



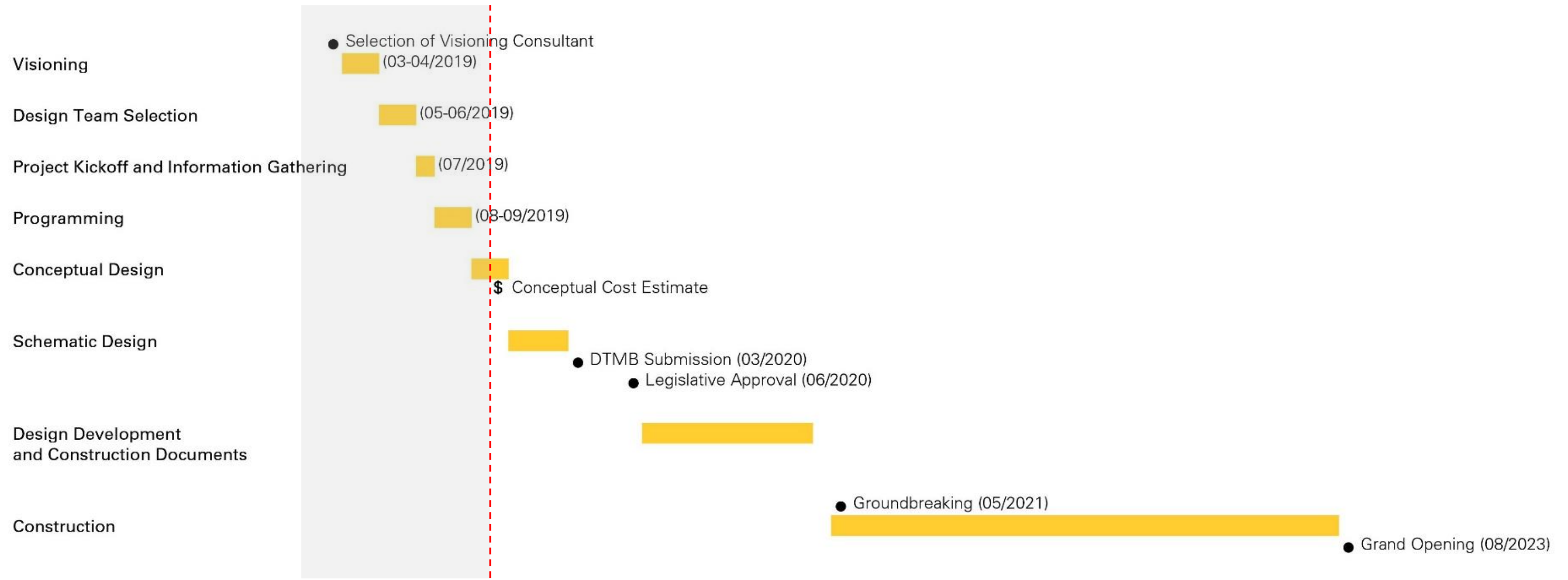
H-STEM

ENGINEERING & HEALTH TECHNOLOGIES COMPLEX

Conceptual Design Presentation

November 6, 2019

Project Milestones



Project Precedents



Wayne State University
Integrative Bioscience Center (iBio)



Central Michigan University
Biological Sciences



University of Michigan
Biological Sciences Building



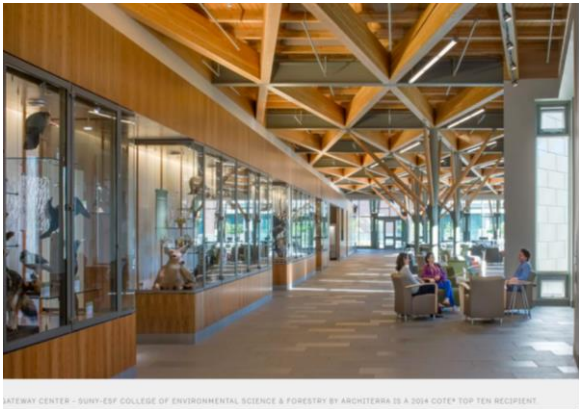
Michigan State University
STEM Teaching and Learning Facility

