Somerville High School

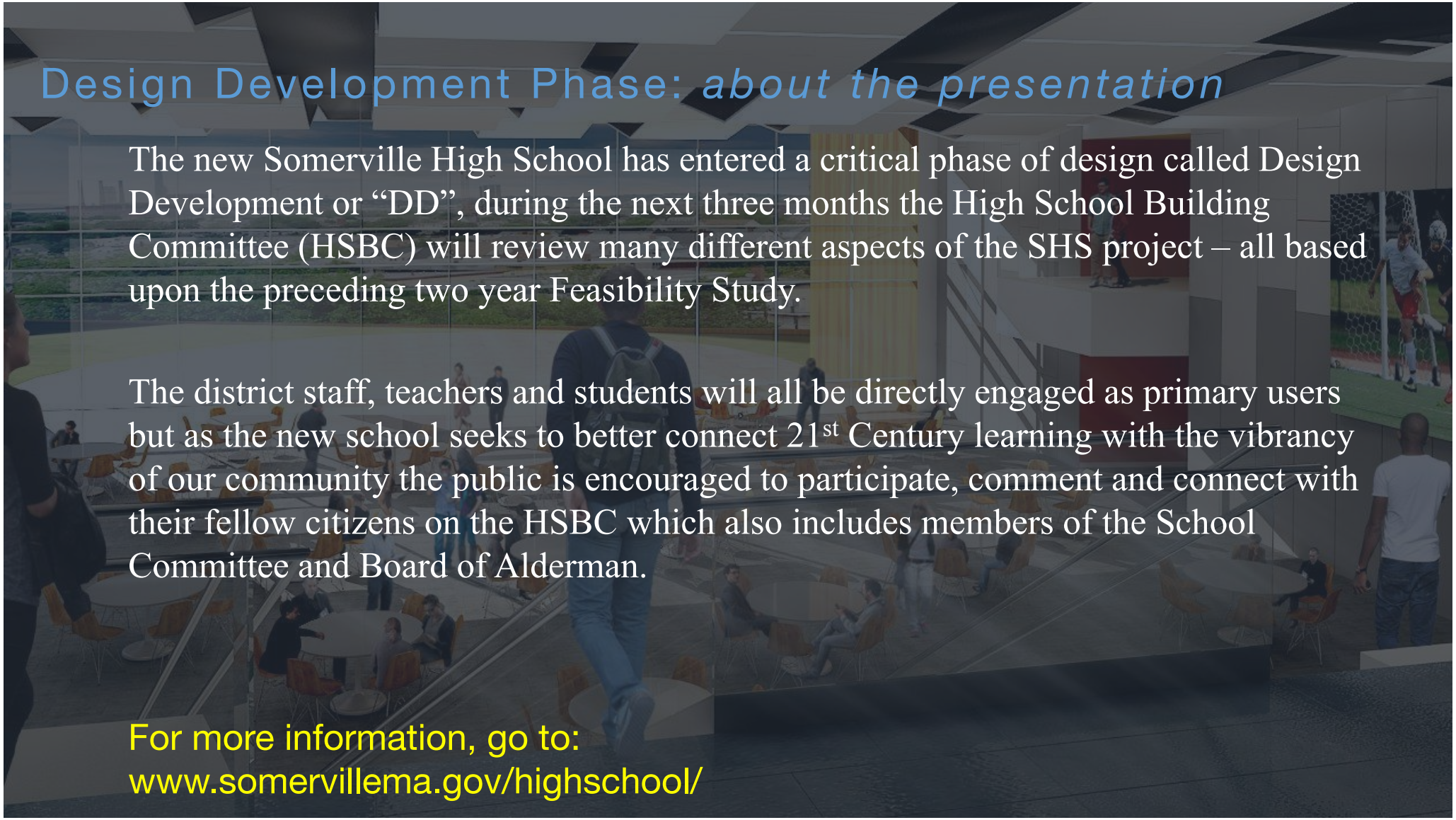
School Building Committee

May 15, 2017

Symmes Maini & McKee Associates | SMMA

Agenda

- Educational Planning Updates - Floor Plans
- Working Group Updates
  - Sustainability
  - Safety & Security
  - Exterior & Site Design
    - Architectural Exteriors Design Strategy
    - Site Design Updates

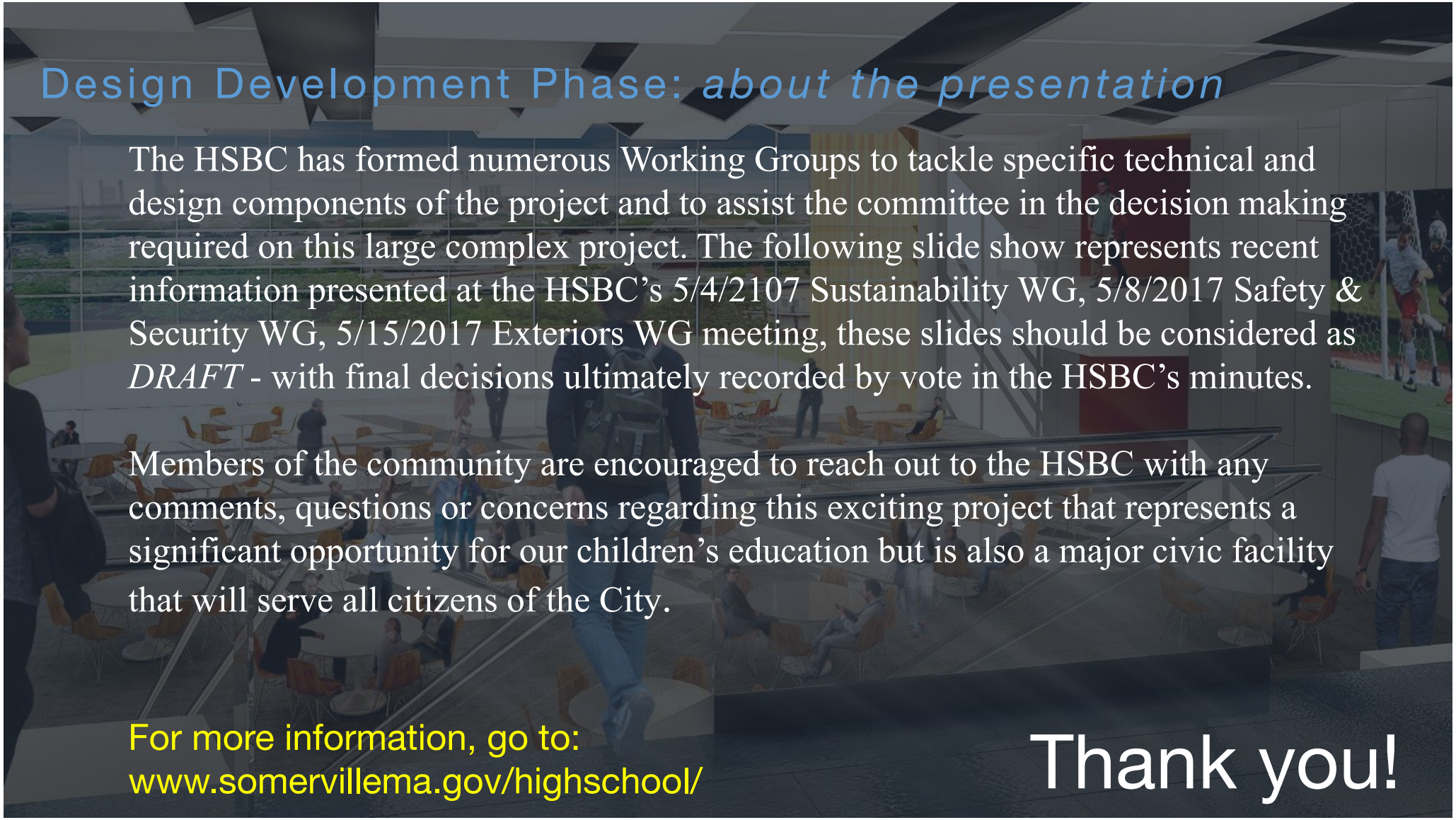


Design Development Phase: *about the presentation*

The new Somerville High School has entered a critical phase of design called Design Development or "DD", during the next three months the High School Building Committee (HSBC) will review many different aspects of the SHS project – all based upon the preceding two year Feasibility Study.

The district staff, teachers and students will all be directly engaged as primary users but as the new school seeks to better connect 21st Century learning with the vibrancy of our community the public is encouraged to participate, comment and connect with their fellow citizens on the HSBC which also includes members of the School Committee and Board of Alderman.

For more information, go to:
www.somervillema.gov/highschool/



Design Development Phase: *about the presentation*

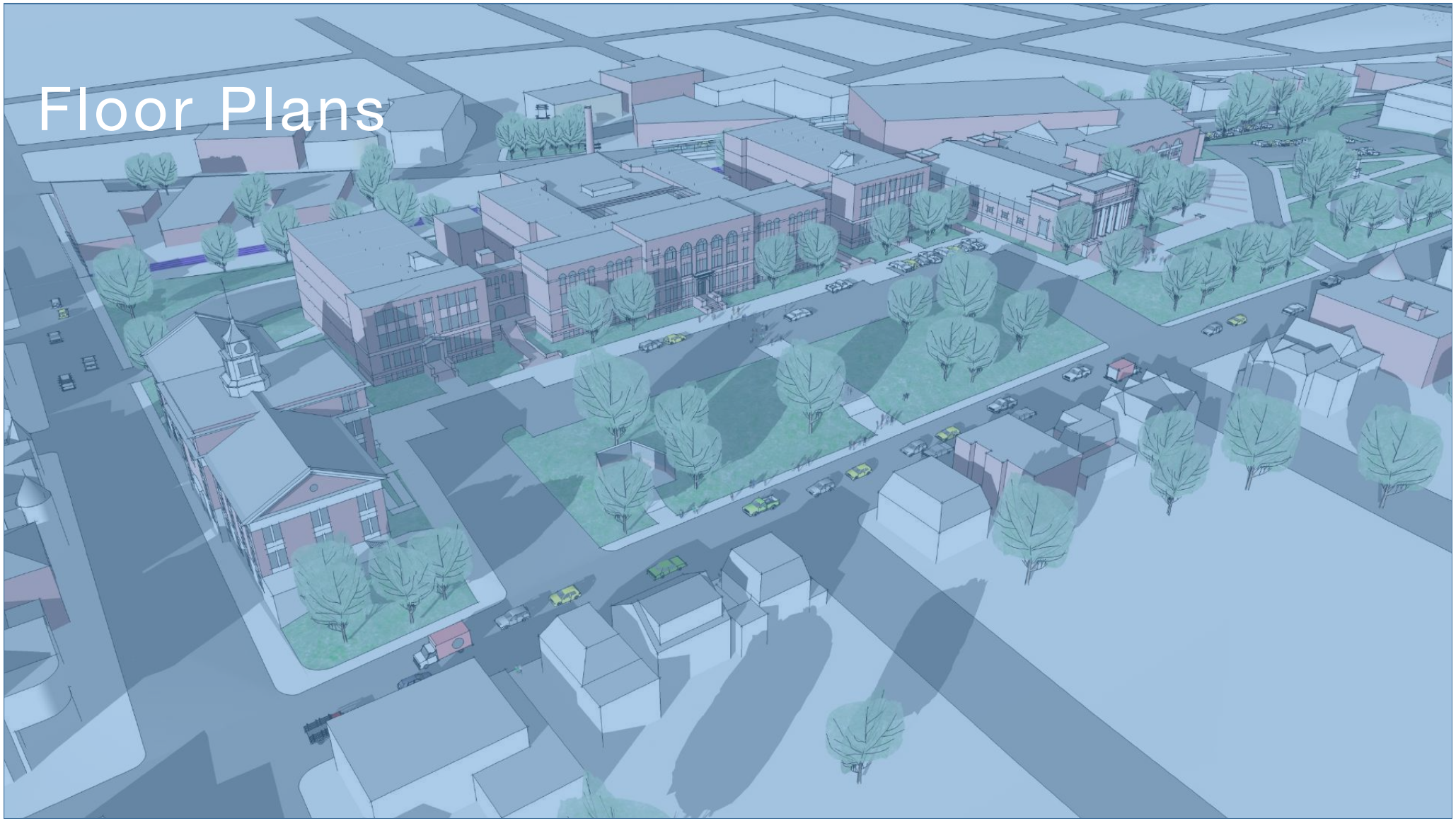
The HSBC has formed numerous Working Groups to tackle specific technical and design components of the project and to assist the committee in the decision making required on this large complex project. The following slide show represents recent information presented at the HSBC's 5/4/2107 Sustainability WG, 5/8/2017 Safety & Security WG, 5/15/2017 Exteriors WG meeting, these slides should be considered as *DRAFT* - with final decisions ultimately recorded by vote in the HSBC's minutes.

Members of the community are encouraged to reach out to the HSBC with any comments, questions or concerns regarding this exciting project that represents a significant opportunity for our children's education but is also a major civic facility that will serve all citizens of the City.

For more information, go to:
www.somervillema.gov/highschool/

Thank you!

Floor Plans



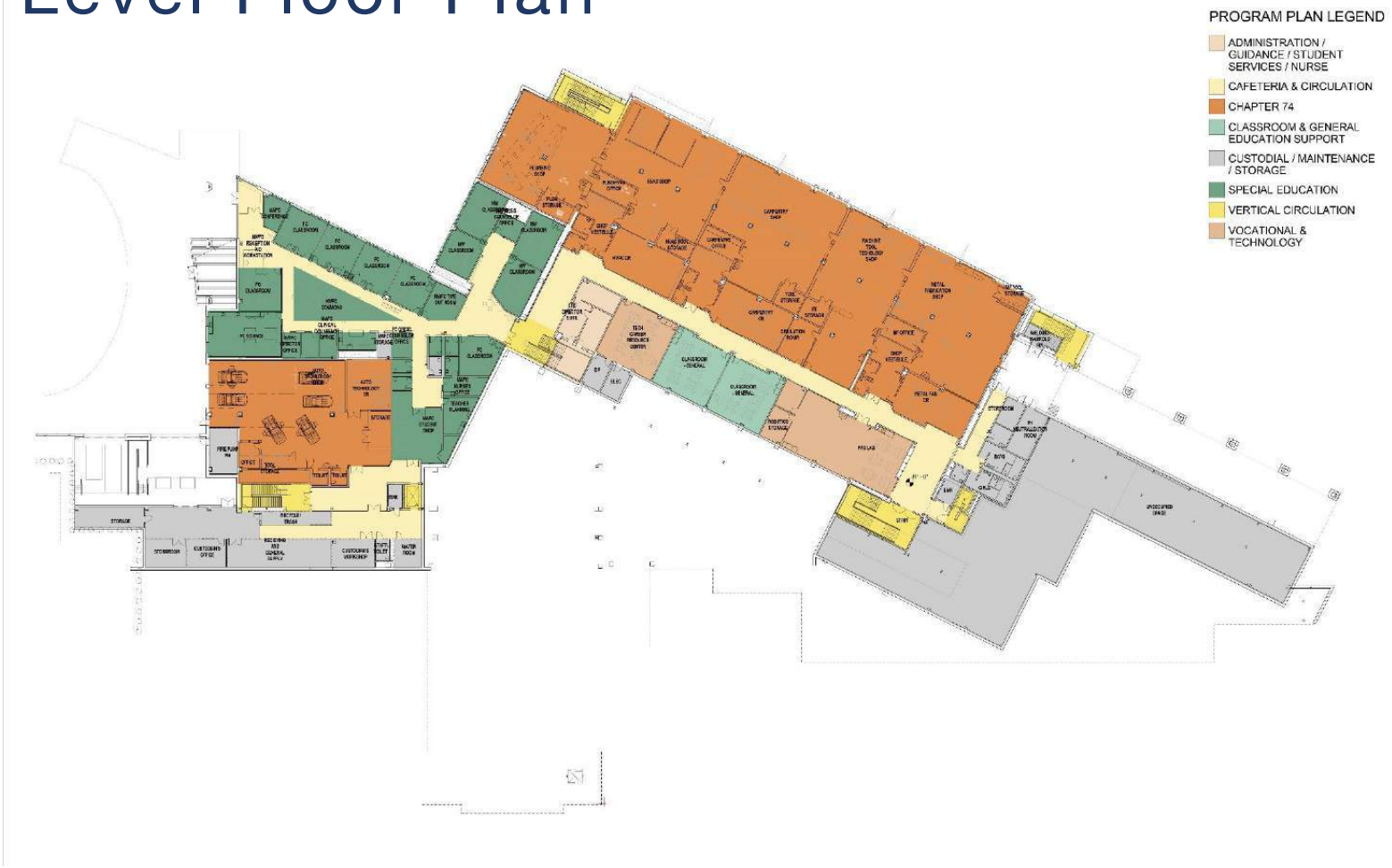
Educational Planning Update

- Lower Level CTE Shops updated and final equipment layout in process
- NW/FC space and Layout revisions still in progress
- Removed corridor connection to 1895 Building due to accessibility and constructability concerns
- Ongoing HVAC & Electrical coordination will affect layouts
- Life Skills and Consumer Science being revised
- Continued study at Cosmetology lab
- CHA suite requires review and sign off
- Updating Culinary Arts and Music suite to reflect comments
- Fine tuning to Upper Level Electricity and Medical shops

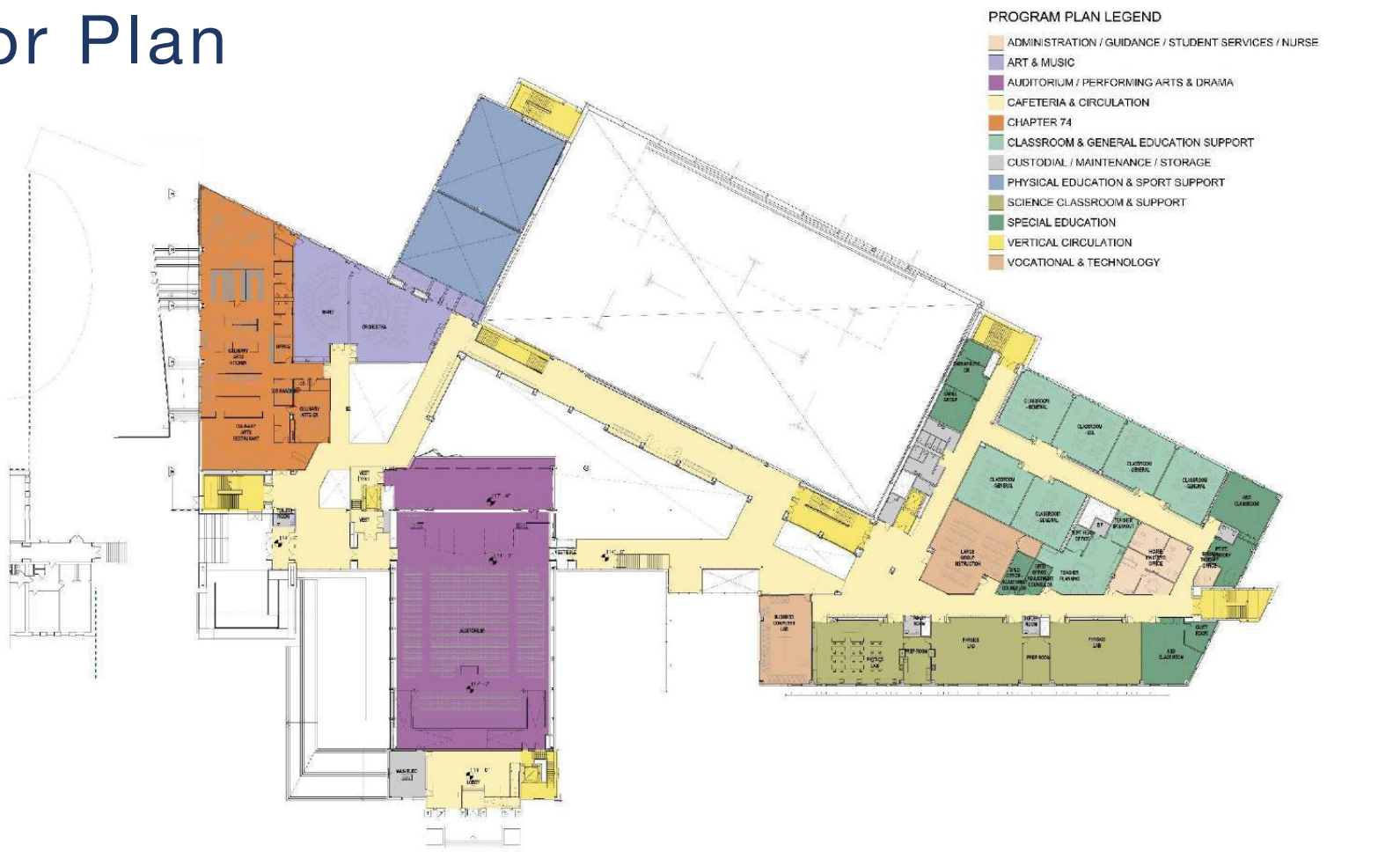
1st Floor Plan

Major Public Event Spaces
Academic Zones
Commons & Core Areas as Bridge/Link

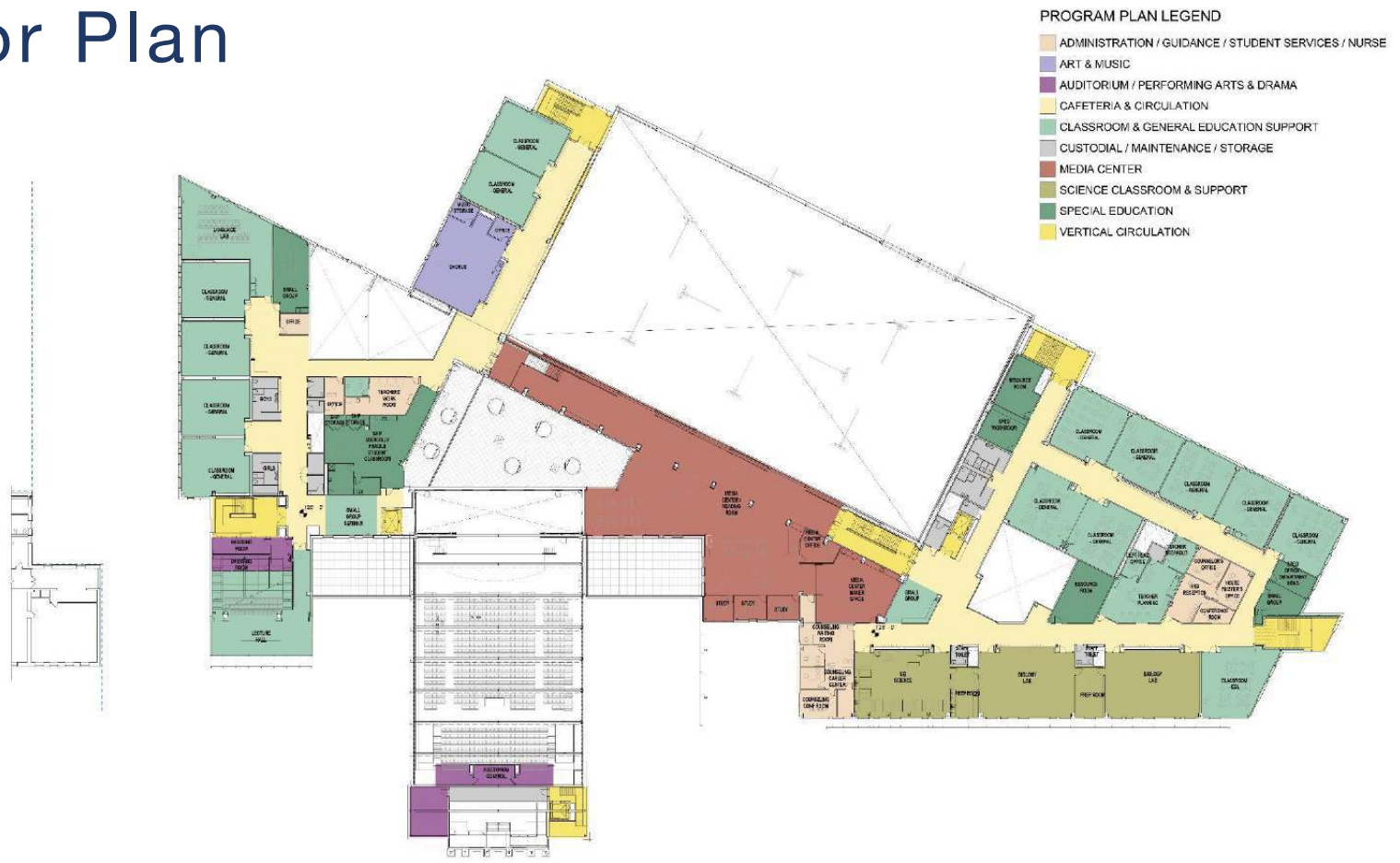
Lower Level Floor Plan



2nd Floor Plan



3rd Floor Plan



4th Floor Plan

5th Floor Plan

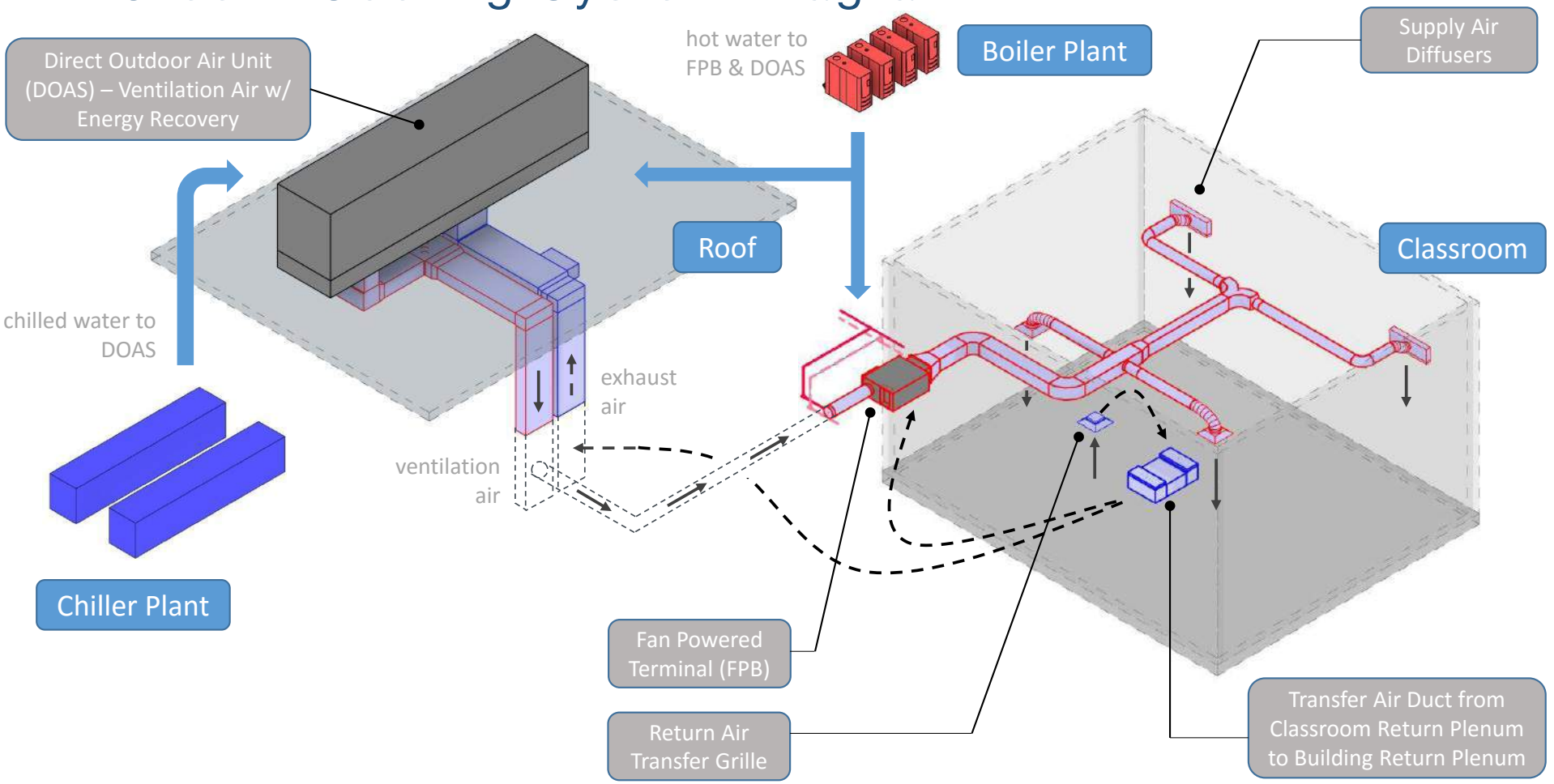
Sustainability Working Group #1

Agenda

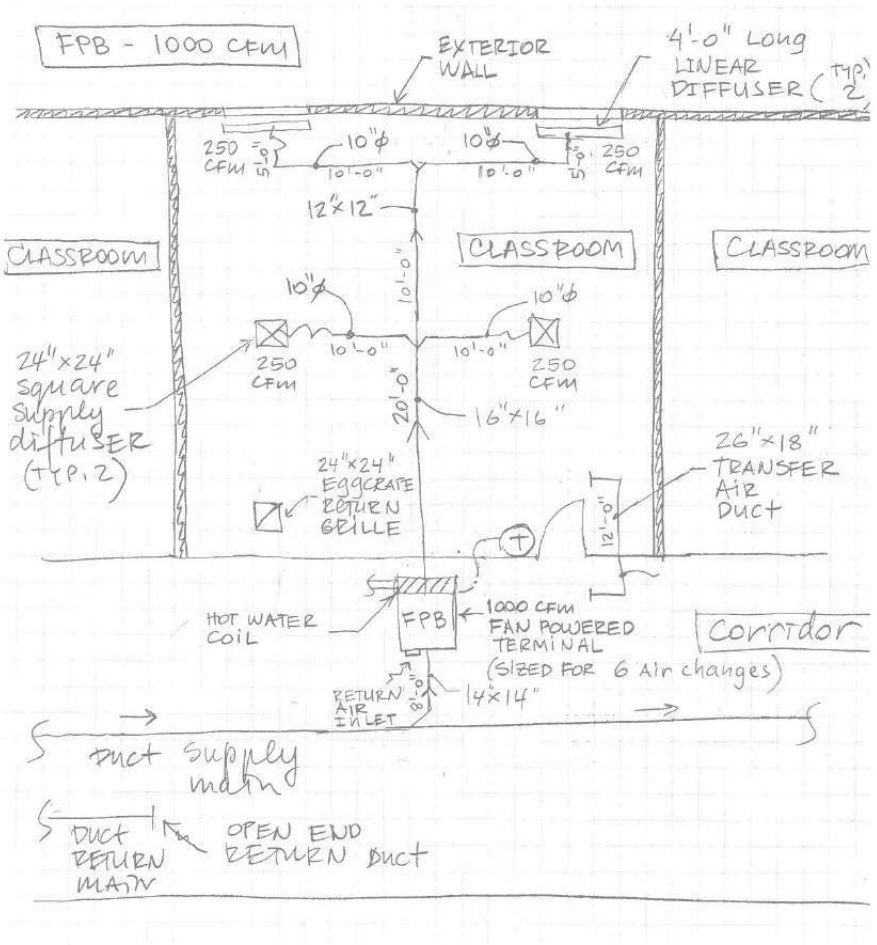
- HVAC System Design Efficiency Studies
- PV Capacity Study
- Integration with the Climate Change Plan
- LEED Credit Update

