

DESIGNER'S GUIDE

II. Design Phase Issues

(Revised May 2, 2008)

August 1, 2004



**Yale University
Facilities Planning & Construction**

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DESIGN PHASE ISSUES

DESIGNER'S ROLE

Key to the delivery of a successful project is that all players work as a team. The Designer plays an important role in fostering the participation required to create an effective team. To this end, a proactive approach is expected to the interface with Yale representatives, such as the Office of Environmental Health and Safety, Building Services and Operations, Yale Telecommunications, Yale Security, Yale Fire Marshal, and others. Secondly, the Designer must take ownership of the project. The Designer is expected to embrace the scope, schedule and budget and be responsible to keep these three parameters in focus when making decisions regarding the project design. Finally, the Designer is responsible for ensuring that the design proposed adheres to the Yale School of Medicine Design Standards. It is expected that the Designer will embrace the Design Standards and have a proactive approach to using them. The Designer can assume that no one will be checking and that they are following these standards. The Designer must check for themselves and notify the Project Manager if there is a proposed deviation.

REQUESTS FOR PROPOSALS/WORKPLANS

Each project undertaken at the Yale School of Medicine begins with a Request for Proposal issued to a designer. Contained within the Request for Proposal is a "Workplan" which is a project-specific document put together by the Project Manager managing that project. The Workplan documents the scope, schedule and budget of the project. The scope is typically shown via verbal description and referencing a schematic sketch produced in-house. It is our view that these schematic sketches and scope descriptions, while lacking in specific detail, are inclusive in terms of the extent of the desired scope. We are looking for Design Teams to analyze the schematic sketches during Preliminary Design to see if the same scope can be achieved in a different fashion. It is not the intention of the Workplan to list all the contractual obligations required of the Design Team, since these are clearly stated in the Contracts (Y-100 or Y-105) which are distributed with the Workplan as an attachment. The intent of a detailed Workplan is to avoid misunderstandings on the part of the Design Team and the Project Manager about what the project entails.

Please note that Deliverables are outlined in the Workplan. A key deliverable at every phase (PD, DD, and CD) is the MEP Systems Description. (See section IV: Close Out Procedures for further definition of this deliverable.) The budget that is indicated in the Workplans is one that has been estimated internally using data from past similar projects. The projects outside design consultant must evaluate the desired scope and the stated budget to determine if they are in agreement that the project scope can be done for the stated price. The designer should discuss with the Project Manager any perceived problem with this relationship prior to submitting a proposal. It should be noted that in the Design Contracts which are included within the Request for Proposal there is a re-design clause which requires that a designer re-do construction documents in order to reduce a project's cost to the agreed-upon budget in the case that a project comes in over budget. Sometimes it is discovered through the estimating and bidding process that an initial project budget was simply too low for the stated scope of work. In these cases, if in fact the scope has stayed the same as was indicated in the Request for Proposal, we do not support additional fees to the designers based simply on project budget increase. It is our assumption that design fees are based on the scope of work indicated, not on the construction cost and we will therefore not support proposals for additional fees.

The schedule included in the Workplan needs to be adhered to. Conformance with this schedule is one of the many factors which are used to evaluate both Project Manager and Design Team performance. Designers should raise any objections they have with the proposed schedule with the Project Manager before submitting a proposal.

In summary, the Workplan serves two purposes. First it allows the Project Manager to think through the project and "design" the project in terms of its participants, scope, schedule and budget. Second, the Workplan allows the outside design professional to fully understand what is expected of them during the project and therefore allows for a dialogue between the designer and the Project Manager to occur before the project is undertaken.

(See Exhibit II-B for *required* format for proposals for design services.)

KICKOFF MEETINGS

There are two types of Design Phase Kickoff Meetings. One is the initial Preliminary Design Kickoff meeting, while the other is the kickoff meeting for subsequent phases. The Preliminary Design Kickoff Meeting initiates the project. All project participants are present and it is a chance to educate the users on the design process. The Project Manager will review the scope, schedule and budget for the project and briefly describe the overall process of design, review and construction. The Project Manager will then turn the meeting over to the Design Team. The Design Team should then give an overview of their work and describe how information will be gathered and translated into the design. The process and overall schedule for the PD phase should be presented. A schedule for subsequent meetings with the user should then be established as part of the presentation. The Design Team can begin their information gathering.

The Design Team, at subsequent kick-off meetings for the next phases of the work, will review comments on the previous phase, schedule the next series of meetings on specific topics and begin the design process of the next phase of work.

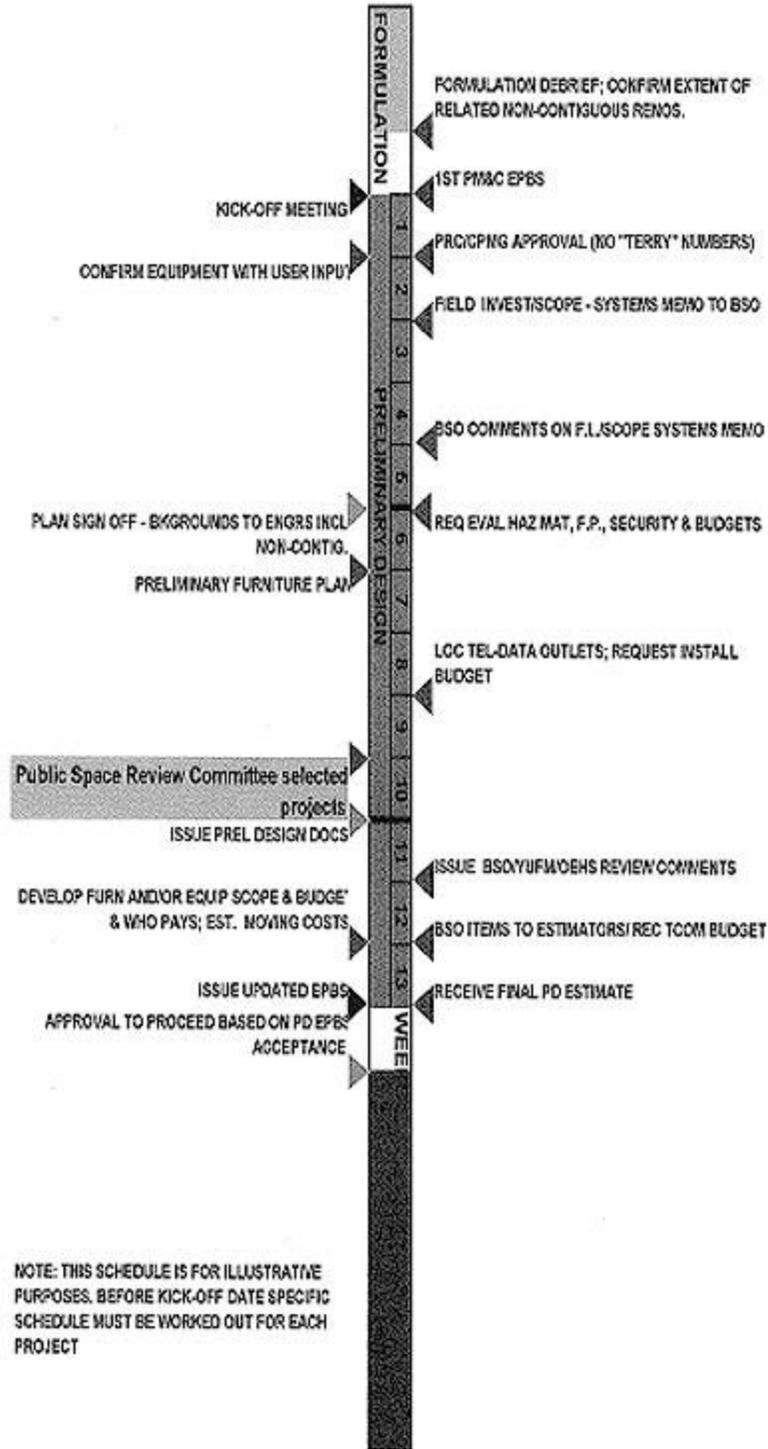
During the Design Phases of the work, the Design Team takes and distributes meeting minutes at each meeting. Please see the suggested format for meeting minutes that we have found to be very easy to read to follow issues and their resolution (Exhibit II-C). This format keeps all previous comments on a particular issue and puts in bold the most recent. It also clearly indicates by whom action needs to be taken.

