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Section A – General Project Standards

A0000 – Introduction and Principles

Introduction

1. The University of Colorado-Boulder (UCB) is a premier institution of higher education and is internationally renowned for teaching and research excellence. The campus and facilities play an integral role in the University's academic successes. The Facility Standards support the University's academic and research missions by building, renovating and maintaining the campus environment to provide elite facilities and opportunities for faculty, students, staff, neighbors and visitors. Designs are expected to enhance the campus and campus facilities by considering overall building and landscape aesthetics, economy, durability, flexibility and enhancement of campus academic performance.

2. The University of Colorado-Boulder Planning, Design, and Construction (UCB PDC) entity exists to provide the University with the leadership required to implement the Planning, Design, Construction and Stewardship goals of the campus in response to the needs and desires of University constituents. The Facility Standards provide a road map for UCB PDC Staff, consultants and contractors on how to implement the design and construction processes. Not all standards are applicable to every campus project, and the consultant is expected to confirm with UCB which portions of the standard are appropriate to their contracted work.

3. The Facility Standards are intended to be used as a performance-based guideline rather than prescriptive specification. The consultant and contractor is expected to employ the highest degree of professional skill and expertise to design and develop creative, flexible, and innovative solutions

that successfully exemplify the performance goals of the Facility Standards. UCB encourages design and engineering excellence for their facilities to support the UCB's reputation as a leader in promoting state-of-the-art design and engineering solutions. Additional information can be found in **Facility Standard A0020**.

4. Proposed solutions are expected to meet the Facility Standards at a minimum, but consultants are encouraged to present solutions that may exceed the minimum requirements, in effort create the best value for the project. For any size project, analyze proposed solutions by performing a value-based decision-making methodology in conjunction with UCB to evaluate and make design decisions that produce the maximum advantages for the best value. Tasks expected to be performed during the value-based decision-making process include, but are not limited to the following:
    a. Function analysis
    b. Cost modeling and analysis
    c. Project modeling (quality, square footage, risk)
    d. Life-cycle costing
    e. Creative brainstorming techniques to expand alternative ideas and concepts.
    f. Structured evaluation methods using benefit/cost comparisons.

5. The consultant is expected to create economical, sustainable, easily maintained and efficiently operating facilities. The Facility Standards document the UCB PDC culture of Stewardship, Sustainability and a Life-Cycle understanding of Facility Planning, Design, Construction and Maintenance. UCB facilities are expected to showcase the campus as a leader in innovation in the practice of sustainable building practices by designing facilities that conserve both natural and campus resources. Campus facilities are expected to maintain viability over an extended period of time without significant burden or impact to the UCB campus and broader community.

6. The Facility Standards also summarize information that is unique to UCB facilities, infrastructure, and campus landscape. UCB has constructed many campus projects and has years of experience in operating and maintaining campus buildings long after the original construction has been completed. This experience has been documented and provides the elemental base for the requirements and concepts are covered in the Facility Standards. Prescriptive and/or proprietary requirements identified in the Facility Standards are indicated where deemed necessary to provide for consistency in material, aesthetics, systems and operations. Where the Facility Standards does not identify a standard for a particular system or building component, the consultant and/or contractor is expected to implement industry standards and best practices while maintaining code compliance.

7. Every project will have particular requirements that need to be addressed to provide a fully integrated design within the existing campus context. A fully integrated design will consider the impacts of construction, operations and maintenance to the long-term success of the campus facility. Designs are expected to be contextual that are appropriate for the use of the campus and maintain, respect, and complement the project's location and architectural heritage on campus.

Use of the Facility Standards

1. For each project, UCB will assign a Project Manager. All project documentation and coordination efforts of the consultant or contractor will be channeled through the designated UCB Project Manager (PM). In many of the Facility Standards, the consultant is instructed to obtain approval from the UCB Campus Architect, UCB Mechanical Engineer, UCB Electrical Engineer, UCB Civil Engineer or other appropriate UCB entities. It is required that all processes for approval or otherwise be channeled through the UCB Project Manager.

2. Refer questions and comments regarding the content and use of the Facility Standards to the UCB Project Manager. If the consultant wishes to deviate from information provided within the Facility Standards, deviations must be coordinated through the appropriate UCB Architectural, Engineering, or Facilities Management entity. The consultant may submit a formal request to the UCB Project Manager, and the UCB Project Manager will assist the consultant with the approval process and issue written direction prior to implementation.

3. The information in the Facility Standards does not relieve the consultant or contractor of any professional or contractual responsibility. The consultant will inform the UCB Project Manager if there are discrepancies between the standards and the contractual agreement. If information contained within the Facility Standards conflicts with the agreement between UCB and the consultant or contractor, the terms of the contractual agreement shall govern.

4. It is the responsibility of the consultant or contractor to determine code compliance of project. Refer to **Facility Standard A0020** for more code-related information.

5. The Facility Standards provide requirements for both design consultants and contractors. The consultants and contractors are responsible for compliance with all sections of the standards and will familiarize themselves with the standards and all appendices prior to design and construction of UCB projects.