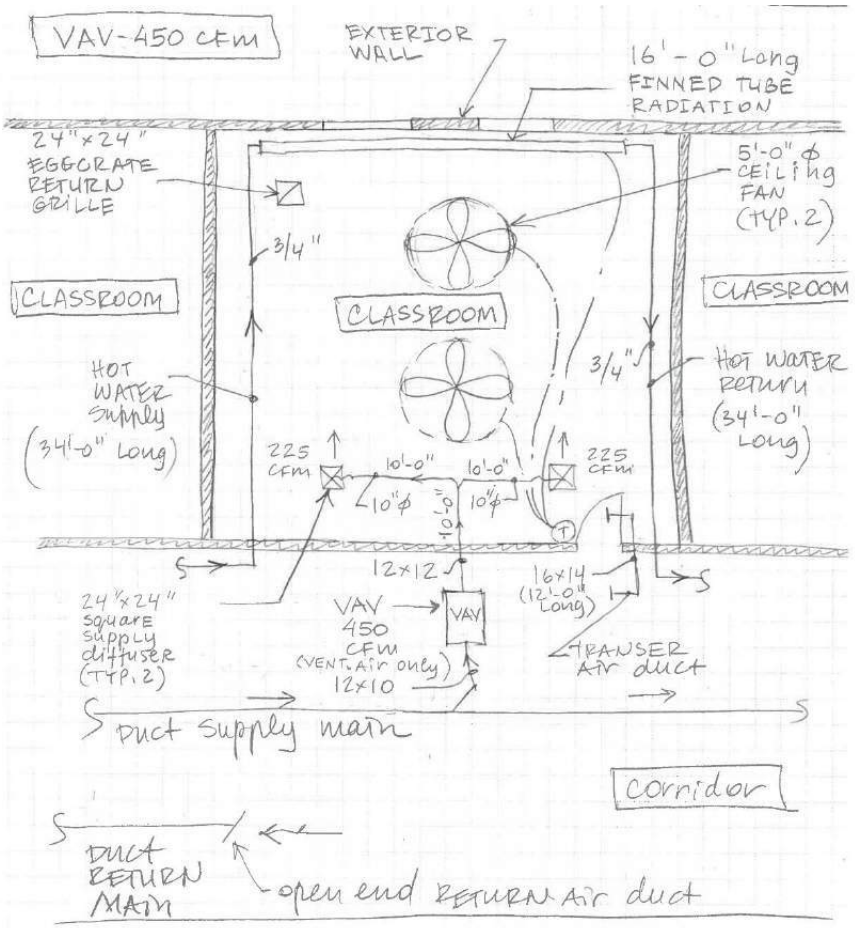
HVAC System Design Efficiency Studies

“Green” Cooling System Diagram

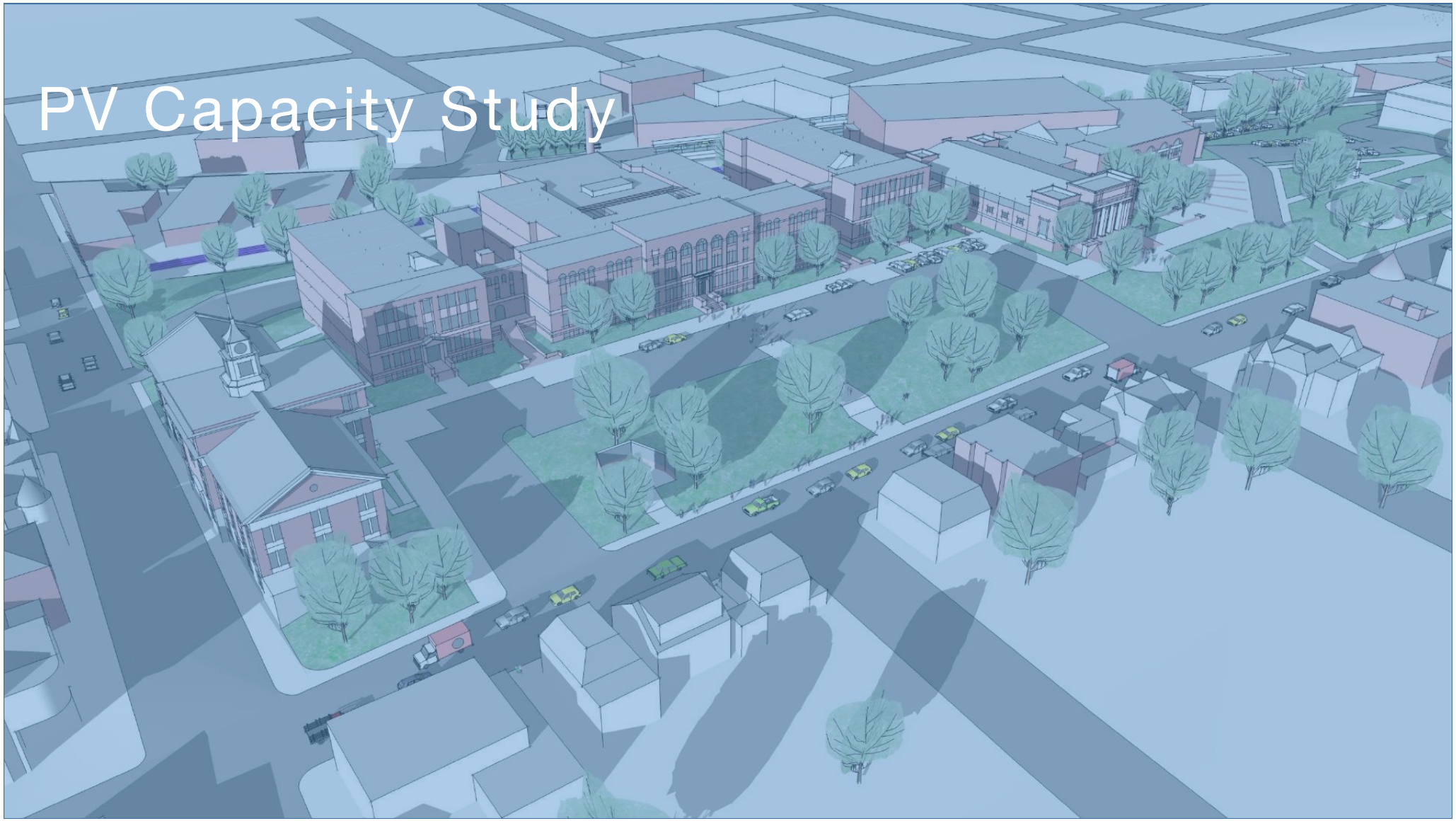


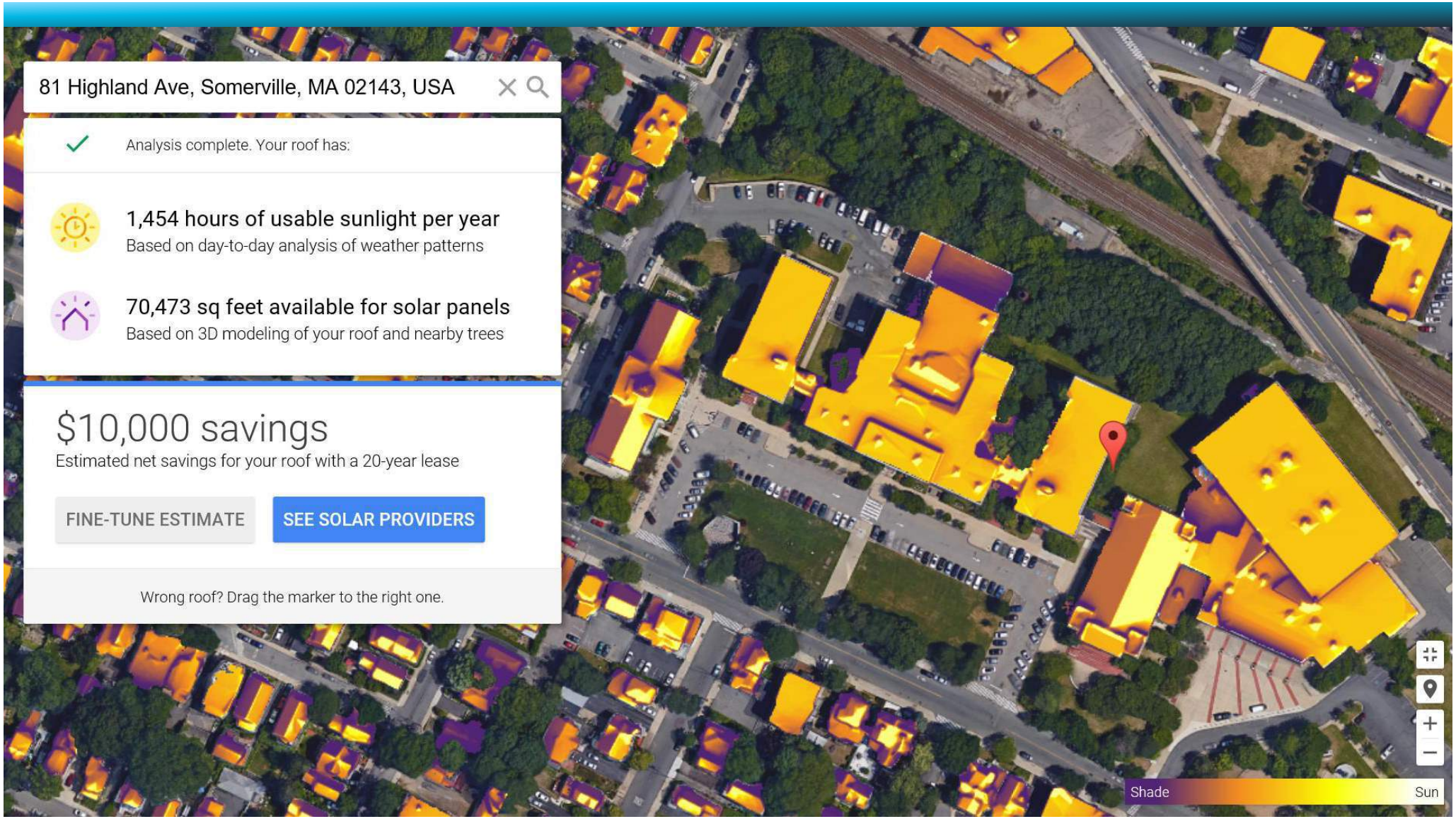
Typical Classroom HVAC System Diagrams

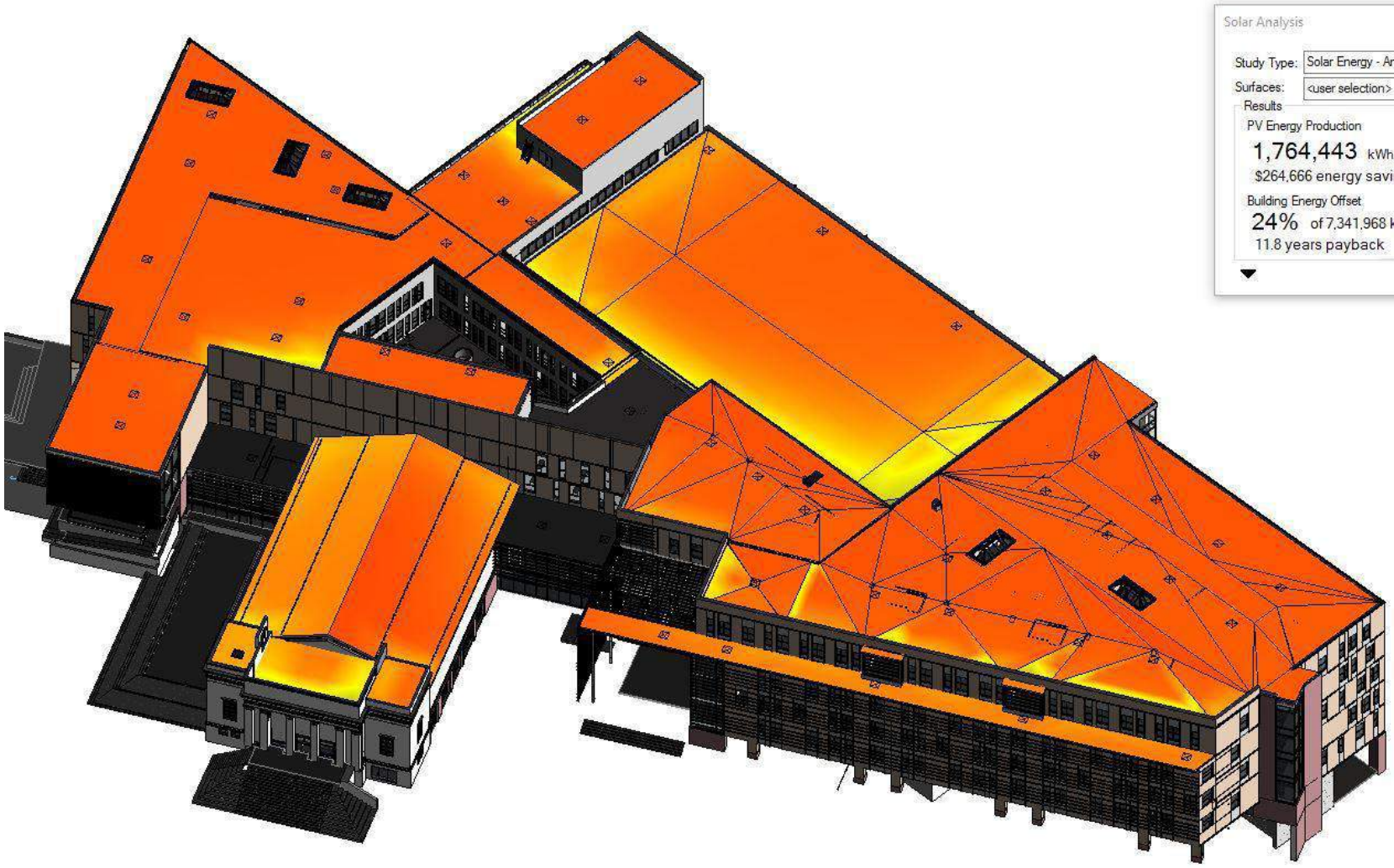




PV Capacity Study




81 Highland Ave, Somerville, MA 02143, USA
Analysis complete. Your roof has:
1,454 hours of usable sunlight per year
Based on day-to-day analysis of weather patterns
70,473 sq feet available for solar panels
Based on 3D modeling of your roof and nearby trees
$10,000 savings
Estimated net savings for your roof with a 20-year lease
FINE-TUNE ESTIMATE
SEE SOLAR PROVIDERS
Wrong roof? Drag the marker to the right one.
Shade
Sun



Solar Analysis

Study Type: Solar Energy - Annual PV

Surfaces: <user selection>

Results

PV Energy Production

1,764,443 kWh/Year

$264,666 energy savings

Building Energy Offset

24% of 7,341,968 kWh/year

11.8 years payback

Update

v1.0.0.1

Solar Energy (kWh/m²)

197

180

120

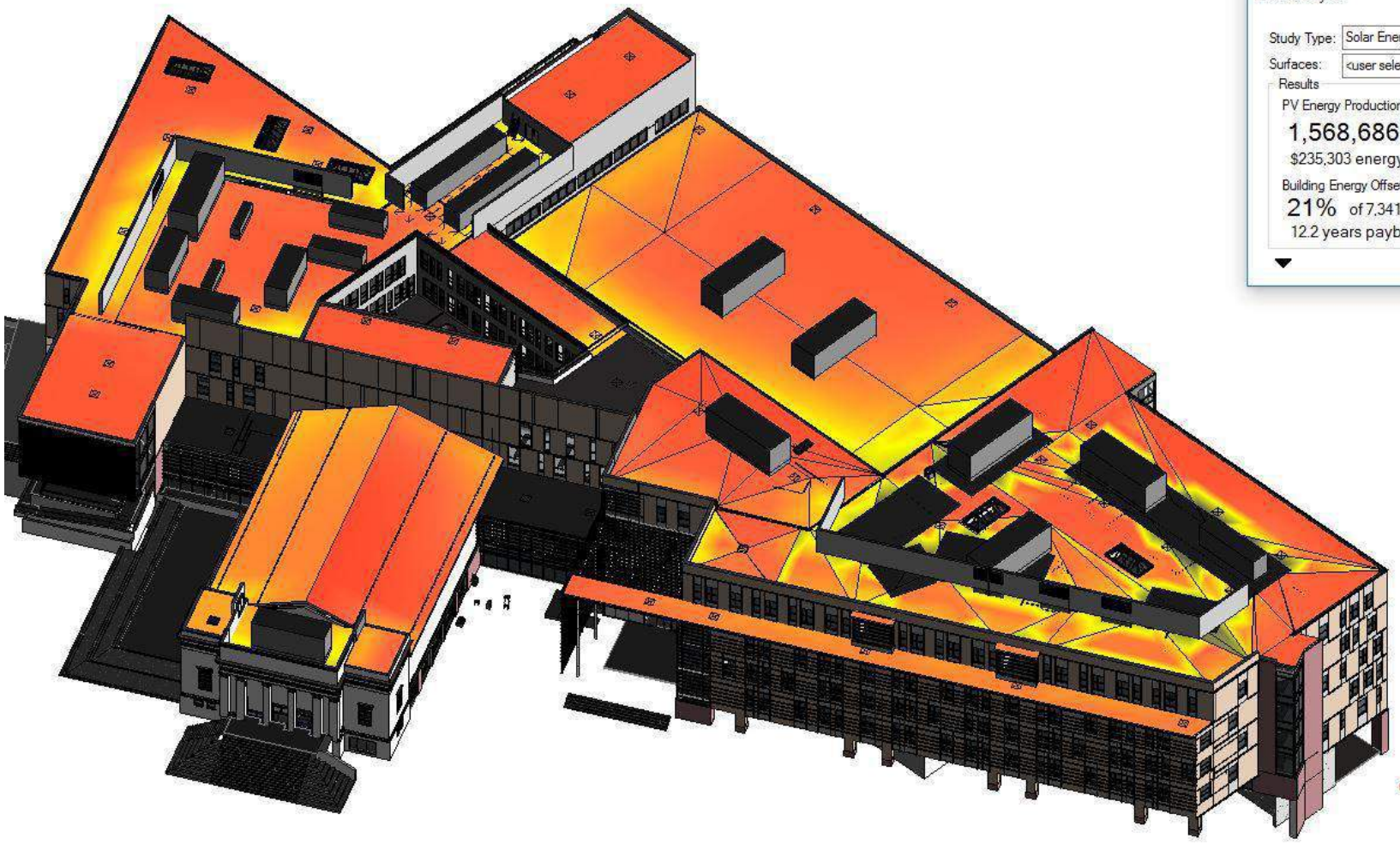
0

Project location: 81 Highland Ave, Somerville, MA 02143

Sun study start date time: 1/1/2010 12:00:00 AM

Sun study end date time: 12/31/2010 11:59:00 PM

PV Energy



Solar Analysis

Study Type: Solar Energy - Annual PV

Surfaces: <user selection>

Results

PV Energy Production

1,568,686 kWh/Year

$235,303 energy savings

Building Energy Offset

21% of 7,341,968 kWh/year

12.2 years payback

Update

v1.0.0.1

Solar Energy (kWh/m²)

197

180

120

0

Project location: 81 Highland Ave, Somerville, MA 02143

Sun study start date time: 1/1/2010 12:00:00 AM

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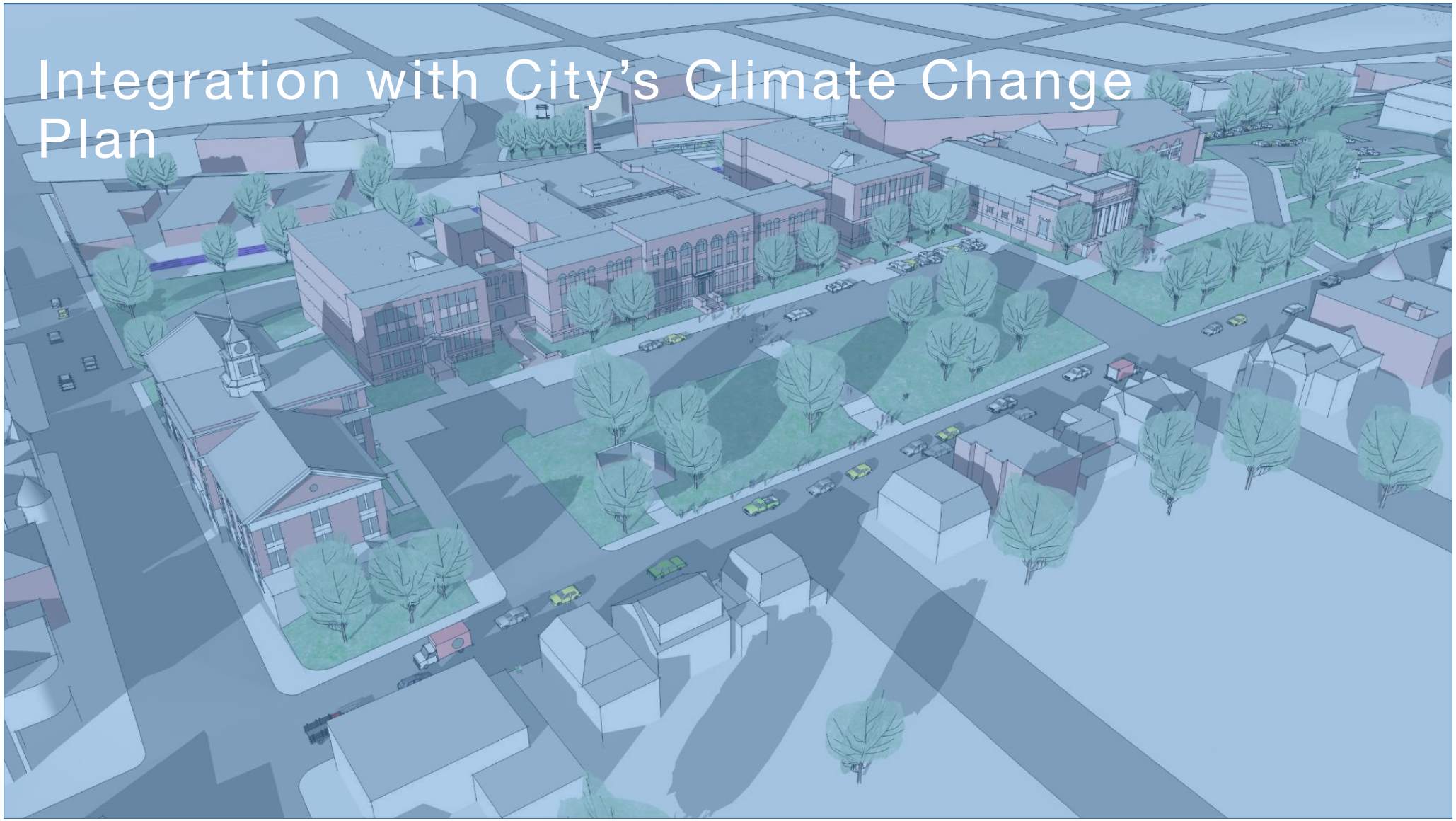
PV Energy

Integration with City's Climate Change Plan



Climate Change Planning Process

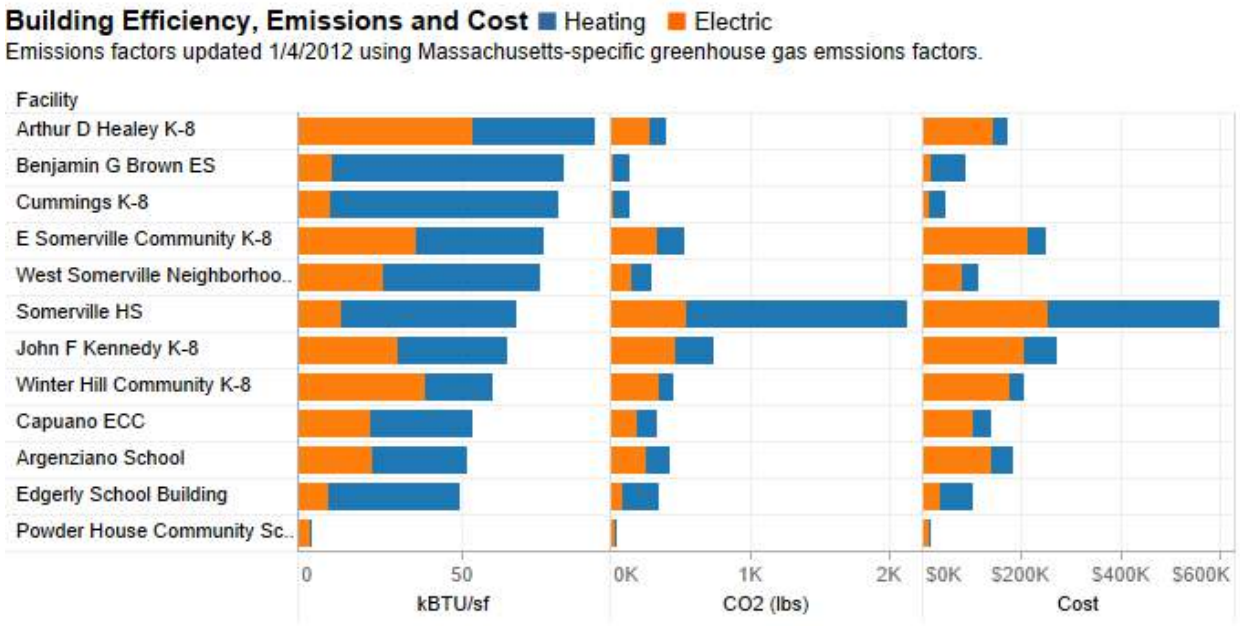
Where are we now?

