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Stanford University
Space and Furniture Planning Guidelines

Developed by
Department of Capital Planning and Space Management
Land, Buildings & Real Estate
Stanford University

Originally Published March 2003
Updated July 2007, Jan. 2008, July 2008, April 2009

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Space and Furniture Planning Guidelines
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Introduction

Authority and Administration

At the request of the President and Provost, Stanford University has developed space and furniture planning guidelines to serve as an aid in planning, allocating and managing space on the campus. These guidelines assist the Stanford community in establishing equitable, consistent, efficient and flexible planning parameters. In addition, the guidelines assist the university community in making sound management decisions about space allocations both for new construction and within existing or renovated buildings.

The space planning guidelines were first developed in 2003 and updated in 2007 and 2008. The furniture planning guidelines were added for the first time in July 2008.

The Provost has reviewed and approved these guidelines.

The Department of Capital Planning and Space Management administers these guidelines and assists the campus community in their implementation and interpretation. The guidelines are updated by Capital Planning and Space Management, in consultation with the Provost, on a regular basis. As requests for new, renovated and reallocated spaces are forwarded into the Capital Planning process, and approved by the Provost, we implement the guidelines.

Acknowledgements

The Department of Capital Planning and Space Management within Land, Buildings & Real Estate (LBRE) developed the Space Planning guidelines with the assistance of consultant Marlene Berkoff of Berkoff Facility Strategies. Individuals in Land, Buildings and Real Estate who worked on this project include: Robert Reidy, Vice President of Land, Buildings and Real Estate; Langston J. Trigg, Jr., AIA, (formerly Associate Vice Provost, Land and Buildings); Margaret Dyer-Chamberlain, (formerly Senior Director of Capital Planning and Space Management, LBRE); David F. Neuman, FAIA, (formerly University Architect, Associate Vice Provost, Land and Buildings); Sandra Louie, AIA, (formerly Architect and Capital Planner, LBRE); and Craig K. Tanaka, AIA, Associate Director of Capital Planning. Consultants who assisted in the project included MKThink, MBT Architects, CAS Architects, Inc., and Perkins+Will Architects.

The Furniture Planning guidelines were developed by Edith Porras (formerly Workplace and Furniture Planner, LBRE), and Margaret Dyer-Chamberlain in July 2008 in collaboration with members of the team listed above.

Overview

Background

Space is a precious and finite resource at most academic institutions and Stanford is no exception. Historically, Stanford did not have campus-wide guidelines for allocating space, although some of the individual schools within the university developed their own norms over time. The following recent developments triggered a need for Stanford to regard space allocation more judiciously, to ensure that new construction is planned realistically and efficiently, and to promote optimum use and conservation of space in existing and renovated buildings.

- The GUP (General Use Permit) agreement between Stanford and the County of Santa Clara, effective December 2000, restricts the amount of net new academic space Stanford can build for the next 10-15 years and also requires costly environmental mitigations which Stanford must fund;
- Stanford faces debt and fundraising constraints, creating an incentive to limit capital costs associated with new construction and, in tandem, to better use and manage existing space; and
- High construction costs make many projects increasingly difficult to afford.

These factors have accelerated the need to optimize use of existing space and to plan new space carefully and conservatively. As we look to the future, which holds realities and constraints that we are not able to anticipate at this juncture, it continues to be important to carefully utilize the space that we have and to maintain our flexibility for the needs of generations to come.

Development of Space Planning and Furniture Guidelines

The space planning and furniture guidelines contained in this document reflect existing space use and tradition at Stanford, along with the guidelines, data and approaches gathered from many peer institutions across the nation.

Data From Stanford

We contacted a number of Stanford schools and departments to review current approaches to managing space and space allocations for standard areas such as faculty offices. We also made a number of contacts regarding the new furniture guidelines. These schools and departments included the Schools of Engineering, Medicine, Business, Law, and Humanities and Sciences, as well as several key administrative and operational units such as the Office of the Provost, the University Architect/Planning Office and Facilities Operations. The Office of the Registrar also provided valuable information and data on classrooms. The guidelines also reflect empirical data gathered from building and renovation projects that have recently been completed, or are currently underway, on the Stanford campus.

A summary of these Stanford contacts is available from the Department of Capital Planning and Space Management as background.

Research From Other Universities and Sources
In developing these guidelines, we also contacted a number of other universities and obtained, investigated and reviewed several models of space guidelines. We contacted individuals in charge of space management at various universities to discuss their institutions' space and furniture guidelines approaches and to obtain recommendations. The space planning in this document reflects the research finding from these investigations, synthesized and incorporated with Stanford's own data and tradition of space management.

A full listing of research contacts, sources and findings is also available as background.

Evolution of Space Planning and Furniture Guidelines Over Time
The guidelines presented in this document represent Stanford's approach to defining and applying space and furniture guidelines. The guidelines address the primary areas that are focal points for nearly all space guidelines used across the country; offices, classroom and conference areas, and research/lab areas. In 2008, we added "other" spaces to the guidelines – these include storage, office services, kitchen and touchdown spaces.

These guidelines will evolve and be further refined as they are applied over time and as practical issues, new information, and special cases arise. Capital Planning and Space Management welcomes comments and suggestions on their content and application

Scope and Impact of Space and Furniture Guidelines
Stanford has over 14 million gross square feet of space university-wide in approximately 670 buildings. This amount reflects contiguous space within the physical boundaries of the campus and does not include the hospital, SLAC, or off-campus space. Figure 1 below shows the percentage breakdown of space on campus, by category, as counted in March 2008. Much of this represents specialized space such as venues for athletic events, the performing arts, housing, libraries, and public space of various types. These types of spaces tend to have special requirements and/or industry standards that guide their design and development. For this reason, specialized spaces are not the focus of these space guidelines. The guidelines focus on the following more generic types of campus space:

- Offices
- Classrooms, Computer Clusters and Conference Rooms
- Laboratory/Research Space

As Figure 1 below shows, offices occupy 22% of all space at Stanford, 3% is used for classrooms and laboratory space occupies 14%.
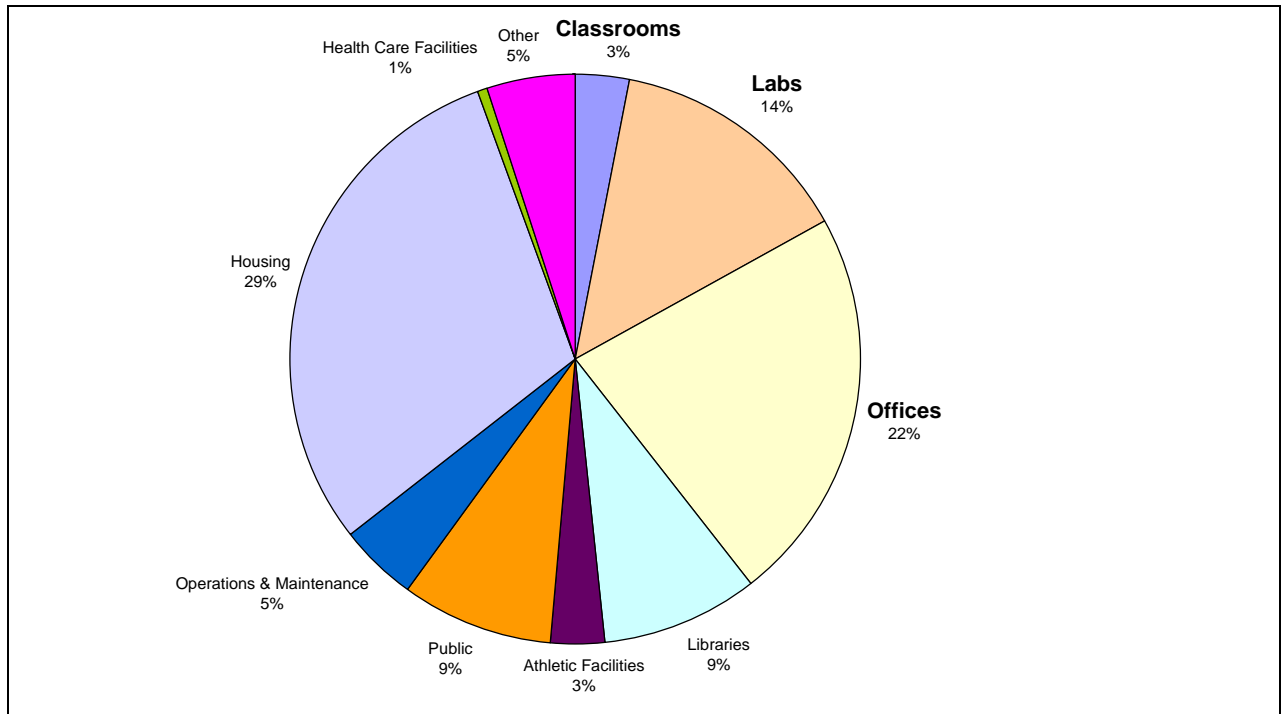

Figure 1
All Campus Space, by Category (2008)

Space Costs
The costs of building, renovating, operating and maintaining this space are high. In a project cost benchmarking study that the Department of Project Management updates annually, our 2008 data shows us that project renovation costs on the Stanford campus have ranged from $420/sq. ft for simple office renovations to nearly $542/sq. ft. for wet laboratory space renovations or historic preservation projects. Building new space costs even more, ranging from $529/sq.ft. for new office space to up to $667/sq.ft. for new wet laboratory space. These numbers represent total project costs, which are the total cost of developing space, including construction costs plus fees, permits, furniture, equipment, etc. (Development fees such as the GUP fee are not included in these benchmarks.) The Departments of Capital Planning and Space Management and Project Management work carefully to benchmark these project development costs and to compare project costs across campus.

The ongoing operating costs of buildings on the Stanford campus are even more significant over time. Over the lifetime of a building, anywhere from 60 to 75% of the total cost relates to operation and maintenance. These life cycle costs include routine operating and maintenance costs as well as the cost of utilities and repairs. The magnitude of these costs makes it even more important for the University to use its space wisely and efficiently.

Application of Space Planning and Furniture Guidelines
We intend that the guidelines presented in this document will assist the University
community in fairly and efficiently planning for space needs. The guidelines are applied
whenever possible in a university-wide effort to support the following goals:

- *Equity* – ensuring that space is allocated, renovated and built in an equitable
manner across campus;
- *Consistency* – ensuring that we use consistent practices in allocating, renovating
and building space;
- *Efficiency* – ensuring that we utilize the space we have as well as we can, and that
we plan for the future in the most efficient ways possible;
- *Flexibility* – ensuring that we plan our space needs flexibly in order to meet
current needs, to anticipate future needs, and to ensure our ability to modify
spaces in the future.
- *Sustainability* – It is often said that "the most sustainable building is the one that
is never built". A major goal of the guidelines is to ensure that we build only the
space that we need.

The furniture guidelines mirror these goals, which are further described in the furniture
section of this document.

We also realize that the guidelines need to be flexible in order to address and meet a wide
range of space needs on campus. These guidelines are not meant to imply entitlement or
to set rigid standards for space.

New Construction
The guidelines provide specific reference data for planning new buildings. They are
designed to help University units and Capital Planning and Space Management define the
magnitude of new capital projects in the initial scoping, feasibility and programming
phases of development. At subsequent planning and design stages of project
development, the guidelines are intended to continue to serve as a reference for the size
of three major building components; offices, classrooms, and lab/research space. While
the guidelines are not "standards," they define typical space expectations. Deviations
from the guidelines may be justified and examined on a case-by-case basis.

Existing Space
Planning space within existing buildings is often affected by structural limitations, aging
utility and infrastructure systems, architectural design, or issues of historic preservation.
Many older buildings were constructed for purposes other than those currently being
served. Some academic programs "fit" more efficiently than others in specific buildings,
but we do not always have the latitude, justification or inclination to locate programs in
certain buildings for purely space efficiency reasons. Complex issues are involved in
allocating and planning academic space and meeting campus-wide space needs. When
dealing with existing space, especially when major renovation projects or relocations are
under consideration, the guidelines are designed to serve as a reference for planning

decisions, with the goal of maximizing the efficiency, modularity, and flexibility of the University's space.

Department of Capital Planning and Space Management's Role
The Capital Planning and Space Management department within Land, Buildings & Real Estate assists the Stanford community with specific space planning tasks and questions, and will be applying the new space and furniture guidelines as appropriate. The Department is available to work with schools and programs to inventory and assess existing space usage, translate program aspirations into space needs, identify physical layouts that can improve efficiency and increase space capacity, design space renovations, and "right size" offices and other spaces. Throughout the planning process we address efficient furniture planning, ADA and other code issues.

Additional Resources:

iSpace
Successful application of space guidelines depends upon a university-wide space inventory system. Key decisions about renovations, relocations, or approvals for new construction, all of which have major capital planning implications, depend on accurate understandings of existing space allocations, conditions and utilization. The iSpace system provides valuable information of this type for the Stanford community, and is brought to bear on planning projects across the campus on a regular basis. The iSpace system is being continually improved, as resources permit, so that it can be an increasingly valuable space planning tool.

Room Numbering Guidelines
These guidelines will allow floor and room numbering and way-finding procedures to be applied consistently to all University buildings.

These room numbering guidelines are provided for Architects for use on new construction. Existing University buildings will also be evaluated for these guidelines when remodels take place. Because room numbers affect emergency responders, as well as multiple campus databases, including; the Office of Research Administration, Chemical Inventories and Telecommunications systems; room numbers should not be changed without a formal review process by the Land, Buildings and Real Estate, Maps and Records department.

Department of Project Management
These space planning guidelines form an important part of the project delivery process, helping to define the magnitude of space needed for a proposed project – which directly affects both the capital budget and the use of space on campus, whether in new or existing buildings.

> *Project Delivery Process at Stanford* (PDP)
> In September 2001, the Department of Project Management (formerly CP&M) issued a *Project Delivery Process at Stanford* (PDP) manual.

This manual outlines the University's capital planning processes and the specific process steps which are required for development and approval of new capital projects, whether new construction or major renovation, from initial scope and feasibility definition through project completion. The manual explains that the Departments of Capital Planning and Space Management and Project Management work with University units across the campus to "ensure that projects are aligned with the academic mission of the University and meet approved goals, budgets and schedules."

Guidelines for Life Cycle Cost Analysis (LCCA)
In October 2005, Land and Buildings issued a new set of guidelines for Life Cycle Cost Analysis (LCCA). LCCA is the process of evaluating the economic performance of a building over its entire life. Sometimes known as "whole cost accounting" or "total cost of ownership," LCCA balances initial monetary investment with the long-term expense of owning and operating the building. LCCA is based upon the assumption that multiple building design options can meet programmatic needs and achieve acceptable performance, and that these options have differing initial costs, operating costs, maintenance costs, and possibly different life cycles. The LCCA guideline provides the tools to calculate the economic impact of various design options at different stages of the project delivery process, the result of which is better informed decision making.

Guidelines for Sustainable Buildings
In March 2002, the Environmental Stewardship Committee, chaired by Bob Reidy, Vice President for Land, Buildings & Real Estate, issued new "*Guidelines for Sustainable Buildings*," a companion document to the PDP. The guidelines describe the process for implementing sustainable principles in building projects, with a focus on sustainability issues for each phase of construction and design. This document is a reference tool as these sustainability goals are pursued.

The University Space Charge
Beginning in 2007/08, Stanford's non-formula schools have paid a charge for the use of office space. The goal of the space charge is to establish awareness that space is not a free good and to provide an incentive and guidelines to use space as efficiently as possible. To offset the charge, schools receive budget allocations based on how much office space they need according to the space guidelines.

Since the inception of the efficiency program, several schools have begun actively pursuing options to reduce their space charge:

The School of Earth Sciences has completed a master space plan study. The study identified and addressed underutilized office space, planned strategies to accommodate growth, and addressed space problems in the common areas of each building. The net result will be a reduced space

charge and an achievable plan for aligning the School's facilities with its long-term strategic goals.

The Vice Provost for Undergraduate Education (VPUE) has undertaken a project to renovate Sweet Hall. Once completed, VPUE will significantly reduce its space usage by housing an additional 70 employees in spaces designed to support students, lecturers, and staff. Sweet Hall plans currently reflect that 12% of the office spaces will be private offices and 88% will be shared offices or cubicles. The spaces will be sized according to the space guidelines. This is a much higher percentage of shared space than the average on campus, and is a model for future campus spaces.

The School of Humanities and Sciences completed a 're-stack' in the Main Quad during the summer of 2007. In this project, a series of departmental moves organized where programs were housed and brought many departments into alignment with the space guidelines.

The School of Education began a space study of the Cubberley Building in spring 2008. The goal will be to better use space, reduce the space charge, and determine if any of the physical changes needed can coincide with the seismic retrofit of the building planned for summer 2009.

DEFINITION OF TERMS

Terminology
In discussing the new space and furniture guidelines, it is important to understand terminology. The following are Stanford's generally accepted definitions of the types of space and building areas that are relevant to application of these guidelines. These definitions are consistent with those used by the "Postsecondary Education Facilities Inventory and Classification Manual" (FICM), published by the U.S. Department of Educational Research and Improvement, NCES 92-165r. FICM is a standard reference document used by nearly all universities across the country, including Stanford.

Gross Square Feet – gsf (also called bgsf-building gross square feet) - GSF is the total area of all floors of a building. This includes the area within the outside faces of exterior walls and floor penetration areas, however insignificant. GSF also includes all building structural, mechanical and other infrastructure systems, all building circulation space, and all support space such as public toilets, lobbies, etc. An interesting issue for Stanford is that this can include building arcades, which represent a significant area of space on the campus, particularly in areas such as the main quad. Gross area also includes space located above and below grade (basements.)

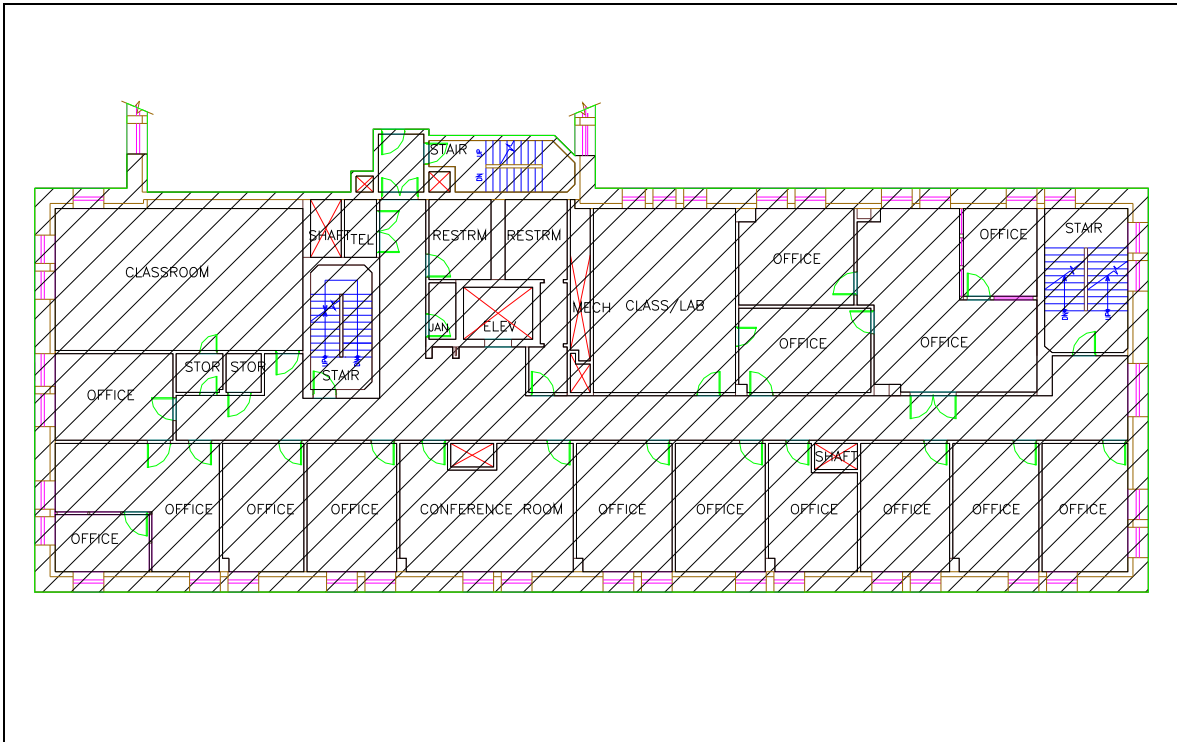The hatched area of Figure 2A below delineates the gsf of a building.

Figure 2A
Building Gross Square Feet (gsf)

Net Assignable Square Feet – nasf (also called nsf or asf -net square feet or assignable square feet) NASF refers to the space inside a room, as measured from interior wall to interior wall, including "nooks and crannies" which may exist in older buildings. It does not include building circulation, or areas such as restrooms, elevators and stairs. This is the space that is available for assignment to an occupant or for a specific use. The space guidelines are presented in terms of "nasf."

The hatched areas of Figure 2B below show the nasf of the building.
(Note that the corridors, restrooms, elevators, etc. are not included in the nasf.)
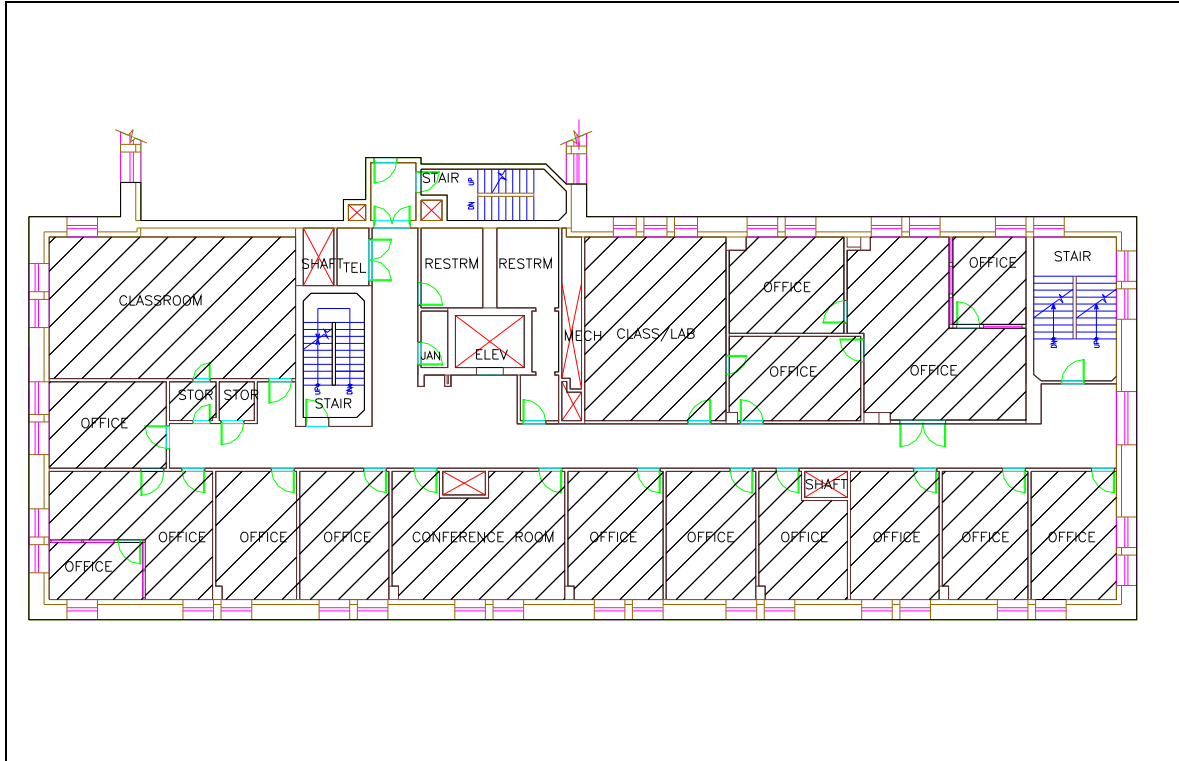
Figure 2B
Building Net Assignable Square Feet (nasf)

Net to Gross Efficiency
In the figures above, the efficiency of net to gross square feet is 55%, which is fairly typical for buildings at Stanford and at our peer universities as well. Land, Buildings & Real Estate continually analyzes building efficiencies on the campus as we develop and plan new and renovated buildings. Our overall goal is to move toward the highest overall building efficiency that we can achieve, while also meeting program needs and requirements.

General Use Permit Gross Square Footage (GUP GSF)
Stanford University's central campus is located within the jurisdiction of the County of Santa Clara. The GUP (General Use Permit) agreement between Stanford and the County of Santa Clara, effective December 2000, restricts the amount of net new academic space Stanford can build for the next 10-15 years. The methodology for calculating GUP GSF should be reviewed with Land, Building and Real Estate staff.

