LABORATORY FACILITY GUIDELINES FOR PLANNING AND DESIGN

April, 2009
# Laboratory Facility Guidelines

*For Planning and Design*

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INTRODUCTION

Our call for support builds on the activities that have taken place to date around the idea that a comprehensive guideline document be created to assist in the planning design, construction and operations of laboratories. BBH Design, Research Triangle Park, NC architectural firm, presented this proposal to the International Institute for Sustainable Laboratories (I2SL) at the 2007 national Labs21 conference. I2SL and its representatives supported the idea proposal. BBH Design then met with the incoming President of the American Institute of Architects to suggest that a partnership be formed between the AIA and I2SL.

Subsequent meetings took place at the AIA headquarters in Washington, DC. At these meetings a consensus was formed that an open forum discussion should take place at the 2008 Labs21 national conference. At the conference BBH Design, I2SL and a representative from the AIA facilitated a discussion around this concept proposal. The level of support communicated during this session encouraged I2SL and the AIA even more in developing a partnership.

I2SL mission is to promote sustainable design and engineering practices for laboratories and other high technology facilities. I2SL, a non-profit organization, competitively selected by the US EPA and DOE to promote the goals of Labs21 and carry-out training, technical collaborations, and general education within this industry through annual conferences, workshops, partnerships and coordination internationally.

Based in Washington, D.C., the American Institute of Architects (AIA) has been the leading professional membership association for licensed architects, emerging professionals, and allied partners since 1857. The AIA has a membership of 83,000 that serves as the voice of the architecture profession and the resource for our members in service to society.
Laboratory Facility Guidelines
For Planning and Design

GOAL OF GUIDELINES

There is one goal for this scope of work. The goal is to collaboratively create an integrated compendium, a Laboratory Facility Guidelines for Planning and Design.

The intent for this document is to provide information to the design and research communities or serve as code requirements (also used by states in the development of codes) on the planning and design of laboratories. These proposed guidelines should reflect the judgment of a multidisciplinary group of experts in laboratory design and operation. This should encompass the majority of current best practices today and for the perceivable future. Yet at the same time they are neither universal solutions. In addition it will not be detailed enough to answer every question that may arise in the course of a specific planning and design project.

This document will not specify construction techniques, to prescribe facilities quality or cost criteria, or to serve as code requirements. The intent instead is to identify issues and approaches that deserve careful thought when undertaking laboratory facilities projects. Such facilities are complex and require these special and specific design considerations.

Laboratories are highly changeable environments and their support spaces must be flexible and able to readily accommodate a wide range of current and future requirements and hazards.

A total “integrated design approach,” including attention to site, structure, massing, circulation, visual harmony, open areas, existing conditions, and construction logistics, as well as operational sustainability, is the most effective strategy when planning laboratory facilities. A integrated design approach that responds to these specific issues will serve to create a product that is sustainable, functional, aesthetic, flexible and reliable. Design professionals must consider all these criteria to meet the needs that are identified by users, dictated by functional relationships, and imposed by specific existing conditions.
POTENTIAL MEMBERS

Potential Guideline Group Composition:

Project Management Board:
  - Project Management Team – 3
  - Oversight Committee - major owners and association reps
  - Advisory Committee – federal, state and international reps

Executive Committees [+/-7]
  - Steering Committee supporting each Executive Committee [+/- 12]

Revisions Committee [variable and interest dependent]

Potential Federal Participants and Members to be Involved at most any level:

Department of Health and Human Services
  - National Institutes of Health
  - Center for Disease Control
  - Food and Drug Administration

US Department of Agriculture
Department of Defense
Homeland Security Administration
Department of Energy
Environmental Protection Agency

Other Potential Participants and Members to be Involved:

