UNIVERSITY OF COLORADO

DENVER | ANSCHUTZ MEDICAL CAMPUS

GUIDELINES AND STANDARDS

FOR DESIGN AND CONSTRUCTION PROJECTS

PART 1

DESIGN MANAGEMENT

Contents:

1.1 University Departments and Divisions

A. The University departments and divisions most directly involved with the process of planning and design of projects are as follows:

1. Facilities Management
    a. Facilities Projects
    b. Building Maintenance and Operation (BMO)
    c. Facilities Support Services (FSS)
    d. Campus Building Official (CBO)
    e. Authority Having Jurisdiction (AHJ)
    f. Graphic Information System (GIS) Coordinator
2. Institutional Planning
    a. Campus Architect
3. Other University Departments
    a. IT Services
    b. Education Support Services
    c. Environmental Health and Safety
    d. Electronic Security
    e. University Police

1.2 University Design Management Administration:

A. Project Administration and Design Expectations

The Facilities Management Department serves as the primary administrative resource for Architects and Engineers completing projects on the Anschutz Medical Campus and Denver Campus.

1. The Facilities Projects – Project Manager (PM) is the overall lead for University projects. He or she is responsible for managing all aspects of architect/ engineer (AE) and contractor agreements. The PM works with the Office of State Architect and the University of Colorado President's office to make sure administrative, programmatic, and aesthetic requirements are met. The PM is the single point of contact and go-between for Building Maintenance and Operation (BMO) and Facilities Support Services (FSS) staff with the project AE and contractor to ensure technical and operational requirements are met. The PM also serves as the prime facilitator for FSS involvement on University projects.

2. The PM serves as the point of contact for other University entities involved in the design and construction process, including but not limited to University Police, Electronic Security, Education Support Services for audio video and IT Services for communication. The PM is also the primary point of contact for Program representatives.

3. The BMO Rep is the overall lead for Building Maintenance and Operations on University projects. He or she serves as the single point of contact and go-between with the BMO staff, including University Subject Matter Experts (SME) with the PM. The BMO Rep either has authority to give direction to the PM or will provide direction after counseling with other BMO staff in a timeframe that will not jeopardize the project schedule.

4. BMO-SME's and FSS Rep's primary responsibilities are building maintenance and operation. They are experts in the areas of electronics, HVAC, plumbing, parking, grounds, etc. Their involvement on projects is on an as-needed basis through the PM (for FSS) BMO Rep (for BMO) for specific tasks, and they serve as resources to the PM and BMO Rep during the design and construction of projects. Their roles change as the project transitions to University acceptance. While they serve as resources to the PM and BMO Rep, they become involved in observing equipment startup and testing and train in the operation of equipment and operational systems.

5. The AE is responsible for producing a design that complies with applicable codes and regulations. If the Program Plan requirements conflict with codes or regulations, the AE shall notify the PM, in writing, and provide a recommendation for resolution.. The University PM who will advise the AE how to proceed.

6. At the start of a project, the AE must furnish to the University PM a proposed schedule of the work for the entire design process, which shall include all required meetings, submittal dates, etc. The AE will update the schedule at the end of each phase of the design process.

7. All meetings attended by the AE during the design process shall be recorded by the AE with accurate minutes reported in a summary format and distributed by them to all attendees.

8. Most projects will require mandatory pre-bid walk-through. Dates and times shall be coordinated with the University PM and the AE must attend.

9. The AE shall submit a list of any proposed methods, materials, equipment, etc. that deviates from the requirements of this Manual, with reasons for variance, to the University PM for review and approval.

10. University Architect/Engineer, Contractor should realize that change as in room number may occur late in a project after construction documents are issued and look for practical ways to fully adjust or locally adjust numbering to best suite long and short term needs.

11. Energy Conservation Design:

    a. The University adheres to the State of Colorado High Performance Building Program (HPCP) for new and substantially renovated buildings. This program is administered through the Office of State Architect (OSA). The OSA recognizes the US Green Building Council (USGBC) Leadership in Energy and Environmental Design (LEED) guideline. This program is detailed at the following website:

        1) http://www.colorado.gov/cs/Satellite?blobcol=urldata&blobheader=application%2Fpdf&blobkey=id&blobtable=MungoBlobs&blobwhere=1251640271702&ssbinary=true

    b. Design Objectives:

        1) Architects, Engineers, and other design consultants shall design energy efficient buildings that provide the environment required by our teaching and research faculties to carry out their work in an effective manner.

        2) The AE shall utilize energy modeling to assist its efforts to design an energy efficient project. These services consist of modeling the projected energy use of proposed designs, suggesting strategies to reduce the projected energy use, and providing life-cycle cost analysis for suggested strategies. Verify the suggested, project specific energy conservation strategies with University BMO.

        3) Strategies not proven under field operation conditions are not acceptable.

        4) The responsibility for choosing and incorporating energy efficiency strategies into the design remains that of the design team and the University..

        5) Include the means to measure the results of the energy efficient design strategies in all projects.

        6) Use Demand Control ventilation where possible consistent with ASHRAE.

    c. The University has adopted additional energy conservation design considerations for small projects and renovations, or those with an estimated cost of less than 25% of the building worth. Abiding by these criteria will assist with commitments to better working environments, longevity and useful life of constructed spaces, environmental goals and possible future LEED certifications for existing buildings. Some LEED criteria may coincide with University standards but many will go beyond. All criteria will not apply to all projects.

AE's, working with University PM's will need to make decisions on applicability of criteria on a per project basis. The following criteria must be discussed as part of initial design plans.

1) Sustainable Sites Stormwater Design

   a) Stormwater Design – Quantity Control

   b) Stormwater Design – Quality Control

   c) Heat Island Effect – Nonroof

   d) Heat Island Effect – Roof

   e) Light Pollution Reduction

   f) Water Efficient Landscaping – Reduce by 50%

   g) Water Efficient Landscaping – No potable water use or irrigaton

   h) Innovative Wastewater Technologies

2) Water Efficiency:

   a) Water Use Reduction – 20% Reduction

3) Energy and Atmosphere:

   a) Fundamental Commissioning of Building Energy Systems

   b) Minimum Energy Performance

   c) Fundamental Refrigerant Management

   d) Optimize Energy Performance: Lighting Power

      i. 15 – 35% Reduction

   e) Optimize Energy Performance: Lighting Controls

      i. Daylight Controls

      ii. Occupancy Sensors

   f) Optimize Energy Performance: HVAC

      i. Equipment Efficiency

      ii. Zoning Controls

      iii. Reduce Design Energy Cost

   g) Optimize Energy Performance – Equipment and Appliances

      i. ENERGY STAR Appliances

h) Measurement and Verification

i. Install sub-metering equipment

4) Materials and Resources:

a) Storage and Collection of Recyclables

b) Building Reuse

c) Construction Waste Management

i. Divert 50% – 75% from disposal

d) Materials Reuse

i. 5% - 10% Reuse

e) Materials Reuse – Furniture and Furnishings

f) Recycled Content

i. 10% - 20% of Content

g) Regional Materials

i. 20% of Materials Manufactured

h) Rapidly Renewable Materials

i) Certified Wood

5) Indoor Environmental Quality:

a) Indoor Environmental Quality

b) Minimum IAQ Performance

c) Outdoor Air Delivery Monitoring

d) Increased Ventilation

e) Construction IAQ Management Plan – During Construction

f) Construction IAQ Management Plan – Before Occupancy

g) Low-Emitting Materials – Adhesives and Sealants

h) Low-Emitting Materials – Composite Wood and Agrifiber Products

i) Low-Emitting Materials – Systems Furniture and Seating

j) Indoor Chemical and Pollutant Source Control

k) Indoor Chemical and Pollutant Source Control

l) Controllability of Systems - Lighting

m) Controllability of Systems – Thermal Comfort

n) Daylight and Views – Daylight

i. 75% - 90% of space

o) Daylight and Views – Views for Seated Spaces

B. Building Code Compliance

1. Introduction:

a. The State of Colorado mandates that the International Building Code (IBC) and related standards be the recognized authority for the public health and safety and continuity of all State owned buildings. The University of Colorado adheres to this program and is charged with the responsibility of ensuring that the provisions of these codes and standards are met on its campuses. The University campus has the specific task to review and examine buildings and construction documents, to permit and inspect construction and/or demolition to ensure conformance to these standards on its campus and issue certificates of occupancy if satisfactory conformance is demonstrated.

b. To this end the University has a building authority to carry out the duties and responsibilities of this program. The authority is executed by the University Campus Building Official (CBO) who has the responsibility to perform all the duties set forth in the IBC, other applicable Codes and Standards (identified in paragraph 3 below) and as deemed necessary and advisable by the CBO to ensure the public health and safety as they pertain to University campus buildings.

2. University Construction Documents Review:

a. The CBO and University PM shall review drawings, specifications and engineering calculations pertinent to the request for permit to verify the completeness of the submittal.

b. At the discretion of the CBO, a third party review may be required to verify compliance with the IBC and other applicable Codes and Standards this will generally occur for new buildings and major additions.

3. University Applicable Codes and Standards:

The University has approved building codes and standards as the minimum requirements to be applied to University buildings and physical facilities including capital construction and controlled maintenance construction projects as enumerated in Part 4, Section 01 41 00, Regulatory Requirements, of this Manual.. The most current versions of these codes and standards are to be verified with the AE by the University PM at the onset of each project.

C. Authority Having Jurisdiction (AHJ)

1. Introduction:

   a. The University is the AHJ for fire prevention and life safety. The AHJ maintains authority for occupied buildings at the Anschutz Medical Campus and Denver Campus. The term "AHJ" as used in the International Fire Code and National Fire Protection Association standards is defined as the entity that is responsible for requiring adherence to the adopted fire and life safety provisions for property under the University jurisdiction.