PRELIMINARY DESIGN PHASE – DETAILED SCHEDULE

At completion of the PD estimate a variety of non-construction costs must be accurately budgeted to obtain a soundly based, reliable updated EPBS. This requires a tight sequence of steps to assure that these costs are based on accurate information. The following illustrative schedule shows the many steps that are required and the sequence in which they must occur.

Before the project kick off meeting, for all projects, the PM should meet with the architect, engineers and CM to develop a project specific detailed PD phase schedule with dates for each of the listed events. It is important to get buy-in from both the architect and CM on these dates before issuing them. This detailed schedule should be reviewed at the kick-off meeting along with the overall project schedule. This schedule should be as aggressive as can be achieved without compromising the planning process. PRELIMINARY DESIGN PHASE – DETAILED GRAPHIC

PRELIMINARY DESIGN PHASE - DETAILED SCHEDULE



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INTERFACE WITH PROJECT PARTICIPANTS

In order to achieve a successful project, the Designer must get input from, and coordinate with, a number of different groups. These groups include Yale representatives from Building Services & Operations, the Office of Environmental Health & Safety, the Yale Fire Marshal, Yale Telecom, Yale Security, Client Support, and in addition, the New Haven City Officials.

When the Design Team meets with the City Building Official or Fire Marshal to review projects, the Project Manager must be present to monitor the discussion and to field any questions regarding Yale School of Medicine policy as a whole. A visit to the City is required during Preliminary Design to familiarize City officials with the project and to get their comments and concerns early in the process.

In general, everyone can talk to everyone else, but the Project Manager must know about all communications via minutes or memos, reporting the interaction. The Design Team cannot act on a comment from another Department, or from the User, if this is not approved by the Project Manager. If changes get incorporated that are not brought to the Project Manager's attention, and not approved by the Project Manager, the Design Team will "own" that issue and will be required to re-design as required if the decision is not approved by the Project Manager. The Project Manager must be thoroughly informed of every aspect of the project, as they are responsible for its ultimate completion. Therefore, no decisions can be made without the Project Manager's approval.

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FIELD INVESTIGATION

Field Investigation is part of the basic service the Designer provides. That basic service entails checking key dimensions and general critical dimensions. Yale University requests a separate not-to-exceed fee for Field Investigation, because Facilities Planning & Construction wants more than just the general critical dimensions to be indicated. We are often working within existing buildings that are rather complex and seek to minimize problems that are encountered during Construction. Yale School of Medicine is willing to pay additional fees for field investigative services in order to avoid construction problems in that we feel we pay more to solve problems once in Construction. This is the purpose of the not-to-exceed Field Investigation fee.

It is expected that the fee for Field Investigation covers a full and thorough investigation and documentation of the existing space. As such, it will be unacceptable if unknown issues are encountered in construction that could have been known via a complete and appropriate Field Investigation. A field investigation report addressing MEP conditions shall be submitted to FACPC/BS&O for review and comment.

PRELIMINARY MEP SCOPE / SYSTEM DESCRIPTION

At the time of the Field Investigation report submission, a Preliminary MEP Scope/System description shall also be submitted. This document will in a summary format describe the proposed MEP approach to the project informed by the findings of the field investigation and the project requirements. This document will be submitted to FACPC/BSO for review and comment. This document will be the basis for later MEP System Descriptions due at the end of each design phase and at Closeout (see section IV Close Out Procedures).

HVAC CRITERIA SPREAD SHEET

The HVAC Criteria Spread Sheet shown below as [EXHIBIT II-D](#) is required for all projects. At the start of the project design parameters or criteria should be entered as shown in the example. As each phase progresses the appropriate data should be entered or updated. Completion of each project phase requires that the spread sheet be completed with the final data for that phase. Review of this spread sheet will be an integral part of each end of phase review.

USE OF DESIGN STANDARDS

The Design Standards are a result of much Yale School of Medicine internal discussion about preferred products and processes. The Design Team is responsible for following the Design Standards completely. Following the Design Standards will, in fact, streamline the process as there will not be objections to any products being suggested.

If, for some reason, the Design Standards cannot be followed and an alternative product is suggested, it is essential that the Design Team submit a list of those non-conforming items for approval by the Project Manager.

Designers will be notified of periodic updates. It is the Designer's responsibility to review the update and incorporate the issues into their current projects.

The Design Standards document can be found on the Web at:

[Procedure Manuals, Facilities Construction & Renovation: Yale School of Medicine](#)

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PUBLIC SPACE REVIEW COMMITTEE

The Public Space Review Committee process applies to *all* projects unless funded by the Department.

The Committee reviews of proposed finishes, colors and furniture. A meeting should be scheduled with the PSRC *before* any presentation is made to the users to confirm that the direction is appropriate both for selection and cost level. For projects requiring furniture with possibly large variations in cost – such as conference rooms and libraries – a PSRC review should be scheduled *before* completion of the PD Phase estimate and EPBS. This will enable the furniture and equipment budget to be confirmed; see PD time line. PMs must have the design team schedule their work accordingly.