6. As a long-standing and historic public institution, the campus has many types of systems present on campus. Consultants and contractors are expected to provide a fully integrated design solution in compliance with the Facility Standards in coordination with the existing campus built environment. Special consideration is expected when designing new facilities or systems to seamlessly integrate and coordinate with existing buildings, systems, and infrastructure. Typical industry standards or methods may not always fit within the context of the existing facilities.

7. The Facility Standards are not intended to be used as a specification, contract document or in place of contract documents. The consultant or contractor is expected to adopt and incorporate the intent of the Facility Standards into their applicable specifications, drawings, contract documents and project documentation.

Standard Updates

1. The Facility Standards will be periodically updated based on reviews performed throughout the year by UCB. UCB staff, consultants and contractors are encouraged to provide feedback and recommendations on improving the Facility Standards.

2. The consultant and contractor are required to follow the current Facility Standards as publicly posted at the start of the contracted work. In the event the Facility Standards are updated during later design phases and during construction, the consultant and contractor are expected to incorporate the updated Facility Standards whenever practical or directed by the UCB Project Manager.

A0010 – Project Development Process

Introduction

This section outlines the procedures that are expected of capital construction projects at the University of Colorado-Boulder (UCB).

The overarching goal of this section delineate the working relationship, responsibilities, and operational details between UCB, consultants, and contractors involved in the planning, design, construction and maintenance projects on the campus.

Confirm project development processes with the UCB Project Manager prior to commencing design. Depending on the size and scope of the project, phases and deliverables may be condensed or combined for project efficiency. Not all phases identified in the capital project delivery sequence may be applicable for small project delivery.

Relationship with the University

1. <u>UCB Review:</u>
    a. UCB will provide architectural and engineering review throughout the project.
    b. In the latter part of each project phase, project documentation will be distributed for formal review and comment by appropriate UCB entities.
    c. Account for a mandatory ten business day review period for all projects for UCB review. Review period starts after documents are submitted and distributed.
    d. Following UCB review, comments will be distributed to the consultant.
    e. The consultant will respond to the comments within ten business days.
        1) For more complex projects, an in-person meeting with reviewers to discuss documentation and comments may be required.
        2) Confirm an approach with UCB to resolve all comments prior to advancing to the next project development phase.
    f. Resolve all comments prior to completion of the next development phase.
    g. Depending on the size and scope of the project, the review process may include the UCB Board of Regents, UCB Design Review Board, or the Colorado Commission for Higher Education.

2. Consultant's Role:
    a. Work with the assigned UCB Project Manager to develop design solutions that comply with the program scope, budget, and schedule as included in the program documents. The design documents and project requirements will be evaluated throughout the project's development and construction.
    b. Work with the UCB Project Manager to define the project deliverables at each stage of design.
    c. Work with the UCB Project Manager to determine appropriate user groups and campus entities that will have influence on the design of the project. Interface with these campus entities are further described in **Facility Standard A0022**.
        1) Coordinate with UCB Project Manager to schedule meetings with user groups and UCB Campus Entities.
        2) Coordinate designs with any user group and campus entities requirements as identified by the UCB Project Manager.
    d. Meet all defined review and authorization procedures at each phase of the project and provide the required deliverables at each stage and the conclusion of the project.
        1) Refer to **Facility Standard A0023** for CAD submittal requirements.
    e. If applicable to the project, obtain the most recent version of the UCB Design Review Board Summary of Project Review Process for a detailed list of submittal requirements. Work with the UCB Project Manager to determine which phase the consultant will be expected to present to the Design Review Board.
    f. Work with UCB to obtain all necessary forms, procedures and requirements to comply with the State of Colorado Office of the State Architect State Buildings Program.

3. Contractor's Role:
    a. Coordinate with UCB for applicable contract documents and project expectations.
    b. Coordinate required inspections and utility outages with UCB.
    c. Project Schedules:
        1) Account for general workings of campus. These include but are not limited to semester calendars, class schedules, campus events and other campus operations.
        2) Confirm project schedules with the UCB Project Manager to coordinate with quiet times, access requirements, delivery schedules, and other campus operations which may affect schedule.

Capital Project Development Sequence:

Phase 0 – Idea

1. Definition:
    a. Statement of intent by UCB Project Initiator.

Phase 1 – Feasibility/Scoping

1.1. Definition:

a. Preliminary investigation and scoping of the project including programmatic vision and goals, along with building and site program components.

1.2. Phase Goals:

a. Establish a framework of understanding issues related to the project proposal and how the project fits within the broader campus, institution and community.

Phase 2 – Programming

2.1. Definition:

a. Based on the framework established in the Feasibility/Scoping phase, continued investigation and scoping of the project to refine the programmatic vision and goals, along with building and site program components.
b. Detailed investigation involving primary research (both market and technical) including product and project definition, justification, and the proposed development plan.

2.2. Phase Goals:

a. Establish an understanding leading to a business case justification of the project and provide clear needs assessment prior to preliminary design studies.
b. Build consensus and campus agreement as to scope of project, cost and timeline of the project.
c. Delineate scope of work, including site and infrastructure requirements, and programmatic requirements for consultants and UCB.
d. Begin commissioning processes.
e. During this phase, a design consultant may be hired to assist in programming phase deliverables.
f. A general contractor may be hired during this phase based on project delivery method.

