Contents:

1.1 University Departments and Divisions
1.2 University Design Management Administration
1.3 University Design Review Board Procedure
1.4 University Minor Project Design Review Procedure
1.5 University Planning and Technical Review Procedure
1.6 Project Numbering Standards
1.7 Drawing Production Standards
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:


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 irrigation
   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
1) 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.

A. Introduction

1. This Procedure is intended to be used in conjunction with Part 2 of this Manual, Physical Campus Planning and Design Guidelines (Guidelines). This Procedure is administered by the University Campus Architect. The following information is for staff, and planning and design consultants as a reference guide during the project design or modification process for both campus building and site development projects.

2. All capital construction projects are reviewed to determine their compliance with the Master Plan and the Guidelines.

3. Prior to commencement of any physical work, such Plans and Specifications necessary to demonstrate conformance of the project with the Guidelines must be submitted to the University of Colorado Design Review Board (DRB) for review and approval. The DRB serves all University of Colorado campuses and reports to the University President.

B. General

1. Scope

The submittal of plans and securing of the approvals pertains to all exterior components of the building architecture and site development including, but not limited to:

a. General campus character;

b. Building siting, massing, expansion, materials selection, and architectural character;

c. Campus landscaping, plant selection, and location;

d. Vehicular circulation routes, patterns, materials, parking lot locations, and parking ratios;

e. Pedestrian circulation routes, patterns, amenities and materials;

f. Campus site furnishing, lighting and signage design, location, and quantity; and

g. General campus infrastructure systems.

2. Meetings

The DRB generally meets bi-monthly.

3. Procedures

There are procedures involving deadlines, submittal and review of documents that all building and site development projects must follow. Formal presentations to the DRB are mandatory.

The DRB process is to assist with the preparation and approval of plans for any specific site where development is being considered. Certain improvements do not require all review phases. The DRB determines which steps are necessary for an individual project.
The DRB may also require additional information or studies as they determine needed or useful.

For most campus projects, a four-step review process is required for the DRB’s approval.

Step 1: “Pre-Design”; Step 2: “Conceptual Design”; Step 3: “Schematic Design”; and Step 4: “Design Development.” Six (6) sets of Plans and Specifications and other related documentation must be submitted, at each step in the process, to the University Resident Architect at least ten (10) days prior to the scheduled meeting.

C. Pre Design

1. The pre-design phase is intended to be an informal discussion between members of the DRB and University representatives (or Children’s Hospital Colorado or University of Colorado Hospital), and the consultant to review project issues, concerns, and expectations. Presentation materials are at the discretion of the project team; however, drawings, photographs and contextual information should be provided so that the DRB has sufficient comprehension to understand the extent of the project.

D. Conceptual Design

1. For any new building project, addition or site improvement, the review of the conceptual design by the DRB will be concerned with the overall development of the site in the context of the existing campus and the environs as defined by the Master Plan. The submittal is to include a “Micro-Master Plan” (MMP) which is an urban design study of the project in the context of the campus environs. At a minimum, the limits of the MMP are to include a study of the spaces and structures surrounding the site. It is to include the extent of all principle open spaces that are part of the site context, whether such spaces are existing, proposed by this project, or proposed by the Master Plan. The MMP is to explore site layout, building form and placement, expansion, general architectural treatment and associated site development, and specific site parameters such as orientation, pedestrian and vehicular circulation, parking and service requirements, emergency access, utilities, setbacks, and jurisdictional restrictions, if any.

2. The most appropriate time to discuss variances and interpretations of the Campus Planning and Design Guidelines is during the Conceptual Design meeting.

3. For review of conceptual building and site development, the following information must be submitted:
   a. Brief narrative statement of the project’s intent, anticipated schedule, and general programmatic requirements.
   b. General plan of existing campus at a scale of 1” = 200’ and plan of the existing site and context showing topographical data, roads, easements and significant features including existing trees three (3) inches in caliper and larger.
   c. Site analysis diagram including critical environmental influences and surrounding conditions and known Plans.
   d. Conceptual planning studies and preliminary site MMP development (at a scale not smaller than one 1” = 50”, indicating:
      1) Adjacent buildings.
2) Building location and critical dimensions (including setbacks) and potential expansion zones.