Sustainability Goals and Energy Targets

Ten Measures of Sustainable Design

Design for Integration

1



Design for Community

2



Design for Ecology

3



Design for Water

4



Design for Economy

5



Design for Energy

6



Design for Wellness

7



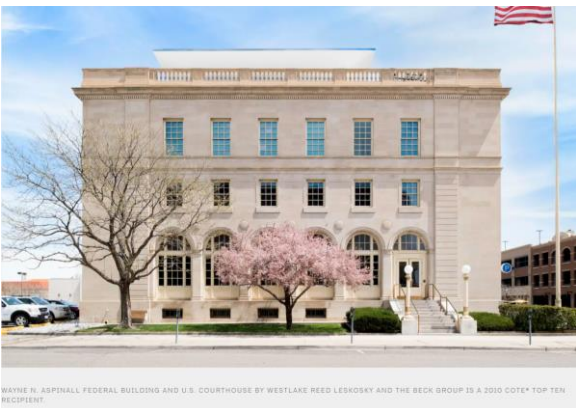
Design for Resources

8



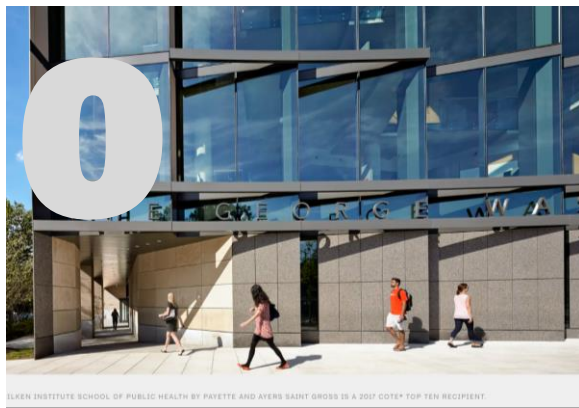
Design for Change

9



Design for Discovery

10



Energy Targets

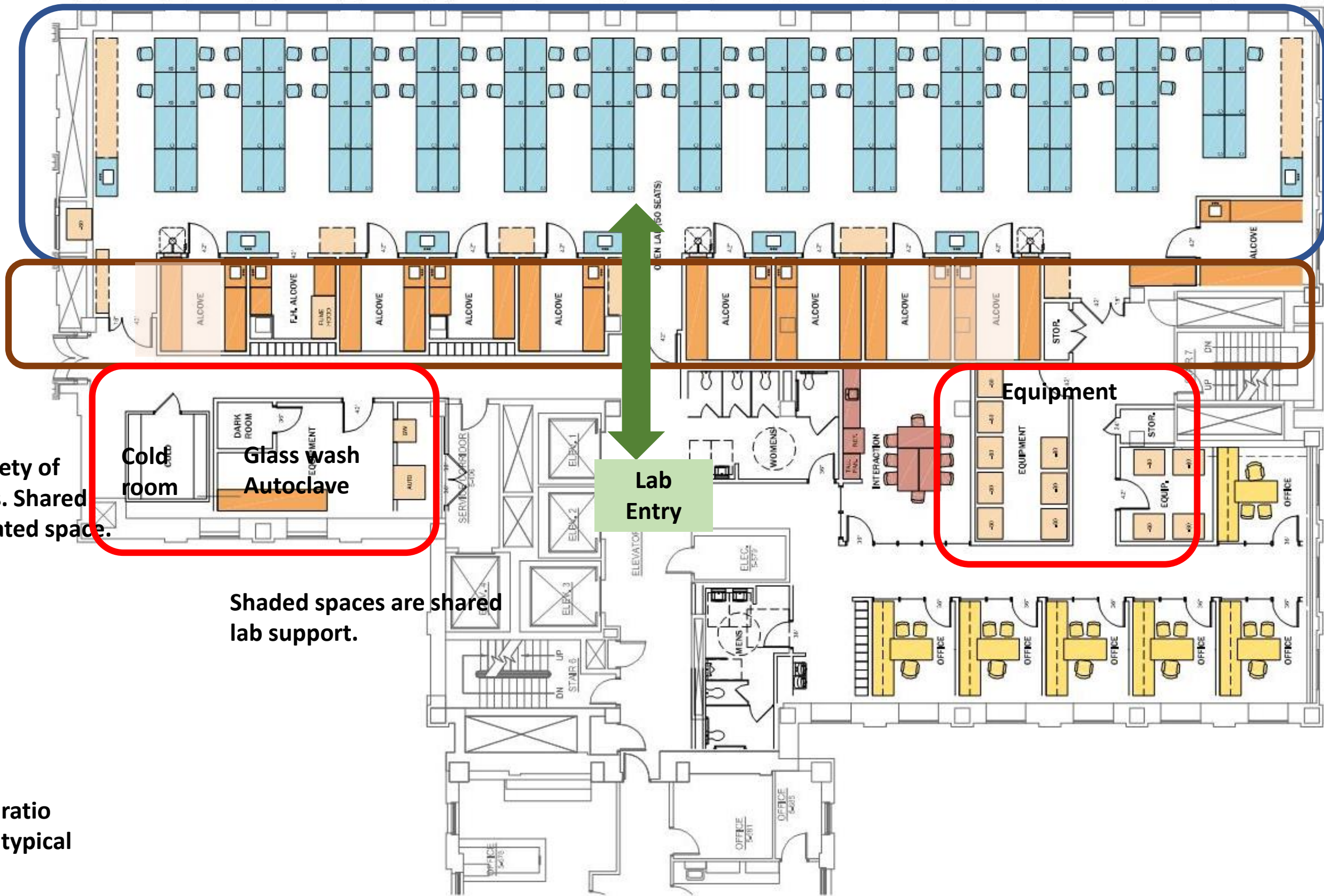
Benchmark	pEUI kBTU/sf/year	Notes
APPA average for Research Higher Ed Campuses	162	
MTU campus average	152	Figured is brought down by non-research buildings on campus
MTU Research Building Average	212	Range of 200 to 225
Chem-Sci energy use FY2019	225	
I2SL benchmarking tool (median)	296	Specific to climate zone 7
Michigan Energy Code (IECC 2015)	104	*This analyzed for addition only using 25,000 Lab and 61,400 sf higher education baseline data from AIA 2030
IECC 2018	98	*This analyzed for addition only using 25,000 Lab and 61,400 sf higher education baseline data from AIA 2030
AIA 2030 Commitment Goal	58	*This analyzed for addition only using 25,000 Lab and 61,400 sf higher education baseline data from AIA 2030
Case Study Buildings:		
Flint Murchie	50	
MSU STEM	?	
WSU IBio	180	
Central Michigan U Bio Sciences	?	