Phase 3 – Concept Design

3.1. Definition and Phase Goals:

a. The Concept Design phase identifies what problems the project will solve and the important aspects of the design approach and solution to the problems. Arguably the most creative stage of project development, Concept Design is the time that the framework of the solution is developed. It is the initial big picture or macro design phase where sweeping ideas and a multitude of various possibilities are considered.

3.2. Phase Goals:

a. Explore the opportunity of innovation and establish the foundation of project success through a shared vision.

3.3. UCB Review:

a. The goal of the Concept Design Review is to test ideas and gain input from a wide range of project influencers. Reviewers should express both opportunities and constraints based on their areas of expertise. Review comments at Concept Design should focus on understanding of project expectations and informing future detailed decisions.
b. The Concept Design submittal will describe or at least imply a direction for the design solution in sufficient detail to elicit meaningful feedback from subject matter experts and direct cost opinions, but should not be considered a project solution.

c. Present and revise, as needed, site integrated massing and architectural design concepts based on the completed contextual analysis and/or project program. UCB will verify conformance with the contextual analysis and/or project program.
d. Multiple Concept Design alternatives may be required; confirm the scope of design alternatives expected for the project with the UCB Project Manager.
e. Concept Design Presentations may include:
    1) Sketches, Diagrams and Images
    2) Massing Models
    3) Character Sketches
    4) Narratives

Phase 4 – Schematic Design

4.1. Definition:
    a. Design phase to refine the Concept Design and continue project development prior to Board of Regents review and approval.
4.2. UCB will determine project delivery method (e.g. Design/Bid/Build; CMGC; Design/Build).

Phase 5A – Design Development (DD)

5A.1. Definition:
    a. The DD submission may be described as an incomplete Contract Documents set.
5A.2. Phase Goals:
    a. Identify and make every design decision in every applicable discipline necessary to complete the project. It is desirable to communicate these decisions in graphic or written form as part of the submission, although it is recognized that due to the inherent nature of the submission this is not always possible. The design team should be able to refer to notes, calculations, or other materials that have been prepared or obtained previously to answer any question about the intended design.
5A.3. UCB Review:
    a. The DD design documents in this phase will be reviewed for adherence to the following:
        1) Previously established Program and Schematic Design submissions.
        2) Previous decisions and directions given.
        3) UCB Facility Standards
        4) Code review
    b. In addition, the DD design documents will be critiqued for conflicts, concerns, coordination issues, and opportunities for improvement.

Phase 5B – Construction Documents (CD)

5B.1. Definition:
    a. Construction documents developed leading to bidding, procurement and construction.
5B.2. UCB Review:
    a. Final review of scope (including site implications), budget and schedule before construction commences.
    b. Submit complete sets to UCB for review. Refer to **Facility Standard A0023** for UCB CAD submittal requirements.

5B.3. Construction Documentation Deliverables:
   a. Provide complete final drawings and specifications, prepared and checked in accordance with the Facility Standards, fully describing all parts of the project.

Phase 6 – Construction
6.1. Coordinate with UCB Project Manager for contract administration and quality assurance procedures.

Phase 7 – Delivery
7.1. Complete commissioning procedures ensure systems operate as intended.
7.2. Occupant move-in and training.

A0020 – General Design Requirements

Introduction
This section describes general concepts and requirements when designing a new facility, renovation, or addition at the University of Colorado-Boulder (UCB). This section is intended to provide overall guidance to supplement other more detailed Facility Standards. Comply with the requirements listed below and verify application at all stages of the design and construction process.

UCB Requirements
1. Reference Documents:
   a. Refer to the website of the UCB Campus Architect for additional architectural guidelines.
   b. If applicable to the project, obtain the appropriate Campus Master Plan from the UCB Project Manager.

2. Project Delivery Consistency, Quality Control and Quality Assurance:
   a. Project designs, design alternatives, and details evolve over the course of the project's development. Perform the following reviews below as part of an ongoing design and construction review process:
      1) **Compliance Consistency:**
         i. Perform with both design and construction teams to ensure the designs are consistent with those that were evaluated within the Feasibility Assessment, Project Charter and other Record of Decision documents.
      2) **Constructability Strategy:**
         i. Perform with both design and construction teams to ensure that the designs are constructible.
      3) **Occupant Relocation:**
         i. Verify occupant spatial needs and occupant transition planning.

      4) **Quality Control:**
         i. Ensure the technical accuracy, completeness, and correctness of all architectural, landscape architectural, and engineering designs and details.

ii. Ensure cross-coordination of all disciplines and with the specifications.

5) **Quality Assurance:**
   i. Ensure the project deliverables meet the established performance and technical requirements of the project, adhere to the Facility Standards, conserves both natural and cultural resources, is appropriate for the location, and that the campus design aesthetic is maintained.
6) **Risk Analysis:**
   i. Identify and assess factors that may jeopardize the success of a project or achieving any project goals. Define preventive measures to reduce the probability of these factors from occurring and identify countermeasures to successfully deal with these constraints if or when they develop.
7) **Scope and Budget Consistency:**
   i. Ensure the designs are consistent with the approved Project Program, Cost Estimates, and available project funds.

