

Pennsylvania State University
Eberly College of Science Facilities Master Plan

November 12, 2008

Planning Goals

Develop an Eberly College of Science facilities master plan to:

- Address the critical facility issues and meet the long term program objectives of the college
- Integrate the college needs into the University Park Master Plan
- Outline a phased execution strategy
- Guide decision making to ensure stewardship of the University's physical and fiscal assets

Planning Guidelines

Improve research environment

Improve undergraduate learning environment

Attract and retain top talent

Allow for potential growth

Preserve and enhance adjacencies

Enhance collaboration and cross-disciplinary discovery

Preserve and enhance the quality of the campus environment

Develop solutions that relocate research labs once, not twice

Current Issues

Accumulated deferred maintenance

Obsolete research and teaching labs

Need for swing space to allow renovation

Challenges of renovation

Space to accommodate growth

Space for undergraduate laboratory instruction

Immediate needs for Physics, BMB, Biology

Existing Conditions

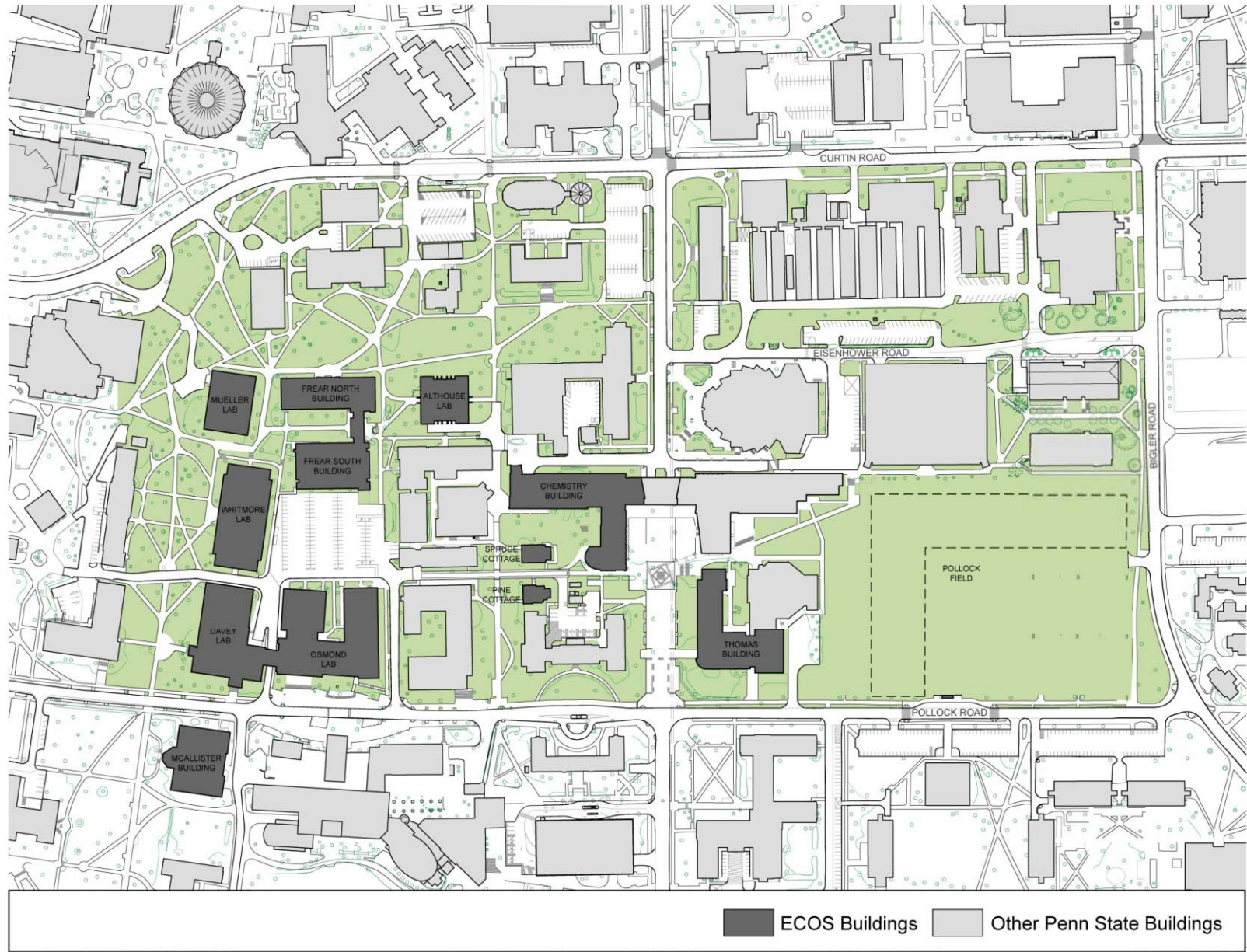
ECOS Buildings

Building Use by Departments

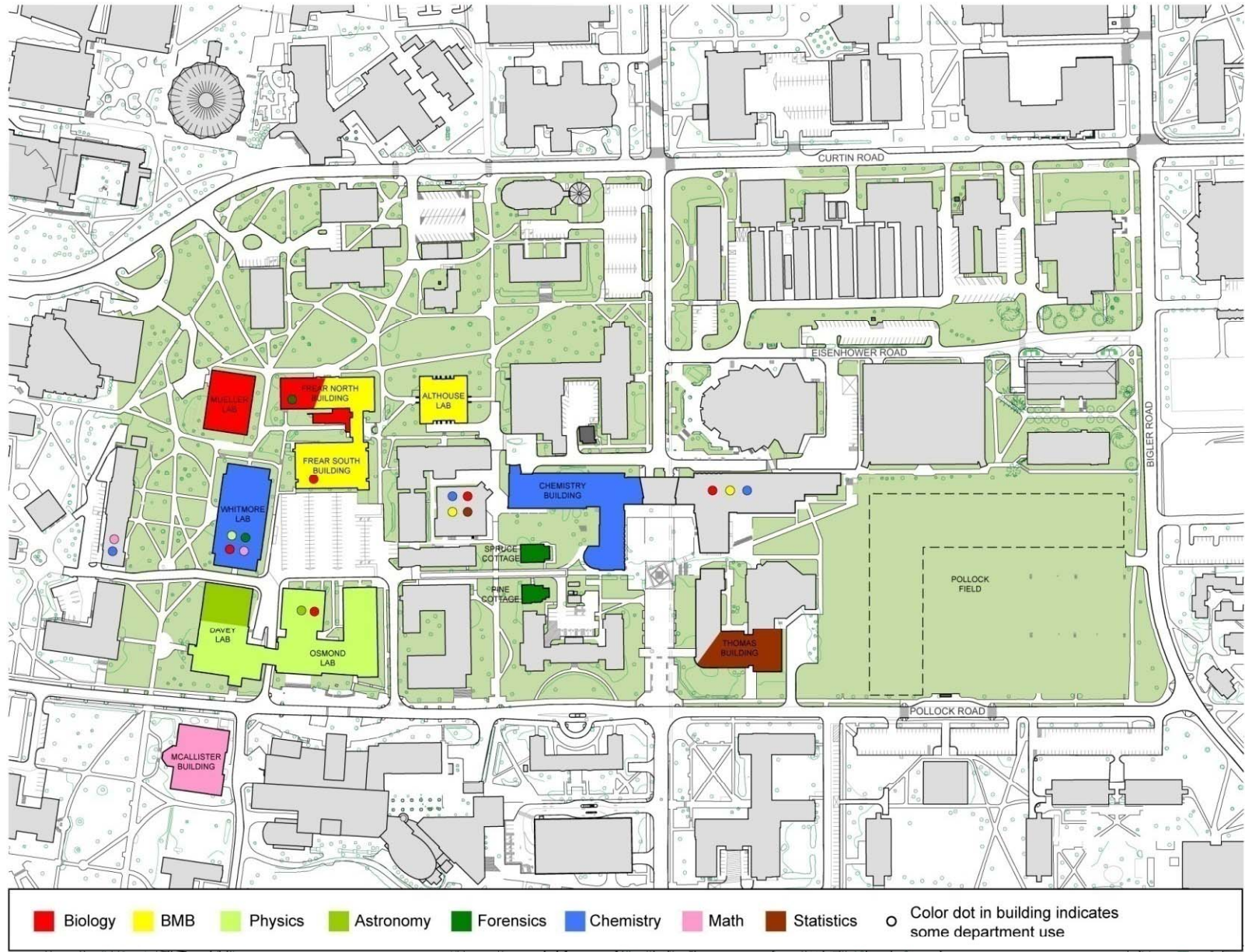
Facility Condition Needs Index

Departments With the Greatest Need

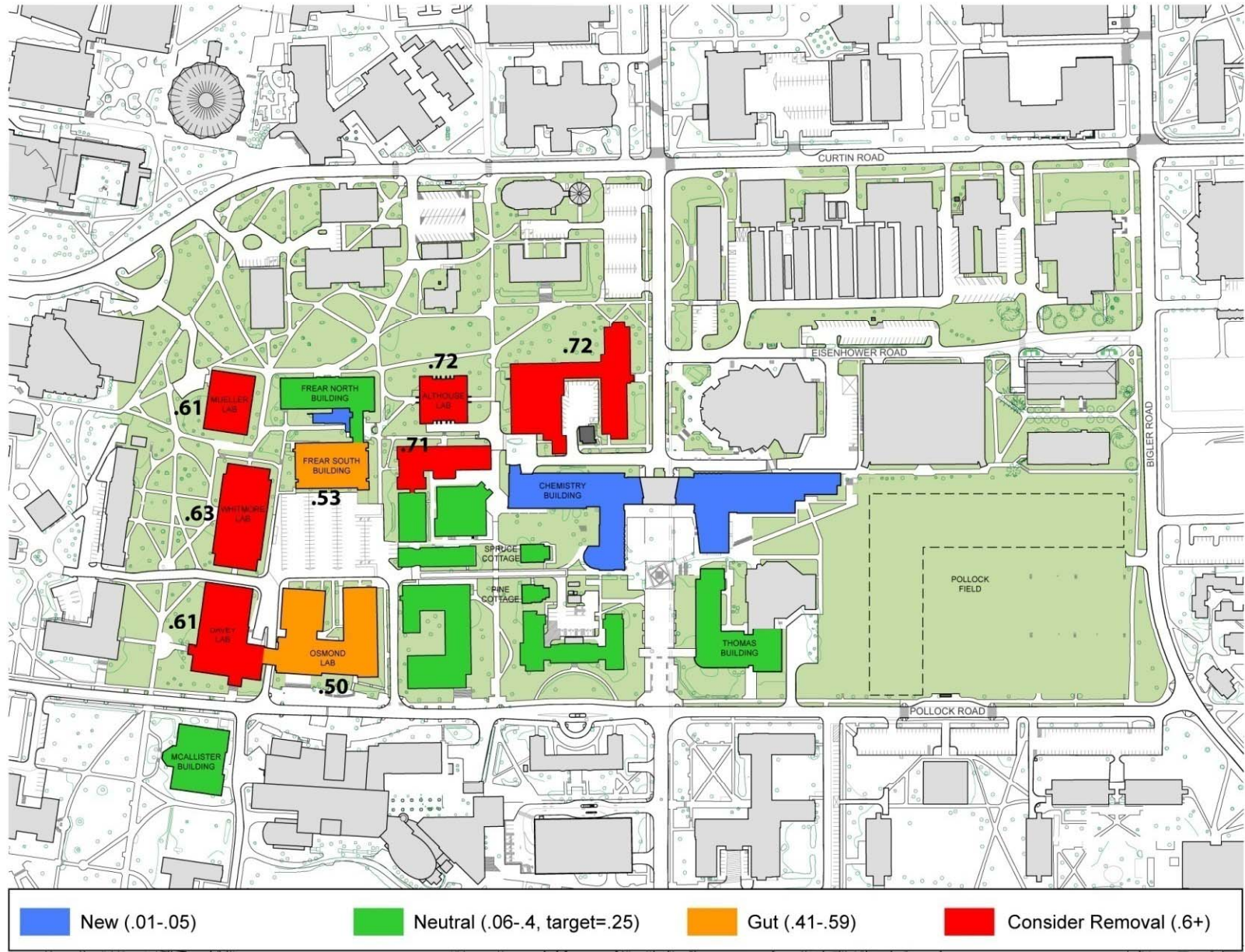
ECOS Buildings



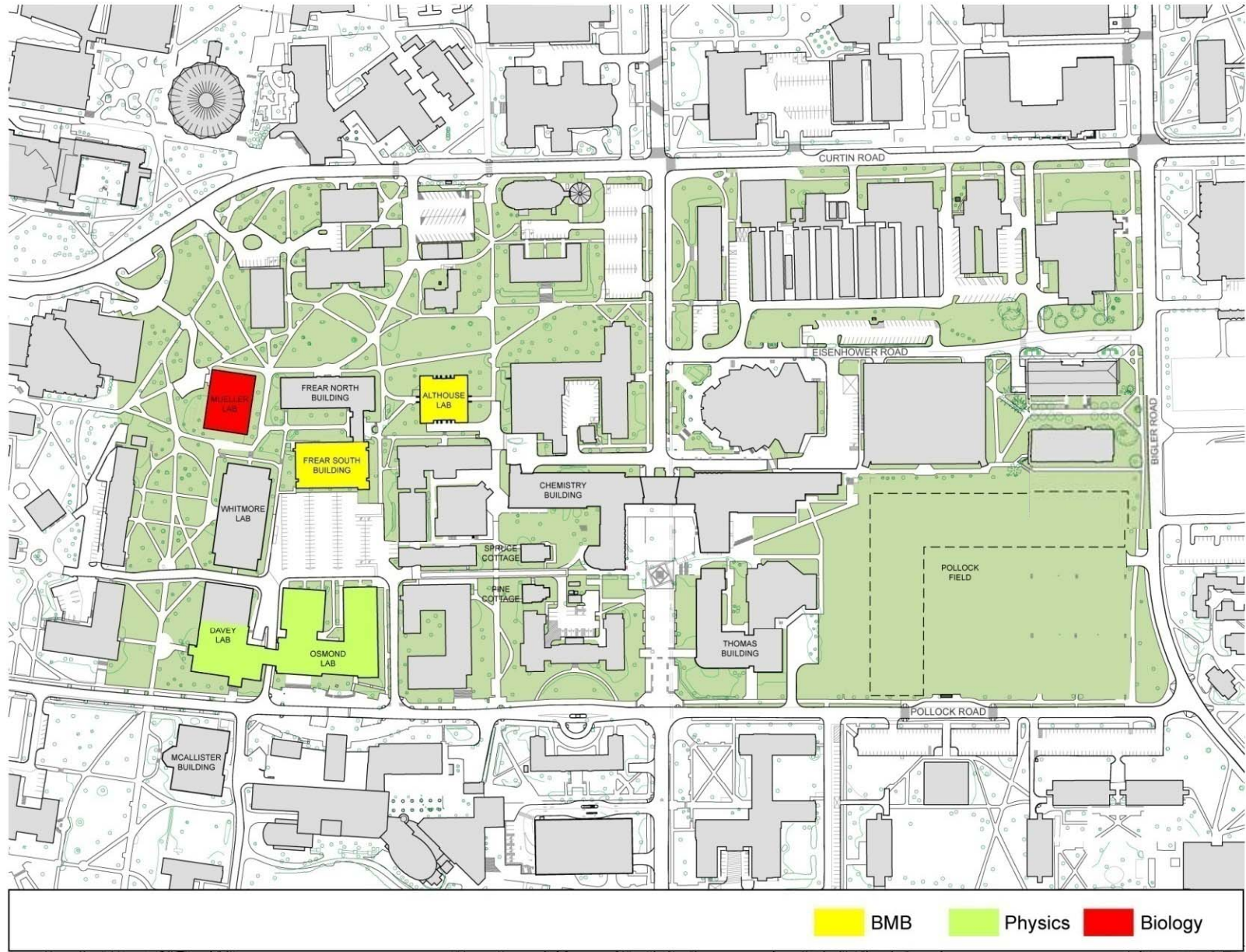
Building Use by Departments



Facility Condition Needs Index



Departments with the Greatest Need



Departmental Data

Departmental Assignable Square Footage

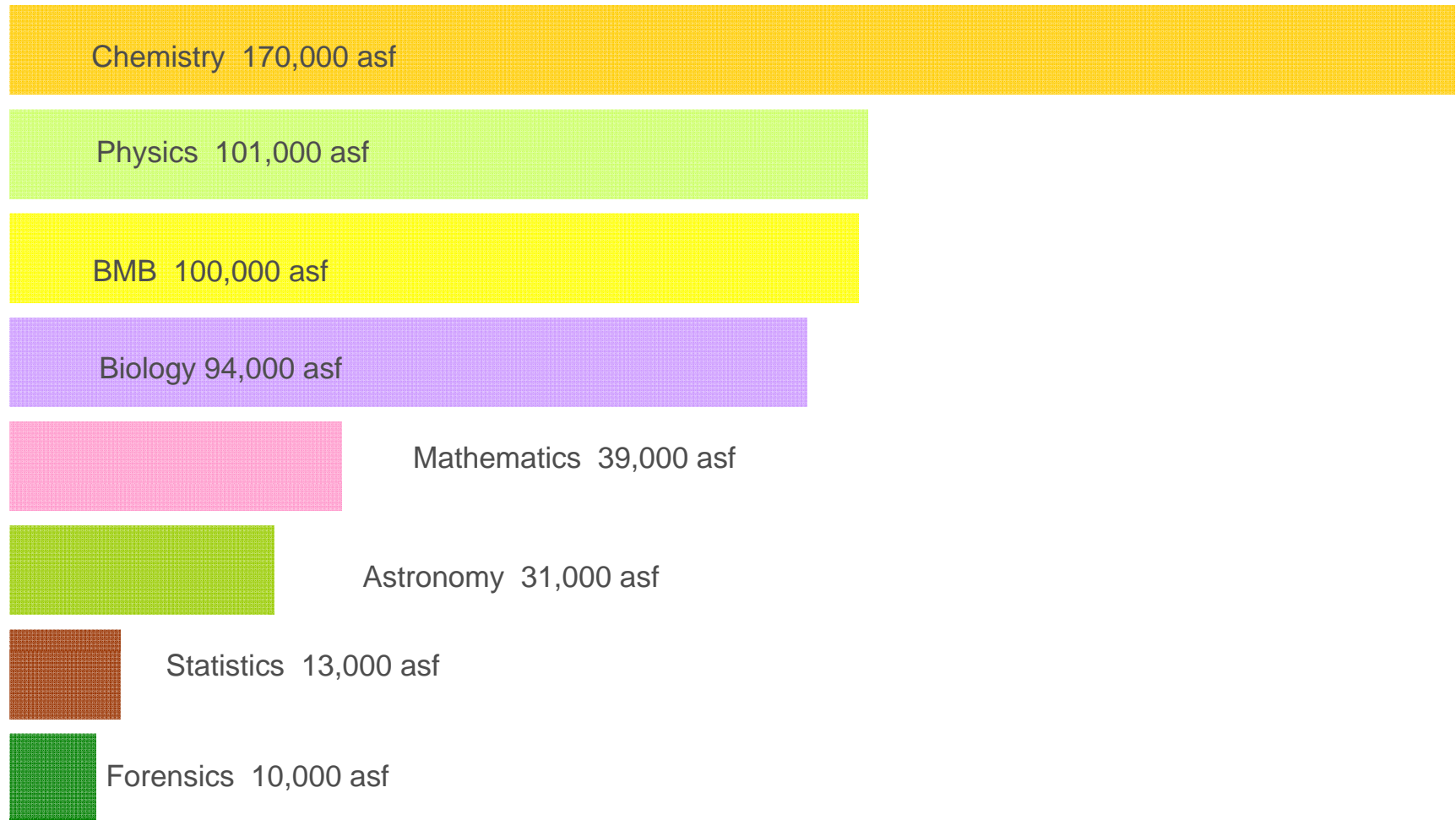
Existing Assignable Square Footage

Growth Assumptions

Long Term Growth Assignable Square Footage

Departmental Assignable Square Footage

Includes space in Life Sciences, Wartik, Torsell, etc.



Existing Assignable Square Footage

	<i>Total ASF</i>	<i>Research ASF</i>	<i>Teaching ASF</i>
Chemistry	170,000	142,400	27,600
Physics	101,000	89,600	11,400
BMB	100,000	83,100	16,900
Biology	94,000	84,000	10,000
Mathematics	39,000	38,600	400
Astronomy	31,000	29,400	1,600
Statistics	13,000	12,300	700
Forensic Science	10,000	3,000	7,000
	<hr/> 558,000	482,400	75,600

Growth Assumptions

Factors contributing to needs for growth:

- Existing unmet needs for research and teaching space
- Modern instruction requires smaller sections, more support space, and more flexible teaching spaces
- Modern research requires space for more instrumentation and support areas
- Space quality and quantity constraints are an obstacle in attracting and retaining faculty
- Every department must hire new faculty to maintain academic excellence
- Research program success requires additional space even without hiring new faculty

Long term planning assumption: Departmental growth of 25%

Long Term Growth Assignable Square Footage

	<i>Total ASF</i>	<i>Research ASF</i>	<i>Teaching ASF</i>
Chemistry	212,500	178,000	34,500
Physics	141,000	112,000	29,000
BMB	125,000	103,875	21,125
Biology	138,000	105,000	33,000
Mathematics	48,750	48,250	500
Astronomy	40,750	36,750	4,000
Statistics	32,075	15,375	16,700
Forensic Science	12,500	3,750	8,750
	<hr/>	<hr/>	<hr/>
	750,575	603,000	147,575
Existing ASF	558,000	482,400	75,600
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Projected Space Need	192,575	120,600	71,975