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USE OF ARCHIVES

It is important that the designers follow the rules below, in order to maintain the quality and completeness of our archive:

1. No original (mylar, vellum, or print) shall leave 100 Church Street South Suite 214 in the possession of an outside designer.
2. Designers are free to search the files and make prints within the archives, using the diazo printer and paper provided. All drawings removed from the drawers must be re-filed by the designer before leaving.
3. If a designer wishes to have prints made by an outside printing service:
 - a) The designer must log which drawings are leaving the archive on the log sheet posted by the door.
 - b) The designer must give the drawings along with charging instructions (obtained from the appropriate Project Manager to the Administrative Assistant on the second floor of 100 Church Street South Suite 214. The drawings will be sent to an outside vendor for printing, with the copies to be delivered to the designer and the originals to be returned to 100 Church Street South Suite 214.

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FURNITURE PROCUREMENT

The key to a successful purchase and installation of furniture is communication. From the very outset of the project, i.e., the Kick-off Preliminary Design meeting, the Project

Manager will establish the guidelines by which the Design Team, the furniture vendor, Yale's Purchasing Department, and the Project Manager will interact. With so many parties involved, miscommunication can easily happen without the proper framework established. While all parties can talk to all other parties at any time, a key of the overall communication guideline is that the Project Manager must authorize any change that increases the cost of the furniture package.

There are two ways that the furniture design and procurement process occurs: 1) minimal designer input for projects with straightforward furniture needs and 2) in depth designer involvement, for larger projects with more complex furniture requirements. In the more complex situation the Architect's involvement will require additional fees as the work is not considered part of the basic services.

For the more simple project, the furniture procurement process can briefly be described as follows: The user meets with the furniture vendor (usually BKM), the Project Manager and Architect to review the project needs for furniture. The vendor will make a proposal based on the general layout generated by the Architect working within the established budget. The Architect is expected as part of the basic services to advise on color selections to work with the colors chosen for the other finishes in the space. Review of proposed finishes, colors and furniture should be scheduled with the Public Space Review Committee (PSRC) *before* any presentation is made to users to confirm that the direction is appropriate both for selection and cost level. This review applies to all projects unless funded by the Department and it is a non-public space. The Design Team is also responsible for coordinating the electrical power/ data outlets with the proposed furniture so that they are accessible for use. (This is very important as repeatedly outlets are blocked by furniture.) The vendor will provide drawings, specification and estimate. Once the user agrees to the layout and the proposed cost is in line with the budget, the Project Manager then takes the specification and attaches a Purchase Requisition authorizing the furniture to be either bid, or bid and purchased, and forwards this package to Yale Purchasing via Asset Management. Yale Purchasing then either competitively bids the furniture specification or through the established buying agreement with a preferred vendor (for example Steel Case Partnership through BKM) obtains a proposal and detailed specification. Once established that the specification meets the design intent, the furniture is released for purchase via notification by the Project Manager to Yale Purchasing. Yale Purchasing in turn tells the vendor.

On larger more complex projects, the furniture procurement process can briefly be described as follows: Working from an established budget the design team meets with the user and the Project Manager to determine the appropriate furniture required and the design, selection and price parameters. Review of proposed finishes, colors and furniture should be scheduled with the Public Space Review Committee *before* any presentation is made to users to confirm that the direction is appropriate both for selection and cost level. This review applies to all projects unless funded by the Department and it is a non-public space. On larger projects requiring furniture with larger variations in cost – such as conference rooms and libraries the PSRC should be scheduled before completion of the PD phase estimate and EPBS so that the furniture and equipment budget can be confirmed. The Design Team specifies the furniture and submits the specification to the Project Manager. The specification need not be a “full specification” in the sense that every manufacturer's part number needs to be identified, since the full specification will be produced by the furniture vendor. The Project

Manager takes the specification as submitted by the Design Team and attaches a purchase requisition authorizing the furniture to be either bid, or bid and purchased, and forwards this package to Yale Purchasing via Asset Management. Yale Purchasing then either competitively bids the furniture specification or through the established buying agreement with a preferred vendor (for example Steel Case Partnership through BKM) obtains a proposal and detailed specification. Regardless of who the successful vendor is, specification as produced by vendor needs to be reviewed in detail by the Design Team to insure compliance with design intent. Once established that the specification meets the design intent, the furniture is released for purchase via notification by the Project Manager to Yale Purchasing. Yale Purchasing in turn tells the vendor. When the furniture arrives at the site, the Design Team needs to be present and review the shipped furniture versus the specified furniture to see if the order is complete and correct.

In both cases when the furniture installation is complete, the Project Manager signs and dates the purchase order (yellow sheet) and sends it to 100 Murphy Drive. This action indicates to Disbursements that the product has been “received” in satisfactory condition and therefore payment can be made to any pending invoices.

Please note: Yale University has furniture standards that must be followed. Contact your Project Manager for the latest version.

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END OF PHASE REVIEW COMMENTS & RESPONSES

It is important to punctuate the phases of the project by bringing closure at the end of each phase to re-assess the status of the scope, schedule and budget. At the end of each phase, documents are submitted and distributed to appropriate parties for review. Comments will come from the project participants described above, and the Design Team is expected to respond to the comments promptly. A copy of the standard form that is used by Yale University School of Medicine is in the Appendix. This form should be used by the Design Team to make responses to comments. The standard form is a Word document and can be transmitted electronically.

It is very important that comments and responses be documented on the form so all participants know what issues are of concern and how they will be addressed. It should be noted that a project cannot proceed to the next phase if the scope, schedule, and budget are not within the project limits.

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SAFETY ISSUES

Most projects at Yale University are in existing active laboratory environments that pose potential risks. It is important that Designers understand these risks and conduct their

work in a manner that ensures their safety and the safety of those who work in the laboratory.

