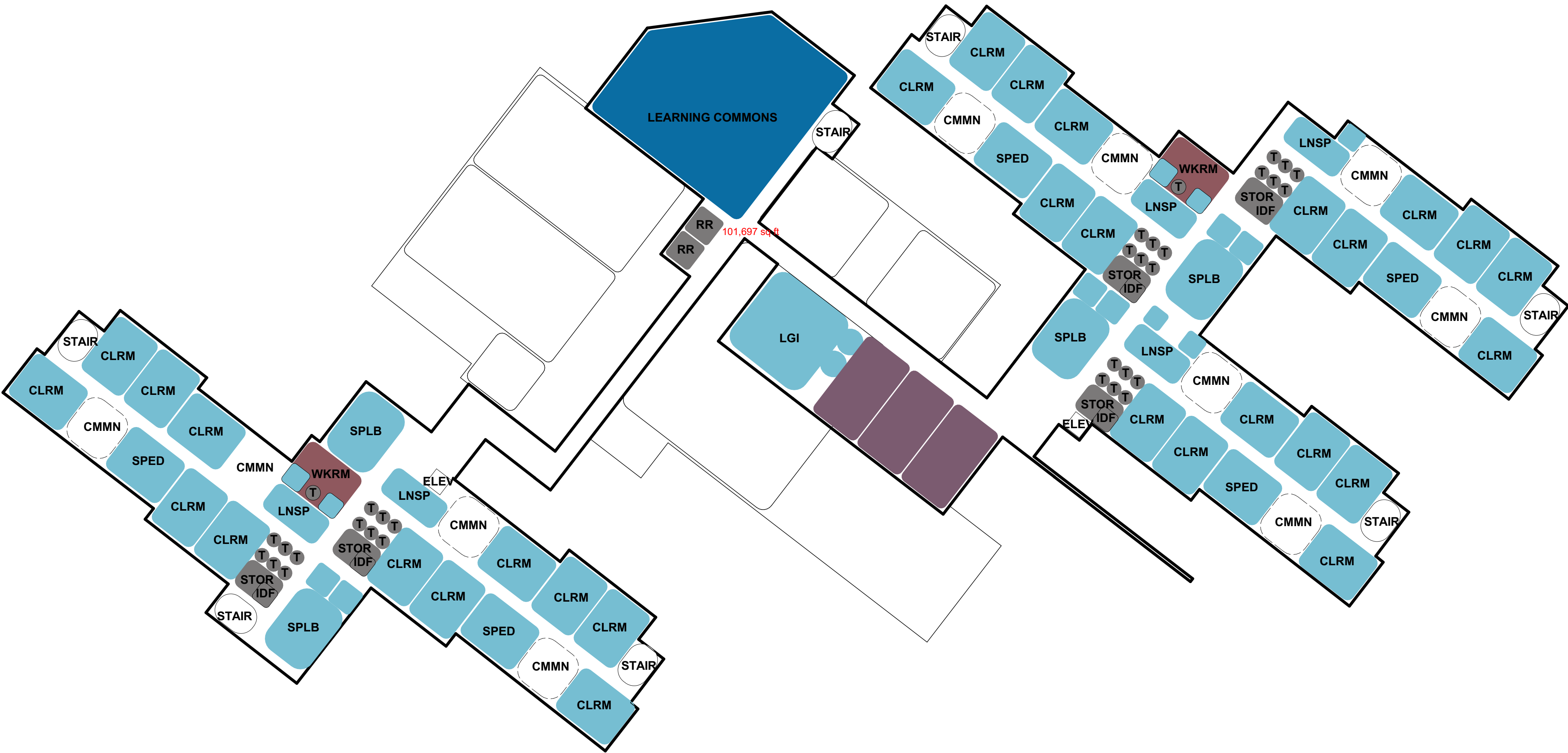


GROSS BUILDING AREA - OPTION 3	
NEW BUILDING	
LEVEL	AREA
LOWER	40,136
MAIN	132,170
UPPER	94,063
	266,369
TOTAL:	266,369











GROSS BUILDING AREA - OPTION 3	
NEW BUILDING	
LEVEL	AREA
LOWER	40,136
MAIN	132,170
UPPER	94,063
	266,369
TOTAL:	266,369

Option 3 – New Building

Pros:

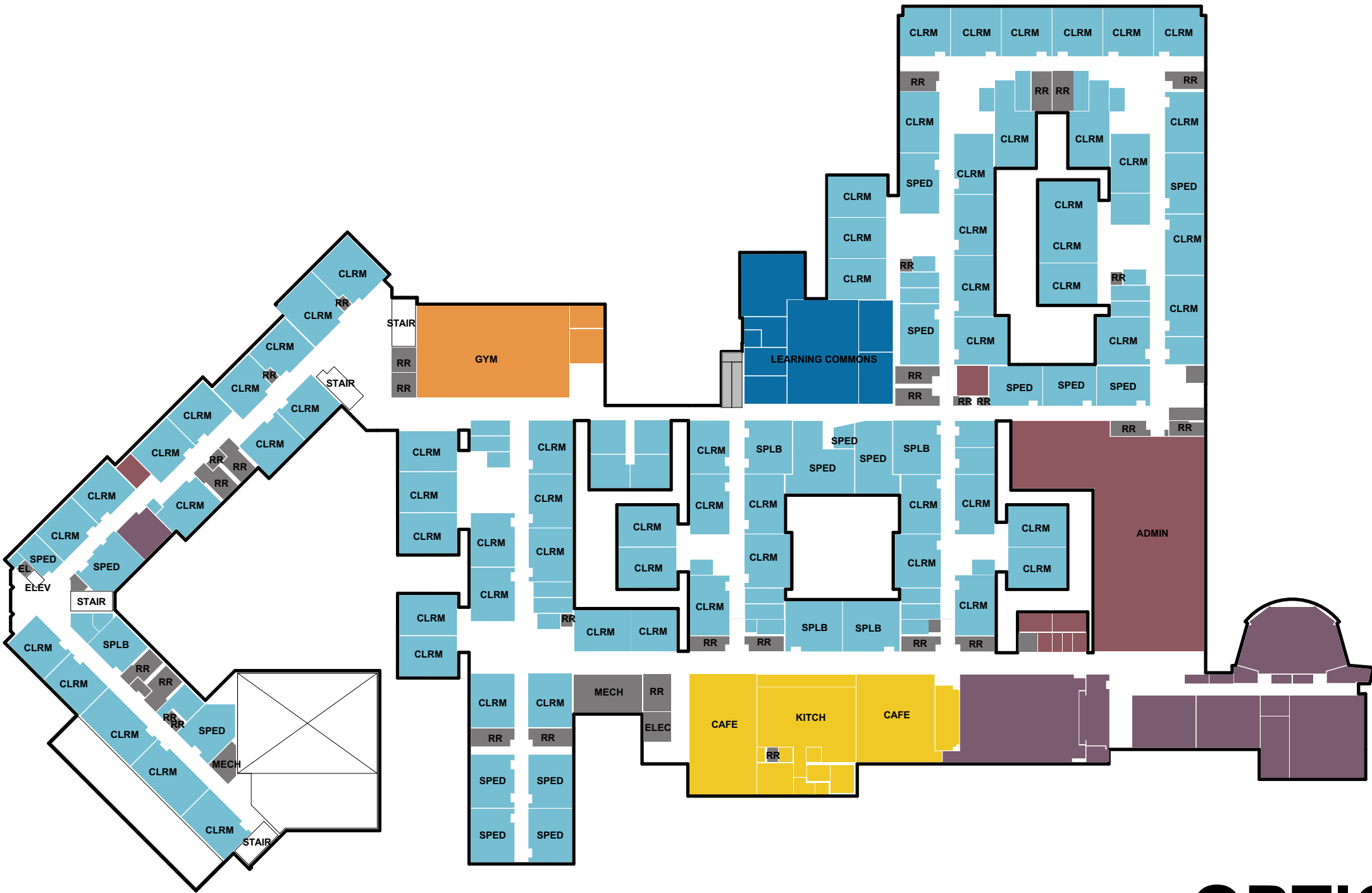
- No modular classroom facilities required
- Shorter construction period (2+ years)
- Owner gets the program spaces & sizes requested
- Building 100% current code compliance
- Provides space for possible future additions at this building site
- Mechanical/electrical systems fully integrated into new building design.
- New parking facility and dropoff/pickup loop to alleviate existing issues.

Cons:

- Loss of parking lot between ES and MS
 - Construction site
- Loss of play fields behind MS (some permanent & some temporary)
 - Construction site
 - New parking for MS staff
 - Staging area for construction
- Parking & bus drop off for new building cannot be constructed until existing ES is demolished
- ECC is mothballed or repurposed
- ECC should still have roof replaced if SD mothballs or repurposes
 - \$250k - \$350k range if membrane only
 - \$500k - \$600k range if membrane & new code compliant R30 roof insulation
- Loss off centralized parking, displaced parking for middle school, need for new middle school parking lot.
- Loss of sports fields
- Extensive area of disturbance.
- Significant increase in impervious area necessitates new stormwater BMPs and possible revision to existing BMPs.

		Option 3	
		New Building	
			266,369
Overall Project Budget Worksheet			
01	Estimated Construction Costs		
	Estimated Cost of Construction	\$ 362.47	\$ 96,551,525
	Escalation to Const Midpoint	10.00%	\$ 9,655,152
	Construction Contingency	10.00%	\$ 9,655,152
	Modular Classrooms		\$ -
	Abatement		\$ 3,500,000
	Phasing Premium		\$ -
	Gen Conds & Gen Reqs		\$ 5,252,705
	General Liability Insurance		\$ 1,246,145
	Builder's Risk Insurance (By Owner)		\$ -
	P&P Bond		\$ 1,573,259
	Fee		\$ 3,504,433
	Total Current Const Cost:		\$ 130,938,372
02	Owner Project Contingency		
	Owner Contingency @ 10%		\$ 13,093,837
	Total Owner Contingency:		\$ 13,093,837
03	Design Fees		
	Architect / Engineers	7.5%	\$ 9,820,378
	Total Design Fees:		\$ 9,820,378
04	Furnishings, Fixtures, & Equipment		
	Allowance		\$ 7,000,000
	Total FFE:		\$ 7,000,000
05	Related Expenses Allowances		
	Builder's Risk Ins (65% Total Const Cost)		\$ 861,099
	Bonds		\$ -
	Relocation Costs		\$ -
	Moving and Storage		\$ -
	Financing Fees		\$ -
	Permit Fees (\$3,14/\$1,000 of const)		\$ 303,172
	Utility Connection Fees		\$ -
	Utility Consumption Costs		\$ -
	Other		\$ -
	Total Related Expenses:		\$ 1,154,271
TOTAL ESTIMATED PROJECT COST:		\$ 608.30	\$ 162,006,850
Total Estimated Project Range			
	Low	\$	153,906,515
	High	\$	174,967,407

OPTION 3



OPTION 1

GROSS BUILDING AREA - OPTION 1	
ECC - MINOR RENOVATION	
LEVEL	AREA
MAIN	43,260
UPPER	30,094
	73,354
ES - MAJOR RENOVATION	
LEVEL	AREA
MAIN	145,232
MAIN (DEMO)	9,050
ES - ADDITION	
LEVEL	AREA
MAIN	53,984
TOTAL	272,570

Option 1 – Maintain Existing Buildings w/ Additions & Alterations

Pros:

- Maintain existing facilities
- Maintains existing parking, service areas & bus drop off locations for both buildings
- Minimum reconfiguration of site.
- Ability to maintain existing site amenities i.e. parking, sports fields etc....