- ☑ **Conduct baseline greenhouse gas (GHG) inventory**
- ☑ **Map possible pathways to carbon neutrality by 2050**
- ☐ Assess local and regional climate change vulnerabilities
- ☐ Develop actionable, integrated solutions in a comprehensive Climate Change Plan

EUI RANGE

• Somerville HS solar "budget"	?? kBtu/sf-yr (Net Zero)
• Ultra low energy	30 kBtu/sf-yr (Non-CTE areas 15, CTE 45)
• High Performance	45 kBtu/sf-yr
• Stretch Code/LEED	60 kBtu/sf-yr
• Base code	75 kBtu/sf-yr

ENERGY USAGE AND COSTS TODAY



FY2015 data from Mass Energy Insight

LEED Credit Update

LEED v4 for BD+C: New Construction and Major Renovation - Schools

Somerville High School Add/Reno Preliminary Scorecard

Design Development Report

Project Name: Somerville High School PNUM: 15070

Date: 4/14/17

Y	?+	?-	N			
1				Credit 1	Integrative Process	1

8	3	2	2	**Location and Transportation**	Possible Points:	15
				Credit 1	LEED for Neighborhood Development Location	15
1				Credit 2	Sensitive Land Protection	1
			2	Credit 3	High Priority Site	2
5				Credit 4	Surrounding Density and Diverse Uses	5
1	2	1		Credit 5	Access to Quality Transit	4
		1		Credit 6	Bicycle Facilities	1
	1			Credit 7	Reduced Parking Footprint	1
1				Credit 8	Green Vehicles	1

5	1	5	1	**Sustainable Sites**	Possible Points:	12
Y				Prereq 1	Construction Activity Pollution Prevention	Required
Y				Prereq 2	Environmental Site Assessment	Required
1				Credit 1	Site Assessment	1
		2		Credit 2	Site Development--Protect or Restore Habitat	2
		1		Credit 3	Open Space	1
2		1		Credit 4	Rainwater Management	3
	1	1		Credit 5	Heat Island Reduction	2
1				Credit 6	Light Pollution Reduction	1
			1	Credit 7	Site Master Plan	1
1				Credit 8	Joint Use of Facilities	1

6	3	2	1	**Water Efficiency**	Possible Points:	12
Y				Prereq 1	Outdoor Water Use Reduction	Required
Y				Prereq 2	Indoor Water Use Reduction	Required
Y				Prereq 3	Building-Level Water Metering	Required
1	1			Credit 1	Outdoor Water Use Reduction	2
4	2		1	Credit 2	Indoor Water Use Reduction	7
		2		Credit 3	Cooling Tower Water Use	2
1				Credit 4	Water Metering	1

18	4	6	3	**Energy and Atmosphere**	Possible Points:	31
Y				Prereq 1	Fundamental Commissioning and Verification	Required
Y				Prereq 2	Minimum Energy Performance	Required
Y				Prereq 3	Building-Level Energy Metering	Required
Y				Prereq 4	Fundamental Refrigerant Management	Required
5	1			Credit 1	Enhanced Commissioning	6
10	2	2	2	Credit 2	Optimize Energy Performance	16
1				Credit 3	Advanced Energy Metering	1
2				Credit 4	Demand Response	2
	1	2		Credit 5	Renewable Energy Production	3
			1	Credit 6	Enhanced Refrigerant Management	1
		2		Credit 7	Green Power and Carbon Offsets	2

4	5	3	1	**Materials and Resources**	Possible Points:	13
Y				Prereq 1	Storage and Collection of Recyclables	Required
Y				Prereq 2	Construction and Demolition Waste Management Planning	Required
3	1		1	Credit 1	Building Life-Cycle Impact Reduction	5
	1	1		Credit 2	Building Product Disclosure and Optimization - Environmental Product Declarations	2
	1	1		Credit 3	Building Product Disclosure and Optimization - Sourcing of Raw Materials	2
	1	1		Credit 4	Building Product Disclosure and Optimization - Material Ingredients	2
1	1			Credit 5	Construction and Demolition Waste Management	2

5	5	2	4	**Indoor Environmental Quality**	Possible Points:	16
Y				Prereq 1	Minimum Indoor Air Quality Performance	Required
Y				Prereq 2	Environmental Tobacco Smoke Control	Required
Y				Prereq 3	Minimum Acoustic Performance	Required
2				Credit 1	Enhanced Indoor Air Quality Strategies	2
	3			Credit 2	Low-Emitting Materials	3
1				Credit 3	Construction Indoor Air Quality Management Plan	1
	1	1		Credit 4	Indoor Air Quality Assessment	2
			1	Credit 5	Thermal Comfort	1
2				Credit 6	Interior Lighting	2
			3	Credit 7	Daylight	3
	1			Credit 8	Quality Views	1
		1		Credit 9	Acoustic Performance	1

4	2	0		**Innovation**	Possible Points:	6
1				Credit 1	Green Building Education	1
1				Credit 2	Low Mercury Lamps	1
1				Credit 3	Green Cleaning	1
	1			Credit 4	Exemplary Performance Credit	1
	1			Credit 5	Pilot Credit	1
1				Credit 6	LEED Accredited Professional	1

1	1	2		**Regional Priority**	Possible Points:	4
		1		Credit 1	Regional Priority: Open Space	1
1				Credit 2	Regional Priority: Optimize Energy Performance - 8 pts. Min.	1
		1		Credit 3	Regional Priority: Outdoor Water Use Reduction - 100%	1
	1			Credit 4	Regional Priority: Renewable Energy Production (2 pt. min), Building Life Cycle, Open Spa	1

Y	?+	?-	N			
52	24	22	12	**Total**	Possible Points:	110

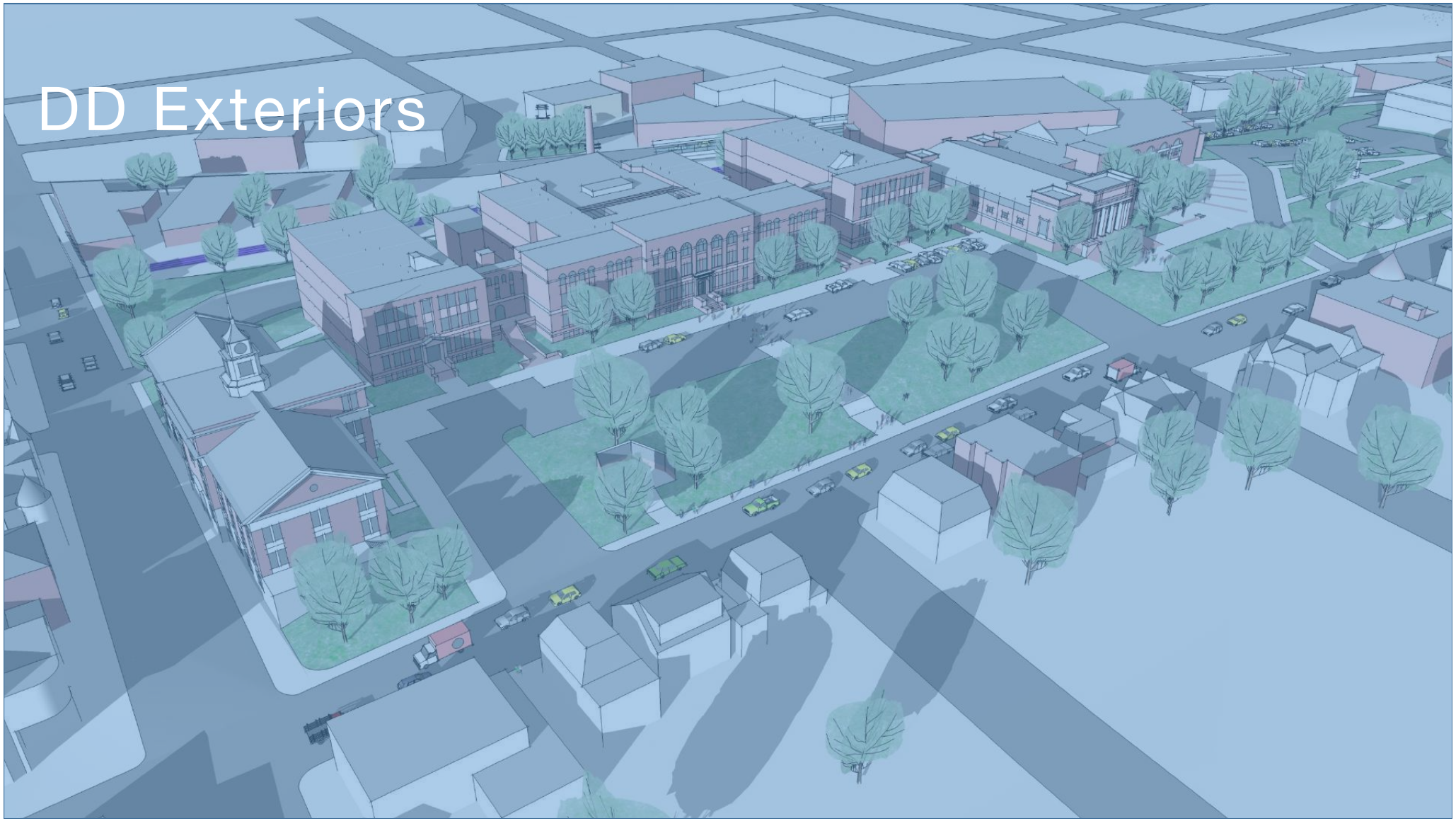
Certified 40 to 49 points Silver 50 to 59 points Gold 60 to 79 points Platinum 80 to 110

Safety & Security Working Group

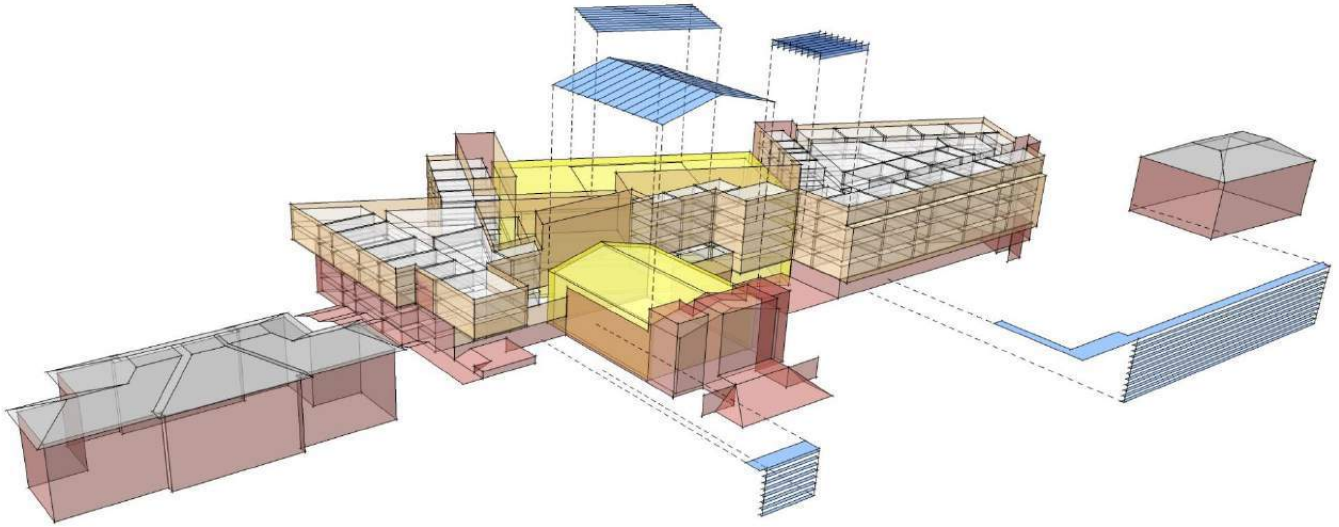
Agenda

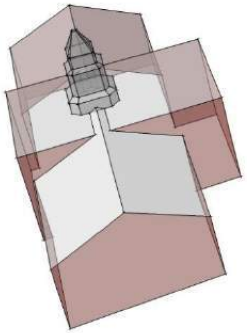
- Review of Current Site Design
- Review of Current Building Design
- Overview of Current Construction Phases
- Implications of Summer 2017 & Modular Classroom Work