The Office of Environmental Health & Safety provides a training session for Designers and Constructors which is offered at intervals. The following guidelines should be followed:

1. Eating, drinking and/or smoking in any laboratory are strictly prohibited.
2. Before entering any laboratory, always look for labeling at the entrance to the facility. There you may find any of the following:
 - a) "Caution Radioactive Material" sign: This sign is an indication that radioactive material is either used or stored in the area or item containing the sign. It does not necessarily mean, however, that there is an exposure hazard present;
 - b) "BL2" or "BL3" – Biological Safety Level 2 or 3;
 - c) Information Sleeve containing specific information related to potential hazards in the facility; including biological, chemical, and/or radioactive materials.
3. Do not touch or move any containers, equipment, and/or items with any hazardous material label (i.e., "Caution Radioactive Material," "BL2," or "BL3").
4. Do not stand on or place tools on bench tops labeled with hazardous material labels.
5. Do not use sinks labeled with "Caution Radioactive Material" stickers, unless emergency situations arise (i.e., someone cuts themselves, the wound needs to flush, and there are no other sinks available). Please try to use sinks in the men's room for hand washing.
6. When situations arise where hazardous materials hinder your ability to perform your required task adequately, please contact the Office of Environmental Health & Safety at 737-2121 (Linda Mouning). Please inform Ms. Mouning of the potential hazard and an appropriate safety specialist will address the issue.
7. If hazardous exhaust ductwork, vacuum, and/or waste plumbing line needs to be penetrated, please contact the Office of Environmental Health & Safety at 737-2121 (Linda Mouning). Please inform Ms Mouning of the required work to be performed and an appropriate safety specialist will address the issue.
8. Emergency response: If an emergency arises while in a laboratory relating to a hazardous material, please contact the Office of Environmental Health & Safety emergency line at 785-3555 (between 8:30 a.m. – 5:00 p.m.). All other emergencies and times, please contact Campus Police at 111.

GUIDELINES FOR MAKING BUILDINGS ACCESSIBLE TO PERSONS WHO HAVE DISABILITIES

Revised: May 12, 2005

These Guidelines, prepared by the Provost's Advisory Committee on Resources for Students and Employees with Disabilities, are intended for the use of University planners, architects, engineers, and consultants, who design, construct, renovate, and manage facilities projects. Their purpose is two fold: first, to clarify some of the ambiguities found in the various applicable codes including the Americans with Disabilities Act of 1990 Accessibility Guidelines (ADAAG), the Connecticut State Building Code which incorporates by reference the American National Standards Institute (ANSI) A117.1; and second, to present additional design guidelines that Yale University has elected to adopt, based on the practical experience of the University population as regards accessibility, and the physical nature of its uniquely historic campus settings.

The Guidelines were first developed in 1994 after careful consideration of the practical experiences students and employees with disabilities have shared with Committee members regarding access to the University's facilities and its programs, services and activities. The Guidelines are intended to achieve fully integrated participation of people with disabilities at the University.

These revised Guidelines are to be reviewed, amended as required, and approved annually by the Provost's Advisory Committee on Resources for Students and Employees with Disabilities. Departures from these Guidelines should be discussed with the Committee. The Committee welcomes your comments and ideas about ways to improve them.

Roman Kuc, Chair
Advisory Committee on Resources for Students
and Employees with Disabilities

Kari Nordström, Chair
Access Subcommittee

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A. PATHWAYS

1. Exterior pathways, made of flagstone, should be as level and smooth as possible. A concrete base should be used for flagstones, rather than a sand base. Where possible, concrete finished pathways are preferred.
2. When interior pathways exist for movement between buildings, these should also be accessible to wheelchair users. (ex. a wheelchair user should not have to go outside to get to a dining hall when other students in the residential college can get there by using an inside route.)
3. Address potential drainage problems that cause puddles of water, or form icy areas along accessible paths and/or in front of accessible entries. Provide a code specified minimum cross pitch for drainage perpendicular to pathways and sidewalks. Use freeze-free drains, and/or slope away from exterior doors.
4. New curb cuts and cross walks should be positioned so that all pathways allow a mobility device user to follow established and predicted traffic patterns set by pedestrians.

B. PARKING

1. When a new building is constructed, or when an existing building renovated and made accessible, the issue of accessible automobile parking for wheelchair users should be reviewed. Accessible parking spaces should be located as close as possible to the accessible entrance of a building, and there should be several parking spaces near well-utilized buildings.
2. When an off the street dedicated accessible parking space, a Yale parking lot, or a commercial parking lot is not reasonably adjacent to a building, accessible street parking must be considered. Such parking must be located as close as possible to a curb cut, in order to avoid lengthy travel distances in the street or in parking lots.
3. Accessible parking must also be able to accommodate lift-equipped vans. Vans often have lifts which, when parked, open to the traffic side. One-way streets present a different safety consideration, so parking spaces should be available on both sides of the street. Parking lots, or off the street spaces are the preferred solutions.

C. RAMPS

1. Gradual slopes equal to, or less than, 1:20 are preferred to steeper ramps with railings. At exterior locations ramps should be integrated, unobtrusively into the landscape. Exterior ramps should have railings designed to prohibit the securing of bicycles to the railings.

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2. When possible, landings at midway along a ramp should be large enough to allow a wheelchair to reverse direction, or to stop out of the way of pedestrian traffic, and/or any opening doors.

3. Ramps should not be made of wood. They should be constructed of permanent and durable materials, be easy to clean and clear off snow during the winter, and should be integrated into the design of the building and surrounding landscape.
4. Covering an outdoor ramp should be considered, if architecturally appropriate, in order to protect both the ramp and its users from severe weather.

D. STAIRS

1. All stairs, even those with fewer than three risers, both inside and outside buildings, should have hand railings on both sides.
2. Stairs should be avoided on primary routes wherever possible.
3. New construction should not incorporate stairs at its main entry.

E. ELEVATORS

1. Code requires that an audible signal announce the position of the elevator car. An automatic voice announcement is preferred when this does not interfere with the primary functions of the building.
2. Areas of refuge must be designated and identified, at each floor not directly accessible to the exterior, and have a way to communicate for assistance, e.g. a telephone. These areas are to be used in case of emergencies such as fire.
3. If existing elevator sizes, in a renovated building, are such that they cannot accommodate an interior wheel chair turning radius, then a modified cab must be considered, having two doors at opposite ends, and/or duplicate interior controls.
4. Elevator control buttons should be tactile and/or emit a tone to assure that they have been actuated.

F. LIFTS

1. To date the University's experience with platform or wheelchair lifts has not been positive. They can be difficult to operate, they breakdown frequently, are inadequately maintained, and some cannot accommodate heavier, electric wheelchairs and scooters. Therefore, they should be installed only after all other alternatives have been explored. Un-protected exterior lifts should never be used. Wheelchair lifts cannot be installed in new construction.

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2. All lifts should have signs that explain how to operate the lift, identify a contact person for assistance to use the lift when necessary, and display an emergency number in case the contact person is unavailable. Lifts are to be available to wheelchair users without their having to call for assistance.

G. DOORS

1. Main entrance and building vestibule doorways should have automatic door openers per Yale Standards.
2. All new buildings must have 36" wide doors as a minimum. Doors being renovated in existing buildings should also be 36" wide. When this is not possible, then minimum ADA opening clearances must be maintained.
3. In accessible student rooms, security door peepholes should be placed at the eye level of a sitting person (46") as well as at the eye level of someone who is standing.
4. In entry and bathroom vestibules with two consecutive doors, the swing of the doors must not impede the direct path of entry/exit.
5. Eliminate thresholds/sill plates under doorways where possible. Where not possible, thresholds/sill plate heights should attempt to be less than that required by ADA.