Projected needs include current space deficit

Campus Context

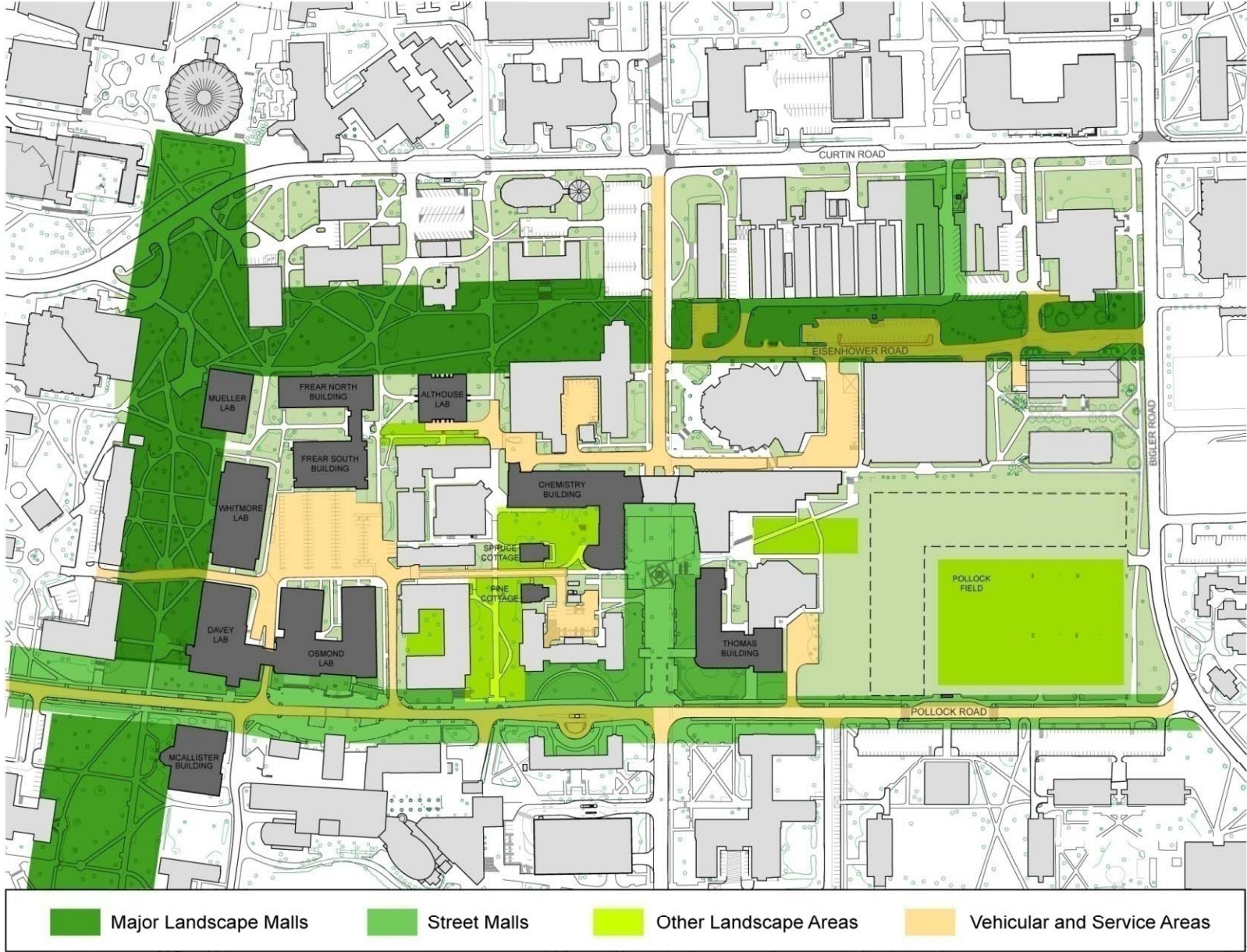
Open Space Structure

Campus Environment

Opportunity Sites

Building Opportunities

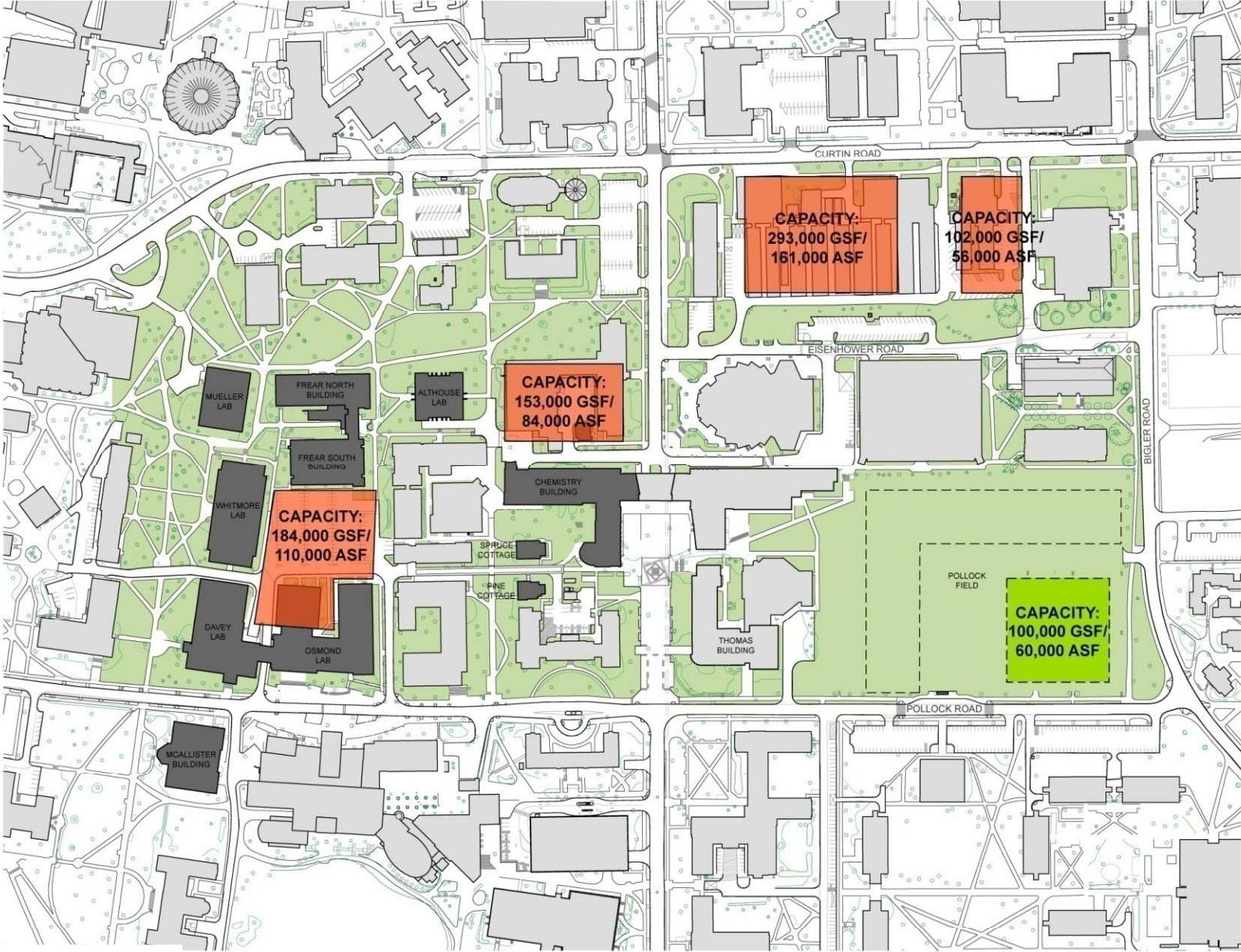
Open Space Structure



Campus Environment



Opportunity Sites



Building Opportunities

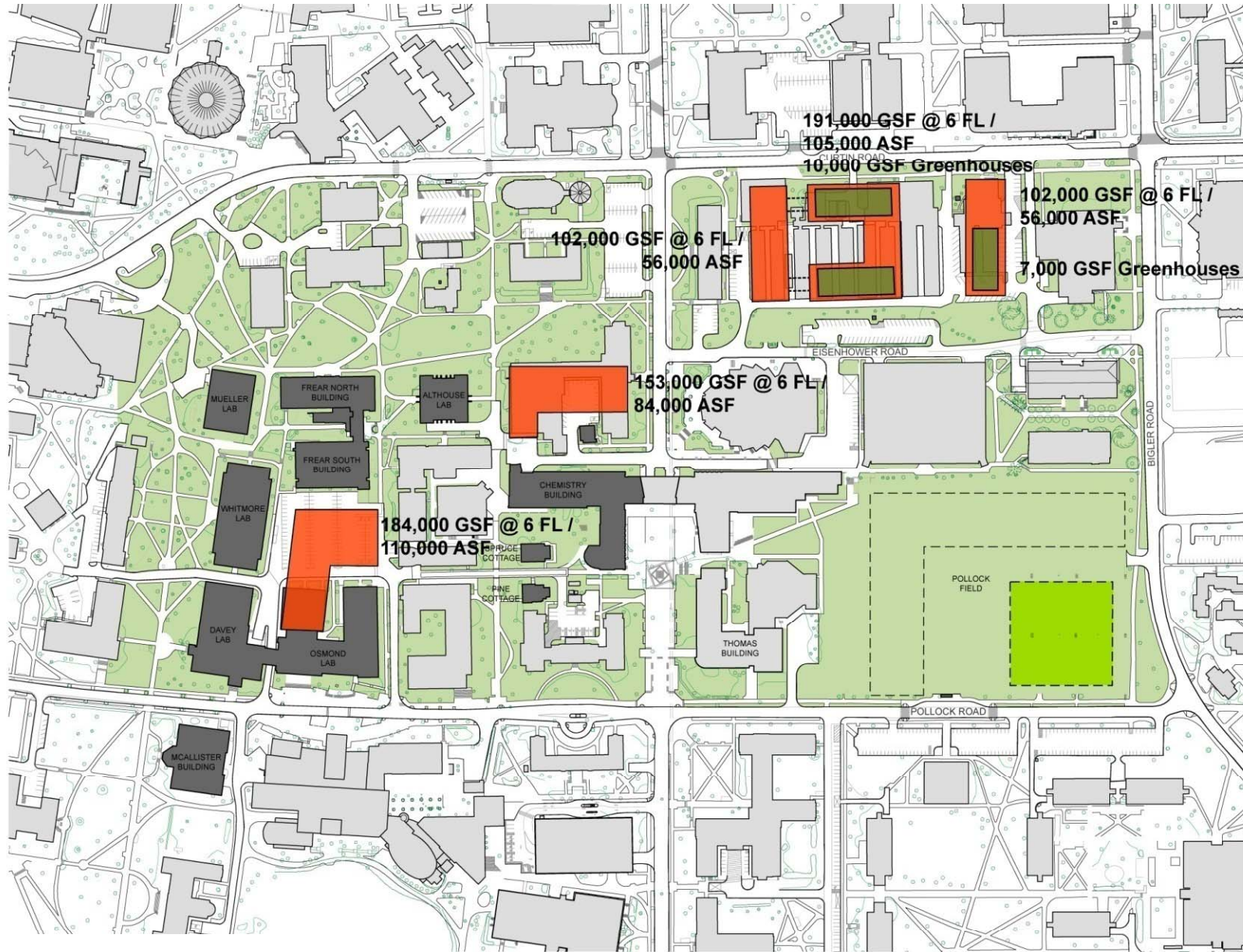


Figure 6, Opportunity Sites with Footprints

Schemes

BMB- Biology

Alternative 1- Greenhouse Site

Alternative 2- Fenske Site

Physics- Astronomy

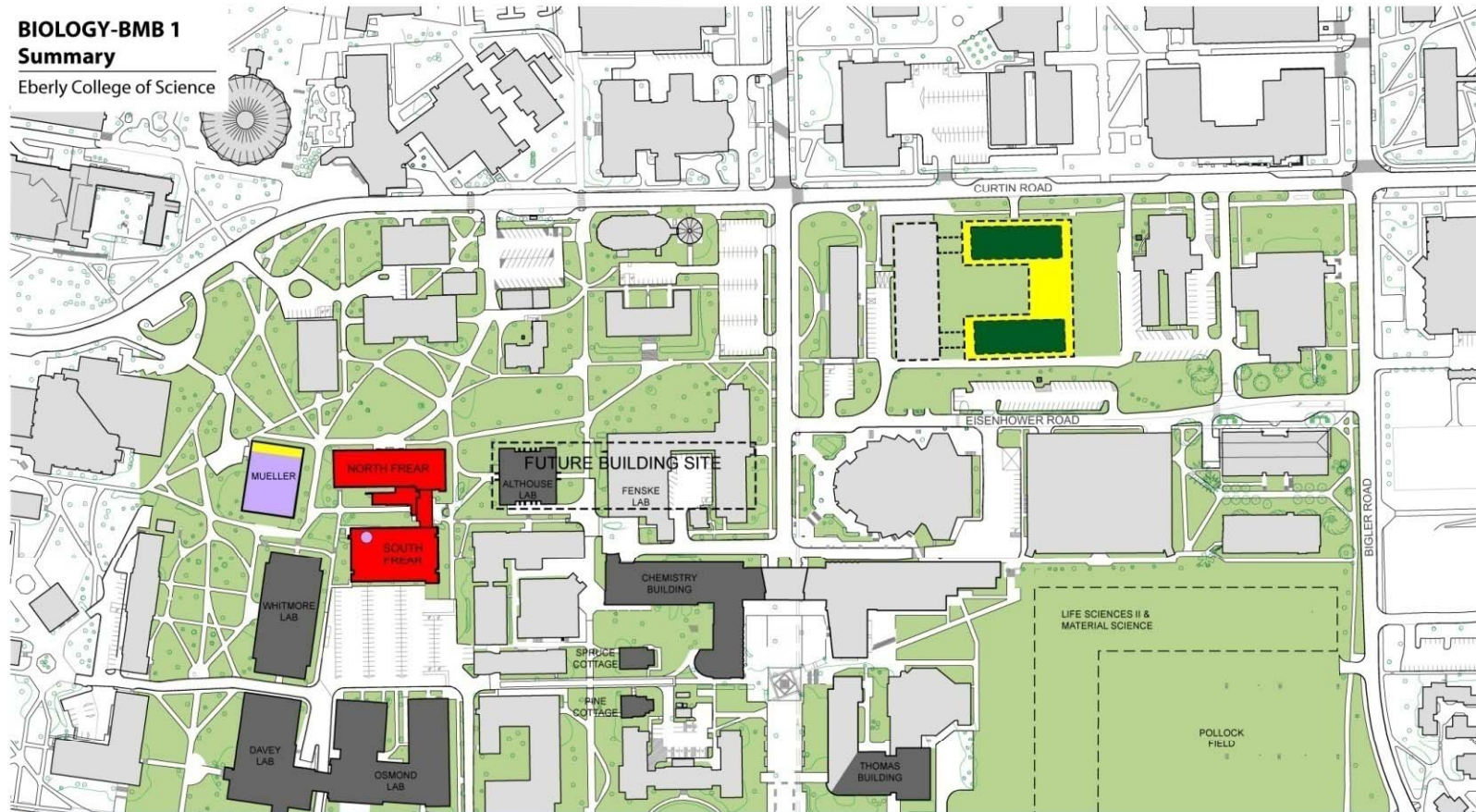
Osmond Parking Lot

BMB - Biology Alternative Plan 1

BIOLOGY-BMB 1

Summary

Eberly College of Science



1 Clear Greenhouse-Headhouse Site; demolition may be phased.