International Institute for Sustainable Laboratories
American Institute of Architects,
Major Universities
National Science and Technology Council
National Science Foundation
National Institute of Building Sciences
National Society of Professional Engineers
International Interior Design Association
American Society of Heating, Refrigeration and Air Conditioning Engineers
National Conference of States for Building Codes and Standards;
Professional Consultants
Worldwide Manufacturers
Other Interested Individuals
CURRENT PRACTICES

Current laboratory design and construction criteria can be found within Federal agencies, many major universities, or commercial organizations. Often university projects receive a portion of their funding from the National Institutes of Health (NIH), and has required the use of the AIA guidelines for biomedical laboratories. This has been very helpful for university administrations, architectural/engineering firms, and state review/approval organizations. However, there is no universal laboratory design criteria document that covers all laboratories.

The AIA guidelines were based on the NIH guidelines, focused on university requirements (which are less stringent than the NIH campus requirements). In 2008, the NIH updated their guidelines for laboratories.

Therefore, there exists a need for updating the AIA guidelines, and an opportunity for expansion to include all laboratories, and criteria for sustainability issues. This document should also then reflect the current and future challenges for energy, water and other resources, and for safe and productive human environments.

Architect, planners and engineers, as well as owners, need to consider the total environment, in particular, all external factors. Because of the energy crises of the past and present, a renewed recognition for energy independence, a growing energy demand, along with an awareness for sustainable development, we must design and engineer facilities that are energy efficient, self sufficient, and environmentally connected to our well-being.

We would model the laboratory guidelines after the AIA Healthcare Guideline document this is a knowledge and guidance based document, used by owners, design professionals, and government entities. The AIA Healthcare Guidelines document is presently used as code in 42 states.

The AIA healthcare document is updated through an oversight partnership between a non-profit group and the AIA, with public comments and reviews by a national committee composed of members representing all of the healthcare community. This process has produced a national document that has improved the health of the nation and we envision a similar process in developing Guidelines for Laboratories.
ACTION ITEMS & SCHEDULE

A Partnership between AIA and I²SL now exists to begin bringing experts together to establish a baseline of current research and design criteria for laboratories, and to update the AIA guidelines on a periodic basis.

Establish the Committees for the Guidelines for Laboratories. It is the purpose of the San Francisco meeting scheduled for April 30 to begin identifying the scope of the Guidelines and the perspective executive committees. Identifying the Executive Committees and the Chairs/co-Chairs for these is expected to take place at the April 30 meeting. Steering Committees members may also be identified during this meeting but also throughout the development of the Guidelines.

Create a process for updating and expanding the Guidelines for Laboratories. Create a democratic process that will allow for public comment, review by a national review committee, and voting for changes to be incorporated into the Guidelines for Planning and Design of Laboratory Facilities. It is envisioned that this process will be similar to the updating of the AIA Guidelines for Design and Construction of Health Care Facilities.

Establish a budget for and production process to create the Guidelines will be the responsibility of the Project Management Team which will welcome any support from other participants of the effort.

Revision Committees. These committees should be multidisciplinary experts in laboratory design and operation, and laboratory owners and users, with specific familiarity to the subjects which they are reviewing. AIA and I²SL may utilize sessions at the annual Labs21® and AIA national conferences to obtain comments, recommendations, concurrences, and/or final edits of sections of the Guidelines. The Revision Committees will also be credited with assisting in the creation, review and recommendations of content to be contained in the Guidelines.
SUMMARY

Our nation needs a design guideline for laboratories that will provide the necessary knowledge base for owners and design professionals to create safe laboratories focused on human health and saving our natural resources. The goal of these efforts is to bring together Federal and State agencies, professional organizations, universities, and industry, to create a document of guidance for designers, builders, and building operators.

Safety in laboratories is not a new issue, but it is an issue viewed by growing constituencies with increasing importance. Currently, we risk designing problems into the laboratory workplace.

With the creation of the AIA - IPN partnership we can create healthier laboratory spaces for our states and nation through a comprehensive Laboratory Facility Guidelines for Planning and Design.