H. ENTRANCES TO BUILDINGS

1. The main entrance to a building must be accessible to all in new construction. Other ground floor entrances should also be accessible. Renovated or altered existing facilities should also attempt to provide accessibility through the main entrance. A side or rear entrance can not be the only accessible entrance, unless it can be demonstrated to the Committee that accessibility through the main entry can not be reasonably accomplished, and that the side or rear entry will terminate in the same interior lobby or entry hall as the main entry. In such cases, the accessible path around the main entry must be clearly marked, and originate from a common point in front of the main entry. Access that requires the assistance of others, such as ringing a doorbell for service, is unacceptable.
2. Automatic doors should be used at main building entrances. If the entry can accommodate it, an adjacent, dedicated automatic door, similar to the un-automated door(s) should be planned for maintenance reasons.
3. Snow and ice can make an otherwise accessible entrance dangerous to all, and inaccessible to a wheelchair user. If cost effective, an automatic snow melting system should be considered for installation at main building entrances as part of renovation projects and new construction. If architecturally appropriate, covered entrances should be considered as another way of keeping entrances free of ice and snow.
4. Floor mats should be placed inside at building entrances so that on rainy and snowy days floors are not slippery. Mats may present barriers or bumps to wheelchair users. In new construction, mats should be recessed into the floor so that the adjacent surfaces are level with each other.
5. Opening doors should not interfere with the path of the wheelchair accessible route at building entrances.
6. Landings, with an entry door at the top of both stairs and a ramp, should be wider than the minimum wheel chair turning radius. New ramps reaching these upper landings are often designed perpendicular to the axis of the entry stairs and doors.

In such situations, turning to open the door exposes the wheelchair user's back to the flight of stairs, especially when the user has to also back away from the door swing. Locating the doors in protective areas, installing railings or providing a more generous landing depth should be considered, so that there is no threat of a wheelchair rolling backwards down the stairs.

I. TOILET FACILITIES

1. Accessible toilet facilities should be located in convenient areas of buildings.
2. Toilet stall door latches should be easy to grasp with one hand and should not require tight grasping, pinching, or twisting of the wrist to operate. Doors in wheelchair accessible stalls should have pull handles near the hinge side of the door.
3. Where possible, single accessible toilet rooms should have doors that swing outward.
4. There should be a shelf or several hooks in the restroom where packages, garments, purses, backpacks, etc., can be placed. Some people are unable to retrieve items up from the floor.
5. In large public buildings such as museums, concert halls and sports stadiums it is helpful to have at least one accessible unisex restroom which will allow an attendant of the opposite sex to assist a wheelchair user.
6. Public restrooms should be clearly identified with respect to accessibility and type—unisex, women, men. In large buildings directions to accessible restrooms should be posted in the lobby areas and near elevators.
7. In multiple stall restrooms, the lighting levels inside the ADA stall should be equal to that of the main restroom area.
8. Permanent fixtures such as soap and towel dispensers, and trash containers should be positioned within reach of a person using a wheelchair and should not obstruct wheelchair movement.

J. CLASSROOM, ASSEMBLY, AUDITORIUM, AND STADIUM AREAS

1. Classrooms and other assembly areas should be designed to provide integrated seating for wheelchair users, with a variety of seating options, which permit them to be seated with friends or guests who do not use wheelchairs. Seating that is permanently fixed to the floor, should not be specified.
2. In renovations of classrooms and auditoriums where fixed seating already exists, and will not be removed, the perimeter of the room should have aisle clearances equal in width to that of the wheelchair turning diameter, at least 5ft. wide. When such classrooms also have fixed tables, or tablets, one or two seating areas with free, separated chairs and tables should be provided

3. In classrooms with tables, at least one should have an ADA specified knee clearances in order to accommodate a large wheelchair.
4. Wheelchair seating locations should be identified with signs.
- 5. *Projector screens should be able to be operated from a seated position.***
6. Instructor tables, lecterns, and/or desks should be accessible and accommodate various heights. They should be accessible to persons who must be seated when they lecture by providing a 60 in. minimum turning radius behind any fixed counters, lecterns, or furniture. All electronic devices should be accessible from a seated position and have handheld remote controls.
7. A floor level speaking area is preferable to a raised podium, or stage in tiered assembly rooms. Ramps, not wheelchair lifts, should be used to provide access to different levels of the auditorium including the stage level. Wheelchair lifts accessing a podium must not be used in new construction.
8. Wheelchair users should be able to enter and exit along the same primary routes as everyone else.
9. Consult with the Resource Office on Disabilities about the type of assisted listening systems to be installed in classrooms and assembly areas.

K. DINING AREAS

1. Provide a wheelchair accessible route to all service areas. Provide at least 36" clearances to maneuver between occupied tables and chairs.
2. Tables and chairs should not be permanently fixed to the floor.
3. At least two tables should have ADA specified knee clearance to accommodate large wheelchairs.

L. LIVING QUARTERS

1. The principles of Universal Design are important in planning all living quarters on campus. Accessibility should be considered from both the occupants and the visitor's point of experience.
2. A range of accessible housing options and types should be offered. For example, a residential college should not have only single rooms available to students with disabilities.
3. Controlling the temperature of accessible areas such as living quarters should be considered since the inability of one's body to adjust to extremes of temperature is a characteristic of certain disabilities.
4. Accessible rooms should have a sufficient number of electrical outlets for recharging batteries and other aids for living. Some outlets should be located above the heights of desks/chairs etc. so as to be easily accessible from a seated wheelchair position, without having to move furniture.

5. Accessible room furnishings (desk, table and chairs) should be adjustable.
6. Accessible room lighting fixtures should be rated for 100-150 watt bulbs. Lighting fixture switches should be easily accessible at primary entrances, hallways and all rooms, and they should be able to be operated with a closed fist.
7. Secured storage should be available in the building for durable medical equipment.
8. Accessible closet space should offer adjustable height rods and shelves.
9. Bathrooms associated with accessible living quarters should offer roll in showers, adjustable height mirrors and shelving, and sinks with lever style handles. Where possible, accessible shower stalls should eliminate any curbs or floor transitions between the wet shower floor and the rest of the bathroom. Fixed seats and all shower controls should be positioned so as to be within easy reach of someone using the shower from a seated position.
10. All doors to accessible suites should, at a minimum, be adaptable to automation.
11. Accessible toilet facilities located in potentially remote areas should not only have the required emergency alarms outside the toilet, but also a secondary alarm located in an area where the call for assistance will be clearly noticed at all times of the day.
12. Rooms should have the capability for visual or tactile fire alarms to be installed in order to supplement audio alarms.