3. Integration of Facilities into the Campus Environment:
   a. Major facilities will be placed only in locations identified in the approved Campus Master Plan or appropriate planning document as determined by University of Colorado-Boulder Planning, Design, and Construction (UCB PDC).
   b. Consider the need for protection of view corridors and take advantage of factors such as existing service areas, landscaping, and other campus features.
   c. Design the configuration of facilities to minimize impacts on campus resources and situate the facility to stimulate the use of alternative transportation systems, bicycle routes, and pedestrian walkways.

4. Flexibility in Future Renovation and Expansion:
   a. A building designed for a specific department may not always be used by that department. The designer is expected to provide solutions that consider potential future uses that are not identified in the current project scope.
   b. While there are no hard and fast criteria set forth on how to design a building so that it can later be used by a completely unknown department, there are certain design strategies that have been employed on campus which make this later transition somewhat easier. Examples of these design strategies:
      1) Uniform window placement of reasonable sized windows
      2) Reasonable ceiling heights
      3) Ample electrical facilities
      4) Easily adapted heating and cooling systems
      5) Adequate mechanical rooms
      6) Ample stairways
   c. Designs of flexible spaces, systems and possibility of future needs (i.e. building expansion, new equipment) shall be identified early in the design process, and presented to the UCB Project Manager and applicable UCB professional staff.

d. UCB may require layouts showing expansion possibilities in addition to current project scope. When determined that the likelihood of expansion exists, provisions should be made to accomplish interconnections, upgrading and installation of mechanical systems.
e. Create human-centered designs that locate critical operational components in easily discoverable locations.

5. Resiliency:
   a. Work with UCB to identify programmed areas that will require resilient systems.
   b. Where applicable, consolidate and co-locate areas requiring resiliency in the same general area of the building.
   c. The intent of UCB is to avoid having resilient systems stretched throughout facilities when areas requiring resiliency could be in close proximity.

6. Code Requirements:
   a. UCB functions as their own Authority Having Jurisdiction (AHJ).
      1) The design consultant, contractor or any construction team member are not to engage City of Boulder municipality without written approval from UCB or without UCB representation.
   b. Obtain current UCB Fire Marshal Code Checklist.
   c. As applicable to the project, provide a list of chemicals or gases that are expected to be stored in the facility. This list is used to determine occupancy type, structure, envelope and fire/life-safety planning, and needs to be considered early in the design phase.
   d. Adopted Codes and Code Compliance:
      1) Applicable building codes and code compliance procedures are set forth by the State Building Programs (SBP) through the Colorado Office of the State Architect.
         i. Colorado Model Electric Ready and Solar Ready Code has been adopted for projects meeting or exceeding 50% of the current replacement value of the building.
      2) The design consultant is expected to determine current adopted codes and code compliance procedures set forth by the SBP for UCB projects prior to commencing design.
      3) UCB Review/Code Compliance Objectives:
         i. Enhance the level of compliance with codes.
         ii. Provide clear direction for the design team throughout the design process.
         iii. Use in answering questions raised during the construction phase.
         iv. A secondary objective of the code review is to provide adequate information, on file, for future reference during future alterations and renovations.
      4) The Facility Standards may include references to codes or regulatory requirements that may conflict with current SBP adopted codes or other Federal requirements.
         i. The Facility Standards are not intended to supersede local or national codes and standards.
         ii. The consultant or contractor is expected to make recommendations to UCB to achieve both code compliance and the intent of the Facility Standards.

5) In the case of renovation, the renovated project area and systems are expected to meet current code and comply with current UCB Facility Standards unless approved otherwise by UCB.

7. Energy and Sustainability:
    a. Performance criteria for the exterior envelope is provided in the Owner's Project Requirements (OPR) document.
    b. UCB facilities are subject to the High-Performance Certification Program (HPCP) as defined by the Office of the State Architect (OSA). Review requirements with UCB and coordinate the HPCP with additional UCB performance requirements.
    c. Although an individual section is not provided within the Facility Standards; sustainability is integrated into the entire design and engineering processes at UCB. The intended UCB approach to sustainability is identified throughout the Facility Standards in the individual sections. It is the consultant's responsibility to review the individual sections to produce an integrated approach to the project.
    d. UCB is dedicated to the principle of conserving energy. Consultants must design new buildings and remodel existing buildings to make the most efficient use of building materials and energy sources available.
        1) Provide an energy analysis to UCB for review. Show the estimated use of energy for the facility.
        2) In the design of the HVAC and electrical systems, give consideration to building utilization by planning for conservation of energy during summer and winter vacations and for other periods of minimum occupancy.
        3) Consider if separate systems are necessary by reviewing the daily needs of each area of the building, (i.e. research laboratories, spaces for animals, and other spaces which might require 24 hours/day operation must be serviced by systems separate from classroom/office systems which may require only 8 hours/day operation).
    e. Present the project's capability of incorporating alternative sources of energy to UCB.
    f. Based on project size and scope, a sustainability consultant may be a required sub-consultant. The sustainability consultant is expected to evaluate multiple building enclosure options to evaluate Energy Use Intensity (EUI).
    g. A major priority of the University is balancing initial construction costs with long-term maintenance costs.
        1) Based on the scope of the project, the consultant may be required to provide life-cycle cost (total cost of ownership) analysis as determined by UCB.