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Space Planning Guidelines

I. OFFICES

Introduction

The following guidelines articulate the sizes, utilization guidelines, and layouts for the various types of offices at Stanford. As we think about space planning guidelines with regard to offices, it is important to consider the following:

- Application of a modular planning approach, to preserve flexibility of office use over time. For example, co-locating offices of similar sizes and types can be very useful as we think about future needs and changes in academic and other programs.
- Placement of offices in the building core rather than along the windowed side of buildings, in order to create the flexibility noted above as well as to promote air quality and to maximize light penetration for all building occupants.
- Development of an annual program by which office occupants eliminate excess paper by sorting, purging and archiving their documents.   Quite often office occupants feel that their offices are cramped, only to find that the space is adequate once a "clean up day" occurs. This can also help to identify specialized storage needs or furniture solutions that better organize office spaces.
- Undertaking reviews of office spaces to be sure that utilization continues to make sense, to update office rosters, and to make any space reallocations that might be required.

The figures shown in the space guidelines that follow demonstrate sample diagrammatic office layouts, for the purpose of visualizing the variety of office spaces at Stanford and thinking about how the guidelines can be used to plan efficient and flexible space. Some of the office "shapes" in the figures are irregular and are not layouts that Stanford would likely plan in new buildings. These shapes represent the reality that in many of our older buildings we have unusual office shapes, which represent challenges for layouts.

At the end of this section, we have attached a summary of the office guidelines.

Dean and Vice President offices should be a single, private office intended to accommodate a desk, files, bookshelf and a meeting area for an additional 5-6 people. Dean and Vice President offices at Stanford tend to average 240 nasf.
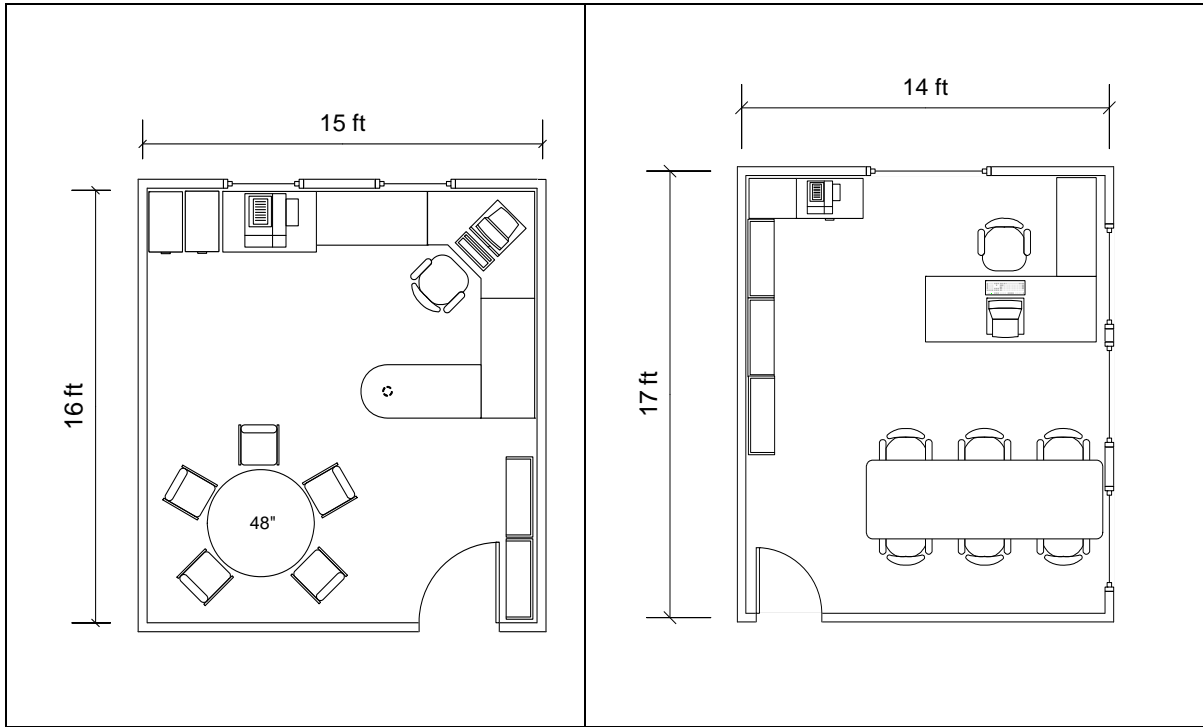
Sample office layouts are illustrated below:

Figure 4A   **Figure 4B**
Dean/VP Office   **Dean/VP Office**
240 nasf   **238 nasf**

Full time tenure track faculty generally are assigned a single, private office. Individual faculty offices are intended to accommodate a desk, files, bookshelf and workspace for the faculty member, plus a meeting area for an additional 2-3 people as needed. Part-time tenure track faculty, depending upon their circumstances, may be assigned spaces more similar to visiting faculty and research associate offices (outlined in the next section.)

Special Circumstances
In special circumstances, to be evaluated by the Dean and/or Department Chair, a faculty office may be larger or smaller than 160 nasf. These circumstances might include:

- Special or unusual building configurations which affect the efficiency of the measured nasf;
- Particular accessibility issues:
- Overall school and/or department space constraints or needs;
- Needs of department chairs for group meeting spaces;
- The need to merge needs/expectations of interdisciplinary programs.
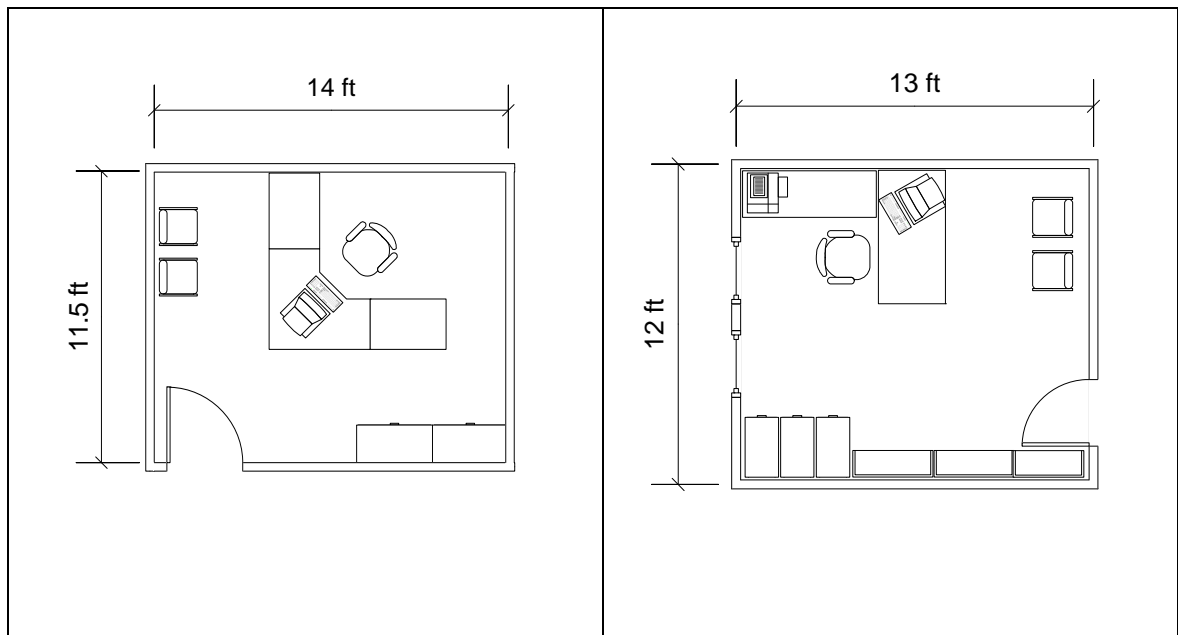
Sample layouts are illustrated below:

Figure 5A
Full-Time Tenure Track Faculty Office
161 nasf

Figure 5B
Full-Time Tenure Track Faculty Office
156 nasf

Second Offices
Stanford strongly discourages the assignment of second offices for faculty. A second office may be assigned in the following cases:

- Department chairs may be assigned a second administrative office, particularly if the primary faculty office is in a separate building from the department office.
- Faculty who are in leadership positions (i.e., Directorships) in independent laboratories, faculty who are Associate Deans or faculty who have joint appointments might be assigned a second office, particularly if their primary office is a significant distance (i.e. across campus) from the home department. SLAC faculty may be assigned a second office due to distance issues.

Faculty second offices should not be as sizeable as the primary office; that is, the second should be smaller than 160 nasf. Two faculty offices in the same building (other than in a chair situation) are strongly discouraged. The appropriate school Deans, the Dean of Research, and the Provost work together to consider requests for second faculty offices.

Please note that various schools at Stanford may have larger or smaller average faculty office sizes, for the reasons mentioned above.

Visiting Scholars, Visiting Faculty, Lecturers, Fellows and Research Associates
160 nasf for 2 occupants

Visiting Scholars, Visiting Faculty, Lecturers, Fellows and Research Associates generally are assigned shared office space, with two individuals housed in one 160 nasf office. A variation on shared offices for these faculty can be open-office cubicle arrangements, with typical cubicle sizes of about 80 nasf per person. In either case, space assignments for these faculty depend upon the type of work being done, whether individuals have full or part time appointments, and overall program needs and building constraints. Figure 5A shows a possible layout for two associates sharing one office space. Figure 5B demonstrates an open office cubicle arrangement.
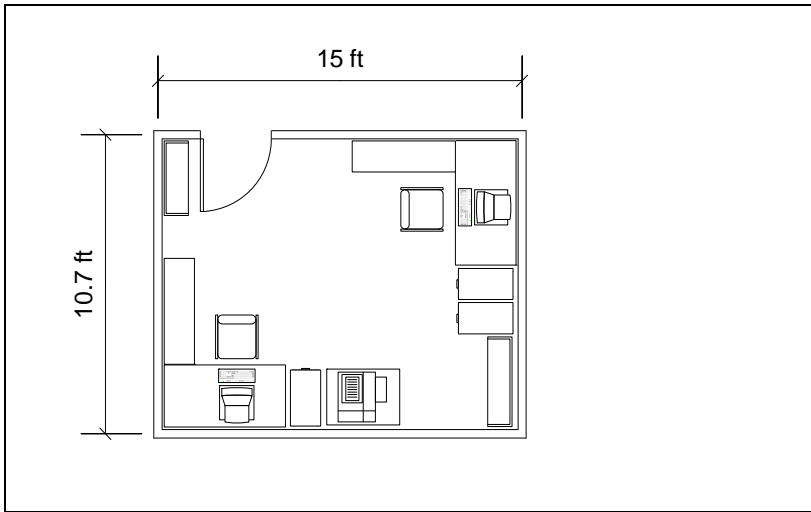

Figure 6A
Visitors, Lecturers, Fellows and Research Associates - Shared Office Space (2 occupants)
160.5 nasf
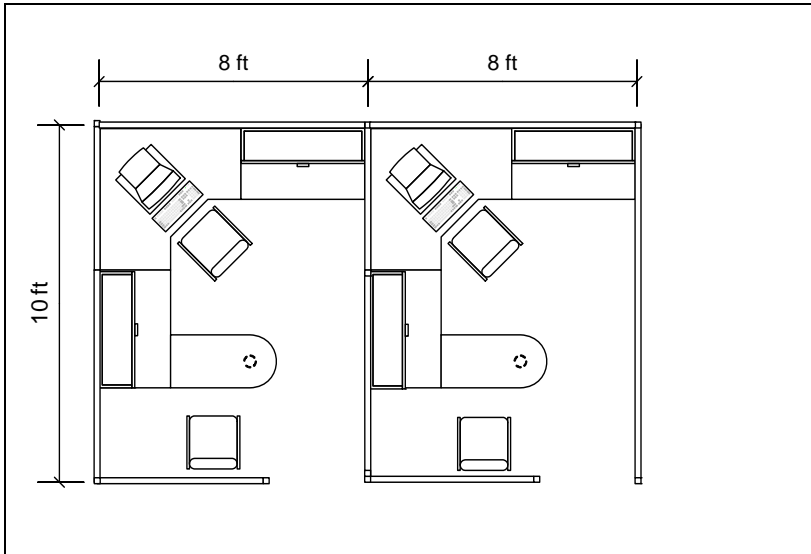
Figure 6B
Visitors, Lecturers, Fellows and Research Associates - Cubicle Environment
80 nasf/person

Emeritus faculty with significant continuing research or teaching responsibilities, and/or in active or "recalled" status, may be assigned a private office similar to that of a faculty office, and /or laboratory space, as appropriate and as space is available.

When emeritus faculty are engaged in teaching and research on a part-time or infrequent basis, they generally are assigned a shared office space of 160 nasf to accommodate two emeritus faculty members (80 nasf each.) Layouts of these types of shared spaces are similar to those shown previously for visiting faculty and research faculty. Layouts may also include cubicle environments or shared office spaces.

An alternative in this case, as space is available, could be a cubicle environment designed particularly for a community of emeritus faculty members in the same or related disciplines. These spaces can incorporate a shared lounge, storage and (as appropriate and as resources permit) administrative support.

An example layout of this kind of emeritus center is shown below.

Figure 7
Emeritus Center - Shared Space for four faculty
576 nasf

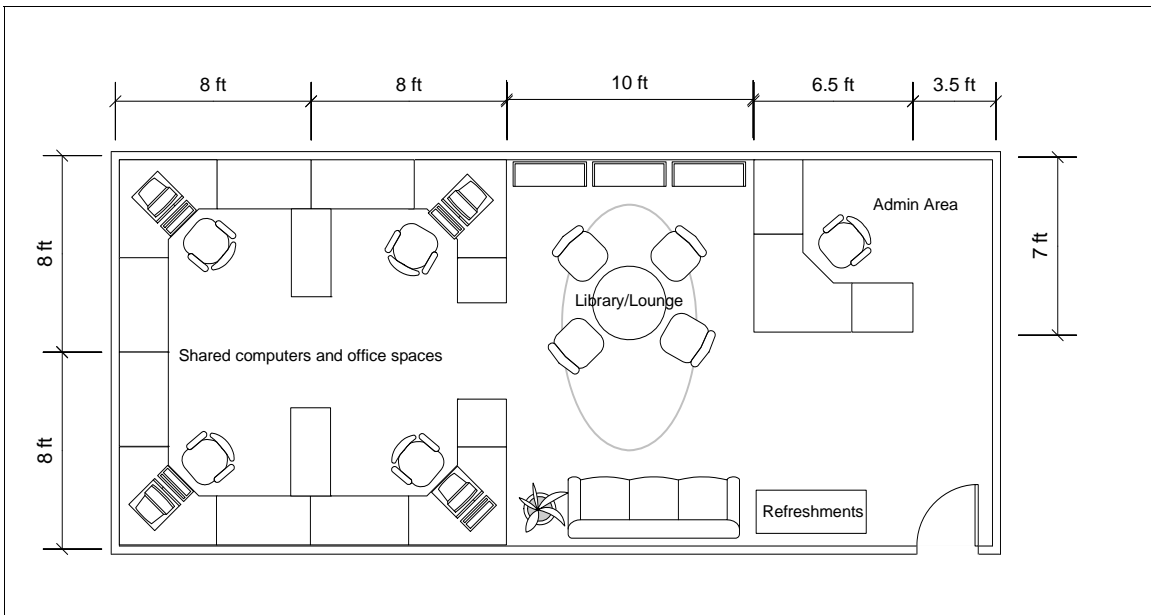The Stanford guideline for full time staff office space ranges from 64-140 nasf per person. This space may be cubicle space, a shared office, or a private office, depending upon the nature of the work. Part-time staff should be located in shared spaces or cubicles at the smaller end of the range. Student employees should be located in shared cubicles.

One of the most challenging aspects of allocating office space for staff at Stanford has to do with determining which staff members should have a private office and which should have a cubicle or open office environment. Private offices are heavily favored at Stanford, and many staff tend to resist cubicles or open office settings, despite the fact that such settings are commonplace in our area of the country in corporate settings and also at many universities and colleges.

We have developed the following guidelines for staff cubicle/office/teaming spaces as a way to assist schools and areas in allocating office spaces on campus.
We welcome input, questions and thoughts on these guidelines.

Guideline for Determining Staff Office Space Type

The decision about whether to allocate an office or a cubicle or a teaming environment to Stanford staff members should be made on the basis of the type of work an individual performs. The following factors can be a part of determining workspace assignments:

- Job position, rank, and classification
- Time appointment (full-time versus part-time, seasonal versus year-round, job share versus more traditional job arrangements)
- Supervisory and/or managerial role
- Nature/frequency of interaction with internal or external client groups
- Nature/frequency of confidential communication in person or on the telephone
- Nature/frequency of working with other members of a team pursuing similar tasks
- Nature/frequency of processing confidential data
- Nature/frequency of handling equipment/material that requires secure space
- Volume of noise associated with departmental activity or individual job role
- Degree of isolation required for completion of routine job duties

Guidelines for the types of offices, cubicle and teaming spaces assigned to individual staff are as follows:

- Staff Senior Associate Deans, Associate Deans, and Assistant Deans generally qualify for an individual office. The size of such offices will vary depending upon the criteria listed above (need for meeting spaces, need for specialized secure equipment, etc. These offices might range up to 140 nasf.

- Departmental Managers and/or Program Directors with three or more direct reports generally qualify for an individual office. Managers with fewer than three direct reports qualify for offices when they are available and when the scope of work requires a private space. These offices typically range from 100 to 140 nasf.
- Managers and other staff with no direct reports qualify for a cubicle environment. Shared offices can be appropriate based on the criteria above (need for secure space, quiet areas, etc.) These spaces range from 64 to 100 nasf.
- Part-time, seasonal and job-sharing staff qualify for a cubicle environment or, based on the criteria above, a shared office. This guideline applies to all of the staff categories listed above, even senior managers. These spaces typically range from 64 to 80 nasf.
- All of the staff categories above, from Associate Deans to Managers to part-time staff might qualify for a teaming or open office environment. These environments are particularly useful for groups that work closely together on a daily basis, project-based groups, groups that desire or need interaction in order to complete their work, groups that rely heavily on cross-training and shared responsibilities, etc.

The following are the guidelines for these types of staff office spaces.

Cubicle Spaces
Staff may be accommodated in cubicle environments ranging from 64-80 nasf per person, depending on the type of work.   In general, the 64 square foot cubicle is the preferred size; cubicles reach the 80 square foot range only for particular and specialized work-related reasons. Cubicles have tended to be the exception rather than the norm at Stanford, but they are successfully used in a range of office environments and we expect to see more of them in use at Stanford over time. Cubicle environments can have the benefit of being more open, airy and light, and can make more efficient use of space. Such environments are particularly conducive to team-oriented office groupings. Cubicle environments work best when they contain adequate numbers of conference and small group meeting spaces, for confidential conversations and/or group tasks. Additional storage is sometimes required for file intensive office groups. Sample layouts are shown below:
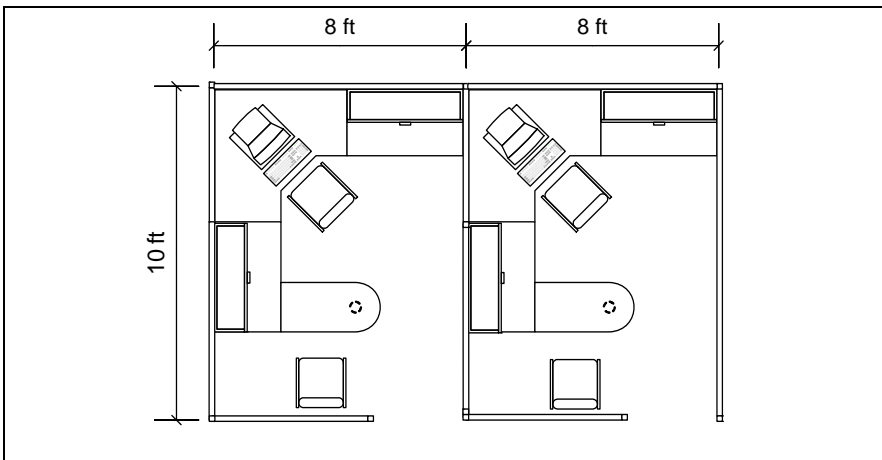
Figure 8A
Staff Office Space - Cubicle Environment
80 nasf
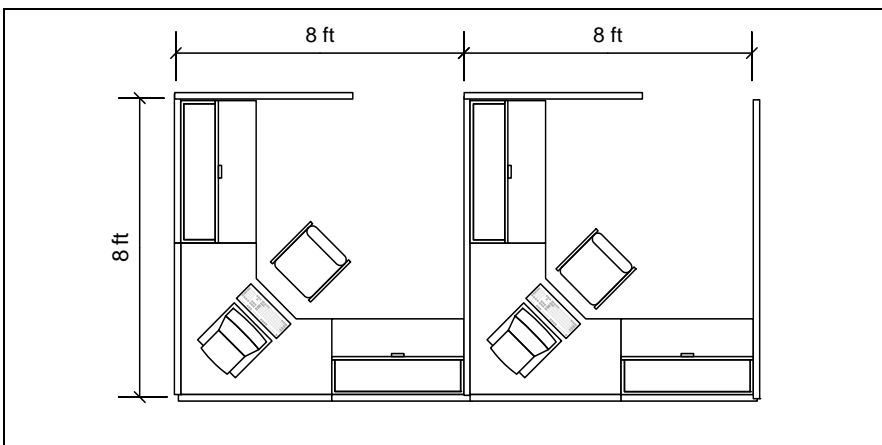
Figure 8B
Staff Office Space - Cubicle Environment
64 nasf

Shared Offices

Staff also may be assigned to share an office space of 160 nasf, which amounts up to 80 nasf per person. This can be a good solution for staff for whom a quiet office environment is important for writing, financial planning or other tasks. In addition, for staff working in teams of two this can be ideal. Below is a sample layout for this type of shared office format.
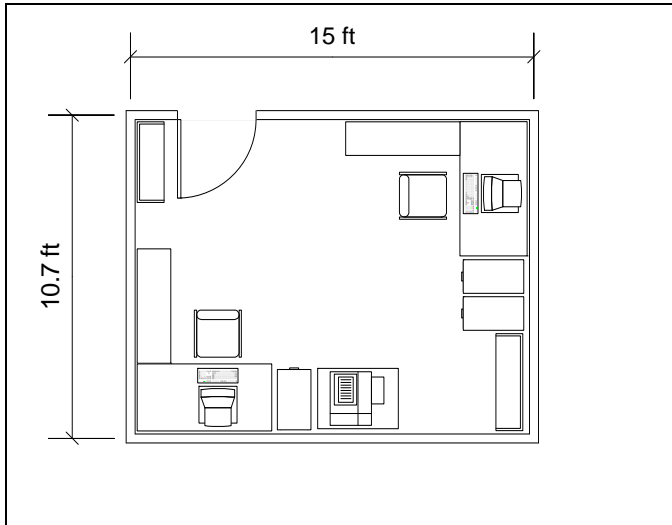
Figure 8C
Shared Staff Office (2 people)
160 nasf

Private Offices

Management staff, depending upon the nature of their work, may require a private office. The size of the office varies depending on the type of work and the need to supervise other employees and/or participate in private discussions. When private offices are justified, management staff members typically are assigned private offices of 100 nasf. If senior management staff and/or department heads require different or larger space accommodations for specific reasons, such cases are considered by the appropriate Vice President or Dean on a case-by-case basis, and space is allocated depending on the work needs of these individuals. In some cases, Program Directors require an office of 140 nasf.
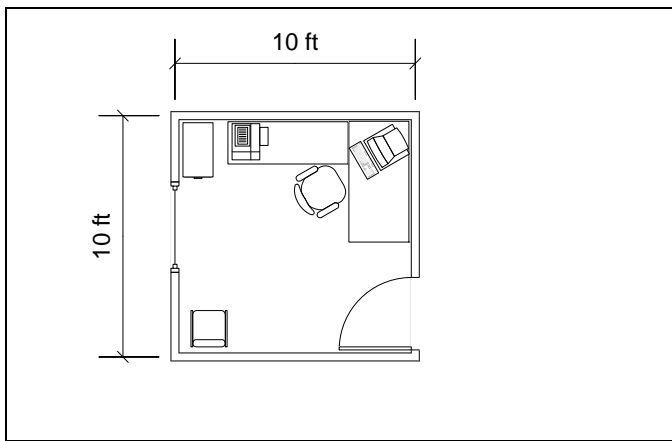
Figure 7D
Management Office Space
100 nasf

Assignment of office space for students tends to vary from school to school and from department to department. In general and when it is available, space is allocated to selected active doctoral students in a school, with the shared space ranging from 30-64 nasf per person. 64 nasf is at the highest end of cubicle space for students; in general, students can be comfortably housed in spaces less than this.