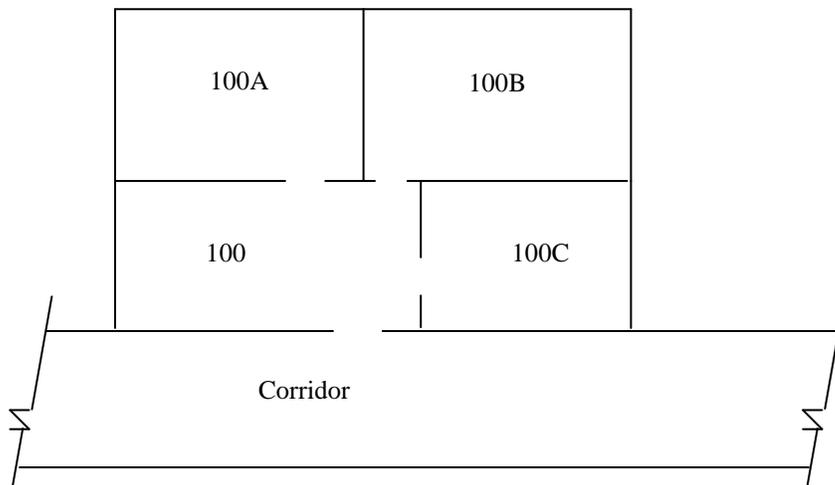
Rooms are numbered at Yale School of Medicine in a consistent manner according to a system which coordinates with a database for space planning (Space Inventory System, SIS). The system is as follows:

Rooms shall be numbered sequentially on either side of a corridor with odd numbers on one side and even numbers on the other, in most cases.

A room directly off the corridor is a whole number (e.g. 100). A room off of that room is that number plus a letter (100-A). Additional rooms are lettered in a clockwise fashion (100-B, 100-C, etc.).

Corridors shall be numbered sequentially (i.e., 1, 2, 3) following existing patterns. All room numbering shall be shown on the Preliminary Design drawing submission for review and approval by the Yale School of Medicine Space Coordinator (Mary Mathis).

EXAMPLE:



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APPENDIX II

see next page

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Exhibit II-A: Standard Form for End of Phase Review Comments

Yale University

BLDG: SHM C wing LOCATION: E Floor NAME: Lab Renovations
 PHASE: PRELIMINARY DESIGN: [] DESIGN DEVELOPMENT: [] CONSTRUCTION DOCUMENTS: [X]
 DOCUMENTS [X] PLANS DATED: 6/12/98 [X] SPECS DATED 6/12/98

REVIEWED BY: F. DeLucia, A. Gurvich, D. LaRocca, G. Clarke, B. Fiondella, T McMahon DEPARTMENT
 Building Services and Operations

DATE OF REVIEW COMMENTS: June 30, 1998

Sheet 1 of 2

| Project Manager's | Reviewers' Response By | A/E Response Comments Date |
|-------------------|---|----------------------------|
| | Drawing A106: 1. Coordinate reflected ceiling plan and lighting arrangement on E6 in the glasswash room E07 with the mechanical drawings to incorporate the steam capture hoods above the doors to autoclaves, washing machines, etc. The lighting arrangement will need to be reconfigured. | |
| | 2. Coordinate reflected ceiling plan and lighting arrangement on E6 in the Tissue Culture room E12 with the mechanical drawings to facilitate exhaust and supply duct arrangement and associated registers and diffusers. See drawing 11-5 note 3 below, for reference of additional supply diffuser. | |
| | Drawing H-5: 3. In Tissue Culture room E12, the design has the supply air issued through one diffuser at 830 cfm. Provide two diffusers at half this rate. Also coordinate duct and diffuser/register layout with the extensive lighting arrangement shown on E6 for this room to allow acceptable access to the exhaust and supply volume boxes. See drawing E-6 note 13 below for reference to lighting arrangement validity. | |
| | 4. In the Glasswash room, an "L" shaped canopy hood is shown, but the reference text defines two (2) 8 ft hoods. The arrangement of the equipment (from details on A-10S and A-307) is not adequately matched by the representation of the "L". Some indication is needed that references location of these hoods to the equipment they are serving, {i.e. maximum acceptable gap between the equipment and hood edge, placement of hood relative to equipment dimensions (on centers?)} None is found. | |
| | 5. In the Glasswash room, provide an exhaust grille within the enclosed autoclave mechanical space and a transfer grille in the access door to this space. | |
| | 6. The three FCUs should use filter grills and remove the filters within the units after job is up and running. | |
| | 7. Is there a detail of the FCU installation that I am missing? No duct arrangements are shown. Are these to be installed below the drop ceiling. Please provide detail. | |

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Exhibit II- A (continued)

Yale University
 BLDG:SHM C wing LOCATION: E Floor NAME: Lab Renovations
 PHASE:PRELIMINARY DESIGN: [I DESIGN DEVELOPMENT: [I CONSTRUCTION DOCUMENTS: [X]
 DOCUMENTS [X] PLANS DATED: 6/12/98 [X] SPECS DATED 6/12/98
 REVIEWED BY: F. DeLucia, A. Gurvich, D. LaRocca, G. Clarke, B. Fiondella, T McMahon DEPARTMENT
 Building Services and Operations
 DATE OF REVIEW COMMENTS: June 30, 1998

Sheet 2 of 2

| Project Manager's | Reviewers' Response By | A/E Response Comments | Date |
|-------------------|---|-----------------------|------|
| | Drawing H-6: 8. For the four (4) circulation pumps of the radiant heating panel system, in order to provide adequate service access, locate pumps 3 ft from any wall (so access does not involve conflict with furnishings or standing on casework and/or desks. Coordinate with the lighting, conduit and duct arrangements to afford adequate access in rooms E24, E25, E28A & E29, particularly in E25 and E28A. | | |
| | 9. All FCUs should be drained to the closest sink in stead of to floor drains, if possible. | | |
| | Drawing H-11: 10 In the AllU, we suggest increasing the length of the diffuser plate section (E) to increase the distance between the fan and the cooling coils (should be at lease 2 diameters of the fan inlet) through decreasing proportionally the lengths of the other sections of the unit. This short discharge section will always cause moisture carryover, increased pressure losses and decreased fan efficiencies | | |
| | Drawing H-21: 11. Exhaust fans EF-1 & -2 to have TEFC severe duty motors with shaft gaskets. | | |
| | 12. Humidifier should be "Dri-steem Ultrasorb". | | |