Cons:

- Long construction period (4+ years)
- Phased construction
- Modular classrooms for students during various phases (safety & security issue)
- Existing building non-compliance code issues will need to be addressed
 - Fire walls
 - Travel distances
 - Egress capacities at doors & stair towers
 - Toilet fixture counts
 - Accessibility
- Client will not get the full program requirements that they have requested due to existing building constraints
- Overlapping systems
- Noise
- Loss of outside play areas for construction layout space
- Periods where primary function spaces are offline
 - Gymnasiums (ECC gymnasium will need to be shared while new ES gymnasium is constructed)
 - Kitchens (meals will need to be prepared in one kitchen while the other is being renovated and transported to the other school)
 - Cafeterias (students will need to eat in classrooms while cafeterias are being renovated)
 - Band Room (band will need to be relocated to the multipurpose room while the performing arts suite is being renovated)
- Potential for structural modifications to existing structure for lateral load analysis
- Impact to existing structure for modifications would require phasing and temporary shoring
- Does not provide for further growth of the school footprint beyond this work at this current site
- Phased mechanical/electrical systems upgrades will take longer and increase costs.
- Mechanical/electrical equipment space constraints due to existing conditions (i.e. ceiling space, pathways, mech/elec room sizes, etc.).
- New central plant equipment to be housed in same location as existing, leading to additional phasing concerns and longer down times during replacement.
- Challenge for constructing in-fill areas.
- Increase in impervious will necessitate new or expanded stormwater management facilities.
- Difficulty getting stormwater from in-fill areas to BMPs.
- Some parking constraints remain.

4/27/2020

Overall Project Budet Worksheet	Option 1		Option 2		Option 3	
	Renovate ECC and ES		Renovate ECC, New ES		New Building	
	272,570		286,017		266,369	
01 Estimated Construction Costs						
Estimated Cost of Construction	\$ 258.24	\$ 70,387,784	\$ 331.69	\$ 94,870,206	\$ 362.47	\$ 96,551,525
Escalation to Const Midpoint	15.00%	\$ 10,558,168	13.50%	\$ 12,807,478	10.00%	\$ 9,655,152
Construction Contingency	10.00%	\$ 7,038,778	10.00%	\$ 9,487,021	10.00%	\$ 9,655,152
Modular Classrooms		\$ 3,405,440		\$ 3,059,120		\$ -
Abatement		\$ 4,500,000		\$ 4,500,000		\$ 3,500,000
Phasing Premium		\$ 3,519,389		\$ 2,371,755		\$ -
Gen Conds & Gen Reqs		\$ 7,363,135		\$ 6,550,068		\$ 5,252,705
General Liability Insurance		\$ 1,067,727		\$ 1,336,456		\$ 1,246,145
Builder's Risk Insurance (By Owner)		\$ -		\$ -		\$ -
P&P Bond		\$ 1,348,005		\$ 1,687,276		\$ 1,573,259
Fee		\$ 3,002,682		\$ 3,758,408		\$ 3,504,433
Total Current Const Cost:		\$ 112,191,108		\$ 140,427,788		\$ 130,938,372
02 Owner Project Contingency						
Owner Contingency @ 10%		\$ 11,219,111		\$ 14,042,779		\$ 13,093,837
Total Owner Contingency:		\$ 11,219,111		\$ 14,042,779		\$ 13,093,837
03 Design Fees						
Architect / Engineers	8.5%	\$ 9,536,244	8.0%	\$ 11,234,223	7.5%	\$ 9,820,378
Total Design Fees:		\$ 9,536,244		\$ 11,234,223		\$ 9,820,378
04 Furnishings, Fixtures, & Equipment						
Allowance		\$ 2,000,000		\$ 3,500,000		\$ 7,000,000
Total FFE:		\$ 2,000,000		\$ 3,500,000		\$ 7,000,000
05 Related Expenses Allowances						
Builder's Risk Ins (.65% Total Const Cost)		\$ 729,242		\$ 912,781		\$ 851,099
Bonds		\$ -		\$ -		\$ -
Relocation Costs		\$ -		\$ -		\$ -
Moving and Storage		\$ -		\$ -		\$ -
Financing Fees		\$ -		\$ -		\$ -
Permit Fees (\$3.14/\$1,000 of const)		\$ 221,018		\$ 297,892		\$ 303,172
Utility Connection Fees		\$ -		\$ -		\$ -
Utility Consumption Costs		\$ -		\$ -		\$ -
Other		\$ -		\$ -		\$ -
Total Related Expenses:		\$ 950,260		\$ 1,210,673		\$ 1,154,271
TOTAL ESTIMATED PROJECT COST:	\$ 498.58	\$ 135,896,723	\$ 595.82	\$ 170,415,462	\$ 608.20	\$ 162,006,858

Total Estimated Project Range	Low	\$ 129,101,887	Low	\$ 161,894,689	Low	\$ 153,906,515
	High	\$ 146,768,461	High	\$ 184,048,699	High	\$ 174,967,407

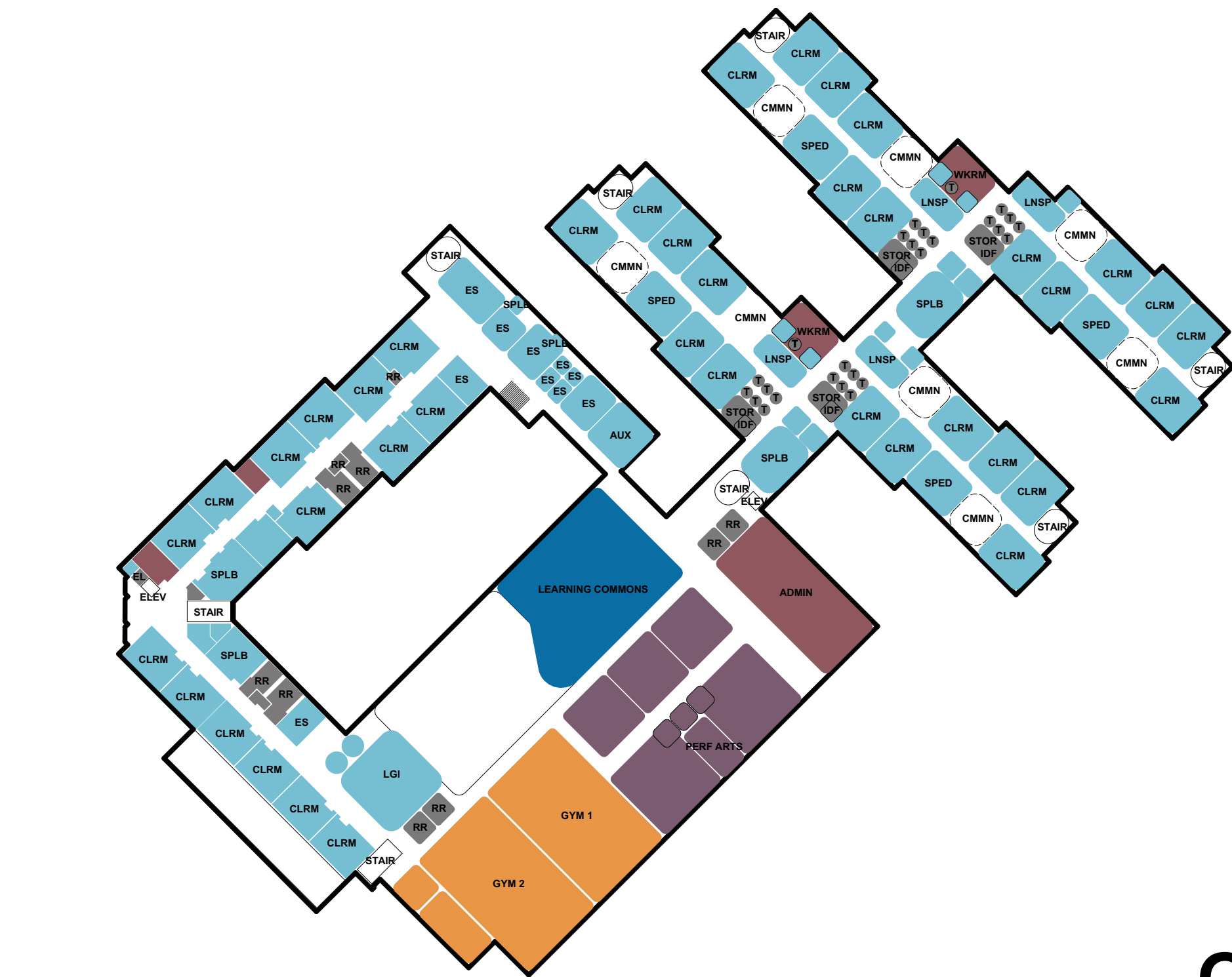
Option 3 – New Building

Pros:

- No modular classroom facilities required
- Shorter construction period (2+ years)
- Owner gets the program spaces & sizes requested
- Building 100% current code compliance
- Provides space for possible future additions at this building site
- Mechanical/electrical systems fully integrated into new building design.
- New parking facility and dropoff/pickup loop to alleviate existing issues.

Cons:

- Loss of parking lot between ES and MS
 - Construction site
- Loss of play fields behind MS (some permanent & some temporary)
 - Construction site
 - New parking for MS staff
 - Staging area for construction
- Parking & bus drop off for new building cannot be constructed until existing ES is demolished
- ECC is mothballed or repurposed
- ECC should still have roof replaced if 50 mothballs or repurposes
 - \$250k - \$350k range if membrane only
 - \$500k - \$600k range if membrane & new code compliant R30 roof insulation
- Loss off centralized parking, displaced parking for middle school, need for new middle school parking lot.
- Loss of sports fields
- Extensive area of disturbance.
- Significant increase in impervious area necessitates new stormwater BMPs and possible revision to existing BMPs.



OPTION 2

GROSS BUILDING AREA - OPTION 2	
ECC - MINOR RENOVATION	
LEVEL	AREA
MAIN	28,985
UPPER	20,163
	49,148
ECC - MAJOR RENOVATION	
LEVEL	AREA
MAIN	14,275
UPPER	9,931
	24,206
ES - DEMOLITION	
LEVEL	AREA
MAIN	154,282
ES - NEW BUILDING	
LEVEL	AREA
LOWER	29,364
MAIN	114,138
UPPER	69,161
	212,663
TOTAL:	286,017



OPTION 3

GROSS BUILDING AREA - OPTION 3	
NEW BUILDING	
LEVEL	AREA
LOWER	40,136
MAIN	132,170
UPPER	94,063
	266,369
TOTAL:	266,369

APPENDIX:

A - CIVIL ENGINEERING NARRATIVES

B - STRUCTURAL ENGINEERING NARRATIVES

C - MECHANICAL, ELECTRICAL, PLUMBING AND
FIRE PROTECTION ENGINEERING NARRATIVES

D - BUDGET DETAILS

A

Memo for Record

WARE
HAUS

JOB NAME: DTSD ES-ECC JOB NO: 2019.0058.00 PHASE: _____
ISSUED BY: Joseph Stein DATE: 2020-04-03
ISSUED AS: Civil Narrative - Option 1

- ☐ Meeting minutes ☐ Telephone conversation
☒ For information only ☐ Follow-up to previous MFR

PARTICIPANTS:

DISTRIBUTION:

This record of communication is important and may alter project scope, project schedule or rescind previous instructions.