DD Exteriors



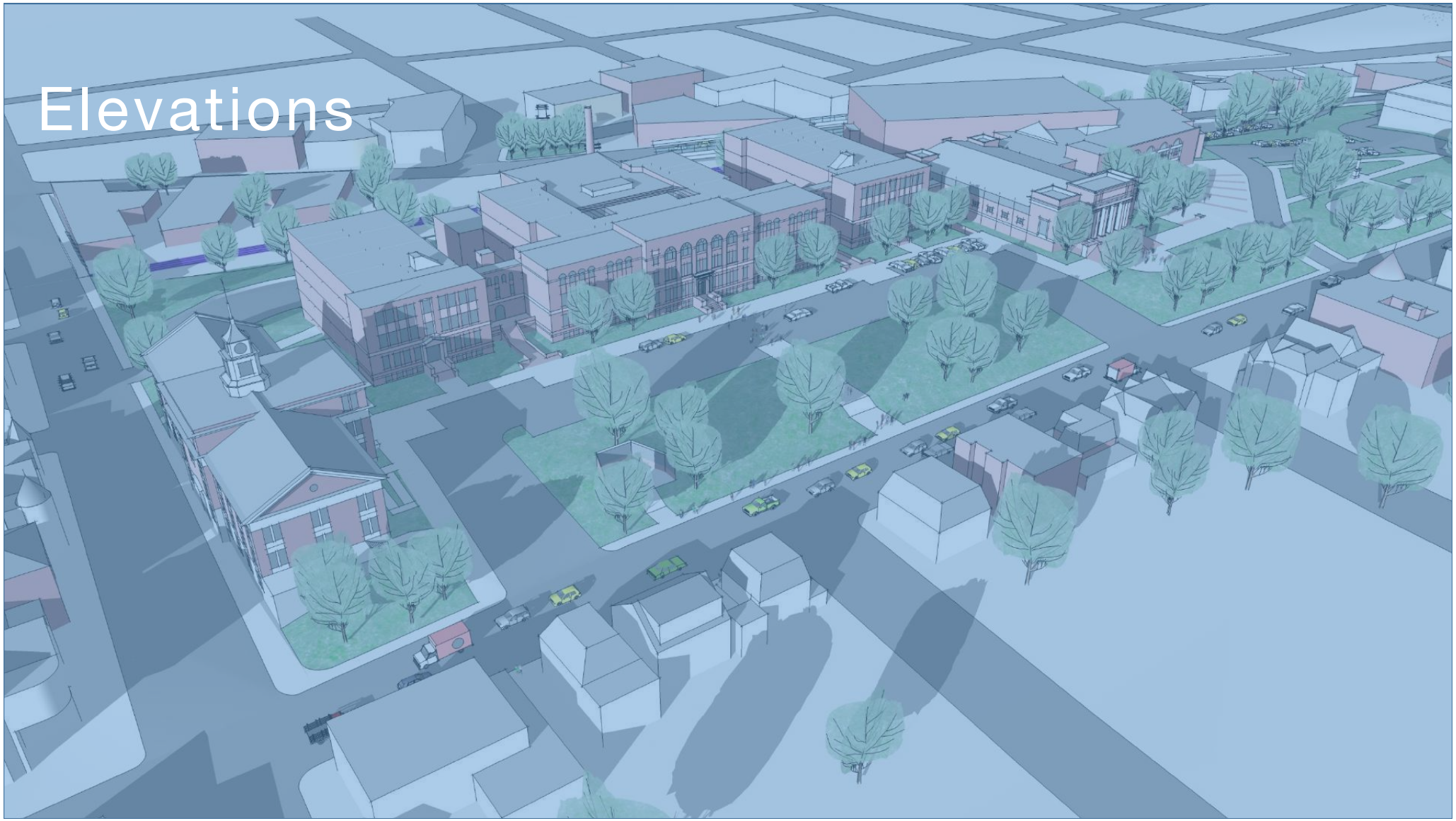
Concept

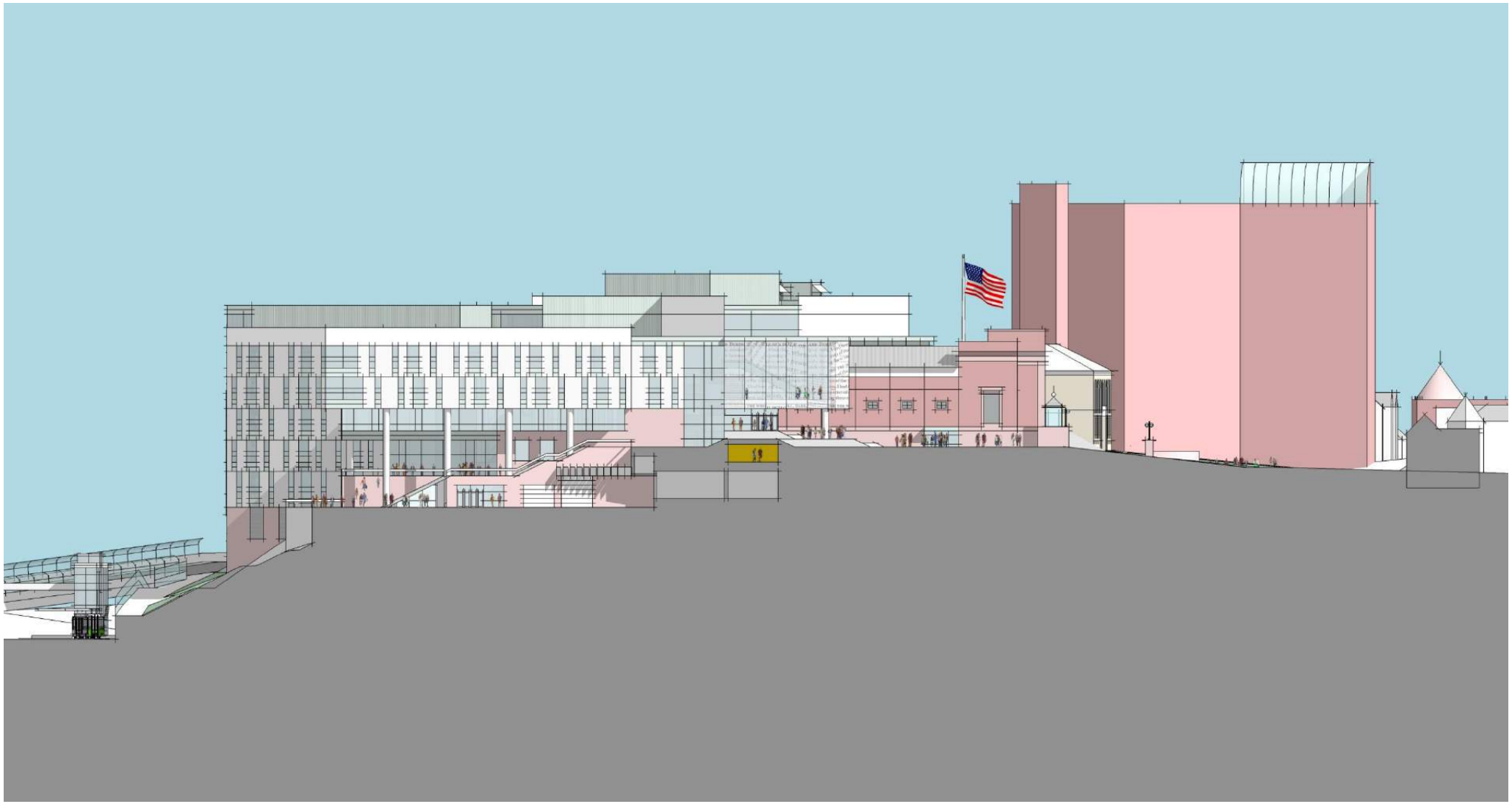




Concept

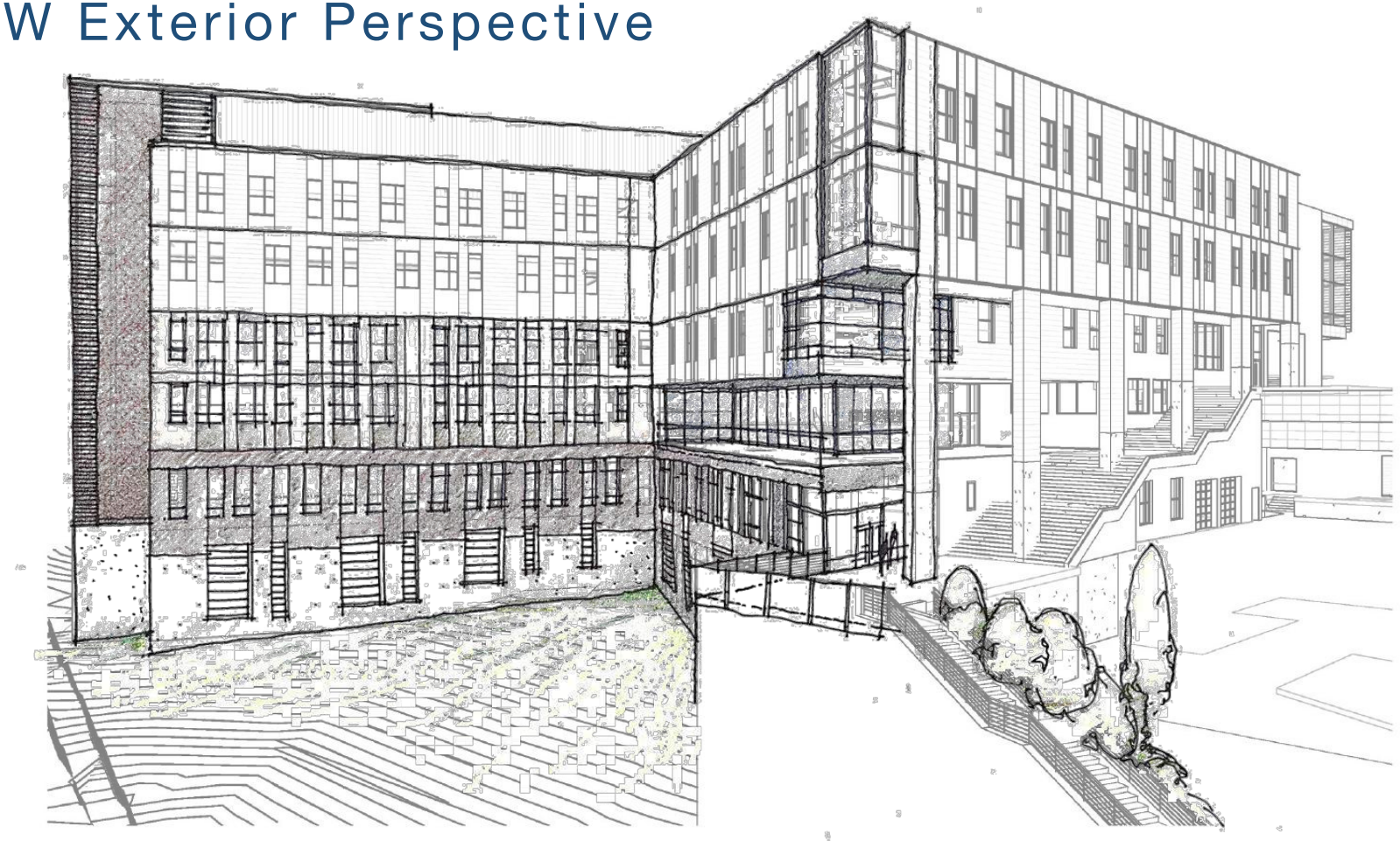
Elevations





West Elevation

NW Exterior Perspective

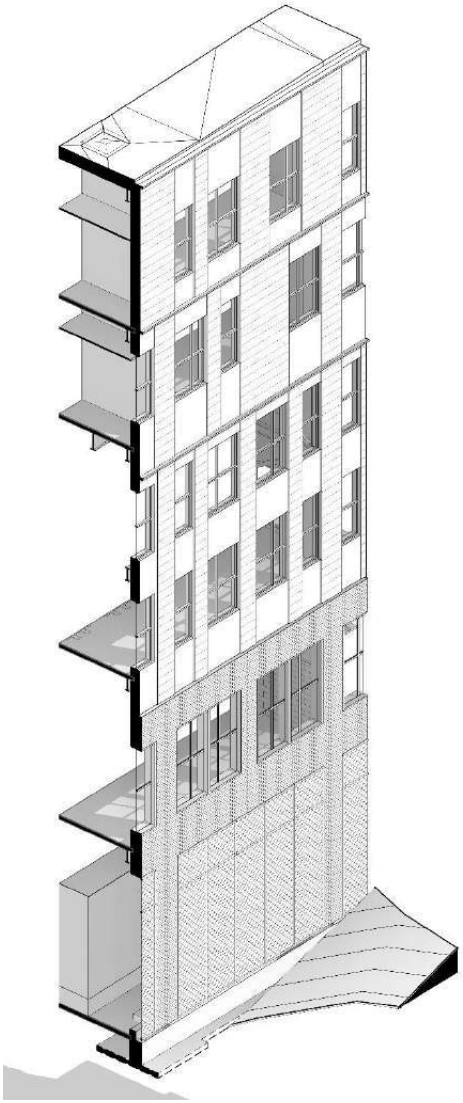


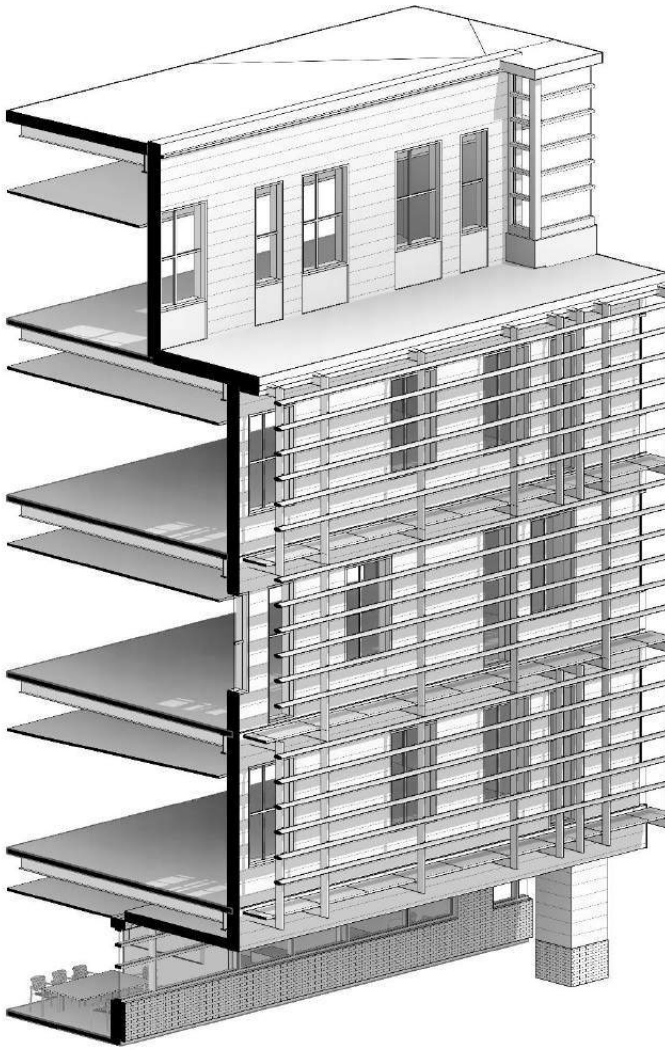
Next Wave Full Circle Entrance

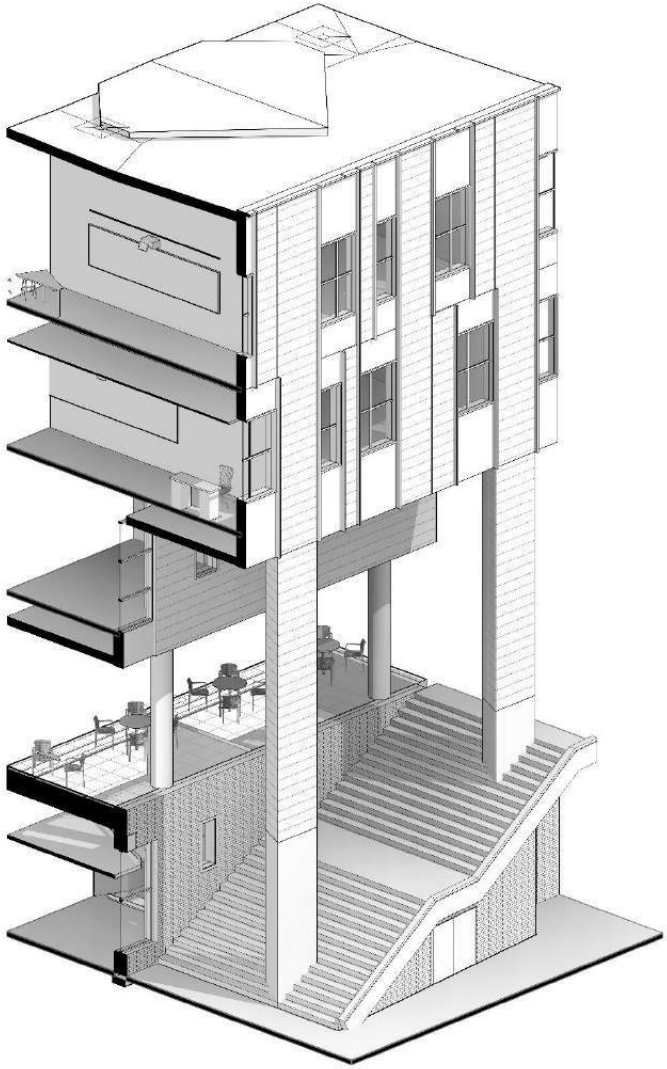
South Elevation

SW Exterior Entrance Perspective

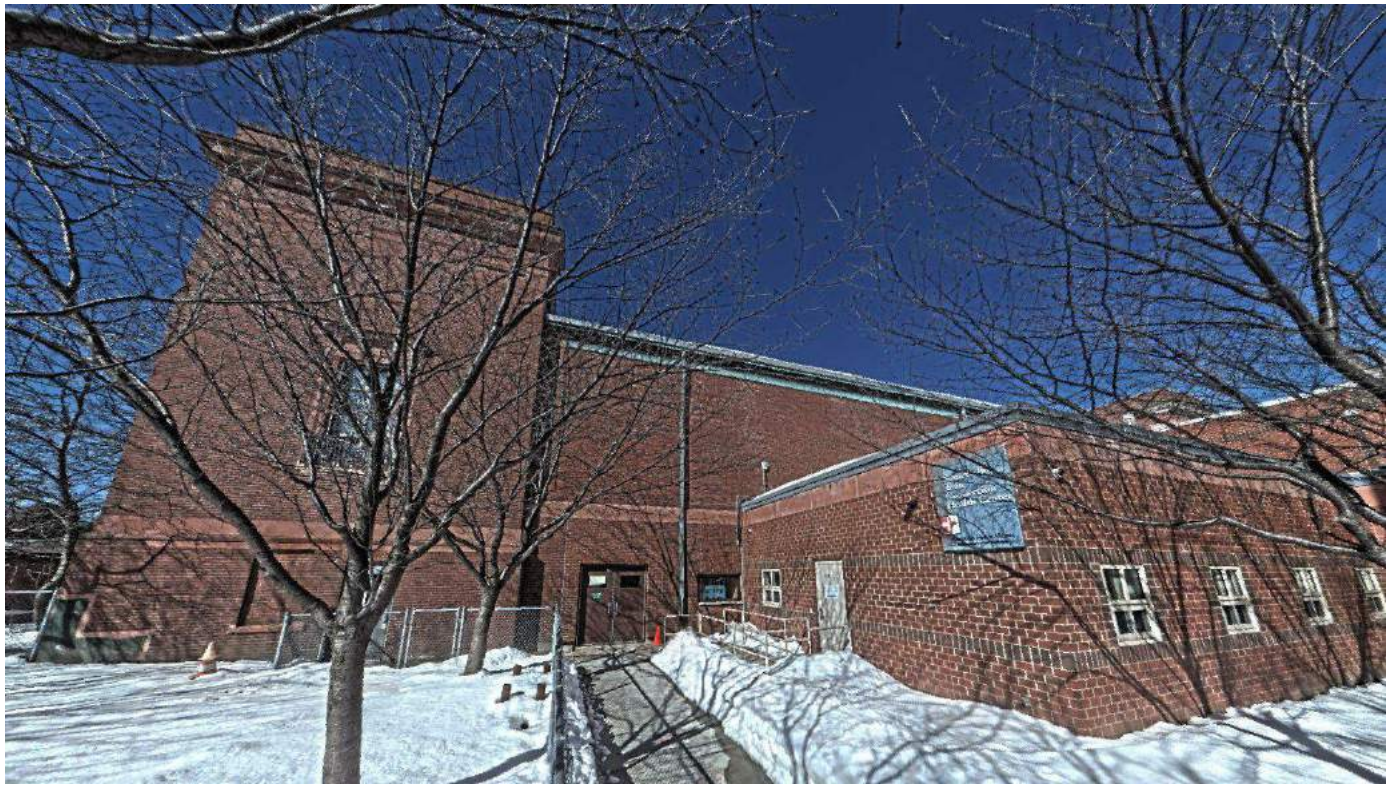
Main Entry Perspective







1929 War Memorial




DEDICATED TO THE PREPARATION OF YOUTH
FOR THE RESPONSIBILITIES OF LIFE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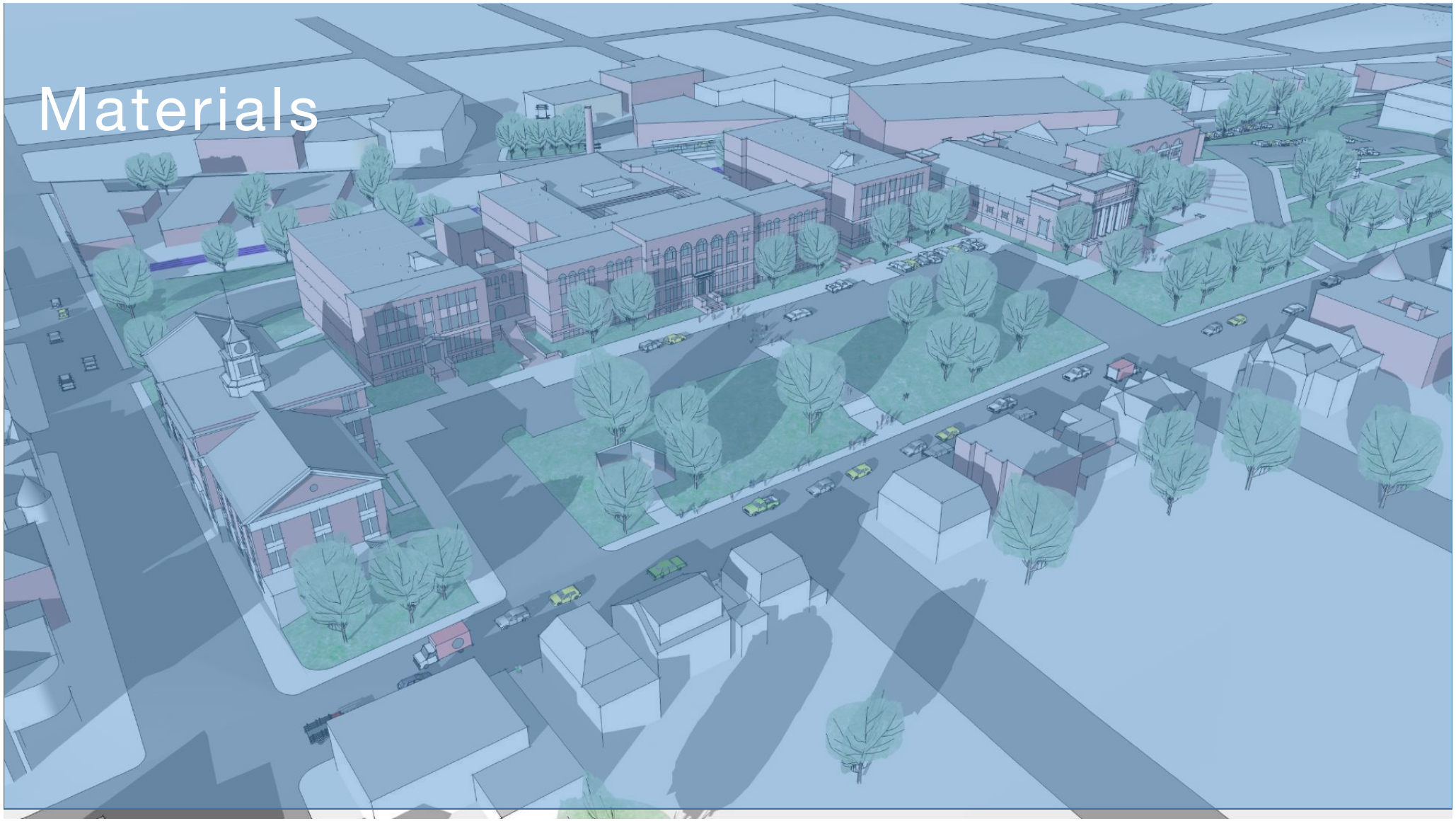
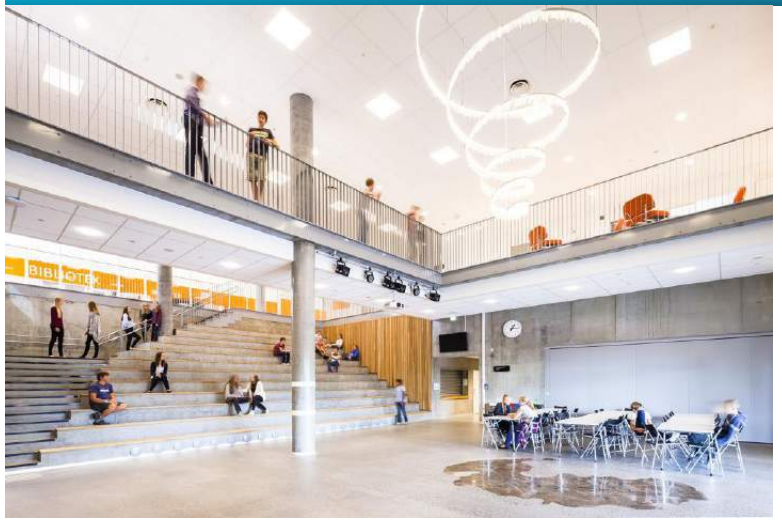
Materials





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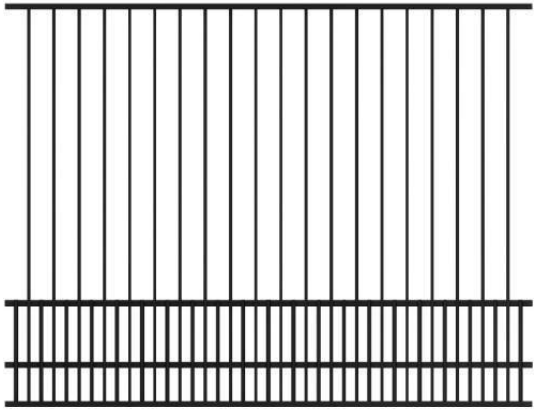

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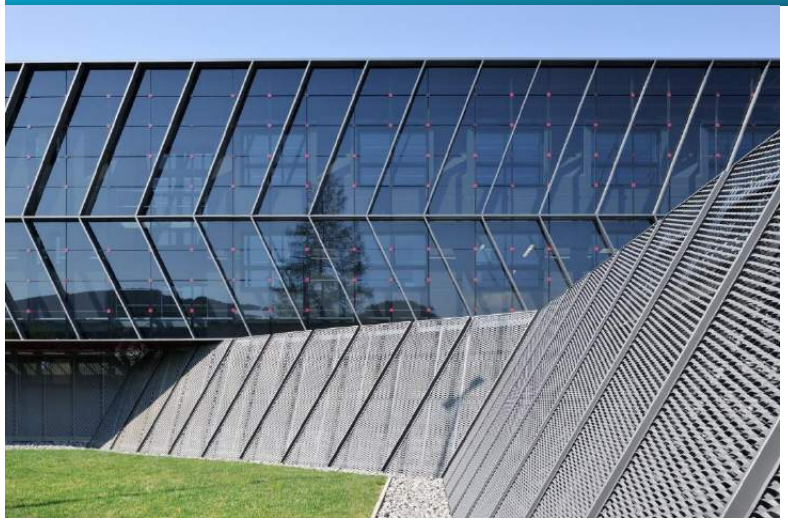
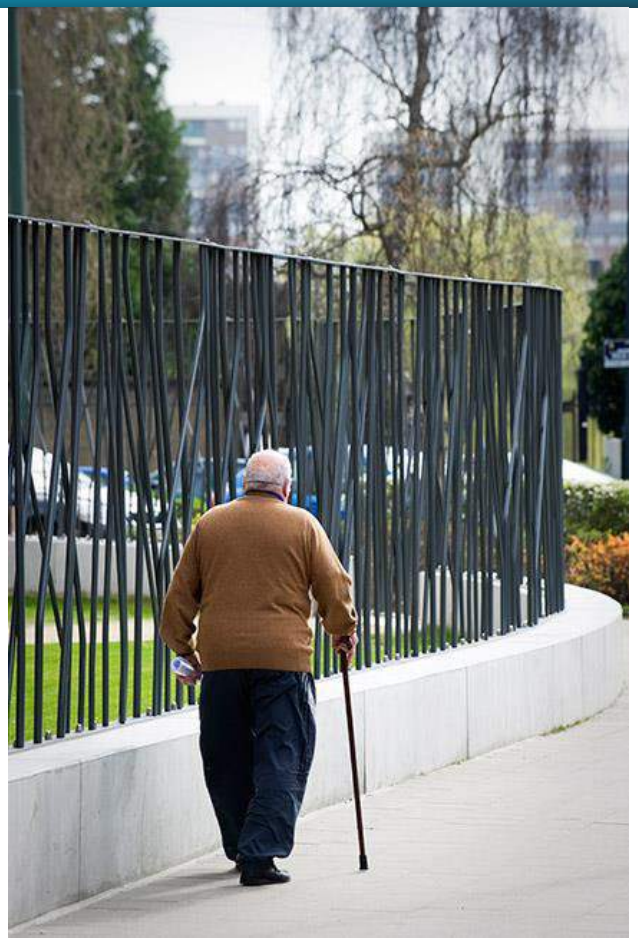
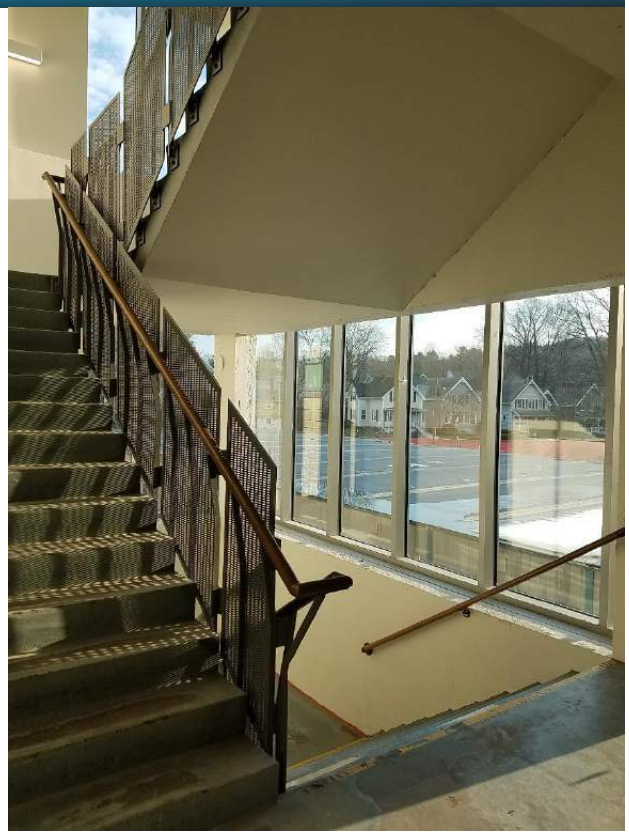




