

Massive open innovation space: Lehigh's game-changing reuse project for experiential learning, design, and prototyping

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Courtesy of CO Architects

Overview

Lehigh's Mountaintop Building C project:

- Background & history
- Goals & opportunities
- Experiences & lessons learned so far

... from the perspective of an academic (professor, department chair, initiative director, computer scientist) who provided some design input.



Lehigh University



- Founded in 1865
- Mid-size private university
- 3 adjacent campuses
- Arts & sciences + engineering + business
- 5k undergrads, 2k grads

Bethlehem Steel

a look at the new Bethlehem Steel



At Homer Laboratories, research programs are under way on all phases of steel manufacture from raw materials to finished products.

a new \$50 million research facility to develop even better steels

**At Homer Research Laboratories in Bethlehem, Pa.,
700 Bethlehem researchers are developing new steels, new steel products,
and new ways of making this most versatile of all metals**



Please don't misunderstand us. Research is not a new venture for Bethlehem Steel.

In many forms it's been part of our activities since our founding 60 years ago. A very successful part, too, as

proved by a lengthy list of steel products and processes we've developed.

What is new is that we've centralized the research activities we formerly conducted in a dozen widespread locations. Today the top of South Mountain in Bethlehem, Pa., is the scene of some of the world's most advanced steel research—a \$50 million investment in the future of steel.

Here at the Homer Research Laboratories engineers and scientists are

developing new and improved processes for producing steel at lower costs, and new steels for buildings, automobiles, appliances, containers and a host of other products.

This is the *new* Bethlehem Steel.