SUMMARY:

In Option One, the existing parking lot is utilized to the maximum extent possible. In an effort to separate traffic seeking parking spaces and traffic arrive for drop off or pick up, we have created dual lanes; an 18' wide bypass lane to access the parking spaces (minimum width allowed by Township Zoning ordinance for one way traffic) and a 12' stacking lane for pickup/drop-off. Due to the limited length of staking for the pickup/drop off lane on site, we have widened the entrance and create a dedicated right turn lane into the campus. The lane is 11 ft. wide and has a 4 ft. shoulder, provides 200' of stacking and has a 75' taper. The addition of this lane necessitates the relocation of the existing sidewalk parallel to Homestead Road. Existing sidewalk is utilized in the area of the drop-off and pick up zone. The increase in impervious will require stormwater management facilities in the green space between Homestead Road and the parking lot. For the purpose of this narrative, the designer is assuming a stormwater facility capable of holding at least 15,000 c.f. of stormwater. Assume a stone bed 150' x 75' x 4'. It should be noted that extensive directional signage and paint striping is expected to be utilized in this concept in an effort to guide drives to the appropriate locations. Signs include but are not limited to: Do Not Enter, One Way, Stop, Pickup/Drop-off

I:\Jobs 2019\2019.0058.00\00 Received\Civil\2020-04-03 Civil Narrative - Option 1 & 2\2020-04-03 DTSD ES-ECC - Civil Narrative - Option 1.docx

Only, No Stopping and Right Turn Lane. Striping would be for cross walks, separation of lanes, directional arrows and stop bars. Additionally, the current plans propose 60,000 to 65,000 SF of new impervious associated with the building additions. This will require stormwater management in accordance with applicable regulations. The existing stormwater management basin may need to be retrofit, or new facilities may be required. Most existing storm structures will be utilized. No new lighting is proposed. Moderate landscaping proposed. Erosion and sediment controls will be necessary including but not limited to 24" filter sock, rock construction entrance, stripping and stockpiling topsoil, inlet protection, stabilization materials such as matting and permanent seeding & mulching.

Assumptions:

- All lighting to be compliant with Township requirements.
- All landscaping to be compliant with Township minimum requirements.
- All new paving outside of public right of way shall be light duty.
- All new paving in the public right of way shall confirm to Township specifications.

Permitting Fees:

- \$30,000 for fees / expenses associated with regulatory submissions.

Exclusions:

- PennDOT permitting
- Zoning approvals
- Utility design
- Expanded landscape design

Memo for Record

WARE
HAUS

JOB NAME: DTSD ES-ECC JOB NO: 2019.0058.00 PHASE: _____
ISSUED BY: Joseph Stein DATE: 2020-04-03
ISSUED AS: Civil Narrative - Option 2

- ☐ Meeting minutes ☐ Telephone conversation
☒ For information only ☐ Follow-up to previous MFR

PARTICIPANTS:

DISTRIBUTION:

This record of communication is important and may alter project scope, project schedule or rescind previous instructions.

SUMMARY:

In Option 2, the new Elementary school provides an opportunity to reconfigure the entire parking area. Traffic enters the site at the current location. A new parking lot entrance is created and is 18 feet wide in accordance with one way travel aisles per the Township Zoning Ordinance. From there parking traffic and pickup/drop-off traffic is separated. Traffic may enter the parking area where 79 parking spaces are proposed. This is an increase from the 47 spaces currently existing in the front parking lot. The parking lot allows for two-way traffic via 24' wide aisles, though entry and exit ways are one-way and 18' in width. The drop off lane grows from one 18' wide drive aisle to two 12' wide lanes in the pickup/drop-off area, one being for by-pass. The lanes are narrow in order to discourage higher rates of speed through this area. This area would also have designated crosswalks – a minimum of two from the parking lot, and three speed tables for traffic calming. Fencing or landscaping would be used between the parking lot and bypass lane in an effort to corral people from the parking lot in to designated cross walks. It is expected that with the new school and parking layout there is a reduction in impervious on site and stormwater management is not needed. That said, new storm conveyance structures will be necessary as is new site lighting, signage, paint striping,

I:\Jobs 2019\2019.0058.00\00 Received\Civil\2020-04-03 Civil Narrative - Option 1 & 2\2020-04-03 DTSD ES-ECC - Civil Narrative Option 2.docx

and landscaping. The same signage identified above is proposed in this layout as well. Not part of this option are any improvements to Homestead Road. Reconfiguration of existing access drives within the site may be necessary. A connection to the parking lot south of the elementary school is also proposed.

Erosion and sediment controls will be necessary including but not limited to 24" filter sock, rock construction entrance, stripping and stockpiling topsoil, inlet protection, sediment traps, stabilization materials such as matting and permanent seeding and mulching.

Assumptions:

- All lighting to be compliant with Township requirements.
- All landscaping to be compliant with Township minimum requirements.
- All new paving outside of public right of way shall be light duty.
- All new paving in the public right of way shall confirm to Township specifications.

Permitting Fees:

- \$30,000 for fees / expenses associated with regulatory submissions.

Exclusions:

- PennDOT permitting
- Zoning approvals
- Utility design
- Expanded landscape design

Memo for Record

WARE
HAUS

JOB NAME: DTSD ES-ECC JOB NO: 2019.0058.00 PHASE: _____

ISSUED BY: Joseph Stein DATE: 2020-04-17

ISSUED AS: Civil Narrative - Option 3

- ☐ Meeting minutes ☐ Telephone conversation
☒ For information only ☐ Follow-up to previous MFR

PARTICIPANTS:

DISTRIBUTION:

This record of communication is important and may alter project scope, project schedule or rescind previous instructions.

SUMMARY:

In Option 3, a new stand alone building is proposed. This new building is to be constructed on land that is currently part parking lot and part lawn area. The new building shall be constructed with little to no disruption to the existing operations of the nearby schools. The removal of the existing parking lot will necessitate the construction of a new parking lot to the rear of the Middle School. Temporary additional parking facilities at an undetermined location may be necessary depending on the timing of construction (less demand in the summer months). Access to the new building construction site is to be chosen between the existing Elementary School access or the existing Middle School access. As there are no other points of entry to the Middle School, consideration should be given to using the Elementary School access. However, this will require an operational change at that school as their secondary (northern) entrance is for buses only at this time. Staff and parent traffic to the ECC currently uses the southern entrance which is near the construction site and would be considered best for construction vehicles. Again, operational changes at the school may be necessary. Contractor should consider signage and vehicle access restrictions as part of this design for the duration of construction. Only after demolition of the existing elementary

I:\Jobs 2018\2018.0170.04\00 Received\Civil (WH)\2020-04-15 Civil Narrative - Option 3\2020-04-17 DTSD ES-ECC - Civil Narrative Option 3.docx

school occurs may the new bus loop and parent/staff parking lot be constructed. The bus loop has one way traffic with bus parking stalls and shall utilize med to heavy duty paving. The parent and staff parking lot shall have approximately 250 spaces, 10' x 20', two-way 24' wide aisles with light duty paving. The parent pickup/drop off loop will be one-way, 18 feet wide and have light duty paving. Traffic calming such as speed tables, signage such as One-Way, Do Not Enter Pickup/Dropoff Only, and No Stopping, striping for parking spaces, ADA aisles and cross walks, sidewalks with ADA ramps and landscaping are to be considered. No improvements to Homestead Road are proposed.

The new building and parking lot are expected to cause an increase in impervious area. Contractor should assume that stormwater management will be necessary. Conveyance (inlets, manholes and pipes) to two BMP facilities should be considered. A new stormwater BMP to the rear of the Middle School should be considered beneath the future parking area and should be sized to hold approximately 15,000 c.f. (may extend beyond foot print of parking lot) and would discharge to lawn area down slope of the facility beyond any sports fields. Another stormwater BMP beneath the future parking lot to the north of the new elementary school and should hold approximately 30,000 c.f. and would discharge to the existing stormwater BMP to the north.

Erosion and sediment controls will be necessary including but not limited to 24" filter sock, rock construction entrance, stripping and stockpiling topsoil, inlet protection, sediment traps, stabilization materials such as matting and permanent seeding and mulching.

Assumptions:

- All lighting to be compliant with Township requirements.
- All landscaping to be compliant with Township minimum requirements.
- All new paving outside of public right of way shall be light duty.
- All new paving in the public right of way shall confirm to Township specifications.

Permitting Fees:

- \$30,000 for fees / expenses associated with regulatory submissions.

Exclusions:

- PennDOT permitting, Zoning Approvals,
- Utility design, Expanded Landscape Design, etc.

B



April 2, 2020

Craig Campbell, Project Manager
Warehaus
320 N. George Street
York, PA 17401

Re: DTSD Hershey Elementary School
Design Option 1 Narrative
CEG Project No. C019.0153.00

Dear Mr. Campbell:

As requested, Carney Engineering Group, Inc. (CEG) is providing this structural framing narrative of Design Option 1 for the Elementary School (ES) and Early Childhood Center (ECC). Design Option 1 is focused on keeping both existing structures, with additions and renovations constructed at both buildings to meet the needs of the district. This narrative is based on the preliminary schematic plans provided by you on March 30, 2020.

I. ECC

Work at this building includes a 2-story addition off the north end of the existing structure, which will include classroom spaces, new stairwell, and a connector corridor and commons area. The construction of a new masonry (CMU) firewall toward the south end of the building is also proposed to separate the ECC into two zones to meet today's code requirements. It is anticipated that renovations to the ECC space may include demolition of load bearing and non-load bearing walls, which will require steel tube or wide flange beams for lintels or support of existing framing.

Construction of the addition will consist of load bearing exterior CMU walls (8" CMU with #5 rebar @ 24" on center) with brick veneer to match the existing building. Interior load bearing walls will be utilized for the classroom spaces on the corridor side, while the commons area may require steel beams and columns at both floors for support of floor and roof structure. Ground floor will be a 4" concrete slab-on-grade, with foundations anticipated to be typical isolated concrete spread and strip type footings for columns and walls, respectively. The stairwells will be standard CMU shafts supporting concrete metal-pan stairs.

The second floor of the ECC will tie into the ground floor of the ES and will be a combination of concrete slab-on-metal deck and slab-on-grade. It should be anticipated that portions of the exterior walls connecting the two buildings will be retaining walls (assume fully

grouted wall). The concrete slab-on-metal deck (4"-5" thick) will be supported by steel bar joists at 5'-0" on center (20"-24" LH joists).

The roof construction is anticipated to be steel bar joists at 5'-0" on center (24"-28" K-series joists) supporting a standard 1 ½" metal roof deck and insulation with EPDM. Roof framing may be sloped for drainage, or tapered insulation installed as required for drainage.

II. ES

Work at this building includes the addition of single-story classroom and amenity space additions, corridors, and administration support areas. An addition to the existing gymnasium is also proposed directly adjacent to the ECC-ES connector addition. This area will require complete demolition of an existing space and partial demolition to the existing gym. Other renovations will classroom extensions, which will require partial demolition of existing load bearing and non-load bearing walls, where new steel framing will be required for lintels and support of existing framing. Similar to the ECC, the ES will be separated into six different zones with the construction of new firewalls throughout.

Construction of the single-story additions are primarily located within the existing courtyards and will consist of load bearing exterior CMU walls (8" CMU with #5 rebar @ 24" on center) with brick veneer to match the existing building. Interior load bearing walls will be utilized for the classroom spaces on the corridor side, with new steel columns and beams required directly adjacent to the existing walls and framing at all tie-in locations. Floor construction will be a 4" concrete slab-on-grade, with foundations anticipated to be typical isolated concrete spread and strip type footings for columns and walls, respectively. Existing slabs will require partial demolition at footing tie-in locations, with the foundations excavated to match existing footing elevations.