      1) Final decisions as to application of the codes will be made after consultation with the University Fire and Life Safety Officer
      2) After the CBO authorizes the Certificate of Occupancy, the University Fire and Life Safety Officer will be the primary contact for ongoing fire prevention and life safety issues.

      3) The Fire and Life Safety Officer retains advisory status to the CBO.

1.3 University Design Review Board Procedure: It is anticipated that this information will be updated by the University of Colorado System. AE's should confer with University PM to ensure the procedure for their individual project adheres to the latest information. Please see most current version dated May 5, 2016.

University of Colorado

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DESIGN REVIEW BOARD PROCESS AND PROCEDURES

MAY 5, 2015

Message from the President

The University of Colorado Design Review Board (DRB) is the second-oldest established academic and higher education review board in the United States. The history and legacy of the previous Design Review Board members speak volumes for its national prestige and importance to the University of Colorado. Notably, Hideo Sasaki, Pietro Belluschi, Bill Muchow, Dwayne Nuzum, Eldon Beck, John Prosser, Jerry Seracuse, and several other noted architects and landscape architects have served as members of the Design Review Board since the 1960s.

The role of the DRB is to guide the future planning and design of all four campuses according to their respective master plans, planning and design guidelines, and the specific development program. I entrust to the members of the DRB the challenge of preserving our rich history of thoughtful planning and design in such a manner that each new site and building is in context with the campus and a tribute to our academic heritage and legacy. Their task is twofold in being both guardians of our history and heritage in campus planning and architecture as well as advocates who actively encourage and provoke remarkable and sustainable design that is both functional and inspirational. The members of the DRB act on my behalf in providing faculty, administration, students, and outside consultant groups with advisory expertise that adds value to all four campuses. I value and trust each DRB member to represent the highest and best planning and design standards for our University projects.

While the funding, financing, and method of construction continue to be accelerated to meet our fiscal and contractual obligations, I want to underscore my commitment to thoughtful, meaningful and appropriate planning and design. Although construction project schedules may be more aggressive, the quality of planning and design shall never be compromised. The DRB Policies and Procedures reflect these practical realities while they also encourage and require exceptional planning and design requirements for all CU projects.

To this end, the members of the University of Colorado DRB are my appointed stewards and guardians of all that has been planned and designed with a distinguished history and legacy. They are my trusted associates in encouraging purposeful and outstanding planning and design for many future generations. To this, I am deeply committed.

Bruce D. Benson, President
University of Colorado

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I. INTRODUCTION

The University of Colorado Design Review Board (DRB) is composed of uniquely experienced professional architects, landscape architects and planners appointed by the university President. Its mission is to review and advise parties charged with the design and development of proposed capital planning and development projects at all campus properties under the control of the CU Board of Regents. The DRB is charged with helping each campus maintain a commitment to design excellence. The following information is a reference guide for university staff and architectural/engineering (A/E) consultants involved in the design of campus buildings and site development.

A. The DRB is specifically charged with:

- Reviewing and advising appropriate campus officials on the facilities portion of campus master plans and the development of land-use plans, with particular concern for aesthetic, functional and physical characteristics of the individual campus.
- Reviewing and consulting on project design, new construction, major renovations, building additions and all aspects of the built environment to ensure consistency with the campus master plan and design guidelines.
- If requested by the campus architect, serving on each campus's architect selection committee.
- Being sensitive to the complicated nature of providing architectural services and seeking appropriate ways to work with project architects in expediting reviews and design input early in the process.
- Other charges assigned by University of Colorado Administrative Policy Statement 3002, *Capital Construction Planning and Projects, Appendix 3.*

II. SCOPE OF DRB REVIEW

The DRB examines all site development and exterior architectural components for projects on the university's campuses. The DRB is actively involved from the initial stages of pre-design through design development. Below are the specific project related items the DRB shall review and evaluate:

- General campus character consistency and continuity.
- Building siting, massing, urban design, expansion, materials selection, and architectural design and character.
- Campus landscapes, including design, plant selection and location.
- Vehicular circulation routes, patterns, parking lot locations and parking ratios.
- Pedestrian circulation routes, patterns, amenities and materials.
- Campus site furnishings, lighting and signage design, location and quantity.
- General campus infrastructure systems (not utilities).
- Building performance, sustainable and integrated design methods and materials as they relate to the above.



III. ADMINISTRATION

A. Management

The Vice President for Budget and Finance, or his/her designee at the CU system office (ex officio DRB membership), is responsible for the administration and management of the DRB and reports directly to the President of the university on all DRB matters.

B. The Role of the DRB Chairperson

The Chair of the DRB is appointed directly by the President of the University of Colorado. The Chair oversees all DRB meetings, formal and informal, and strives to set a constructive tone for all members. The Chair meets regularly with the Vice President for Budget and Finance (or his/her designee) and on occasion with the President to refine and resolve project design as defined by scope and budget. The Chair reviews agendas, meeting records, DRB meeting schedules and, as needed, any Board-related documents before issuance to project teams or to the public. The Chair will appoint a member of the DRB as “Acting Chair” in the event of his/her absence. The Chair guides and mediates the actions of the DRB with respect to university Administrative Policy Statement 3002.

C. The Roles of the Campus Liaison and the DRB Project Representative

Each campus has an appointed and designated “campus liaison” to the DRB, who shall be the campus architect or facilities director. The campus liaison is responsible for selecting a “DRB project representative” for all major capital improvement projects, coordinating DRB review with the CU system office and submitting to the DRB the planning and design submittal work products that demonstrate project conformance with campus master plans, design guidelines and other DRB requirements necessary to accomplish the DRB evaluation. Each campus shall develop procedures to meet both the needs of the DRB and internal campus requirements.

In order to ensure continuity and appropriate communications between the DRB and the university staff and administration, the following DRB review procedures have been instituted. For each major campus capital improvement project, the campus liaison may appoint a qualified campus “DRB project representative.” The designated project representative shall inform and communicate project issues and concerns directly with DRB members. The DRB project representative shall be responsible for attending and participating in all DRB meetings and review sessions for the assigned campus project. The campus liaison or DRB project representative may participate as an active and voting member of the DRB throughout the review and approval process for the proposed campus project, from Pre-Design through Design Development.

The campus liaison may also request a DRB Member, in coordination and collaboration with the DRB Chair, participate in the review and selection of an architectural and engineering (A/E) firm for major campus projects. The purpose of including a voting DRB member in the selection process is to offer advice to the selection committee, and inform the DRB of the proposed project background and history, previous studies and conditions, programming, budgets and proposed project schedule. The selected DRB representative is obligated to inform the remaining DRB members of the project context and A/E selection process.

The administrative procedures described above are intended to facilitate improved and more efficient DRB, university and A/E project management and communications throughout the planning and design process.

IV. PROCESS

A. Meetings

The DRB meets monthly on the second Thursday (all day) and Friday (in the morning) on various campuses. The campus liaison is responsible for scheduling the project review and coordinating document submittals with the CU system office. The DRB meeting record is posted on the DRB website and distributed to campus architects.

The DRB Chair, in consultation with the campus liaison, may eliminate design steps typically necessary for project review. Should the DRB feel the planning or design of a project is progressing in a direction inconsistent with the intent of the campus master plan and/or design guidelines, it may request additional meetings, information or studies to further demonstrate conformance.

B. Process for Consideration of Different Project Types

Depending on the size of the project, DRB review will proceed according to one of the two following processes:

1. **Small Projects** - Minor exterior renovations or minor landscape projects, which do not change the function of the site or impact the aesthetic value of the campus, can be reviewed and approved at one meeting through a consent agenda item. DRB recommendations may be delegated to the campus liaison for implementation. The campus liaison may determine that a minor project does not warrant DRB review but shall transmit electronic files of small projects to the DRB for the DRB's acceptance of their placement on the DRB's consent agenda. Staff may also place responses to previous actions taken by the DRB on minor projects on the DRB's consent agenda. The collective impact of minor projects upon the overall campus form and function shall be considered.
2. **Major Renovations and New Buildings** - For campus projects proposing new buildings, or major exterior renovations, DRB review typically occurs at the four phases of design: pre-design, conceptual design, schematic design and design development. Phases may be combined or additional meetings requested at the discretion of the campus liaison in coordination with the DRB Chair.

IV. PROCESS (CONT.)

C. DRB Session Format

The format of the DRB Session is as follows:

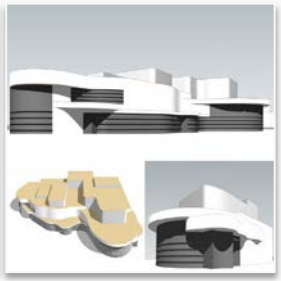
- Generally, a DRB session is approximately one and one-half hours in length and consists of four parts. The individual times are approximate, and may vary due to the nature and complexity of the project. Prior to each project review the DRB liaison shall brief the DRB members on the status of the proposed project in terms of current planning and design issues and schedule.
- The A/E team presents the proposed project to the DRB.
- The A/E team is excused, allowing the DRB board to recess.
- The DRB reconvenes and communicates its summary critique and recommendations to the A/E team.

D. DRB Action and Documentation

There are four (4) DRB submittals required for major renovations and new buildings for the university. Namely:

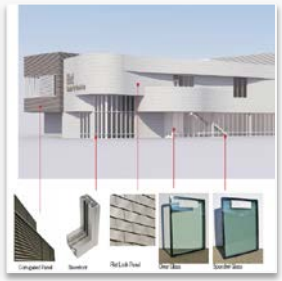
- Pre-Design
- Conceptual Design
- Schematic Design
- Design Development

Pre-Design



Concept

Schematic



Design Development

IV. PROCESS (CONT.)

Based on the A/E presentation of Pre-Design, the DRB shall provide written comments and recommendations to the campus liaison, DRB project representative and A/E firm. These written comments shall be recorded in the monthly DRB meeting record. No formal review and approval shall be required for Pre-Design.

