

The Role of the EHS Professional in Laboratory Design

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UNC-CH History

- Opened its doors for students in 1795 as the nation's first public university.
- Offers 77 bachelor's, 110 master's, 64 doctorate and 7 professional degree programs through 14 schools and the College of Arts and Sciences.
- More than 29,000 undergraduate, graduate and professional students learn from a faculty of 3,600.
- Over 12,000 employees
- 1st among the 100 best in the US public colleges and universities for 16 years according to Kiplinger's Personal Finance Magazine

The University of North Carolina at Chapel Hill

- \$967 million in research activity annually
- Ranked 8th in the US for federal research among universities
- 11th largest US research university in research volume and annual expenditures
- 57 million in income generated by technology created at UNC

<http://research.unc.edu/>



- 18 million square feet
- > than 700 acres of main campus
- 4,000 total acres throughout Orange County, NC

UNC-CH Growth since 2008

Bldgs. #	Bldg. Name	Year of Construction	Gross SqFt	Assign Sq Ft
360	Marsico Hall	2014	362419.24	246073.26
676	Genome Sciences Bldg.	2012	220900.62	156986.63
210A	Koury Oral Health Sciences Bldgs.	2011	230183.58	148383.43
674	Murray Hall	2010	126612.29	76935.78
745	Venable Hall	2010	42887.43	32453.4
673	Kannapolis Nutrition Research	2008	128274.85	104536.34
359	Genetic Medicine Research Bldg	2008	358746.01	264861.93
TOTAL			1470024.02	1030230.77

UNC Chapel Hill Capital Projects Team

- Initiated in 2011
- A committed partnership between the Organizations must exist to ensure Capital Projects successfully deliver facilities that are readily operational and maintainable, per established guidelines, specifications, standards, and expectations of all.
- It is the responsibility of Facilities Planning & Construction (FPC) to lead Capital Project Partnership Teams.
- Each Organization is responsible for identifying their Capital Project Partnership Team member(s) to Facilities Planning & Construction.

Roles and Responsibilities

The responsibility of team members shall be one of full commitment and support to each Capital Project assigned by occupying **“a seat at the table”**.

- Engage collaboratively in discussions and decision making
- Provide subject matter and/or systems expertise
- Ensure timely reviews are submitted by their respective internal departments
- Keep open lines of communication with project designers/project managers.
- Participate in resolution of disagreements.

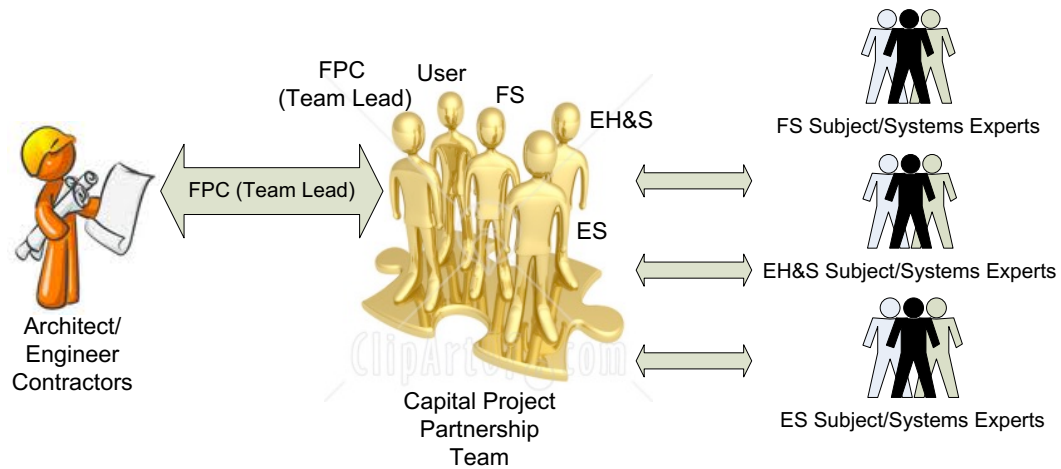


Capital Program – Guiding Principles

- Mission
- Vision
- Values – Sustainability, HUB



Communications Flow



Facilities Planning & Construction (FPC), Facilities Services (FS), Environment Health & Safety (EH&S), Energy Services (ES)

Capital Project Team leaders (FPC) shall be the responsible communication liaison for any and all correspondence, written or verbal, between contracted and/or subcontracted Architect/Engineering firms, General Contractors, Sub Contractors, and all team members.