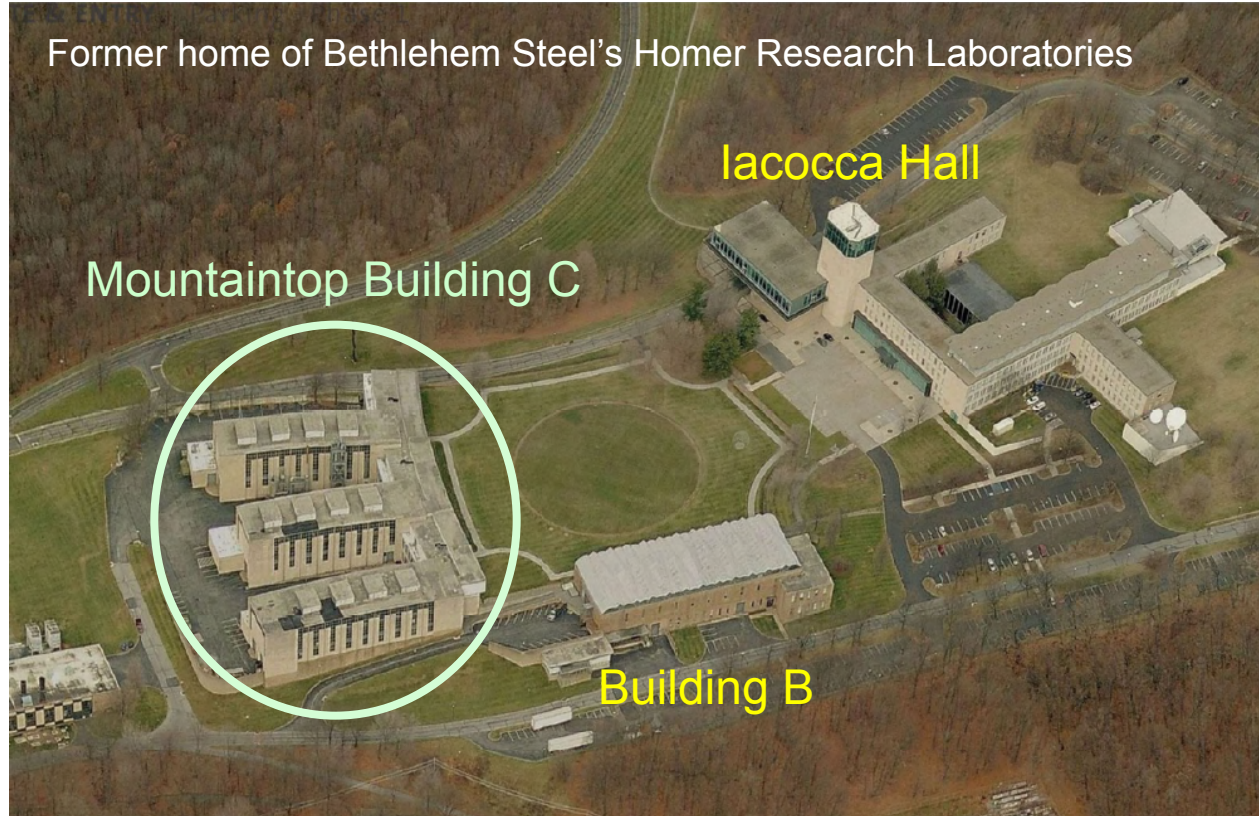


- Founded in 1904
- America's second-largest steel producer and largest shipbuilder
- Bankrupt in 2003