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Exhibit II-B: Format for Design Service Proposals

| | \$ Architect | \$ Struct. | \$ MEP | \$ Total |
|------------------------------------|-----------------|---------------|-----------|-------------|
| Part A – Field Investigation (NTE) | 0 | 0 | 0 | 0 |
| Part B – Preliminary Design | 0 | 0 | 0 | 0 |
| Part C – Design Development | 0 | 0 | 0 | 0 |
| Part D – Contract Documents | 0 | 0 | 0 | 0 |
| Part E – Bidding and Negotiation | 0 | | 0 | 0 |
| Part F1 – Contract Administration | 0 | 0 | 0 | 0 |
| Part F2 – Close-Out | 0 | 0 | 0 | 0 |
| Subtotal B-F | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 |
| Reimbursables | | | | |
| Allowance for Cost Est | | | | |
| Allowance for Structural | | | | |

| # | Position | Principal | Assc/PM | | | | | |
|---|------------------------------|-----------|---------|-----|-----|-----|-------|---------|
| | Rate | \$X | \$X | \$X | \$X | \$X | Hours | Dollars |
| | Hours | | | | | | | |
| | Task | | | | | | | |
| | Field Inv Meas & Doc | | | | | | | |
| | Equipment Survey & Doc | | | | | | | |
| | PD Dwgs # Dwgs | | | | | | | |
| | DD/CD Dwgs # Dwgs | | | | | | | |
| | Mtgs & Mins | | | | | | | |
| | CD Rev/Coord # Dwgs | | | | | | | |
| | Coordination | | | | | | | |
| | Est Review | | | | | | | |
| | QA (PD & CD) | | | | | | | |
| | Mgmt | | | | | | | |
| | Bid / Addenda | | | | | | | |
| | CA Mtgs/Site | | | | | | | |
| | CA Sub List & Shop Dwgs | | | | | | | |
| | Coordination | | | | | | | |
| | Furn/Mtls/Bds Pub Spc Com | | | | | | | |
| | Close-out Assign Plans | | | | | | | |
| | Totals | | | | | | | |

Note: Listed tasks are for illustration. Modify as appropriate for the project.

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Exhibit II-C: Format for Meeting Minutes

XYZ ARCHITECTS

PROJECT REPORT NO. XX

DATE: 1/23/00

PLACE:

PROJECT:

12345 Melody Lane
Harmony, TM 98765
t: 123 456-7890
f: 098 765-4321

| DISTRIBUTION: | Name | Company | Attending |
|---------------|----------------|-----------------|---------------------|
| | Paul Bartlett | Yale University | |
| | John Bollier | Yale University | |
| | Mike Ferland | Yale University | |
| | Douglas Golden | Yale University | |
| | Rob Klein | Yale University | |
| | Wilf Lamb | Yale University | X |
| | Jeff Euben | Yale University | |
| | H. Rosenberg | Yale University | |
| | Walt Perry | Yale University | |
| | Joe DeSimone | Architect XYZ | X |
| AUTHOR: | John Doe | Architect XYZ | FAX: (xxx) xxx-xxxx |

PURPOSE OF MEETING: PROJECT DESIGN REVIEW

DISCUSSION:

| BY WHOM - DEADLINE | DATE/NO. | DESCRIPTION/STATUS |
|--------------------|----------|--------------------|
|--------------------|----------|--------------------|

12/5 DISCUSSION

| | | |
|--------|--------|--|
| RECORD | 12/5-1 | <p>SCHEDULE:</p> <p>01/04 Richard M. presented YXY's project schedule.</p> <p>Critical Dates:</p> <p>1/12 CD issue to YSM for review.</p> <p>1/17 YSM sign off of CD's.</p> <p>1/23 Issue CD's for Bid.</p> <p>1/23 Completed</p> <p>1/23 Addendum Issue 2/2; present GMP to YSM 2/19;</p> <p>Construction start 2/23.</p> |
|--------|--------|--|

12/19 DISCUSSION

| | | |
|-----|---------|--|
| XYZ | 12/19-1 | <p>Area 2 comments:</p> <ol style="list-style-type: none"> XYZ to clarify the equipment identified in the northwest corner of room 8201. In rooms 8200B, 8200E and 8201 provide adjustable shelving at all available wall surfaces. <p>01/23 Complete.</p> |
|-----|---------|--|

01/04 DISCUSSION

| | | |
|-----------------|---------|---|
| YALE UNIVERSITY | 01/04-1 | Wilf L. to provide additional spec. information on sterilizing equipment in glass wash room. 01/09 In progress 01/16 In progress 01/23 Wilf working with manufacture to determine requirements for the steam generator. 01/23 Richard M. working with allowance numbers for the time being till all spec information is available then final quotes will be determined and approved for purchase. |
| DEPT X | 01/04-2 | Barbara D. and G+E to identify future hood locations. 01/09 In progress 01/16 In progress 01/23 Tom R. has met with B. Dodd and is working on the users of Dept X future hood requirements. |
| RECORD | 01/04-4 | Wilf L. distributed plan with Mike Ferland comments to XXX. Wilf L. requested a copy of the plan be returned to him. |
| G+E, ABC, XYZ | 01/04-5 | John B. requested plan and area calc's. indicating lab to office ratio. <ul style="list-style-type: none">• G+E, ABC and XYZ to determine lab zones;• XYZ to provide plan indicating area and calculations. 01/23 Done. |

01/09 DISCUSSION

| | | |
|--------|---------|--|
| XYZ | 01/09-1 | XYZ to submit comparison between George Street 300 Labs and YSM Labs at Science Park 01/23 Complete |
| RECORD | 01/09-2 | Telecom room #8103 requires plywood on all four walls. 01/23 Indicated on drawings. |
| RECORD | 01/09-3 | Electrified hardware require in door to stair 01/23 Indicated on drawings. |

01/16 DISCUSSION

| | | |
|--------|---------|--|
| YALE | 01/16-1 | YSM to pursue permit for emergency generator 01/23 In progress. |
| RECORD | 01/16-5 | Submittal: MEP submittals shall be sent directly to BVH. Architectural submittal shall be sent directly to XYZ. One set of all submittals shall be sent to YSM for review. Approvals shall be by the design team. All responses shall be forwarded through XYZ to XX. 01/23 No Change |

01/23 NEW BUSINESS

| | | |
|-----|---------|--------------------------------|
| XYZ | 01/23-1 | XYZ to verify millwork nosing. |
|-----|---------|--------------------------------|

XYZ

01/23-2

XYZ to confirm that Workplace furniture has extensions on top and shelves similar to Science Park installation. Also, color and finishes to be the same.

NEXT MEETING

01/30/2001, 10:30 AM at YALE

Report prepared by: John Doe

NOTE: Unless the Architect is informed to the contrary in writing within 5 days, these minutes will be considered an acceptable transcription of the meeting.