2 Build new 191,000 GSF/105,000 ASF Building @ 6 levels with 10,000 GSF of greenhouses on the roof; construction may be phased.

3 Relocate to new buildings:

● BMB from Althouse	32,000
● BMB from South Frear	44,000
● BMB from North Frear	20,000
● Part of BMB growth	9,000
	<hr/>
	105,000 ASF

Relocate to North Frear:

● Biology from South Frear	373 ASF
● Biology from Whitmore & Osmond	3,000 ASF
● and accommodate:	
● Biology Growth	18,000 ASF
	<hr/>
	21,000 ASF

Temporarily relocate 9,000 ASF LARP and Life Sci. Labs from South Frear to elsewhere.

4 Renovate South Frear (96,000 GSF/53,000 ASF).

5 Relocate to South Frear:

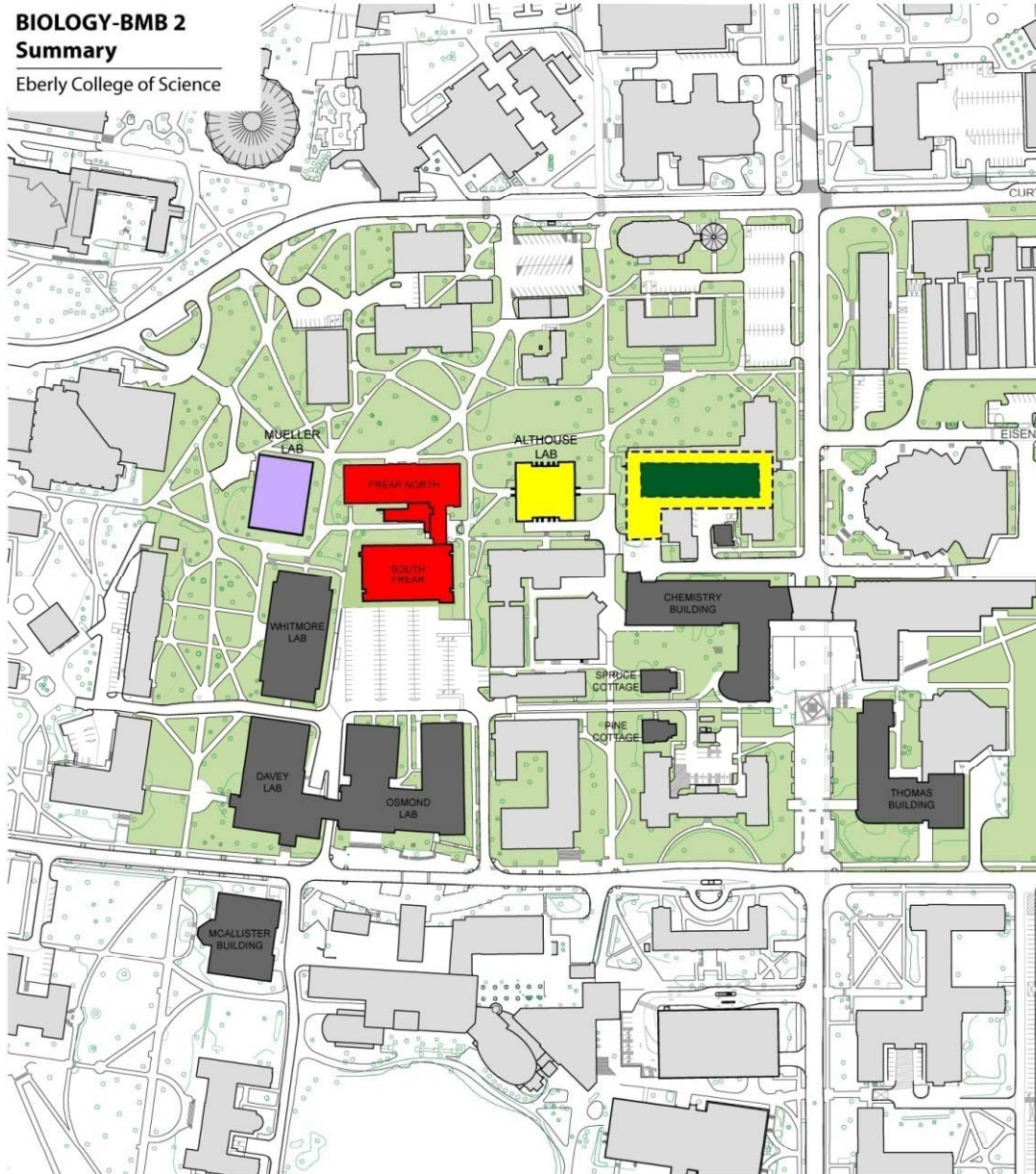
● Biology from Mueller	50,000 ASF
● remaining surplus in S. Frear	3,000 ASF
	<hr/>
	96,000 GSF / 53,000 ASF