For Conceptual, Schematic, and Design Development, the DRB Chair shall make formal recommendations to the President for approval, approval with conditions, denial and/or continuation of hearings. Approval of Conceptual, Schematic and Design Development by the DRB is required for all university projects.

The record of the DRB proceedings shall be used as the formal documentation of recommendations and actions taken by the DRB. The record shall be published and distributed to appropriate campus liaison and project representatives within fourteen (14) days of the formal DRB meeting date. The campus liaison and DRB project representative are responsible for the release, communications, clarifications and distribution of the DRB record to appropriate university personnel, A/E consultants and other project related parties, at their discretion.

E. Appeal Process

If a campus disagrees with a formal DRB action, the campus may appeal that decision to the President through the Vice President for Budget and Finance or his/her designee.

- Prior to a formal appeal, a chancellor may choose to bring the matter to the attention of the Vice President for Budget and Finance or the President.
- Within 30 days of a DRB decision that a campus wishes to appeal, the campus architect, through the appropriate Vice Chancellor, shall advise the Vice President for Budget and Finance or his/her designee on design directions that vary from the DRB's recommendations.
- Before resolving such an appeal, the President shall consult with the campus chancellor.
- The President's decision on a campus appeal from a DRB decision shall be final.

V. SUBMITTAL REQUIREMENTS

A. Submittal Process and Procedures

There are no formal submittal requirements for each of the four phases in the DRB review and approval process. The university and DRB assume that the selected A/E firms were selected and retained based on their professional expertise, capabilities and experience. As such, great latitude and discretion is given to the A/E firm to demonstrate exceptional planning and design for the proposed project.

Members of the DRB shall receive each submittal in its entirety four (4) working days before the scheduled DRB meeting. It shall be the sole responsibility of the selected A/E consultant firm to submit electronic documents to the campus liaison and the designated DRB project representative seven (7) working days before the scheduled DRB meeting. This allows the campus liaison and DRB project representative adequate time to review and verify that the A/E submittal meets the DRB submittal requirements. Upon review and approval of the A/E submittal package by the campus liaison, the necessary documents will be transmitted to the CU system office for distribution to the DRB. The campus liaison shall then confirm or modify the final DRB meeting agenda with the CU system office.

The DRB may reject a project from the agenda if one or more of the following conditions exist:

- Receipt of the electronic or hardcopy submittal is received by the DRB in fewer than the four (4) days required.
- The DRB campus project representative determines the submittal materials are inadequate to communicate the design intent.

The DRB review and recommendation (approval, approval with conditions, denial or continuation of university projects) shall be based on the project packets and supplemental materials sent to the university. The DRB may refuse to consider in the review and approval process any new, revised or updated materials that the Chair determines were not a part of the original submittal.

V. SUBMITTAL REQUIREMENTS

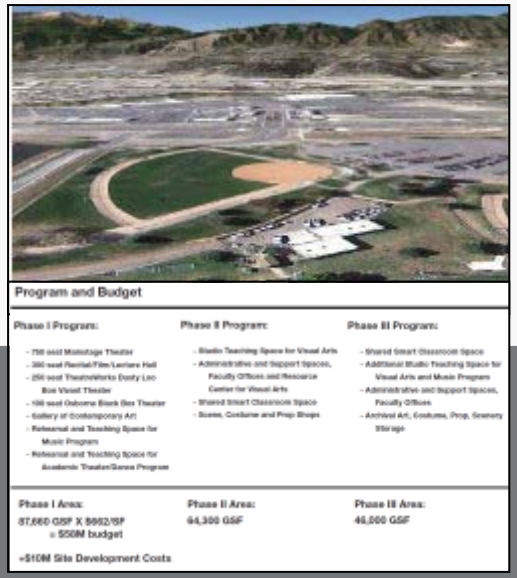
B. Required Submittals

1. Pre-Design

The pre-design phase establishes clear project goals, objectives and priorities for the proposed project. This phase should clearly outline project-related issues, concerns, opportunities and constraints that affect the planning and design process. It is a critical first step in the process because it establishes the goals and objectives of the project. During this phase, the proposed project is fully discussed and reviewed so a clear project understanding is arrived at by all parties, including campus representatives, campus administration, members of the selected A/E firm and other interested parties. The intent of the Pre–Design Phase is to:

- Discuss, clarify, and confirm items noted in the DRB Briefing Packet as provided by the campus liaison to the DRB members (the briefing packet contains information regarding budget history and context);
- Introduce the selected A/E team of consultants and define their project roles and responsibilities;
- Describe the proposed project program of improvements, budget, schedule of completion, and all university, governmental or other jurisdictions that may be affected by the project;
- Illustrate and describe the historical and current context and setting of the project;
- Analyze site and programming conditions and assumptions; and
- Define project goals and objectives and identify project issues and concerns.

Please note that the DRB encourages the A/E firm to clearly and professionally communicate, illustrate, and demonstrate the intent of the proposed project in any manner they consider effective, timely and professional. There is no formal action taken by the DRB for the predesign phase; the DRB shall note concerns, actions, and expectations that should be addressed at the concept phase.



V. SUBMITTAL REQUIREMENTS (CONT.)

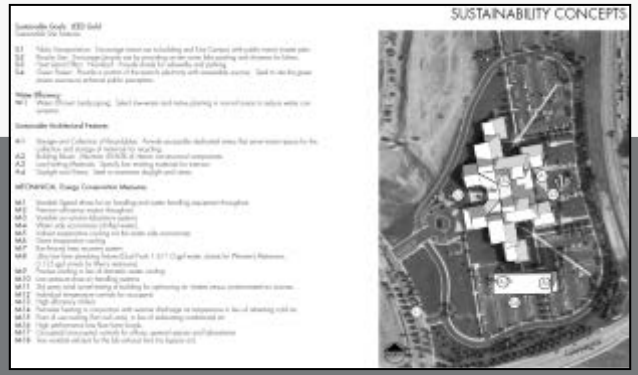
2. CONCEPT DESIGN

The Concept Design phase should reflect, address and build upon the issue identification, constraints and opportunities discussed and noted in Pre-Design. The intent of Concept Design is to apply the goals, objectives, priorities, and observations of the project site characteristics and the building program into a preliminary design. This should address outstanding constraints and opportunities and apply this understanding to the proposed design to create a synthesis of site approaches and internal organization. The A/E firm should suggest various alternative site and building design approaches for the project and offer a preferred alternative.

The intent of Concept Design is to clearly review, clarify and determine the following elements:

- Clarify any Pre-Design DRB comments and recommendations regarding the proposed project and make certain that the project goals and objectives, program, budget and schedule are clearly understood;
- Quantify and qualify all existing and proposed site constraints;
- Determine a reasonable site and building development program based on site and budget constraints;
- Evaluate alternative site and building concepts and options that achieve the development programming objectives and site constraints;
- Explore conceptual site development relationships illustrating how the proposed site development and improvements conceptually relate to the proposed architectural improvements;
- Demonstrate and document initial energy, sustainability and low-impact development methods and techniques and best management practices that are being evaluated early in the conceptual design process for the proposed site and building improvements; and
- Identify and define a preferred conceptual design direction to be further refined and detailed in the Schematic Design phase.

Review and approval is required by the DRB before the project can move to the next phase – Schematic Design.



V. SUBMITTAL REQUIREMENTS (CONT.)

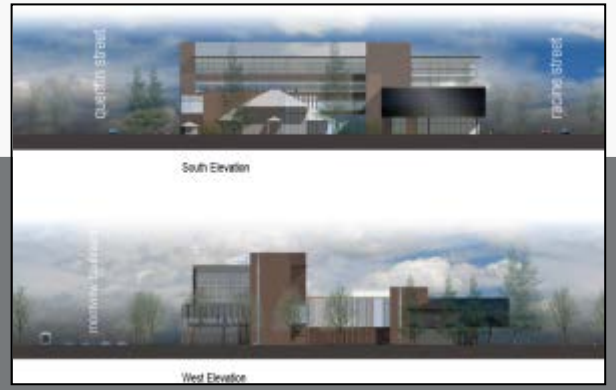
At the conclusion of the Schematic Design presentation, the A/E firm shall be asked to briefly summarize all defined, unresolved and outstanding site, architectural, and sustainability issues that have been identified. The DRB will further clarify and assist the A/E firm in understanding schematic design-related issues and concerns before making a formal action. DRB review and approval is required prior to proceeding to Design Development.

3. SCHEMATIC DESIGN

Schematic Design should be developed from a common and well-defined understanding by the DRB and A/E firm of all site and building issues identified in the Concept Design review process. The DRB is interested in better understanding the A/E approach to demonstrating a refined resolution for on-site and off-site issues, the development of a preliminary site design, the architectural approach, the development of the sustainability plan and any other special conditions. Specifically, the intent of Schematic Design is to:

- Establish a strong site plan and building design that further enhances the campus and objectively achieves the development program, budget, schedule and overall project goals;
- Refine the site plan and architectural design to achieve greater sustainability, energy efficiency and reduced life-cycle costs;
- Demonstrate a higher level of refinement and detail in the site and architectural design that furthers the conceptual design;
- Prepare plans and illustrations that clearly convey site development improvements and their relationship to existing and proposed landforms, visual context, pedestrian connections and linkages, vehicular, service and emergency access, and defined hardscape and landscape improvements; and
- Prepare schematic plans, elevations, perspectives, cross-sections and other three-dimensional illustrations that further support and clarify the design concept.

Where applicable, please refer to the most recent American Institute of Architects (AIA) standard criteria for “Schematic Design” professional services.