The illustrations below show such student environments.
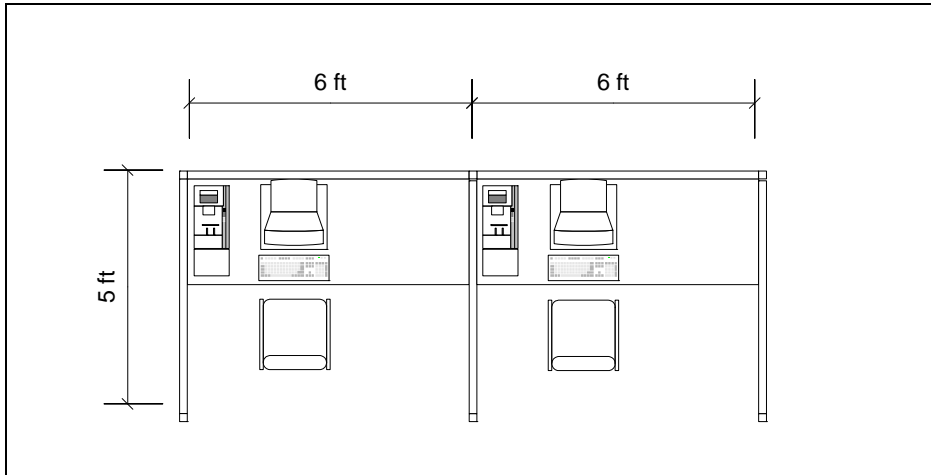
Figure 9A
Student Workstations/Office Space
30 nasf
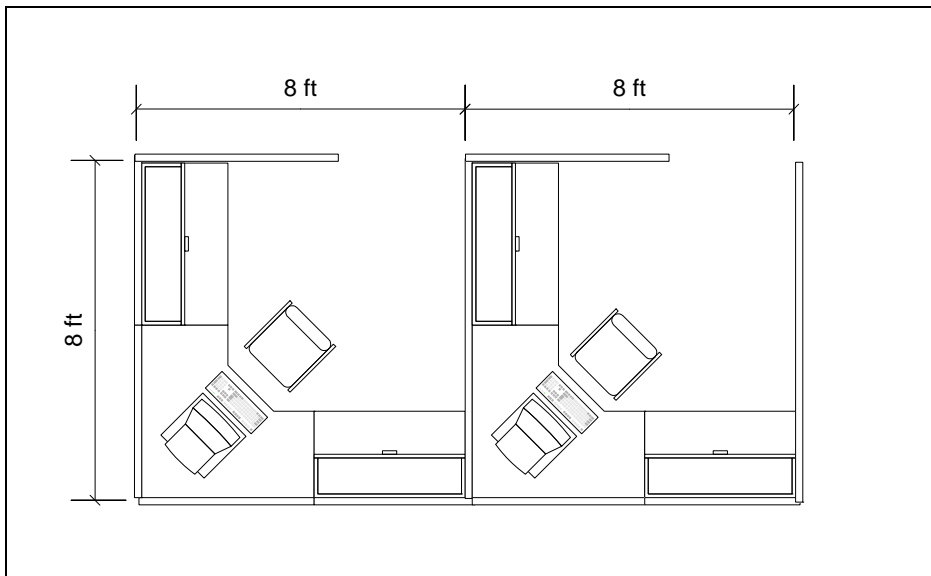
Figure 9B
Student Workstations/Office Space
64 nasf

Comparative Data on Office Space

Comparative office sizes from different universities and from different state guidelines are available upon request. The reference documents section of these guidelines provide some of this information. The array of sizes used by peer institutions helps to place the new Stanford office space guidelines in perspective. Note that the sizes recommended for offices of different types at Stanford are generally similar to the larger size standards used by other universities or state space guideline models.

Space Planning Guideline Summary

Group	Employee Type	Office type	Recommended Sq ft
Dean	Dean/VP	Office	240
Faculty	Tenure track, full time	Office	160
	Tenure track, part time	Shared office or cube	80
	Second offices*	Small office, shared office or cube	80 to160
Emeriti	Active	Office	160
	Non-active	Shared office or cube	80
Other teaching	Lecturers Sr. Lecturers Consulting Faculty Visiting Faculty	Shared office or cube	80
Others	Affiliates Visiting Scholars Fellows Research Associates	Shared office or cube	80
Staff	Program Directors	Office	140
	Full Time	Small office, shared office or cube	64 to 100
	Casual & Temp (full time)	Shared office or cube	64 to 100
	Part Time	Shared office or cube	64 to 80
	Research Associates	Small office, shared office or cube	64 to 100
	Student workers	Cube	36 to 64
Students	RAs	Cube	30-64
	TAs	Cube	30-64
	Grad Students	Cube	30-48

* Second offices
Note: Second offices for faculty or staff are highly discouraged.

The following second offices may be approved as exceptions, provided that primary and secondary offices are not in the same building:
- Directors of independent labs or programs
- Academic deans
- Chairs
- Joint appointments
- SLAC faculty

II. CLASSROOMS, COMPUTER CLUSTERS AND CONFERENCE ROOMS

Introduction

Effective allocation of classroom space on any university campus depends on multiple factors. Key among these are:

- *Classroom Space Assignments and Utilization Analyses*
  Provision of adequate numbers and sizes of classrooms, in the appropriate locations, to serve academic needs. (How many large or medium-sized classrooms are needed, versus smaller seminar rooms, in what buildings, and available at what times?)

- *Classroom Space per Station or Seat*
  Provision of correctly sized spaces *per seat* within any given classroom. (Are classrooms intended for 100 students in fact adequately sized to seat 100 students with the appropriate furniture?)

- *Classroom Technology Support*
  Provision of technology. (Is the classroom capable of supporting the teaching needs of the faculty, even if it is large enough, in the right place, available at the right time, and with the appropriate space per student seat?)

- *Flexibility of Classroom Space*
  Flexibility is a key factor in the design of classrooms. The configuration of the room and furniture layout should have the ability to change as the pedagogy evolves, and classroom
  designs should reflect this.

As these factors demonstrate, defining and allocating classroom space is a complex undertaking. The space planning guidelines in this document primarily address the second point noted above: guidelines for the appropriate amount of space provided in classrooms *per seat,* or *per student station.* The guidelines are most useful in helping to estimate the actual size of classrooms needed for new construction or for renovation projects which revamp existing classroom space. They also help to assess the efficiency of existing classroom space, when concerns arise about the adequacy of existing rooms to accommodate assigned numbers of students.

These factors and issues are addressed on a regular basis by the Office of the Registrar, which centrally allocates, equips and schedules most of Stanford's classroom space. The Office of the Registrar, working with Capital Planning and Space Management, weighs these issues and works with schools and departments in the design of new classrooms and the renovation of existing rooms. The involvement of the Registrar is key because of the need to coordinate classroom uses and functions across the campus in order to meet Stanford's academic needs. The Offices of the Registrar and Capital Planning and Space

Management also can help by advising about key issues such as grouping classrooms, clustering classroom support, and providing formal and informal breakout spaces. All of these can affect classroom plans quite markedly.

Classrooms

The table presented on the next page provides a range of guidelines for different types of classroom spaces. Actual space per station, or per seat, in a classroom may vary depending on existing room configuration as well as type of furniture and seating used (fixed versus movable, tablet arms of varying sizes, tables, or theater-type seating). Also, as classrooms are increasingly outfitted to accommodate sophisticated audiovisual equipment, streaming video, rear projection capacity, etc., the size of the rooms may need to be increased. In general, basic technology needs include a projector, white board, Ethernet connection, and video capacity. The guidelines below accommodate these types of needs. Recommendations for seminar rooms for 25 or fewer persons are also applicable to space planning guidelines for conference rooms.

Classroom Space Guidelines
Net Assignable Square Feet (nasf) per Station

Room Category	Room Capacity (No. Stations)	Movable Chairs W/Tablet Arm (TA) 15"- 20" Arms nasf	Fixed Pedestal or Riser Mounted Seating w/ TA nasf	Auditorium Seating nasf	Movable Table and Chairs nasf	Fixed Pedestal Table and Chairs nasf
Seminar/ Conference/ Small Class	0 – 25	17 - 24	17	--	16 - 26	20 - 22
Classrooms	26 – 49*	16 - 18	17	--	16 - 26	18 - 20
Classrooms	50 – 99	14 - 16	13	14 - 17	16 - 22	18 - 20
And	100 – 149	--	12 - 14	12 - 15	16 - 22	18 - 20
Lecture	150 – 299	--	--	10 - 14	16 - 22	17 - 19
Rooms	300 +	--	--	10 - 14	16 - 22	16 - 18

Figure 10
Classroom Space Guidelines
Nasf per Station *Seating capacity per fire codes for most classrooms with only one entrance/exit door should not exceed 49.

Sources:

The Classroom Space Guidelines data is based on a synthesis of space guidelines developed by the following:

Cornell University, "Space Planning Guidelines," Ithaca Campus, 1994. (The Cornell Report included reference data from: SUNY – State University of New York, WICHE – Western Interstate Commission for Higher Education, MIT – Massachusetts Institute of Technology.), Washington State ("Facilities Evaluation and Planning Guide (FEPG), October 1994), California "Postsecondary Education Commission" report (CPEC), "A Capacity for Learning," 1990.

The following figures show layouts for a variety of classroom spaces and configurations. These layouts are not intended to be exhaustive; rather they are illustrations of some typical classroom sizes and formats at Stanford.
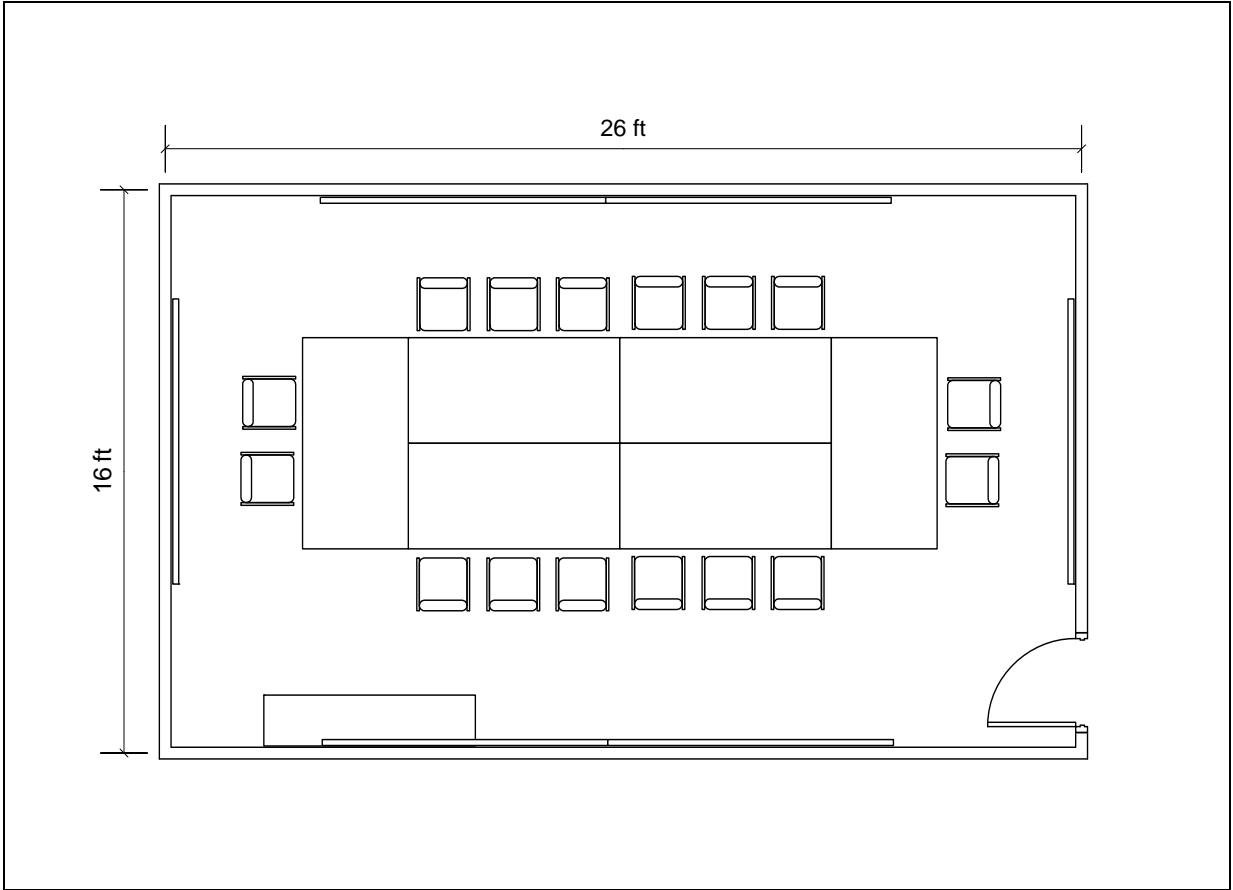
Figure 11A
Small Seminar Room – 416 nasf
Capacity 16 (26 nasf per seat)
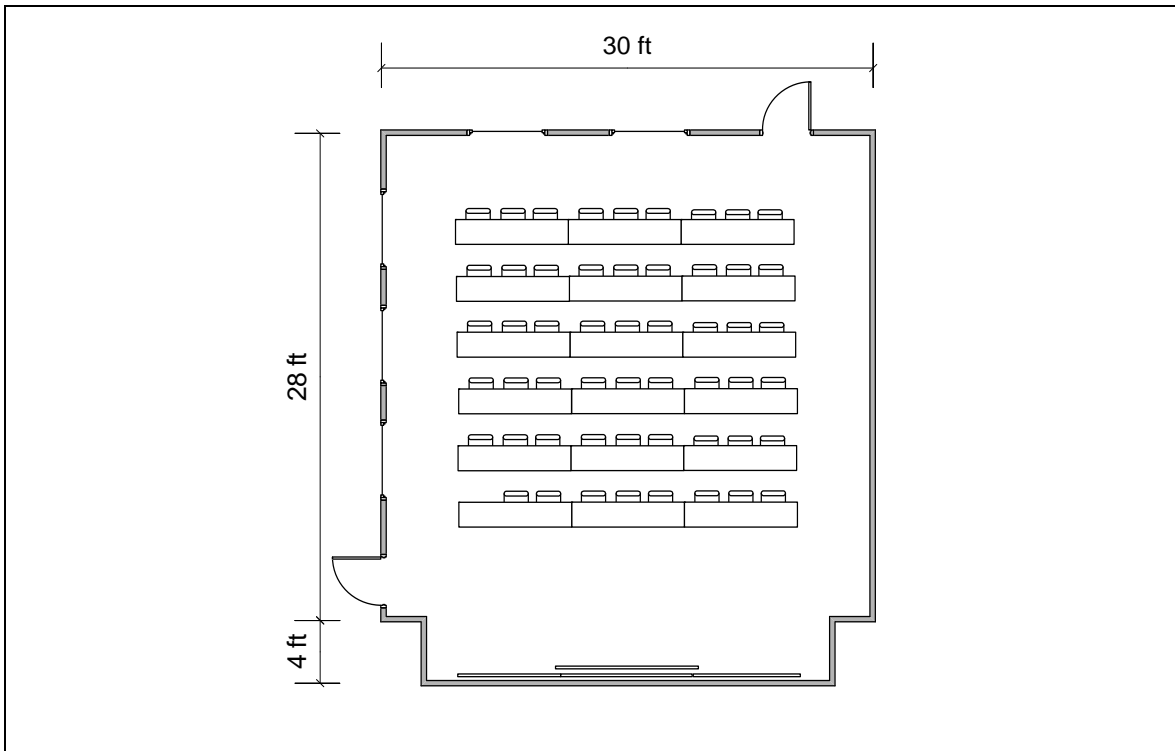
Figure 11B
Medium Classroom with fixed pedestal tables and chairs – 960 nasf
Capacity 54 (18 nasf per seat)
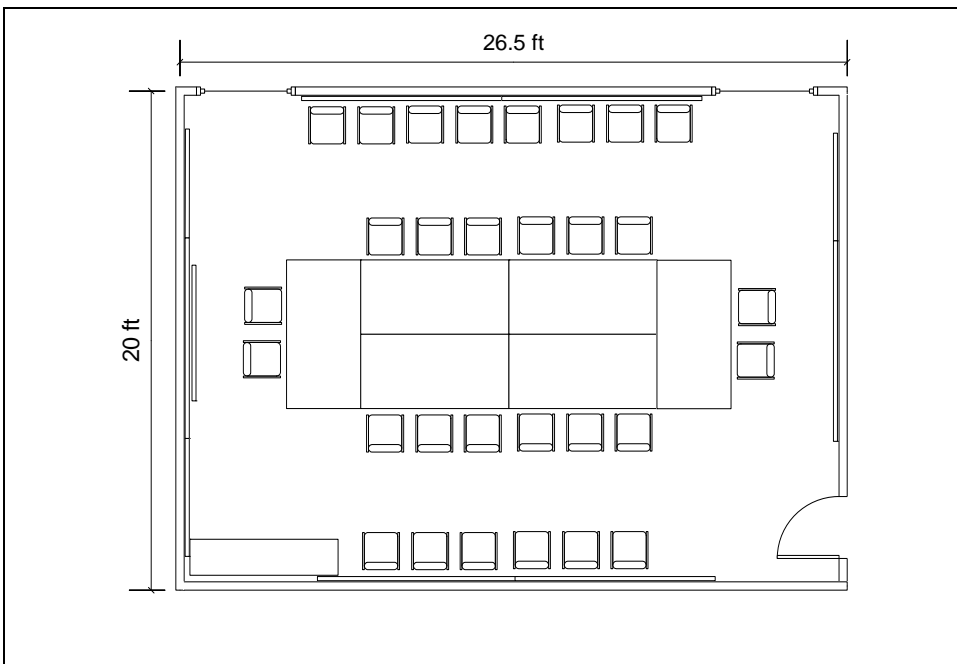
Figure 11C
Medium Classroom with moveable tables and chairs – 530 nasf
Capacity 30 (18 nasf per seat)
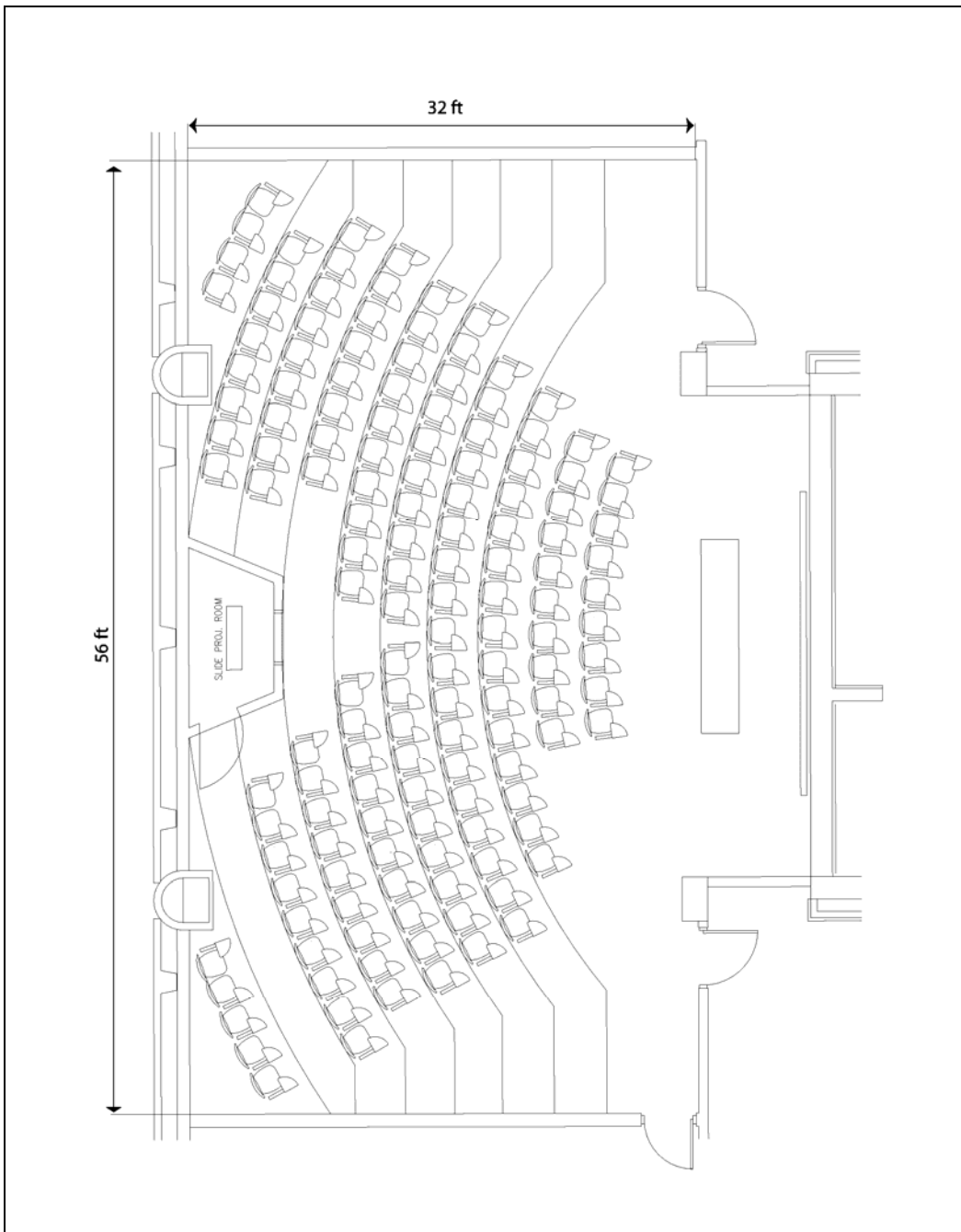
Figure 11D
Room Size: 56X32 with 200 sf for teaching area with raked floor – 1,992 nasf
Auditorium Seating with Fixed Chairs and tablet arms
Capacity 135
15 nasf per seat

Computer clusters, which are areas available for student use on a casual or an assigned basis, should provide approximately 30-36 nasf per workstation. ITSS and Capital Planning work with specific schools or departments requesting space to develop creative approaches for design of spaces to house computer clusters. This is particularly important in rooms or areas with challenging building configurations. An alternative to the single seat per machine is a shared workstation model, with two or more students sharing terminals for group projects. Terminals can also be effectively used lined up along wide corridors or along building walls
in larger rooms. When designing a computer lab, it is important to provide adequate space on the work surface for notebooks and papers in addition to monitors and CPUs. Some computer lab work areas should be height adjustable or at a 32 inch height to accommodate wheelchair access.