8. New or Innovative Design:
    a. UCB encourages designers to introduce new and innovative designs, techniques, materials, and building systems. However, UCB does not want to become a "testing center" for new practices and will still require proven designs and systems.
    b. Identify materials, components and systems that are unique or have unproven records of performance early in the project schedule to give ample time to UCB to review.
    c. UCB maintains the right to determine whether new products and assemblies are acceptable for incorporation into project. Changes to the design may be required for unproven systems.

9. Product Specification:
    a. Review applicable Facility Standards for UCB preferences or product requirements.

1) Specified products are required to meet the performance criteria set forth in each of the individual Facility Standards sections unless UCB-required products are identified.
2) Where indicated, 'Reference Products' are products that UCB has had successful installations in the past. Alternate proposed products will be measured against these reference products, and may be accepted or denied upon UCB review.
3) Where indicated, 'Required Products' are products that UCB requires for effective integration within the existing campus built environment for ease of maintenance and campus uniformity both aesthetically and operationally.

b. If a proposed product requires hazardous material disposal requirements, review information for alternative safer materials for UCB. Compare the performance expectations for each product.
c. Confirm if any sole source purchasing agreements are applicable to the project with the UCB Project Manager.
d. Unless a sole source justification is approved in writing by UCB Procurement Officer, design consultants and contractors are required to provide a minimum three potential manufacturers for any specified product.
    1) Notify UCB Project Manager if three manufacturers do not provide products that meet the Facility Standards.
e. Coordinate design with manufacturer's installation requirements to provide complete system.
f. For each type of product specified, include technical data and tested physical and performance properties.
g. VOC's:
    1) When applicable, provide documentation from the product manufacturer that identifies if the VOC and chemical component content complies with applicable State and Federal regulations.
h. Asbestos:
    1) Ensure all specified materials used do not contain asbestos.
    2) UCB may require consultant and contractor to submit manufacturer's certified product data indicating specified products are 100% asbestos-free.

10. <u>Manufacturer's Warranty:</u>
    a. All products are expected to have warranties that meet or exceed industry standard warranty; confirm desired warranty with UCB.
    b. When specifying products, compare manufacturer's warranties and life-cycle costs to make recommendation to UCB on selection of product/system.
    c. Identify installation requirements and procedures to achieve UCB desired warranty.
    d. Provide recommendation to UCB when it would be beneficial to obtain extended or special warranties for specified products/systems.
        1) Consider the extensive documentation required to maintain the warranty, and whether an extended warranty will provide anticipated coverage.

11. Installer Experience:
    a. As a general rule, the installer of any system or product must have a minimum of three years' experience installing the specified system or product of which they are or are requesting to be contracted.

12. Mock-Up Requirements:
    a. Confirm project-specific mock-up requirements with UCB Project Manager during the Design Development phase. The size and type of mock-up is typically determined based on the scope and complexity of the project.

13. Building Material Selection/Owner's Stock:
    a. Because UCB does not typically maintain stock of building materials and still expects to efficiently maintain their facilities, the consultant is expected to consider and select materials that are readily available or produced within the region.
    b. Confirm requirements for building stock with UCB Project Manager.
        1) The contractor is expected to make available any extra materials to UCB, however, UCB maintains the right to collect or reject extra materials.
    c. If material stock is requested by UCB, the General Contractor will coordinate stock materials with as-built finish schedules.
    d. If UCB does not retain the extra materials provided, the contractor is expected to dispose of the materials as required by UCB Recycling and Solid Waste Operations.

14. Waste Minimization in Design and Construction:
    a. UCB Recycling and Solid Waste Operations has their own specific standards and requirements when working on campus. Refer to **Facility Standard A0022** for information on how to interface with UCB Recycling and Solid Waste Operations.
    b. Work with UCB Recycling and Solid Waste Operations to develop concepts and implementation strategies during design and construction that will help reduce waste and promote recycling.

A0021 – Space and Building Requirements

Introduction

This section includes requirements when planning and programming for facilities at the University of Colorado-Boulder (UCB).

The overall intent of UCB is to provide consistent and efficient building layout throughout all facilities whether new construction or renovation.

UCB Requirements

1. Building Area Measurement:
    a. Refer to **Appendix A0021.1** for UCB Building Area Measurement System (BAMS) requirements.

2. Building Room Numbering:
    a. Refer to **Appendix A0021.2** for UCB Building Room Numbering Systems (BuRNS) requirements.

3. Building Entries:
    a. It is the intent that all entries into new facilities be accessible. Refer to **Facility Standards A0040, B3011, and B3012** for additional information.

4. Public Circulation/Lobbies:
    a. Carefully calculate allocated square footage areas for circulation and lobby areas when designing classroom buildings. Circulation areas need to account for occupants of all adjacent classrooms entering the circulation spaces at the same time.