*THESE NUMBERS ARE FROM LARRY H. AT MTU.

Planning Concepts

Open Lab: bench space
Specialized infrastructure



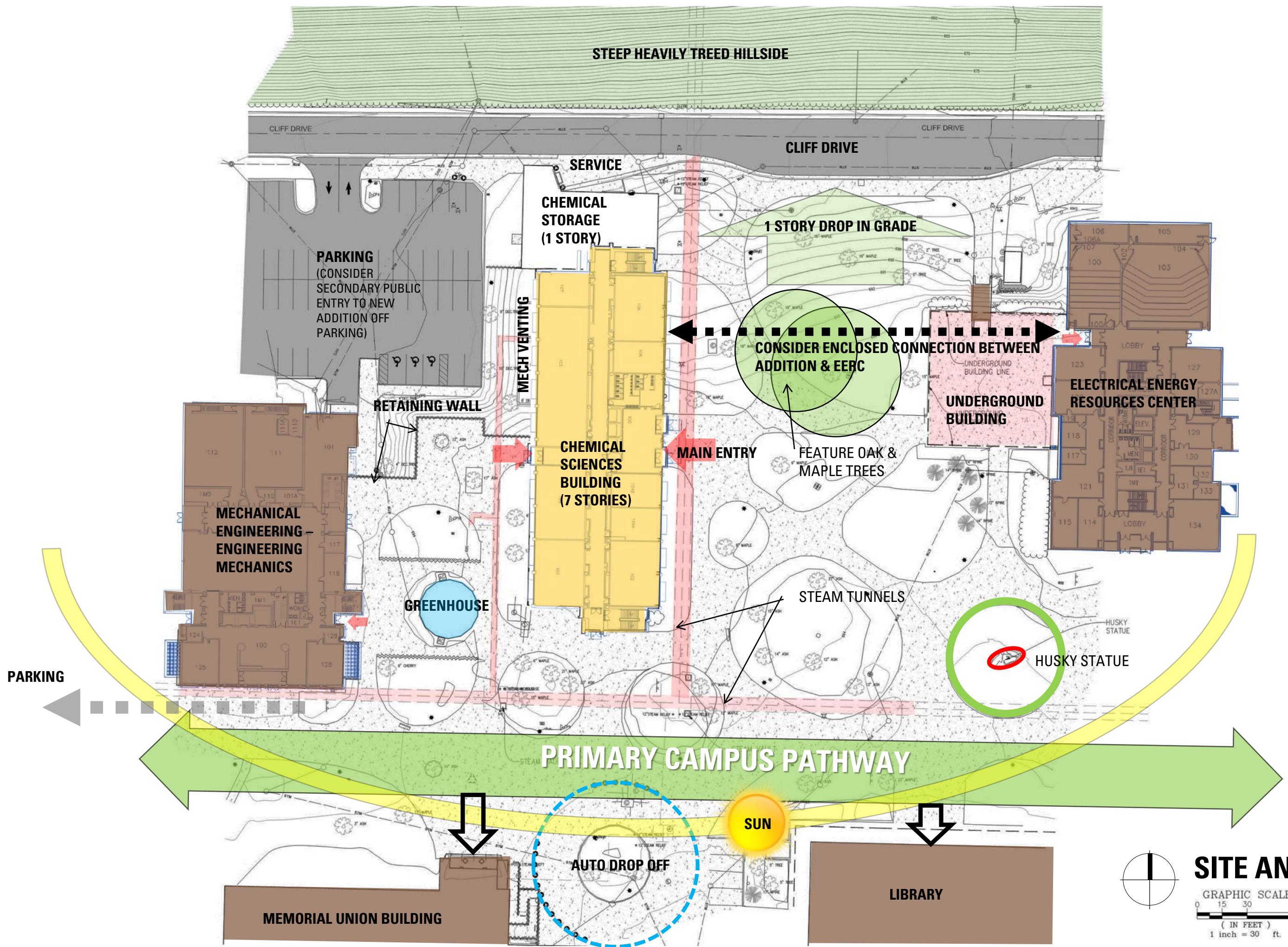
Lab Support:
Alcoves for a variety of functional spaces. Shared and/or PI designated space.