Magazine ad from 1966

Lehigh Mountaintop Campus

Former home of Bethlehem Steel's Homer Research Laboratories



Lehigh Mountaintop Building C



Photos taken May 2013

Lehigh Mountaintop Building C



Photos taken May 2013

Lehigh Mountaintop Building C



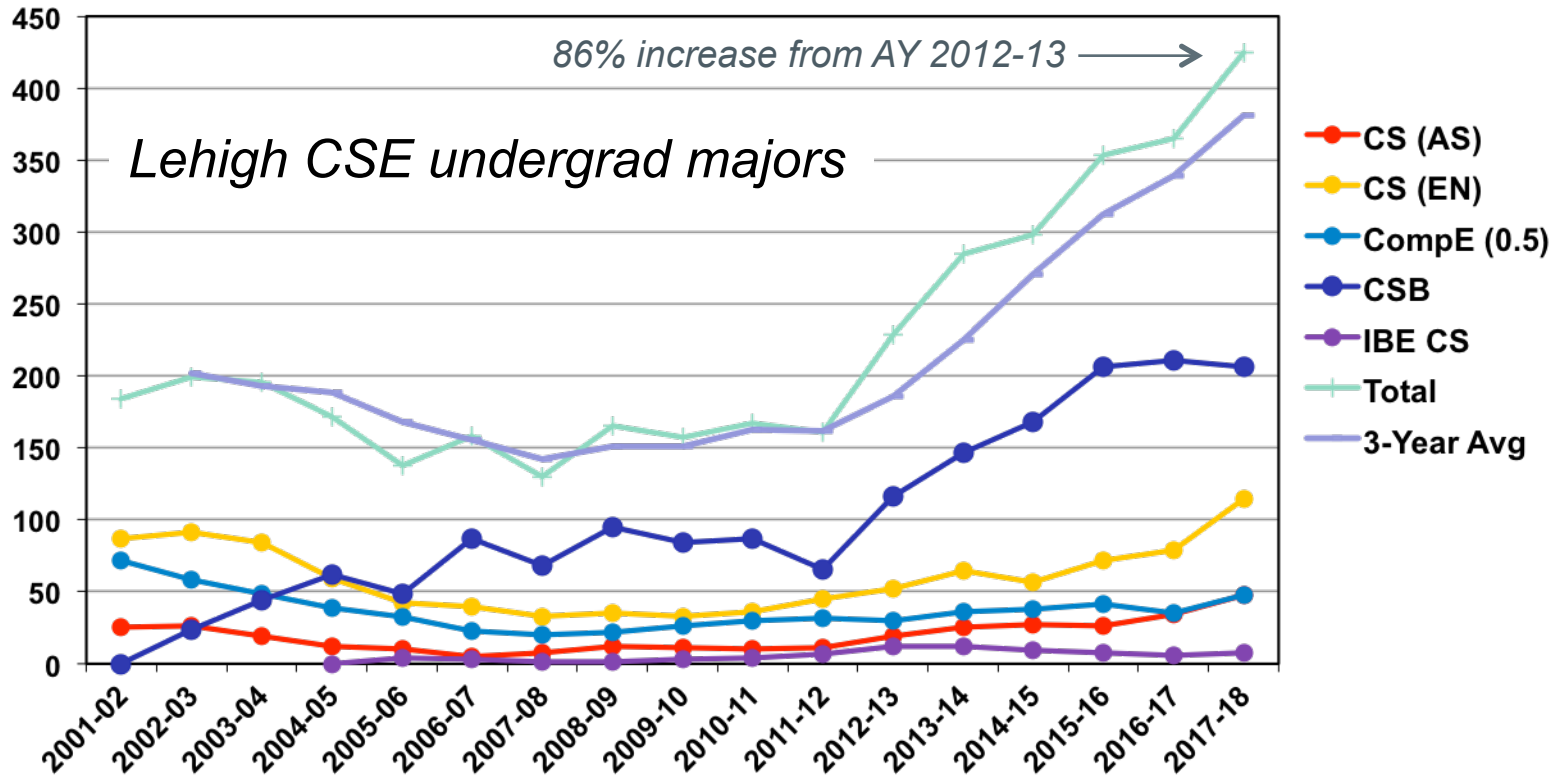
Photos taken May 2013

Summer Mountaintop Experience (2013-)



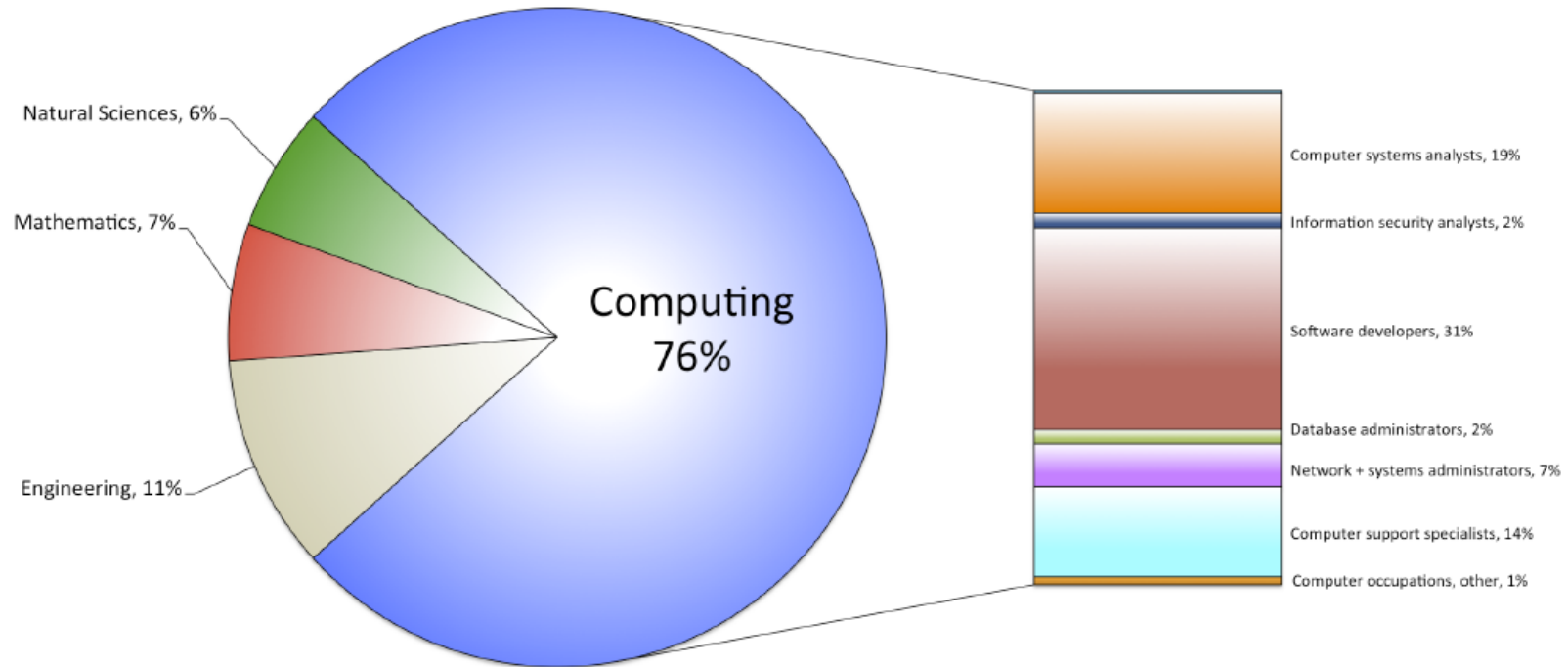
- Student-driven interdisciplinary projects
- Faculty serve as mentors
- 100-200 students each summer
- But only using part of the building: 1 or 2 high bays