The following figures provide sample layouts of computer clusters.
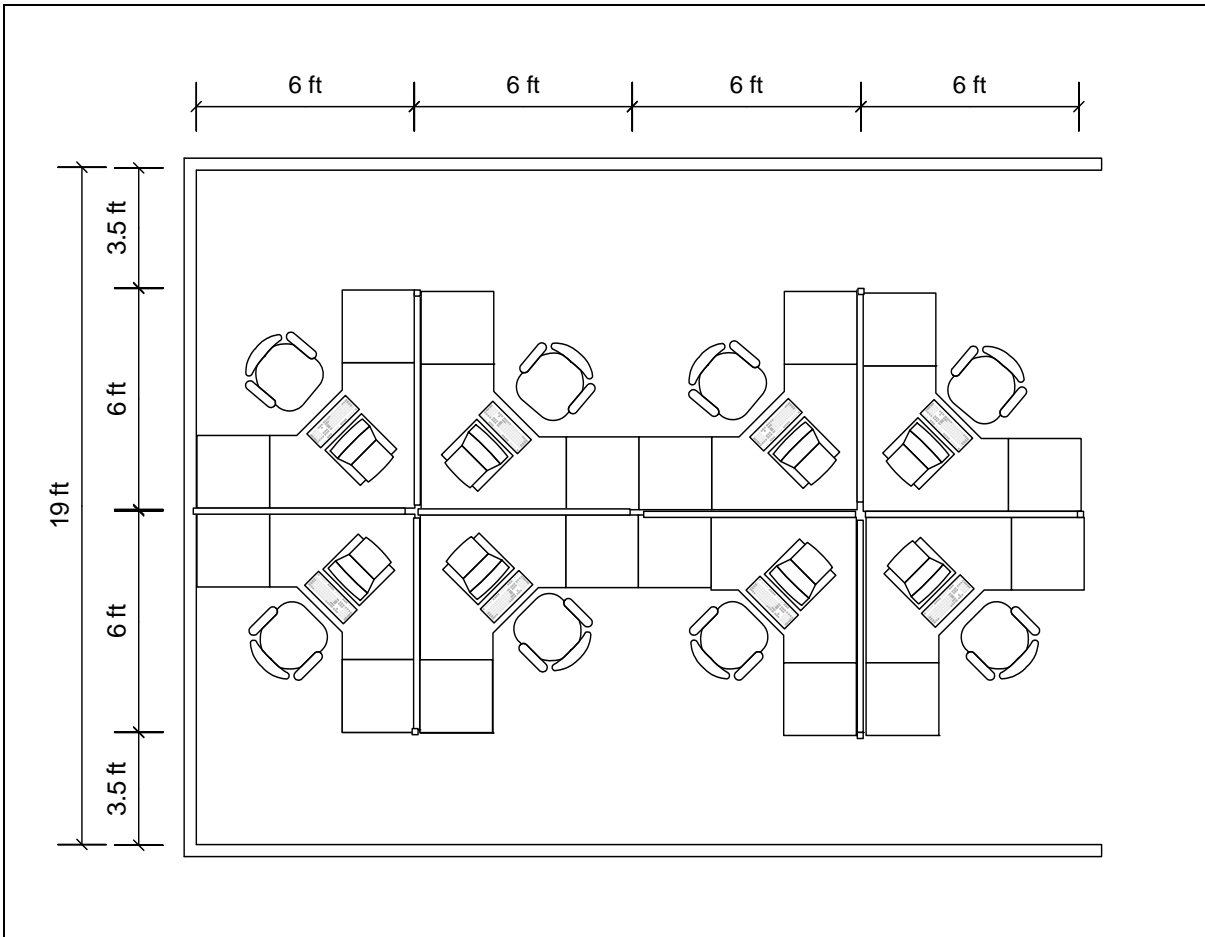
Figure 12A
Computer Cluster
36 nasf per workstation
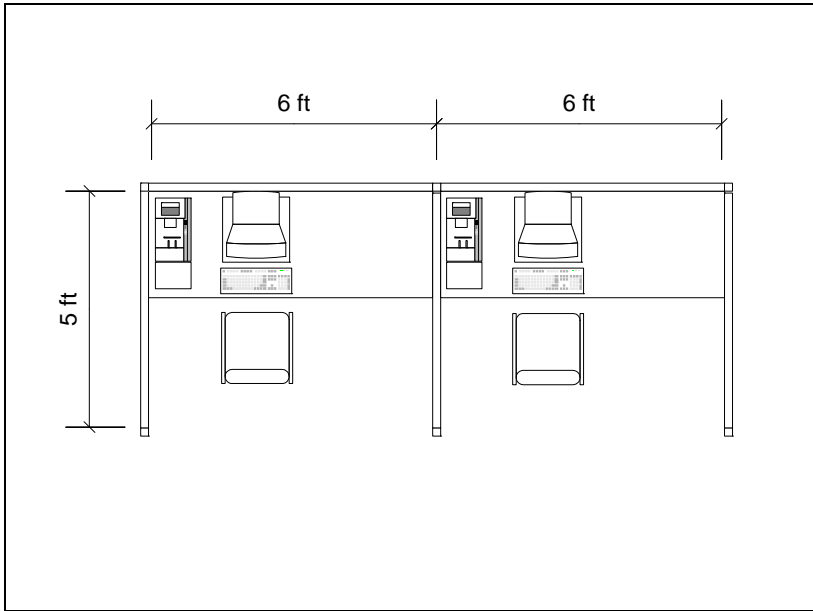
Figure 12B
In-line Computer Cluster
30 nasf per workstation
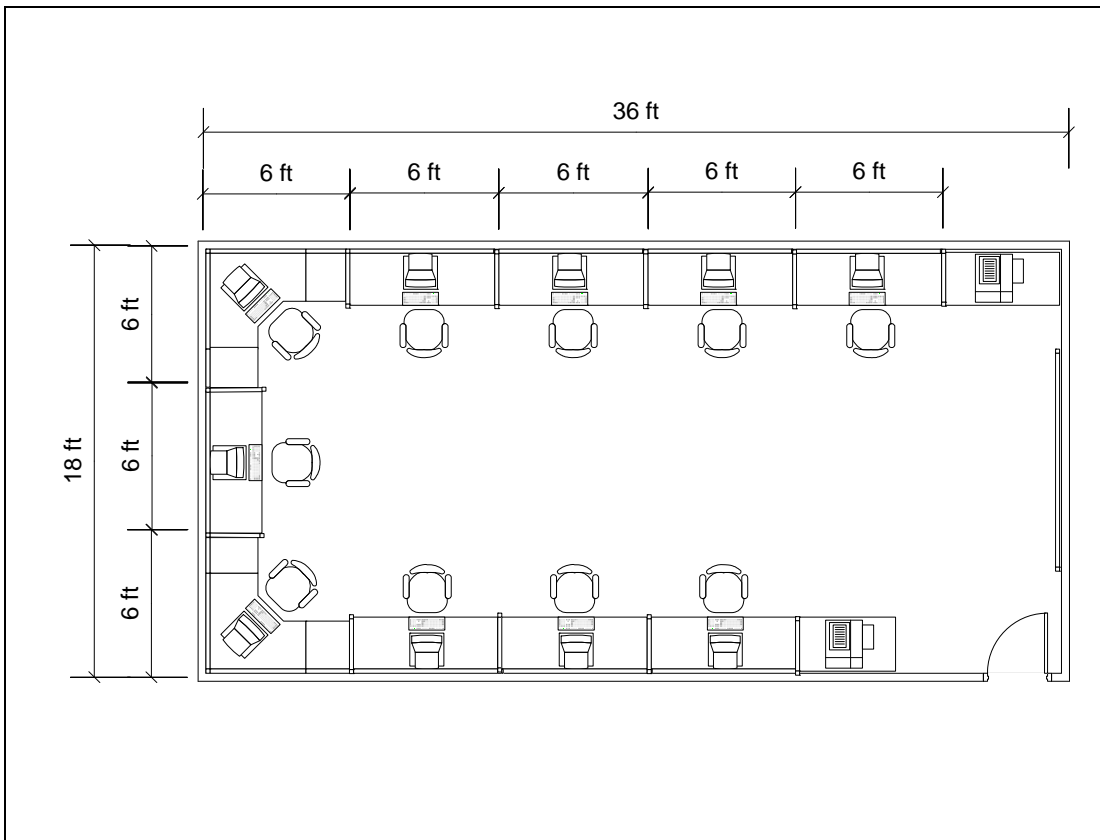
Figure 12C
Computer Cluster
36 nasf per workstation

34

Conference Rooms

Guidelines

For the purpose of these guidelines, a Conference Room is considered as a meeting space planned for 25 or fewer people.

Guidelines for seating space on a per person on a per seat basis are presented previously in this section in Figure 9 (page 18) Classroom Space Guidelines. Conference Room space is defined according to the same criteria as Seminar Rooms, with seating around a table, space for audio/visual equipment and presentations, and space for food service or other conference needs as required.

Determining the Number of Conference Rooms Required

The range of space for a small seminar room or conference room of 0 – 25 people is approximately 16 to 26 nasf per person. The larger area is for a room with space for audio/visual equipment, a screen and/or white board for projection and display, bookcases or shelves, and a serving area for buffet food or coffee service. The smaller areas per person are for conference rooms without these capabilities.

The total amount of Conference Room space required to serve a grouping of office areas varies widely. The following guidelines serve as frameworks for determining the number of conference rooms in each area, knowing that particular circumstances might lead toward the development of varying numbers of rooms for different types of areas.

In predominantly private office environments (defined as areas with a majority of offices, minority of cubicles), the guideline is:

- 1 conference/meeting space for every 20 people
  2/3 of these spaces should be for 8-10 people
  1/3 of these spaces should be for 5-7 people
  (Alternatively, all spaces can be sized for 10-15 people and then divisible into smaller rooms. Feasibility of doing this depends upon requirements for soundproofing, cost, etc.)
  There might be one larger space per floor (holding 20-30 people)

In predominantly open office environments (defined as areas with a majority of cubicles and a minority of offices), the guideline is:

- 1 conference/meeting space for every 10-12 people
  2/3 of these spaces should be for 8-10 people
  1/3 of these spaces should be for 5-7 people
  (Same comment as above on creating divisible rooms.)
  Additional tiny spaces (phone room size) might be needed
  There might be one larger space per floor (again, for 20-30 people)

The following layouts provide some sample conference room plans. In addition, the classroom plans in the previous section show larger size conference room options.
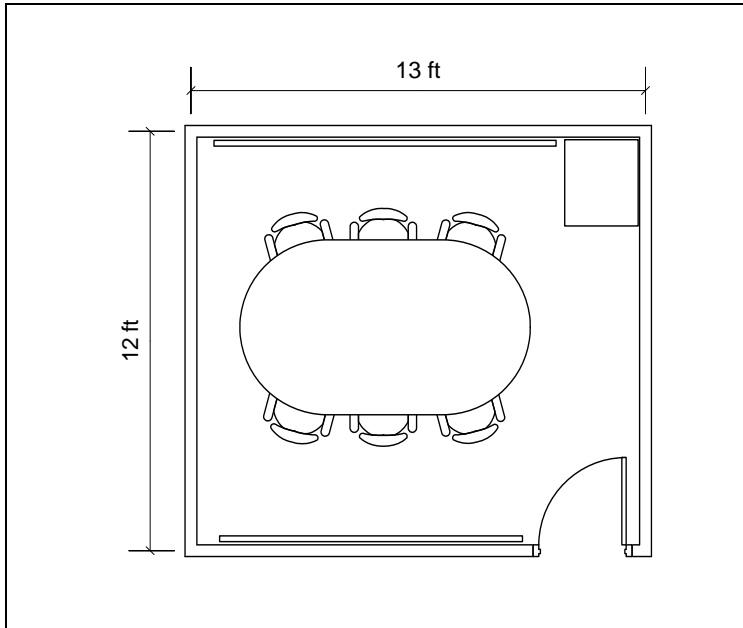
Figure 13A
Conference/Small Consulting – 156 nasf
Capacity 6 (26 nasf per seat)
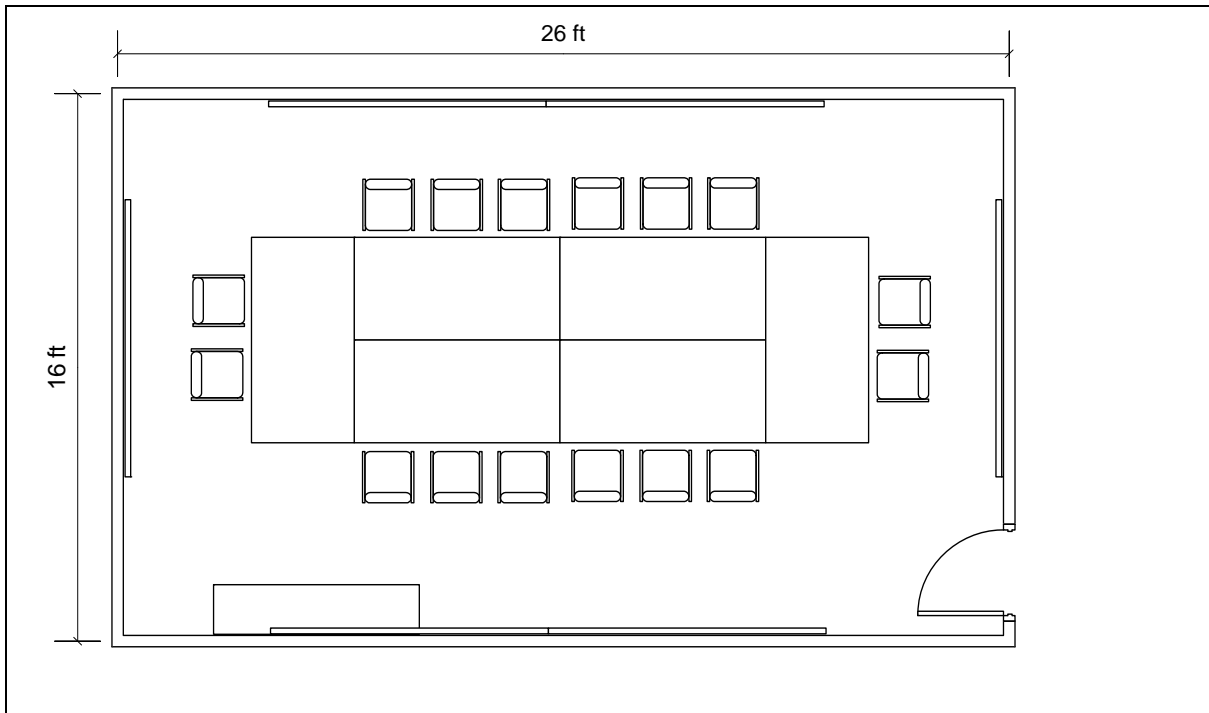
Figure 13B
Conference - 416 nasf
Capacity 16 (26 nasf per seat)

Comparative Data on Classrooms and Conference Rooms
Comparative data for Classrooms and Conference Rooms is presented in the reference documents section of these guidelines. The recommended Stanford space guidelines for space per station in classrooms of varying sizes represents an amalgamation of the most applicable data from these different sources.

In addition, the reference documents include the Executive Summary for Stanford's new Classroom Master Plan, which addresses classroom utilization and policy issues.

III. RESEARCH AND LABORATORY SPACE

Introduction

Research and laboratory space needs and guidelines vary markedly between schools and departments, types of research being undertaken, and special equipment needs. There are a number of different types of laboratories that exist on campus, including (among others):

- Computational laboratories
- Wet laboratories
- Dry laboratories
- Studio or design-based laboratories
- Teaching laboratories
- Special large equipment or instrumentation laboratories

The allocation of research and laboratory space within schools and departments typically is determined by department chairs in collaboration with the school Dean.

When additional space is needed, and/or substantial space revisions are requested for research functions, Capital Planning and Space Management assists schools with defining the specific types of research spaces required, and then with benchmarking, comparative studies, and laboratory designs. This helps to ensure flexibility, modularity and consistency in space allocation, as well as efficient use of existing space and comprehensive planning of proposed new space. Capital Planning and Space Management works with schools to define areas such as student space, core facility spaces, common equipment areas, etc.

Planning Themes

While laboratory types vary markedly and can be so specialized as to defy space planning guidelines, there are some common themes to keep in mind in laboratory space planning. Some of these are as follows:

> Modularity – Making laboratory design as modular as possible is key, particularly in terms of HVAC design, specialized systems and structural loading designs. This is important because, given the increasingly fast pace of change in science disciplines and techniques, we need to be able to modify and improve lab settings as science evolves and changes.

> Flexibility – While each lab is different and many specialized features are required, it is important to plan laboratory spaces as flexibly as we can both because of the changes in science mentioned above and also because research programs ebb and flow over time. Flexibility in design enables us to allocate additional space easily, as research programs grow or shrink. Often flexible planning enables us to co-locate similar laboratory programs, which furthers scientific goals and encourages collaboration.

Zoning – Creating laboratory "zones" which also enable flexibility and ease of operations is very important. EHS and ADA codes are critical here.

Shared Laboratory Support and related spaces – Sharing of laboratory support rooms and functions has become much more common today that was the case in the past. Continuing to develop shared support spaces is critical in constraining costs, using space efficiently, and being able to provide state-of-the-art spaces. It is important that these kinds of shared spaces are planned well from the very start, so that sharing can be accommodated. Examples of support and other spaces that should be considered for sharing include:

- Seminar and conference rooms
- Student spaces (for maximum flexibility, these should be interchangeable, rather than dedicated to individual faculty research groups)
- Computer clusters and labs
- Preparation rooms – (there is a large range here – everything from rooms to prepare rocks and minerals to those housing chemicals and cultures)
- Storage rooms
- Dark rooms
- Glass wash
- Equipment rooms – (again, a large range – from microscopes to isotopes and other specialized equipment)
- Cold rooms
- Greenhouses
- Analysis rooms

Utilization – Laboratory space is the most expensive space that any university develops. It is critical that this type of space is well used, which requires regular monitoring to see how the space is used and for what purposes. For example, a wet lab space being used to store materials rather than engaging in an active research program is not an optimal use. Assessing utilization involves:

- Performing regular utilization walk-throughs and studies;
- Evaluating how many researchers are housed in each research space;
- Assessing how active the research program is (measures commonly used include publication activity, grants, awards, etc.), and
- Determining how critically important the research is to the university or school's academic mission.

Service Centers and Core Facilities – Developing core facilities, which in some cases become service centers, is another way of sharing laboratory facilities that could not be developed or housed by individual investigators. This can save markedly on the cost of expensive laboratory equipment, as well as energy and other operations costs. These facilities need to be well

staffed and organized, so that the equipment and research needs of all parties are well met.

Accommodating storage needs – We have all seen laboratories that begin to look like storage rooms, either because there is no other storage available or because researchers cannot dedicate time to developing storage options. It is important that storage for laboratories is carefully thought out, so that the highest and best use of laboratory spaces can be achieved.

These themes have different applications in laboratory design, depending upon the type of laboratory (wet labs are very different than computer or teaching labs, for example). Nonetheless, they are important themes to keep in mind as planning tools.

Guidelines

As mentioned above, research space needs can vary widely, ranging from a computer workstation to a large engineering lab with a wind tunnel installation. The following present some general planning guidelines that can be followed in many cases with regard to wet laboratories in the biological and medical sciences, as well as dry laboratories (including those with and without teaching lab needs.) Additional guidelines are being developed by Capital Planning and Space Management as a resource for the campus related to other types of laboratory spaces. In the coming years, we plan to develop guidelines for the following additional laboratory types:

- Wet Laboratory (Chemistry) – sometimes called "super wet"
- Computer Laboratory
- Instrumentation Laboratory
- Teaching Laboratories (being developed as part of the shared teaching lab building planning)
- Core Facilities

A. Wet Laboratories (most applicable to Biology and Bio-Medical Labs)

Introduction

While laboratory needs vary widely between disciplines, as mentioned above, Stanford's goal is to configure laboratory space in as flexible and modular a way as possible because of the fact that research needs and methods change and evolve over time. Laboratory space is typically configured in standard laboratory modules, which become space denominators that are designed to meet a variety of research needs. These modules allow for flexibility in planning the following: mechanical/electrical/plumbing (MEP) systems; heating, cooling and ventilation (HVAC) systems; casework; laboratory support spaces; specialized functions; partitions; fume hoods; etc.

Laboratory modules, then, become the building blocks for planning research space. Larger units can be created by aggregating a number of modules, and by the same token smaller laboratories can be created with portions of modules. The number of modules allocated to each researcher is based on the type of work being done, and the associated requirement for research space. This allocation of research space can ebb and flow over time, as research programs change. The planning module is repetitive and regular, and enables flexibility in design. The size varies depending upon the depths requires for special equipment or particular research purposes. The actual layout and zoning of the laboratory modules depends upon the specific laboratory function and research needs, including sinks, fume hoods, and special support, as well as the building floor plan. For example, the relationship between laboratory and office zones, or between laboratory and support space, will vary depending upon the type of research and laboratory need. The module component will remain standard while the ways in which the modules are arranged will differ from laboratory to laboratory.

Typical Length and Width
The width dimension of a standard bench lab module for this lab type is typically 10'6. This dimension accommodates wall thickness and 30" deep benches on either side of a 5' wide aisle (the 5' aisle is wide enough to accommodate people working back to back at opposite benches, the 60" ADA wheel chair turning diameter, and a 36" wide in swinging door with the ADA required 18" clear area next to the strike). A significantly greater width becomes inefficient and gains little in additional functional workspace unless it is to accommodate unusually large pieces of research equipment that might be 3' or 4' deep. A significantly narrower width becomes too tight to allow efficient functioning room for lab technicians, students or researchers who use lab benches and equipment on both sides of the room.

The length dimension of a single standard bench lab module is typically assumed to be 10 'long. However, this dimension can easily vary according to a building's structural system or plan configuration. The critical dimension is the width, not the length, of the wet lab bench module. Ideally, lab module lengths are multiples of their width. This adds flexibility to the building or space in that modules (benches and aisles) can be arranged longitudinally or transversely without loss of efficiency.

At a typical 10' length, one standard wet lab bench module becomes approximately 110 nasf (11' wide x 10' long.) Two lab modules are often placed end-to-end to make one longer lab of 220 nasf (11' wide x 20' long.) In addition, two or more lab modules can be placed side-by-side, creating double or triple width labs. In this case, the intermediate "side" walls are eliminated and the lab benches in the center become double-width island benches, providing workspace on both sides.

Important Factors
In this type of modular planning, Capital Planning and Space Management also brings in comparable benchmark data from similar research facilities, as applicable and available, to inform the design. An important factor in the overall building layout for research laboratories are seismic standards, particularly in larger buildings with deeper floor plates. In order to meet seismic requirements, the layout of laboratory, support and office space often needs to be varied at the middle and ends of buildings in order to accommodate bracing and/or shear walls.

Some Recent Stanford Examples
This type of modular planning has been used in some of Stanford's most recent science building projects, The Beckman Center (completed in 1988), the CCSR building (completed in 2001) and the Clark Center (currently under construction.)

The Beckman Center is designed to a 10' module. The perimeter general lab module is 10' x 23'and arranged in labs that are two and three modules wide. The interior lab support spaces are accommodated in a 10' x 30'.

CCSR is designed to an 11' module. The wider module allows for additional aisle width between the 20' long fixed benches in the 31' deep open labs.

The Clark Center is designed to a 10'6" module. The structural column grid is a multiple of the module with a maximum bay size of 31'6" x 31'6". The large open labs feature an exposed utility distribution system at the ceiling supported on a unistrut grid located on the half module (5'3' in each direction). Flexible connections link the utilities to the lab benches on wheels below. The 4' and 6' long benches can easily move to support the changing needs of the researchers. They can be placed end to end, arranged at angles to each other and the building grid, and make aisles of any width to suit the need.

The walls of the enclosed lab support rooms in the Clark Center are located on the module creating rooms of different sizes as needed: 10'6" x 10'6", 10'6" x 21', 10'6" x 31'6", 21' x 21', etc. There are some lab support room walls that hit the half module, making rooms 10'6" by 15'9".

The following figures give a sense of this modular format. As mentioned above, the overall layout of this modular format will vary throughout buildings for seismic and other structural reasons.
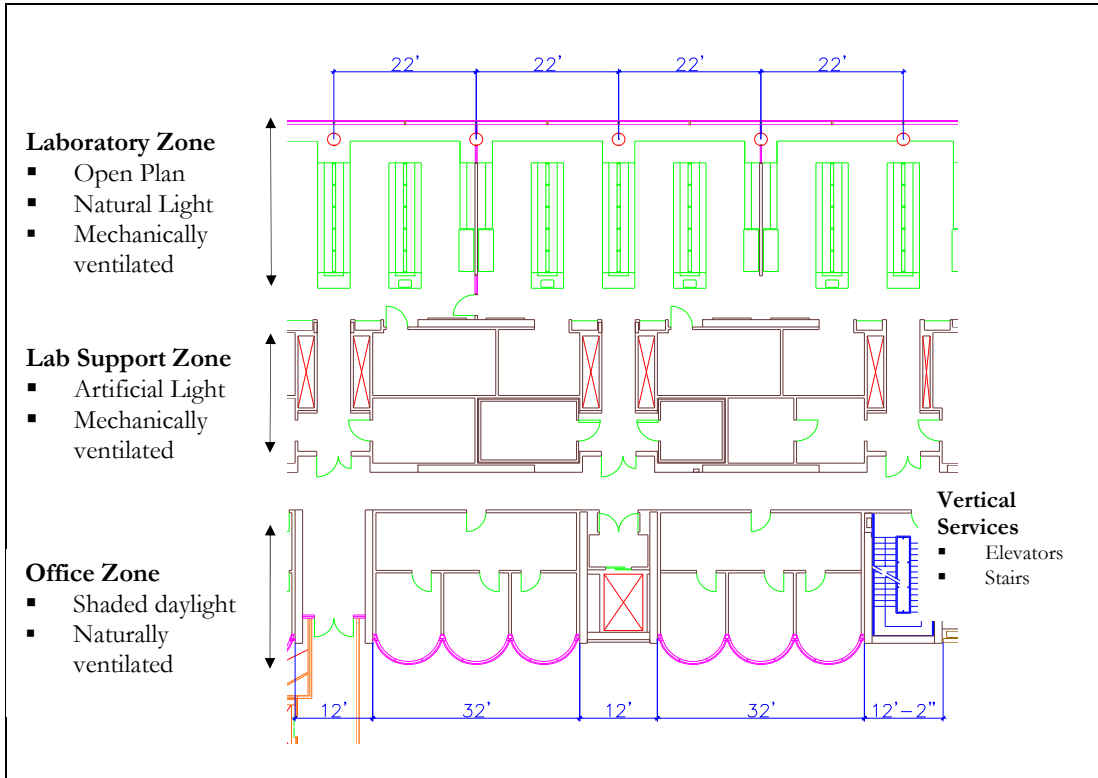
Figure 14A
Typical Laboratory Layout used in design of Beckman, CCSR and Clark Buildings at Stanford University
(Illustration from MBT Architects)

Figure 14B
Typical Wet Laboratory Layout
~2,385 sf per PI
(Illustration by Perkins+Will Architects)

1 PI plus 10 students = 11; 2385 sf / 11 persons = 217 sf/pers

10'–6"

PI Office
160 sf

Admin
100sf/4 = 25 sf

Research Lab
1125 sf

H&CW
DI, EW

Safety
Shower

Fume Hood
Alcove
75 sf

Equip
165 sf

Tissue
Culture
165 sf

CO2

6' BSC

Cold Room
165 sf

CW

Chem Stor
165 sf

DI
H&CW,
EW

Plus access to shared : (areas prorated)

Autoclave	41 sf
Microscope Room	41 sf
Radio Isotope Lab	41 sf
Dark Room	20 sf
Glass Wash	32 sf
Seminar room	100 sf
Break/Pantry	65 sf
	340 sf

Some biologists may need access to a
vivarium

A plant biologist will need access to more
spaces, including:
  Green House/Head House
  Growth Chambers

B. Dry Laboratories

Dry laboratories can also be designed with modularity described in the previous section on web laboratories. As in wet labs, many of the support spaces can be shared. Moveable tables and storage cabinets can lend flexibility for changing research needs over time.