5. Classroom Design:
    a. Refer to **Appendix A0021.3** for UCB classroom design requirements.

6. Toilet Room Design:
    a. Consider location of toilet room in relation to offices, classrooms, or other spaces that may be negatively affected by the noise generated by electric hand dryers.
    b. Locate floor drains in locations to avoid conflict with toilet partition support pilaster.
    c. Plan room size to accommodate 2-3 large waste cans. Confirm waste can size with UCB.

7. Lactation/Wellness Rooms:
    a. Provide room approximately 100 sq. ft. with thoughts for future conversion to another use. Provide a sink, refrigerator and a chair for the occupant. The door hardware should provide a privacy locking function and occupancy notification.

8. Mechanical & Electrical Rooms:
    a. Work with UCB Mechanical Engineer and UCB Electrical Engineer to conform size of mechanical or electrical rooms. The size of these rooms are typically sized as a *percentage* of overall facility size based on type of facility. **Table A0021.1** identifies the minimum floor space, floor-to-ceiling height and ceiling-to-structure height requirements for mechanical and electrical spaces for various building types as classified based on maximum airflow rates.

Table A0021.1

	Space Type		
	Offices/Classroom Buildings	Teaching Lab Buildings/ Auditoriums	Research Lab Buildings/ Dining Centers/ Cleanrooms
Maximum Air Flow Rate (Total Max. Air Flow Rates through all AHU's in bldg.)	<1.0 CFM/GSF	1.0-1.5 CFM/GSF	>1.5 CFM/GSF
Mech Space (% of GSF)	10%	12.5%	15%
Electrical Space (% of GSF)	1%	1.5%	2%
Room Height Floor to Structure	12'-0"	14'-0"	16'-0"
Plenum Height Ceiling to Structure	3'-0"	4'-0"	5'-0"

b. Locate floor drains in locations to avoid conflict with housekeeping pads. Carefully coordinate size of selected equipment with size of pads.
c. Waterproof the mechanical rooms under AHU's on the mechanical pads and turn the waterproofing up the face of surrounding walls.

9. Access Services Panel Room:
    a. Provide minimum 5'x5' access control panel room, secured and separate from other equipment rooms. Stack panels rooms on each floor.
10. IT Room:
    a. Coordinate space requirements and specialty electrical and mechanical equipment selection with the UCB Office of Information Technology (OIT). Locate the main IT room on lower level floor. Provide an IT room on each floor, stacked. Locate the IT room away from major mechanical and electrical rooms due to interference concerns. Refer to **Facility Standard A0022** for additional information on how to interface with UCB OIT.

11. Laboratory Facilities:
    a. Confirm space requirements with UCB Environmental Health and Safety (EH&S).
    b. Laboratory facilities may require a hazardous waste storage area included within the building, especially buildings located off of the main campus.
    c. Provide office areas and/or break rooms outside of the laboratory to allow adequate space for workstations and for the consumption of food and drink in compliance with UCB Food and Drink Policies. Provide access to office areas and break rooms off of public corridors.
    d. Additional design requirements for laboratories are found in **Facility Standards F1010** and **F1020**.

12. Emergency Water Management Equipment:
    a. Clearly identify locations within the building where emergency water management equipment is stored.

13. Custodial Workstations, Custodial Storage and Equipment Storage Rooms:
    a. Confirm quantity and locations with UCB for each of the different room types.
    b. Each room type has slightly different room requirements which are listed below.
    c. All rooms are dedicated spaces. Do not place pumps, motor/fan assemblies, water valves, HVAC equipment, electrical panels, telephone switch boxes or other extraneous equipment in room.
    d. Provide 4' doors when room is expected to accommodate pallet movement.
    e. Where partition walls are not concrete or CMU, provide Fiber-Reinforced Plastic panels for water resistance.
    f. Provide non-slip flooring, quarry tile or sealed concrete floor finish.
    g. Protect light fixtures with wire mesh.
    h. Verify proper room ventilation requirements.
        1) Provide door with transfer grille to allow air flow through door into space.

14. Custodial Workstations:
    a. Quantity and Location:
        1) Provide a custodial work station on each floor of a multi-level facility accessed from a public corridor.
        2) If the building level square footage exceeds 20,000 ft^2, provide second Custodial Workstation on the level.
        3) Locate near the facility restrooms but not within restrooms, laboratories, or any other space.

    b. Size and Configuration:
        1) Provide minimum 35 ft^2; Provide 5'x7' or 6'x6' dimensions.
        2) Provide 3'-6" entry door, located to the side of the room.
        3) Door swing must open outward from room, or provide additional 7 ft^2.
    c. Services:
        1) Provide minimum one 110-volt double outlet located 3' - 4' above finish floor.
        2) Provide custodial slop sink:
            i. Mouth of tap should have external threading to allow for easy attachment of hoses and/or chemical mixing machines.
            ii. Minimum 10" high stainless steel walls
            iii. Stainless steel splashguards mounted to room walls adjacent to sink
            iv. Locate sink in corner of room adjacent to entry door.
        3) Provide a floor drain in addition to the sink drain using one of the following methods:
            i. Pit drain with grated cover surrounding the slop sink. (Preferred)
            ii. Floor drain located in close proximity to sink, not in center of room.

d. Accessories:
    1) Heavy-duty, wall-mounted adjustable shelving should be installed min. 12 sq. ft., 12" deep, location and arrangement dependent on size and configuration of work station.
    2) Provide (2) lockers for personal storage.
    3) Provide coat hooks on back-side of door for hanging personal belongings.
    4) Mop Rack:
        i. Provide (2) wall mounted mop hooks above the slop sink.
        ii. Provide at least (5) other mop hooks in room.