Balancing Completing Demands

- Program – Academic/Research/Infrastructure
- Budget – One time cost vs. life cycle cost
- Schedule



Vision – Campus Sustainability Goals

The diagram illustrates a building's cross-section with two key sustainability features highlighted:

- GREEN ROOF**
 - reduces heat island effect
 - increases water retention
- STORM WATER RETENTION SYSTEM**
 - prevents site erosion
 - provides water for irrigation system

The diagram also shows a yellow sun in the upper right, trees to the right, and labels for 'EAST' and 'WEST' orientation.

A photograph of a modern brick building with large windows, surrounded by trees and a paved area, illustrating the real-world application of the sustainability goals.

Lower Level:
Auditorium and Entry, Meeting, Seminar, Storage

Entry Level:
Ticket Warehouse, Great Hall, Gardens, Great Entry, Lobby, Colonnade Walkway

2nd Floor:
Book Depository, K12, K12E Administration, Book Depository, Conference Booth, Classroom, Seminar

3rd Floor:
Book Depository, Office, Conference Booth, Seminar, 2 Conference Booths

4th Floor:
none

Section North-South

Legend:
 A Suite (pink)
 B Suite (light pink)
 Classrooms (yellow)
 Conference (blue)
 Commons (green)
 Dining (light green)

Program Massing Studies: Two Courtyard Scheme

UNC-Chapel Hill Global Education Center, Pre-Design Phase

24 January 2003

Program Needs

EHS Project Representative

- Generalist
- Understands EHS organization
- Committed to the team
- Open to learning
- Major liaison
- Understands how the University works