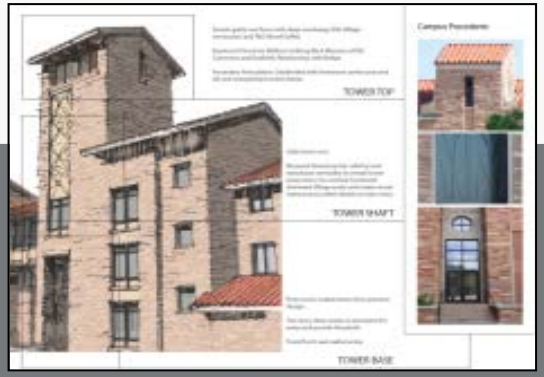
V. SUBMITTAL REQUIREMENTS (CONT.)

4. DESIGN DEVELOPMENT

Design Development is the final phase of review by the DRB. It is the final opportunity for the DRB to review the specific planning and design details as they relate to the various terms, conditions and recommendations offered by the DRB during the Schematic Design review. It is the intent of the DRB not to make or suggest substantive or significant changes at the Design Development phase for practical, cost and scheduling reasons. This notwithstanding, the DRB shall review with care and detail to make certain that the terms, conditions and provisions noted in the Schematic Design are incorporated into the Design Development submittal. The intent of Design Development is to:

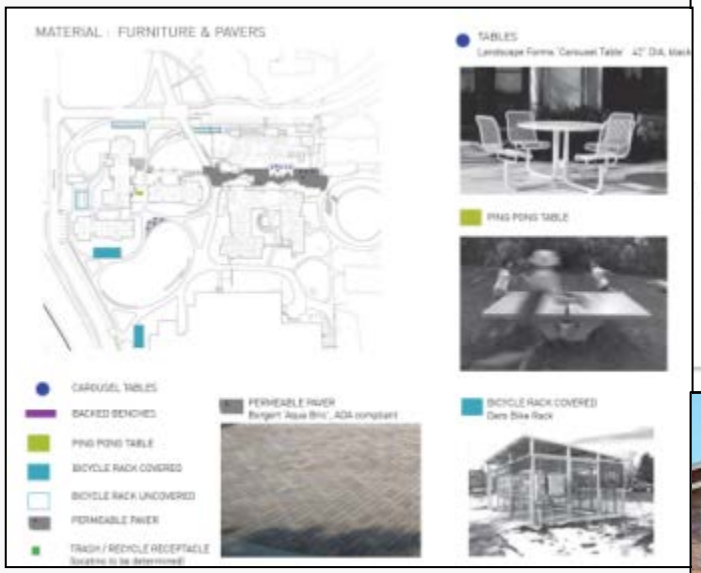
- Prepare minor adjustments and modifications to the Schematic Design submittal packet based on DRB recommendations and comments;
- Develop, in detail, the site and building design in a manner that is suitable for the campus;
- Demonstrate integration of sustainable strategies in the design of the project; and
- Prepare a final record set of plans, drawings and support documents that reflect a level of “design development” for the proposed project;

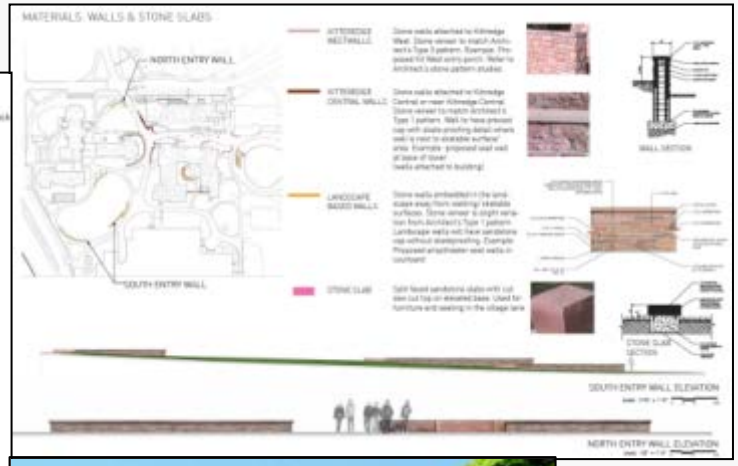
Where applicable, please refer to the most recent American Institute of Architects (AIA) standard forms and criteria for “Design Development” professional services. At the conclusion of the Design Development presentation, the A/E firm shall be asked to briefly summarize all defined, unresolved and outstanding site, architectural and sustainability issues that were identified through the schematic design process. The DRB will further clarify and assist the A/E firm in understanding design development related issues and concerns, if any, before making a formal recommendation.



V. SUBMITTAL REQUIREMENTS (CONT.)

If the Design Development phase is approved with conditions, the A/E firm shall provide the DRB members a "Final Design" document that illustrates and describes the resolution of the conditions leading to final approval. This summary document should reflect, as necessary, the evolution of the planning and design process and reflect the approved final design. The final design packet (electronic) shall be submitted to the DRB within forty-five (45) days of final approval.





1.4 University Minor Project Design Review Procedure:

A. Purpose

1. University Minor Project Internal Design Review is intended to meet the functional needs of the campus as follows:

    a. Provide an expeditious review process for minor projects.

    b. Establish a separate review procedure which in coordination with review by the DRB can further facilitate the review and approval of projects.

    c. Provide a consistent and appropriate standard for the quality, character and appearance of new and remodeled facilities at the campus.

    d. Provide a mechanism for the improved coordination of project and site development at the campus.

B. Projects Subject to Minor Project Design Review

1. All projects on the campus which involve exterior improvements or modifications of buildings or site development shall be subject to “internal” design review.

2. Exceptions

    a. Projects where the improvement or modification will be removed entirely within one year of the date of installation or construction are exempted.

    b. Projects which are following standard prescribed review procedures of the DRB as set forth in Part 1, 1.3 of The Manual.

C. Required Reviews

1. Review shall typically occur at four phases of design: pre-design, concept, schematic design and design development (preliminary construction document phase), unless otherwise determined by the University design review committee through the University PM. Certain minor projects may be exempted from one or more review phases.

D. Review Period

1. A period of two weeks shall be allowed for review of each phase. The review period may be adjusted on a case by case basis depending on unusual circumstances approved by University Director-level or higher positions and communicated by University PM’s.

E. Submittal Requirements

1. Submittal materials shall be appropriate to the project phase as outlined in the AE agreement.

1.5 University Planning and Technical Review Procedure:

A. Purpose

1. The University Planning and Technical Reviews are intended to facilitate the approval of a project in coordination with the DRB Procedure and/or University Minor Project Internal Design Review.

    a. The planning review is intended to:

        1) Verify compliance with the requirements of the Program Plan;

        2) Review the function(s) of the space planning versus the needs(s) of the user(s);

        3) Review the size(s) and location(s) of spaces for the project's support facilities and functions with relation to Part 3.0 – Project Planning and Design Guidelines/Considerations; and

        4) Review the space planning with relation to issues of compliance with code and life safety requirements.

    b. The technical review is intended to:

        1) Review the materials proposed for use throughout the project and the details associated with those materials; and

        2) Review of the design of the project's various systems for being applicable to the project and in compliance with the requirements of Part 4 of this Manual – -Specification Guidelines

        3) Ensure compliance with approved codes (exhibit D of Architect / Engineer Contract) through University CBO or 3rd Code Consultant.

    c. City of Aurora Review (for projects with underground utilities)

        1) City of Aurora will review site work and utilities for conformance to the latest City of Aurora standards. The must be submitted formally to the City through the University PM for a joint University/ City permit.

    d. Grant Review (for projects with grant funding)

        1) Project with grant funding will require specialize review and conformance. It will vary based on the grant requirement. The design team should confirm special grant requirement at the state of design.

B. Projects Subject to Reviews

1. All new and remodel projects on the campus shall be subject to planning and technical reviews.

C. Required Times for Reviews

1. Reviews shall typically occur at the schematic design, design development and construction documents phases of the design process unless determined otherwise by the

University Project Manager. Certain minor projects may be exempted from one or more of these phases.

D. Submittal Requirements

1. Submittal materials shall be appropriate to the phase of the design process as outlined in the AE Agreement.

E. Review Process

1. The review materials shall be submitted to the University Project Manager, who will distribute the materials to the University departments , as applicable, for their reviews. All review comments will be put in written form and transmitted back to the design team.

2. The design team will provide written responses to the review comments with explanations, clarifications and/or action items related thereto. If and action item indicates a change to be incorporated into the ensuing phase' documents, an appropriate notation as to the location of that change shall accompany said documents so that the change can be confirmed.

F. Review Period

1. A period of two weeks shall be allowed for review of each phase. The review period may be adjusted on a case by case basis depending on unusual circumstances approved by University Director-level or higher positions and communicated by University PM’s.

1.6 Project Numbering Standards

A. Room Numbering:

1. Scope

It is the goal of the University that occupants and visitors are able to find their way through the buildings on campus with minimal effort. To facilitate this, a building designation and a room numbering system have been developed. Other concerns to be addressed by these systems include, but are not limited to:

a. Emergency Response

b. Space Management

c. Asset tracking

d. Security

It is expected that each room numbering plan will be unique. Illustrations in the "Process" section of the "Room Numbering Standards" are examples only and are not prescriptive, and are based on the Anschutz Medical Campus format. The building designator referenced in the illustrations and examples shall be A99; this designator is for demonstration purposes only and is not to be used as the actual designator. Room numbering will be an interactive process between the AE and the University GIS Coordinator.

2. Applications

It is the goal of the University that all rooms have a number that is unique and not duplicated in this building or any other building on campus.

Each room number shall reference the building that it is in.

All design documents shall have University room numbers that shall be used on the plans as well as all schedules, electric panel circuit designations and any other component of the drawing set or specifications or correspondence that references room numbers.

The mounted room number signs shall match the room numbers on the design documents.