3) Drives, parking locations and sidewalks.

4) Approximate finished floor elevations.

5) Site topography.

6) Projected number of students, faculty, staff and visitors.

7) Amount and location of employee and visitor parking.

8) Truck loading and service vehicle access.

9) Emergency vehicle and Fire Department access, if applicable.

e. Massing model including the physical context and topography.

f. General building and site materials being considered.

g. Conceptual elevation studies indicating general architectural character.

h. Principal site section(s) showing existing developed condition.

i. General landscape concept with existing significant vegetation and site features.

E. Schematic Design

1. This step consists of a review meeting with the DRB that continues to address building and site development planning, architectural character, relationships to surrounding context, and other specific site parameters. This presentation will also include a further review of the MMP for the site development placed in the context of the campus and Master Plan.

2. Submittal requirements for this Step include:

   a. Micro-Master Plan (at a scale not smaller than one 1” = 50”, indicating:

      1) Proposed and future building(s) location and build-out phasing scenarios.

      2) Drives, parking locations and sidewalks.

      3) Zones for potential building expansions.

      4) Finished floor elevations.

      5) Grading plan.

      6) Truck loading and service vehicle docks and access routes.

      7) Emergency vehicle and Fire Department access route, if applicable.

      8) Landscape design.
b. Site plan (at a scale not smaller than on 1” = 20’).

c. Grading and drainage plan.

d. Building floor plans.

e. Building elevations (all sides).

f. Sections (at a scale not smaller than one 1” = 20’).

g. Building and site materials including color samples.

h. Architectural Model, if required.

i. Roof plan.

j. Critical exterior architectural details.

k. Landscape plan (including type, size, and location of existing plant material to be retained and proposed plant material).

l. Amount and location of all site accessories such as bicycle racks, benches, trash receptacles, signs, flag poles, etc.

F. Design Development

1. This final step consists of a review with the DRB that addresses, in sufficient detail, the intent of all architectural and structural design, site work and landscape, including materials and finishes.

2. Submittal requirements for this step include:

   a. Revised MMP Plan incorporating the DRB Schematic Design comments.

   b. Phasing plan.

   c. Site plan and sections

   d. Grading and drainage plan.

   e. Building floor plans.

   f. Building elevations (all sides)

   g. Architectural model, if required.

   h. Roof plan showing all visible roof equipment such as mechanical and satellite dishes.

   i. Architectural details.

   j. Landscape plan.

   k. Site lighting plan.

   l. Site accessories package and location plan.
m. Signage plan with details, if applicable.

n. Building and site materials types and color samples.
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's 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 looks 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 looks 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-A99-003  Shall read:  A99-3

   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 the name 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