Roof construction of the classroom and administration additions will be steel bar joists at 5'-0" on center (24"-28" K-series joists), supporting 1 ½" metal deck, roof insulation, and EPDM. The gym additional is anticipated to be constructed of 36" LH joists at 8' to 10' spacing with 3" metal acoustical roof deck. Roof framing may be sloped for drainage, or tapered insulation installed as required for drainage.

III. Overall Building Design

With the building additions at both the ECC and ES primarily matching existing roof elevations, it greatly reduces the structural modifications to the existing framing as this will eliminate snow drift loading onto the existing joists and deck. However, as noted above, additional structural steel framing should be anticipated at all tie-in locations, firewalls, and demolition of existing load bearing walls. If the building additions are to be taller in elevation to meet spatial requirements, every attempt should be made to limit the projection above the existing roof at all additions. This could be accomplished with sloping of the roof framing or lowering corridor areas at tie-in locations.

The lateral system of the proposed additions is anticipated to be CMU shearwalls; however, impact to an existing structure's lateral resisting system must be limited before the building code requires a complete analysis of the entire building, which would include both the existing building and the proposed additions. If the threshold is exceeded, we would be required to follow current building code design requirements for both new and existing

construction. This could potentially create cost implications as structural modifications to the existing framing may be required if analyzed with the current building code loads for lateral and gravity loads.

Should you have any questions or concerns, or if we can be of further assistance, please feel free to contact us. Thank you for the opportunity to be of assistance in this matter.

Sincerely,

CARNEY ENGINEERING GROUP, INC.

A handwritten signature in black ink, appearing to read "Timothy Koppenhaver", followed by a long horizontal line.

Timothy Koppenhaver
Structural Project Manager



April 10, 2020

Craig Campbell, Project Manager
Warehaus
320 N. George Street
York, PA 17401

Re: DTSD Hershey Elementary School
Design Option 2 Narrative
CEG Project No. C019.0153.00

Dear Mr. Campbell:

As requested, Carney Engineering Group, Inc. (CEG) is providing this structural framing narrative of Design Option 2 for the Elementary School (ES) and Early Childhood Center (ECC). Design Option 2 is focused on keeping a majority of the ECC structure, with a complete 2-story rebuild of the ES structure to meet the needs of the district. This narrative is based on the preliminary schematic plans provided by you on April 6, 2020.

I. ECC

Work at this building includes demolition and reconstruction of the east portion of the ECC. The lower level of this area is the existing Gymnasium, Mechanical room, Shipping / Storage Area, Kitchen, Cafeteria, Large Group Instruction space, and Locker rooms. The renovations will include the reconstruction of the Kitchen, Service, Shipping / Storage, Faculty dining and Cafeteria area at the lower level, with a main north-south connector corridor and open stairway that leads to the main level. At the main level, a Large Group Instruction area and Learning Commons will be added overlooking the Cafe area below. East building additions to the ECC will include 2-story height Gymnasiums and a Performing Arts Center. It is anticipated that renovations to the ECC space may include demolition of load bearing and non-load bearing walls, which will require steel tube or wide flange beams for lintels or support of existing framing.

Construction of the Gymnasiums and Performing Arts Center is anticipated to be 12" CMU walls with brick veneer to match the existing ECC and proposed ES building. Long span joists will be utilized to support the roof structure, which is anticipated to be 3" metal deck, insulation, and EPDM. Direction of framing is yet to be determined, and deck profile and type could affect the spacing and type of roof joists. Roof framing may be sloped for drainage, or tapered insulation installed as required for drainage.

The second floor of the ECC will tie into the ground floor of the ES and will be a combination of concrete slab-on-metal deck and slab-on-grade. The open area Café and Learning Commons will most likely be steel framed with columns and beams as required. Portions of a concrete slab-on-metal deck (4"-5" thick) that is required per final grading will be supported by steel bar joists at 5'-0" on center (20"-24" LH joists). It should be anticipated that portions of the walls connecting the two buildings will be retaining walls (assume fully grouted wall).

The roof construction of the Learning Commons, Café, and connector corridor is anticipated to be steel columns and beams supporting steel bar joists at 5'-0" on center (24"-28" K-series joists), supporting a standard 1 ½" metal roof deck and insulation with EPDM. Desired roof deck profile, type, or framing direction could affect the size and spacing of the main roof framing in these areas. Roof framing may be sloped for drainage, or tapered insulation installed as required for drainage.

II. ES

Design Option 2 will require the complete demolition of the existing ES and reconstruction of a 2-story classroom building. The ground floor of the ES will tie into the 2nd floor of the ECC due to the existing and proposed grading of the site. A main north-south corridor connects four classroom wings, with a main east-west corridor that connects the ES and ECC containing Classrooms and Administration Offices. The southwest classroom wing will be a single-story addition above existing / proposed grading, with a lower level section of classrooms that connects to the ECC. The shared amenities spaces for both the ES and ECC (Gym, Performing Arts, Café) are connected by the main open stairway and Learning Commons area mentioned above.

Construction of the new ES building will consist of load bearing exterior CMU walls (8" CMU with #5 rebar @ 24" on center) with brick veneer to match the existing building. Interior CMU walls along the corridors will also be utilized for floor and roof support. Ground floor construction will be a 4" concrete slab-on-grade, with foundations anticipated to be typical isolated concrete spread and strip type footings for columns and walls, respectively. Second floor construction will be a concrete slab-on-metal deck (4"-5" thick) supported by steel bar joists at 5'-0" on center (20"-24" LH joists for classrooms, 12" K-series joists for corridors). Floor and roof framing of the Administration Offices may require steel columns and beams supporting steel joists due to the office space arrangement and possible lack of CMU bearing walls.

Roof construction will be steel bar joists at 5'-0" on center (24"-28" K-series joists), supporting 1 ½" metal deck, roof insulation, and EPDM. Roof framing may be sloped for drainage, or tapered insulation installed as required for drainage.

For comparative pricing options of the ES construction, the floor framing construction could be 10" hollow-core concrete plank (HCP) with leveler for the classrooms, and 8" HCP for the corridors, bearing on CMU walls. Roof construction could be 8" HCP over both classrooms and corridor, supporting EPDM and tapered insulation for drainage.

III. Overall Building Design

Design Option 2 will require phased demolition and construction of the additions to the ECC and new ES building but reduces the impact of potential structural modifications to the overall building, limiting it to the southeast section of the ECC. This option provides a new ES building built to the current design codes that will meet the needs of the district. Structural steel framing and double walls should be anticipated at all tie-in locations, firewalls, and demolition of existing load bearing walls of the ECC, with firewalls as needed in the new ES building as well.

If the building additions at the ECC are to be taller in elevation to meet spatial requirements, every attempt should be made to limit the projection above the existing roof to eliminate any snow drift buildup. This could be accomplished with sloping of the roof framing or lowering corridor areas at tie-in locations. Existing roof framing will be analyzed and modified as required to support induced snow drifting at tie-ins and addition / renovation areas.

The lateral load resisting system of the proposed ES school will be CMU shearwalls. Analysis of the existing lateral load resisting system for the ECC will be required for the partial demolition; however, impact to the overall building has been reduced, and lateral load resisting elements may be incorporated into the design of the proposed additions.

Cost should be included for a potential main entryway canopy / bus drop-off area, which would be constructed of steel column and beam framing supported by isolated foundations.

Should you have any questions or concerns, or if we can be of further assistance, please feel free to contact us. Thank you for the opportunity to be of assistance in this matter.

Sincerely,

CARNEY ENGINEERING GROUP, INC.

A handwritten signature in black ink, appearing to read 'Timothy Koppenhaver', followed by a long horizontal line.

Timothy Koppenhaver
Structural Project Manager



April 17, 2020

Craig Campbell, Project Manager
Warehaus
320 N. George Street
York, PA 17401

Re: DTSD Hershey Elementary School
Design Option 3 Narrative
CEG Project No. C019.0153.00

Dear Mr. Campbell:

As requested, Carney Engineering Group, Inc. (CEG) is providing this structural framing narrative of Design Option 3 for the Elementary School (ES) and Early Childhood Center (ECC). Design Option 3 is focused on construction of an entirely new 285,294 square foot building that will house school grades Kindergarten through 5th and will meet the needs of the district. This narrative is based on the preliminary schematic plans provided by you on April 15, 2020.

I. ECC / ES

Design Option 3 will require the complete demolition of the existing ES and ECC buildings, and the construction of a new building toward the southeast, adjacent to the existing Middle School. The building will consist of classroom wings at the north and south end of the building, with connector corridors to the central support areas to include the Gymnasium, Mechanical room, Shipping / Storage Area, Kitchen, Cafeteria, Large Group Instruction / Learning Commons, Administration Offices, and Performing Arts space. The two southern classroom wings will be 3-stories, while the three northern wings will be 2-stories in height. Several stairwells in each classroom wing, and two elevator shafts, will be included in the construction. The central support areas will primarily be taller, single-story areas as is common for the Gymnasiums and Cafeteria, and the Administrative Office area will be 2-stories tall, with the Learning Commons on the second floor adjacent to the northern classroom wings. Additional classroom support for the Performing Arts will also be included in the central support area. The Mechanical Room will be located at the lower level of the southern classroom wings, beneath a section of the Gymnasium.

Construction of the 1 ½ - 2 story central areas is anticipated to be 12" CMU walls with brick veneer (#5 rebar @ 24" on center). Potential firewalls as required by code could result in a double-wall condition to avoid load bearing on the designated firewalls. Long span joists will be utilized to support the roof structure, which is anticipated to be 3" metal deck,

insulation, and EPDM. Direction of framing is yet to be determined, and deck profile and type could affect the spacing and type of roof joists. Roof framing may be sloped for drainage, or tapered insulation installed as required for drainage.

The ground floor of the Gymnasium and Cafeteria will tie into the second floor of the southern classroom wings (with the exception of the Mechanical Room) and will be a combination of concrete slab-on-metal deck and slab-on-grade. The open area Cafeteria will most likely include steel framing with columns and beams as required. Portions of a concrete slab-on-metal deck (4"-5" thick) that is required for the Gymnasium area above the Mechanical Room will be supported by steel bar joists at 5'-0" on center (20"-24" LH joists). It should be anticipated that portions of the walls for the Mechanical Room area will be retaining walls (assume fully grouted wall). Foundations in the central area are anticipated to be typical shallow concrete spread and strip type for columns and walls, respectively.

The 2-story Administration Area will also require steel column and beam framing for the 2nd floor, with a similar floor assembly as noted above. The partial second floor supporting LGI and Performing Arts classrooms will utilize load bearing CMU walls, with steel joists supporting a concrete slab-on-metal deck (same as above). The roof construction of the Learning Commons and support classrooms is anticipated to be steel columns and beams supporting steel bar joists at 5'-0" on center (24"-28" K-series joists), supporting a standard 1 ½" metal roof deck and insulation with EPDM. Desired roof deck profile, type, or framing direction could affect the size and spacing of the main roof framing in these areas. Roof framing may be sloped for drainage, or tapered insulation installed as required for drainage.

Construction of the north and south main classroom wings will consist of load bearing exterior CMU walls (8" CMU with #5 rebar @ 24" on center) with brick veneer. Interior CMU walls along the corridors will also be utilized for floor and roof support. Ground floor construction will be a 4" concrete slab-on-grade, with foundations anticipated to be typical shallow concrete spread and strip type footings for columns and walls, respectively. Floor construction will be a concrete slab-on-metal deck (4"-5" thick) supported by steel bar joists at 5'-0" on center (20"-24" LH joists for classrooms, 12" K-series joists for corridors). Roof construction will be steel bar joists at 5'-0" on center (24"-28" K-series joists), supporting 1 ½" metal deck, roof insulation, and EPDM. Roof framing may be sloped for drainage, or tapered insulation installed as required for drainage.