The types of rooms or spaces that will receive numbers on the design documents as well as room number signs, shall include, but are not limited to:

a. Standard rooms

b. Open-rooms

c. Lobbies

d. Vestibules

e. Closets

f. Loading Docks

g. Alcoves

h. Linear Equipment Rooms

All room types listed above are to have room number signs mounted as per Part 4, Section 10 14 00 of this Manual

The types of rooms or spaces that will receive numbers on the drawings but shall not have any room number signs mounted, shall include:

a. Corridors

The types of rooms or spaces that will receive numbers on the drawings, but shall require a different type of signage as per Part 4, Section 10 14 00 of this Manual shall include:

a. Stairs

3. Definitions

Alcove: - a slightly closed in or indented area - where the space function differs from that of the surrounding area. An example of this might be where a fume hood is used.

Building designator (Anschutz Medical Campus): - a unique three character alpha/numeric title that is assigned to each building on campus by the GIS Coordinator.

Building designator (Denver Campus): - a unique set of alpha characters that is assigned to each building.

Linear equipment room: - a room that has the appearance of a corridor but is in fact an intermediate space between a true corridor and other rooms. It is a multi-user, multi-functional space. This room has floor to ceiling walls and its limits are usually defined by fire doors.

Modular lab: - A large room divided into subsections based on temporary features like casework, possibly incorporating surrounding rooms into its function and room number structure.

Open room: - generally with partial walls, or without walls - where the space function differs from that of the surrounding area. An example of this might be a reception area adjacent to a corridor or lobby. Open rooms might also be used to describe modular labs.

Standard room: - generally with floor to ceiling walls and a doorway - such as offices, laboratories, restrooms, and mechanical rooms.

Zone: - Divisions in the floor plan established at the introductory meeting. The purpose of the room number zone is to establish a transition point where numbers ascend or descend into the next number group, for example from the twenty's group to the thirty's group. Zones might be established based on: columns, column lines, fire doors, or many other architectural features. Once a zone is established it applies to every floor of a building unless specified otherwise by the GIS Coordinator.

4. Process

a. Existing Buildings

The AE shall meet with the University PM to determine if an existing building is to be assigned a new numbering format or maintain and established one. The AE shall assign new room number if a remodel adds or deletes rooms in a building or if room access is altered.

b. New Buildings

1) No floor shall be designated “ground floor”.

2) Grade level of the main entrance shall be the first floor.

3) Floor designations shall be as follows:

Basement: “0” (First primary floor that is located directly under the first floor).

First floor: “1”

Second floor: “2”

Third floor: “3”

Etc.

Tenth floor: “10”

Etc.

Penthouses shall be assigned room numbers as well. The floor designator shall be one number higher than the designator number of the floor immediately below the roof. For example if the top floor of a building is designated “8”, the penthouse floor shall be designated “9”.

Levels might exist in a building that is understood to be between floors, such as interstitial space, intermediate floors or mezzanine’s. This level shall be assigned the floor designator of “M”. If there is more than one level of this type in a building the AE shall meet with the GIS Coordinator to address options.

A floor might exist in a building that is located one level below the basement. This floor designator shall be “U”.

A floor might exist in a building that is located below level “U”, if this occurs add a second “U” so that the floor designator is “UU”.

If the number of below basement floors exceeds this point, the AE and the GIS Coordinator shall meet and address alternatives.

4) Buildings will have two categories of room numbers.

a) General room number types.

b) Classified room number types. The classified differs from the general in that it uses an alpha instead of a number in the sixth character position to note room/space type.

There is also an (Alternate) General number Type that is similar to the General room number type except that it integrates the linear equipment room into the process.

The basic number portion of the General and Classified room number shall look like this:

A99-123

c. General Room Number Type

1) General numbers are used in the following types of rooms:

a) Standard rooms

b) Open-rooms

c) Closets

d) Alcoves

e) Loading docks

d. General Number Structure

1) The first, second and third characters are the building designator, and indicate which building the room is located in. The AE shall obtain these characters from the University GIS Coordinator. Alphas in the building designator shall always be uppercase. The building designator looks like this:

A99

2) The fourth character shall be a hyphen. With this addition the number looks like this:

A99-

3) The fifth character shall designate the floor on which the room is located. If a floor designator reaches 10 or higher two characters shall be used, this will affect the examples given in the remainder of the "General room number type" portion of the construction standards by increasing the position count of a character by one. For example, "The sixth character" shall read as "The seventh character". For the purposes of this standard, use a floor designator of one character. Do not insert a "0" before a single character floor designator. With this addition the number looks like this:

A99-1

4) The sixth character shall indicate the zone of the floor where the room is located. With this addition the number looks like this:

A99-12

5) The seventh character shall indicate the specific room within a zone. Number assignments start over after a zone is crossed. With this addition the basic number portion is complete and looks like this:

A99-123

6) All rooms, which are entered from a corridor, lobby, stairwell, or vestibule, are assigned a unique basic number.

7) The above (Items: “1” through “6”) address the basic number portion of the general room number. The remaining Items (“8” through “14”) address possible additions to the basic number portion of the general room number.

8) If the subject room is entered from another room or is inside a room with a basic number an eighth character shall be assigned which shall be an alpha. This will result in a number that look s like this:

A99-123A

All alpha characters shall be assigned in a clockwise order starting from the entrance of the primary room (the room with the basic room number). This alpha shall always be uppercase.

The AE shall not use the letters “I” or “O” when assigning alpha characters.

9) If the subject room is inside a room that has been assigned an alpha as its eighth character, then a ninth character shall be assigned, which shall be a numeric. This will result in a number that look s like this:

A99-123A1

All post alpha, numeric characters shall be assigned in a clockwise order starting from the entrance of the room with the alpha designation.

In some applications there might be rooms inside of these rooms which in turn might have rooms inside of them and so on. If this scenario occurs continue to add characters assigned in a clockwise order starting from the entrance of the room, if the last character was numeric add an uppercase alpha or if the last character was an alpha add a number. If this becomes extreme the AE and the GIS Coordinator shall meet to consider alternatives.

10) In some applications basic room numbers may be exhausted before entering a new zone. At this time, an eighth character, which shall be a hyphen followed by a ninth character which shall be numeric is assigned. This will result in a number that looks like this:

A99-123-1

If this becomes necessary, it is preferable that a common space, closet, mechanical room, or rest room be assigned the number with the hyphen, and that the basic number be reserved for prime assignable space such as labs or offices.

11) The location of the main entrance of a room shall determine the zone in which the room is located. Note, for example, that most of a room may be located in the 40's zone; however, the main entrance is in the 30's zone and the room shall have a 30's zone designation.

12) Intermediate spaces that lead to rest rooms, stairs or auditoriums but are separated from those spaces by a door are regarded as part of the room they lead to. Such a space shall not be assigned a room number of its own.

13) In some applications open-rooms might be numbered in reference to a modular lab concept, this part ("l") is only to be referenced if the AE is specifically directed to use the modular lab concept.

In this scenario a large room is divided into subsections. This group of subsections will share a common basic number that might be:

A99-123

However this basic number – on its own – is never to be assigned to any part or subsection of the lab.
Each subsection shall be assigned an uppercase alpha resulting in a group of numbers that look like this:

A99-123A

A99-123B

A99-123C

These subsections shall constitute 100% of the open room space.

In some applications open rooms might be the primary access to alcoves that are understood to be a part of the over-all modular lab, even if these alcoves have direct access to a corridor. These alcoves are to be included when numbering the subsections. In most cases one or more alcoves are associated with a subsection and should be numbered accordingly. An example of this might be:

A99-123A	Subsection
A99-123B	Alcove
A99-123C	Alcove
A99-123D	Next subsection

These numbers are assigned so that they ascend with the flow of pedestrian traffic in the building. This numbering system is subject to change at the Initial review meeting.

14) To address safety and security issues it is necessary to further identify the function of certain types of rooms by using a lowercase alpha at the end of the room number. Those types of rooms are as follows:

a) Electrical: All electrical rooms and closets shall be designated with an “e” resulting in a number that looks like this:

A99-123e

b) Mechanical: All mechanical rooms and closets shall be designated with an “m” resulting in a number that looks like this:

A99-123m

c) Telecommunications: All Telecommunications rooms and closets shall be designated with a “t” resulting in a number that looks like this:

A99-123t

d) Fire Command: All fire command rooms shall be designed with an “f” resulting in a number that looks like this:

A99-123f

e) In some applications the subject room might have an alpha as its eighth character, when this occurs the lower case alpha for the above room types must still be applied, resulting in a number that might look like this:

A99-123Am

If there is a room inside of a room with a safety and security alpha but that room does not perform a function that qualifies it for a safety and security alpha, it does not receive one. For example, if a mechanical room titled “A99-123m” has a storage room inside that contains no mechanical equipment the “m” is not assigned to the storage room number.

e. Classified Room Number Type

1) Classified numbers are used in the following types of rooms:

a) Corridors

b) Lobbies

c) Stairs

d) Vestibules

f. Classified Number Structure

1) The first, second and third characters are the building designator, and indicate which building the room/space is located in. The AE shall obtain these characters from the University GIS Coordinator. Alphas in the building designator shall always be uppercase. The building designator looks like this:

A99

2) The fourth character shall be a hyphen. With this addition the number looks like this:

A99-

3) The fifth character shall designate the floor on which the room/space is located. If a floor designator reaches 10 or higher, two characters shall be used, this will affect the examples given in the remainder of the "Classified room number type" portion of the construction standards by increasing the position count of a character by one. For example, "The sixth character" shall read as "The seventh character". For the purposes of this standard, use a floor designator of one character. Do not insert a "0" before a single character floor designator. With this addition the number looks like this:

A99-1

4) The sixth character shall indicate the classification. Those types of rooms are as follows:

Corridors: All corridors shall be designated with an uppercase "C" with this addition the number looks like this:

A99-1C

Lobbies: All lobbies shall be designated with an uppercase "L" with this addition the number looks like this:

A99-1L

Stairs: All stairs shall be designated with an uppercase "S" with this addition the number looks like this:

A99-1S

Vestibules: All vestibules shall be designated with an uppercase "V" with this addition the number looks like this:

A99-1V

5) Assignments of corridor room/space numbers shall be based on the flow of pedestrian traffic in the building, which is established during the introductory meeting. Room/space numbers are assigned to segments of corridors. The extents of these segments (Transition points) are defined by fire doors and sometimes by right angle turns.