<table>
<thead>
<tr>
<th>Name</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATS</td>
<td>Automatic Transfer Switch</td>
</tr>
<tr>
<td>AW</td>
<td>Animal water</td>
</tr>
<tr>
<td>BB</td>
<td>Baseboard radiation</td>
</tr>
<tr>
<td>BCU</td>
<td>Vaporized hydrogen peroxide BCU</td>
</tr>
<tr>
<td>BLR</td>
<td>Boiler</td>
</tr>
<tr>
<td>BTU</td>
<td>Energy in BTUs</td>
</tr>
<tr>
<td>CA</td>
<td>Air Compressor</td>
</tr>
<tr>
<td>CAV</td>
<td>Constant volume terminal box</td>
</tr>
<tr>
<td>CH</td>
<td>Chilled water</td>
</tr>
<tr>
<td>CR</td>
<td>Cage wash rack</td>
</tr>
<tr>
<td>CSG</td>
<td>Clean steam generator</td>
</tr>
<tr>
<td>CU</td>
<td>Cooling unit with water cooled condenser</td>
</tr>
<tr>
<td>CUH</td>
<td>Cabinet unit heater</td>
</tr>
<tr>
<td>CW</td>
<td>Condenser water</td>
</tr>
<tr>
<td>DET</td>
<td>Detergent (chemical)</td>
</tr>
<tr>
<td>DH</td>
<td>Domestic hot water</td>
</tr>
<tr>
<td>DIW</td>
<td>De-ionized water</td>
</tr>
<tr>
<td>DRN</td>
<td>Drain system</td>
</tr>
<tr>
<td>DW</td>
<td>Domestic cold water</td>
</tr>
<tr>
<td>EAV</td>
<td>Exhaust air terminal box</td>
</tr>
<tr>
<td>EDI</td>
<td>Electric distribution, mostly breaker status</td>
</tr>
<tr>
<td>EMG</td>
<td>Emergency generator</td>
</tr>
<tr>
<td>EMS</td>
<td>Emergency shower</td>
</tr>
<tr>
<td>EVR</td>
<td>Environmental room</td>
</tr>
<tr>
<td>FCU</td>
<td>Fan coil unit</td>
</tr>
<tr>
<td>FE</td>
<td>Fume hood exhaust fan</td>
</tr>
<tr>
<td>FHF</td>
<td>Fume hood HEPA fan</td>
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<tr>
<td>FSS</td>
<td>Fire safety system</td>
</tr>
<tr>
<td>HUM</td>
<td>Stand alone humidifier</td>
</tr>
<tr>
<td>HX</td>
<td>Heat exchanger &amp; heating water system</td>
</tr>
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<td>ITW</td>
<td>Index tunnel wash</td>
</tr>
<tr>
<td>KW</td>
<td>Kilowatt</td>
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<td>Kilowatt hours</td>
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<td>LGT</td>
<td>Lighting circuit</td>
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<td>MA</td>
<td>Medical air compressor</td>
</tr>
<tr>
<td>MG</td>
<td>Medical gas</td>
</tr>
<tr>
<td>OAH</td>
<td>Outside air humidity</td>
</tr>
<tr>
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<td>Outside air temperature</td>
</tr>
<tr>
<td>PMP</td>
<td>Miscellaneous pumps</td>
</tr>
<tr>
<td>RA</td>
<td>Return air fan</td>
</tr>
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<td>RDH</td>
<td>Floor radiation heating system</td>
</tr>
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<td>RHC</td>
<td>Re-Heat coil</td>
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<td>SA</td>
<td>Supply air fan</td>
</tr>
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<td>SAV</td>
<td>Supply air valve terminal box</td>
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<tr>
<td>SE</td>
<td>Sewage ejector</td>
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<td>SEC</td>
<td>Security</td>
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<tr>
<td>SFW</td>
<td>Soft water</td>
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<td>SM</td>
<td>Steam system</td>
</tr>
<tr>
<td>SNW</td>
<td>Snow melt system</td>
</tr>
<tr>
<td>SP</td>
<td>Sump pump</td>
</tr>
<tr>
<td>STZ</td>
<td>Sterilizer</td>
</tr>
<tr>
<td>TE</td>
<td>Toilet exhaust</td>
</tr>
<tr>
<td>TF</td>
<td>Transfer fan</td>
</tr>
<tr>
<td>UH</td>
<td>Unit heater</td>
</tr>
<tr>
<td>VAC</td>
<td>Vacuum system</td>
</tr>
<tr>
<td>VAV</td>
<td>Variable air volume terminal box</td>
</tr>
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<td>Name</td>
<td>Definition</td>
</tr>
<tr>
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</tr>
<tr>
<td>ALM</td>
<td>Alarm contact</td>
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<tr>