Shaded spaces are shared lab support.

Lab: Lab Support ratio
50-50 -most typical
60-40
70-30



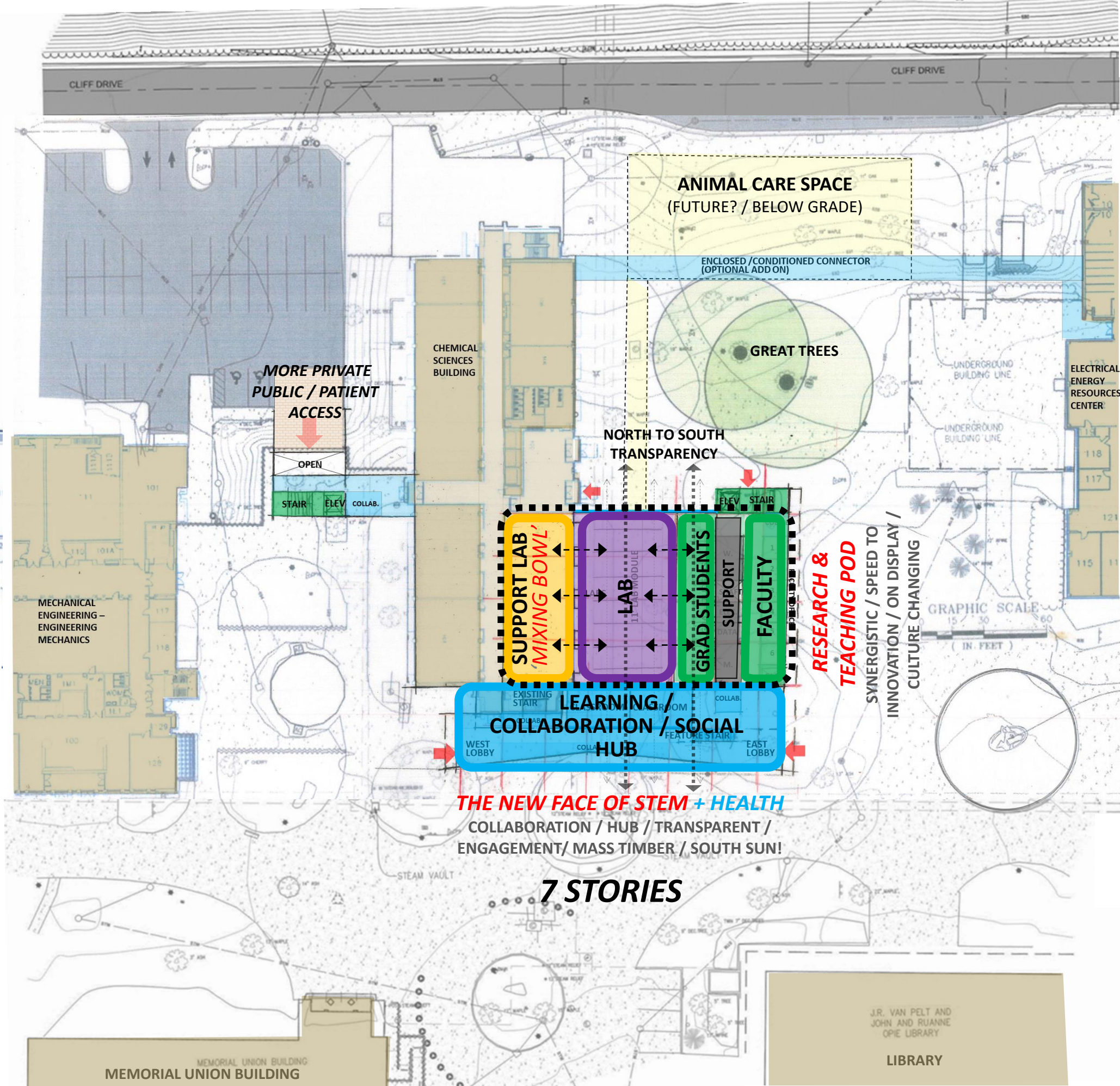
Site Analysis