6 Renovate Mueller for 15,000 ASF BMB growth, 9,000 ASF LARP and Life Sci. Labs, and other ECOS or campus uses.

7 Consider demolishing Althouse to create a new building site or retain Althouse for University use.

BMB - Biology Alternative Plan 2

BIOLOGY-BMB 2 Summary Eberly College of Science



- 1 Relocate Chemical Engineering & Raze Fenske Laboratory (100,000 GSF/55,000 ASF).
Build new BMB building (153,000 GSF/84,000 ASF) with 12,000 GSF greenhouses on roof.
- 2 Move to new building:

● BMB from South Frear	44,000
● BMB from Althouse	33,000
● BMB from North Frear	5,000
● Part of BMB Growth	2,000
	84,000 ASF

Temporarily relocate 9,000 ASF LARP and Life Science Lab Space from South Frear
- 3 Renovate South Frear (97,000 GSF/53,000 ASF).
Renovate Althouse Lab (64,000 GSF/35,000 ASF).
- 4 Move to renovated South Frear:

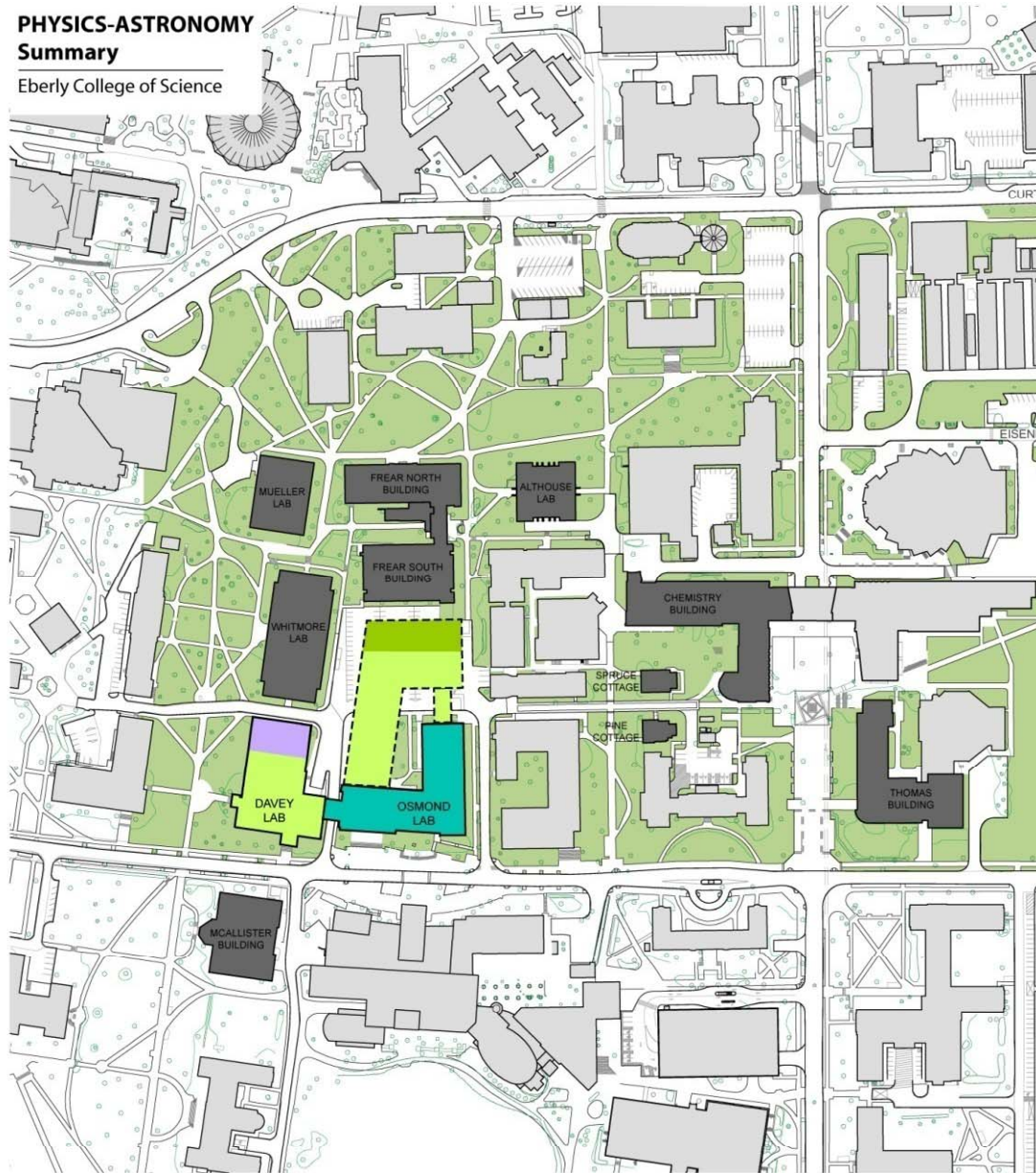
● Biology from Mueller Lab	50,000
● Biology from Whitmore	2,000
● Biology from Osmond	1,000
	53,000 ASF
- 5 Renovate Mueller Lab (97,000 GSF/53,000 ASF)
- 6 Accommodate the balance of BMB growth (22,000 ASF) and displaced LARP and Life Sci. Labs (9,000 ASF) in either renovated Mueller or Althouse Lab.
 - Reuse 57,000 ASF of Mueller and Althouse for ECOS growth
 - Accommodate 18,000 ASF biology growth in North Frear in 20,000 ASF vacated by BMB

Preferred Plan for Physics - Astronomy

PHYSICS-ASTRONOMY

Summary

Eberly College of Science



1 Replace Osmond parking (120 spaces)
Relocate classroom space from Osmond west wing and raze west wing.

2 Build new physics/astronomy building on Osmond parking site, linked to Osmond Lab. (184,000 GSF/110,000 ASF @ 6 levels).

3 Move to new building on parking lot:

● Astronomy from Davey	21,000
● Physics from Davey	39,000
● Part of physics from Osmond	24,000

and accommodate:

● Part of Physics growth	13,000
● Astronomy growth	7,000
● Swift Mission on campus	6,000

110,000 ASF

Temporarily relocate elsewhere:

PAMS Library (22K) from Davey

4 Renovate Davey Laboratory (150,000 GSF/82,000 ASF)

5 Move to renovated Davey Laboratory:

● Remaining physics from Osmond	37,000
● Physics from Whitmore	4,000
● PAMS Library	22,000
● Physics Growth	5,000

68,000 ASF

● Surplus remaining in Davey for ECOS growth or classroom space	14,000 ASF
	82,000 ASF