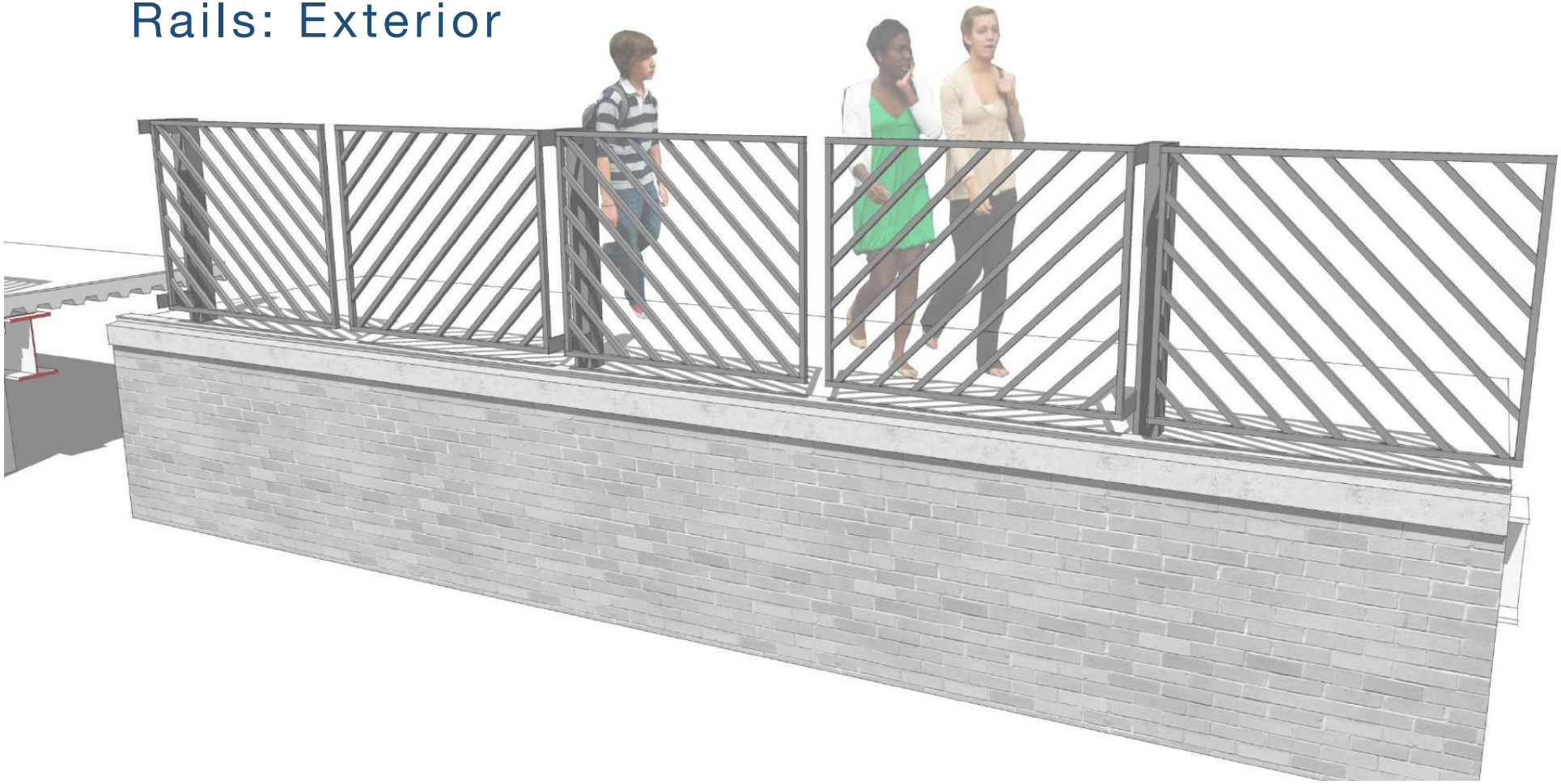


Rails: Materiality, Textures & Patterning

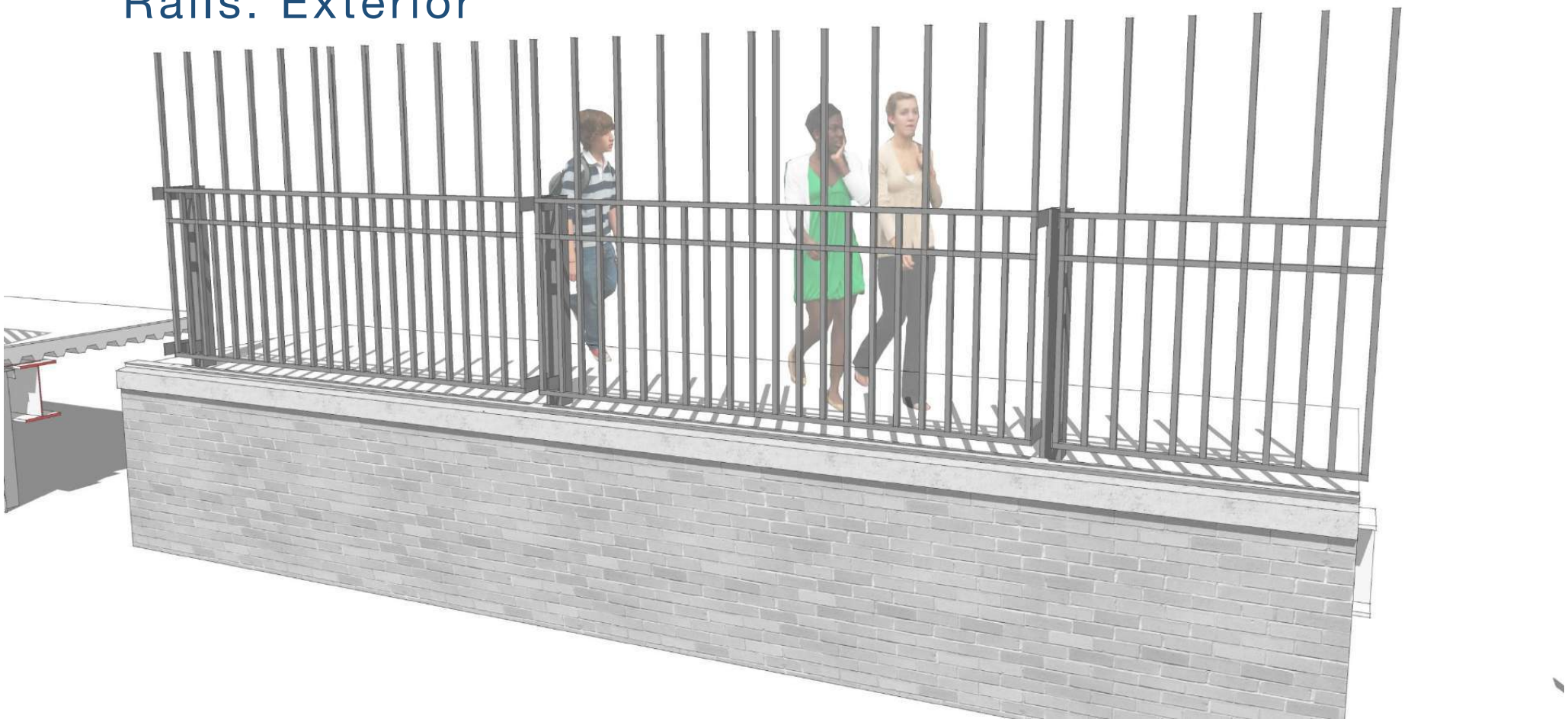
Rails: Interior

Rails: Interior

Rails: Exterior

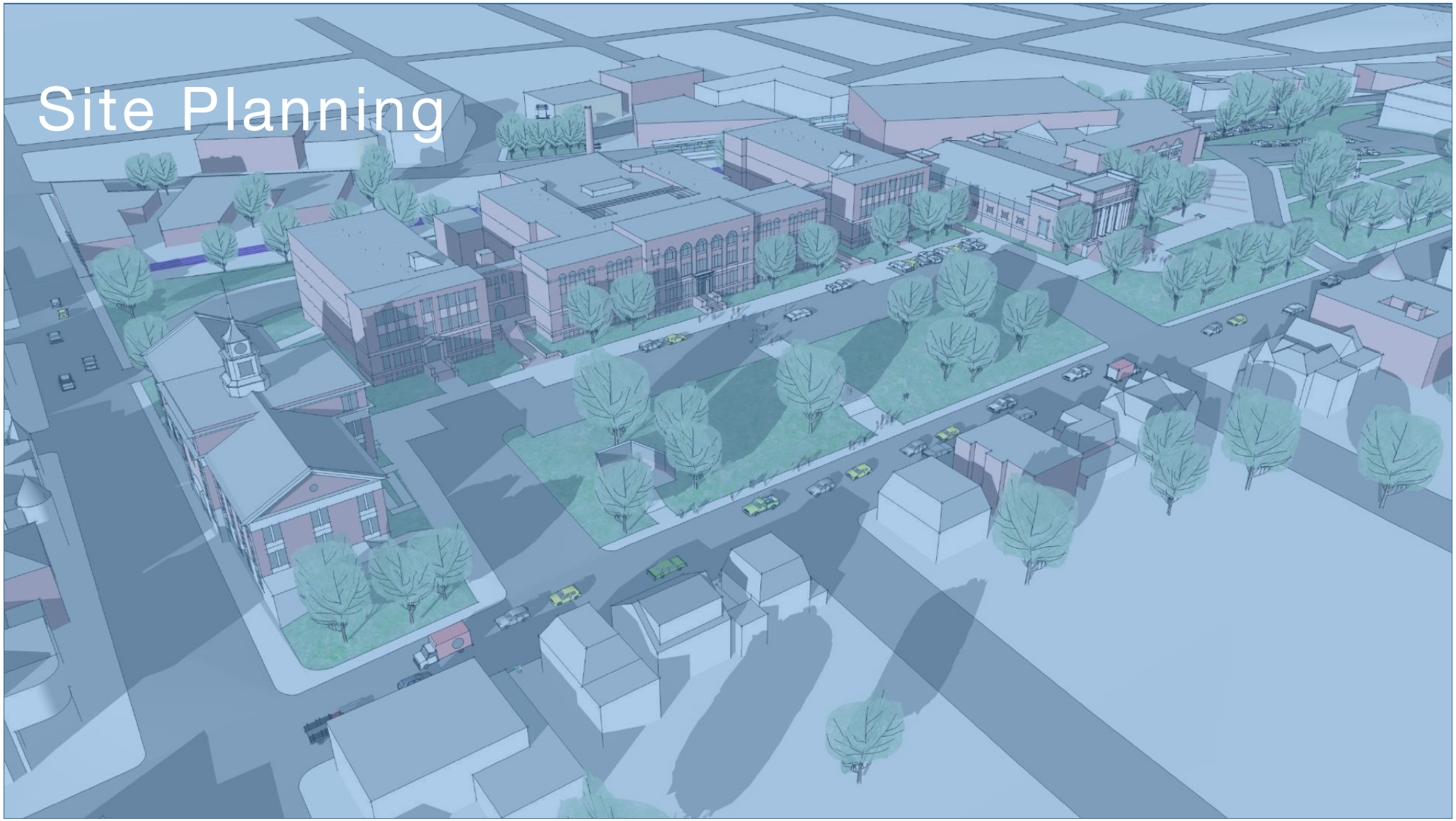


Rails: Exterior



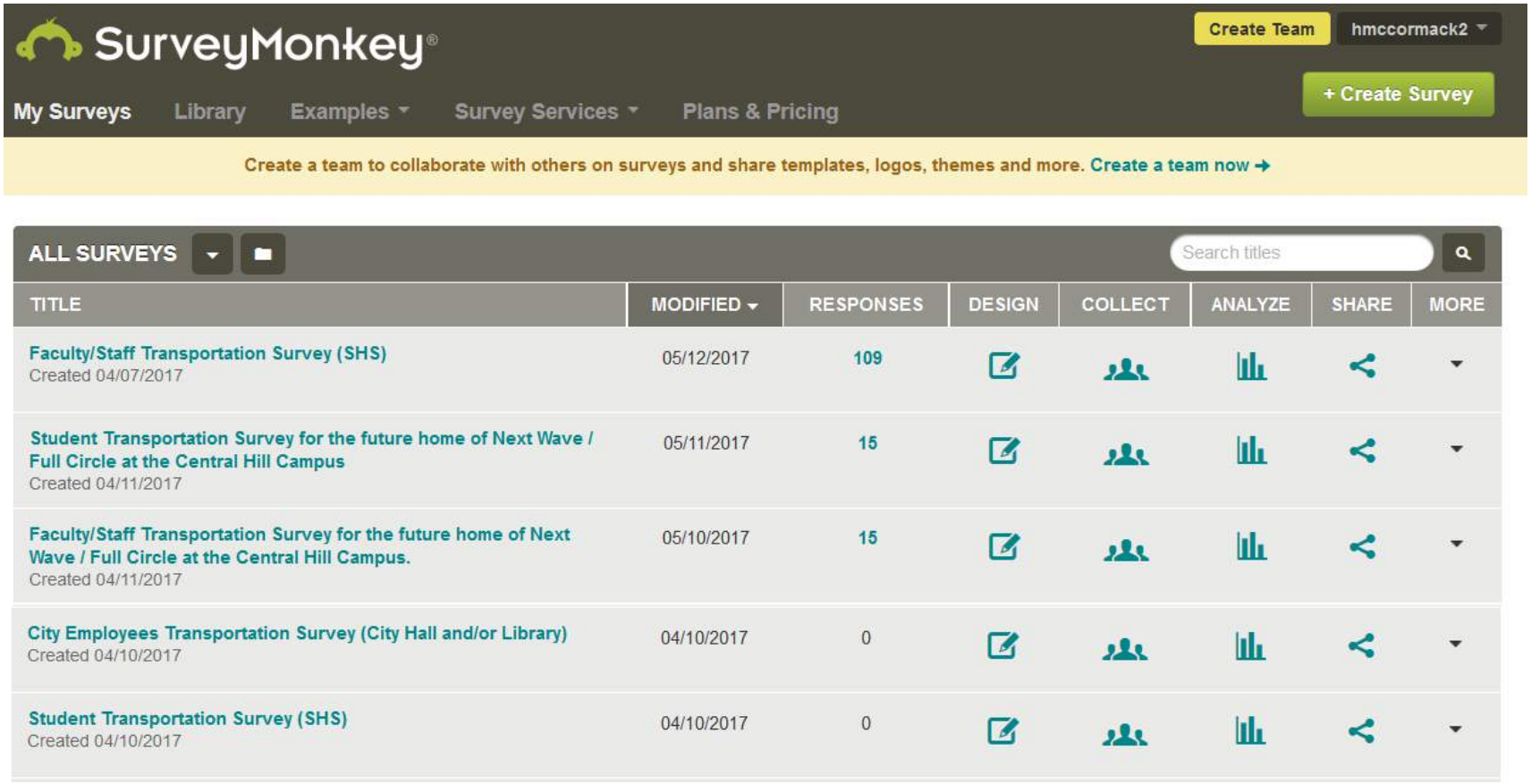
Rails: Exterior

Site Planning



Masterplan

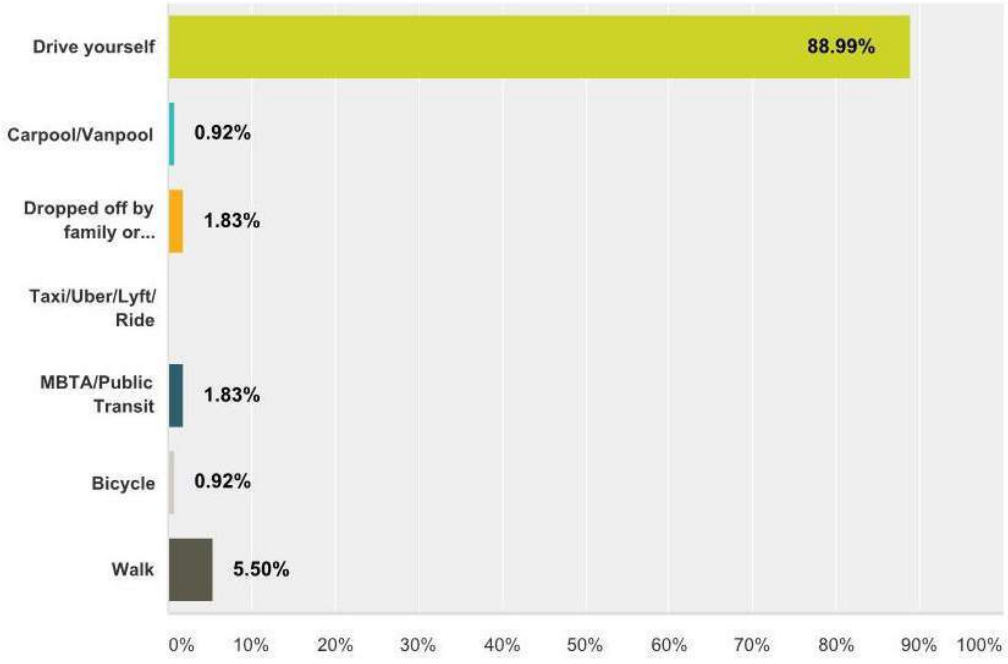
Transportation/Parking Survey



Transportation/Parking Survey

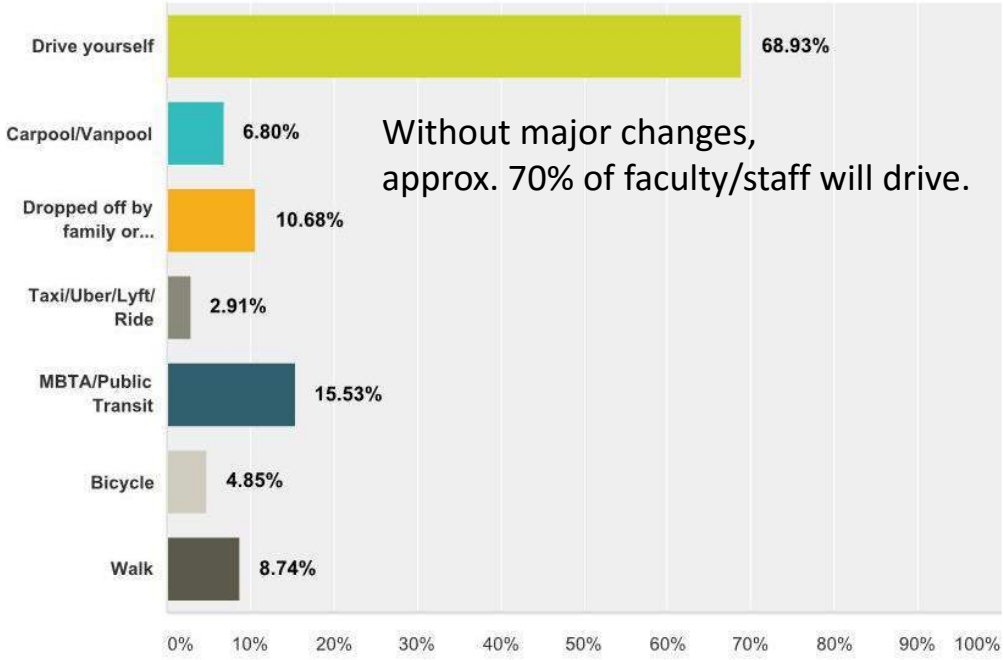
Q1 How do you typically get to Somerville High School?

Answered: 109 Skipped: 0



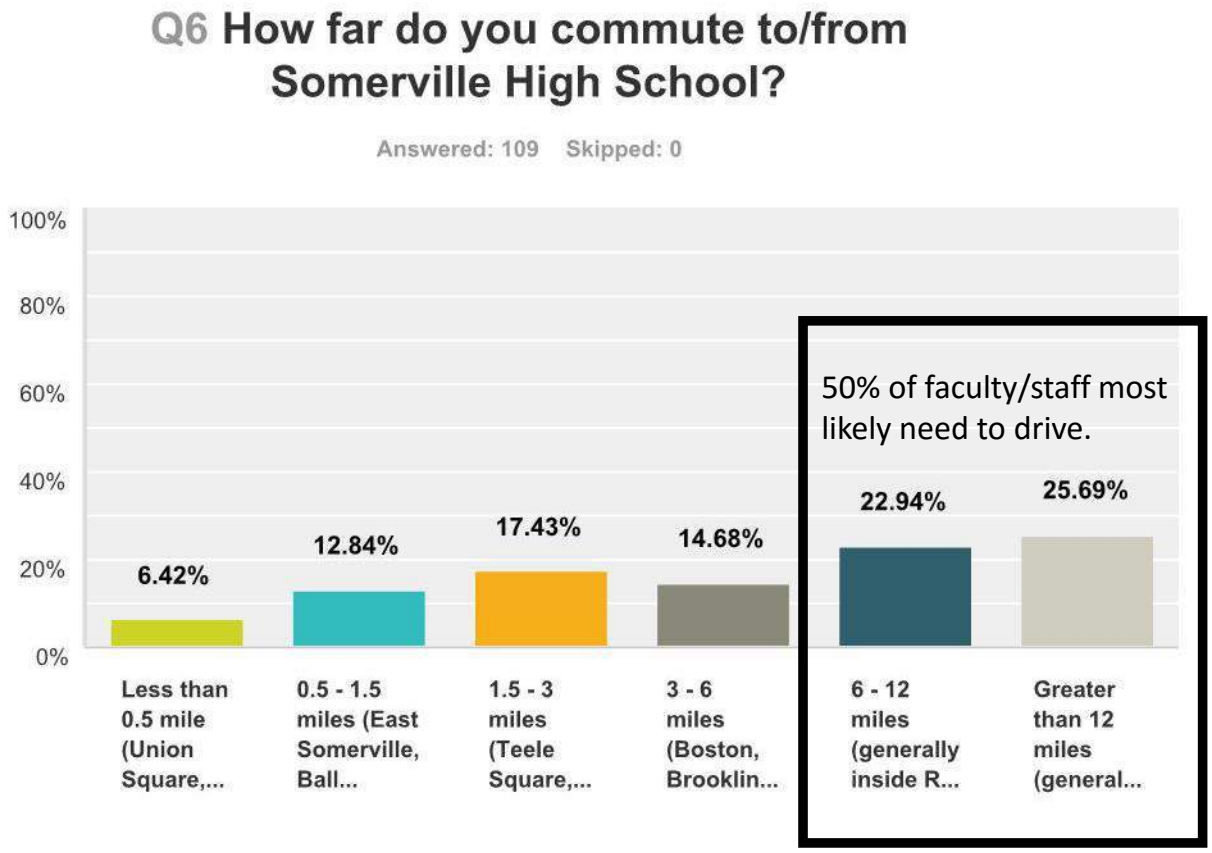
Q2 What other way do you get to Somerville High School? (such as during good/bad weather, for temporary schedule changes, etc.)

Answered: 103 Skipped: 6



Without major changes, approx. 70% of faculty/staff will drive.

Transportation/Parking Survey



Transportation/Parking Survey

Q7 What would help you drive or be driven less often? (select all that apply)

Answered: 51 Skipped: 58

Most of 58 that skipped responded that they could not drive less often.

Answer Choices	Responses	
Subsidized MBTA Pass (for train and/or bus)	60.78%	31
Showers/Lockers Available	27.45%	14
Green Line Gilman Square Station	23.53%	12
Community Path Extension to School	21.57%	11
Shared Cars at School (such as ZipCar)	21.57%	11
Secure Bicycle Parking	19.61%	10
Improved & More Convenient Bus Shelter	17.65%	9
Designated Bicycle Lanes to School	15.69%	8
Emergency Ride Home (typically by taxi in the event of a family or medical emergency)	15.69%	8
Improved Sidewalks to School	9.80%	5
Subsidized Bicycle Expenses	3.92%	2
Additional Hubway Station at School (currently one at City Hall)	1.96%	1
Total Respondents: 51		

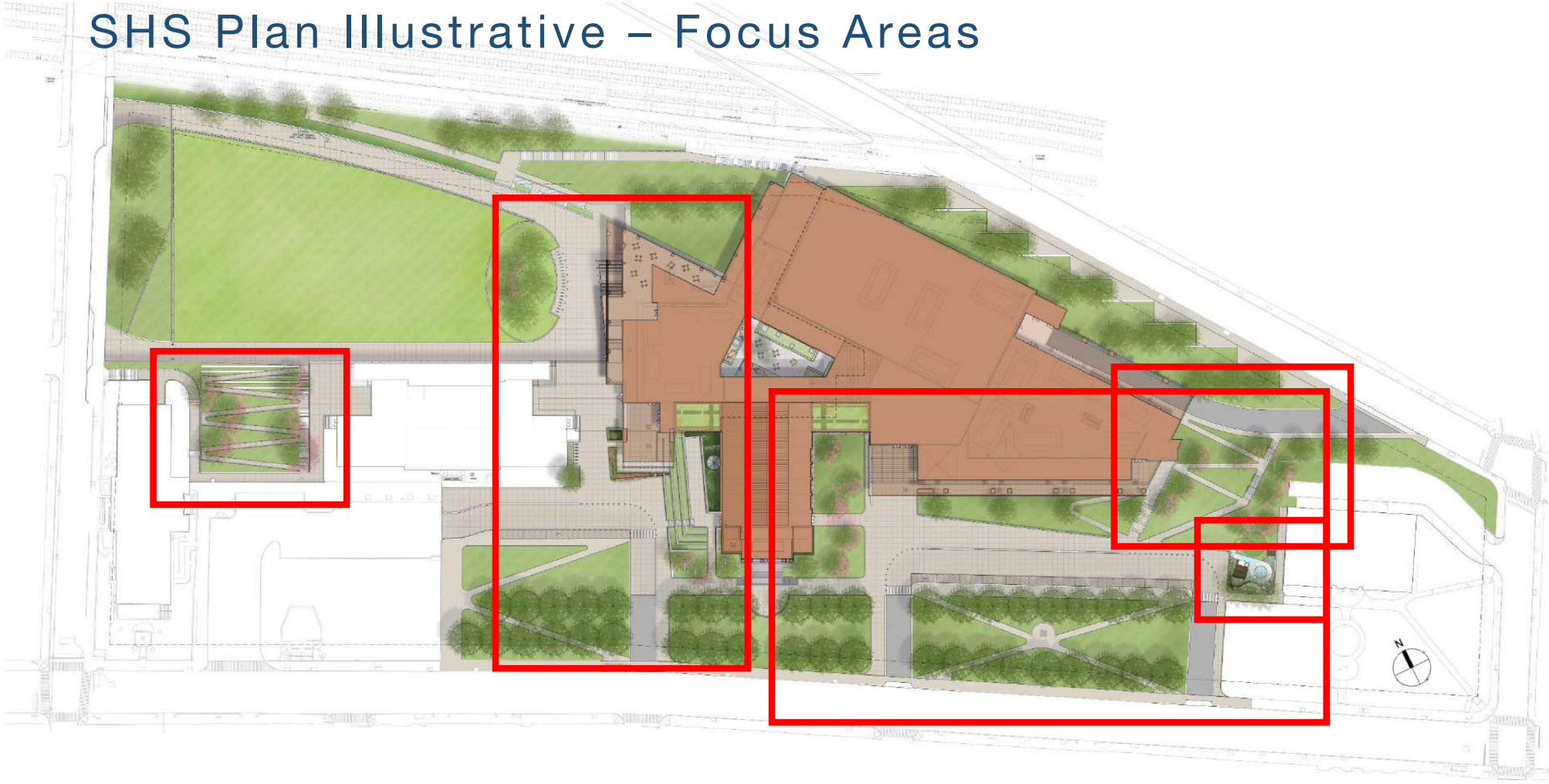
Many would take T if it wasn't more expensive than driving.

SHS Plan Illustrative

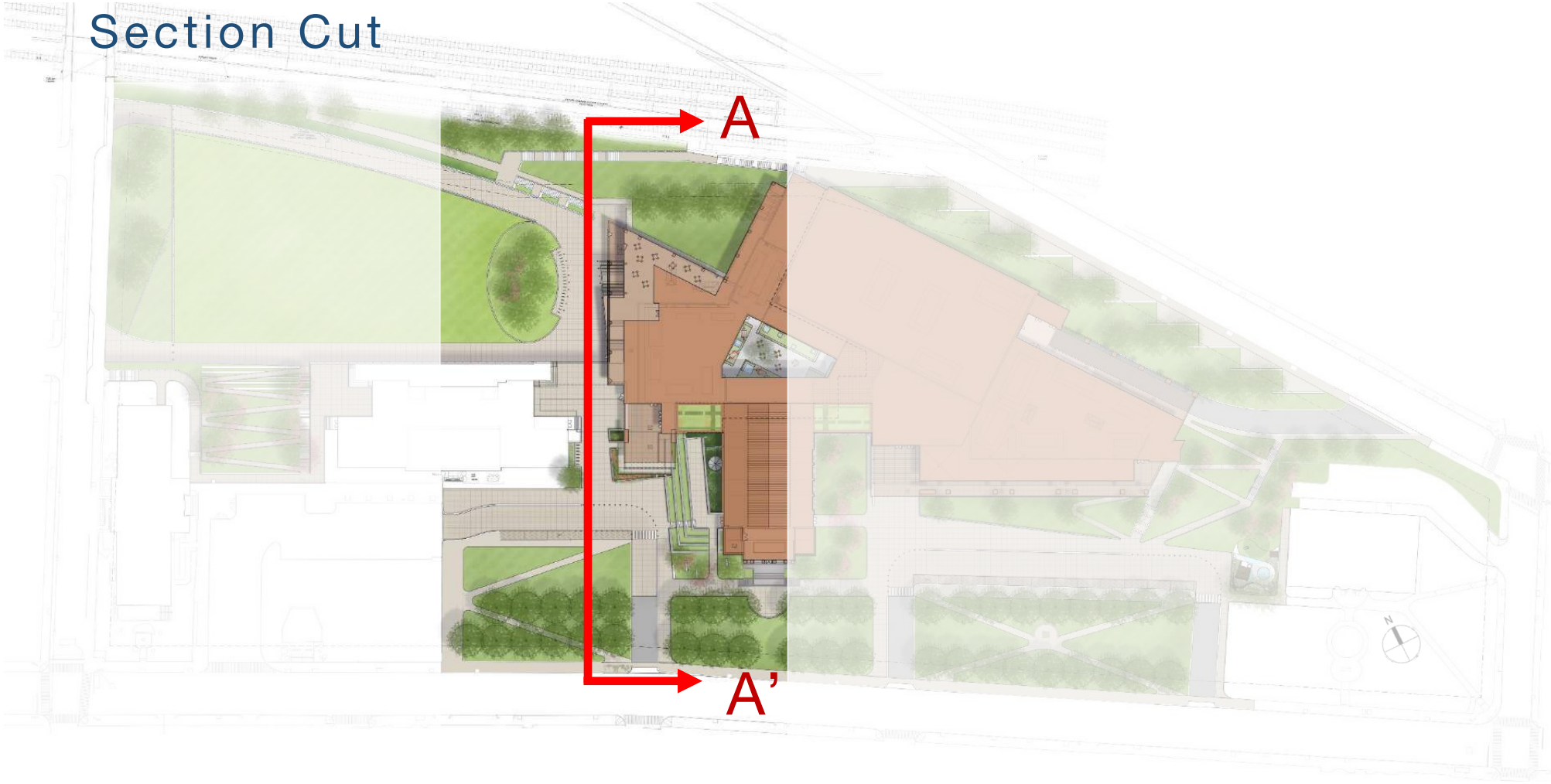
Somerville High School DRAFT Parking Counts		
Design Development	*8-May-17*	
SMMA	*#15070*	
Location	Existing	Proposed
School Street	**46**	**0**
School	*46*	*0*
City Hall	*0*	*0*
Highland West	**92**	**48**
School	*12*	*3*
City Hall	*80*	*45*
Highland East	**55**	**12**
School	*40*	*12*
Library	*15*	*0*
Walnut Street	**18**	**18**
Library	*18*	*18*
Medford Street	**34**	**5**
School	*34*	*5*
TOTALS	**245**	**83**
School	132	20
City Hall	80	45
Library	33	18

SHS Plan Illustrative

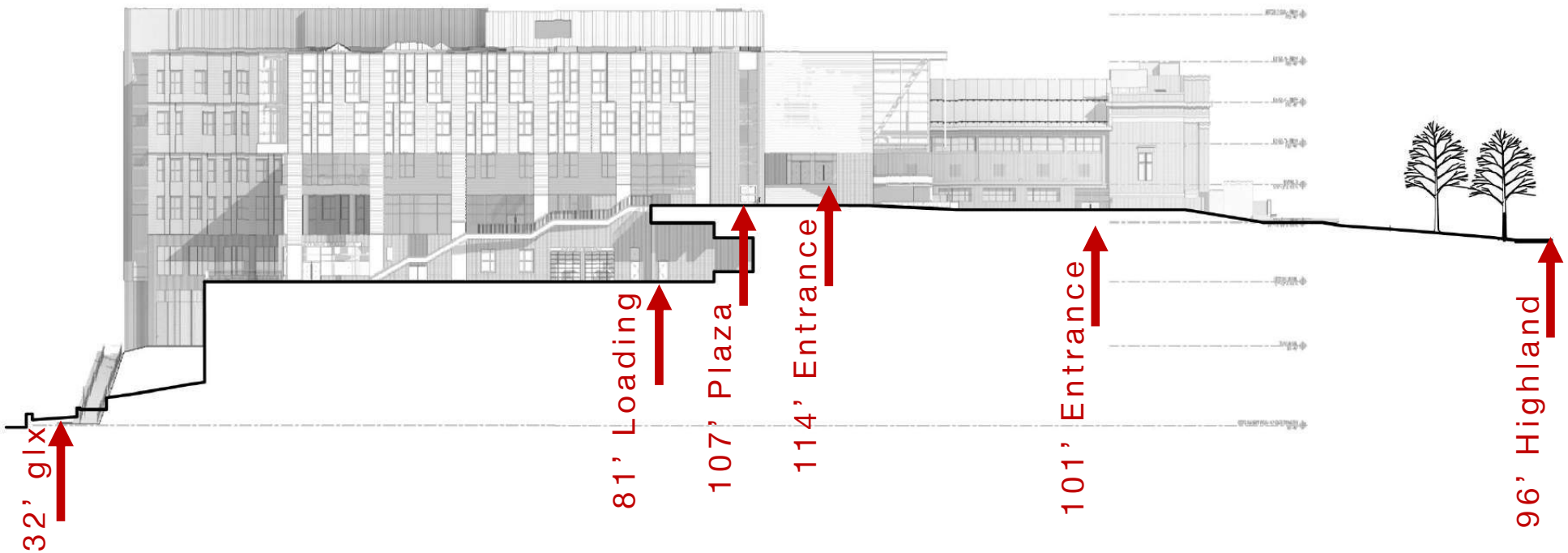
SHS Plan Illustrative – Focus Areas



Section Cut



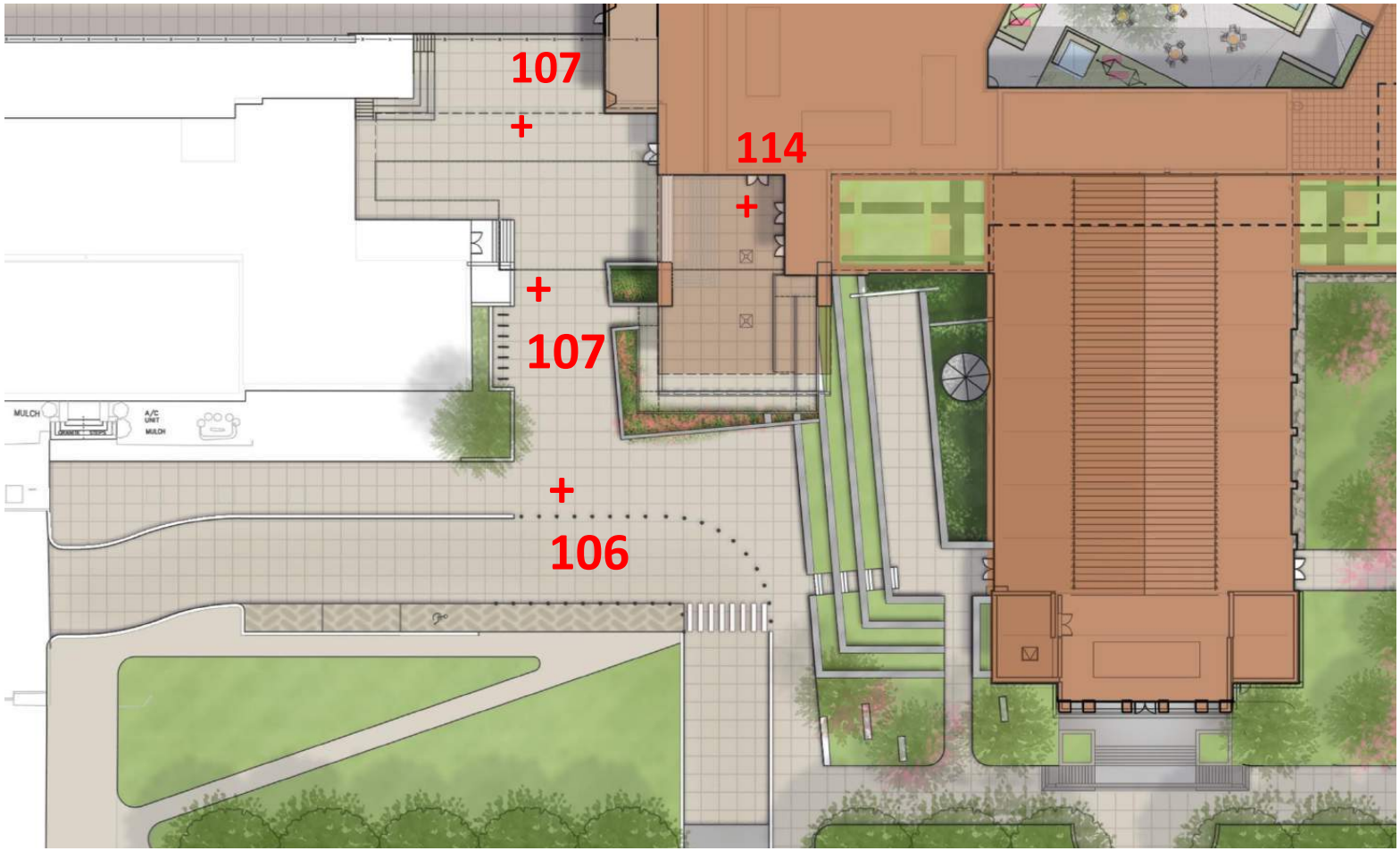
West Elevation



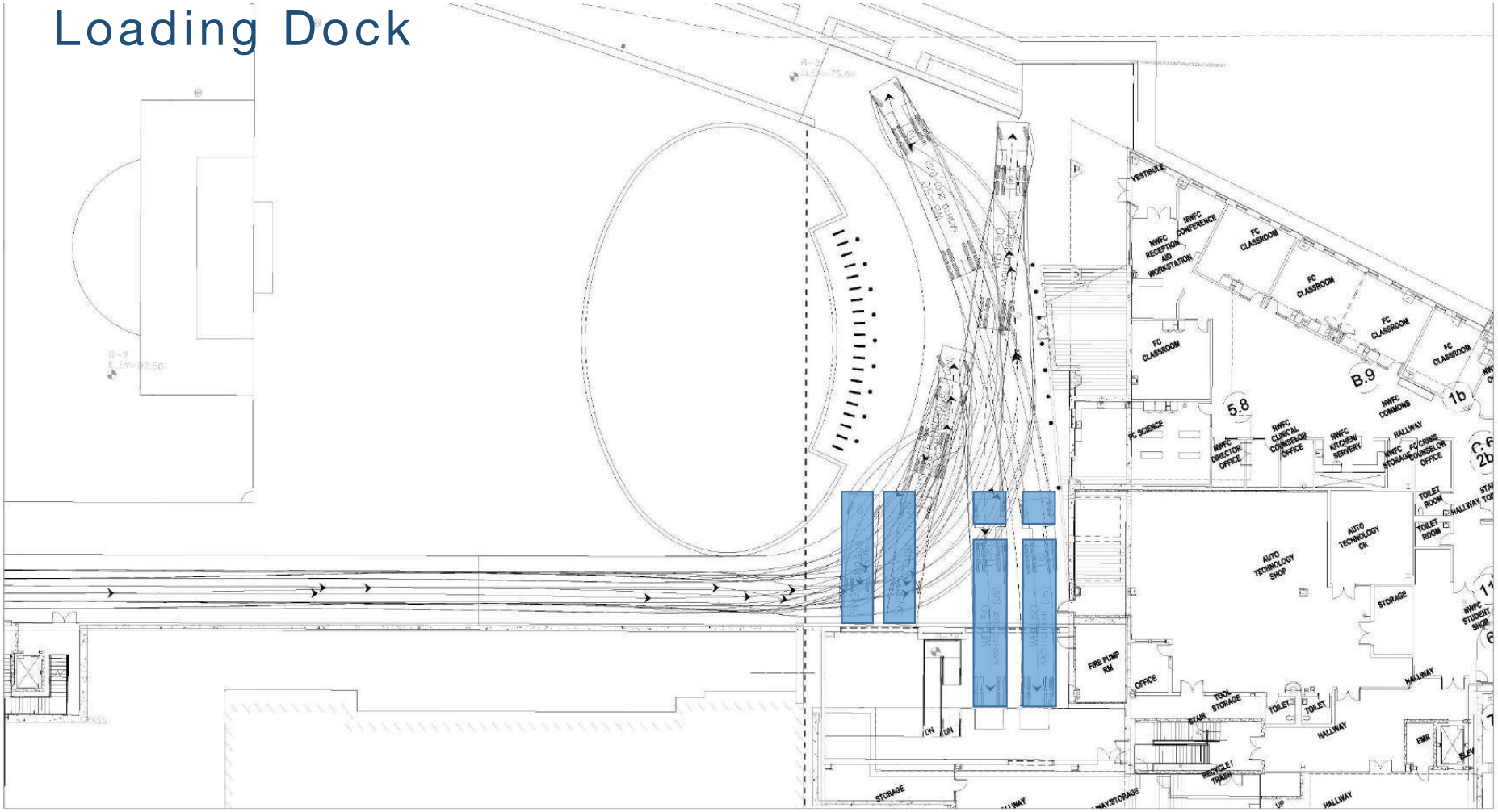
A -GLX Rail Side

Highland St. Side - A’