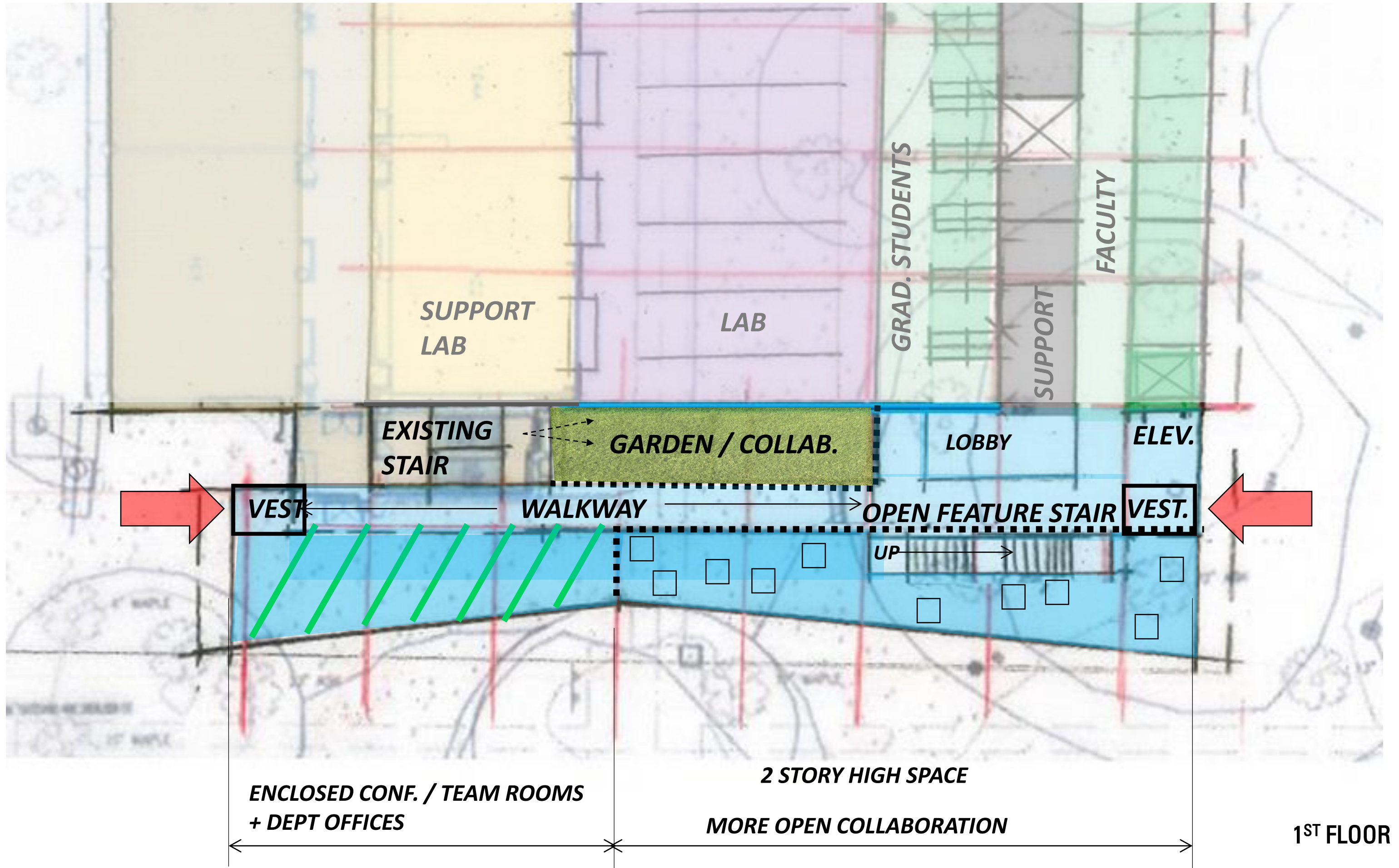


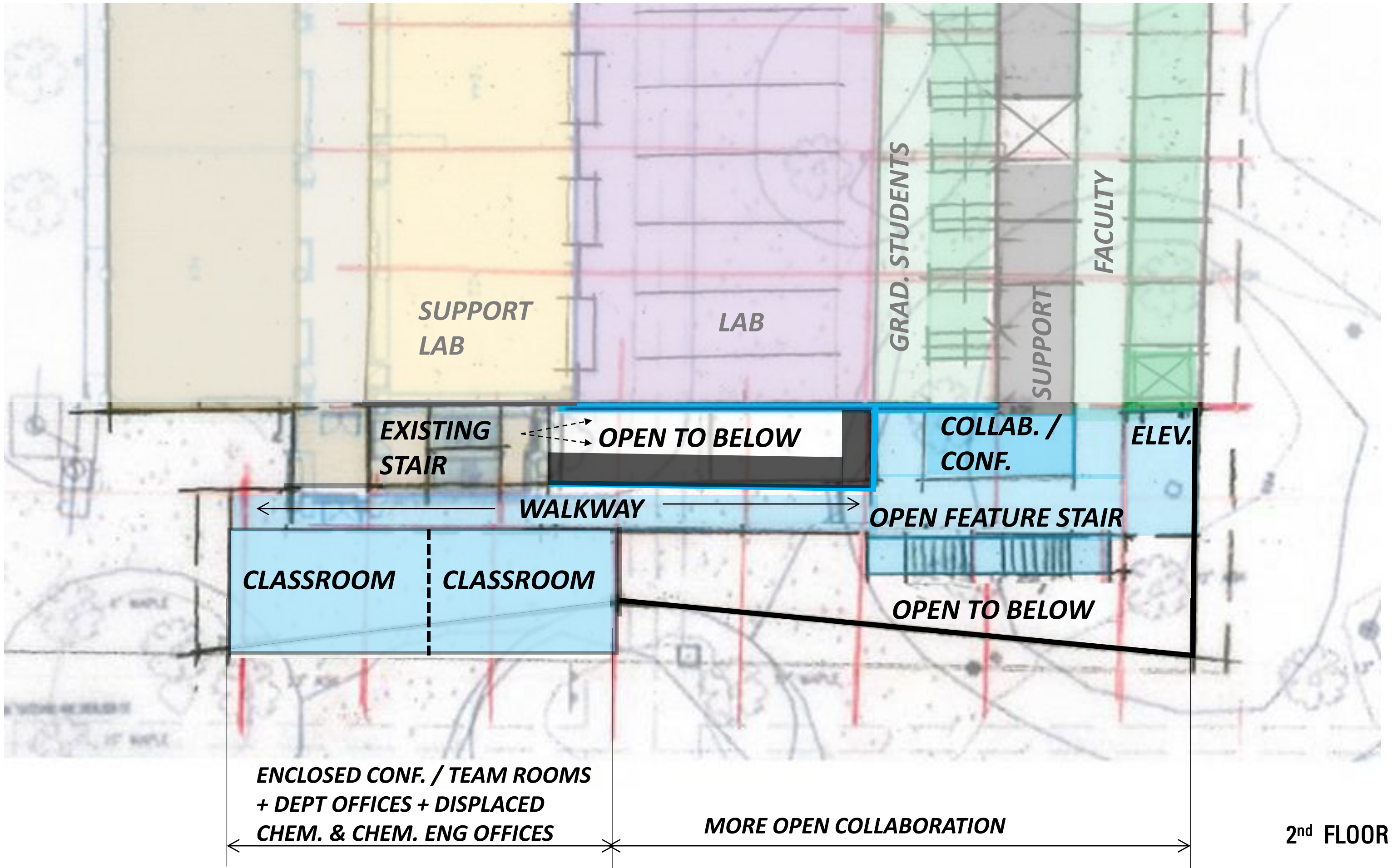
SITE ANALYSIS

GRAPHIC SCALE
 0 15 30 60
 (IN FEET)
 1 inch = 30 ft.

Conceptual Design







SUPPORT LAB

LAB

GRAD. STUDENTS

SUPPORT

FACULTY

EXISTING STAIR

OPEN TO BELOW

COLLAB. / CONF.

ELEV.