The corridor number shall be based on where it begins within a room number zone; if that zone is 01 (One's) with this addition the number is complete and looks like this:

A99-1C01

If the corridor crosses a transition point before entering a new room number zone the number shall ascend by one. Resulting in a new corridor segment number that looks like this:

A99-1C02

If the corridor crosses a transition point after entering a new room number zone the number shall reflect the new zone. For example if a corridor started in zone 01 (One's) and ended in zone 10 (Ten's) the new corridor number looks like this:

A99-1C10

Bridges and suspended walkways within the building shall be numbered as part of the corridor numbering system, unless they are of sufficient size to be regarded as a room by the GIS coordinator.

The corridor numbers might be assigned differently based on unforeseen factors, and the numbering system is subject to change at the Initial review meeting.

It is understood that the above application of corridor numbers might not coincide with the AE need to reference specific areas of the corridor. In this scenario the AE and the GIS Coordinator shall meet to address those needs.

6) Assignments of lobby room/space numbers shall be based on the flow of pedestrian traffic in the building, which is established during the introductory meeting. Room/space numbers are assigned at the Initial review meeting with the GIS Coordinator.

7) Stair (Stairwell) numbers are generally assigned ascending in a clockwise direction starting at the main entrance of the building. This numbering system is subject to change at the Initial review meeting.

8) Vestibule numbers are generally assigned ascending in a clockwise direction starting at the main entrance of the building. This numbering system is subject to change at the Initial review meeting.

g. (Alternate) General Room Number Type

1) This type only applies if the AE is specifically directed to use it.

(Alternate) General numbers are used in the following types of rooms:

a) Standard rooms

b) Open-rooms

c) Closets

d) Alcoves

e) Loading docks

f) Linear equipment rooms

h. (Alternate) General Number Structure

1) The structure of the (Alternate) General number type is the same as the structure for the General room number type, except that linear equipment rooms are now part of the design and will affect room numbering in the following ways.

1. Linear equipment rooms are assigned basic room numbers because they are entered from corridors, lobbies, or stairs.

b) Linear equipment rooms are access ways to other rooms, however those other rooms are assigned basic room numbers as if they are entered from a corridor, or lobby.

B. Door Numbering

1. Scope

It is the goal of the University to support University Electronic Security and Access Control as well as the University BMO Lock Shop in their efforts to insure that occupants, visitors, resources, and facilities are secure. To facilitate this, a door designation system has been developed. Other concerns to be addressed by these systems include, but are not limited to:

a. Emergency Response

b. Lock and Door Maintenance

It is expected that each door numbering plan will be unique. Illustrations in the “Process” section of the “Door Numbering Standards” are examples only and are not prescriptive, and are based on the Anschutz Medical Campus format. The building designator referenced in the illustrations and examples shall be A99; this designator is for demonstration purposes only and is not to be used as the actual designator. Door numbering will be an interactive process between the AE and the University GIS Coordinator.

a. Applications

It is the goal of the University that any door shall have a number that is unique and not duplicated in this building or any other building on campus.

Each door number shall reference the building that it is in.

All design documents that reference doors shall use University door numbers, they will be used on the plans as well as all schedules, and any other component of the drawing set, specifications or correspondence that references door numbers.

There are three types of door numbers, they are as follows:

a. Exterior

b. Corridor

c. Room

Exterior doors (and/or entry points) are to have door number signs mounted as per Part 4, Section 10 14 00 of this Manual.

Corridor doors are to have door number signs mounted as per Part 4, Section 10 14 00 of this Manual.

Room doors are not required to have door number signs mounted unless there is more than one entrance to the room.

4. Process

a. Exterior doors

1) The complete exterior door number looks like this:

A99-1A

2) Exterior door numbers are assigned to any entry point on any floor that can be opened into the building, where people or materials might pass through. This includes but is not limited to:

a) Standard doors

b) Loading dock doors

c) Garage doors

d) Emergency exits

e) Balcony / Deck doors

f) Roof access doors

g) Penthouse doors

h) Rooftop access hatchways

i) Bridge access doors

3) The exterior door number has three components.

4) The first, second and third characters are the building designator component, and indicate which building the door is located in. The AE shall obtain these characters from the University GIS Coordinator. Alphas in the building designator shall always be uppercase. The building designator looks like this:

A99

5) The fourth character shall be a hyphen. With this addition the number looks like this:

A99-

6) The fifth character begins the second component and shall designate the floor on which the door is located. The floor shall be referenced like this:

Basement: "0"

First floor "1"

Second floor "2"

Third floor "3"

Etc.

Tenth floor "10"

Etc.

With this addition the number looks like this:

A99-1

Note: Do not use a "0" before a single character floor designator.

7) The sixth character is the third component; it is an uppercase alpha and shall designate the specific door. With this addition the complete number looks like this:

A99-1A

8) Starting in the Southwest corner of the building, proceeding in a clockwise direction the first door encountered shall be assigned an "A". The next door shall be assigned a "B" and so on. The Architect/Engineer shall not use the letters "I" or "O". The exact starting corner of the building will be determined during the introductory meeting.

9) If all alphas are exhausted the AE shall use double alphas. For example after "Z" is used the next alpha assignment would be "AA" followed by "AB" and so on.

10) Alpha assignments are based on doorways each door or set of double doors shall be assigned an alpha.

11) Once a floor is complete the AE shall move to the next floor and start assigning alphas again in the same format starting over with "A".

b. Corridor doors

Corridor door number assignments are based on doorways – each door or set of double doors shall be assigned a number.

The complete corridor door number looks like this:

A99-12dA

1) The first, second and third characters are the building designator component, and indicate which building the door is located in. The AE shall obtain these characters from the University GIS Coordinator. Alphas in the building designator shall always be uppercase. The building designator looks like this:

A99

2) The fourth character shall be a hyphen. With this addition the number looks like this:

A99-

3) The fifth character begins the second component and shall designate the floor on which the door is located. With this addition the number looks like this:

A99-1

4) The sixth character shall designate the zone (in reference to the room number zone) in which the door is located. For example a door may be located in the “20’s” or “200’s” room number zone and shall receive a “2”. With this addition the number looks like this:

A99-12

5) The seventh character shall be a lowercase “d”. With this addition the number looks like this:

A99-12d

6) The eighth character shall designate the specific door within a zone. This character is an uppercase alpha and is assigned based on the flow of pedestrian traffic in the building, which is established during the introductory meeting. For example as you enter a new room number zone you enter a new corridor door number zone. The first corridor door you encounter will be an “A”, the next you encounter shall be a “B” and so on in alphabetic order, skipping “I” and “O”. With this addition the number looks like this:

A99-12dA

c. Room door numbers

The complete room door number looks like this:

A99-123

1) Room door numbers are the same as the room number provided there is only one entrance to the room.

2) If there is more than one door accessing a room each doorway must be assigned a unique number. This number uses the room number followed by lowercase “d” followed by a door count number. A “0” shall precede all single digit door count numbers. The door count number shall be assigned in a clockwise direction starting from the

main entrance of the room. For example, if a room numbered A99-123 has three doors, the numbers shall look like this:

A99-123d01

A99-123d02

A99-123d03

C. Elevator Numbering

1. Scope

It is the goal of the University that occupants and visitors are able to find their way through the buildings on campus with minimal effort. To facilitate this, an elevator designation system has been developed. Other concerns to be addressed by these systems include, but are not limited to:

a. Emergency Response

b. Space Management

c. Security

It is expected that each elevator numbering plan will be unique. Illustrations in the "Process" section of the "Elevator Numbering Standards" are examples only and are not prescriptive, and are based on the Anschutz Medical Campus format. The building designator referenced in the illustrations shall be A99; this designator is for demonstration purposes only and is not to be used as the actual designator. Elevator numbering will be an interactive process between the AE and the University GIS Coordinator.

2. Applications

It is the goal of the University that all elevators have a number that is unique and not duplicated in this building or any other building on campus.

Each elevator number shall reference the building that it is in.

All design documents shall have University elevator numbers, that shall be used on the plans as well as all schedules, and any other component of the drawing set, specifications or correspondence that references elevator numbers.
All elevators are to have signs mounted as per Part 4, Section 10 14 00 of this Manual. The elevator numbers referenced shall correspond to the elevator numbers on the design documents.

3. Process

The complete elevator number has three components and looks like this:

ELV-A99-001

a. The first three characters of the elevator number are the equipment type component. This component is always the same and looks like this:

ELV

b. The fourth character shall be a hyphen. With this addition the number looks like this:

ELV-

c. The fifth, sixth and seventh characters are the building designator component, and indicate which building the elevator is located in. The AE shall obtain these characters from the University GIS Coordinator. Alphas in the building designator shall always be uppercase. With this addition the number looks like this:

ELV-A99

d. The eighth character shall be a hyphen. With this addition the number looks like this:

ELV-A99-

e. The ninth, tenth, and eleventh characters are the series number component, it has three numeric characters assigned in ascending order starting with this number:

001

With this addition the complete number looks like this:

ELV-A99-001

f. The overall pattern of number assignment shall be established in the introductory meeting.

g. If elevators are positioned side by side with no elevators across a lobby or corridor from them, series numbers shall be assigned in ascending order from left to right as you face them.

h. If elevators are face to face across a lobby or corridor, series numbers shall be assigned in ascending order in a clockwise direction. The starting point shall be where a pedestrian might first encounter the elevators assuming they are following the direction of pedestrian traffic in the building, established in the introductory meeting.

i. The elevator number on all elevator signage shall correspond to the elevator number on the construction documents, however the signage shall differ in that it will not have an equipment type component, and the series number shall be reduced to its simplest form by dropping any zeros to the left of the critical digit. For example:

ELV-A99-001	Shall read:	A99-1
ELV-A99-002	Shall read:	A99-2
ELV-A99-003	Shall read:	A99-3

Etc.