For comparative pricing options of the classroom wing buildings, the floor framing construction could be 10" hollow-core concrete plank (HCP) with leveler for the classrooms, and 8" HCP for the corridors, bearing on CMU walls. Roof construction could be 8" HCP over both classrooms and corridor, supporting EPDM and tapered insulation for drainage.

II. Overall Building Design

Design Option 3 will require limited construction phasing as new construction interacts with the existing building and site layout; however, this option allows the existing school to remain functional while construction of the proposed building progresses. This option also provides a new building built to the current design codes that will meet the needs of the district for both the existing ECC and ES. It also eliminates any required structural modifications or cost implications associated with analyzing and/or modifying the existing school structure and bringing that construction into compliance with the current design codes.

The lateral load resisting system of the proposed building will be CMU shearwalls. It should also be anticipated that stairwell walls and elevator shafts will be grouted solid. Firewalls should also be anticipated and would require double-wall conditions to avoid load bearing onto the firewall. High-low roof areas subjected to snow drift loads will be designed accordingly, along with rooftop equipment loads, as required.

Cost should be included for a potential main entryway canopy / bus drop-off area, which would be constructed of steel column and beam framing supported by isolated foundations.

Should you have any questions or concerns, or if we can be of further assistance, please feel free to contact us. Thank you for the opportunity to be of assistance in this matter.

Sincerely,

CARNEY ENGINEERING GROUP, INC.

A handwritten signature in black ink, appearing to read 'Timothy Koppenhaver', followed by a long horizontal line.

Timothy Koppenhaver
Structural Project Manager

C

Susquehanna Commerce Center North Building
221 West Philadelphia Street, York, PA 17401
717 845-7654 | www.ba-inc.com

Project:	DTSD Elementary School – Option 1 MEP Basis of Design Narrative	Date:	April 2, 2020
Project No:	BA 2019138	By:	David Myers, PE, LEED AP Kyle Flanagan, PE Madison Stine, EIT

**MEP/FP Basis of Design Narrative for
Derry Township School District – Elementary School
Option 1**

A. HVAC

1. Existing Conditions
 - a. ECC Building - All HVAC equipment and materials will be removed from the existing building.
 - (1) The existing air-cooled chiller serving the ECE will be salvaged for reuse within the new, combined chiller plant constructed to serve the combined ECE/ES building.
 - b. Elementary School - All HVAC equipment and materials will be removed from the existing building.
2. Proposed HVAC Scope of Work
 - a. The building primary HVAC systems will be variable volume, roof mounted, outdoor air handling units (AHUs) with chilled water cooling and hot water heating.
 - (1) Gymnasiums, Cafeterias, Library, and Auditorium will be served by single-zone, variable air volume, roof mounted air handlers. These units will be provided with variable speed supply fan, barometric relief, airside economizer, hot water preheat, chilled water cooling, and hot water reheat coils to allow for active dehumidification. High occupancy spaces will be provided with low returns to improve ventilation efficiency.
 - (2) Classroom and Administration Areas: The remaining building areas will be served by multi-zone, variable air volume, roof mounted air handlers. These units will be provided with variable speed supply fan, variable speed return fan, airside economizer, hot water preheat, and chilled water cooling coil. Air will be distributed to individual spaces via variable air volume (VAV) boxes with hydronic heating coils. The VAV boxes will provide individual space control as well as provide active dehumidification capabilities.
 - b. The Kitchen will be provided with new grease exhaust and gas fired makeup air units for each new grease hood.

If this is not in accordance with your understanding, notify writer within three (3) days after receipt of this memo.

- c. Heating hot water for both the ECC and Elementary school will be generated within a central boiler plant located within the existing elementary school mechanical room. Hot water serve air handlers, terminal heating equipment, and VAV box reheat coils. Hot water will be generated by modular, high efficiency, condensing boilers. Hot water will be distributed throughout both buildings via base mounted, end suction pumps at 140 F. The hot water plant will be controlled with a hot water reset schedule to maximize the efficiency of the condensing boilers and take advantage of additional savings during part load operation.
 - (1) Boilers will be similar to Lochinvar Crest Model FBN.
 - (2) Boiler Plant will consist of four (4) approximately 5000 Mbh hot water boilers.
- d. Cooling chilled water for both the ECC and Elementary school will be generated within a central chiller plant, located on site, adjacent to the existing elementary school mechanical room. Chilled water will serve air handler cooling coils. Chilled water will be generated by air cooled chillers with direct driven, variable speed, helical rotary twin screw compressors. Chilled water will be distributed throughout both buildings via base mounted, end suction pumps, at 44 F.
 - (1) Chillers will be similar to Trane Stealth Model RTAE.
 - (2) Chiller Plant will consist of three (3) approximately 200 Ton air cooled chillers plus the relocated ECC chiller.
- e. Hot Water and Chilled Water loops will be furnished as 30% Propylene Glycol solutions for freeze protection of outdoor coils and outdoor chillers. Each system will receive an automatic glycol feeder within the existing Elementary School mechanical room.
- f. Ductwork will distribute supply and return air throughout the building. Ductwork concealed above ceilings will be rectangular style and exposed ductwork will be spiral round.
- g. Terminal heat for vestibules, mechanical rooms, etc. throughout the building will be provided by a mixture of cabinet unit heaters, unit heaters, and fin tube radiation.
- h. The building HVAC systems will be controlled by a Building Automation System (BAS). The BAS will have the capability of monitoring temperature and relative humidity in each zone as well as provide control for all building HVAC equipment. The BAS will be an extension of the existing campus wide Trane Tracer Building Automation System and Trane Tracer SC System Architecture.

B. Electrical

- 1. Existing Conditions
 - a. All electrical equipment and materials will be removed from the existing buildings.
- 2. Proposed Electrical Scope of Work
 - a. A new 4000A, 277/480V, 3PH, 4W electrical service will be brought to the building under ground via a new utility owned pad mounted transformer. The service will terminate in an 4000A main distribution switchboard with a main breaker.
 - b. The 277/480V, 3PH, 4W distribution panels will be located throughout the building to feed the HVAC equipment, lighting panels, and step down transformers for a 120/208V, 3PH, 4W loads. 277/480V, 3PH, 4W lighting panels and 120/208V, 3PH, 4W branch panels will be located throughout the building for branch circuiting.

- c. LED lighting and automatic lighting controls will be installed throughout the building. Lighting controls will be in accordance with current energy codes, including dimming, daylighting, manual on, and occupancy sensing functions.
- d. A 125 KW, 277/480V, 3PH, 4W emergency generator will be installed and located in a dedicated generator room inside the building. Two automatic transfer switches will be installed, one for life safety loads (lighting, fire alarm) and one for non-essential loads (IT, access control, security, or as designated by DTSD).
- e. Exterior building mounted lighting and pole mounted site lighting will utilize LED sources.
- f. Communications utilities will enter the building into a dedicated main telecommunications room (MDF). Several telecommunication rooms (IDF) will be located throughout the building as required to distribute cabling to all outlets and maintain cabling distances under 295 feet. Fiber optic cabling will be run between the MDF and IDF locations. All systems cabling will be CAT6E. Wireless access points will also be installed to provided full building coverage.
- g. Each computer workstation location will be provided with a double duplex receptacle and two data drop provisions.
- h. Each general classroom will be provided with two branch circuits and a minimum of two receptacles on each wall. Each classroom will have 5 data drops, two at the teaching desk, two at the teaching wall and one in the ceiling for a projector. The science classroom will have additional receptacles and circuits as required for the program. Each classroom will have a multi-media system (OH projector, Short-throw projector, Apple TV, etc.) as directed by DTSD.
- i. General use receptacles will be provided throughout the building, each wall will have at least one receptacle, except for toilet rooms and storage rooms.
- j. An addressable fire alarm system with voice evacuation capabilities will be provided for the building.
- k. An access control and security system will be provided as directed by DTSD.
- l. A security camera and video monitoring system will be provided as directed by DTSD.
- m. A master clock and paging system will be provided for the building.
- n. Remote sound systems will be provided for the gymnasium, auditorium, and cafeteria.
- o. A small theatrical lighting system will be provided in the auditorium.

C. Plumbing

1. Existing Conditions

- a. All existing plumbing items and services will be removed from both existing buildings.
 - (1) Domestic water and natural gas utility services will be combined into a single service for the proposed combined building.
 - The existing domestic water service and natural gas services for the Elementary School will be retained, and upgraded if required, to serve the proposed combined building. Both existing services for the ECC shall be removed in their entirety.
 - (2) Sanitary sewer and storm water services exiting each building to be maintained for reuse from the proposed combined building.

- (3) All piping above finished floor elevation will be removed from both existing buildings.
- (4) Existing roof drains and piping will be removed from both buildings.
- (5) All storm and sanitary piping underground and within utility service tunnels below the Elementary School will be removed.
- (6) All underground storm and sanitary piping beneath the ECC will remain and be reused.

2. Proposed Plumbing Scope of Work

- a. The Elementary School existing domestic water service will be upgraded to 4" size to accommodate the proposed combined facility. Extend 4" underground from the street tie-in and provide a new 4" reduced pressure zone style backflow preventer.
- b. The existing 8" sanitary main serving the Elementary School will be replaced complete from a point 5' outside of the building. The 8" sanitary main will enter the building and be distributed to all plumbing fixtures and drains.
- c. The existing natural gas service will be upgraded to a 4" size to accommodate the proposed combined facility. The new gas service will be a low-pressure service, with 12" w.c. distribution pressure. The gas service will be distributed to all gas-fired plumbing, mechanical, and kitchen equipment.
- d. A gas-fired, storage type, domestic water heater and expansion tank will be installed within the existing Elementary School mechanical room. Domestic hot water will be generated and stored at 140-deg F. 140 deg F hot water will be distributed directly to the kitchen for food prep sinks and dishwashing appliances. The 140 deg F hot water will be mixed down to 130-degree hot water via digital master mixing valve and distributed throughout the remainder of the building. Intake and exhaust will extend up through the roof.
 - (1) Water heater to be similar to PVI Power VTX Condensing Storage Water Heater
 - (2) Water heater to provide 200 gallons of storage, 500 MBH burner, and 582 gallon per hour recovery at a 100 deg F temperature rise.
- e. Point of use mixing valves will be installed at all handwashing lavatories, breakroom and classroom sinks to deliver 110-degree hot water to the faucets.
- f. Plumbing fixtures will be installed throughout the building and will be properly trapped and vented.
 - (1) Floor mounted water closets with manual flush valves and wall hung urinal with manual flush valves will be provided.
 - (2) Lavatories will be wall hung with manual faucets.
 - (3) Mop receptors will be provided in janitor's closets and service room.
 - (4) Wall hung water coolers with bottle filling stations will be provided.
- g. Domestic hot and cold water will be extended to all plumbing equipment and fixtures.
- h. A grease interceptor will be installed outside the building, adjacent to the kitchen, for the dishwasher, floor sinks, and food prep fixtures. Further coordination required with future kitchen design.
- i. A sink will be installed within each classroom with a manual gooseneck faucet.

- j. A sink will be installed in the art room with a solid interceptor trap and manual gooseneck faucet.
- k. Floor drains will be installed in all mechanical spaces, adjacent to all pumps, boilers, kitchen, water services and water heaters, and toilet/locker rooms.
- l. Roof drains will be installed on the roof and connect to an interior storm drainage system that will connect to the on-site stormwater management system. Overflow drains will discharge via downspout nozzles and spill to grade.