The following figures give a sense of dry laboratory ideas. Figure 14C shows a typical research space and Figure 14D shows a research space with the addition of dedicated teaching and storage space.

Figure 14C
Typical Dry Laboratory Layout
~930 sf per PI
(Illustration by Perkins+Will Architects)

1 PI plus 7 students = 8;   930 sf / 8 persons = 116 sf/pers
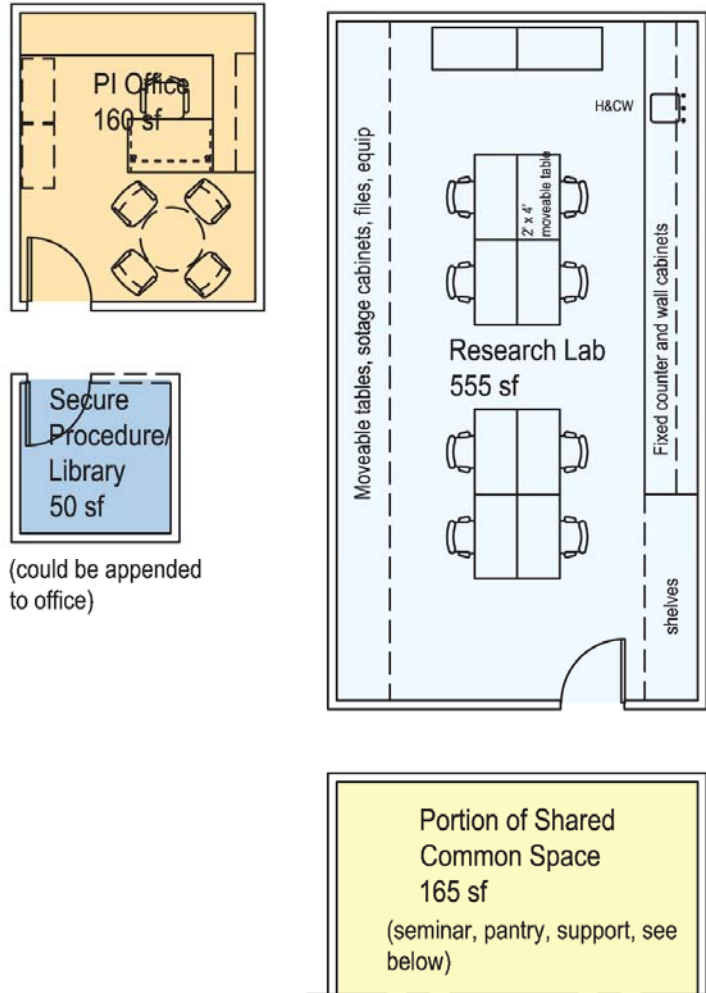
PI Office
160 sf

Secure
Procedure/
Library
50 sf

(could be appended
to office)

Moveable tables, sotage cabinets, files, equip

H&CW

2' x 4'
moveable table

Research Lab
555 sf

Fixed counter and wall cabinets

shelves

Portion of Shared
Common Space
165 sf

(seminar, pantry, support, see
below)

Shared Common Space: (areas prorated)

Seminar Room	50 sf
Pantry/Lounge	50 sf
Analysis/Imaging/Support	65 sf

Figure 14D
Typical Dry Laboratory Layout with addition of Teaching Space
~1,710 sf per PI
(Illustration by Perkins+Will Architects)

1 PI plus 8 students = 9;   1710 sf / 9 persons = 190 sf/pers

PI Office
160 sf

Secure
Procedure/
Library
50 sf

(could be appended
to office)

Research Lab
555 sf

Moveable tables, sotage cabinets, files, equip

Fixed counter and wall cabinets

2 x 4'
moveable table

H&CW

shelves

Study Collection
and Dedicated PI
Teaching Space
600 sf

Moveable tables, sotage cabinets, files, equip

Fixed counter and wall cabinets

2 x 4'
moveable table

H&CW

Portion of Shared
Common Space
165 sf
(seminar, pantry, support, see
below)

Collection Storage
180 sf

30" deep cabinets

Shared Common Space: (areas prorated)

Seminar Room	50 sf
Pantry/Lounge	50 sf
Analysis/Imaging/Support	65 sf

Comparative Data

Comparative data about laboratory planning is available upon request, and also is mentioned in the reference documents section.

IV. OTHER SPACES

Introduction

There are a number of other spaces that present challenges in planning and/or renovating buildings. Some of these include office service space, storage space, kitchen space, and touchdown space. While we have not developed square footage guidelines to size and plan these types of spaces, we offer the following observations and planning ideas related to their development. We will be working to develop additional guidelines on these types of spaces, and welcome thoughts, comments and perspectives.

Office Service Space

There is sometimes the tendency to design office service space for individual workgroups, which can result in cramped and poorly organized spaces that don't operate particularly well. Office service space is generally much more effective when it is centralized on a floor or in one location. This should be the focus, and this often can include sharing such space between groups. Separate office service spaces for each small group should be discouraged, for space utilization reasons as well as for cost reasons (equipment costs that could be shared – copiers, postage meters, printers, etc.) and for sustainability reasons (such as energy costs resulting from operating duplicative equipment group by group and procurement costs resulting from small orders of the same supplies rather than one larger order.)

Storage Space

In 2002-03, Capital Planning and Space Management undertook a study of storage on campus. In general, the study found that Stanford schools and units manage their storage well and do not have extensive storage issues and problems, with a few exceptions. These exceptions are usually for reasons of specialized storage needs (scientific equipment, physical specimens used in research, files with long-term storage regulations, etc.) In these cases, special storage solutions need to be developed and monitored. Whenever possible, this type of specialized storage should be off-campus so that on-campus space can be used for active academic programs priorities.

As a result of the study above, Capital Planning and Space Management developed storage policies for the campus' centralized on campus storage space (the Commissary) and the off-campus storage that is available (Newark warehouse.) These policies are available at lbre.stanford.edu/cap_plan.

Also included in the background documents are policies on storage containers (we discourage containers in general) and a generic storage policy for use by schools and areas to manage storage needs.

For day to day storage of routine materials on campus, we have developed a few key guidelines as a result of the study:

- On-campus storage ideally should not exceed 5% of any school or area's total space. If storage exceeds this percentage, an assessment should be made of solutions and alternatives.
- Storage should not be housed in windowed offices.
- The following types of materials are appropriate for on-campus storage:
  - Materials that require short-term storage due to a renovation project or an office move/remodel (moving costs are generally covered by project budget);
  - Documents or materials required for grants and/or research projects (the time frame required must be specified);
  - Documents or materials required for personnel or legal actions (the timeframe required must be specified);
  - Materials required for teaching laboratories, classroom use or other educational uses.
  - Materials necessary to the academic mission of the (school/area) which may include working equipment, furniture, library materials.
- The following types of materials should not, in general, be stored on campus:
  - Chemicals or hazardous waste
  - Non-working equipment
  - Empty cardboard boxes, crates, computer boxes, packing materials, etc.
  - Individual office files or other individual office items (personal furniture, books, etc.)
  - Materials belonging to emeritus faculty members
  - Non-usable office furniture (such furniture should be surplused)
  - Personal property (bicycles, athletic equipment, clothing, luggage, etc.)
- It is advisable that storage assignments be made for a specified period of time, and that storage is culled on a regular basis.

Kitchen Space

Like office service space, kitchen spaces that are developed for small work groups tend to become cramped and poorly organized spaces that are too close to individual work environments. Centralizing kitchens for shared use on each floor of buildings is a preferable way to organize these spaces. This also saves cost in terms of appliance purchase and use, and is more sustainable in terms of energy use.

Galley style kitchens tend to be space efficient and adequate for office settings. Eat-in kitchen areas require more space and should be centralized in buildings as much as possible. They also require careful monitoring to be sure that they are utilized and that clean-up occurs on a regular basis.

Touchdown Space

Touchdown, or hoteling space, is becoming more and more important as Stanford faces the reality of moving administrative and other staff off campus in order to make on campus space available for growing academic programs. Touchdown space is important in assisting staff to accomplish work as they move from the main campus to other campus locations.

As we plan touchdown space, the following are key planning parameters. We look forward to thoughts, input and suggestions as we develop touchdown space on campus.

- Touch down space should be as centrally located as possible – near entrances to campus, public transportation, parking, coffee, etc.
  Convenience is key, because this is "just in time" office space that is non-territorial in nature. It is shared by many, needs to be easy to find, and helps staff both do their work and maintain connections to main campus colleagues and activities. There needs to be card key access, to permit entry at all hours. Room reservation systems need to be easy to use.

- Touch down space should be open, light airy, because it is a magnet or destination point. The colors and furniture can be fun and lively – this type of space can look a bit different than other spaces on campus.

- Touch down space needs to provide the business center elements that people need. This varies group by group but includes: wireless, copiers, fax, land-line phones, printers (with instructions), shredders, plotters, access to coffee, and desk-top computers for stopping in and checking e-mail.

- There are different types of touchdown spaces, facilitating a variety of needs. These include teaming (groups working together), meeting (of all sorts and sizes) and quiet, heads down work. Some types of touchdown might require storage space for personal items and work that is in process.

- Furniture needs to be highly adjustable and very flexible, particularly the chairs and work surfaces. Everything needs to have a "plug and play" ease of use. Whiteboards to share information can be very helpful.

- There needs to be a "back-up" plan for when touch down space gets full – perhaps a conference room that is easily converted into more group space, etc.

- Etiquette about how to use touch down space is very important. There need to be rules and norms in place about touchdown use, voice levels, and scheduling priorities. Open communication is key. Etiquette evolves as the space is used more and more, and as people adjust to touchdown concepts.

- People need training about how to use touch down space, which includes the etiquette mentioned above as well as technology resources. There needs to be the appropriate support and staff resource to facilitate this training and ongoing evaluation.

Furniture Program Guidelines

Introduction

The Department of Capital Planning and Space Management within Land, Buildings and Real Estate began the development of a comprehensive Furniture and Workplace Program in the beginning of 2007. Furniture and workplace design is a critical aspect of any building project, because it strives to create a work environment that is safe, welcoming and comfortable for our faculty and staff. In addition, furniture design and workplace planning come together to create an overall impression of Stanford as a university and as a work setting. Such impressions are memorable, lasting, and important.

The Furniture and Workplace program is being introduced as a part of Stanford's Space Planning Guidelines, to be used in conjunction with these guidelines. The program also relates to Stanford's Sustainability Guidelines and the Project Delivery process used by LBRE, as well as the University's Environmental Health and Safety guidelines.

The Furniture and Workplace program outlines a holistic approach that:

- Supports the University **space guidelines**;
- Promotes **ergonomic** and **healthy** work environments;
- Maximizes **sustainability** in furniture choices;
- Creates **high quality, durable and long-term** furniture solutions;
- Enables **flexibility** in design so that furniture can be reused, moved, and modified to meet changing program needs; and
- Leverages Stanford's overall buying power in furniture purchasing to achieve **better service** and **more competitive pricing**.

This new program is particularly important at this time, because of the unprecedented scope of furniture and workplace volume represented in Stanford's capital plan. The program has been rolled out in the following phases, and is still in process. Further updates to these guidelines will be provided in the coming years.

The Furniture and Workplace program was developed as a collaboration of the Department of Capital Planning and Space Management, the Procurement Department, and the departments within Land, Buildings and Real Estate particularly the Department of Project Management. The thoughts and comments of many schools and areas at Stanford are reflected in the program and its guidelines as well.

Furniture and Workplace Program Phases To Date

Phase 1 – Research
The program began with research and benchmarking about Stanford's current furniture practices, together with research about peer schools and how they approach furniture and workplace planning. This involved interviews, meetings and focus group sessions with schools, administrative units, project managers and the procurement department at Stanford, as well as with external vendors and consultants. We also conducted telephone interviews with peer schools and colleagues. This research has supported the development of the furniture program as a whole, and helped to outline the key objectives of this new initiative.

Issues at Stanford

The research phase of the project identified many of the issues facing Stanford with regard to furniture and workplace design. Key among these were the following:

- The University tends to have a mix of furniture of varying quality and design. Much of the furniture is old, unsafe, out of scale, and inflexible.
- Furniture often tends to be highly customized, limiting flexibility and re-use options.
- Furniture often is not ergonomic, nor does it follow safety standards.
- Vendor service for furniture is often poor in terms of service, pricing and delivery.
- The procurement process for furniture is long, cumbersome, and inefficient.
- There are no coordinated University-wide efforts to dispose of furniture or to sustain it for a second life.
- Many different individuals on campus plan and order furniture, facing the issues listed above and with little or no guidance or support regarding guidelines, design, and quality.

Research from other Colleges and Universities

In our research with other Colleges and Universities, we found that:

- Most universities do not have Furniture Guidelines
- Most universities do not have furniture costing benchmarks
- Universities that have standards are usually tied to 1- 3 vendors
- Others are tied to only one vendor (typically a major furniture vendor)
- Furniture Standards are often classified as Good, Better, Best
- Most furniture standards are managed at the procurement office

We found that a number of our peers have developed programs with vendor partners, in order to standardize furniture programs. Some of the peer vendor partners include:

- Yale University – Steelcase and others
- Harvard University – Herman Miller and Steelcase (vendor partners)
- Rochester Institute of Technology – Steelcase
- Duke University – Herman Miller, McThrift and others
- Dartmouth – Steelcase
- University of Michigan – Steelcase

Furniture and Workplace Program Goals

The goal of the furniture and workplace program has been to address these issues and problems by focusing on three key goals:

Save Money:
- Leverage Stanford's buying power for furniture in the next 5-10 years by developing vendor partnerships
- Re-Utilize existing furniture
- Increase efficiency of furniture
- Reduce cost of planning, providing and managing furniture

Save Time:
- Improve the furniture delivery process
- Improve the procurement process
- Improve the contractual process

Improve Performance:
- Increase flexibility of furniture
- Meet technology needs
- Raise quality and durability levels, including ergonomic quality
- Increase building efficiency through more efficient furniture layouts

PHASE 2 – **Procurement and the Choice of Two Key Vendors**

The next step in the furniture and workplace program was to convene a committee made up of facility coordinator representatives from the Schools and Administrative Units and led by Procurement and Capital Planning/Space Management. This committee met throughout the Fall of 2007. In February of 2008, the committee selected two preferred furniture vendors, Steelcase and Knoll, to be the leading furniture providers for the University.

The product lines and key information for these two vendors can best be researched on their websites:

Steelcase – www.steelcase.com
Knoll – www.knoll.com

Below are key points about this choice of two preferred furniture vendors:

1. The purpose is to narrow the field to leverage Stanford's buying power in our upcoming Capital Plan projects. Both Knoll and Steelcase have the breadth of products and array of resources to service Stanford. Most importantly, they adhere to University initiatives of promoting ergonomic and healthy work environments, maximizing sustainability in furniture choices, and creating high quality and long term furniture solutions.

2. The intent also is to obtain better service for Stanford customers through the development of dedicated service teams from the preferred vendors. The vendors have been charged to identify and create a process whereby service improves in the next 12 months. Metrics and meetings are being set in place to measure performance and to help the vendors increase service levels. If the preferred vendor's team and service process do not improve or become an issue, Stanford will have the option to replace vendors and select other options.

3. It is critical to our on-campus clients that we create a platform of solutions from Knoll and Steelcase that provide cost benchmarks and workplace concepts to accompany the University's Space Guidelines. This will help the schools and administrative units to develop readily available furniture options at a range of price points.

4. Although the intent of the preferred vendor approach is to consider the two vendors for all major new or renovations projects, there will be instances where the preferred vendors may not be the best fit. For instance, a school or area might already have made an investment in systems furniture with another vendor. In those instances, schools and administrative units have the option to choose the appropriate solution for their needs.

Next steps with the preferred vendor approach will be to:

- Develop pilot projects to test concepts, service standards, and planning (see our section on pilot projects for information on pilot programs to date and in planning.)
- Monitor and report on metrics for vendor scope of service, products and results.
- Develop an easy to use website where principles, concepts, project examples, case-studies, guidelines, ready made solutions and a variety of options will be described. This website will describe the resources of both of our vendor partners, Knoll and Steelcase.

PHASE 3 - Concept Development and Furniture Guidelines

Within the Furniture and Workplace Program, Capital Planning and Space Management also has developed concepts that embrace change management, ergonomics and flexible solutions that are applicable to Stanford's workplace environments. The primary activities to date have been the development of the "Kit of Parts" concept and the application of that concept in pilot projects.

The "Kit of Parts"

The "Kit of Parts" approach to furniture and workplace design emphasizes holistic ergonomics and sustainable solutions that maximize flexibility, re-configurability and mobility of furniture pieces. The Kit of Parts is a concept whereby a minimum number of furniture pieces are chosen for a broad array of office needs. These parts then can be moved from one workplace setting to another, creating flexibility and easy change of environments.

The Kits of Parts can be broken into the furniture pieces shown below, which are used to support activity centers such as:

- Reading/writing telephoning (primary and secondary work surfaces support this)
- Computer area (work surfaces also support this)
- Meeting space (tables and visitor seating support this)
- Storage (lateral files, bookcases, pedestal files and overhead storage support this)
- Work tools (these include tackboards and other organizational tools)
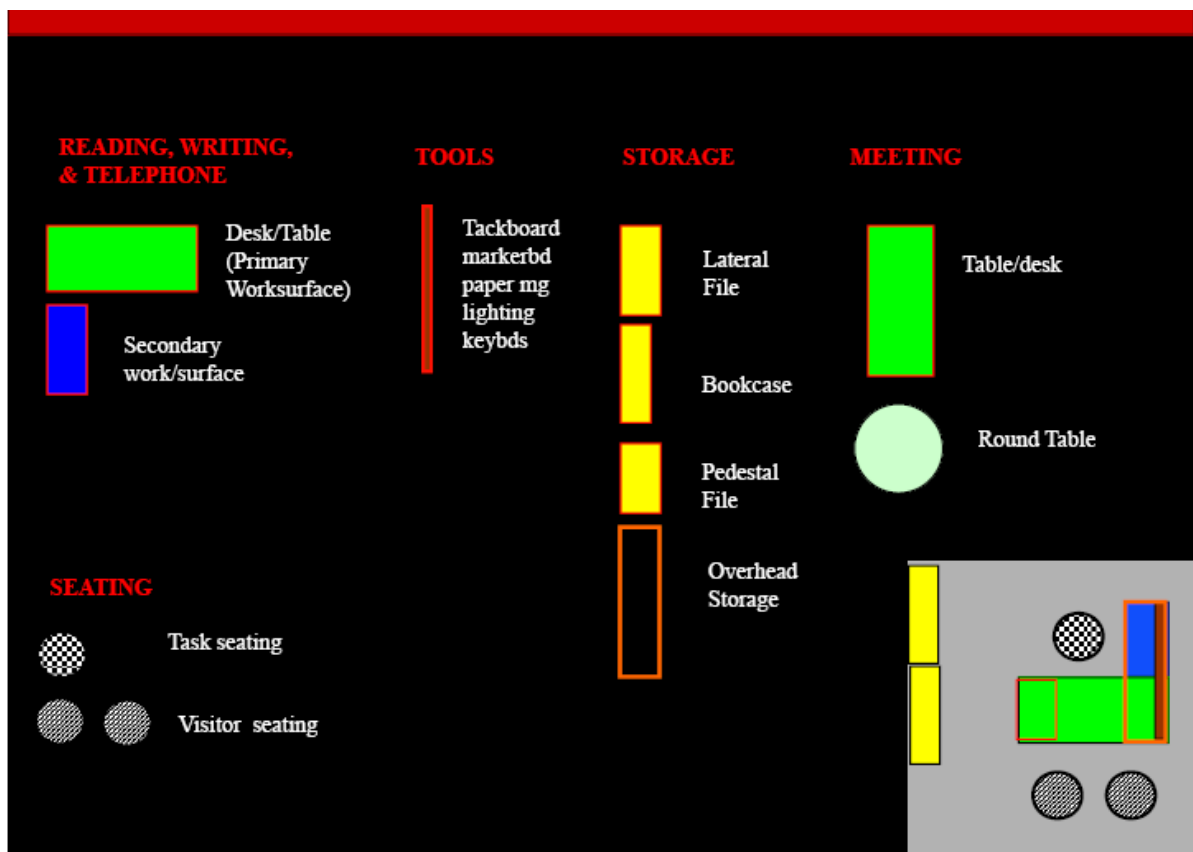
The diagram below shows these furniture pieces and a sample organization in an office setting.

Furniture Guidelines

Kit of Parts

Panels outline the space in some locations

STORAGE space

READING, WRITING, & TELEPHONE space

Work Tools space

MEETING space

COMPUTER space
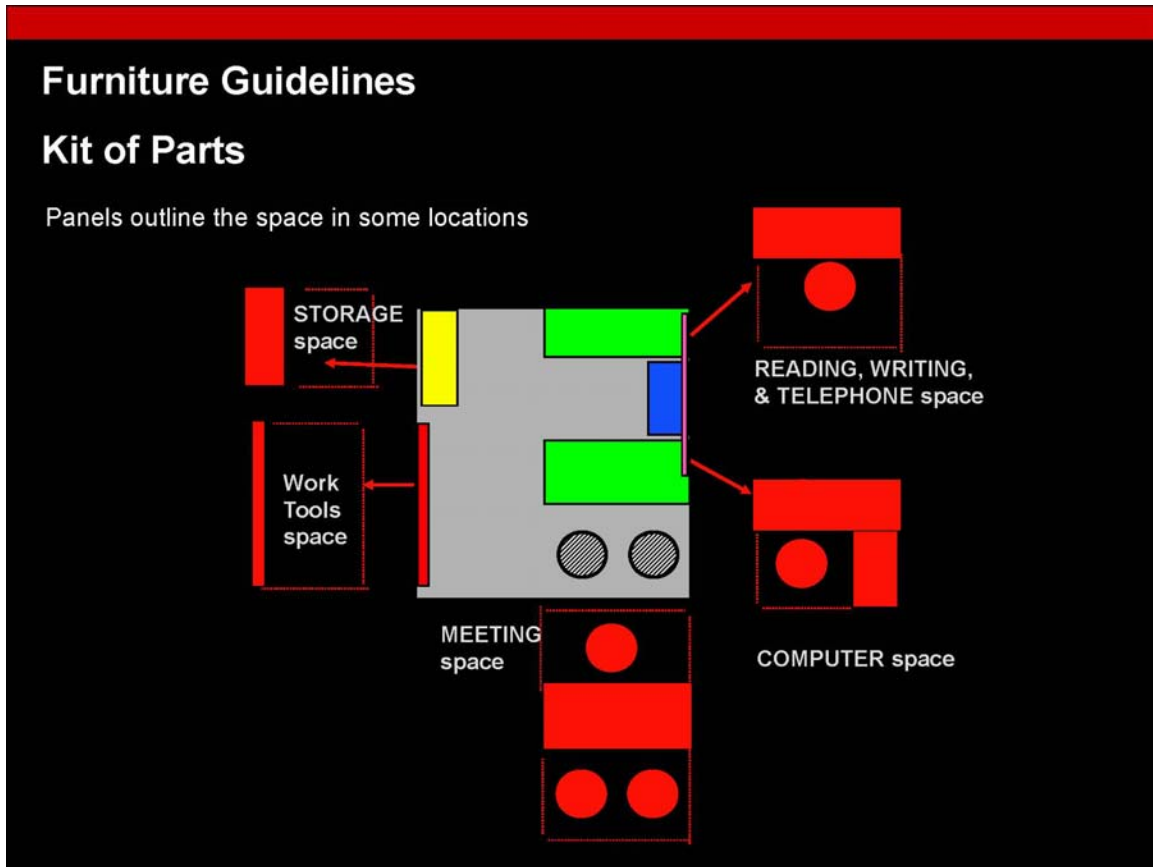
To apply the Kit of Parts to a typical office space, there are a set of eleven furniture pieces that are generally used. These include:

- 30" x 72" Work Surface Desk
- 24" x 72" Work Surface Desk
- 24" x 42" Return
- Tack Board or Slat Wall
- Overhead Hutch
- Lateral File
- Personal Storage
- Round Table
- Task Seating
- Visitor Seating

These furniture pieces may be modified for particular needs and specialized office work, but for the majority of offices at Stanford these are adequate for most needs.