ELV-A99-010 Shall read: A99-10

Etc.

j. Floor buttons in the elevator cars shall match the floor designator used in the drawings, for example:

When the floor designator used in a room number is a “4” then the elevator fourth floor button shall use a “4”. This is typical of all floors with numeric designators with the exception of elevators that provide access to roofs or penthouses. In this scenario room/space designators may have a floor designator such as “9” however the floor button in the elevator car shall read “R” (Roof) to accommodate non-University emergency personnel. Variations in building configuration may require that alternative assignments be devised with the University GIS Coordinator.

When the fifth character used in a room number on the mezzanine floor is “M” then the elevator mezzanine floor button shall use “M”.

When the fifth character used in a room number on the mezzanine floor is “U” then the elevator mezzanine floor button shall use “U”.

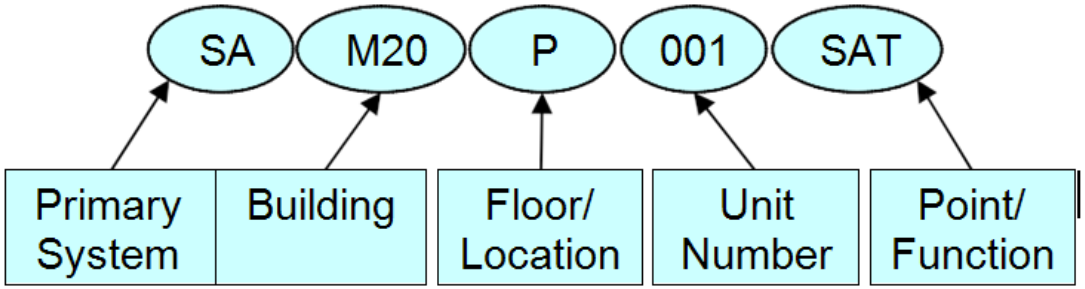
D. Equipment Identification Numbering

1. All points in the Building Automation System (BAS) are given a unique name that provides both identification and functional description. This guide is intended to help with understanding the naming convention. Due to the complexity of some systems, some names will require more information than this guide provides. This must be addressed on a case by case basis working with the University PM. It is expected that this equipment numbering system will be incorporated into drawing production.

2. The naming convention is in the format:

SYSTEM-BUILDING-FLOOR-UNIT-POINT

EXAMPLE: SA-M20-P-001-SAT



Primary System — This is the main function of the system – Supply Air, Chilled Water, etc. The abbreviations for this part of the name are listed on the System page.

Building — This is the Building Number designation.

Floor/Location — This indicates which floor in the building the system is located.

Numbered Floors (Expressed with two numbers; 01, 02, etc)

B=Basement,
G=Ground
P=Penthouse
R=Roof or Penthouse

IN = Intersitial (RC-1)
VI = Vivarium (RC-1)
M=Mezzanine/Intersitial (RC-2)
00=Vivarium (RC-2)
U=Below Vivarium (RC-2)

Unit Number This indicates the unit number among like units on the same floor. Expressed with 3 numbers; 001, 002, etc.

Point/Function This part of the name indicates the actual function within the system. The abbreviations for this part of thename are listed on the Point page. In the Siemens system, points in a Terminal Equipment Controller (TEC) or Variable Frequency Drive (VFD) are considered to be Sub Points.

SYSTEM ABBREVIATIONS

Name	Definition
ATS	Automatic Transfer Switch
AW	Animal water
BB	Baseboard radiation
BCU	Vaporized hydrogen peroxide BCU
BLR	Boiler
BTU	Energy in BTUs
CA	Air Compressor
CAV	Constant volume terminal box
CH	Chilled water
CR	Cage wash rack
CSG	Clean steam generator
CU	Cooling unit with water cooled condenser
CUH	Cabinet unit heater
CW	Condenser water
DET	Detergent (chemical)
DH	Domestic hot water
DIW	De-ionized water
DRN	Drain system
DW	Domestic cold water
EAV	Exhaust air terminal box
EDI	Electric distribution, mostly breaker status
EMG	Emergency generator
EMS	Emergency shower
EVR	Environmental room
FCU	Fan coil unit
FE	Fume hood exhaust fan
FHF	Fume hood HEPA fan
FSS	Fire safety system

Name	Definition
HUM	Stand alone humidifier
HX	Heat exchanger & heating water system
ITW	Index tunnel wash
KW	Kilowatt
KWH	Kilowatt hours
LGT	Lighting circuit
MA	Medical air compressor
MG	Medical gas
OAH	Outside air humidity
OAT	Outside air temperature
PMP	Miscellaneous pumps
RA	Return air fan
RDH	Floor radiation heating system
RHC	Re-Heat coil
SA	Supply air fan
SAV	Supply air valve terminal box
SE	Sewage ejector
SEC	Security
SFW	Soft water
SM	Steam system
SNW	Snow melt system
SP	Sump pump
STZ	Sterilizer
TE	Toilet exhaust
TF	Transfer fan
UH	Unit heater
VAC	Vacuum system
VAV	Variable air volume terminal box

FVA	Fan powered variable volume terminal box
GE	General exhaust fan
HC	Heat chamber
HR	Heat recovery system
VHP	Vaporized hydrogen peroxide sterilization system
WD	Washer dryer
WDW	Motorized window
WL	Water detection
WM	Water meter on irrigation water

POINT ABBREVIATIONS A-L

Name	Definition
ALM	Alarm contact
BD#	Exhaust fan bypass damper
BSP	Building static pressure
BSS	Building static setpoint
CCPM	Cooling coil pump
CCV	Chilled water valve
CCV-LK	Chilled water valve lockout temperature
CHWR	Chilled water return temperature
CHWRV	CHW return valve
CHWS	Chilled water supply temperature
CMP#	Compressor #
CO2	CO2 level
COM	Communication status
COM-HWR	Common HWR
CWS	Condenser water supply temperature
DID	Discharge isolation damper
DMP	Misc damper
DMP-OVR	Misc damper control override
DP	Differential pressure
DPS	Dew point setpoint
DPT	Dew point temperature
EAD	Exhaust air damper
ENA	Enable - Indicates BAS command to system

Name	Definition
FFLT	Final filter static pressure
FLOW-TOT	Total steam flow
FLR	Slab floor temperature
FLT	Filter static pressure
FLT	Filter pressure alarm switch
FLW	Flow
FP	Fire pump status
HALM	High level alarm
HCPM	Heating coil pump
HCT	Heating coil discharge air temperature
HCV	Heating coil valve , Preheat valve
HCV-LK	Heating coil valve , Preheat valve lockout temperature
HI-PRS	Pressure in high pressure steam line
HRE	Exhaust air temperature after the heat recovery coil
HRR	Heat recovery return water temp from the supply air coils
HRS	Heat recovery supply water temp to the supply air coils
HRT	Heat recovery supply air discharge air temperature
HRV	Heat recovery valve
HSPA	High static pressure alarm
HSS	Heating water supply setpoint
HV1	Steam 1/3 valve
HV2	Steam 2/3 valve
HWR	HW return temperature

ESP	Exhaust static pressure
EVC	Direct evaporative cooling conductivity
EVCV	Direct evaporative cooling dissolved solids purge valve
EVD	Exhaust fan VFD
EVP	Exhaust air velocity pressure
EVPM	Direct evaporative cooling spray pump
EVPV	Direct evaporative cooling drain and fill valves
EVT	Direct evaporative cooling discharge air temp
EXT	Exterior lights
FALM	Flood alarm
FAN	Constant volume fan output and status
FBD	Face and bypass dampers
HWS	HW supply temperature
HWV	HW valve
ID	Intake damper
IID	Intake isolation damper
IV	Isolation valve
IV-CLS	Isolation valve verified closed
IV-OPN	Isolation valve verified open
LALM	Low level alarm
LO-PRS	Pressure in low pressure steam line
LPALM	Low pressure alarm
LSPA	Low static pressure alarm
LTD	Low temperature detector

POINT ABBREVIATIONS M-Z

Name	Definition
MAD	Mixed air dampers
MAM	Minimum mixed air damper setpoint
MAO	Mixed air virtual loop output
MAS	Mixed air setpoint
MAT	Mixed air temperature
MED-PRS	Pressure in medium pressure steam line
MLS	Economizer switchover temperature
MOAD	Minimum outside air damper
MODE	Operating archetype
NHM	Night heat mode
OAC	Panel reference to outside air temperature
OAD	Outside air damper
OALM	Oxygen alarm contact
OCC-SW	Occupancy override switch
OCF	Outside air flow in CFM
RHRM	Room relative humidity
RHS	Supply air humidity
RHSS	Supply humidity setpoint
RHV	Humidity valve
RMS	Room temperature setpoint
RMT	Room temperature
RSD	Return duct smoke detector
RSP	Return air static pressure
RSS	Return air static pressure setpoint
SAE	Supply air enthalpy
SAS	Supply air setpoint
SAT	Supply air temperature
SCF	Supply air flow
SCF	Supply air flow
SD	Smoke detector