SHS Plan Illustrative

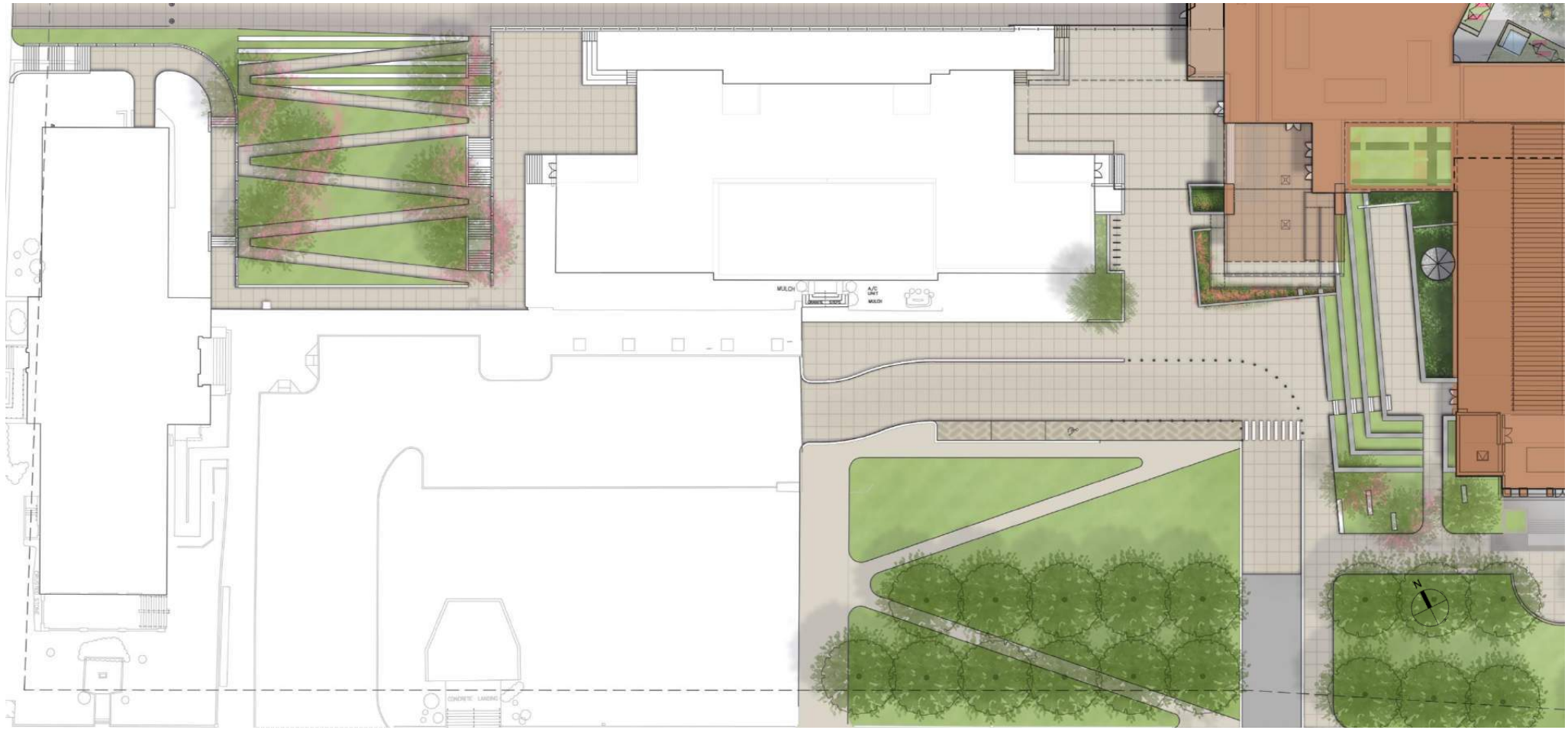


Loading Dock

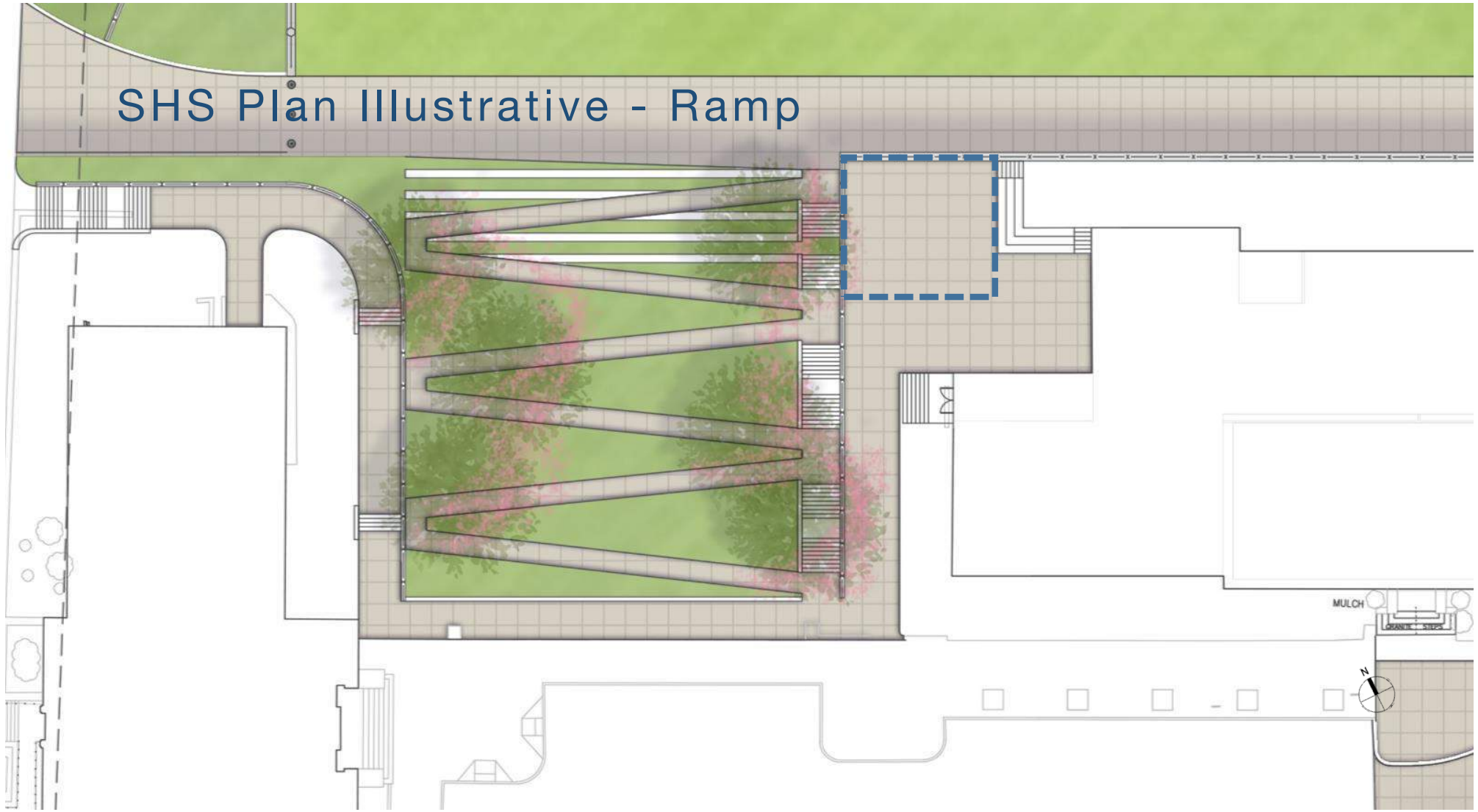


Loading Dock

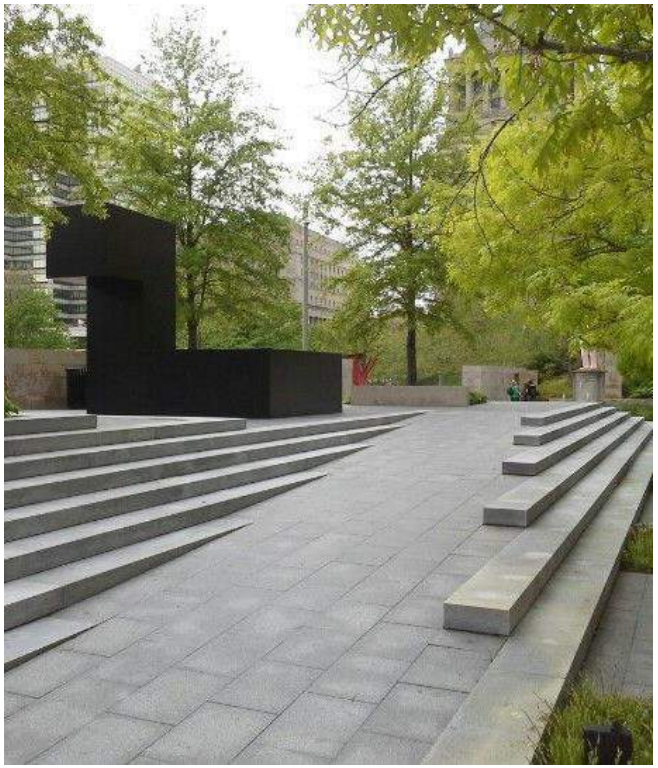
SHS Plan Illustrative



SHS Plan Illustrative - Ramp



Stairs & Ramps



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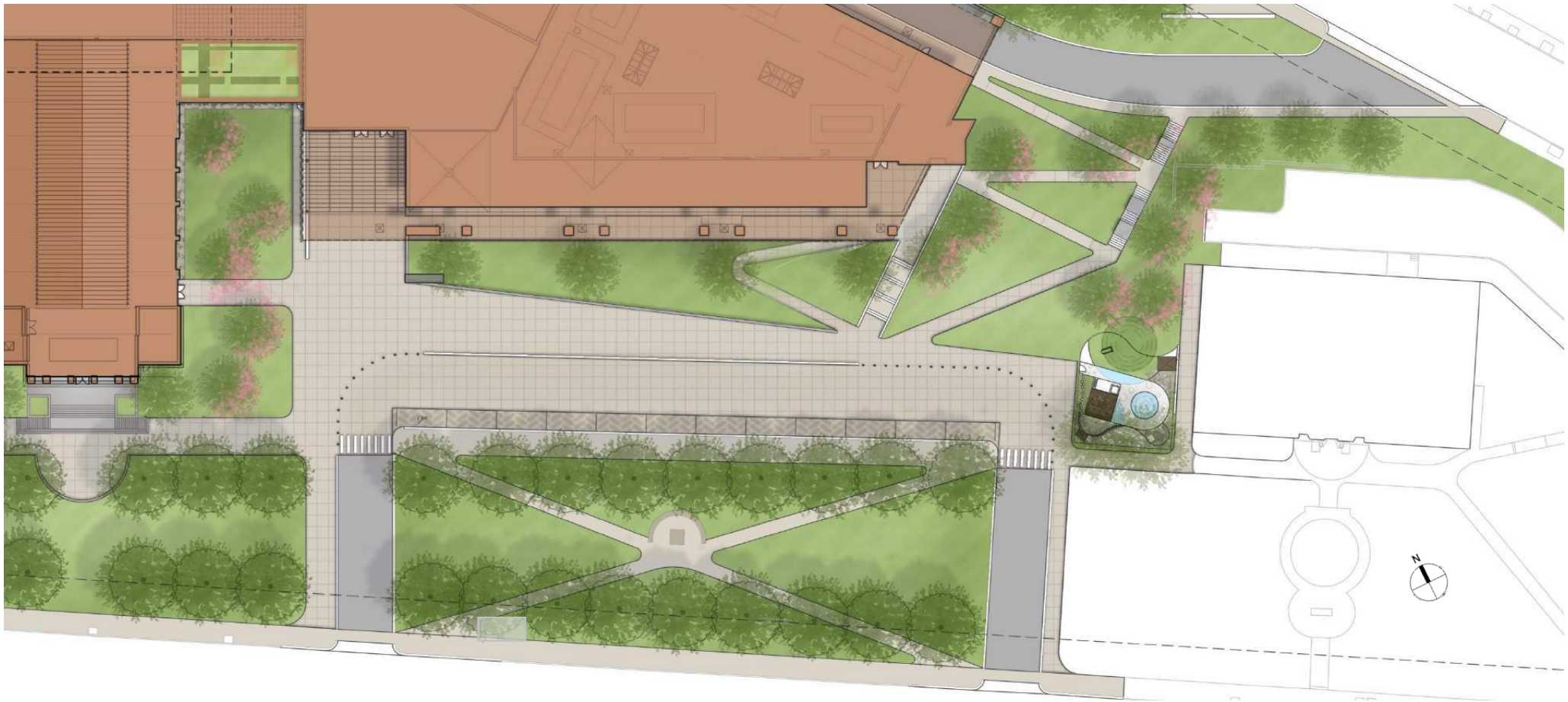

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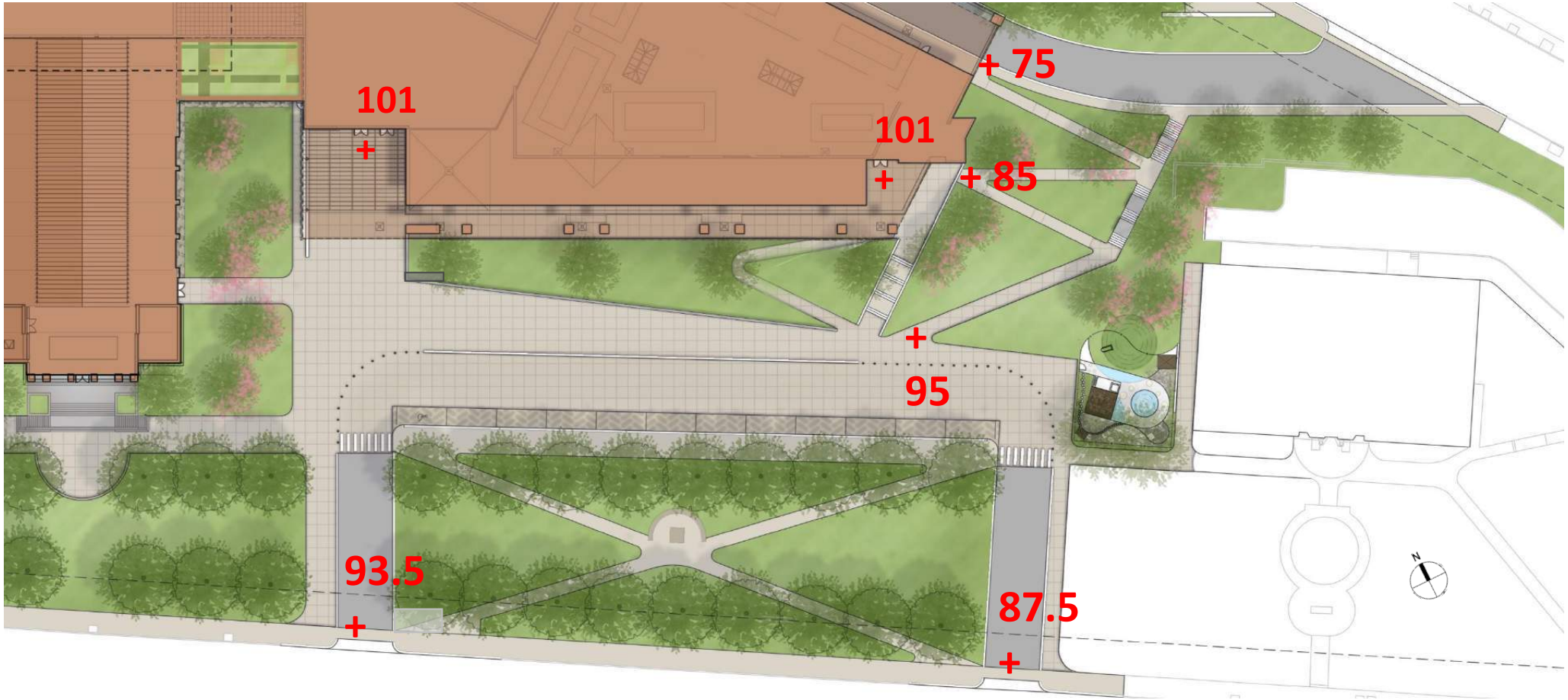
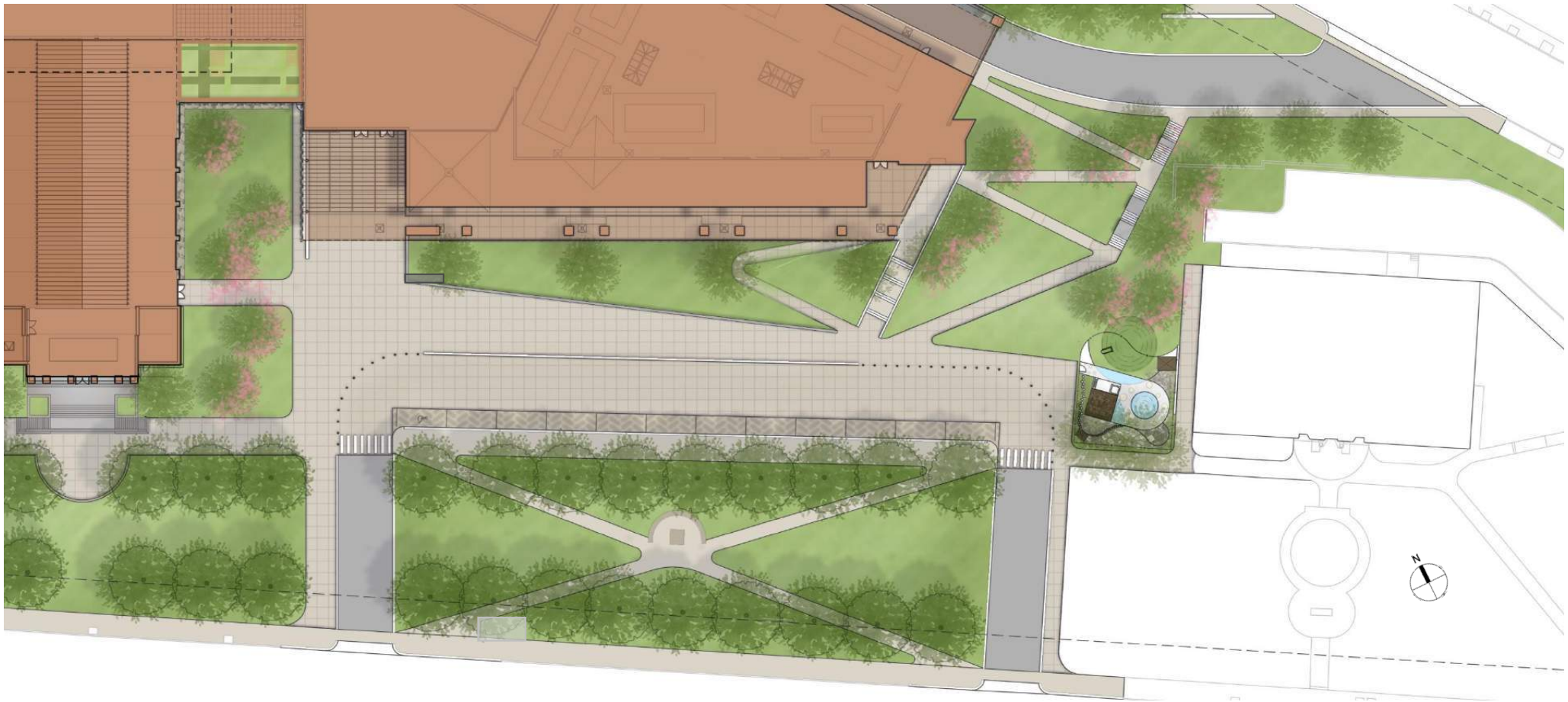