D. Fire Protection

1. Existing Conditions

- a. The fire protection systems will be completely removed from both existing buildings.
- b. The existing fire protection service for the ECC will be removed in its entirety.
- c. The existing 6" fire protection service for the elementary school will be retained for reuse within the proposed combined facility.

2. Proposed Fire Protection Scope of Work

- a. Both buildings will be fully sprinklered in accordance with the most current version of NFPA 13. The buildings will be separated into multiple coverage zones, each not exceeding 52,000 sf of floor area. Each zone shall be furnished with a dedicated wet pipe sprinkler riser complete with an alarm check valve, flow switch, and shutoff valve with tamper switch.
- b. A new 6" double check backflow preventer will be provided for the existing fire protection service within the existing Elementary School mechanical room.
- c. Sprinkler heads will be fully concealed with white cover plates in all areas with ceilings. In areas with no ceilings, sprinkler heads will be installed in upright positions. Sprinkler heads in the gymnasium shall be protected with cages.
- d. A flow test is recommended at this in order to evaluate the available water service, however it is assumed that a fire pump is not required.

Susquehanna Commerce Center North Building
221 West Philadelphia Street, York, PA 17401
717 845-7654 | www.ba-inc.com

Project:	DTSD Elementary School – Option 2 MEP Basis of Design Narrative	Date:	April 8, 2020
Project No:	BA 2019138	By:	David Myers, PE, LEED AP Kyle Flanagan, PE Madison Stine, EIT

**MEP/FP Basis of Design Narrative for
Derry Township School District – Elementary School
Option 2**

A. HVAC

1. Existing Conditions
 - a. ECC Building - All HVAC equipment and materials will be removed from the existing building.
 - (1) The existing air-cooled chiller serving the ECE will be salvaged for reuse within the new, combined chiller plant constructed to serve the combined ECE/ES building.
 - b. Elementary School - All HVAC equipment and materials will be removed from the existing building.
2. Proposed HVAC Scope of Work
 - a. The building primary HVAC systems will be variable volume, roof mounted, outdoor air handling units (AHUs) with chilled water cooling and hot water heating.
 - (1) Gymnasiums, Cafeterias, Library, and Auditorium will be served by single-zone, variable air volume, roof mounted air handlers. These units will be provided with variable speed supply fan, barometric relief, airside economizer, hot water preheat, chilled water cooling, and hot water reheat coils to allow for active dehumidification. High occupancy spaces will be provided with low returns to improve ventilation efficiency.
 - (2) Classroom and Administration Areas: The remaining building areas will be served by multi-zone, variable air volume, roof mounted air handlers. These units will be provided with variable speed supply fan, variable speed return fan, airside economizer, hot water preheat, and chilled water cooling coil. Air will be distributed to individual spaces via variable air volume (VAV) boxes with hydronic heating coils. The VAV boxes will provide individual space control as well as provide active dehumidification capabilities.
 - b. The Kitchen will be provided with new grease exhaust and gas fired makeup air units for each new grease hood.

If this is not in accordance with your understanding, notify writer within three (3) days after receipt of this memo.

- c. Heating hot water for both the ECC and Elementary school will be generated within a new central boiler plant located on the ground floor of the gymnasium addition. Hot water will serve air handlers, terminal heating equipment, and VAV box reheat coils. Hot water will be generated by modular, high efficiency, condensing boilers. Hot water will be distributed throughout both buildings via base mounted, end suction pumps at 140 F. The hot water plant will be controlled with a hot water reset schedule to maximize the efficiency of the condensing boilers and take advantage of additional savings during part load operation. Hot water will be distributed the length of the building within a new underground utility tunnel.
 - (1) Boilers will be similar to Lochinvar Crest Model FBN.
 - (2) Boiler Plant will consist of four (4) approximately 5000 Mbh hot water boilers.
- d. Cooling chilled water for both the ECC and Elementary school will be generated within a central chiller plant, located on site, across the drive lane from the new central mechanical room located on the ground floor of the gymnasium addition. Chilled water will serve air handler cooling coils. Chilled water will be generated by air cooled chillers with direct driven, variable speed, helical rotary twin screw compressors. Chilled water will be distributed throughout both buildings via base mounted, end suction pumps, at 44 F. Chilled water will be distributed the length of the building within a new underground utility tunnel.
 - (1) Chillers will be similar to Trane Stealth Model RTAE.
 - (2) Chiller Plant will consist of three (3) approximately 200 Ton air cooled chillers plus the relocated ECC chiller.
- e. Hot Water and Chilled Water loops will be furnished as 30% Propylene Glycol solutions for freeze protection of outdoor coils and outdoor chillers. Each system will receive an automatic glycol feeder within the existing Elementary School mechanical room.
- f. Ductwork will distribute supply and return air throughout the building. Ductwork concealed above ceilings will be rectangular style and exposed ductwork will be spiral round.
- g. Terminal heat for vestibules, mechanical rooms, etc. throughout the building will be provided by a mixture of cabinet unit heaters, unit heaters, and fin tube radiation.
- h. The building HVAC systems will be controlled by a Building Automation System (BAS). The BAS will have the capability of monitoring temperature and relative humidity in each zone as well as provide control for all building HVAC equipment. The BAS will be an extension of the existing campus wide Trane Tracer Building Automation System and Trane Tracer SC System Architecture.

B. Electrical

1. Existing Conditions

- a. All electrical equipment and materials will be removed from the existing buildings. Demolition will occur in phases in conjunction with new construction.

2. Proposed Electrical Scope of Work

- a. A new 4000A, 277/480V, 3PH, 4W electrical service will be brought to the building under ground via a new utility owned pad mounted transformer. The service will terminate in an 4000A main distribution switchboard with a main breaker.
- b. The 277/480V, 3PH, 4W distribution panels will be located throughout the building to feed the

HVAC equipment, lighting panels, and step down transformers for a 120/208V, 3PH, 4W loads. 277/480V, 3PH, 4W lighting panels and 120/208V, 3PH, 4W branch panels will be located throughout the building for branch circuiting.

- c. LED lighting and automatic lighting controls will be installed throughout the building. Lighting controls will be in accordance with current energy codes, including dimming, daylighting, manual on, and occupancy sensing functions.
- d. A 125 KW, 277/480V, 3PH, 4W emergency generator will be installed and located in a dedicated generator room inside the building. Two automatic transfer switches will be installed, one for life safety loads (lighting, fire alarm) and one for non-essential loads (IT, access control, security, or as designated by DTSD).
- e. Exterior building mounted lighting and pole mounted site lighting will utilize LED sources.
- f. Communications utilities will enter the building into a dedicated main telecommunications room (MDF). Several telecommunication rooms (IDF) will be located throughout the building as required to distribute cabling to all outlets and maintain cabling distances under 295 feet. Fiber optic cabling will be run between the MDF and IDF locations. All systems cabling will be CAT6E. Wireless access points will also be installed to provided full building coverage.
- g. Each computer workstation location will be provided with a double duplex receptacle and two data drop provisions.
- h. Each general classroom will be provided with two branch circuits and a minimum of two receptacles on each wall. Each classroom will have 5 data drops, two at the teaching desk, two at the teaching wall and one in the ceiling for a projector. The science classroom will have additional receptacles and circuits as required for the program. Each classroom will have a multi-media system (OH projector, Short-throw projector, Apple TV, etc.) as directed by DTSD.
- i. General use receptacles will be provided throughout the building, each wall will have at least one receptacle, except for toilet rooms and storage rooms.
- j. An addressable fire alarm system with voice evacuation capabilities will be provided for the building.
- k. An access control and security system will be provided as directed by DTSD.
- l. A security camera and video monitoring system will be provided as directed by DTSD.
- m. A master clock and paging system will be provided for the building.
- n. Remote sound systems will be provided for the gymnasium, auditorium, and cafeteria.
- o. A small theatrical lighting system will be provided in the auditorium.

C. Plumbing

1. Existing Conditions

- a. All existing plumbing items and services will be removed from both existing buildings.
 - (1) Domestic water and natural gas utility services will be removed in their entirety from both buildings. New, combined, domestic water and natural gas services will be provided for the proposed building. New services will enter at the building within the new central mechanical room, located on the ground floor of the gymnasium addition.

- (2) Sanitary sewer and storm water services exiting the ECC will be maintained for reuse from the proposed combined building. All underground storm and sanitary piping serving the existing elementary school will be removed in its entirety. New underground storm and sanitary laterals will be provided to serve all additions.
- (3) All piping above finished floor elevation will be removed from both existing buildings.
- (4) Existing roof drains and piping will be removed from both buildings.
- (5) All storm and sanitary piping underground and within utility service tunnels below the Elementary School will be removed.
- (6) All underground storm and sanitary piping beneath the ECC will remain and be reused.

2. Proposed Plumbing Scope of Work

- a. A new 4" domestic water service will be provided to accommodate the proposed combined facility. Extend 4" underground from the street tie-in and provide a new 4" reduced pressure zone style backflow preventer within the new central mechanical room.
- b. A new 8" sanitary main will be provided to serve all additions. The 8" sanitary main will enter the building and be distributed to all plumbing fixtures and drains.
- c. A new 4" natural gas service will be provided to accommodate the proposed combined facility. The new gas service will be a low-pressure service, with 12" w.c. distribution pressure. The gas service will be distributed to all gas-fired plumbing, mechanical, and kitchen equipment.
- d. A gas-fired, storage type, domestic water heater and expansion tank will be installed within the new central mechanical room. Domestic hot water will be generated and stored at 140-deg F. 140 deg F hot water will be distributed directly to the kitchen for food prep sinks and dishwashing appliances. The 140 deg F hot water will be mixed down to 130-degree hot water via digital master mixing valve and distributed throughout the remainder of the building. Intake and exhaust will extend up through the roof.
 - (1) Water heater to be similar to PVI Power VTX Condensing Storage Water Heater
 - (2) Water heater to provide 200 gallons of storage, 500 MBH burner, and 582 gallon per hour recovery at a 100 deg F temperature rise.
- e. Point of use mixing valves will be installed at all handwashing lavatories, breakroom and classroom sinks to deliver 110-degree hot water to the faucets.
- f. Plumbing fixtures will be installed throughout the building and will be properly trapped and vented.
 - (1) Floor mounted water closets with manual flush valves and wall hung urinal with manual flush valves will be provided.
 - (2) Lavatories will be wall hung with manual faucets.
 - (3) Mop receptors will be provided in janitor's closets and service room.
 - (4) Wall hung water coolers with bottle filling stations will be provided.
- g. Domestic hot and cold water will be extended to all plumbing equipment and fixtures.
- h. A grease interceptor will be installed outside the building, adjacent to the kitchen, for the dishwasher, floor sinks, and food prep fixtures. Further coordination required with future

kitchen design.

- i. A sink will be installed within each classroom with a manual gooseneck faucet.
- j. A sink will be installed in the art room with a solid interceptor trap and manual gooseneck faucet.
- k. Floor drains will be installed in all mechanical spaces, adjacent to all pumps, boilers, kitchen, water services and water heaters, and toilet/locker rooms.
- l. Roof drains will be installed on the roof and connect to an interior storm drainage system that will connect to the on-site stormwater management system. Overflow drains will discharge via downspout nozzles and spill to grade.

D. Fire Protection

1. Existing Conditions

- a. The fire protection systems will be completely removed from both existing buildings.
- b. The existing fire protection services for both buildings will be removed in their entirety.
- c. A new 6" fire protection service will be provided to serve the combined building, to enter at the new central mechanical room on the ground floor of the gymnasium addition.