<td>BD#</td>
<td>Exhaust fan bypass damper</td>
</tr>
<tr>
<td>BSP</td>
<td>Building static pressure</td>
</tr>
<tr>
<td>BSS</td>
<td>Building static setpoint</td>
</tr>
<tr>
<td>CCPM</td>
<td>Cooling coil pump</td>
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<tr>
<td>CCV</td>
<td>Chilled water valve</td>
</tr>
<tr>
<td>CCV-LK</td>
<td>Chilled water valve lockout temperature</td>
</tr>
<tr>
<td>CHWR</td>
<td>Chilled water return temperature</td>
</tr>
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<td>CHWRV</td>
<td>CHW return valve</td>
</tr>
<tr>
<td>CHWS</td>
<td>Chilled water supply temperature</td>
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<td>CMP#</td>
<td>Compressor #</td>
</tr>
<tr>
<td>CO2</td>
<td>CO2 level</td>
</tr>
<tr>
<td>COM</td>
<td>Communication status</td>
</tr>
<tr>
<td>COM-HWR</td>
<td>Common HWR</td>
</tr>
<tr>
<td>CWS</td>
<td>Condenser water supply temperature</td>
</tr>
<tr>
<td>DID</td>
<td>Discharge isolation damper</td>
</tr>
<tr>
<td>DMP</td>
<td>Misc damper</td>
</tr>
<tr>
<td>DMP-OVR</td>
<td>Misc damper control override</td>
</tr>
<tr>
<td>DP</td>
<td>Differential pressure</td>
</tr>
<tr>
<td>DPS</td>
<td>Dew point setpoint</td>
</tr>
<tr>
<td>DPT</td>
<td>Dew point temperature</td>
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<tr>
<td>EAD</td>
<td>Exhaust air damper</td>
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<tr>
<td>ENA</td>
<td>Enable - Indicates BAS command to system</td>
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<table>
<thead>
<tr>
<th>Name</th>
<th>Definition</th>
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<tr>
<td>FFLT</td>
<td>Final filter static pressure</td>
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<td>FLOW-TOT</td>
<td>Total steam flow</td>
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<td>FLR</td>
<td>Slab floor temperature</td>
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<td>FLT</td>
<td>Filter static pressure</td>
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<td>FLT</td>
<td>Filter pressure alarm switch</td>
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<td>FLW</td>
<td>Flow</td>
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<td>FP</td>
<td>Fire pump status</td>
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<td>HALM</td>
<td>High level alarm</td>
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<td>HCPM</td>
<td>Heating coil pump</td>
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<tr>
<td>HCT</td>
<td>Heating coil discharge air temperature</td>
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<tr>
<td>HCV</td>
<td>Heating coil valve, Preheat valve</td>
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<tr>
<td>HCV-LK</td>
<td>Heating coil valve, Preheat valve lockout temperature</td>
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<tr>
<td>HI-PRS</td>
<td>Pressure in high pressure steam line</td>
</tr>
<tr>
<td>HRE</td>
<td>Exhaust air temperature after the heat recovery coil</td>
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<td>HRR</td>
<td>Heat recovery return water temp from the supply air coils</td>
</tr>
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<td>HRS</td>
<td>Heat recovery supply water temp to the supply air coils</td>
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<td>HRT</td>
<td>Heat recovery supply air discharge air temperature</td>
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<td>HSPA</td>
<td>High static pressure alarm</td>
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<td>HSS</td>
<td>Heating water supply setpoint</td>
</tr>
<tr>
<td>HV1</td>
<td>Steam 1/3 valve</td>
</tr>
<tr>
<td>HV2</td>
<td>Steam 2/3 valve</td>
</tr>
<tr>
<td>HWR</td>
<td>HW return temperature</td>
</tr>
</tbody>
</table>
### POINT ABBREVIATIONS M-Z

