RESEARCH ON DISPLAY

Leveraging Collaboration and Wellness to Drive Facility Design

Greg Hadsell, AIA, LEED AP
Michael Bardin, AIA, LEED AP
Learning Objectives

1. Identify planning and programming opportunities to foster collaboration among different user groups;

2. Understand how facility design can promote future flexibility and accommodate the changing needs of research;

3. Describe methods to support occupant well-being and drive sustainable performance in research facility design; and

4. Define methodologies to inform future facility design and determine whether a building is functioning as originally intended.
Phased Project Delivery

PHASE 5
- Office Fit Out
- Lab Fit Out

PHASE 4
- DMF Clean Room

PHASE 3
- Lab Fit Out
- Bid Option 3a: Nano-x Clean Room
- Bid Option 3b: Cryo Tem 1 and 2
- Bid Option 3c: Cryo Tem 3 and 4

PHASE 2
- Office Fit Out
- Bid Option 2a: Director’s Office Suite

PHASE 1
- HVAC Fit-out of Cold Dark Core and Shell
Programming Process

IDENTIFY NEEDS

DEFINE CAPACITY

CUSTOMIZE SPACE

Steering Committee

User Liaison

Town Hall

User Groups

Final Users
Health and Wellness Approach
Project Performance

34% energy use reduction

55% water use reduction
Energy Efficient Sustainable Laboratory

- Light weight mass walls
- Lower lighting power density
- Occupancy sensors in all non-lab spaces
- Daylighting control for perimeter areas
- High efficiency fans

- Premium efficiency pumps with VFDs
  Higher supply air temperature reset

- High performance fume hoods with low face velocity reduce airflow by 16%

- High efficiency exhaust fume hoods
  Reduce airflow by 62.4% during unoccupied hours

- Ceiling fans in open offices at first and second floors expand comfort temperature range

- Exterior shading and light shelves at south facing labs
Typical Program

Shape for to Support SLAC Mission and Research Outcomes
Performance & Flexibility

Nano-X Cleanroom  Cryo-TEM Suite  Metrology Cleanroom

Future Fabrication Cleanroom  Laser Labs  Laser Labs
Safety

Chemical Storage

Linear Equipment Room
Workplace Solutions

**JOB TYPE**
- Office: 80%
- Cubicle: 20%

**% OFFICE TIME?**
- >70% Office: 64%
- 70% - 50% Cubicle: 25%
- < 50% Benching: 11%

**HYBRID**
- Office: 20%
- Cubicle: 23%
- Benching: 57%
Zones and Buffers
Views and Daylighting

North Light and Views

East Light and Distant Views

West Light and Quad Views
Desk Research Layout

- Break Room
- Cubicle
- Benching
- Office
- Conference
- Huddle Room
- Leadership Suite
Collaboration and Flexibility Choices
Collaboration and Flexibility Choices

Collaborative Labs
Collaboration and Wellness

Connectivity

Campus Views
Collaboration and Wellness and Flexibility
Post Occupancy Evaluation Types

**User Satisfaction**
Degree of satisfaction with the functionality, efficiency, comfort, and aesthetics of buildings

**Building Systems Performance**
Energy and water use, “sustainability”, green building performance

**Requirements**
Degree to which building meets original and emerging requirements or goals, cost

**Human Outcomes**
Healing time, injuries, falls, stress, infections, effective collaboration, productivity, cognition, “occupant experience”
Post Occupancy Questions

User Satisfaction - Environment

- How well does the work environment support occupant well-being?
  - Comfort of workspace
  - Ergonomic conditions
  - Acoustics
  - Thermal comfort
  - Lighting and Daylighting
  - Air quality
  - Physical activity opportunities

Human Outcomes - Collaboration

- How do occupants work together within the space?
- How effective is the building at enhancing collaboration?
- How does the proximity of workspaces to one another function?
- Is the proximity of meeting spaces to your workspace adequate? How is the capacity?
- How well do the available tools/technology work?
Post Occupancy Evaluation

Collaboration Environment

Overall Work Environment

Workstation Satisfaction

Light, Air, Views to Nature

Occupant Lighting and Thermal Control

Very Positive

Mostly Positive

Slightly Negative

Mostly Positive

Strongly Positive
Thank you and please let us know if you have any questions.