15. Custodial Storage and Supply Room:
    a. Locate centrally within the facility.
    b. Provide 15'x20' room dimensions.
    c. Provide 36-48 ft^2 total shelf space and a mop rack.

16. Custodial Equipment Room:
    a. Quantity and Location:
        1) If building square footage exceeds 45,000 ft^2, provide equipment and supply storage room located in close proximity to loading dock.
        2) Locate near the building service entrance for deliveries and easily accessible to elevators for equipment and supply distribution throughout the facility.
    b. Size and Configuration:
        1) Provide minimum 64 ft^2.
        2) Door swing must open outward from room or provide additional 7 ft^2.
        3) Provide 4' doors when needed to accommodate pallet movement.
        4) Provide 36-48 ft^2 total shelf space.

    c. Services:
        1) Provide minimum (3) 110-volt double outlets located 3-4' above finish floor.
        2) Provide floor drain in center of room.
        3) Provide adequate HVAC systems for supply rooms near loading docks.

17. Integrated Pest Management:
    a. Birds:
        1) Dealing with birds is a major issue on campus.
        2) Present strategies for dealing with overhead architectural elements in a manner that eliminates perches for birds.
        3) Present strategies for dealing with protection of mechanical equipment.
        4) Protect air supply and exhaust louvers.
            i. Provide bug screen on outside of louvers.
    b. Raccoons and Small Mammals:
        1) Raccoons and other small mammals entering civil infrastructure is a major issue on campus.

2) Refer to **Facility Standard G3030** for information pertaining to designing civil components to keep these animals out of utilities.

18. Typical Room Noise Criteria:
    a. Meet the typical room noise criteria identified in **Table A0021.1** below:

Table A0021.1

Space	Criterion
Computer/Server Rooms	NC-55
Light Maintenance Shops	NC-55
Shop Classrooms	NC-50
Corridors and Public Circulation Areas	NC-45
Laboratories with Fume Hoods	NC-45
Other Laboratories	NC-40
Large Offices	NC-45
Open-Plan Offices	NC-45
Lab Support Spaces	NC-35
Lab Equipment Corridor	NC-35
Private Offices	NC-35
General Classrooms	NC-35
Libraries	NC-30
Executive Offices	NC-30
Large Lecture Rooms	NC-30
Conference Rooms and Auditoriums	NC-25
Sensitive Imaging Suites	NC-25

19. Waste and Recycling:
    a. A top priority at UCB is providing waste and recycling receptacles to maximize recycling and maintain a clean campus environment. Refer to **Facility Standard A0022** for additional information on how to interface with UCB Recycling and Solid Waste Operations.
    b. The design consultant is expected to work with UCB to plan and provide ample space to allow for waste and recycling receptacles throughout both inside facilities and across the exterior campus.
    c. If the required number of waste and recycling receptacles are not located in strategic locations, campus recycling goals and aesthetic landscape expectations may be compromised. Food, wrappers, newspapers, aluminum cans, and other debris will be carelessly scattered and will quickly turn a beautifully landscaped area into an eyesore if waste and recycling receptacles are not identified in the proper locations.
    d. Provide built-in permanent receptacles in outdoor public areas secured to the ground. All exterior waste containers must be co-located with a recycling container. Refer to **Facility Standard G2020** for additional information pertaining to outdoor receptacles and labeling requirements.

e. Provide interior built-in cabinets located throughout the facility as required by UCB Recycling and Solid Waste Operations. Plan for these cabinets during the Schematic Design phase, as there are very specific spatial requirements.
f. "Design for Recycling" for all renovations and new construction. Confirm locations with UCB. General criteria and typical locations listed below:
    1) Easily seen and accessed by the public.
    2) Consider grouping with other site items such as seating, site walls, or lighting columns.
        i. Do not group with plant containers.
    3) Areas that do not impeded paths of egress.
    4) Near entry/exit points of buildings.
    5) Along major circulation routes.
    6) Within main congregation areas.
g. Loading Areas and Outdoor Storage Areas:
    1) Waste and recycling at loading areas and outdoor storage areas also have very specific requirements that need to be confirmed with UCB Recycling and Solid Waste Operations.
    2) Pavements in these areas have specific requirements that are described in detail in **Facility Standard G2010**.
    3) General design criteria listed below:
        i. Provide minimum access to loading area for trucks with a 12' van body, however providing access for trucks with an 18' body is preferred if space is available.
        ii. When dumpsters are located near public areas, shield their visibility using landscaping, site walls, or enclosures.
        iii. Locate space for easy access of building occupants and custodial staff.