WALKWAY

OPEN FEATURE STAIR

CLASSROOM

CLASSROOM

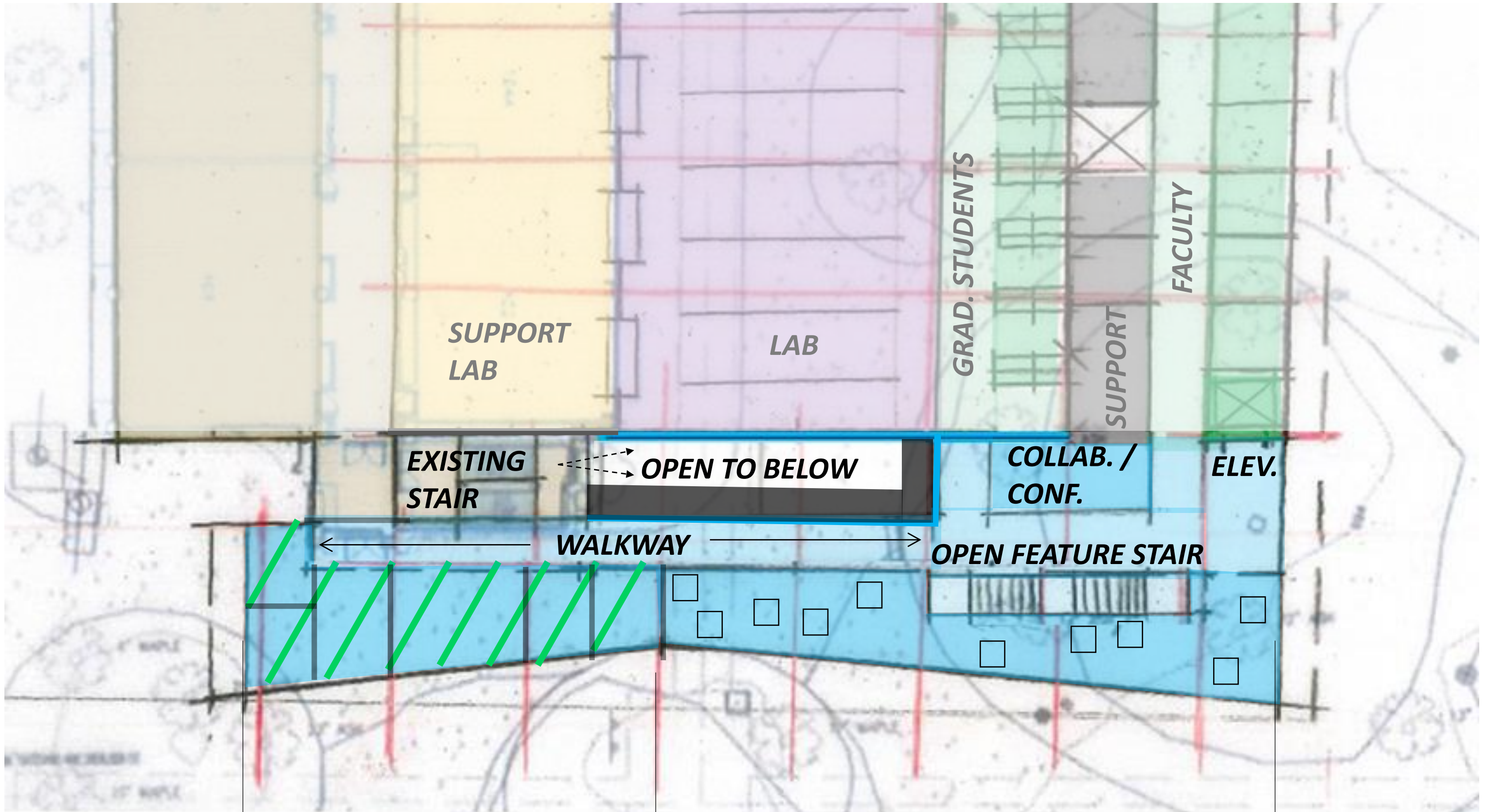
OPEN TO BELOW

*ENCLOSED CONF. / TEAM ROOMS
+ DEPT OFFICES + DISPLACED
CHEM. & CHEM. ENG OFFICES*

MORE OPEN COLLABORATION

2nd FLOOR

ALTERNATE COLLABORATIVE / LEARNING 'BAR' STUDY



**ENCLOSED CONF. / TEAM ROOMS
+ DEPT OFFICES + DISPLACED
CHEM. & CHEM. ENG OFFICES**

MORE OPEN COLLABORATION

3RD – 7TH FLOOR

ALTERNATE COLLABORATIVE / LEARNING 'BAR' STUDY

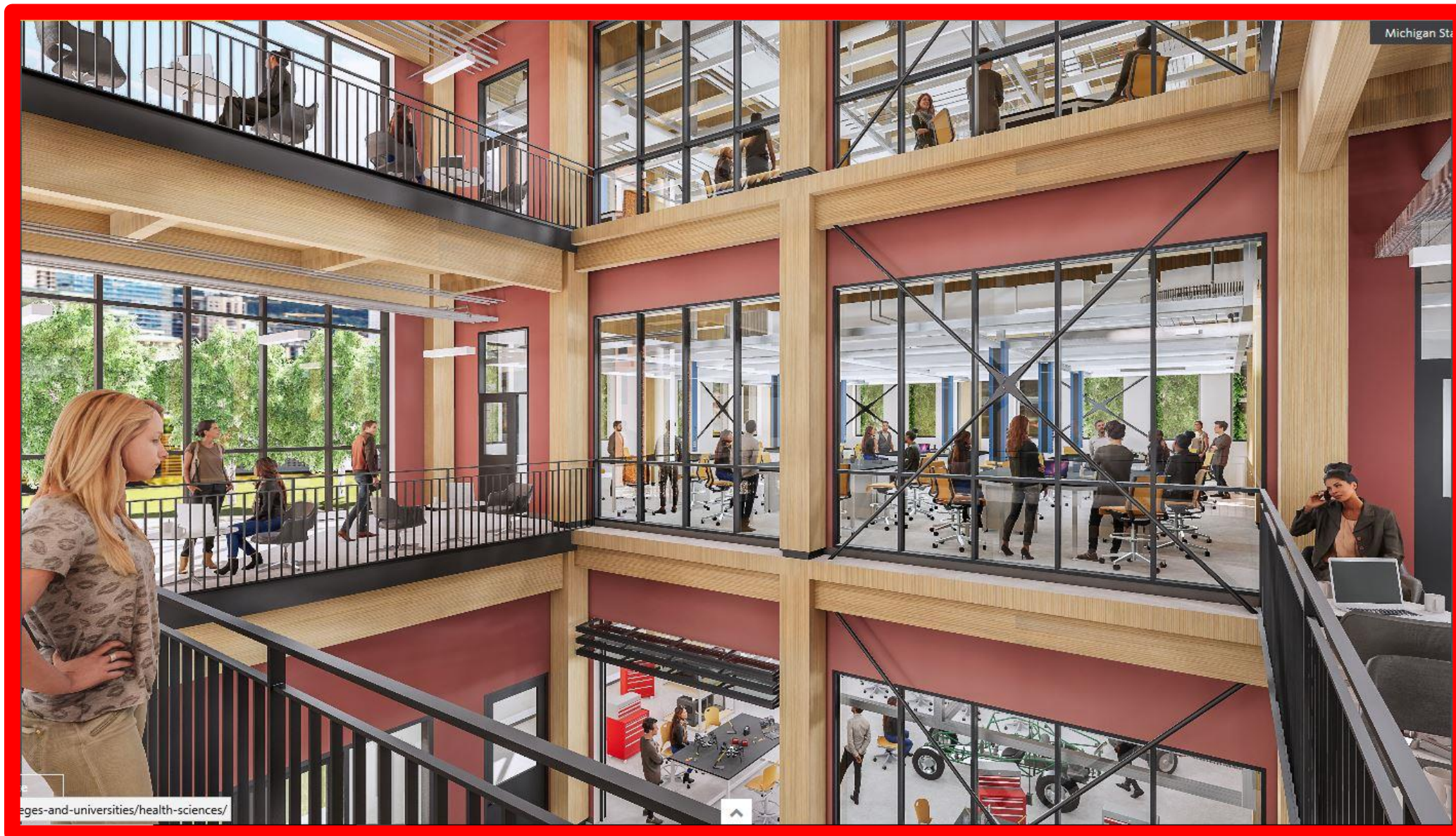
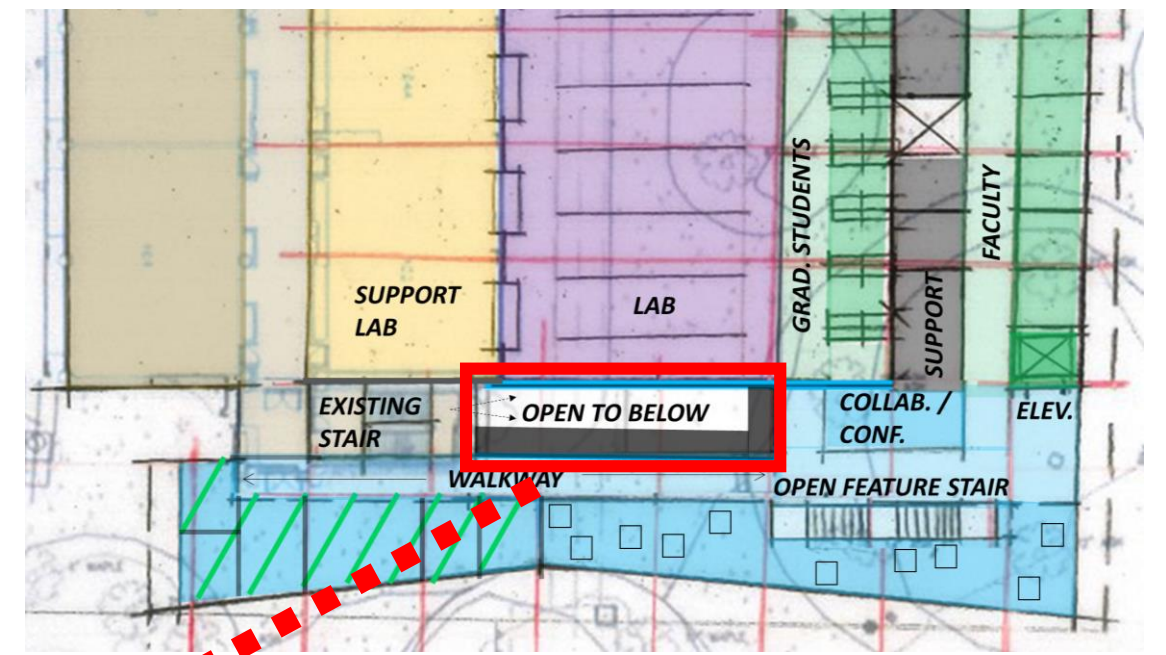




2ND FLOOR CLASSROOMS

HED

ALTERNATE COLLABORATIVE / LEARNING 'BAR' STUDY



ALTERNATE COLLABORATIVE / LEARNING 'BAR' STUDY

Potential Additional Scope Items

- ANIMAL CARE SPACE
- 5TH AND 6TH FLOOR TEACHING LABS RENOVATED
- MECHANICAL UPDATES /'FIXES' TO EXISTING BUILDING
- PARTIALLY CONDITIONED WALKWAY CONNECTOR
- LOBBY AT WEST PARKING LOT

An aerial photograph of a university campus, likely during autumn, with various buildings, parking lots, and green spaces. The text "Thank You" is centered over the image. The campus features several large, multi-story buildings with brick and light-colored facades. There are numerous parking lots filled with cars, and several green spaces with trees, some of which have turned yellow and orange. The background shows a densely wooded hillside under a clear sky.

Thank You