EHS – Concerns

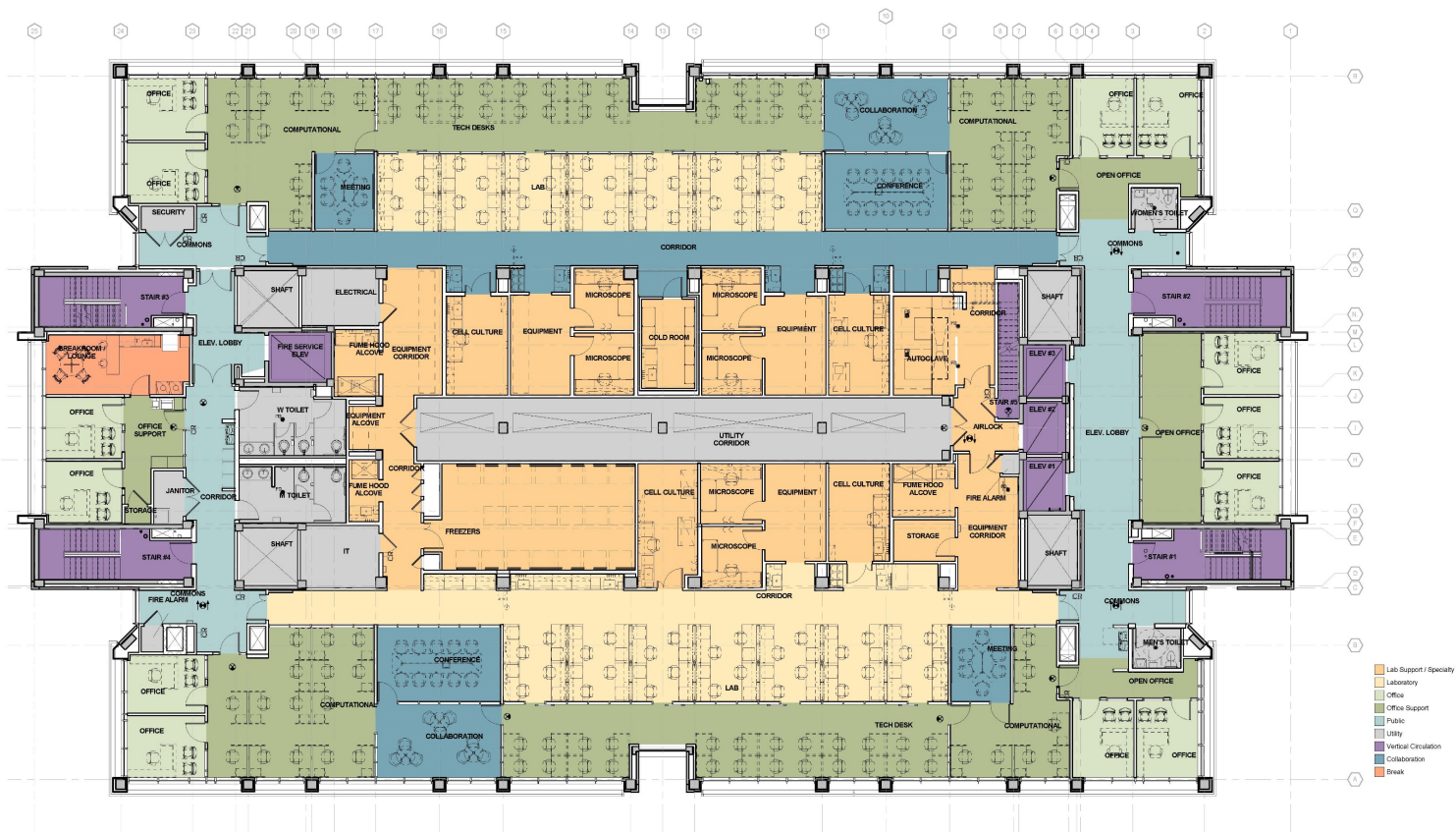
- Environmental – Permitting
 - Air
 - Waste/wastewater
 - Soil
 - Wetlands
- Design
 - Layout
 - Safety equipment
 - Hazardous materials
- Specialized Laboratories
 - High containment facilities
 - Animal research
 - Nano research
 - Biomedical Engineering