OXY	Oxygen sensor
OXY#	Oxygen sensor number #
PALM	Pump alarm
PC	Pumped condensate temperature
PC-FLW	Pumped condensate flow
PHO	Photo cell
PM	Pump
PM#	Pump number #
PMPD	Drainage pump
PMSE	Sewage Ejector pump
PRI-CHWB	Chilled water bypass temperature
PRI-CHWR	Chilled water return temperature to the CUP
PRI-CHWS	Chilled water supply temperature from the CUP
PRI-DP	Primary differential temperature
PVD	Pump VFD
PVD-ENA	VFD pump enable
PVD-RT	Pump Runtime
PVD-SPD	Pump VFD speed
RCF	Return air flow
RHR	Return air humidity
SDP	Supply air dew point
SEC-CDP	Average secondary loop differential pressure
SEC-CHWR	Secondary chilled water return temperature
SEC-CHWS	Secondary chilled water supply temperature
SEC-CHWSP	Secondary chilled water supply temperature setpoint
SEC-DP	Secondary differential pressure
SEQ	Fan, pump, etc. sequence
SHV	Secondary heating valve
SPD	VFD speed
SSD	Supply air smoke detector
SSP	Supply air static pressure
SSS	Supply air static pressure setpoint
STA	Status
SVD	Supply fan VFD
SVD-ENA	SA VFD on/off output and status
SVD-SPD	Supply fan speed output to VFD
SYS	System enable
SYS1A	PMCS zoning point
VLV	Misc. valve
VP	Vacuum pump status

Abbreviations for Assets Not Identified in the UCD BAS

Abbreviation	Description
AC	Air Curtain
AD	Automatic Door
AHU	Air Handing Unit
AIR	Air Dryer
ARF	Animal Rack Fans
AS	Air Separator
ASCHW	Air Separator Chilled Water
ASHW	Air Separator Heating Water
AUT	Autoclave
BFP	Backflow Preventer
BLPHN	Blue Phone
CAR	Control Air Regulator
CF	Morgue Condensing Unit
CH-__-FLW	Chilled Water Meter
CHW-__-PM	Chilled Water Pump
CHWSV-__-IV	Chilled Water Supply Isolation Valve
CLGT	Conference Room Lights
COM	Air Compressor
CPN	Coupon Rack
CRAC	CRAC Unit
CTF	Cooling Tower Fan
DC	Dust Collecting Unit
DCH-__-IV	Domestic Cold Water Isolation Valve
DDOR	Dark Room Door
DEF	Drum Exhaust Fan
DF	Drinking Fountain
DH	Dehumidifier
DHW-__-PM	Domestic Hot Water Pump
DHX	Domestic Heat Exchanger
DIFF	Domestic Water Final Filters

Abbreviation	Description
DOM-__-IV	Domestic Water Isolation Valve
DOR	Door
DRN-___-FL	Floor Drain
DSH	Dishwasher
DWH	Domestic Water Heater
DX	Data Aire Unit
DXC	DX Chiller
ECRT	Electric Cart
ED	Exit Door
EL	Exit Light
ELV	Elevator
EMS	Emergency Shower
EVP	Evaporative Cooler
EW	Eye Wash
EXT	Expansion Tank
FCP	Fire Control Panel
FIL	Filter Housing
FX	Fire Extinguisher
GD	Garbage Disposal
GLY	Glycol Feed Tank
HC_HUMWAND	Humidifier Wand
HDC	Hydraulic Door Closer
HP	Heat Pump
HRC	Freezer
HTW-__-PM	Heating Water Pump
HWRV-__-IV	Heating Water Return Isolation Valve
ICE	Ice Machine
IR	Infrared Heater
LGT	Dark Room Light
LM	Liquid Mover

Abbreviation	Description
LVL	Loading Dock Leveler
MA	Medical Air Compressor
MLAV	Men's Lavatory
MV	Mixing Valve Station
MWC	Men's Water Closet
OL	Oil Interceptor
PC	Chiller
PHS	Radiator
PNL	Electrical Panel
PTAC	PTAC Unit
RAV	Return Air Valve
RDH-__-PM	Radian Heat Pump
RDOR	Overhead Loading Dock Roll Up Door
RO-__-PM	R.O. Water Pump
SAV	Supply Air Volume Box
SPLIT	Split System
SPLIT_HP	Split System Heat Pump
TC	Trash Compactor
TP-__-DTP	Drain Trap Primer
TUB	Bath Tub
UH	Unit Heater
ULAV	Unisex Restroom Lavatory
URN	Urinal
UWC	Unisex Water Closet
VAC-__-PM	Vacuum Pump
VEH	Vehicle
VIDOR	Vivarium Door
WH	Water Heater
WLAV	Women's Lavatory
WWC	Women's Water Closet

E. Project Numbering Meetings and Review

1. Scope

   The Purpose of this section is to provide a framework for meetings and review of the Project Numbering sections:

   Room Numbering

   Door Numbering

   Elevator Numbering

   There shall be three meetings and reviews:

   Introductory Meeting

   Initial Review Meeting

   Primary Review Meeting

   Each meeting shall address all three Numbering Standards sections.

2. Meetings and review are scheduled through the University PM

3. Meetings and review shall include, but are not limited to:

   a. Introductory meeting:

When:	This meeting is to occur during the schematic design phase before any attempt is made by the AE to number the building.
Agenda:	If the subject is an existing building, the GIS Coordinator will determine if it is to be assigned a new numbering format or maintain the established one. If the subject building is new, the AE is given the building designator. Issues will be addressed such as locating the main building entrance, direction of pedestrian traffic in the building; application of zones, and patterns of number ascension shall be determined.
Expectations:	The AE shall bring hard copies of floor plans for study. The AE shall be required to replicate any noted plans and submit them back to the GIS Coordinator.

   b. Initial Review Meeting:

When:	This meeting is to occur during the design development phase after the AE's room numbering approach is added to the floor plans.
Agenda:	The GIS Coordinator will review the AE's room numbering, elevator numbering and door numbering approach, and direct the AE to make any changes required. The corridor, lobby, stair, and vestibule numbering schemes shall be defined.

Expectations: The AE shall provide to the GIS Coordinator floor plans of the numbering approach for study. They shall be supplied in advance of this meeting, no less than six workdays for hard copies or no less than seven workdays for electronic media. The AE shall be required to replicate any noted plans and submit them back to the GIS Coordinator.

c. Primary Review Meeting

When: This meeting is to occur during the design development phase before the AE reaches a point of drawing development where room numbering changes adversely effect schedules and drawing production.

Agenda: The GIS Coordinator will review the AE's room numbering, elevator numbering and door numbering approach, and direct the Architect/Engineer to make any changes required.

Expectations: The AE shall provide to the GIS Coordinator floor plans of the numbering approach for study, they shall be supplied in advance of this meeting, no less than six workdays for hard copies or no less than seven workdays for electronic media. The AE shall be required to replicate any noted plans and submit them back to the GIS Coordinator.

1.7 Drawing Production Standards

1 It is the intention of University to have the AE produce drawings as per the following Production Standards and deliver drawings in two formats.

a. Electronic media will be per latest AE contract supplemental conditions.

b. If the AE uses any supplemental application such as a 3D modeling program, any as-built files or review files must be delivered in a format that is viewable and editable in the above version of AutoCAD without the use of that supplemental application.

2. No project requiring drawings shall be closed without acceptance of drawings by University PM.

1. Before drawing production begins or fees are proposed for projects on existing buildings the AE and the University PM shall meet with the GIS Coordinator. The Graphic Database is a collection of floor plans of the campus buildings in AutoCAD format. The Graphic Database may provide existing plans of a space to be remodeled, reducing investigation time and drafting time, therefore reducing consulting fees and drawing production schedules.

2. AutoCAD Drawing File Requirements

a. Once project drawings are accepted by University PM, they will be filed unaltered for future reference. The drawings will also be assimilated into the Graphic Database to maintain current floor plans. To do this the following requirements must be followed.

1) The AE shall:

a) Follow the American Institute of Architects Layering Convention.

b) Provide written descriptions of any layers that are added.

c) Only add layers if an existing layer cannot be used.

d) Not use custom fonts. All fonts must be standard AutoCAD fonts.

e) Minimize drawing byte size by seeing that lines are not stacked or multi-segmented where one line will suffice.

f) On the table of contents for a drawing set, each drawing listed shall include its AutoCAD file name. This includes all drawings by a Sub-Consultant.

2) When provided with backgrounds, the AE shall never alter columns, column grid, or any feature that is not specifically included in the Scope of Work to be altered.

3) All support files required for drawing completion such as “X-REF’s” must be delivered with the primary drawing files. For Record Drawing files any x-ref file shall be bound to its respective drawing file using the

bind type insert. This includes all drawings by Sub-Consultant. The AE shall include the name and phone number of a contact person who is able to answer questions regarding the AutoCAD drawing files.

4) At the point of delivery of Construction Drawings and again as record Drawings, include any database or spreadsheet files (such as Excel) that are produced for the purpose of adding to an AutoCAD file. This includes all drawings by a Sub-Consultant.

5) The AE shall confirm all critical room dimensions.

3. Drawing Content

a. Title Block

1) The AE shall use its own title block. In addition to information the title block normally contains, it shall include the following:

a) Project Title: Project description including the name of the building or area where project is located.

b) Drawing Title: Description of specific drawing sheets, including contents.

c) Designed by: AE assigned to project.

d) Drawn by: Draftsperson.

e) Drawing Date:

f) Scale:

g) Sheet No.:

h) File Title: AutoCAD drawing file name (******.dwg).

b. General Drawing Content

1) Information documents shall include:

a) Design CFM air quantity for each grille, register, diffuser, and fume hood, and show direction of airflow.

b) Equipment shall be identified (See “Equipment Identification Number Standards”).

2) Drawings are diagrammatic in nature; however the producer of the drawing shall avoid drawing items in manner that might promote construction or maintenance conflicts, such as showing piping crossing an access panel to a VAV box.