Typical organizations of this Kit of Parts are shown below.

Furniture pieces (Kit of parts) 11

One Staff Office Two Staff Office Three Staff Office

Furniture pieces (Kit of parts) 11

Open Office Conference Rm Dean/Director's Office
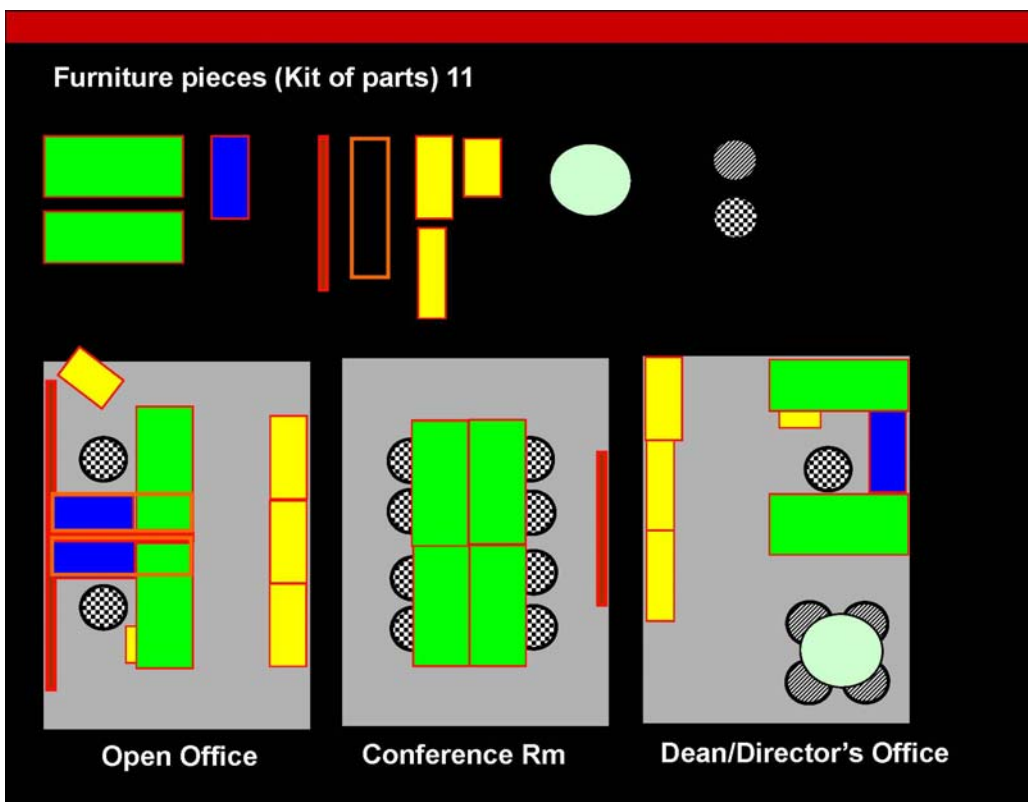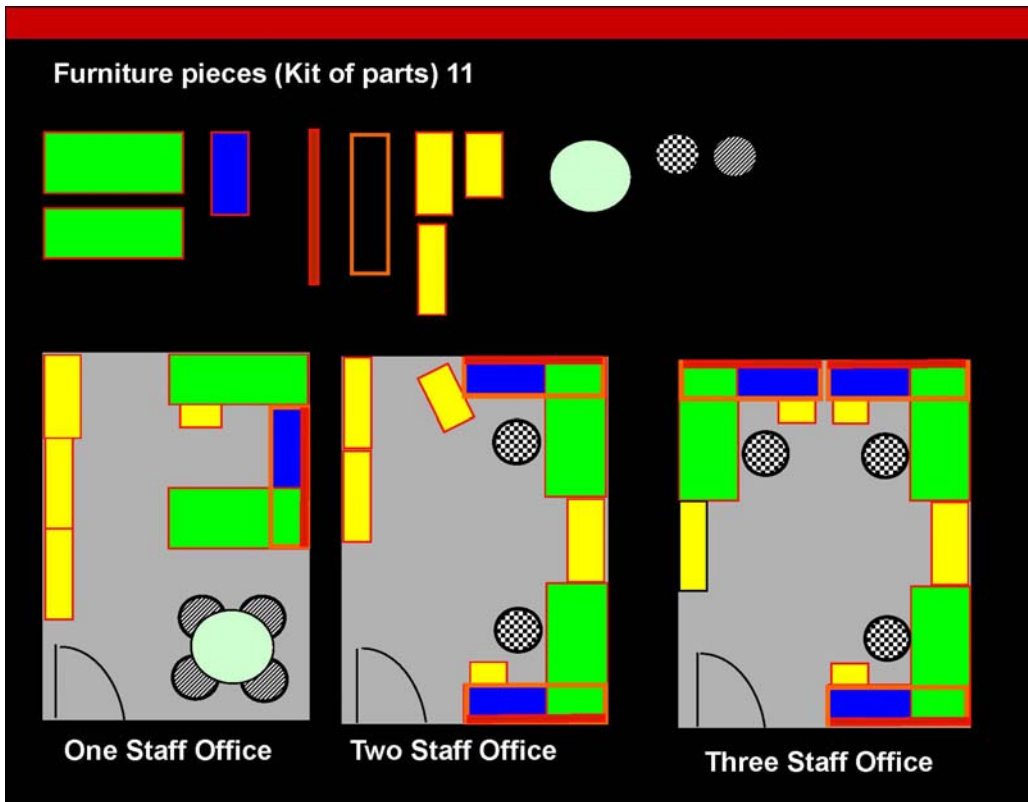
Many of our offices at Stanford are different and unique due to various work responsibilities, office sizes, numbers of staff in offices, and work styles. The advantage of the Kit of Parts approach to furniture and workplace planning is that it is able to address these various needs. The same furniture can be used to create a Director office, a two person shared office, and open office or collaborative space, and/or a conference room. The furniture can be moved and adjusted to meet different needs, in an efficient and flexible way. Because similar furniture is used, the interchangeability of the furniture is seamless.

Pilot Projects to Date

The Furniture and Workplace Program has developed several pilot projects to date. These projects are as follows, and descriptions about them are included in the Appendix to these guidelines. Integral to these projects have been change management activities and programs designed to help individuals become prepared for new furniture and workplace settings.

- Capital Planning and Space Management Open Office environment, 655 Serra building – 2004-2008
- Field Inspector Area, Department of Project Management, 655 Serra building – 2006
- Real Estate/Library/Staff Area, Land, Buildings and Real Estate, 655 Serra building – 2006
- Stanford @ Porter Drive – 2008
- Vice Provost for Undergraduate Education (VPUE) space in Sweet Hall

Our goal is to share these concepts with facility coordinators, architectural consultants and vendor teams. These concepts, together with the product portfolio of our vendors and the space guidelines, will become the platform from which we initiate our workplace planning in the coming years.

Next Steps for the Future

As we utilize our Furniture and Workplace program for the future, we do it in a context of where Stanford has been with regard to furniture and workplace planning, and where the University is going. The visual below shows us phases of workplace planning, ranging from "As is" to "Refine" to "Redefine."

In many cases, Stanford work environments today are in the "As is" stage, with traditional tools and furniture options. For some environments, this is perfectly adequate. For those work units seeking change, the goal will be to move to the "refine" stage where furniture and workplace planning moves to the Kit of Parts program. The Porter Drive, Building 60 and VPUE projects are examples of this "refine" stage. Over time, some offices may even want to move to the "Redefine" model of workplace planning, where work environments are even more aggressively re-thought and planned. The Design Institute and some of its workplace planning might be such an example.

The visual below indicates our sense of when and how such changes will take place at Stanford. While it can be dangerous to predict the future (!) our sense is that we will continue to work with the "As is" state in many of our buildings today. In pilot projects and over the next 2-3 years, with many new buildings and renovations looming, our hope is that we will increasingly move into the "Refine" stage. This will allow us to develop more flexible, ergonomic, sustainable and high quality furniture options at more

competitive pricing. Our vision is that furniture service, timing and planning will be improved as well. In the timeframe of 5+ years, we aspire to move to the "Redefine" stage, where we are even more strategic and imaginative about our furniture and workplace planning, benefitting from even better value, service and products.
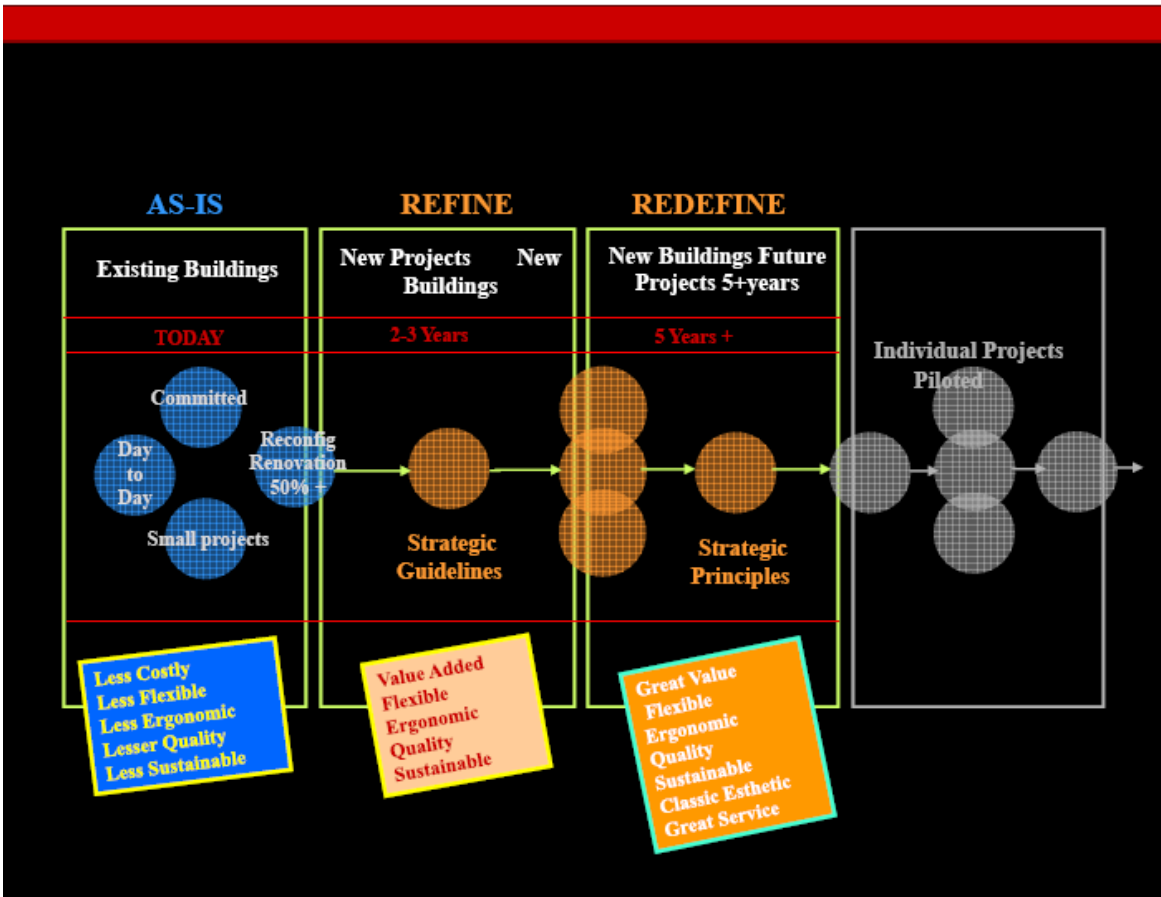
Conclusion

The Furniture and Workplace program guidelines are intended to be a starting point for Stanford's new attention to workplace planning, through the Department of Capital Planning and Project Management and in collaboration with sister offices in Land, Buildings and Real Estate as well as the Procurement Department.

We look forward to the input, thoughts and suggestions of our Stanford and peer school colleagues about these guidelines. We intend for the guidelines to be an evolving set of parameters, and we will update and expand upon them on a regular basis.

Appendix

- Capital Planning and Space Management Open Office environment, 655 Serra building – 2004-2008
- Field Inspector Area, Department of Project Management, 655 Serra building – 2006
- Real Estate/Library/Staff Area, Land, Buildings and Real Estate, 655 Serra building – 2006
- Stanford @ Porter Drive – 2008
- Vice Provost for Undergraduate Education (VPUE) space in Sweet Hall – 2009

The Evolution of Capital Planning and Space Management

Land, Buildings and Real Estate

Goals…To create a workplace that

- Facilitates interaction among the team
- Enhances open communication
- Promotes Learning and Knowledge Sharing for new members of the team
- Develops camaraderie

Workplace objectives:

- Models a teaming space that changes based on needs
- Mixes open, closed, and collaborative environments
- Provides paper and storage organization
- Allows for Flexible and Ergonomic space
- Promotes sustainable practices

Solutions (Iteration of spaces):

- Haworth/COG: 1st Phase
  Co-location in team in open cubicles
- HMI/Pivot: 2nd Phase
  Open collaborative environment
- Work at home day

Challenges:

- New workplace etiquette
- Adjacent conference rooms
- Paperless environment
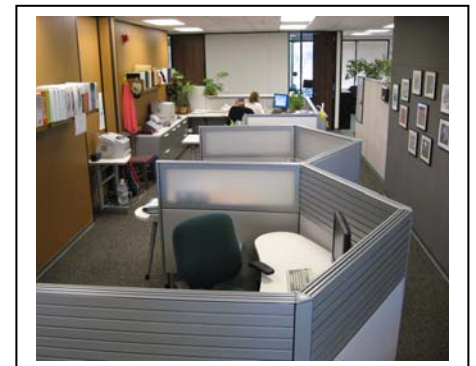
Walking the Talk:
The Workplace Evolution of Capital Planning & Space Management

In October 2004, the Capital Planning team, then comprised of a Senior Director and three support staff (two Capital Planners and an Administrative Assistant), visited a Cisco "proof of concept" open office space and were inspired to work differently. The Cisco space was bright, open and airy, with no assigned offices and ample meeting and teaming spaces. People at Cisco loved the space and found that it supported their work in new, and sometimes surprising, ways.

The team decided to experiment with their existing work environment at 655 Serra. Their space at the time reflected the combination of enclosed office and cubicle settings that are typically found at Stanford. The Senior Director's office was located down the hall from the three support staff cubicles. Interaction between the Senior Director and the team meant that everyone needed to walk up and down the hall to find one another. The three support staff found that they were talking over the cubicle walls that separated them in order to interact – the walls were more of a hindrance than an advantage.

1ˢᵗ Phase

The group decided that they would like to create a living model for how to create teaming space at Stanford. They partnered with Haworth/COG (who generously offered furniture at a very minimal cost) and planned a mixed open and closed cubicle area next to the Land Use and Environmental Planning Team, adjacent to the Vice President and Associate Vice President of Finance and Administration for Land, Buildings and Real Estate. The area consisted of two low paneled cubicles and one open area to house two people. The two

Capital Planners were located in the two person area, while the Senior Director and Administrative Assistant occupied the two cubicles.

Having the four person team co-located was an immediate and noticeable advantage – interaction increased and it was much easier to quickly consult on a daily basis about shared tasks, particularly related to the Capital Plan. The team still found, however, that they often spoke thru the partitions. The Senior Director, located at the end of the space, wished to be closer to the rest of the team. There was inadequate space within the teaming environment to hold impromptu meetings of the whole group. An adjacent conference table in an open area, designed for this use, was not feasible for meetings as such interaction disturbed the people in cubicles nearby. All in all, there were great advantages to the new space but still some fine-tuning to be done.
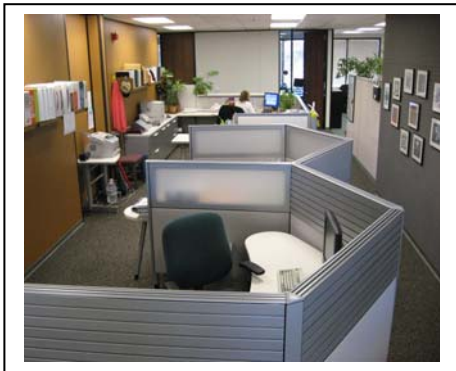
2nd Phase

When the Capital Planning group incorporated two new positions, a Space Charge Planner and a Workplace/Furniture Planner, and replaced the half-time Administrative Assistant to a full-time basis, there was an opportunity to rearrange an adjacent space and create another new workplace idea. The priorities for this space were to have a fully open workspace, with no cubicle walls to work around and space for open communication. This completely open environment would enable the team to confer easily, listen to pertinent information throughout the day, to collaborate and hold impromptu meetings. This kind of environment was particularly important for the learning and knowledge sharing that was needed so that new members of the team could come up to speed with Stanford.

The department's new space is a completely open environment with low perimeter partitions and an open central area where team members are able to exchange pertinent information, collaborate and hold impromptu meetings throughout the day. The group has found that this new space has helped to reinforce and further develop the strong sense of camaraderie that exists among the members of the team. The space facilitates the fact that the team is a social group as well as a work group. The team often shares meals together, consults, advises, brainstorms, or reflects on critical issues throughout the day. The team also engages together in volunteer activities in the community and on campus. There is very little privacy in the space, and members have had to adjust to each other's unique work styles.

New etiquette for working in the office quickly developed. For instance, the team realized that private phone calls are best conducted outside of the teaming area, by using a headset or cell phone. Some of the team members have found that, in order to do concentrated work, they need to move to an adjacent conference room or another location. Others have found that adding one work-at-home day fulfills the need for quiet work time. Additionally, the group has adjusted to new ways of working with less storage, less space,

and smaller work surfaces. The team has worked to become more paperless, to use their central files more efficiently and to organize projects more collaboratively.

…………………………3rd Phase…………………………...

Working differently has had its challenges. The team has felt a bit cramped at times and has had to develop a library storage area immediately adjacent to their space for needed materials that do not fit in the teaming space. The group has discovered the need for some additional square footage, which would allow them to have a permanent conference table in the middle of the space. This kind of meeting table would enable all six members of the team to turn from their desks to meet in a central place. This would work well both for impromptu and planned meetings. In an ideal scenario, the team would be co-located next to the Planning and Project Management groups, as they interact primarily with these two sets of colleagues. Lastly, the team would love to have a small conference room immediately next to their space for the inevitable private meetings and small group sessions that are required in their work.

The team considers these challenges to be minor, given the gains in teamwork and collaboration that they have experienced. In addition, as the team compares the square footage of what Capital Planning and Space Management would have traditionally used (1 private office, 5 cubicle spaces, approximately 620 sq. ft) to what they are using today, (330 sq. ft), this is nearly a 50% reduction in space.

All in all, CP&SM is proud to "Walk the Talk."

655 Serra – RE/Library/Staff

Land, Buildings and Real Estate

Goals:
- Address change, flexibility and mobility in an area
- Accessibility to management
- Touchdown space for RE
- Teaming for Staff
- Meeting and storage space for Library
- Address sustainability & ergonomics
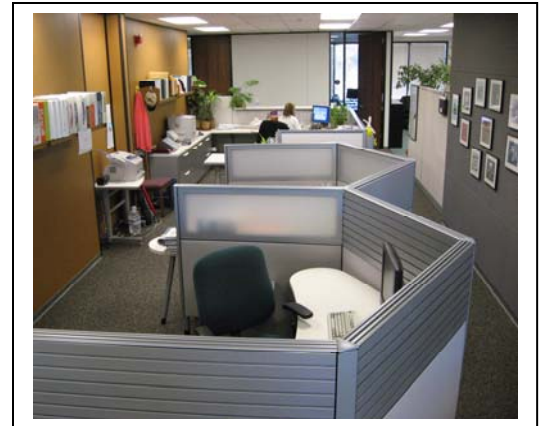
Workplace objectives:
- Maximize functionality of staff
- Maximize teaming when needed
- Maximize storage
- Organize Paper and materials
- provide adaptable and mobile elements

Solutions:
- Haworth Compose and Premise (Iterative solutions)

Challenges:
- Well circulated area
- Peripheral noise
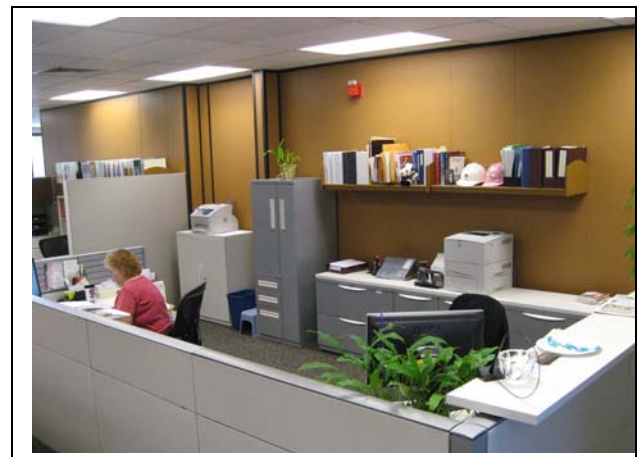
655 Serra – Field Inspector's Area
The Storage story

Land, Buildings and Real Estate

Goal: To create a workplace that addresses the…

- Need for lots of immediate and active storage (different types)
- Need for quick access to files
- Need for collaboration/teaming
- Need for better organization
- Practice of sustainability & ergonomics
- Utililization of existing elements

EXISTING
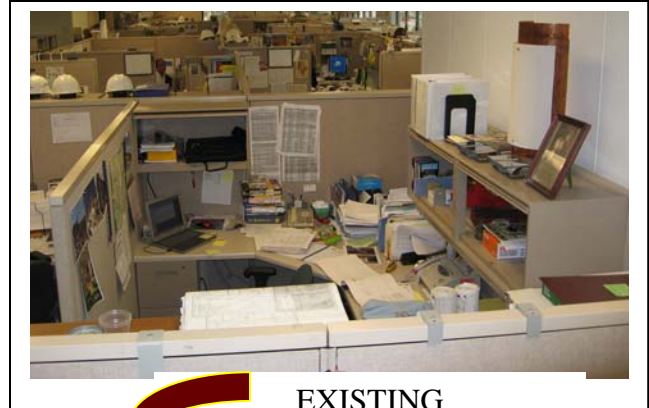
Workplace objectives:

- Maximize functionality
- Maximize storage
- Paper and storage organization
- Accommodate more in less square footage
- Touchdown space

Solutions:

- Allsteel/Reach:
  Active and immediate storage
- HumanScale:
  Ergonomic tools and seating

Challenges:

- New workplace etiquette
- Paperless environment
- Noise from adjoining area (whitenoise??)

NEW SOLUTION

Welcome to the Stanford @ Porter Drive Mock-Up.

Thank you for taking time to review this variety of work setting concepts.
We welcome your questions & input as we continue to explore
& refine your workplace solutions.