Building Under Renovation Mary Ellen Jones



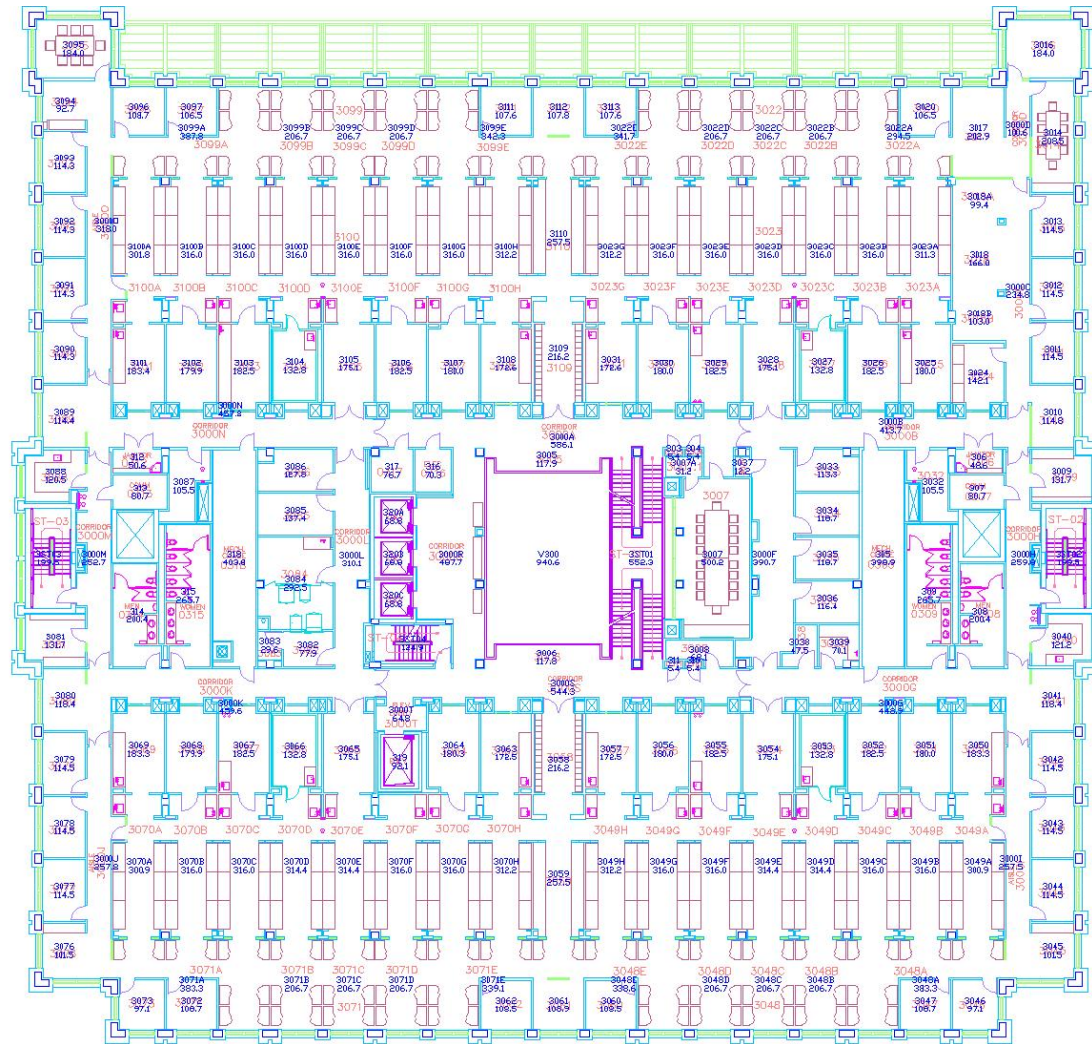
Lord Aeck Sargent











Genetic Medicine Research Building

Third Floor Plan

Bldg. # 359

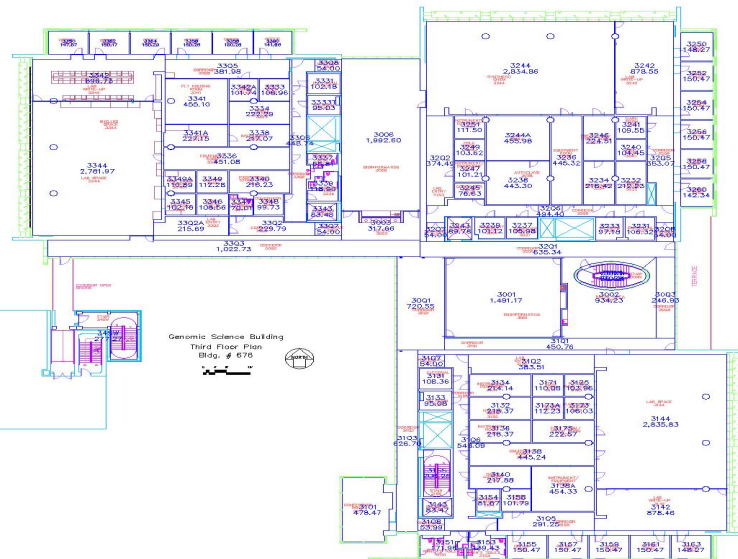


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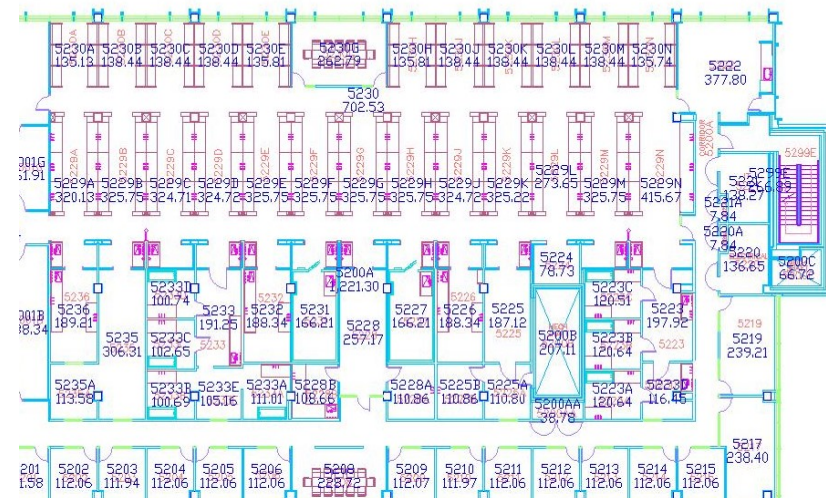


Floor Plan layout

Office/ Lab



Intensive lab





UMASS – Boston Integrated Science Complex



credit Robert Benson Photography for the photographic images, and Goody Clancy as Architect for the building in all images.

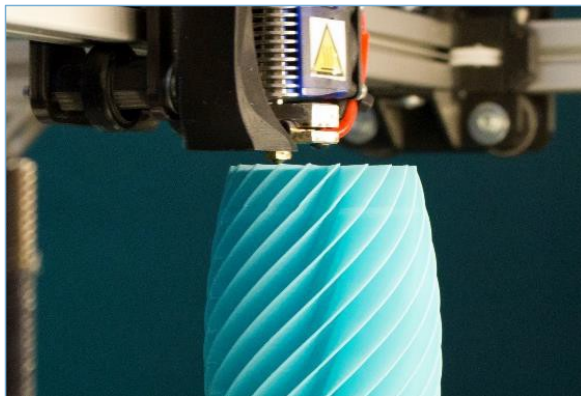
Lessons Learned

- Design specs vs purchased items
- Successes of one project are not carried thru to next project