2. Proposed Fire Protection Scope of Work

- a. Both buildings will be fully sprinklered in accordance with the most current version of NFPA 13. The buildings will be separated into multiple coverage zones, each not exceeding 52,000 sf of floor area. Each zone shall be furnished with a dedicated wet pipe sprinkler riser complete with an alarm check valve, flow switch, and shutoff valve with tamper switch.
- b. A new 6" double check backflow preventer will be provided for the existing fire protection service within the new central mechanical room.
- c. Sprinkler heads will be fully concealed with white cover plates in all areas with ceilings. In areas with no ceilings, sprinkler heads will be installed in upright positions. Sprinkler heads in the gymnasium shall be protected with cages.
- d. A flow test is recommended at this time, in order to evaluate the available water service, however it is assumed that a fire pump is not required.

Susquehanna Commerce Center North Building
221 West Philadelphia Street, York, PA 17401
717 845-7654 | www.ba-inc.com

Project:	DTSD Elementary School – Option 3 MEP Basis of Design Narrative	Date:	April 17, 2020
Project No:	BA 2019138	By:	David Myers, PE, LEED AP Kyle Flanagan, PE Madison Stine, EIT

**MEP/FP Basis of Design Narrative for
Derry Township School District – Elementary School
Option 3**

A. HVAC

1. Existing Conditions
 - a. ECC Building – Entire building, including all HVAC equipment, to be demolished in its entirety.
 - b. Elementary School – Entire building, including all HVAC equipment, to be demolished in its entirety.
2. Proposed HVAC Scope of Work
 - a. The building primary HVAC systems will be variable volume, roof mounted, outdoor air handling units (AHUs) with chilled water cooling and hot water heating.
 - (1) Gymnasiums, Cafeterias, Library, and Auditorium will be served by single-zone, variable air volume, roof mounted air handlers. These units will be provided with variable speed supply fan, barometric relief, airside economizer, hot water preheat, chilled water cooling, and hot water reheat coils to allow for active dehumidification. High occupancy spaces will be provided with low returns to improve ventilation efficiency.
 - (2) Classroom and Administration Areas: The remaining building areas will be served by multi-zone, variable air volume, roof mounted air handlers. These units will be provided with variable speed supply fan, variable speed return fan, airside economizer, hot water preheat, and chilled water cooling coil. Air will be distributed to individual spaces via variable air volume (VAV) boxes with hydronic heating coils. The VAV boxes will provide individual space control as well as provide active dehumidification capabilities.
 - b. The Kitchen will be provided with new grease exhaust and gas fired makeup air units for each new grease hood.
 - c. Heating hot water will be generated within a new central boiler plant located on the ground floor of the gymnasium addition. Hot water will serve air handlers, terminal heating

If this is not in accordance with your understanding, notify writer within three (3) days after receipt of this memo.

equipment, and VAV box reheat coils. Hot water will be generated by modular, high efficiency, condensing boilers. Hot water will be distributed throughout both buildings via base mounted, end suction pumps at 140 F. The hot water plant will be controlled with a hot water reset schedule to maximize the efficiency of the condensing boilers and take advantage of additional savings during part load operation. Hot water will be distributed the length of the building within a new underground utility tunnel.

(1) Boilers will be similar to Lochinvar Crest Model FBN.

(2) Boiler Plant will consist of four (4) approximately 5000 Mbh hot water boilers.

- d. Cooling chilled water will be generated within a central chiller plant, located on site, across the drive lane from the new central mechanical room located on the ground floor of the gymnasium addition. Chilled water will serve air handler cooling coils. Chilled water will be generated by air cooled chillers with direct driven, variable speed, helical rotary twin screw compressors. Chilled water will be distributed throughout both buildings via base mounted, end suction pumps, at 44 F. Chilled water will be distributed the length of the building within a new underground utility tunnel.

(1) Chillers will be similar to Trane Stealth Model RTAE.

(2) Chiller Plant will consist of three (3) approximately 200 Ton air cooled chillers plus the relocated ECC chiller.

- e. Hot Water and Chilled Water loops will be furnished as 30% Propylene Glycol solutions for freeze protection of outdoor coils and outdoor chillers. Each system will receive an automatic glycol feeder within the existing Elementary School mechanical room.
- f. Ductwork will distribute supply and return air throughout the building. Ductwork concealed above ceilings will be rectangular style and exposed ductwork will be spiral round.
- g. Terminal heat for vestibules, mechanical rooms, etc. throughout the building will be provided by a mixture of cabinet unit heaters, unit heaters, and fin tube radiation.
- h. The building HVAC systems will be controlled by a Building Automation System (BAS). The BAS will have the capability of monitoring temperature and relative humidity in each zone as well as provide control for all building HVAC equipment. The BAS will be an extension of the existing campus wide Trane Tracer Building Automation System and Trane Tracer SC System Architecture.

B. Electrical

1. Existing Conditions

- a. ECC Building – Entire building, including all Electrical equipment, to be demolished in its entirety.
- b. Elementary School – Entire building, including all Electrical equipment, to be demolished in its entirety.

2. Proposed Electrical Scope of Work

- a. A new 4000A, 277/480V, 3PH, 4W electrical service will be brought to the building under ground via a new utility owned pad mounted transformer. The service will terminate in an 4000A main distribution switchboard with a main breaker.

- b. The 277/480V, 3PH, 4W distribution panels will be located throughout the building to feed the HVAC equipment, lighting panels, and step down transformers for a 120/208V, 3PH, 4W loads. 277/480V, 3PH, 4W lighting panels and 120/208V, 3PH, 4W branch panels will be located throughout the building for branch circuiting.
- c. A 125 KW, 277/480V, 3PH, 4W emergency generator will be installed and located either outside in weather-proof enclosure or in a dedicated generator room inside the building. Two automatic transfer switches will be installed, one for life safety loads (lighting, fire alarm) and one for non-essential loads (IT, access control, security, or as designated by DTSD).
- d. Exterior building mounted lighting and pole mounted site lighting will utilize LED sources.
- e. Interior and building mounted LED lighting and automatic lighting controls will be installed throughout the building. Lighting controls will be in accordance with current energy codes, including dimming, daylighting, manual on, and occupancy sensing functions.
- f. Communications utilities will enter the building into a dedicated main telecommunications room (MDF). Several telecommunication rooms (IDF) will be located throughout the building as required to distribute cabling to all outlets and maintain cabling distances under 295 feet. Fiber optic cabling will be run between the MDF and IDF locations. All systems cabling will be CAT6E. Wireless access points will also be installed to provided full building coverage.
- g. Each computer workstation location will be provided with a double duplex receptacle and two data drop provisions.
- h. Each general classroom will be provided with two branch circuits and a minimum of two receptacles on each wall. Each classroom will have 5 data drops, two at the teaching desk, two at the teaching wall and one in the ceiling for a projector. The science classroom will have additional receptacles and circuits as required for the program. Each classroom will have a multi-media system (OH projector, Short-throw projector, Apple TV, etc.) as directed by DTSD.
- i. General use receptacles will be provided throughout the building, each wall will have at least one receptacle, except for toilet rooms and storage rooms.
- j. An addressable fire alarm system with voice evacuation capabilities will be provided for the building.
- k. An access control and security system will be provided as directed by DTSD.
- l. A security camera and video monitoring system will be provided as directed by DTSD.
- m. A master clock and paging system will be provided for the building.
- n. Remote sound systems will be provided for the gymnasium, auditorium, and cafeteria.
- o. A small theatrical lighting system will be provided in the auditorium.

C. Plumbing

3. Existing Conditions

- a. ECC Building – Entire building, including all Plumbing equipment, to be demolished in its entirety.
- b. Elementary School – Entire building, including all Plumbing equipment, to be demolished in its entirety.

4. Proposed Plumbing Scope of Work

- a. A new 4" domestic water service will be provided to accommodate the new building. Extend 4" underground from the street tie-in and provide a new 4" reduced pressure zone style backflow preventer within the new central mechanical room.
- b. A new 8" sanitary main will be provided to serve the new building. The 8" sanitary main will enter the building and be distributed to all plumbing fixtures and drains.
- c. A new 4" natural gas service will be provided to accommodate the new building. The new gas service will be a low-pressure service, with 12" w.c. distribution pressure. The gas service will be distributed to all gas-fired plumbing, mechanical, and kitchen equipment.
- d. A gas-fired, storage type, domestic water heater and expansion tank will be installed within the new central mechanical room. Domestic hot water will be generated and stored at 140-deg F. 140 deg F hot water will be distributed directly to the kitchen for food prep sinks and dishwashing appliances. The 140 deg F hot water will be mixed down to 130-degree hot water via digital master mixing valve and distributed throughout the remainder of the building. Intake and exhaust will extend up through the roof.
 - (1) Water heater to be similar to PVI Power VTX Condensing Storage Water Heater
 - (2) Water heater to provide 200 gallons of storage, 500 MBH burner, and 582 gallon per hour recovery at a 100 deg F temperature rise.
- e. Point of use mixing valves will be installed at all handwashing lavatories, breakroom and classroom sinks to deliver 110-degree hot water to the faucets.
- f. Plumbing fixtures will be installed throughout the building and will be properly trapped and vented.
 - (1) Floor mounted water closets with manual flush valves and wall hung urinal with manual flush valves will be provided.
 - (2) Lavatories will be wall hung with manual faucets.
 - (3) Mop receptors will be provided in janitor's closets and service room.
 - (4) Wall hung water coolers with bottle filling stations will be provided.
- g. Domestic hot and cold water will be extended to all plumbing equipment and fixtures.
- h. A grease interceptor will be installed outside the building, adjacent to the kitchen, for the dishwasher, floor sinks, and food prep fixtures. Further coordination required with future kitchen design.
- i. A sink will be installed within each classroom with a manual gooseneck faucet.
- j. A sink will be installed in the art room with a solid interceptor trap and manual gooseneck faucet.
- k. Floor drains will be installed in all mechanical spaces, adjacent to all pumps, boilers, kitchen, water services and water heaters, and toilet/locker rooms.
- l. Roof drains will be installed on the roof and connect to an interior storm drainage system that will connect to the on-site stormwater management system. Overflow drains will discharge via downspout nozzles and spill to grade.

D. Fire Protection**1. Existing Conditions**

- a. ECC Building – Entire building, including all Plumbing equipment, to be demolished in its entirety.
- b. Elementary School – Entire building, including all Plumbing equipment, to be demolished in its entirety.

2. Proposed Fire Protection Scope of Work

- a. Both buildings will be fully sprinklered in accordance with the most current version of NFPA 13. The buildings will be separated into multiple coverage zones, each not exceeding 52,000 sf of floor area. Each zone shall be furnished with a dedicated wet pipe sprinkler riser complete with an alarm check valve, flow switch, and shutoff valve with tamper switch.
- b. A new 6" fire protection service will be provided to serve the combined building, to enter at the new central mechanical. A new 6" double check backflow preventer will be provided for the existing fire protection service within the new central mechanical room.
- c. Sprinkler heads will be fully concealed with white cover plates in all areas with ceilings. In areas with no ceilings, sprinkler heads will be installed in upright positions. Sprinkler heads in the gymnasium shall be protected with cages.
- d. A flow test is recommended at this time, in order to evaluate the available water service, however it is assumed that a fire pump is not required.