Explosive Growth of Computer Science



Explosive Growth of Computer Science

US-BLS New STEM Job Projections Through 2024 By STEM %



Data Source: US-BLS Employment Projections (www.bls.gov/emp/ep_table_102.htm)

The Data X Initiative



Data X in a nutshell:

- Major investment in computing and data analytics at Lehigh.
- Significant number of new faculty positions in CSE and allied areas: Consumer Analytics, Digital Media, Connected Health.
- Plus synergistic faculty searches in other key fields.

Implementation:

- Initial rollout during AY 2015-16 faculty hiring season.
- Also: symposium and hackathon, innovation grants, seminars and brown bag lunches, regional receptions, industry engagement, campus computing infrastructure working group.

Data X + Building C

My first impressions of Building C:

- Completely unique space.
- Great place for a hackathon ...
- ... or for flying drones.
- Looked like someplace Google or Facebook would adapt into a cool, collaborative workspace.

Perfect location for an interdisciplinary initiative with computer science at core.



Requirements



- My personal requirements (as a building user / occupant, not a pro):
- Lots of open, collaborative space for students and faculty.
 - Permanent office space for 30 faculty and staff, 80 Ph.D. students.
 - Hotel office space for other visitors.
 - Unique classrooms – don't duplicate what we have elsewhere.
 - A “look” inspired by places our students will someday work.



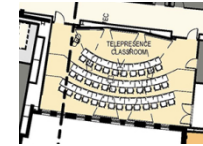
Entry Pavilion - Level 1

08/12/16

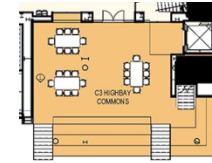
1/16" = 1'-0"

Use Legend

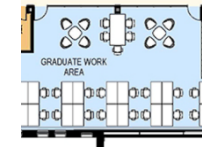
- Building Common Area
- Building Support
- Circulation
- Dry Research Lab
- Faculty/Student Support
- Office



Telepresence classroom (yellow)



Shared collaborative spaces (orange)



Grad student lab (blue)



High bay maker spaces (blue)



Faculty and staff offices (brown)

Entry Pavilion - Level 2

08/12/16

1/16" = 1'-0"

Use Legend

- Building Common Area
- Building Support
- Circulation
- Dry Research Lab
- Faculty/Student Support
- Office



Active Learning classroom (yellow)

Shared collaborative spaces (orange)