<table>
<thead>
<tr>
<th>Name</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAD</td>
<td>Mixed air dampers</td>
</tr>
<tr>
<td>MAM</td>
<td>Minimum mixed air damper setpoint</td>
</tr>
<tr>
<td>MAO</td>
<td>Mixed air virtual loop output</td>
</tr>
<tr>
<td>MAS</td>
<td>Mixed air setpoint</td>
</tr>
<tr>
<td>MAT</td>
<td>Mixed air temperature</td>
</tr>
<tr>
<td>MED-PRS</td>
<td>Pressure in medium pressure steam line</td>
</tr>
<tr>
<td>MLS</td>
<td>Economizer switchover temperature</td>
</tr>
<tr>
<td>MOAD</td>
<td>Minimum outside air damper</td>
</tr>
<tr>
<td>MODE</td>
<td>Operating archetype</td>
</tr>
<tr>
<td>NHM</td>
<td>Night heat mode</td>
</tr>
<tr>
<td>OAC</td>
<td>Panel reference to outside air temperature</td>
</tr>
<tr>
<td>OAD</td>
<td>Outside air damper</td>
</tr>
<tr>
<td>OALM</td>
<td>Oxygen alarm contact</td>
</tr>
<tr>
<td>OCC-SW</td>
<td>Occupancy override switch</td>
</tr>
<tr>
<td>OCF</td>
<td>Outside air flow in CFM</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>RHRM</td>
<td>Room relative humidity</td>
</tr>
<tr>
<td>RHS</td>
<td>Supply air humidity</td>
</tr>
<tr>
<td>RHSS</td>
<td>Supply humidity setpoint</td>
</tr>
<tr>
<td>RHV</td>
<td>Humidity valve</td>
</tr>
<tr>
<td>RMS</td>
<td>Room temperature setpoint</td>
</tr>
<tr>
<td>RMT</td>
<td>Room temperature</td>
</tr>
<tr>
<td>RSD</td>
<td>Return duct smoke detector</td>
</tr>
<tr>
<td>RSP</td>
<td>Return air static pressure</td>
</tr>
<tr>
<td>RSS</td>
<td>Return air static pressure setpoint</td>
</tr>
<tr>
<td>SAE</td>
<td>Supply air enthalpy</td>
</tr>
<tr>
<td>SAS</td>
<td>Supply air setpoint</td>
</tr>
<tr>
<td>SAT</td>
<td>Supply air temperature</td>
</tr>
<tr>
<td>SCF</td>
<td>Supply air flow</td>
</tr>
<tr>
<td>SD</td>
<td>Smoke detector</td>
</tr>
</tbody>
</table>
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
VLD   Misc. valve
VP    Vacuum pump status
### Abbreviations for Assets Not Identified in the UCD BAS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
<th>Abbreviation</th>
<th>Description</th>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC</td>
<td>Air Curtain</td>
<td>DOM-___/IV</td>
<td>Domestic Water Isolation Valve</td>
<td>LVL</td>
<td>Loading Dock Leveler</td>
</tr>
<tr>
<td>AD</td>
<td>Automatic Door</td>
<td>DOR</td>
<td>Door</td>
<td>MA</td>
<td>Medical Air Compressor</td>
</tr>
<tr>
<td>AHU</td>
<td>Air Handling Unit</td>
<td>DRN-___/FL</td>
<td>Floor Drain</td>
<td>MLAV</td>
<td>Men's Lavatory</td>
</tr>
<tr>
<td>AIR</td>
<td>Air Dryer</td>
<td>DSH</td>
<td>Dishwasher</td>
<td>MV</td>
<td>Mixing Valve Station</td>
</tr>
<tr>
<td>ARF</td>
<td>Animal Rack Fans</td>
<td>DWH</td>
<td>Domestic Water Heater</td>
<td>MWC</td>
<td>Men's Water Closet</td>
</tr>
<tr>
<td>AS</td>
<td>Air Separator</td>
<td>DX</td>
<td>Data Aire Unit</td>
<td>OL</td>
<td>Oil Interceptor</td>
</tr>
<tr>
<td>ASCHW</td>
<td>Air Separator Chilled Water</td>
<td>DXC</td>
<td>DX Chiller</td>
<td>PC</td>
<td>Chiller</td>
</tr>
<tr>
<td>ASHW</td>
<td>Air Separator Heating Water</td>
<td>ECRT</td>
<td>Electric Cart</td>
<td>PHS</td>
<td>Radiator</td>
</tr>
<tr>
<td>AUT</td>
<td>Autoclave</td>
<td>ED</td>
<td>Exit Door</td>
<td>PNL</td>
<td>Electrical Panel</td>
</tr>
<tr>
<td>BFP</td>
<td>Backflow Preventer</td>
<td>EL</td>
<td>Exit Light</td>
<td>PTAC</td>
<td>PTAC Unit</td>
</tr>
<tr>
<td>BLPHN</td>
<td>Blue Phone</td>
<td>ELV</td>
<td>Elevator</td>
<td>RAV</td>
<td>Return Air Valve</td>
</tr>
<tr>