6 Renovate Osmond Laboratory for use as undergraduate science/University teaching center (76,000 ASF).

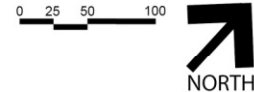
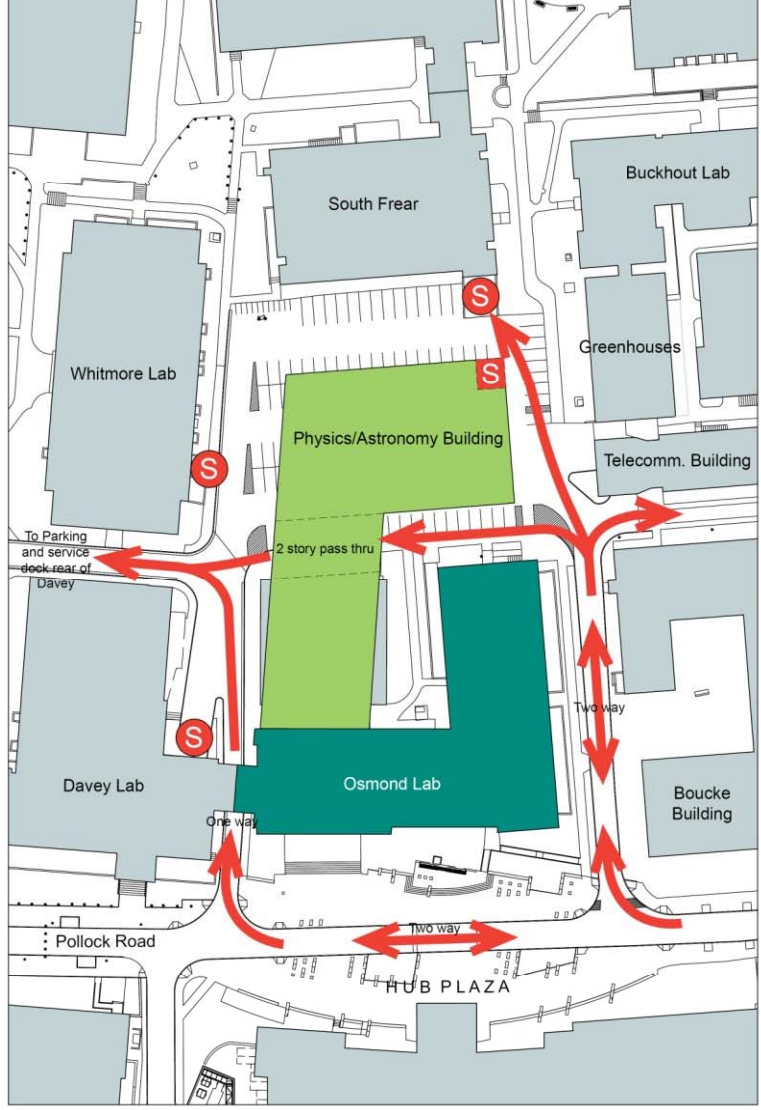
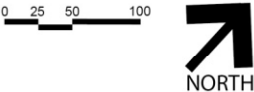
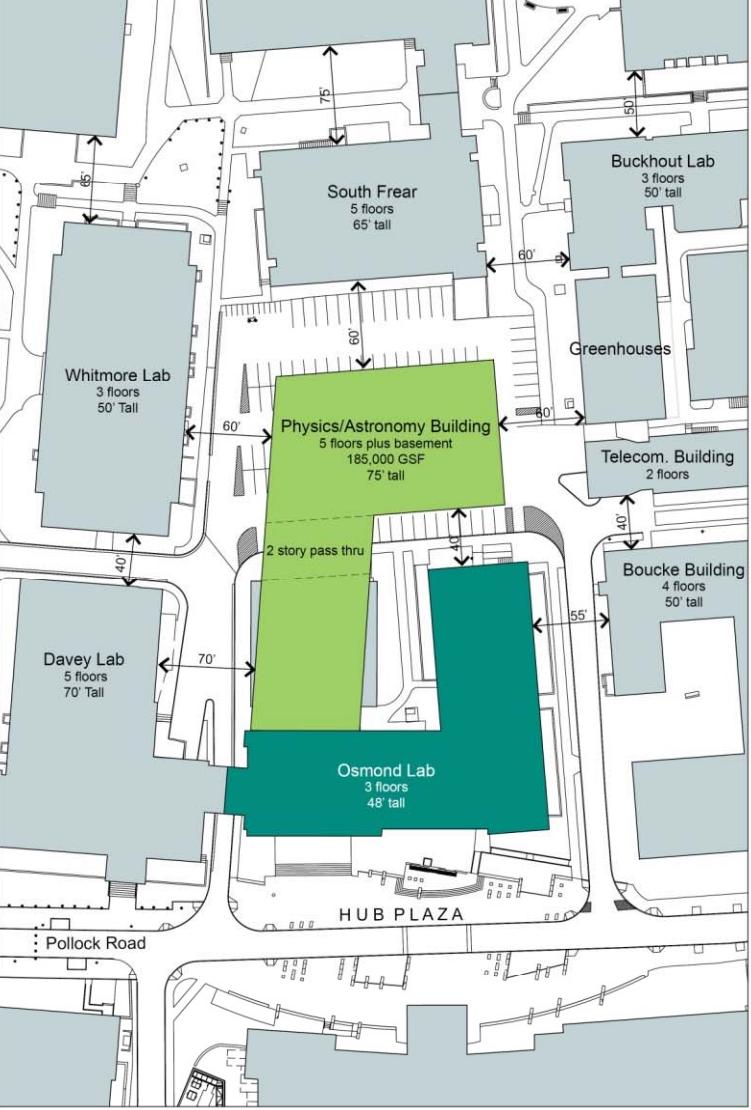
Physics/ Astronomy Building Opportunity Site Study

Site Analysis

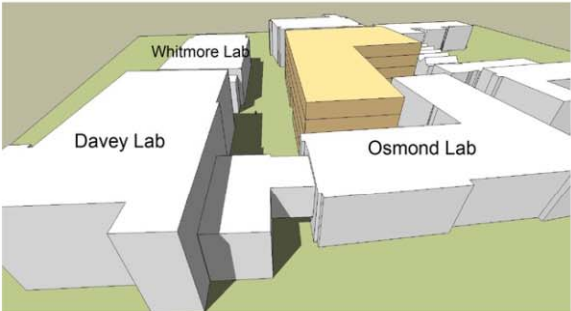
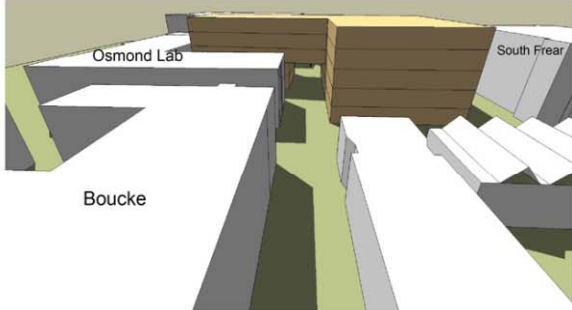
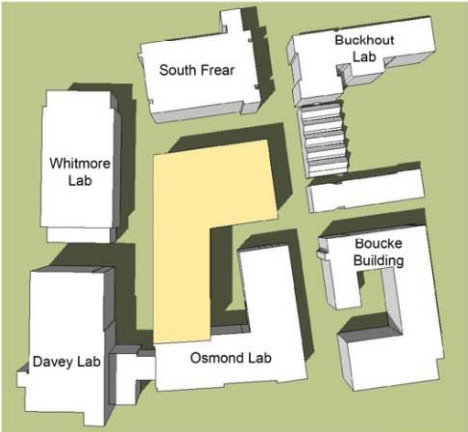
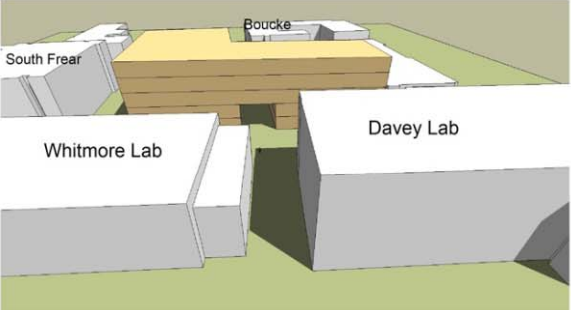
Massing