D

Derry Township School District Early Childhood Center (ECC) and Elementary School (ES)
Options 1-3 Renovations/Additions/New Buildings
Order-of-Magnitude Estimates Clarifications by The Whiting-Turner Contracting Company
April 27, 2020

Basis of Order-of-Magnitude Estimates

The three options we have provided order-of-magnitude estimates for are as follows:

- **Option 1:** Interior renovations to the existing Early Childhood Center (with minor changes to interior layout), extensive renovations to the Elementary School, and new additions to the Elementary School to expand and connect the two buildings.
- **Option 2:** Interior renovations to the Early Childhood Center (with minor changes to interior layout), and phased demolition of the existing Elementary School to accommodate construction of a new Elementary School.
- **Option 3:** Construction of a new combined Elementary School/Early Childhood Center located between the existing Elementary School and Middle School. The existing Elementary School will then be demolished to accommodate a new entrance and parking area.

NOTE: Temporary modular classrooms with associated restrooms will be needed for both Options 1& 2.

In preparing the order-of-magnitude estimates for the three options presented, we have based our estimates on a combination of the following:

- Historical costs from similar projects.
- Conceptual estimates for project-specific items (i.e. sitework, structural modifications, etc.).
- Local experience and current market factors.*

* The impacts on construction costs due to the COVID-19 pandemic are not yet known. Annual escalation rates are based on market trends prior to the onset of the COVID-19 pandemic.

All costs are based on current dollars however we have included an escalation factor for each of the three options based on an anticipated construction start date of summer 2021 and the mid-point of their estimated durations. We have assumed the construction durations for each option to be:

- **Option 1:** Approximately four years
- **Option 2:** Approximately three years
- **Option 3:** Approximately two years

At this early stage, for planning purposes we recommend the low-high range for each Option be considered as minus five percent (-5%) to plus eight percent (+8%) of the estimated cost as indicated at the bottom of each option's cost summary.

**Derry Township School District Early Childhood Center (ECC) and Elementary School (ES)
Options 1-3 Renovations/Additions/New Buildings
Order-of-Magnitude Estimates Clarifications by The Whiting-Turner Contracting Company
April 27, 2020**

Estimate Clarifications

The following clarifications apply to our order-of-magnitude estimates for Options 1-3:

- 1) Our order-of-magnitude estimates represent our best interpretation of the current design documents. As the documents are conceptual in nature, we have used our prior knowledge, experience and historical cost data to provide a comprehensive estimate.
- 2) We have included a ten percent (10%) Construction Contingency within each estimate based on the early nature of the documents. This contingency will reduce as the documents are advanced. A separate ten percent (10%) Owner's Contingency is also recommended at this stage.
- 3) A Phasing Premium has been included for Options 1 and 2 to account for costs associated with maintaining the functionality of the existing ECC and ES while systematically demolishing, renovating, and expanding to construct a combined ECC/ES while occupied. Option 3 has no associated Phasing Premium as the new combined ECC/ES will be completed and students then transferred to the new building prior to demolition of the existing ES.
- 4) General Conditions for each Option are based upon construction duration and phasing.
- 5) Estimated design fees for each Option are based on percentage of cost for each Option.
- 6) Building permit fees based on Derry Township rates shall be paid by Owner and are included in the Related Expenses summary.
- 7) Payment and Performance Bonds will be required by prime contractors.
- 8) Builders Risk Insurance shall be obtained by the Owner and estimated costs are included in the Related Expenses summary. Should an event(s) occur that requires coverage, all deductible costs shall be paid by the Owner.
- 9) Prevailing wage rates shall apply.
- 10) The project is tax exempt.
- 11) Owner shall hire and pay for an independent inspection agent to perform all third-party inspections of earthwork, utilities, asphalt pavement, concrete, structural steel, cold-formed structural framing and other testing and inspections as may be required by code and/or the local authority having jurisdiction.
- 12) Bond fees, if required by Derry Township or other jurisdiction, shall be posted by Owner.
- 13) Project financing costs are not included.

Derry Township School District Early Childhood Center (ECC) and Elementary School (ES)
Options 1-3 Renovations/Additions/New Buildings
Order-of-Magnitude Estimates Clarifications by The Whiting-Turner Contracting Company
April 27, 2020

- 14) All utility consumption charges including power, water, gas, storm and sewer required for construction are excluded and will be paid by Owner. Utility connection fees for new services are also excluded and will be paid by Owner.
- 15) We have included allowances for rock removal, unsuitable soils replacement, and sinkhole remediation if encountered during excavation operations.
- 16) LEED certification of project is excluded.
- 17) Testing for hazardous, contaminated and/or toxic materials within the existing ECC and ES has not yet been conducted to confirm the extents of material requiring abatement, however estimated costs for asbestos abatement have been provided by EHC Associates and are reflected within the overall estimate for each Option.
- 18) Temporary modular buildings to accommodate up to twenty-four (24) classrooms with restrooms have been included in Options 1 and 2 due to phased demolition and construction. Option 3 does not require temporary classrooms, as all students will be relocated to the new combined ECC/ES once completed and then the existing ES demolished.
- 19) Option 3 does not include the demolition of the existing ECC at completion of the new combined ECC/ES building. The ECC will be left as-is.
- 20) Fixtures, Furnishings and Equipment (FFE) estimated costs have been included. Options 1 and 2 account for a combination of new and existing FFE, while Option 3 includes all new FFE.
- 21) Moving, storage and relocation costs are not included.

CSI Division	Option 1 Parametric Estimate		Option 2 Parametric Estimate		Option 3 Parametric Estimate	
	\$/SF		\$/SF		\$/SF	
		272,570		286,017		266,369
02 Existing Conditions	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Div 2 Project Specific Conditions	\$ 7.49	\$ 2,041,977	\$ 8.47	\$ 2,423,827	\$ 7.59	\$ 2,021,918
03 Concrete	\$ 8.13	\$ 2,216,724	\$ 20.19	\$ 5,773,411	\$ 19.31	\$ 5,142,398
Div 3 Project Specific Conditions	\$ 2.39	\$ 650,875	\$ 0.53	\$ 150,750	\$ -	\$ -
04 Masonry	\$ 8.19	\$ 2,233,584	\$ 12.83	\$ 3,669,649	\$ 22.45	\$ 5,981,121
Div 4 Project Specific Conditions	\$ 2.00	\$ 545,580	\$ 0.62	\$ 177,420	\$ -	\$ -
05 Metals	\$ 9.15	\$ 2,494,099	\$ 20.87	\$ 5,968,198	\$ 23.36	\$ 6,223,095
Div 5 Project Specific Conditions	\$ 1.89	\$ 515,000	\$ 0.81	\$ 232,500	\$ 0.69	\$ 182,500
06 Wood, Plastics, and Composites	\$ 9.64	\$ 2,628,645	\$ 21.21	\$ 6,065,483	\$ 23.21	\$ 6,183,606
Div 6 Project Specific Conditions	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
07 Thermal and Moisture Protection	\$ 16.98	\$ 4,628,390	\$ 25.96	\$ 7,424,313	\$ 22.86	\$ 6,088,968
Div 7 Project Specific Conditions	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
08 Openings	\$ 14.69	\$ 4,004,999	\$ 17.15	\$ 4,906,021	\$ 22.11	\$ 5,890,309
Div 8 Project Specific Conditions	\$ 0.72	\$ 196,400	\$ 0.31	\$ 88,300	\$ -	\$ -
09 Finishes	\$ 27.97	\$ 7,624,010	\$ 38.33	\$ 10,963,717	\$ 30.43	\$ 8,105,268
Div 9 Project Specific Conditions	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
10 Specialties	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Div 10 Project Specific Conditions	\$ 3.93	\$ 1,072,500	\$ 3.75	\$ 1,072,500	\$ 4.03	\$ 1,072,500
11 Equipment	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Div 11 Project Specific Conditions	\$ 3.67	\$ 1,000,000	\$ 3.50	\$ 1,000,000	\$ 3.75	\$ 1,000,000
12 Furnishings	\$ 2.50	\$ 681,425	\$ 2.50	\$ 715,043	\$ 2.50	\$ 665,923
Div 12 Project Specific Conditions	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
13 Special Construction	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Div 13 Project Specific Conditions	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
14 Conveying Equipment	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Div 14 Project Specific Conditions	\$ 1.47	\$ 400,000	\$ 1.40	\$ 400,000	\$ 1.50	\$ 400,000
21 Fire Suppression	\$ 4.57	\$ 1,244,317	\$ 4.17	\$ 1,191,711	\$ 3.15	\$ 837,872
Div 21 Project Specific Conditions	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
22 Plumbing, HVAC, and Controls	\$ 71.16	\$ 19,394,816	\$ 70.58	\$ 20,186,948	\$ 68.70	\$ 18,300,539
Div 22 Project Specific Conditions	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
23 HVAC (Included in Div 22)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Div 23 Project Specific Conditions	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
25 Integrated Automation (Incl in Div 22)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Div 25 Project Specific Conditions	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
26 Electrical, LV, Safety & Security	\$ 45.32	\$ 12,352,777	\$ 49.31	\$ 14,104,035	\$ 49.69	\$ 13,235,254
Div 26 Project Specific Conditions	\$ -	\$ 158,774	\$ 1.30	\$ 372,958	\$ 3.13	\$ 833,567
27 Communications (Incl in Div 26)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Div 27 Project Specific Conditions	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
28 Elec Safety & Security (Incl in Div 26)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Div 28 Project Specific Conditions	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
31 Earthwork	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Div 31 Project Specific Conditions	\$ -	\$ 1,800,123	\$ 13.41	\$ 3,836,412	\$ 27.18	\$ 7,239,956
32 Exterior Improvements	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Div 32 Project Specific Conditions	\$ -	\$ 1,047,770	\$ 7.04	\$ 2,013,020	\$ 13.94	\$ 3,713,931
33 Site Utilities	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Div 33 Project Specific Conditions	\$ -	\$ 1,455,000	\$ 7.46	\$ 2,133,990	\$ 12.89	\$ 3,432,800
34 Traffic and Transportation	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Subtotal 1	\$ 258.24	\$ 70,387,784	\$ 331.69	\$ 94,870,206	\$ 362.47	\$ 96,551,525
80 Escalation to Const Midpoint	15.00%	\$ 10,558,168	13.50%	\$ 12,807,478	10.00%	\$ 9,655,152
85 Construction Contingency	10.00%	\$ 7,038,778	10.00%	\$ 9,487,021	10.00%	\$ 9,655,152
00 Modular Classrooms		\$ 3,405,440		\$ 3,059,120		\$ -
00 Abatement		\$ 4,500,000		\$ 4,500,000		\$ 3,500,000
00 Phasing Premium	5.0%	\$ 3,519,389	2.5%	\$ 2,371,755	0.0%	\$ -
Subtotal 2	\$ 364.71	\$ 99,409,559	\$ 444.36	\$ 127,095,579	\$ 448.11	\$ 119,361,830
01 General Conditions & Requirements	9.00%	\$ 7,363,135	6.25%	\$ 6,550,068	5.25%	\$ 5,252,705
Subtotal 3	\$ 391.73	\$ 106,772,694	\$ 467.26	\$ 133,645,647	\$ 467.83	\$ 124,614,535
90 General Liability Insurance	1.00%	\$ 1,067,727	1.00%	\$ 1,336,456	1.00%	\$ 1,246,145
91 Builder's Risk Insurance (By Owner)	0.00%	\$ -	0.00%	\$ -	0.00%	\$ -
92 P&P Bond	1.25%	\$ 1,348,005	1.25%	\$ 1,687,276	1.25%	\$ 1,573,259
93 Fee	2.75%	\$ 3,002,682	2.75%	\$ 3,758,408	2.75%	\$ 3,504,433
Total Construction Estimate	\$ 411.60	\$ 112,191,108	\$ 490.98	\$ 140,427,788	\$ 491.57	\$ 130,938,372