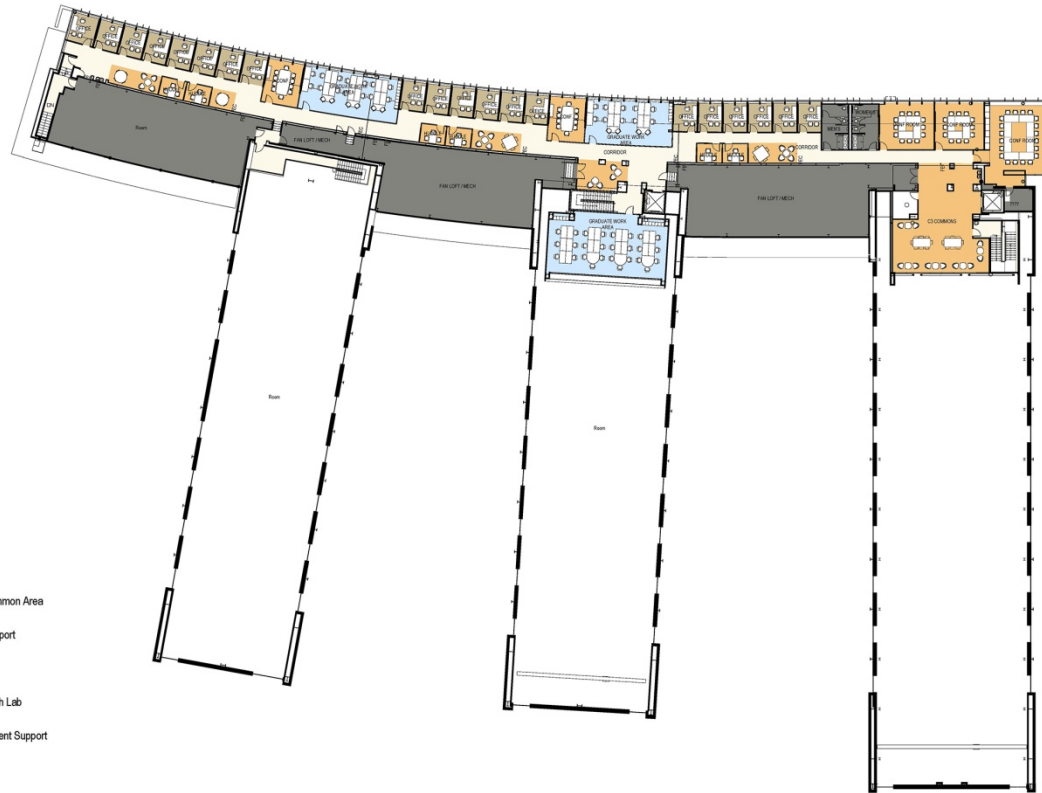
Grad student lab (blue)

Faculty and staff offices (brown)




Entry Pavilion - Level 3

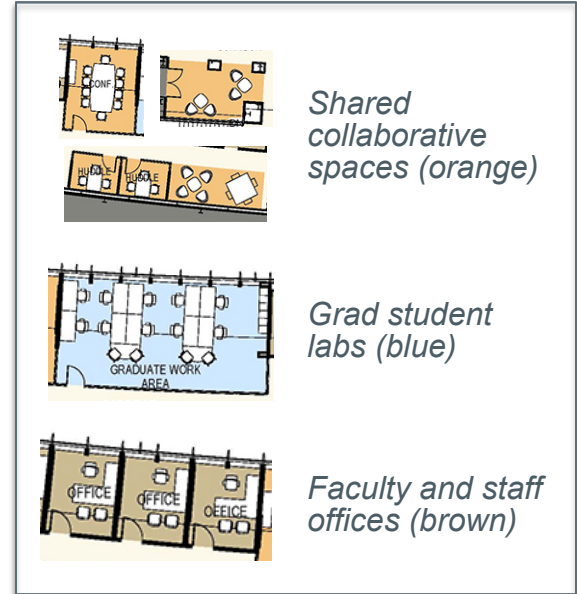
08/12/16

1/16" = 1'-0"



Use Legend

-  Building Common Area
-  Building Support
-  Circulation
-  Dry Research Lab
-  Faculty/Student Support
-  Office