<td>CAR</td>
<td>Control Air Regulator</td>
<td>EMS</td>
<td>Emergency Shower</td>
<td>RDH___/PM</td>
<td>Radian Heat Pump</td>
</tr>
<tr>
<td>CF</td>
<td>Morgue Condensing Unit</td>
<td>EVP</td>
<td>Evaporative Cooler</td>
<td>RDOR</td>
<td>Overhead Loading Dock Roll Up Door</td>
</tr>
<tr>
<td>CH-___/FLW</td>
<td>Chilled Water Meter</td>
<td>EW</td>
<td>Eye Wash</td>
<td>RO___/PM</td>
<td>R.O. Water Pump</td>
</tr>
<tr>
<td>CHW-___/PM</td>
<td>Chilled Water Pump</td>
<td>EXT</td>
<td>Expansion Tank</td>
<td>SAV</td>
<td>Supply Air Volume Box</td>
</tr>
<tr>
<td>CHWSV-___/IV</td>
<td>Chilled Water Supply Isolation Valve</td>
<td>FCP</td>
<td>Fire Control Panel</td>
<td>SPLIT</td>
<td>Split System</td>
</tr>
<tr>
<td>CLGT</td>
<td>Conference Room Lights</td>
<td>FIL</td>
<td>Filter Housing</td>
<td>SPLIT_HP</td>
<td>Split System Heat Pump</td>
</tr>
<tr>
<td>COM</td>
<td>Air Compressor</td>
<td>FX</td>
<td>Fire Extinguisher</td>
<td>TC</td>
<td>Trash Compactor</td>
</tr>
<tr>
<td>CPN</td>
<td>Coupon Rack</td>
<td>GD</td>
<td>Garbage Disposal</td>
<td>TP___/DTP</td>
<td>Drain Trap Primer</td>
</tr>
<tr>
<td>CRAC</td>
<td>CRAC Unit</td>
<td>GLY</td>
<td>Glycol Feed Tank</td>
<td>TUB</td>
<td>Bath Tub</td>
</tr>
<tr>
<td>CTF</td>
<td>Cooling Tower Fan</td>
<td>HC_HUMWAND</td>
<td>Humidifier Wand</td>
<td>UH</td>
<td>Unit Heater</td>
</tr>
<tr>
<td>DC</td>
<td>Dust Collecting Unit</td>
<td>HDC</td>
<td>Hydraulic Door Closer</td>
<td>ULAV</td>
<td>Unisex Restroom Lavatory</td>
</tr>
<tr>
<td>DCH-___/IV</td>
<td>Domestic Cold Water Isolation Valve</td>
<td>HP</td>
<td>Heat Pump</td>
<td>URN</td>
<td>Urinal</td>
</tr>
<tr>
<td>DDOR</td>
<td>Dark Room Door</td>
<td>HRC</td>
<td>Freezer</td>
<td>UWC</td>
<td>Unisex Water Closet</td>
</tr>
<tr>
<td>DEF</td>
<td>Drum Exhaust Fan</td>
<td>HTW-___/PM</td>
<td>Heating Water Pump</td>
<td>VAC___/PM</td>
<td>Vacuum Pump</td>
</tr>
<tr>
<td>DF</td>
<td>Drinking Fountain</td>
<td>HWRV-___/IV</td>
<td>Heating Water Return Isolation Valve</td>
<td>VEH</td>
<td>Vehicle</td>
</tr>
<tr>
<td>DH</td>
<td>Dehumidifier</td>
<td>ICE</td>
<td>Ice Machine</td>
<td>VIDOR</td>
<td>Vivarium Door</td>
</tr>
<tr>
<td>DHW-___/PM</td>
<td>Domestic Hot Water Pump</td>
<td>IR</td>
<td>Infrared Heater</td>
<td>WH</td>
<td>Water Heater</td>
</tr>
<tr>
<td>DHH</td>
<td>Domestic Heat Exchanger</td>
<td>LGT</td>
<td>Dark Room Light</td>
<td>WLAV</td>
<td>Women's Lavatory</td>
</tr>
<tr>
<td>DIFF</td>
<td>Domestic Water Final Filters</td>
<td>LM</td>
<td>Liquid Mover</td>
<td>WWC</td>
<td>Women's Water Closet</td>
</tr>
</tbody>
</table>
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:

<table>
<thead>
<tr>
<th>When:</th>
<th>This meeting is to occur during the schematic design phase before any attempt is made by the AE to number the building.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agenda:</td>
<td>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.</td>
</tr>
<tr>
<td>Expectations:</td>
<td>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.</td>
</tr>
</tbody>
</table>

b. Initial Review Meeting:

<table>
<thead>
<tr>
<th>When:</th>
<th>This meeting is to occur during the design development phase after the AE’s room numbering approach is added to the floor plans.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agenda:</td>
<td>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.</td>
</tr>
</tbody>
</table>
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.