SHS Plan Illustrative

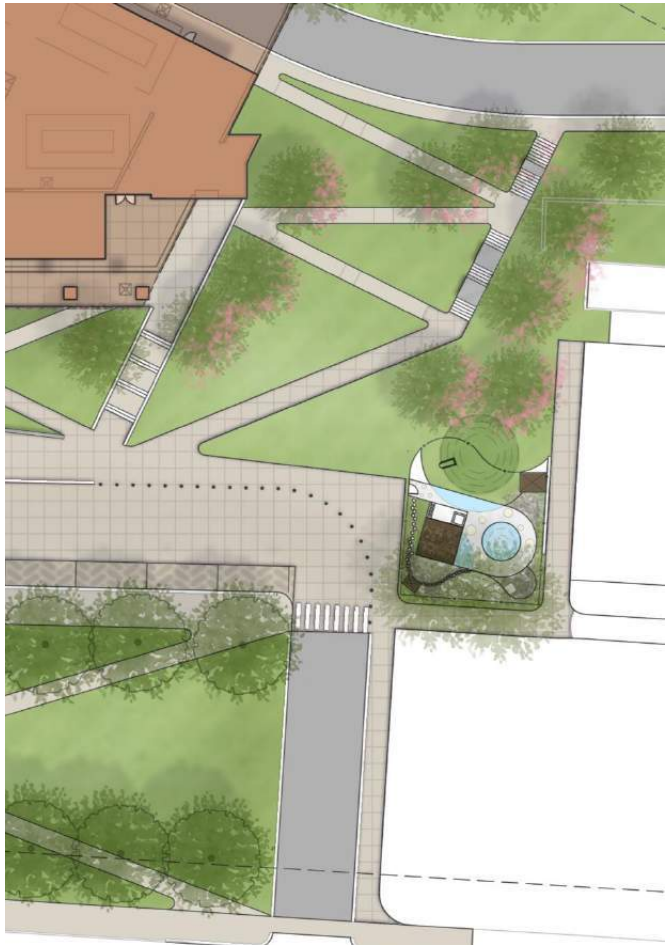


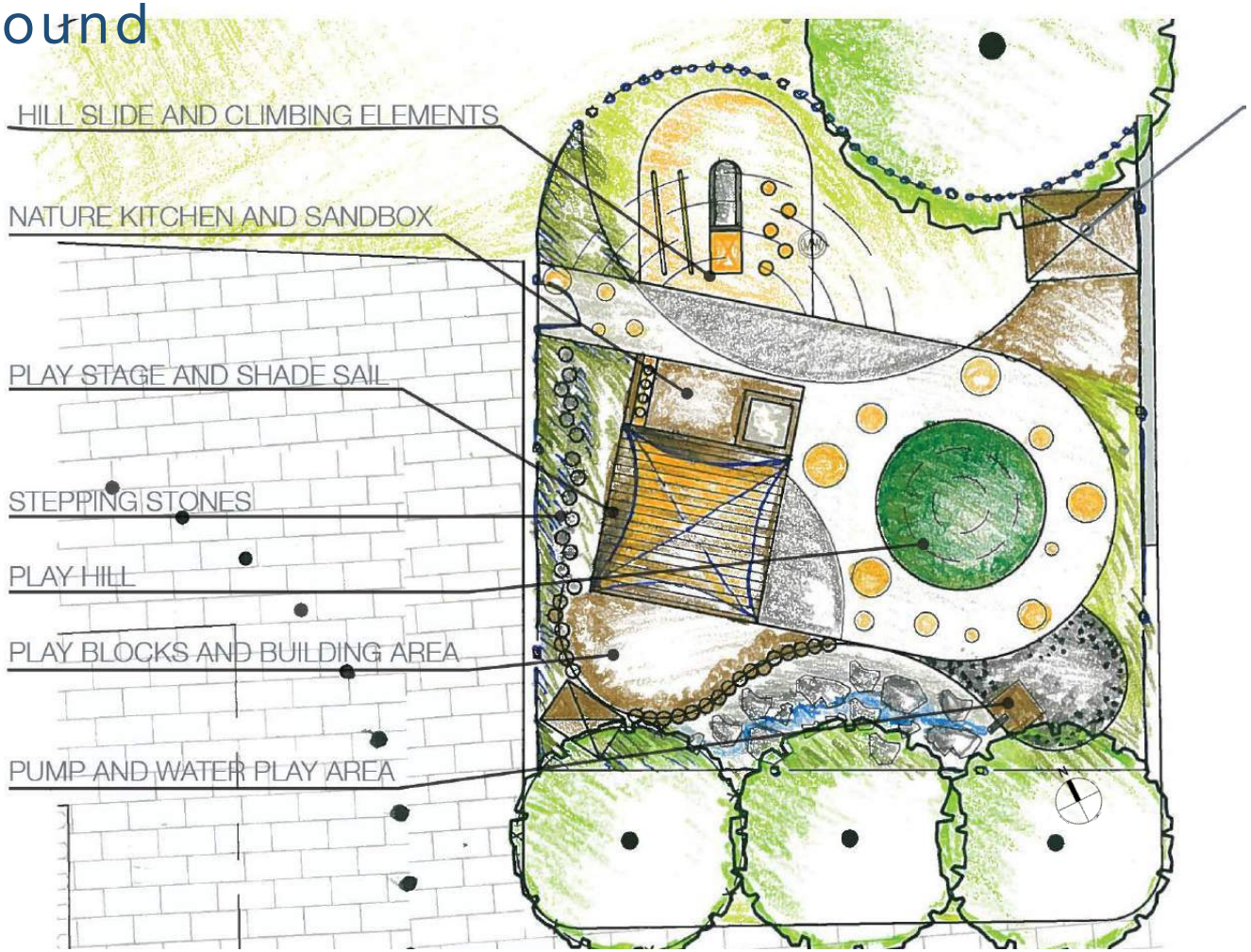
Front Plaza - Transitions

Wellesley Entrance

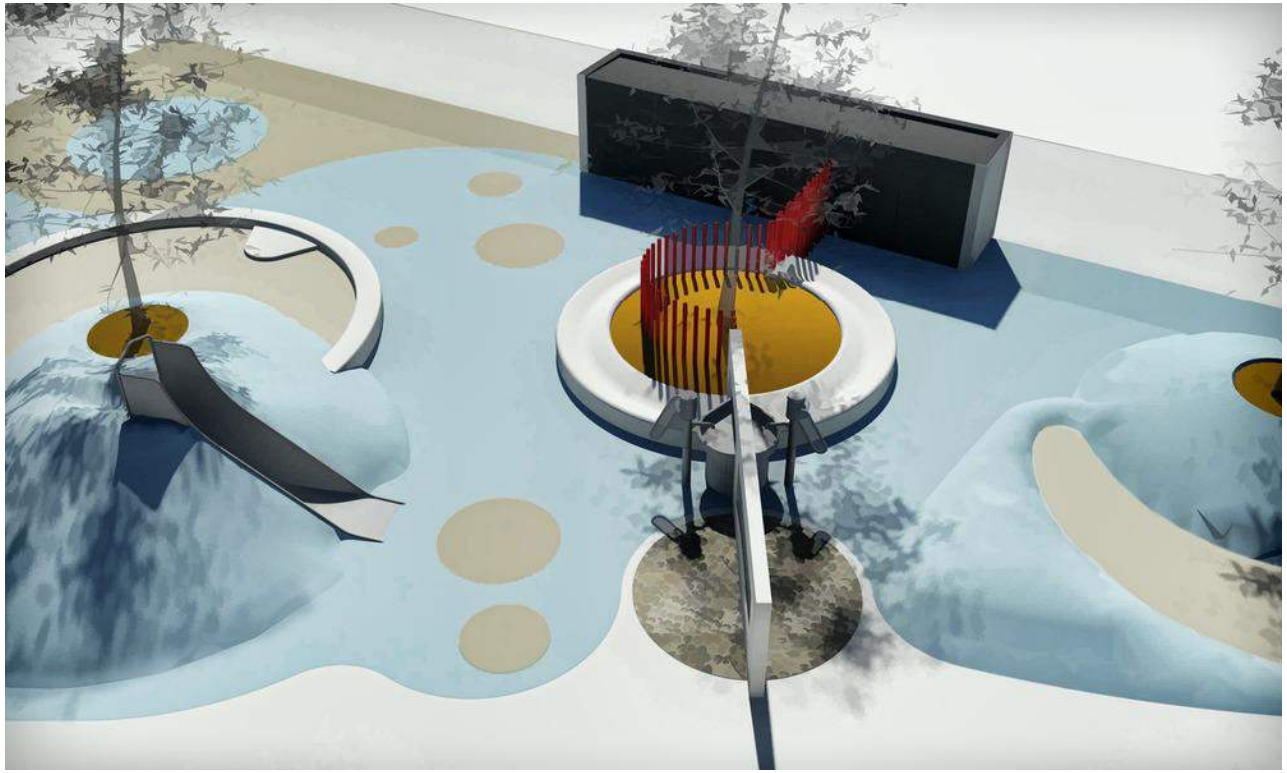
Winchester Sign

Child Care Playground





Child Care Program Element

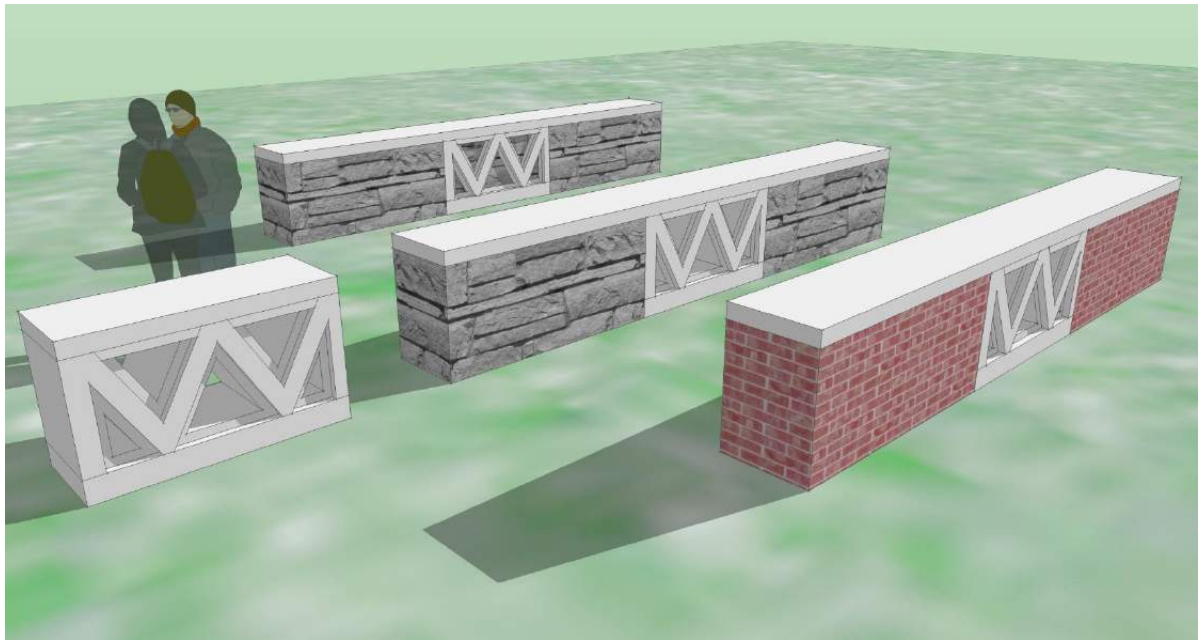


Permitting Update

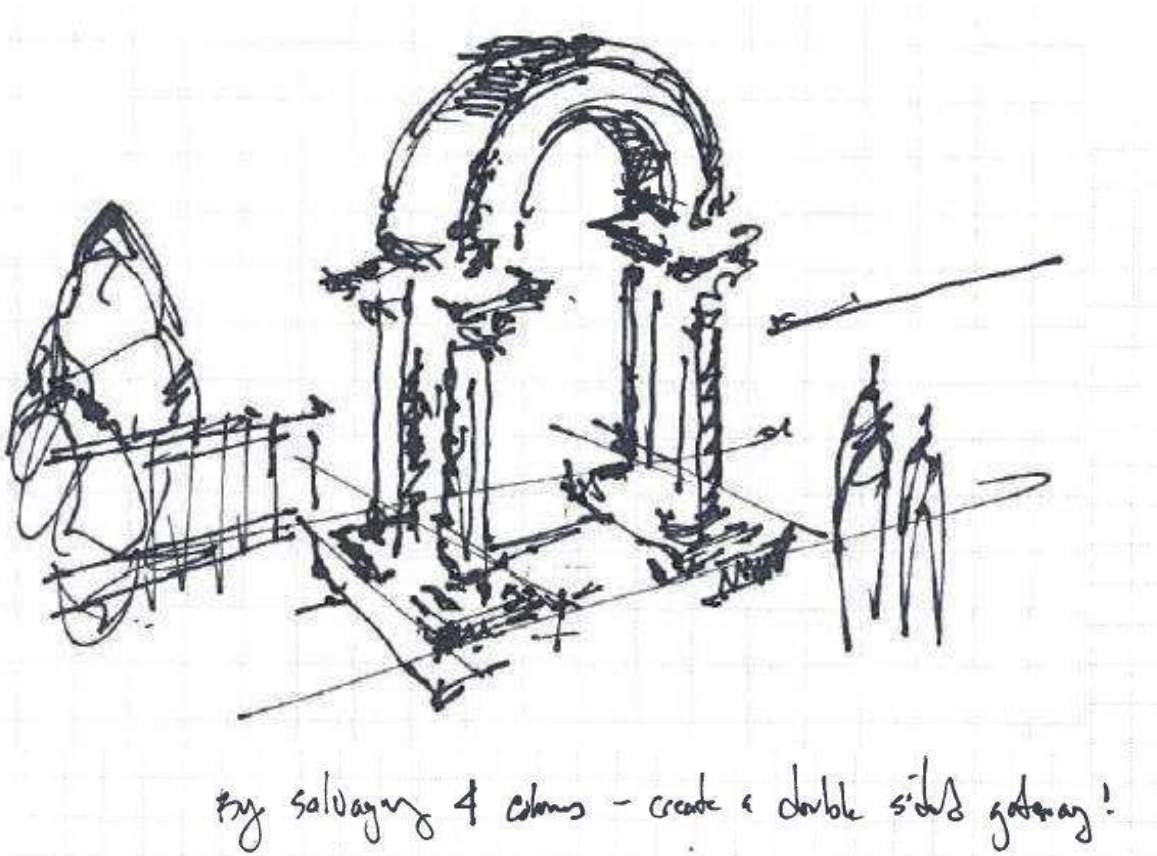
- No Variances required for building
- Design Development set will be used to file permits
- Demolition Permit to be filed with ISD
- Historic: review Memorandum of Agreement (MoA draft)
- Tree Removal: 2-part permit
  - Summer work for borings & contractor access at back of site