Private Office

Room Within a Room

MAIN ENTRANCE ★

Working Differently: Concept "A"

Working Differently: Concept "B"

Extend Your Workspace

Working Differently: Concept "C"
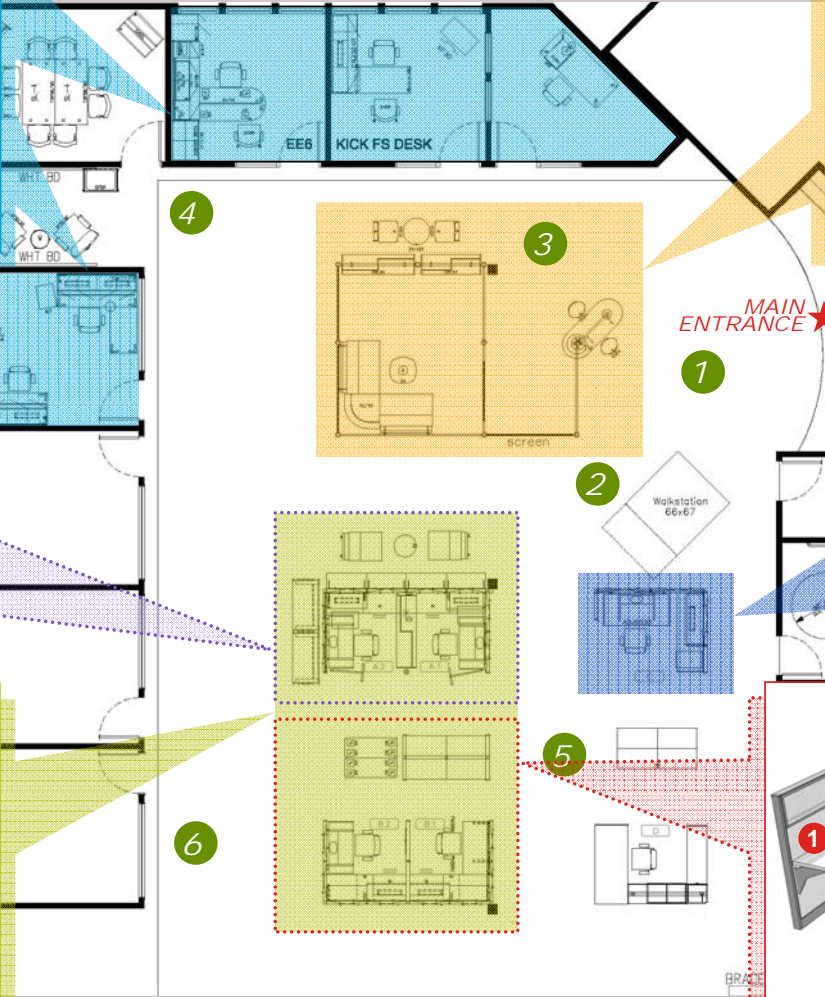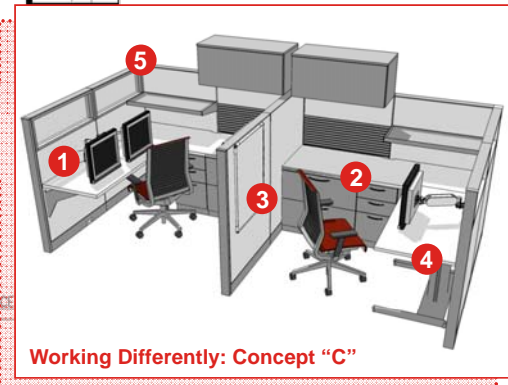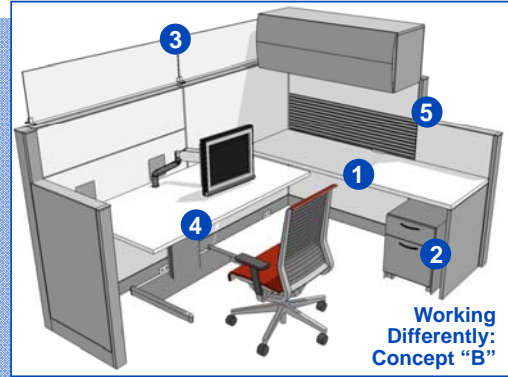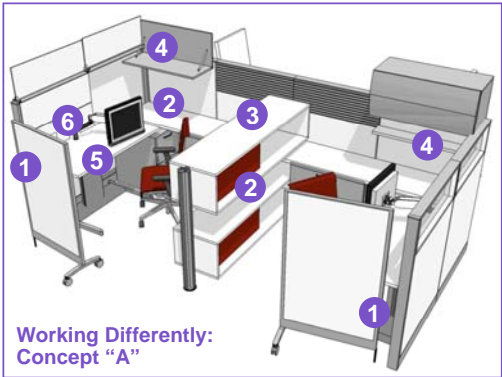
1 **Welcome & Refreshments**

2 **Info Center & Walkstation**

3 **Public & Collaborative Area**

4 **Private Offices & Conference Rooms**

5 **Workstation Settings**

6 **Finishes Gallery**

EE6   KICK FS DESK

WHT BD

WHT BD

screen

Walkstation 66×67

BRACE

70

* Furniture solutions are being developed around the following guiding principles: Employee Health & Safety, Ergonomics, Academic Aesthetics, Sustainability, Flexibility and Quality.

PRIVATE OFFICE

- A private office that supports the way you're working today — with a layout that accommodates individual work, work done in pairs and in some cases, work done in small groups
- Highly flexible, modular kit of parts can be easily moved and reconfigured as your needs change
1. Worksurfaces are height adjustable and may be mobile as well
2. Storage is close by, accommodates a variety of items — files, binders, books and personal items — and is easy to access
3. Multi-functional mobile storage piece with cushion top provides a comfortable place for guests to sit, a footrest or an added surface for piles
4. Ample worksurface to spread out active work, pile anticipated work close by and personalize your office — space for you to display professional achievements
5. Tackable surface or Slatrail feature gives you space to post information or photographs and you have a wide variety of organizational worktools from which to choose

WORKING DIFFERENTLY: CONCEPT "A"

1. Mobile screens can be used to signal a need for privacy and provide added space to display or organize your work
2. Multiple areas for piling and layering work
3. Storage at standing height allows for collaboration with neighbors
4. Spaces to personalize with photos and mementos
5. Work sitting, standing or anywhere in between — primary work zone adjusts with just a touch
6. Access to technology where you need it most — right at the worksurface

EXTEND YOUR WORKSPACE

1. Informal lounge areas to contemplate, collaborate or relax during a break from concentrated work
2. Spaces to share what your team is working on or to store items commonly accessed by a group
3. Your workstation extends to provide added archival storage that's easy to access
4. Mobile pieces provide areas for collaboration, hosting a guest or spreading out project work

ROOM WITHIN A ROOM

1. Lounge and public areas are defined without walls — allowing natural light to filter into the space and providing spaces for informal conversation, team meetings or alternative workspace
2. Unique storage options provide space for team personalization, making team work visible, decorative artifacts or any combination
3. Markerboards in a variety of sizes/locations allow for brainstorming and capturing/sharing ideas
4. Comfortable lounge pieces with high-back panels add a level of visual and acoustic privacy
5. Worksurfaces and access to power can be located at different heights and locations so the area can be used as touch down workspace for guests or to foster quick interaction

WORKING DIFFERENTLY: CONCEPT "B"

1. Long, uninterrupted worksurfaces provide ample space to array and organize your work — you choose your primary work zone
2. Mobile storage piece with seat cushion top is the perfect place for guests to sit
3. Optional privacy screens allow for user control over privacy levels
4. Work while sitting, standing or anywhere in between — worksurface adjusts with just a touch
5. Openness, lower panel heights, long worksurfaces provide natural place for collaboration

WORKING DIFFERENTLY: CONCEPT "C"

1. Adjustable monitor arms accommodate multiple monitors for the technology-intensive user
2. Storage-intensive space provides many options for files, binder and active work organization
3. Mobile whiteboards
4. Work while you're sitting, standing or anywhere in between — primary work zone adjusts with just a touch
5. 54" panel height and use of glass allows natural light to permeate the space

USER ADJUSTABILITY

Think Task Seating
- Seat & back flexors move individually to conform to your shape
- Automatic recline support provided in proportion to body weight
- Height adjustable arms retract & pivot to provide natural support in any posture
- Control back tension & back lock/ stop settings with one simple dial
- Adjustable lumbar panel allows you to place lower back support where you want it

Leap Task Seating
- As you move, chair's back changes shape to support entire spine
- Slats in the back and seat offer "breathability" for superior comfort
- Seat depth adjusts to accommodate varying leg/torso lengths
- Support your lower spine's natural curve using lower back firmness control
- Seat glides forward as you recline, to keep you oriented to your work
- Flexible seat edge minimizes pressure on backs of thighs
- Upper back force control allows you to set the amount of recline resistance you desire

FYI Flat Panel Monitor Arm
- Adjust your monitor's position effortlessly
- Share on-screen information quickly and easily
- Support monitors weighing 5 – 20 pounds
- Connect or disconnect your monitor easily with FYI's QuickConnect mechanism

Privacy Screens
- Add screens for increased privacy, remove them for openness & interaction
- Create additional visual privacy while maintaining a "light" aesthetic
- Mobile screens offer further space for brainstorming and work display

Airtouch Adjustable-Height Worksurfaces
- Empowers users to change postures throughout the day
- Fast, effortless, fluid vertical movement without power
- Simple to use (merely lift paddle to adjust)
- Supports 2-person interaction & collaboration

Slatwall by Details
- Broad range of available worktool accessories — choose the ones that best fit your workstyle
- Take advantage of vertical real estate
- Keep office tools off of the worksurface, but within easy reach
- Organize work flow while maximizing space

SUSTAINABILITY

Environmental issues and considerations are an integral part of many companies' and organizations' business strategies today. At Steelcase, our focus is on three key environmental platforms: materials chemistry, lifecycle assessment, and recycling and reuse, because we believe that these three areas will deliver the greatest results to the environment, to our customers, and to our own business.

Materials Chemistry (MC)
Three years ago we enlisted the expertise of McDonough Braungart Design Chemistry (MBDC) to help us better understand the chemical makeup of our products and our production processes. We evaluate those chemicals against 19 human and environmental health criteria. By doing this, we are eliminating them in our existing products and avoiding them in new products. Materials chemistry is also the foundation of our Cradle to Cradle certification.

Life Cycle Assessment (LCA)
Life cycle assessment is a process that measures a product's impact on the environment during its various phases—from material extraction and selection to the end of a product's usefulness. This isn't new to us. In fact, in 1998 the Please task chair was the first Steelcase product to be developed using LCA tools and thinking. Today, we use LCA as a way to measure the impact of every new and key existing products. It helps us identify opportunities to continuously improve our performance.

Recycling/Reuse (R2)
Recycling and reuse means choosing the right raw materials, as well as designing for disassembly to enable the recycling of products. It also means offering a convenient way for our customers to responsibly dispose of their products or give them a second life through the Steelcase Environmental Partnership.

Cradle to Cradle Product Certification
Introduced in 2005 by McDonough Braungart Design Chemistry (MBDC), Cradle to Cradle design protocol outlines environmentally-intelligent design criteria, which is the basis for Cradle to Cradle product certifications. Steelcase pursues Cradle to Cradle product certifications as part of an effort to help designers and customers specify and purchase products that are environmentally sustainable. We offer an extensive collection of Cradle to Cradle certified products, in fact, more than any other company in any industry.

STANFORD UNIVERSITY

Welcome

to the

Stanford @ Porter Drive

Furniture & Workplace Mock-Up

Steelcase

MKTHINK   ONE WORK PLACE

The Transformation of VPUE at Sweet Hall

VPUE – The Offices of the Vice Provost of Undergraduate Education

Sweet Hall, named after Elaine Sweet (Class of 1919) continues with the tradition of innovation and hard work marked by its donor, who gave to Stanford one dollar at a time until her final $5.5M bequest was used to build the original Sweet Hall. Today, Sweet Hall houses the Office of the Vice Provost for Undergraduate Education, whose 200 academic administrative staff support the entire undergraduate community of Stanford University. The VPUE Renovation project was an ambitious project that began in 2007 and lasted 18 months.

The project was driven by an opportunity to consolidate VPUE's eight major programs into one building (Bing Overseas Studies Program, The Center for Teaching and Learning, Freshman and Sophomore Programs, The Freshman's Dean Office, Introduction to the Humanities, The Program on Writing and Rhetoric, Undergraduate Advising and Research, and the VPUE Central Administration. With the lofty goal of exceeding the space guidelines recently promoted by Stanford University, the VPUE Renovation project is also an exemplar for achieving solutions at one third the typical renovation cost. This was done by opening and reorganizing interior spaces to accommodate more staff and through the creative use of furniture instead of more expensive construction.

The Project Challenges

The Architects and the VPUE project team had to carefully balance the needs of the organization and the University in addressing many challenges, such as:

❖ Consolidating groups from three other campus locations to maximize collaboration by co-locating personnel;

❖ Managing a population increase of 2/3 while gaining only 1/3 more space;

❖ Creating a "hip and cool" destination for students, a serious academic environment for faculty and lecturers, and a productive, welcoming and non-corporate workplace for staff;

❖ Budgeting for the ability to tear down and rebuild;

❖ Scheduling around critical student-service timelines and the academic calendar;

❖ Meeting the needs of the younger staff demographics within VPUE;

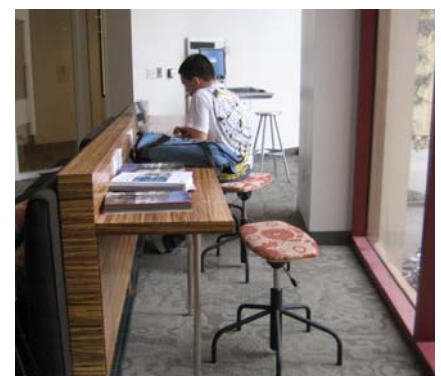❖ Moving dozens of staff from private offices and larger workstations to smaller open spaces.

I-HUM Fellows Collaborating

Inviting Entrance

Spaces for Academics and Students

Student Areas

The Project Approach

Change was a big factor. The project team hired **HOK Advance Strategies** to "implement a change management process that would assist staff, faculty and students with the transition from working in enclosed offices to moving in to new, more efficient and effective work spaces" as well as with the transition from their existing locations across four campus buildings. HOK worked in the planning, communication and implementation of the overall design to ease the transition. However, because VPUE's work is intertwined with the academic year, the move and renovation had to happen in two phases, and some staff had to move twice (many of whom had not moved in 7-10 years). The logistics of the multiple moves across campus entailed a more detailed communication and project planning process. Accordingly, creating an iterative project process provided a systematic and timely knowledge-sharing as well as some content co-developed by the client team. Regular structured work sessions offered unit representatives information and gathered their input to solutions as they evolved. The project process was broken into three facets:

- o **COLLABORATIVE**: ongoing work was shared and discussed in an open forum throughout the project to encourage productive dialogue and to create ownership of the design solutions.
- o **ENGAGING**: enrolling the business unit leadership and users (where appropriate) in data gathering and recommendations helped in developing ownership of the results. The commitment and engagement was essential to the entire project's success.
- o **ADAPTABLE**: modifications of scope, schedule, approach, tools, methods, and deliverables occurred frequently throughout the project to respond to unforeseen unique and changing circumstances.

To ease the transition, the project team and staff held "Office Hours" to give all employees the opportunity to stop by for clarifications, concerns and further discussions around project issues; hosted ice cream socials, pizza lunches and a Halloween party in their temporary facilities to maintain a sense of community; as well as planned moving seminars, organized training seminars, led tours of the renovated facilities, and prepared welcome packets prior to moving. Once staff moved in, the project team conducted ergonomic training sessions and brought in an organizational expert to help staff adjust to their new workspaces. Additional tweaking of the workspaces to address function and comfort was scheduled 6 weeks after the move-in to address needs of the new environment that were not working.

The Project Solution – Interiors & Architecture

HOK devised the following architectural solutions:

❖ Groups with the most student interaction are located on the lower floors; more administrative-oriented groups occupy the upper floors.

❖ Return the building interior to a configuration that was supported by the base building heating and cooling systems.

❖ Implement Stanford's guidelines for furniture and space usage without evoking a corporate environment.

❖ Connect VPUE to the campus both physically and culturally.

Some examples that achieved these solutions:

❖ Enlarging the elevator lobby openings on each floor created a more inviting entry.

❖ Planning the furniture layout to allow everyone access to daylight and to the campus.

❖ Modifying the Artificial lighting to more closely mimic daylight resulting in brighter space, fewer fixtures and increased energy efficiency.

❖ Selecting the finishes deliberately by the VPUE/HOK team evoked comfort and variety as opposed to utility and conformity: two paint colors that helped define space; a paisley carpet that gave a homier environment; two tone panel fabric and multiple finishes in the workspace to diffuse monotony; and multiple uses of wood to warm the work space.

❖ Integrating sustainable features (i.e. motion sensors; energy efficient low wattage light fixtures; and bright, light, transparent open areas) maximized the building efficiency.

The Project Solution – Furniture
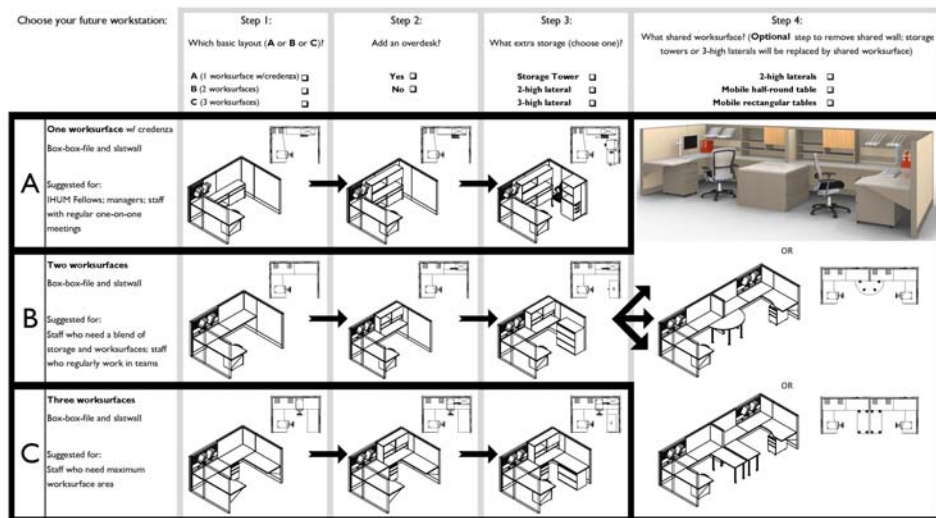
VPUE Workstation "Kit of Parts" Furniture Options

**Workstation
of the
Vice Provost for
Undergraduate
Education
John Bravman**

❖ After carefully assessing the typical functions of the individual groups, the furniture solution at VPUE was resolved by the development of a "Kit of Parts." The Kit of Parts is a concept whereby a minimum number of furniture pieces are chosen for an array of office needs. These parts then can be moved from an open office to a private office setting, creating flexibility and easy change of environments. The Kit of Parts allowed each person to choose their furniture set up from a given set of options (shown above) based on job functions and work process styles.

❖ As a large population transitioned from private to open offices, special spatial and furniture features were added to the workplace: team rooms for privacy; mobile screens for protocol privacy; monitor arms for ergonomic comfort and overall flexibility; and even printers with special access codes.

❖ The Knoll system was the chosen systems product because of its timeless, classic and clean features befitting the new VPUE. Knoll is also one of the two preferred furniture vendors at Stanford University able to aggressively price the solution for both the open and the private offices.

❖ VPUE involved 4 vendors to furnish the workplace: Knoll for the majority of the systems and signature solutions; Haworth for seating and task lighting; Steelcase for conference seating and ergonomic monitor arms; and Herman Miller for open seating.

The Way We Were

4th Floor

3rd Floor

Garden Level

1st Floor

PROJECT CREDITS

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Stanford University:

VPUE

The Provost Office

Capital Planning and Space Management

DPM

LBRE Zone Management

Stanford ITS

Consultants:

HOK Architecture, Planning, Change Consultants

BCCI – General Contractor

Knoll/Hogue – Primary Furniture Vendors

I. Reference Documents

A. Office Sizes – Comparative Guidelines

The chart below shows comparative guidelines from a selected group of colleges and universities, related to office size. The notes below explain and expand upon the chart.

Range of Sizes for Offices

Office Category	Stanford nasf	Cornell	SUNY nasf	WICHE nasf	CPEC nasf	U.C. Berkeley nasf	FEPG nasf	Univ. Indiana nasf	Univ. Minn. nasf
President/Provost		400	400	300+/-50			As req'd		
Vice President/ College Dean	200-240	320 320	320 300	240+/-30 240+/-30			Min. 200		
Dean/Prog.Director Division Head	200-240	280 280	240 240	240+/-20			175		
Dept. Chair Faculty (Studio/ Office)	160[1]	200 200	180 180	120+/-10			175		
Regular Faculty	160	160	120/80[2]	120+/-10	140[3]	150[8]	140	150	120[8]
Visiting Faculty	160[4]								
Emeritus Faculty	160[4]	80							
Research Assoc.	160[4]	120/80	120/80						
Admin. Manager	120/80[5]	120/80	120/80						
Admin. Asst. / Staff Off. Service/Clerical	120/80[5]	80[6]					120 100	100	
Postdoctorate Graduate Ass't. Graduate Student	45	60/40[6]	60/30 60/30 60/30			75[6] 75[6]	140[7] 140[7] 140[7]		

SUNY =   State University of New York
WICHE =   Western Interstate Commission for Higher Education
CPEC =   California Postsecondary Education Commission
FEPG =   Washington State Facilities Evaluation and Planning Guide

Footnotes for Office Size Table:

1. Same size as a Faculty Office unless the Department Chair has need for more meeting or administrative space, in which case the office may be larger.
2. Space shown with slash represents space guideline per person for single / double occupancy.
3. Faculty office of 140 nasf + 40 nasf for support staff + 10% for service/storage. 195 nasf
4. Assumes 2 people per office typically. Emeritus faculty could be 1 or 2 persons per office. Alternative is cubicle environment with 80 nasf / person.
5. 80 nasf /person for multiple occupancies in cubicle environment or in shared enclosed office spaces. 120 nasf / person in private office as management requirements dictate.
6. Area / person in multiple occupancies or cubicle environment.
7. Assumes a minimum of 2 persons per office.
8. Office sizes without the *pro rata* share of conference space and support allocated by these universities. See below.

Comments:
Associated Administrative and Service/Storage Space:
Some guidelines define overall office space per FTE by recommending the office size in nasf, plus an additional amount of space for administration, service and storage. This also sometimes includes pro rata space for conference rooms.

For example, the CPEC Guidelines for the University of California recommends a space guideline of 140 nasf for the office itself (as shown on the chart above), plus 40 nasf for Administration, plus an 10% premium of both these for a total office area of 195 nasf. Thus, for planning and design purposes, the average area required for office space for the U.C. system is 195 nasf per FTE, which includes more than just the size of the office itself. Washington State's FEPG also recommends 195 nasf per FTE, based on a 140 nasf faculty office.

University of California, Berkeley, UC Berkeley calculates faculty office space as 150 nasf for the office, plus a *pro rata* space of 10 nasf for conference rooms, 45 nasf for support, and 20 nasf for service, totaling 225 nasf for *aggregate office clusters*.

The University of Minnesota Model assigns 120 nasf per FTE for a standard faculty office, and then adds 30 nasf for service areas like "reception areas, conference rooms, file storage, copy rooms, work rooms, and staff lounges." The actual office size is 120 nasf, but the additional 30 nasf per person provides a *pro rata* share of all the additional support space required for a cluster of offices.

The approach used by these universities provides useful guidelines for estimating overall office space/FTE for clusters of offices in a new building or in major relocations. This kind of guideline also helps to assess *blocks* of office space in existing locations. However, the *individual* standard for a faculty office (140 , 150 and 120 nasf respectively for California or Washington, U.C. Berkeley, and Minnesota) are the numbers comparable to Stanford's faculty office guideline.

Caveats:
All of the sources which provide guidelines for office areas note that the spaces listed are general guidelines only, not standards. Existing conditions, especially in older buildings, often make adherence to office standards difficult or impossible. Structural systems, building utilities and window locations frequently prevent offices from being sized accurately to meet new standards. Building configurations may force offices to be either larger or smaller than the standard, necessitating design accommodations on a case-by-case basis.

B. Classrooms – Comparative Guidelines

1. Assignable Square Feet per Student Station in Classrooms

Many sources report ranges of Assignable Square Feet per Student Station.

The following table presents a range of classroom seating space from sources referenced in Cornell University's Guidelines. (ASF is the same measure as "nasf" – Net Assignable Square Feet.)

Table from the "Space Planning Guidelines" of Cornell University, Ithaca Campus, 1994, page 8.

Classroom / Classroom Service
Planning Guidelines
Assignable Square Feet per Seat (Station) ASF/S *

Room Type	Number of Seats (Stations)	Cornell Guidelines ASF per seat	SUNY ASF per seat	WICHE ASF per Seat	California ASF per seat	MIT ASF per Seat
	5-9	22-26	20	20-30	15	24 w/ tables
	10-19	18-22	20	20-30	15	24 w/ tables
Seminar **	20-29	17-18	16	16-20	15	17 w/ tablet arms
Class	30-39	16-17	16	15-18	15	17 w/ tablet arms
And	40-49	15-16	16	14-16	15	17 w/ tablet arms
Lecture ***	50-59	14-15	16	14-16	15	17 w/ tablet arms
Rooms	60-99	13-14	16	13-15	15	13-14; theater
	100-149	12-13	13	11-14	15	12-13; theater
	150-299	10-12	12	10-14	15	11-12; theater
	300-500	10-12	12	9-12	15	11; theater

SUNY =   State University of New York
WICHE =   Western Interstate Commission for Higher Education
California =   California Postsecondary Education Commission
MIT =   Massachusetts Institute of Technology

* Service, aisle and instructional spaces are included in the ASF per seat guidelines
** Seminar guidelines can also be used to size conference rooms located within office complexes
*** ASF/S guidelines for classroom and lecture hall seating assumes use of folding table arm writing surfaces. Guidelines for small seminar rooms assume seating at tables.

The following table presents the range of Classroom Size Standards used by the State of Washington.
Reference: Table 1, Facilities Evaluation and Planning Guide, October 1994, p. 100-5.