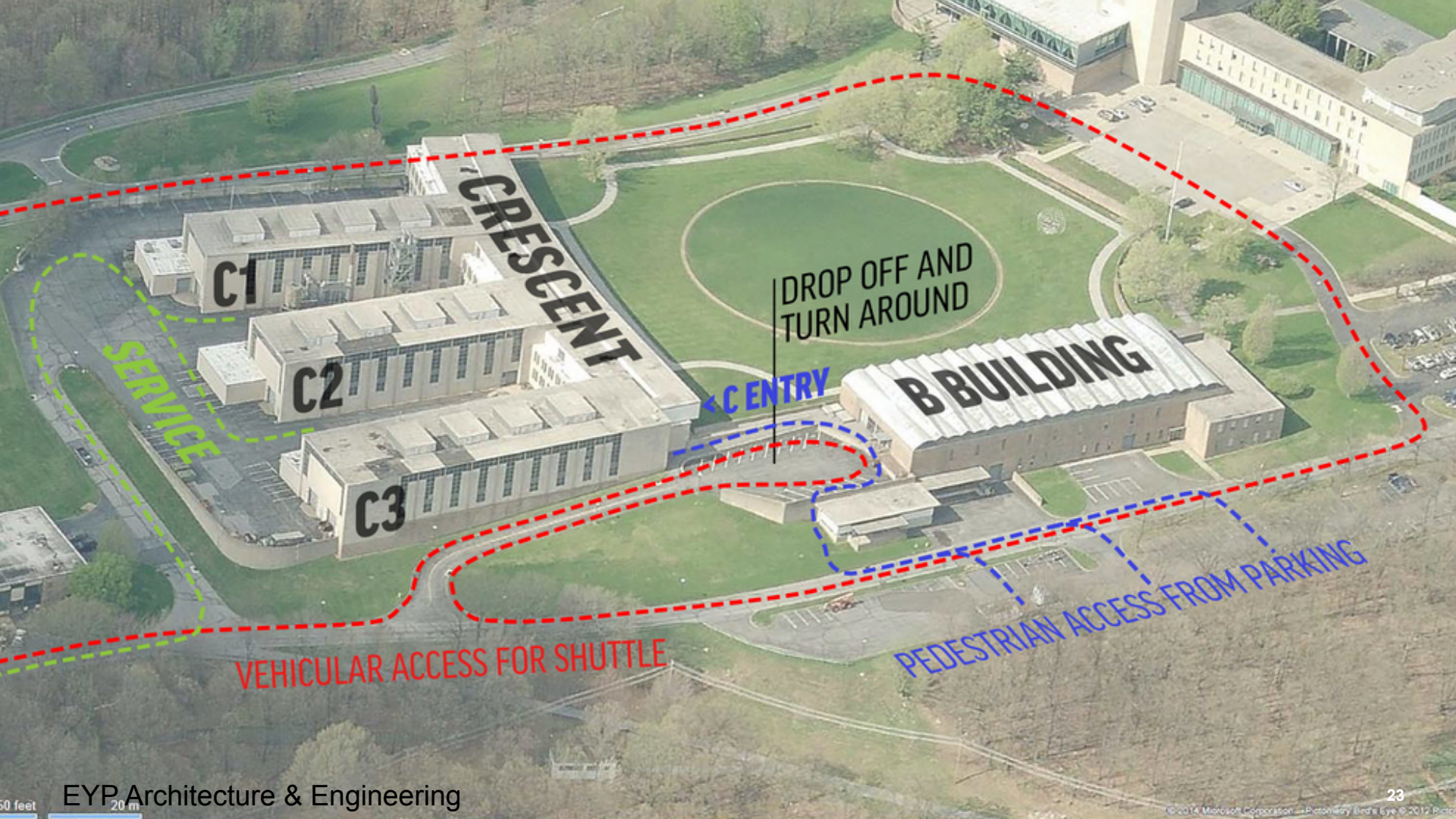












VEHICULAR ACCESS FOR SHUTTLE

PEDESTRIAN ACCESS FROM PARKING

DROP OFF AND
TURN AROUND

C ENTRY

C1

C2

C3

CRESCENT

B BUILDING



Highbay C-2 Mixing Box



Seminar Classroom



Academic Boulevard



Open Collaborative Space



Huddle Rooms



Food: Self-Service Cafe



Active Learning Classroom



Telepresence Classroom

Back to the Silicon Valley connection ...



CSE 098b Software Product Management: Tony Pattera, VP of Product Management at Proofpoint (4/13/18)



CSE 098a Women in Technology: Ann Lewnes, Executive VP and Chief Marketing Officer at Adobe (2/17/18)

Hackathons ...



Experiences & Lessons Learned



- CSE Department moved in in January.
- Phase 2 renovation now underway for Art, Architecture & Design.
- Design for maximum flexibility.
- Fine-tuning technology takes a while (e.g., telepresence room).
- People maintain old habits, even in new spaces (Ph.D. students).
- Still not sure how to effectively use high bays (noise issues).
- If you build a cool new building, lots of people will want to use it.

The EYP Team



- Ann Barolak: Project Executive
- David Thomas: Project Director
- Toni Loiacano: Academic Planner
- Richard Clarke: Lead Designer

EYP Architecture & Engineering
225 Varick Street, 2nd Floor
New York, NY 10014

The Tradeline Three



- If an opportunity drops in your lap, grab it.
- Know what you want, but at same time, look around at what others have done.
- Ask lots of questions.

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