Salvage concepts: WHS Example

Salvage concepts: WHS Example

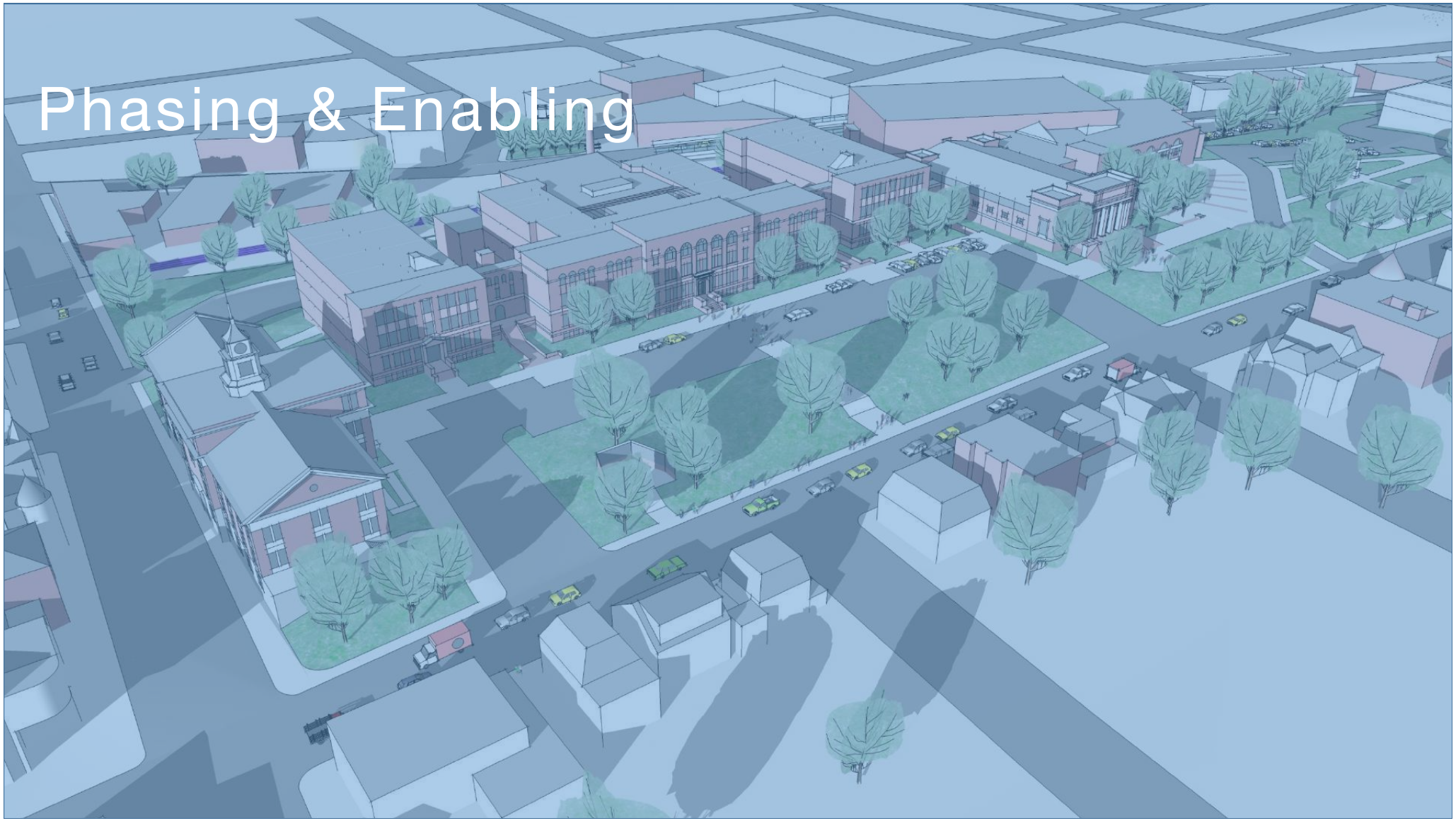


Salvage concepts: Garden Follies



Salvage concepts: Garden Follies

Phasing & Enabling



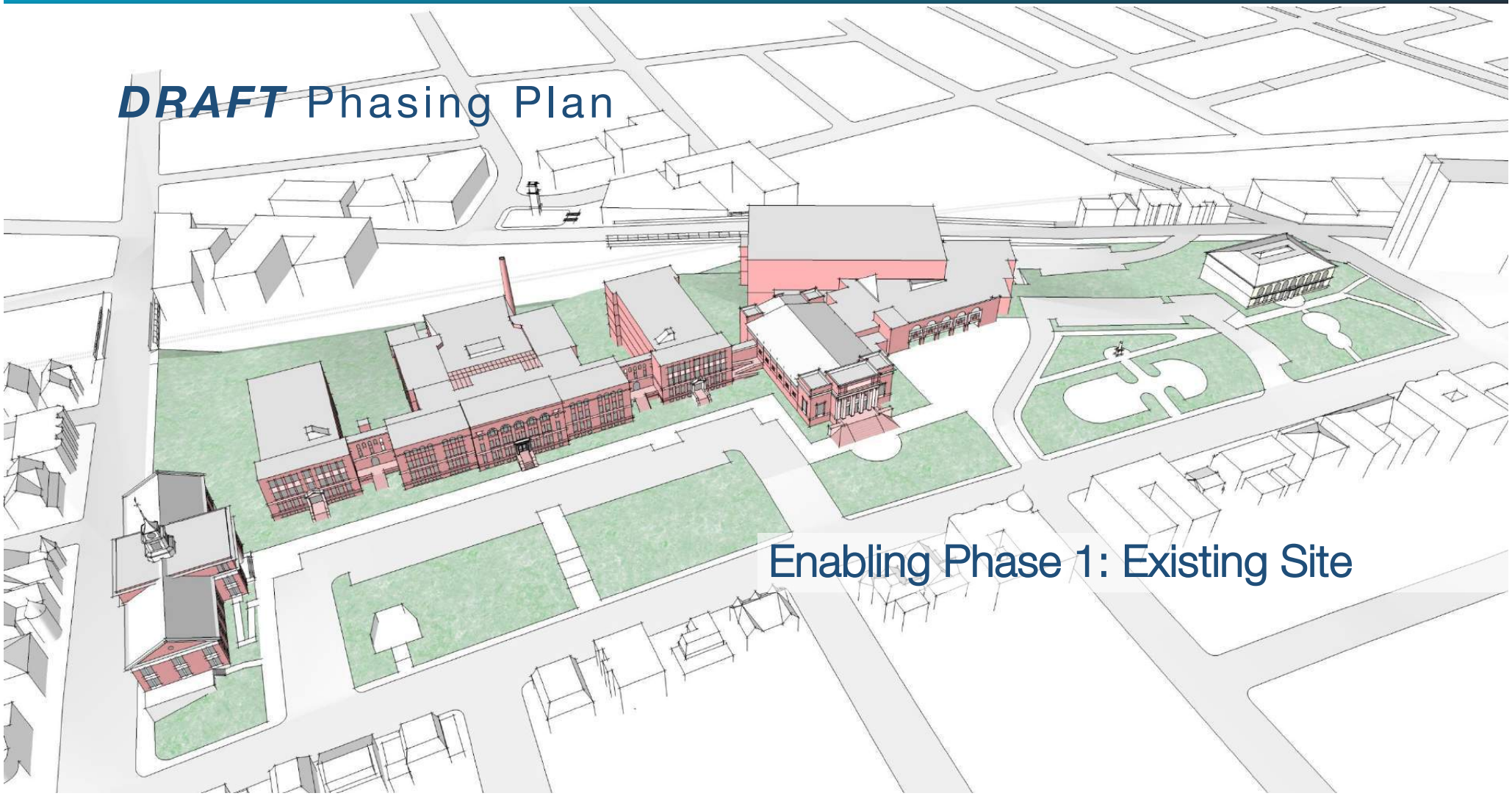
Level One
Summer 2017
Enabling Plans

Level Two

Summer 2017
Enabling Plans
2018 Modulars

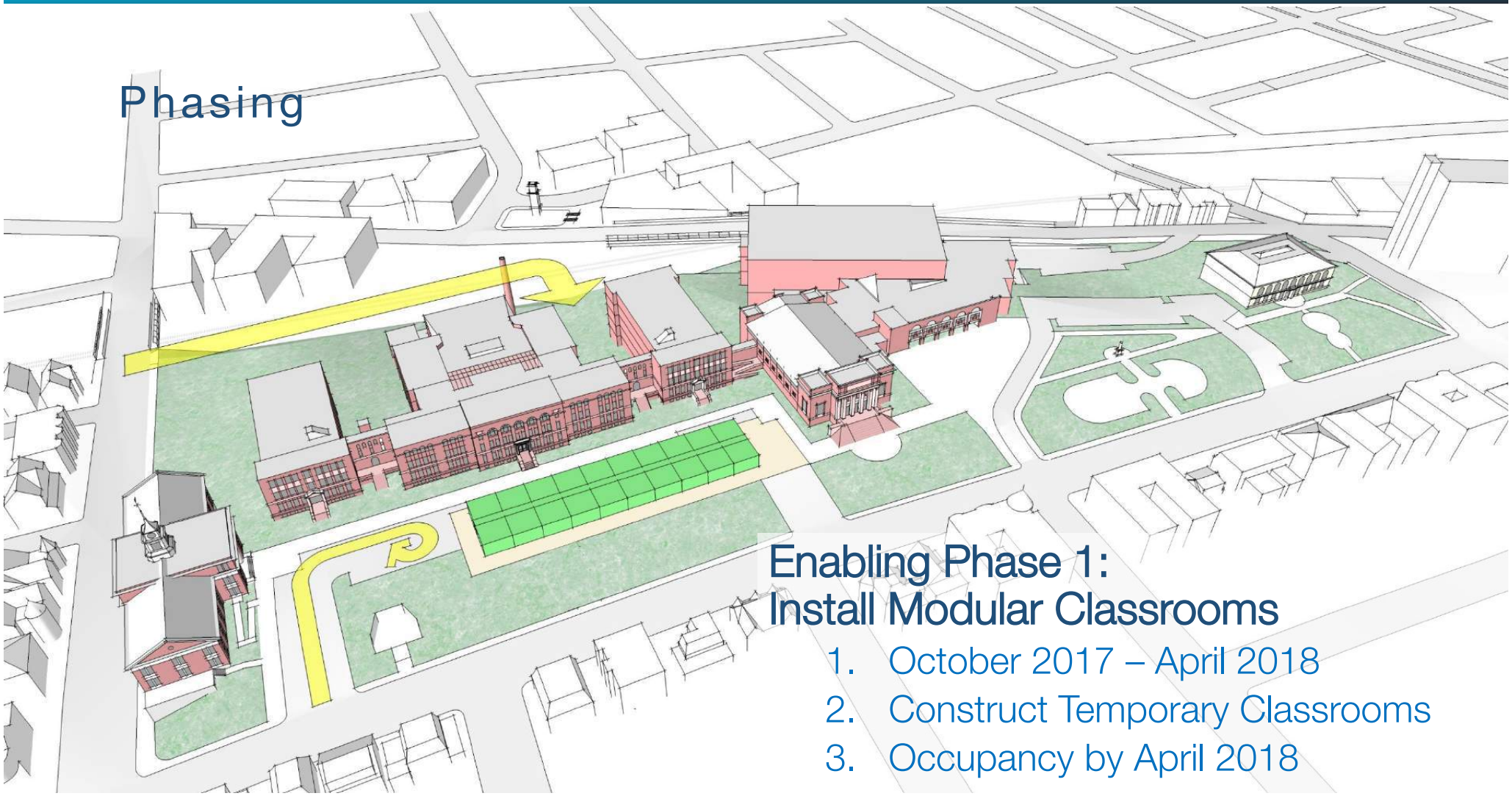
Level Three
Summer 2017
Enabling Plans

DRAFT Phasing Plan



Enabling Phase 1: Existing Site

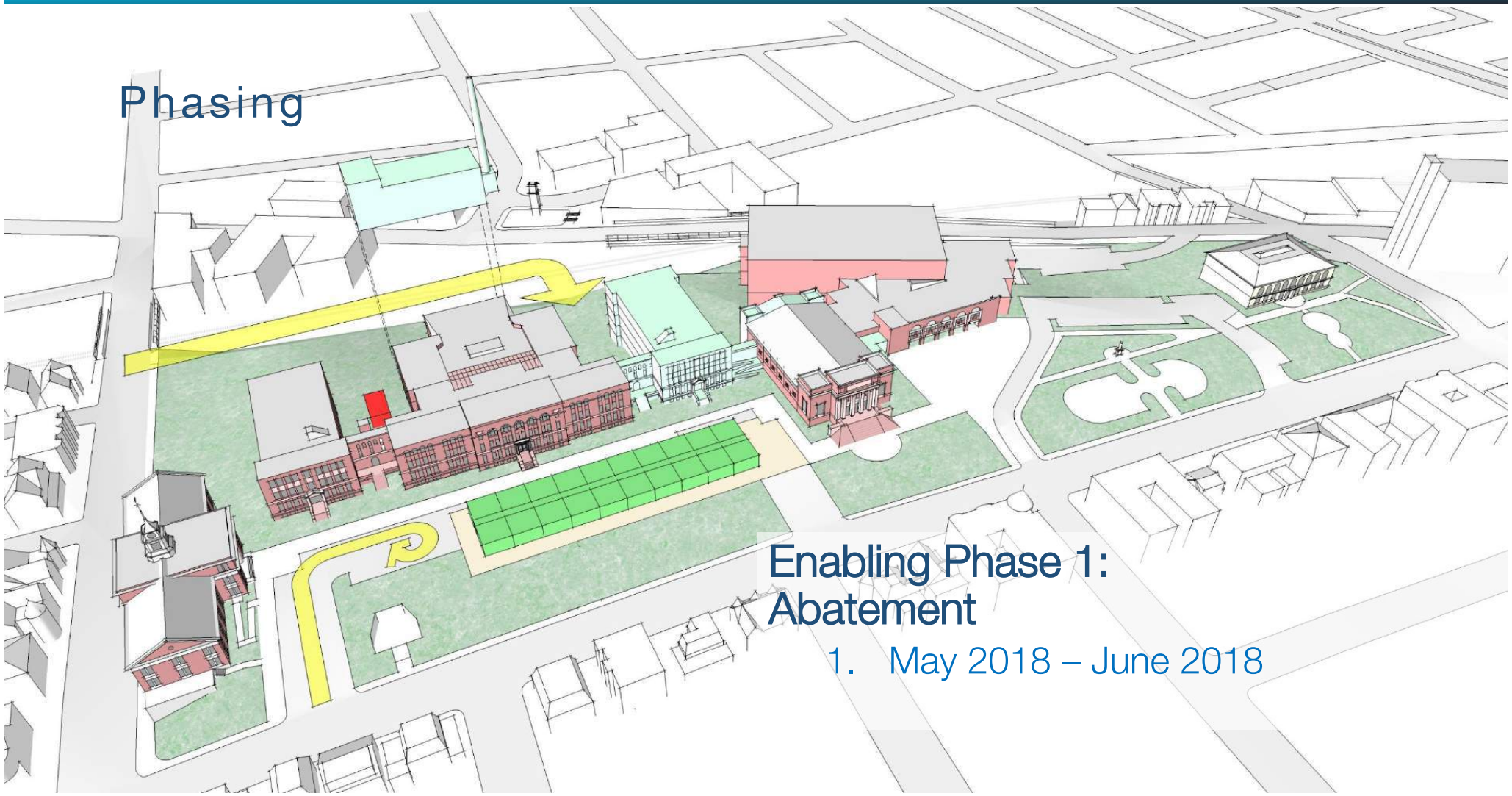
Phasing



Enabling Phase 1:
Install Modular Classrooms

1. October 2017 – April 2018
2. Construct Temporary Classrooms
3. Occupancy by April 2018

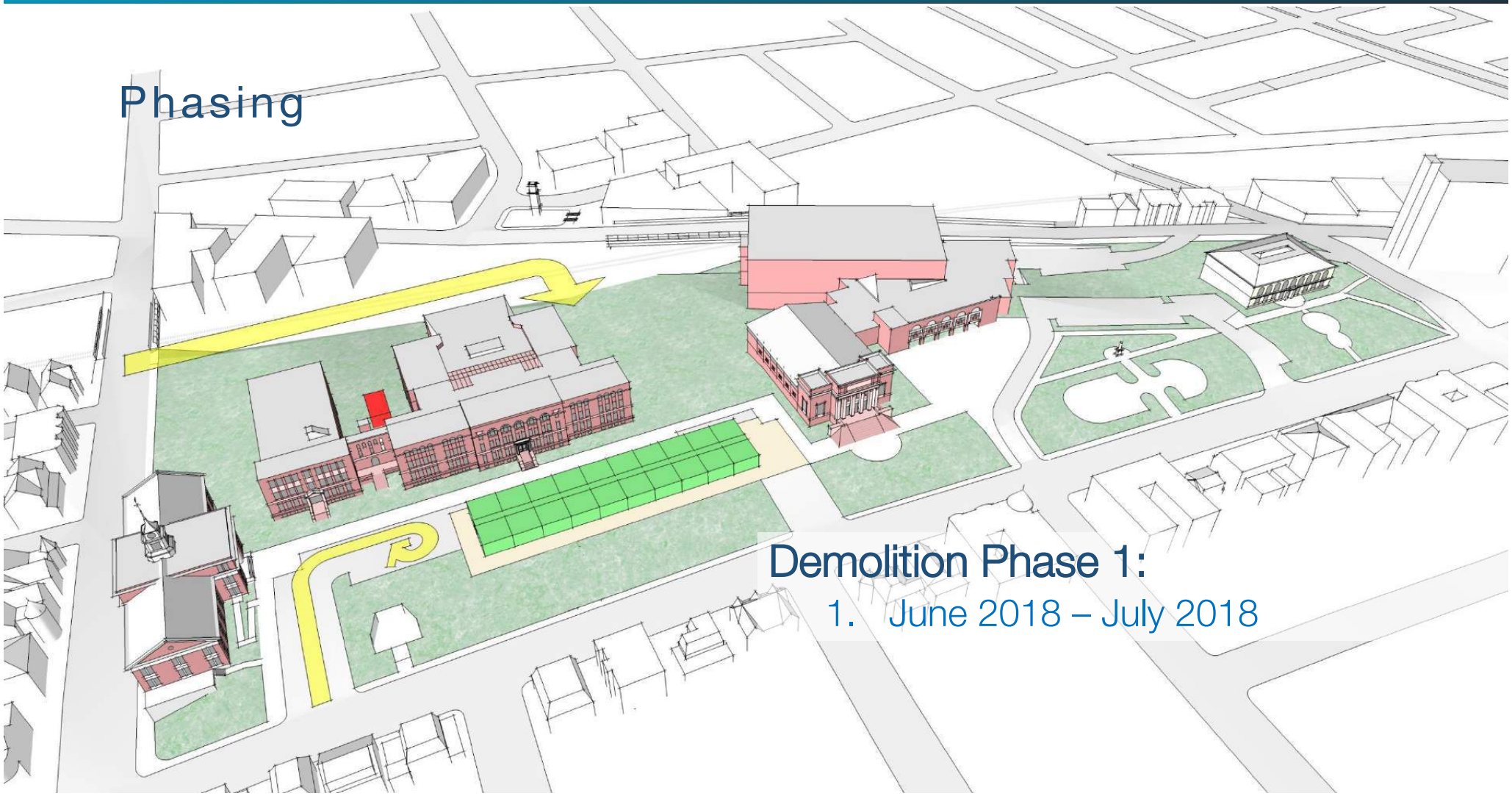
Phasing



Enabling Phase 1: Abatement

1. May 2018 – June 2018

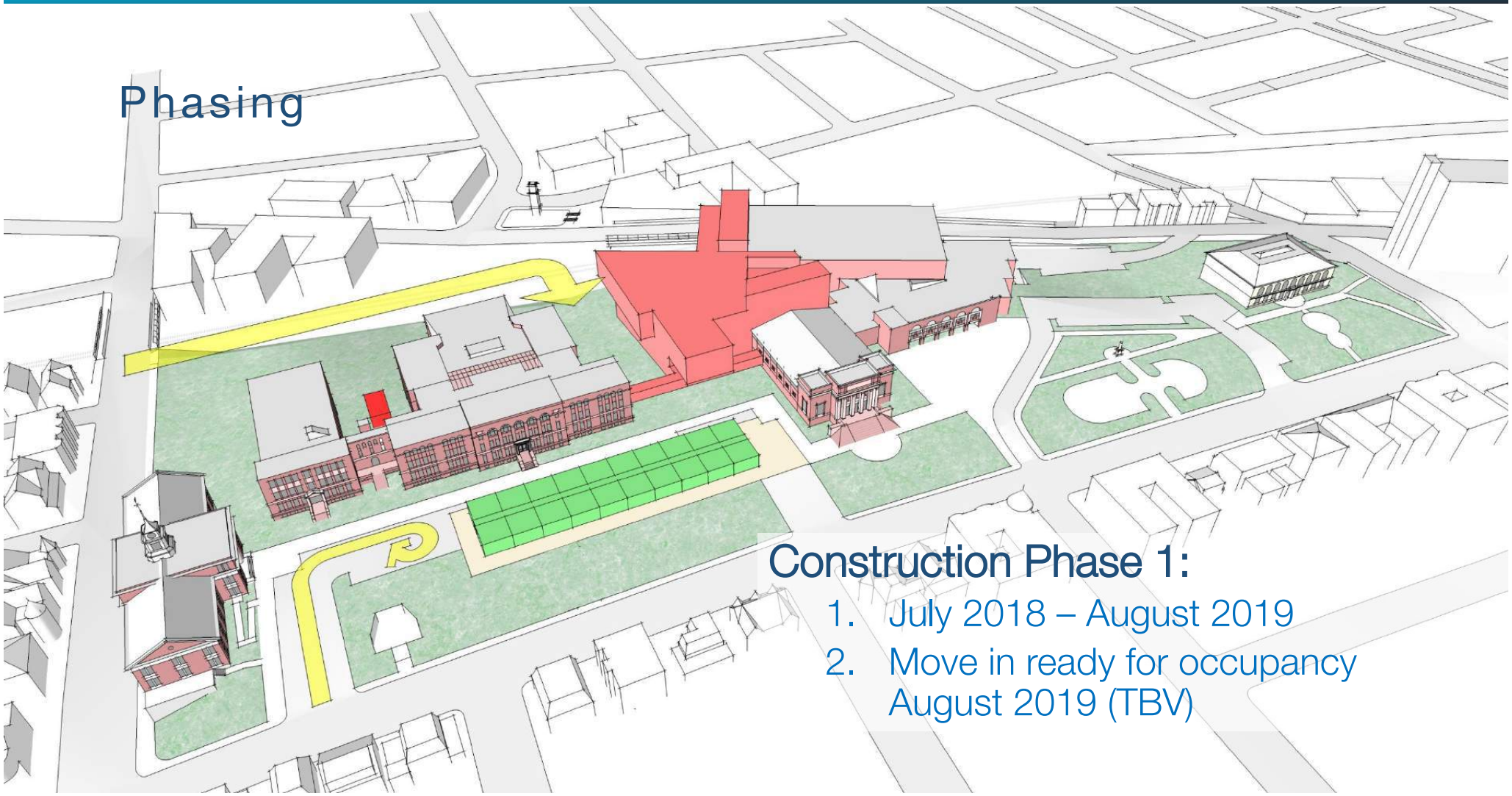
Phasing



Demolition Phase 1:

1. June 2018 – July 2018

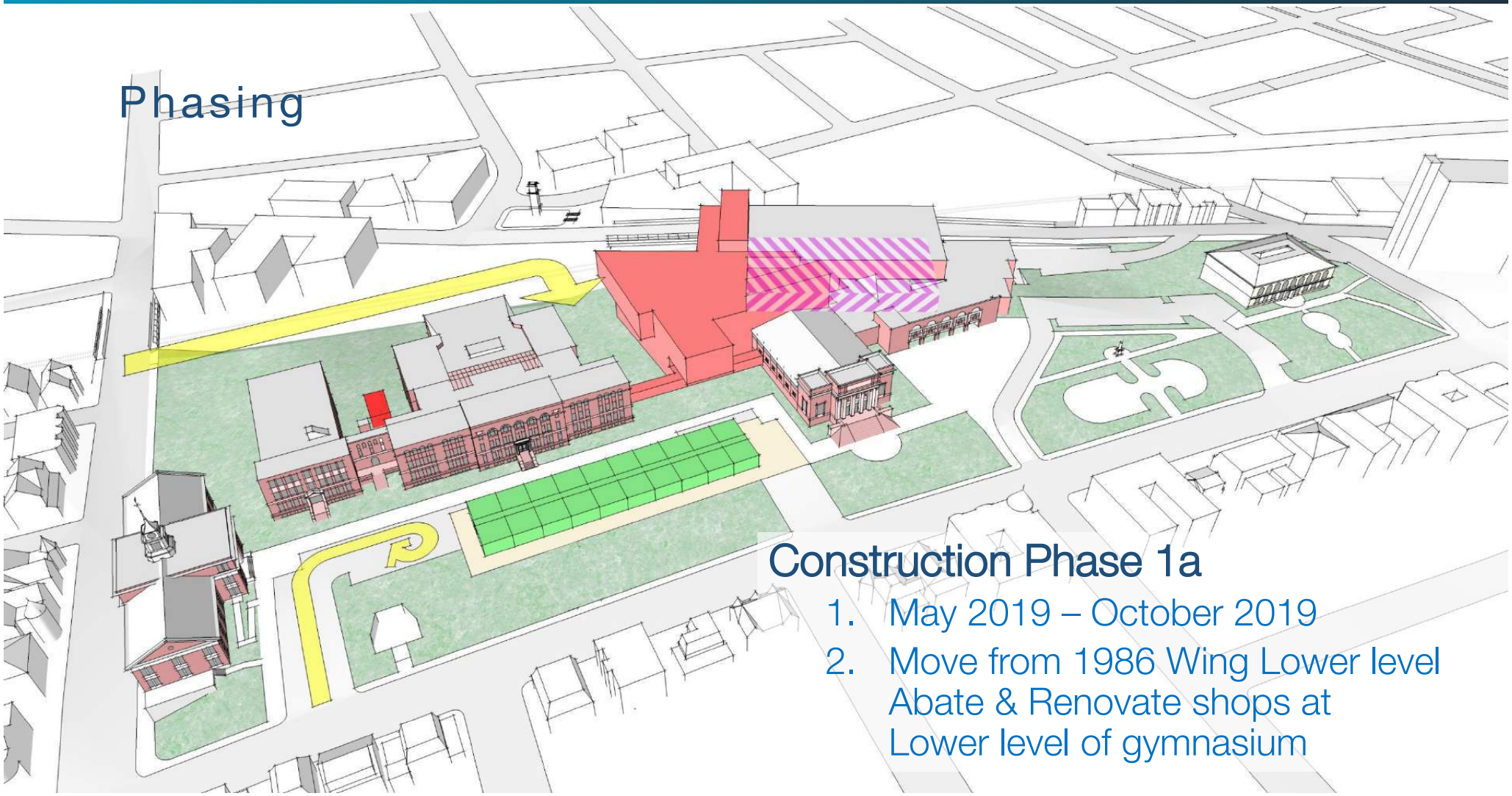
Phasing



Construction Phase 1:

1. July 2018 – August 2019
2. Move in ready for occupancy August 2019 (TBV)

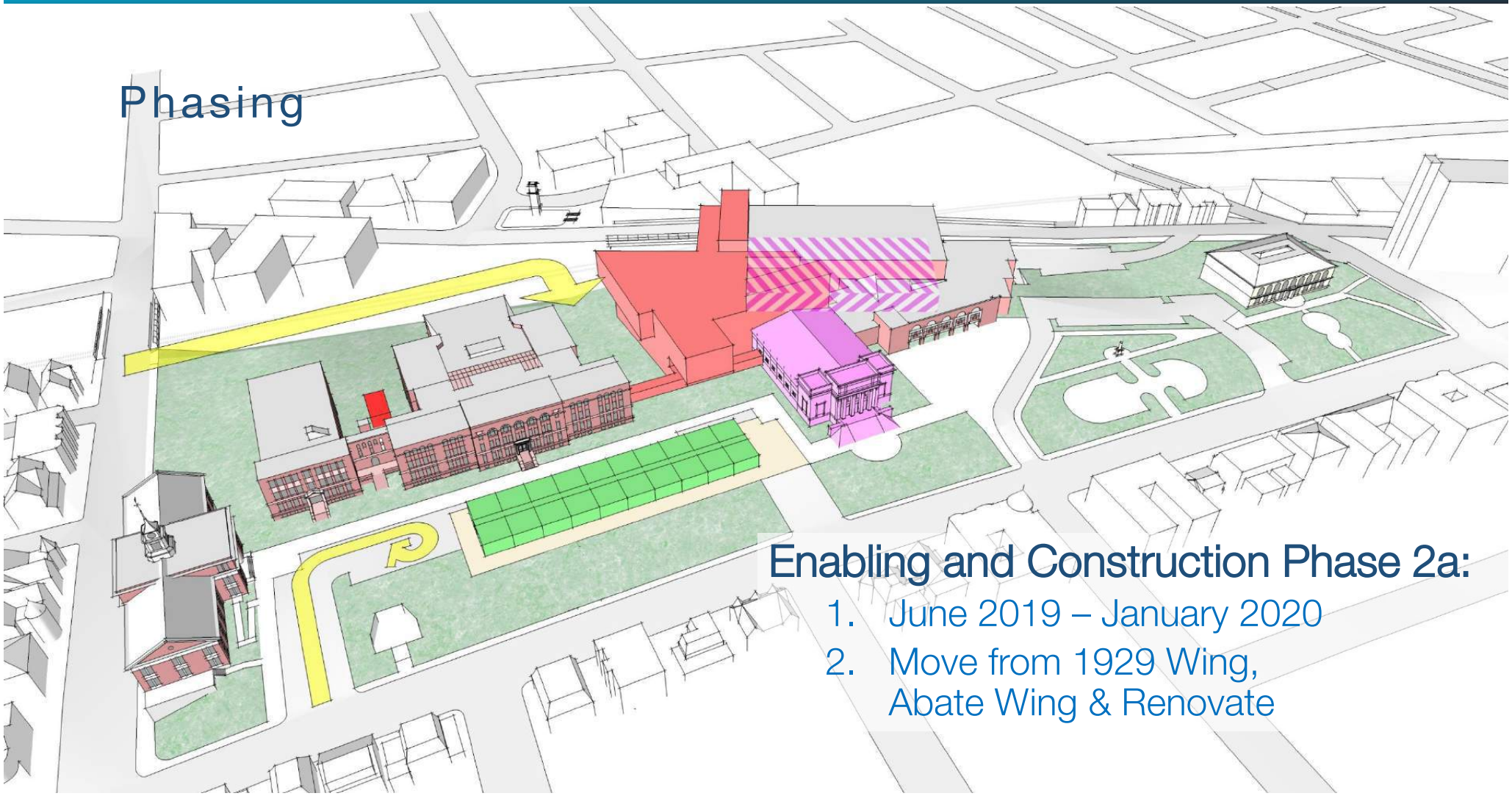
Phasing



Construction Phase 1a

1. May 2019 – October 2019
2. Move from 1986 Wing Lower level Abate & Renovate shops at Lower level of gymnasium

Phasing



Enabling and Construction Phase 2a:

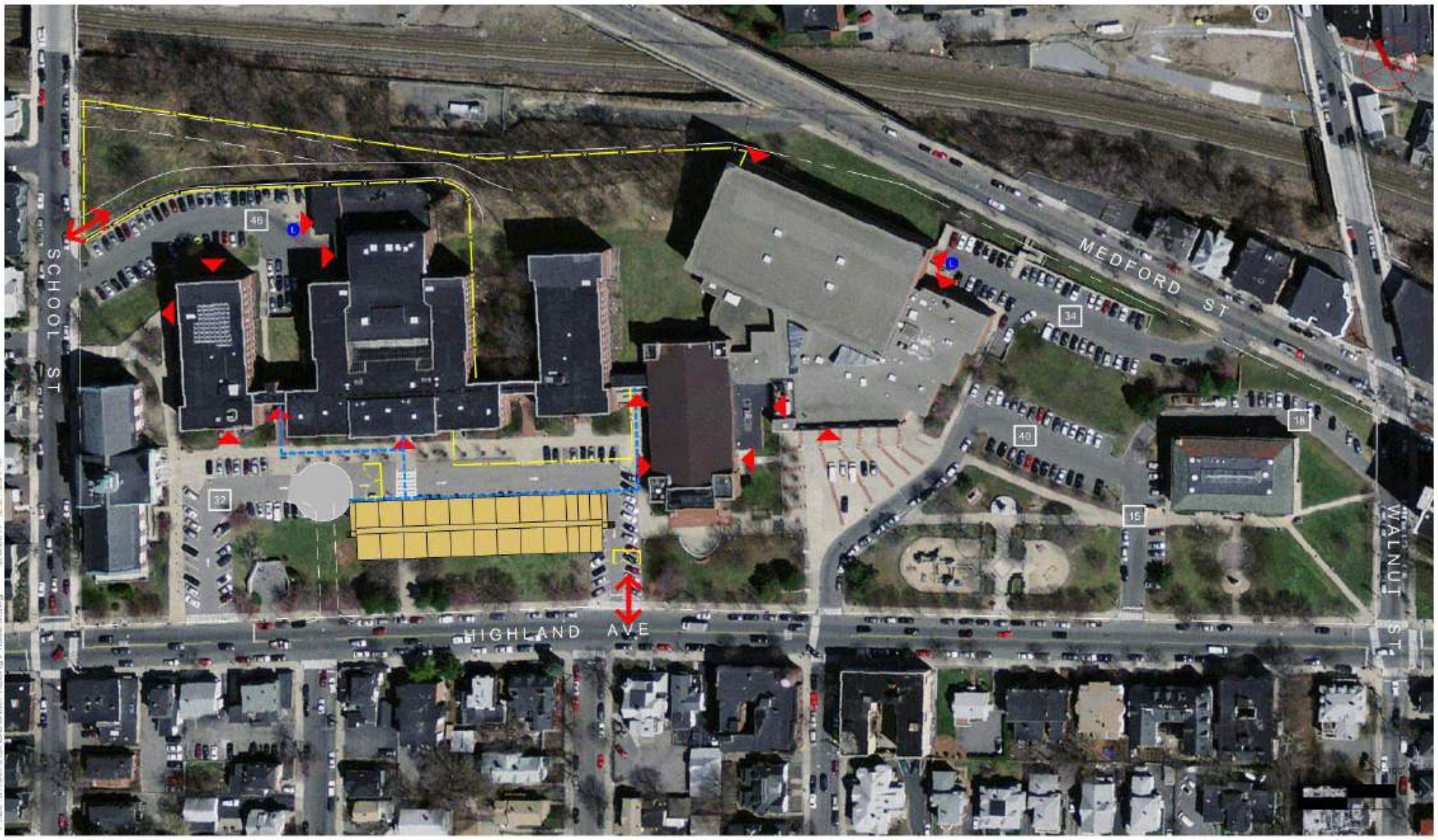
1. June 2019 – January 2020
2. Move from 1929 Wing, Abate Wing & Renovate

LEGEND

- PROPERTY LINE
- TEMPORARY PAVEMENT
- MODULAR CLASSROOMS
- BUILDING ENTRANCE/EGRESS
- PEDESTRIAN ACCESS
- VEHICULAR ACCESS
- TEMPORARY CHAIN LINK FENCE
- CONTRACTOR ACCESS
- 18 PARKING
- L LOADING DOCK

PARKING SUMMARY

245	SPACES	EXISTING CONDITIONS
83	SPACES	PROPOSED CONDITIONS
185	SPACES	PHASE 1



SMMA

SOMERVILLE HIGH SCHOOL

81 Highland Avenue
Somerville, MA

JOB NO.: 15070

DATE:	05/08/2017
ISSUE:	
SCALE:	1"=100'
REF:	
DR BY:	EFP
CK BY:	EFP

PRE-PHASE 1

CONSTRUCTION PHASING

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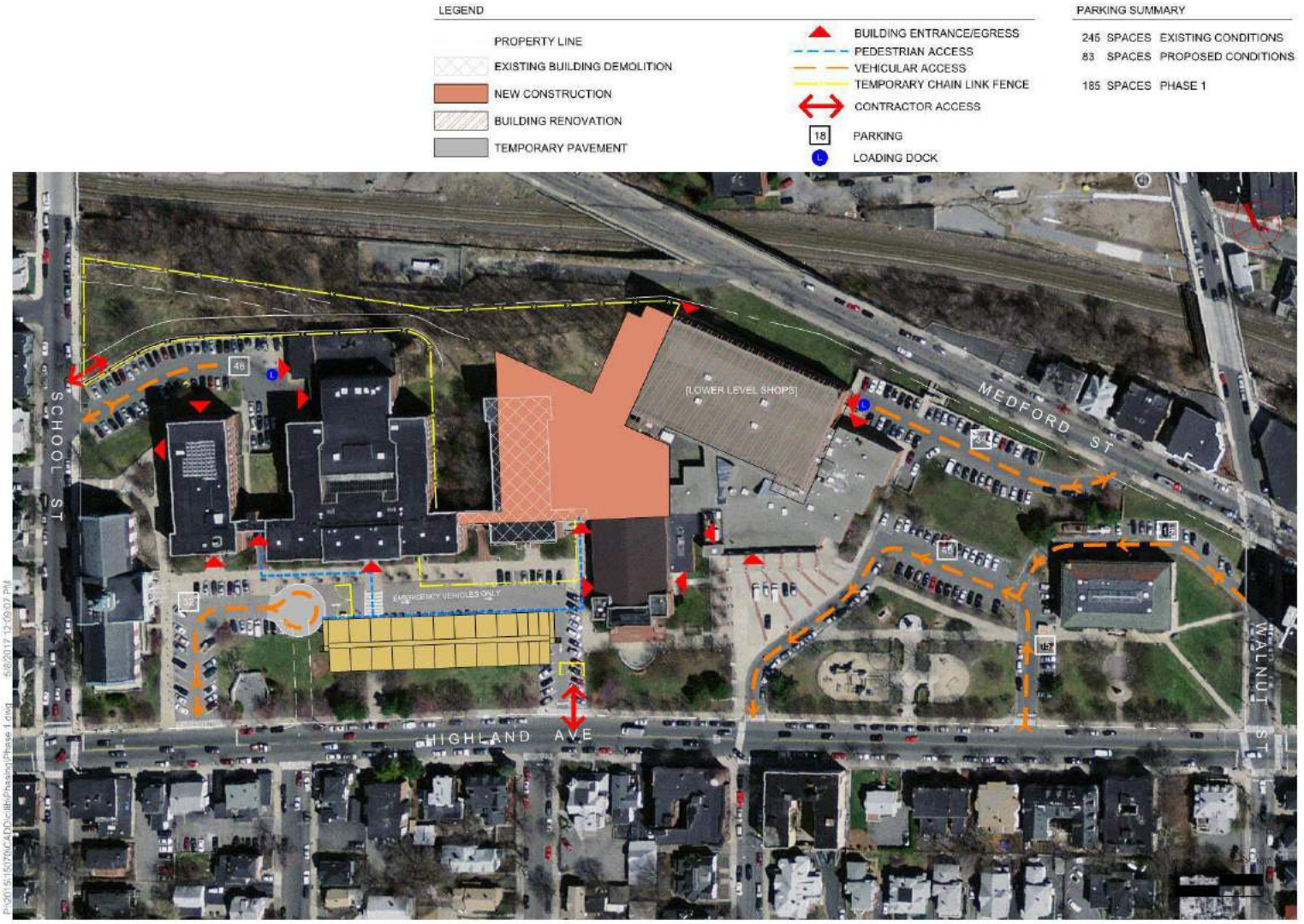

SMMA

SOMERVILLE HIGH SCHOOL

81 Highland Avenue
Somerville, MA

DATE: 04/24/2017
ISSUE:
SCALE: 1"=100'
REF:
DR BY: RJM
CK BY: EFP
JOB NO.: 15070

PHASE 1

CONSTRUCTION PHASING

LEGEND

PROPERTY LINE	BUILDING ENTRANCE/EGRESS
EXISTING BUILDING DEMOLITION	PEDESTRIAN ACCESS
NEW CONSTRUCTION	VEHICULAR ACCESS
BUILDING RENOVATION	TEMPORARY CHAIN LINK FENCE
TEMPORARY PAVEMENT	CONTRACTOR ACCESS
	18 PARKING
	L LOADING DOCK

PARKING SUMMARY

245 SPACES EXISTING CONDITIONS
83 SPACES PROPOSED CONDITIONS

96 SPACES PHASE 2A

SMMA

SOMERVILLE HIGH SCHOOL

81 Highland Avenue
Somerville, MA

JOB NO.: 15070

DATE: 05/08/2017
ISSUE:
SCALE: 1"=100'
REF:
DR BY: RJM
CK BY: EFP

PHASE 2A

CONSTRUCTION PHASING

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LEGEND

- PROPERTY LINE
- EXISTING BUILDING DEMOLITION
- NEW CONSTRUCTION
- BUILDING RENOVATION
- TEMPORARY PAVEMENT
- BUILDING ENTRANCE/EGRESS
- VEHICULAR ACCESS
- TEMPORARY CHAIN LINK FENCE
- CONTRACTOR ACCESS
- 18 PARKING
- LOADING DOCK

PARKING SUMMARY

245 SPACES	EXISTING CONDITIONS
83 SPACES	PROPOSED CONDITIONS
112 SPACES	PHASE 2

PHASE 2

CONSTRUCTION PHASING

DATE:	05/08/2017
ISSUE:	
SCALE:	1"=100'
REF:	
DR BY:	RJM
CK BY:	EFP

SOMERVILLE HIGH SCHOOL

81 Highland Avenue
Somerville, MA

JOB NO.: 15070

SMMA

SYMMES MAINI & McKEE ASSOCIATES
1000 Massachusetts Avenue
Cambridge, Massachusetts 02138
P:617.547.5400 F:617.549.4820

LEGEND

- - - - PROPERTY LINE
EXISTING BUILDING DEMOLITION
NEW CONSTRUCTION
BUILDING ENTRANCE/EGRESS
TEMPORARY CHAIN LINK FENCE
CONTRACTOR ACCESS
18 PARKING
L LOADING DOCK

PARKING SUMMARY

245 SPACES EXISTING CONDITIONS
83 SPACES PROPOSED CONDITIONS

83 SPACES START PHASE 3

SMMA

PHASE 3

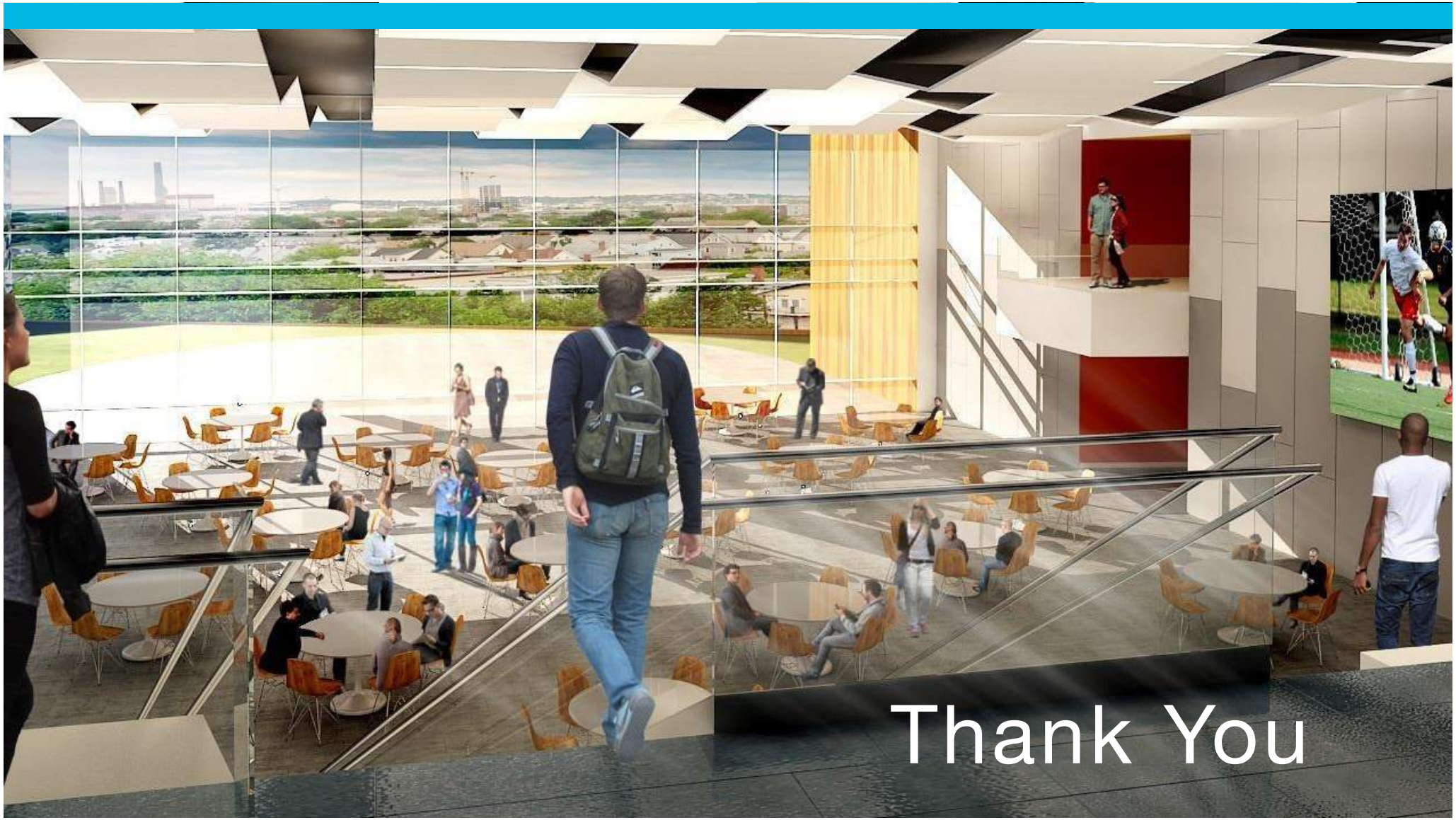
CONSTRUCTION PHASING

DATE:	05/08/2017
ISSUE:	
SCALE:	1"=100'
REF:	
DR BY:	RJM
CK BY:	EFP

SOMERVILLE HIGH SCHOOL

81 Highland Avenue
Somerville, MA

JOB NO.: 15070


Thank You