Classroom Assignable Square Feet per Station Criteria
Includes Classroom Service
From Washington State Facilities and Planning Evaluation Guide

Room Capacity	Moveable Chairs w/Tablet Arm (TA)		Fixed Pedestal or Riser Mounted Seating w/ TA	Auditorium Seating w/ TA		Movable Table and Chairs	Pedestal Table and Chairs
	Under 15" Arm	15" - 20" Arm		Folding	Non-Folding		
0 - 25	18	20	17	--	--	16 - 26	20 - 22
26 - 49	16	18	17	--	--	16 - 26	18 - 20
50 - 99	14	16	13	14	17	16 - 22	18 - 20
100 - 149	--	--	12	14	15	16 - 22	18 - 20
150 - 299	--	--	--	14	15	16 - 22	17 - 19
300+	--	--	--	14	15	16 - 22	16 - 18
Overall Average	16		14	14	15	20	18

In March 2008, the Stanford University Registrar office and Department of Capital Planning and Space Management co-chaired a team that produced an Instructional Space Master Plan. The following pages contains the Executive Summary section from the Instructional Space Master Plan.

Stanford University
Instructional Space Master Plan

Executive Summary

Purpose and Scope of the Master Plan

The purpose of the Instructional Space Master Plan is to provide vision to guide the creation, management and operation of 21st century classrooms that befit the caliber of Stanford and that provide inspiring and exciting environments for learning.

Although "instructional spaces" are broadly defined, the Master Plan focuses primarily on general use classrooms that are the purview of the Office of the Registrar. However, it also sets out parameters for the Registrar's involvement in instructional spaces that operate under shared responsibility with the Registrar's Office or are currently outside the purview of the Registrar's Office, to ensure that management and decision-making responsibilities for these spaces are clearly demarcated.

Context for the Plan

The Master Plan includes a summary of conditions that existed in the past few years (using analyses drawn from an instructional spaces assessment undertaken in 2006 and updated as appropriate), as well as issues in planning for the future.

The following are relevant considerations for future planning efforts.

- Current shortcomings

  - *Mismatch between supply and demand:* The overwhelming majority of Stanford's classes (86%) are small, with enrollments of 30 or fewer. By contrast, more than half of the inventory accommodates 30 or more students.

  - *Physical conditions:* Until recently, many of Stanford's rooms were "overfurnished" based on modern seating standards, although Stanford has begun to address this problem by reducing seating capacity in some rooms. Another significant problem is the poor physical condition of some of the classrooms and problems with certain room features (e.g., screens covering blackboards when in use, fixed seating that makes interactive teaching and learning difficult).

  - *Concentration of scheduling in "prime time":* Almost ¾ of daytime class meetings occur during "prime time" from 10am to 3pm. There are essentially no 8am classes and few 9am classes. If required, there are opportunities for increased scheduling in the morning hours.

  - *Schedule block:* Stanford's scheduling block is a series of overlapping class meeting periods designed to accommodate a wide range of pedagogical meeting requirements. The large number of overlapping periods creates a structural difficulty in being able to schedule efficiently.

- Recent Changes

  - *Classroom rightsizing:* Since 2006, the Registrar's Office has "rightsized" 34 rooms by adjusting the number of seats in the room to conform to modern square foot per seat allocations. In the process, the number of small rooms has increased, and the inventory is in better alignment with class sizes.

  - *Repurposing of Building 60:* To respond to the need for office and administrative space, and after modeling the impact of removing classrooms from the instructional space inventory, the Registrar's Office agreed to repurpose nine classrooms in Building 60 to administrative space.

- Proposed Projects: Stanford has a number of projects scheduled over the next 5+ years that will affect instructional spaces in some fashion.

  - *Science and Engineering Quad (SEQ) projects:*

    … Energy and Environmental Building: will house one new classroom for general classroom use.

    … Renovation of Building 524 and other changes on Panama Mall: The Terman building, which houses many Registrar classrooms, will be demolished as the School of Engineering Center is built. Replacements for these classrooms will be primarily in Building 524.

  - *Annenberg Auditorium:* The auditorium and related classrooms serving arts-related curricula will be removed from service around 2011 and replaced in a new building on the Arts Quad.

  - *Other Auditoria:* Kresge and Bishop Auditoria will be removed in the next few years. Current plan is to replace both with one auditorium in the new Graduate School of Business.

  - *Old Chem:* This building is likely to be repurposed as a science facility, but it is not clear at this time whether it will include classroom space.

  - *Professional School classroom spaces:* The Schools of Law, Business and Medicine are underway with new campus buildings which will include instructional spaces managed by the schools, although it is anticipated that as Stanford moves toward more interdisciplinary programs, more shared scheduling is likely to occur.

The Instructional Space Master Plan

Guiding principles and Elements of the Master Plan

Guiding principles are overarching tenets that derive from the philosophical underpinnings, goals and objectives for teaching and learning at Stanford, and are intended to provide guidance for planning, managing and allocating resources for instructional spaces.

There are three major *elements* of the Master Plan:

- ***Creating** instructional spaces:* the activities and guidelines necessary to size, produce and maintain an inventory of high quality instructional spaces
- ***Managing** instructional spaces:* strategic policies and longer-term planning considerations for instructional spaces
- ***Operating** instructional spaces:* the issues, activities and policies required for day-to-day use of instructional spaces.

Instructional Space: Master Plan Elements

1 CREATION	2 MANAGEMENT	3 OPERATION
• Determining Size and Distribution of the Inventory	• Management Structure	• Building Operations
	• Performance Metrics	• Safety and Security
• Conceptual Standards for the Inventory	• Funding	• Emergency Preparedness
		• Non-Academic Uses of Instructional Spaces

Guiding principles and plan elements are summarized on the following pages.

Guiding Principles

1   *The pedagogical experience should be equalized among classrooms as much as possible in all aspects of classroom fit-out, quality and accessibility.*

2   *There should be an adequate inventory of classroom spaces in each of Stanford's five major Academic Quads – Main Quad, Social Sciences Quad, Arts Quad and SEQ1 and SEQ2 – so that a majority of instruction by academic disciplines residing in a Quad can be delivered within that Quad.*
   As a corollary, to the extent possible, there should be careful balancing in locating classrooms within a quad. Generally, they should be concentrated to create critical masses within selected buildings in a Quad rather than dispersed in small numbers across several buildings, although it is also important to ensure that departmental offices and administrative spaces are not totally divorced from classrooms.
   Finally, when possible, classrooms should be located on the periphery of buildings rather than deeply within to facilitate access and make it easier to manage security in buildings in which classrooms are located.

3   *Buildings on the Main Quad are an iconic and emblematic part of Stanford; as such, there should always be a substantial "instructional presence" on the Main Quad so that all students at Stanford have an opportunity to experience this part of campus.*

4   *All classrooms that are not intended for instructional uses should be deemed "University classrooms" and should be managed and controlled by the University rather than by individual departments.*

5   *Scheduling of all instructional spaces – whether University classrooms, specialized spaces or the limited number of departmental proprietary spaces – should be guided by the goal of achieving an efficient use of instructional space resources.*

6   *Acknowledging that learning occurs in many venues and in many forms at a university, general-use "University classrooms" should include a range of configurations to accommodate different pedagogical styles, and should be complemented by a range of other instructional spaces in each Quad.*

7   *The ever-changing nature of instructional technologies, combined with the existence of several organizations on-campus that have some involvement with them, requires both a clear understanding of each entity's role, as well as ongoing collaboration among them to address technologies in the classroom.*

8   *Information on instructional spaces should be centralized and shared.*

9   *The Registrar should be viewed as a resource for any planning issues and activities related to instructional spaces. This includes any classroom renovation or replacement being considered.*

10 *Priorities for University classrooms are, first, for academic instruction; second, for academic-related events (including Continuing Studies events); and finally, for non-academic events.*

11 *Priorities for using instructional space change during the summer to reflect different uses of this space outside of the academic year.*

12 *Wherever possible, the University should adopt environmentally sensitive and sustainable approaches in constructing, operating and fitting out its instructional spaces.*

Summary of Plan Elements

Creating Instructional Spaces

<u>Size and Distribution of the Inventory</u>
The size and distribution of the space inventory required to support Stanford's instructional needs is directly affected by the nature of pedagogies offered; geographic concerns such as proximity of instructional spaces to departmental spaces; and scheduling considerations, including the length of the scheduling day and the degree to which classes can be scheduled throughout the day.

A significant interest for Stanford is to make each of the five major quads – Main Quad, Social Sciences Quad, Arts Quad, Science and Engineering Quad 1 (SEQ1), and Science and Engineering Quad 2 (SEQ2) – a vibrant hub of activity. The presence of instructional spaces – formal classrooms and other, informal learning spaces (e.g., group study rooms, work areas outside of classrooms) – is a significant contributor to this vitality. A goal of the Master Plan is to ensure an adequate distribution of instructional spaces in each quad.

<u>Conceptual Standards for Instructional Space</u>
The Master Plan provides standards at a conceptual level for the following classroom features:

- Room type and configuration, for all rooms (seminar rooms, general purpose classrooms, lecture halls, case study rooms, and auditoria)
- Square footage allocations
- Furnishings
- Finishes
- Writing and presentation surfaces
- Technology and audio-visual
- Lighting
- Accessibility

These standards are intended to provide a baseline level of quality that all instructional spaces should achieve, so that over time there is a consistent "Stanford classroom" in look and feel, one that befits the quality and reputation of the institution.

These standards should also be used to guide renovation and new construction activities and should be updated periodically to adapt to changing pedagogies, industry best practices and new developments in furnishings, finishes and particularly technology.

Managing Instructional Spaces

<u>Organizational Issues</u>
The Office of the Registrar manages day-to-day operations of instructional spaces (e.g., scheduling, coordination of maintenance). There is need, however, for a more strategic level of management that deals with all aspects of instructional spaces – pedagogy, physical conditions, scheduling, technology, funding, organization, etc. The Master Plan proposes the creation of an Instructional Space Committee that will have within its purview the ability to consider instructional spaces holistically. Initially it is

proposed as an administrative committee, with the possibility of becoming a faculty-led committee if appropriate.

In addition to the Instructional Space Committee, two sub-committees are also proposed at this time, one to address technology planning and one focusing on management of classroom scheduling information. Each of these will include representation from the Registrar's office as well as appropriate stakeholder groups on campus who bring broader perspectives in each subject area. In the case of the Technology Planning Sub-Committee, for example, a focus will be to "look down the road" to emerging technologies and determine how they can eventually be folded into instructional spaces. For the Information Management Sub-Committee, the focus is on creation of policies to centralize scheduling information, and to develop practices and protocols that will encourage campus-wide participation in a centralized scheduling system.

Performance Metrics

Performance metrics provide an objective way to assess how instructional space resources are used. The Master Plan proposes a series of metrics that should be generated on a periodic basis – e.g., once a quarter or once per year – to provide quantitative data on instructional space usage, conformance to scheduling policies, accommodate of pedagogical needs, etc. The primary metrics identified in the Master Plan – along with examples of how to interpret them – are as follows:

- Room utilization
- Seat (station) utilization
- Net assignable square feet per seat
- Demand vs. supply
- Other measures (e.g., enrollment tracking, schedule block conformance)

Stanford has software reporting tools that may be used to generate these metrics easily, quickly and regularly.

Funding

The Master Plan inventories the different types of funds that have typically been available for instructional spaces on an annual basis – including operational, maintenance, technology and capital funds. It also presents future funding benchmarks that may be used to provide order-of-magnitude cost estimates for refurbishing existing spaces, renovating space, and adding instructional media.

Operating Instructional Spaces

By and large, the current system for managing day-to-day operations of instructional spaces works well. Rooms in each building are managed as part of overall building management and the Office of Facilities Operations oversees cleaning and maintenance on behalf of the Registrar. The Master Plan includes some suggestions for more active management of instructional spaces, as well as thoughts on safety and security (e.g., hours of operation, implications of mixing instructional spaces within other uses in a building), and emergency preparedness.

It also includes a section on the use of auditorium spaces for non-academic uses, and some of the operational issues that arise as a result (e.g., need for centralized management of these spaces, issues of cost recovery, need for non-instructional spaces that might serve as "community resources" in addition to and / or in place of instructional auditoria).

Summary of Master Plan Recommendations

Recommendations presented here are excerpted or summarized from the Master Plan.

Management / Organizational Issues

Recommendation 1: Strategic Management

Create an Instructional Space Committee to handle activities associated with general use instructional spaces that are long-term and strategic in nature. The Committee should have a holistic view of instructional spaces and their issues, and should be comprised of University stakeholders who represent the full spectrum of instructional space issues. The scope and range of functions of the committee would be determined by consensus of the participants. An initial list of functions for consideration is below.

- Evaluate the adequacy of instructional spaces (e.g., configuration, furnishings, technology, etc.) to support current and anticipated pedagogies at Stanford.
- Provide ongoing review of scheduling grids and protocols
- Communicate schedule planning requirements across the many entities involved in scheduling across campus (e.g., academic courses, finals, conferences and other summer activities) to ensure that planning happens as early as possible.
- Represent / advocate for an instructional space perspective in all Stanford planning initiatives involving renovation or new construction of instructional space (e.g., with the Office of Land and Buildings, individual Schools, capital planning meetings with deans).
- Periodically review performance metrics (see Section 2.2.2.B. "Performance Metrics" below)
- Review "best practices" nationally and from other institutions, as information is available
- Review instructional space needs that require capital funding; determine budget needs and resource allocation priorities for major capital expenditures related to instructional spaces
- Provide ongoing communication about instructional space issues to the campus at-large, particularly to faculty and other frequent users of instructional spaces
- Oversee the implementation of the Instructional Space Master Plan, ensure that changes to instructional spaces are in accordance with the Plan, and update the Plan as necessary.
- Formulate policies for and approve changes to instructional space use.
- Develop an "Annual State of Instructional Spaces" report to highlight progress that has been made during the year in upgrading instructional spaces, meeting performance metrics, etc.

Initially the committee would be administrative in nature. Ultimately the goal is to also have significant faculty involvement, and if appropriate, the focus of the committee structure could shift from administrative to faculty-led, with a home in the Faculty Senate. In such a circumstance, adjustments to the composition and structure of the committee would shift as necessary to conform to the policies, procedures and protocols of Faculty Senate committees.

Recommendation 2: Technology

Create a Technology Planning Sub-Committee as the vehicle by which the Registrar's Office and other campus entities involved in instructional technologies coordinate and collaborate to bring emerging technologies into the classroom. The sub-committee would provide the means for the following:

- Informing the Registrar's Office about emerging technologies and how they might be incorporated into the classroom, including technologies that are in the forefront, technologies that are five years down the line, etc. (This type of collaborative effort is already happening in other areas on campus.)
- Learning about and discussing best practices at other institutions to ensure that Stanford's instructional spaces continue to be competitive with peers.
- Identifying staffing and training implications of new technologies and strategies to provide these.
- Determining funding requirements and serving an advocacy role with senior administration in securing funding for the constant evolution of instructional space technology.

Recommendation 3a: Information Management

Centralize information on instructional spaces and develop systems for sharing this information among all constituencies using instructional spaces, using Resource25 as the central database.

Recommendation 3b: Information Management

Create an Information Management Sub-Committee to:
- Implement the move toward Resource25 as the single, unified system for scheduling information.
- Identify and recommend support systems that need to be developed to train personnel across campus to use Resource25 effectively, and to ensure the reliability of information entered into the Resource25 system.
- Meet with representatives across campus to understand issues and concerns with moving toward a central information system for storing scheduling data, and to communicate information about the potential benefits of centralized storage of scheduling data (e.g., better planning tools for determining class section needs, faculty and graduate student staffing needs, enrollment planning and estimating, etc.).
- Develop policies and procedures that respond to user concerns.
- Develop tools for planning and periodic reporting using Resource25 (and the reporting functions of its related software package, X25).[1]

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[1] Examples of some of the reporting tools, in the form of "performance metrics," are presented in *"Section 2.2.2.B. Performance Metrics."*

Capital Planning and Funding

Recommendation 4: Short-Term Capital Planning
In the early planning phases for the projects coming in the next five-plus years (e.g., Building 524, Energy and Environmental Building), analyze classroom needs for these buildings in the context of overall need for instructional spaces in the targeted quad.

Recommendation 5: Long-Term Capital Planning
As new or replacement classroom space is deemed necessary, consider creation of dedicated classroom buildings in one or more of the five quads, to allow for efficient development and maintenance of instructional spaces.

Recommendation 6: Capital Funding Requirements
Develop a long-term projection of funding requirements based on expenditures required to achieve the primary goals of the Master Plan, including achieving a base level of quality and fit-out for all instructional spaces, meeting targets for providing and refreshing baseline technologies in instructional spaces as required, and constructing new instructional spaces.

Recommendation 7: Cost Recovery
Develop a university wide policy for cost recovery when instructional spaces are used for non-academic events, addressing charges for basic set-up and room usage, basic and specialized technologies, clean-up, etc.

Scheduling

Recommendation 8: Monitoring Prime Time Usage
Review scheduling patterns on a regular basis to measure room use during peak vs. off-peak periods, with a goal, over time, of promoting schedule shifting into off-peak hours wherever practical (e.g., discussion sections) and / or considering   scheduling incentives to increase the attractiveness of selecting off-peak hours (e.g., better room locations, preferential treatment in selecting prime time spaces for those who teach in off-peak times as well).

Recommendation 9: Finals Scheduling
Explore approaches to finals scheduling that would rely on the honor system and eliminate alternative seating, to allow finals to be given in the rooms where a class is scheduled during the term. This would have a dramatic impact on the need for auditorium space during finals periods.

Inventory and Physical Issues

Recommendation 10: Transition Planning for General Use Classrooms
Conduct a review of instructional spaces that are now departmentally-controlled over the next one to two years to identify spaces that meet criteria for "general use classrooms" as outlined under *Guiding Principle 4* of the Master Plan. For spaces that meet the criteria, the department and the Registrar, on

behalf of the University, should work out a plan to transition the space(s) to University management, after allowing for the following:

- Each department should have access to a space (or spaces, depending on the size of the department) that they can freely schedule for departmental meetings, conferences, and other activities, and an instructional space under review may be converted to such use.
- Such spaces must be fully supported, funded and managed by the department.

Recommendation 11: Instructional Support Spaces

The University should review needs for other spaces that support instructional and learning activities (e.g., group study spaces, computing facilities, informal student work areas, multi-purpose spaces) and develop long-term plans to address these space needs, particularly in quads where there currently is or is anticipated to be a high volume of student activity (e.g., Main Quad, SEQ areas).

Recommendation 12: ADA Requirements

Conduct a study of ADA requirements in instructional spaces within the next three years and incorporate results and recommendations into the Master Plan. Among the issues to be considered in the study are:

- Improving signage for ADA accessibility
- Guidelines for accessibility to tiered classrooms
- Adequate distribution of ADA accessible spaces among the major quadrants of campus
- Phasing and funding considerations and requirements for implementing changes to achieve ADA compliance.

Recommendation 13: Sustainability

Develop a set of goals and principles for adopting environmentally sustainable practices in instructional space and / or adopt existing University standards that may exist.

Operations

Recommendation 14: Emergency Preparedness

Create the necessary "infrastructure" to ensure that instructional spaces can be managed effectively in times of emergency. Specifically:

- All instructional spaces should be scheduled in Resource25 (R25) so that there is a complete database of information on the use and occupancy of these spaces. Spaces can be coded in R25 to distinguish special use from general use spaces. (See *Recommendation 3a* above.)
- The Instructional Space Committee should develop a common set of policies and procedures with regard to classroom security and emergency preparedness. These guidelines would then be distributed to the Registrar's Office (for University instructional spaces) and to each department (for special use instructional spaces) for implementation.
- Concurrent with distribution of these guidelines, the Instructional Space Committee should develop a protocol for communication between the Committee, the Registrar's Office and the individual departments so that information on important matters involving all instructional spaces can be disseminated easily and consistently – particularly in times of emergency.
- Review all physical standards to meet best practices for safety – e.g., fire safety, terror safety, earthquake safety, etc.

C. Research Space– Comparative Guidelines

With the exception of Cornell University and its 1994 Space Guidelines study, and the CPEC State of California guidelines, none of the other universities or sources provide research space planning guidelines *based on type of research space,* as opposed to academic disciplines. Nearly all the other guideline documents provide extensive listings of assignable net square feet per station for numerous (ranging from dozens to over 100) separate and distinct academic disciplines. The range of nasf/station varies from magnitudes of 35 or 40 nasf/per station for some disciplines (communications, social sciences, history, mathematics) to around 200 nasf/per station for some engineering and science disciplines.

The Minnesota Facilities Model for the University of Minnesota, July, 2000, presents a simple table of research space guidelines, as follows:

Research Allowance Ranges

ASF/Researcher	Disciplinary Areas
20 – 50 nasf	Humanities & most Social Sciences
50 – 150 nasf	Clinical Social Science, Law
150 – 300 nsaf	Physical, Life & Health Sciences
300 – 450 nasf	Engineering, Agriculture, Forestry
450 – 600 nasf	Veterinary Science

Source: Minnesota Facilities Model, July 2000, p. 21.

The California Postsecondary Education Capacity (CPEC) space analysis study of 1990 presented the following table, which provides a more complex set of space guidelines than the Cornell study. Note that the numbers on the following table apply to "State Supported" research activity, which implies separately funded research activities which may be very different from more typical university-based research lab needs.

The following table was excerpted from the CPEC study, p. 109. The specific source in that document is listed as the University of California, Office of the President; and Commission Staff.

University of California Research Space Standards

Category	Description	NASF per State Supported FTE Faculty	NASF per Graduate Student	NASF per Postdoctoral Fellow
I	Complete wet and dry laboratories, typically assigned to research teams. High density of utility services, fume hoods, other built-in equipment, bench space and movable equipment. Requires service areas & support space ranging from 25 - 50% of core labs.	500	250	250
II	Labs generally requiring fewer laboratory services and less bench space for individual work stations. Greater proportion of core laboratories shared among research teams, often housing bulky experimental apparatus. Requires service areas and support space ranging from 10 - 25% of core laboratories. Faculty & graduate students also involved in field research.	350	175	175
III	Large individual studios for faculty and graduate student creative activity, usually occurring on a solo basis. Specialized support areas required for specific equipment-based techniques, such as photography, computing arts, or media editing.	500	250	250
IV	Small individual studios and shared rehearsal facilities, production studios and project areas. Accommodates both solo and group activities. Specialized facilities often used on a shared basis for teaching, research, and performance activities. Special storage facilities required.	150	150	150
V	Combination office and lab-based research activities. Labs, project rooms, or observational /practice facilities often shared among several research teams. Limited service areas with some special storage needs.	150	100	100
VI	Office-based research activities requiring computer support, group project rooms, reading/study areas. Limited service and support needs.	50	50	50

Note: Space allowances per faculty, graduate student, and postdoctorate include all service and support space.

Research Lab Space Planning Guidelines

The basic wet lab planning module only addresses the space inside an actual wet lab research laboratory. It does not address other kinds of lab space, nor does it account for the office, support, equipment and storage space that must accompany research lab space to make it functional.

Cornell University has done a detailed study for five categories of research lab space and has proposed guidelines which address the amount of space per person, or per station, which each type of lab might require, including a *pro rata* share of office, storage, shared equipment and other support space. These areas are based on extensive empirical research which Cornell conducted on its own campus and with other institutions. Presented on the table below are the guidelines proposed in the 1994 Cornell Space Planning Guidelines. These guideline numbers provide a good comparative measure for Stanford's research lab planning.

Research Lab and Service

Planning Guidelines -- Net Assignable Square Feet per Seat (Station)

Category	Research Lab Type	Cornell Guidelines Basic Modules (NASF/Station)
1	**Computer Research** Office based research with computer support. Limited service and support needs.	**160**
2	**Studio-based Research -- Design Workstation** Individual studio research space. For design activity requiring: a. Drafting table, stool, and side table, or b. Easel and stool The module area includes space for only one individual.	**200**
3	**Science Laboratory, Module Type** **A. Wet Lab** Space including shared equipment and service areas. The shared equipment/service areas approximate 30 to 50 nasf. **B. Dry Lab** Space including shared equipment and service areas. The shared equipment/service areas approximate 30 to 50 nasf.	**200** **160**
4	**Special Equipment Lab** Reserved for laboratories which are too extensive in their space requirements because of special research activities.	**Custom Design**

Cornell notes that these guidelines should be evaluated annually since research needs change constantly. To help derive and validate the guidelines presented in the preceding table, Cornell conducted a study of the net assignable square feet per station in *actual* lab buildings on its campus. The study data revealed the following:

- The *actual* range of space per station in Office/Computer Labs was 170 to 175 nasf/station. Recommended is 160 nasf.
- The *actual* range of space per station in Studio Labs was 311 to 428 nasf/station. Recommended is 200 nasf.
- The *actual* range of space per station in the Science Wet Labs was 188 to 238 nasf/station. Recommended is 200 nasf.
- The *actual* range of space per station in the Special Equipment Labs was 289 to 758 nasf/station. Cornell recommends planning for these kinds of labs on a case-by-case basis.