- Building codes are dynamic and different depending on your state
- International equipment may not have required code compliance

Electrical Panels



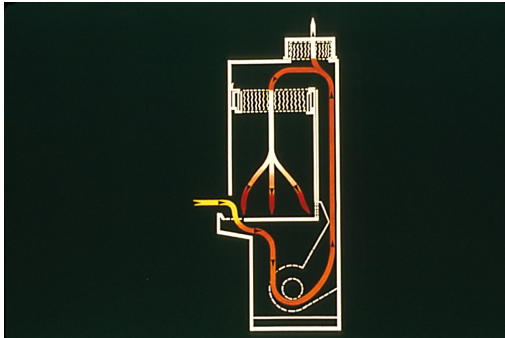
BeAM Makerspaces



Air Flow Patterns (Type II)

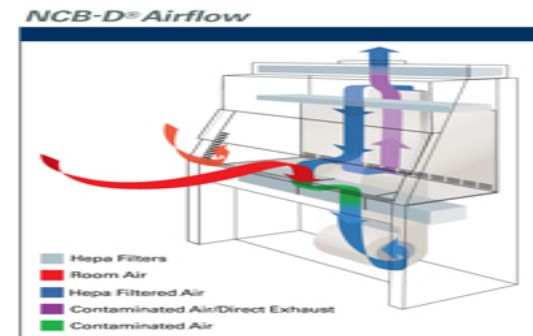
Type II A2

- Air enters through work opening
 - Exhausts 30%
 - Re-circulates 70%
- Laminar flow in work area



Type II B1

- Ducted biosafety cabinet
 - Exhausts 70%
 - Re-circulates 30%
- Vapors and gases emitted from work half way back from the cabinet front are removed and not recirculated.



References

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