Arch's Job No.

here

Date: 1/09/01

EXHIBIT II-D HVAC Criteria Spread Sheet

| R.G. Vanderweil Engineers, LLP | | | | | | | | | | | | | | | | | | |
|--|--|--------------|-------------------|--------------------|-----------------------|--|--------------------------|-----------|-------------|---------------|------------------|---------------------------------|-------------------------------------|---------------------------------|--|---------------------------------|----------------------|--|
| Legend | | | | | | | | | | | | | | | | | | |
| YSM Project SHM LAB Renovation No: C4 07020602 | | | | | | DACH = Design Air Changes Per Hour Per | | | | | | | | | | | | |
| RGV Project Number: 24319 | | | | | | OACH = Operating Air Changes Per Hour Setpoints | | | | | | | | | | | | |
| Date Prepared: 3/11/08 | | | | | | List all rooms/spaces separately. Total area should equal gross project area. | | | | | | | | | | | | |
| Prepared By: CGD/DF | | | | | | Ventilation Quantity is <i>OUTSIDE AIR</i> | | | | | | | | | | | | |
| Project Phase | | | | | | Air Change Rate = Determined by the highest requirement of: space cooling, maximum connected exhaust or DACH | | | | | | | | | | | | |
| CONSTRUCTION DOCUMENTS | | | | | | | | | | | | | | | | | | |
| HVAC SYSTEM BASIS OF DESIGN THIS SPREAD SHEET IS REQUIRED FOR ALL PROJECTS | | | | | | | | | | | | | | | | | | |
| Room Design Parameters | | | | | | | | | | | | | | | | | | |
| Outdoor Design Temp. Summer Degrees F DB/WB: 91/73 | | | | | | | | | | | | | | | | | | |
| Outdoor Design Temp. Winter Degrees F DB: 0 | | | | | | | | | | | | | | | | | | |
| Outdoor Air Ventilation CFM/Person : 20(unless noted otherwise) | | | | | | | | | | | | | | | | | | |
| Room No. | Room Name | Room Area SF | Ceiling Height FT | Temp Deg F Sum/Win | Humidity RH % Sum/Win | DACH | | Ltg. W/SF | Equip. W/SF | People SF/PER | People NO. (qty) | Room Supply Air Requirements | | | | Existing AHU System Information | | |
| | | | | | | Y.S.M | OACH Occ/Unocc Setpoints | | | | | Supply Airflow CFM (See Note 1) | Room Design CFM/WSF (BASED ON DACH) | Room Design ACH (based on DACH) | Temp (T) or Vent (V) Driven. Supp. Cooling (FCU) | Balancing Report cfm | Balancing Report ACH | |
| 1 | Lab Services 1 | 190 | 9 | 75/72 | 50/30 | 12.0 | 9/6 | 1.4 | 15.0 | 120.0 | 2 | 100 | 0.53 | 3.5 | T (FCU) | | | |
| 2 | LAB 441/440 | 4582 | 9 | 75/72 | 50/30 | 12.0 | 9/6 | 1.1 | 2.0 | 200.0 | 23 | 8250 | 1.80 | 12.0 | V | | | |
| 3 | Confocal | 119 | 9 | 75/72 | 50/30 | 12.0 | 9/6 | 1.4 | 10.0 | 120.0 | 1 | 220 | 1.85 | 12.3 | V | | | |
| 4 | Office 430A | 127 | 9 | 75/72 | 50/30 | 4.0 | 4/0 | 1.4 | 2.0 | 200.0 | 1 | 150 | 1.18 | 7.9 | T | | | |
| 5 | Office 430C | 115 | 9 | 75/72 | 50/30 | 4.0 | 4/0 | 1.4 | 2.0 | 200.0 | 1 | 150 | 1.30 | 8.7 | T | | | |
| 6 | Informatics | 115 | 9 | 75/72 | 50/30 | 12.0 | 9/6 | 1.4 | 15.0 | 200.0 | 1 | 270 | 2.35 | 15.7 | T | | | |
| 7 | Tissue Culture | 517 | 9 | 75/72 | 50/30 | 12.0 | 9/6 | 1.4 | 20.0 | 200.0 | 3 | 560 | 1.08 | 7.2 | T (FCU) | | | |
| 8 | Office 430B | 115 | 8.6 | 75/72 | 50/30 | 4.0 | 4/0 | 1.1 | 2.0 | 120.0 | 1 | 210 | 1.83 | 12.7 | T | | | |
| 9 | Womens Toilet | 109 | 8.6 | 75/72 | 50/30 | 10.0 | 10/10 | 0.9 | 0.0 | 100.0 | 1 | 240 | 2.20 | 15.4 | T | | | |
| 10 | Conference Room | 367 | 8.6 | 75/72 | 50/30 | 6.0 | 4/0 | 1.3 | 0.5 | 20.0 | 18 | 700 | 1.91 | 13.3 | T | | | |
| 11 | Kitchen | 112 | 8.6 | 75/72 | 50/30 | 10.0 | 10/4 | 1.4 | 2.0 | 120.0 | 1 | 180 | 1.61 | 11.2 | T | | | |
| 12 | Corridor | 290 | 8.6 | 75/72 | 50/30 | 4.0 | 4/4 | 0.9 | 0.0 | 100.0 | 3 | 300 | 1.03 | 7.2 | T | | | |
| 13 | Mens Toilet | 109 | 8.6 | 75/72 | 50/30 | 10.0 | 10/10 | 0.9 | 0.0 | 100.0 | 1 | 240 | 2.20 | 15.4 | T | | | |
| 14 | ADMIN | 311 | 8.6 | 75/72 | 50/30 | 6.0 | 4/0 | 0.9 | 0.0 | 100.0 | 3 | 400 | 1.29 | 9.0 | T | | | |
| Total Area | | 7178 | | | | | | | | | | | | | | | | |
| Total Required CFM | | | | | | | | | | | | 11970 | | | | | | |
| Growth/Safety Factor CFM | | | | | | | | | | | | 2155 | | | | 0.00 | 0.00 | |
| Total System CFM | | | | | | | | | | | | 14125 | | | | | | |
| Spreadsheet Criteria: | | | | | | | | | | | | | | | | | | |
| 1 | Supply Airflow rate is based on the following: | | | | | | | | | | | | | | | | | |
| EPD Preliminary estimates based on engineering judgement of programming needs | | | | | | | | | | | | | | | | | | |
| DD Load calculations based on updated information and any project program or space revisions | | | | | | | | | | | | | | | | | | |
| CD Final airflow based on final load calculations | | | | | | | | | | | | | | | | | | |
| 2 | Growth/Safety Factor % | 18 | | | | | | | | | | | | | | | | |

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