Existing Spatial Character

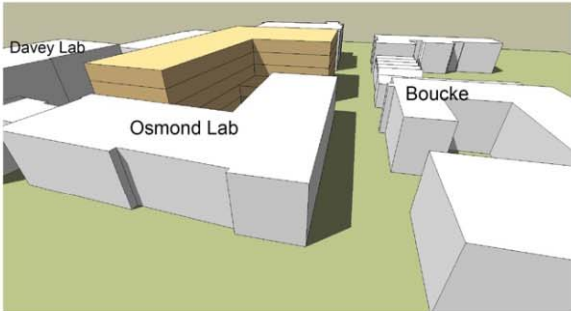
Site Analysis



Massing

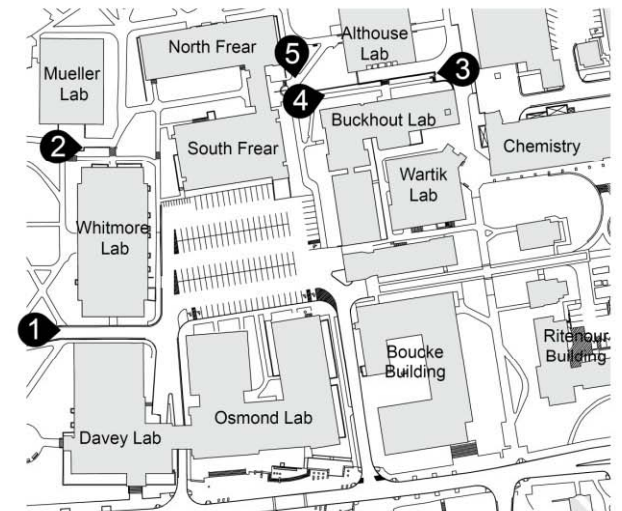
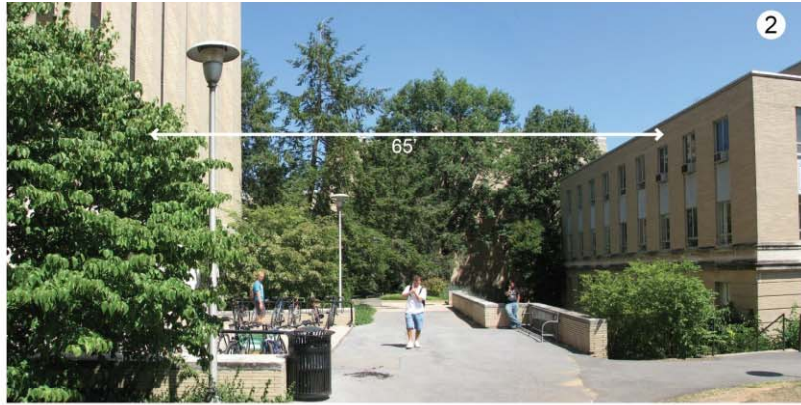
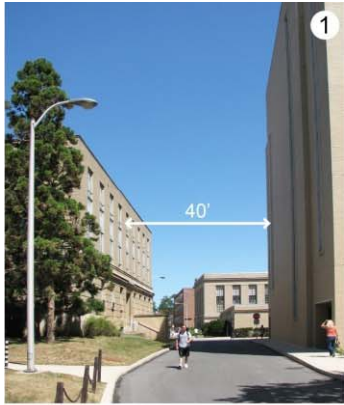


Shadows based on September 9 at noon



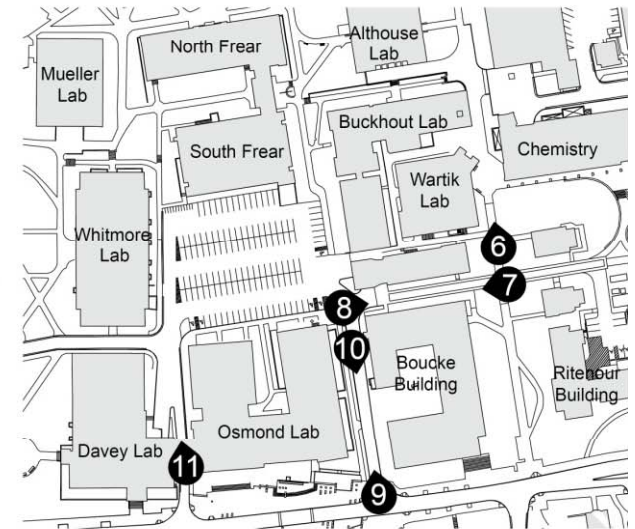
Massing
Physics / Astronomy Building Site Study

Existing Spatial Character



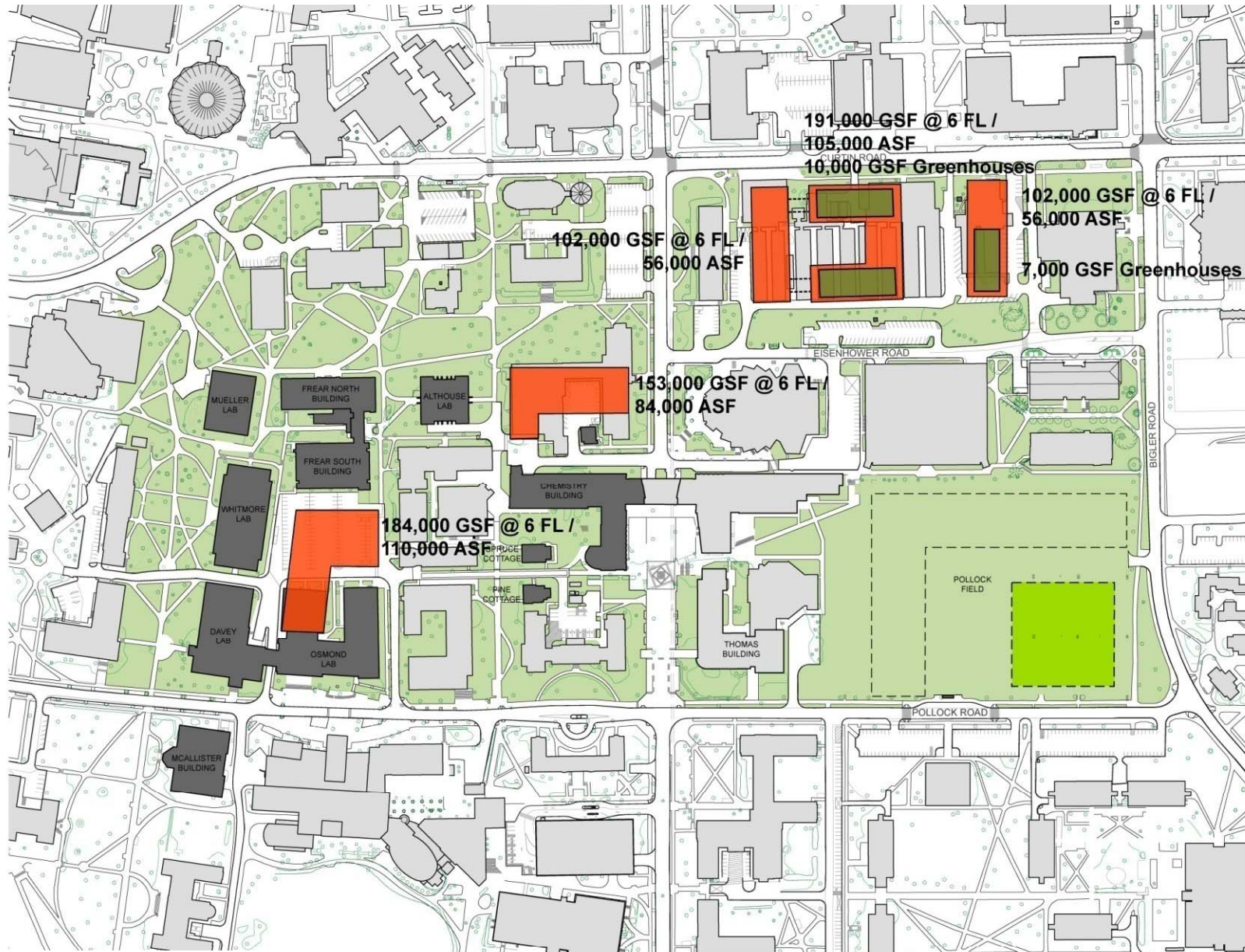
Existing Spatial Character
Physics / Astronomy Building Site Study

Existing Spatial Character



Existing Spatial Character
Physics / Astronomy Building Site Study

Refinements to the University Park Campus Master Plan



Conclusions

Long term vision for ECOS includes two new buildings and the reassignment, reallocation, and renovation of existing buildings to meet remaining needs

Advantages of the ECOS master plan:

- Research environment and capacity will be improved
- All major laboratory buildings will eventually be renovated
- Undergraduate teaching space will be improved
- Allows for modest growth
- Researchers only move once
- Physics and Astronomy adjacencies are maintained