20. <u>Loading Docks:</u>
    a. Coordinate loading dock requirements with **Facility Standard G0010**.
    b. For new buildings and additions, provide a narrative of the expected delivery needs for the building or addition. Meet with UCB to discuss distribution services to discuss distribution services and potential loading dock layouts.
        1) Loading docks are preferred but may not be required. Confirm design direction with UCB.
    c. If freight elevator is required and installed in building, locate adjacent to loading dock.
    d. Design:
        1) Investigate whether a rolling sectional garage or coiling doors are required. Man-doors may be acceptable in some instances.
        2) Provide 4'-0" high loading docks for buildings with frequent large deliveries.
            i. Equip docks with dock levelers rather than dock plates.
        3) Minimize grade and alignment changes to facilitate easy navigation by delivery drivers.

A0022 – Interface with Campus Entities

Introduction

This section includes requirements when dealing with a variety of campus entities at the University of Colorado-Boulder (UCB) that may or may not influence the planning and design of the project. Work with the UCB Project Manager to determine which entities will be involved in the planning, design and review of the project. The consultant is expected to meet with the required entities at least once during each phase of design.

Campus Entities

1. Planning, Design, and Construction:
    a. The UCB project team may be made up of multiple user groups who will be involved in the planning and design of the project. Confirm with the UCB Project Manager to confirm user group involvement.

2. UCB Office of Information Technology (OIT):
    a. The goal of the Office of Information Technology (OIT), is to provide the UCB campus with innovative, customer-focused IT support and core IT services. OIT seeks to foster partnership and collaboration with academic, research, and administrative units in order to create a robust, best-in-class IT environment.
    b. OIT involvement is necessary on all projects involving new construction, building additions, off-campus properties, major utility infrastructure, and renovations large and small. These include any projects that impact teaching and learning spaces, voice/data network connectivity, phones, audiovisual installations, and Wi-Fi or other wireless/radio spectrum usage. Even projects that might seem unrelated, or which might merely be adjacent to technology - such as upgrading lighting to LED's in a building, or modifications to chilled water systems - can impact critical IT infrastructure, the learning space technologies present, and more.

3. UCB Recycling and Solid Waste Operations:
    a. Waste diversion and recycling is a very important organized operation at UCB. Consultants and contractors are expected to understand that campus recycling processes affect multiple aspects in design, demolition and construction. Additional requirements are listed in **Facility Standard A0020, A0021, and B0010**.
    b. Meet with UCB to determine recycling and waste management goals for each specific project.
    c. UCB will be involved in the review of the following:
        1) Consultant's designs for compliance with waste minimization practices.
        2) Consultant's plans for integrating recycling containers into the design.
        3) Consultant's plans for use of recycled materials.
        4) Contractor's plans for recovering recyclable or reusable materials.
        5) Contractor's report summarizing waste reduction and recycling utilized during the project.

4. UCB Environmental Health and Safety (EH&S):
    a. The mission of the Environmental Health and Safety Department (EH&S) is to maintain a safe work and learning environment, ensure regulatory compliance, and recognize and control health and safety hazards.
    b. Every project on campus requires an Environmental Compliance Document (ECD) that is issued by EH&S to outline any special hazards associated with the work area and requirements for hazard mitigation (i.e. asbestos and or lead abatement). The ECD also outlines requirements for health and safety of the campus community during the project and requirements for protection of the environment and adherence to campus permits for storm and sanitary waste water.
    c. The International Building Codes and the Facility Standards outline the minimum requirements for construction on campus. However, EH&S often finds items related to special occupancies and operations (i.e. laboratories, shop areas, maker spaces, etc.) are often overlooked in the project design. EH&S must be involved in the design and review of all projects in laboratory and shop spaces.
    d. To help expedite the project design and review process, the EH&S requirements for construction or renovation in laboratory or shop spaces have been outlined in **Facility Standard: Section F10**. Variances from these guidelines require advanced review and approval from EH&S.

    e. Examples of items requiring EH&S involvement include, but are not limited to:
        1) Hazardous exhaust (local or specialty exhaust, fume hoods, etc.)
        2) Chemical storage, use and disposal
        3) Biological safety cabinets
        4) Autoclaves
        5) Life safety (emergency showers, eyewash, emergency exits, etc.)
        6) Specialty equipment (3D printers, laser cutters, x-rays, etc.)
        7) Animal housing areas
        8) Gas monitoring systems (toxic gases, oxygen sensors)

5. UCB Housing and Dining Services (HDS):
    a. Refer to **Facility Standards F2010 and F2020** for additional information pertaining to HDS.

6. UCB Parking and Transportation Services (PTS)
    a. Meet with UCB PTS during the conceptual/planning phase for new buildings that includes new parking lot layouts to confirm parking lot layout, usage layout permit vs. visitor, snow removal, entry/exit, bio swells, deliveries, drainage, dock, fire lanes, landscaping, large sidewalks bumping up to lot and bumper block placement.
    b. Notify UCB PTS Parking Services whenever a campus building's usage changes due to an expansion, remodel, or change of occupancy designation due to new tenants or programs. UCB PTS needs to be notified in order to be equipped to address the building's needs and restructure the parking lots in a way that makes sense for all parties concerned.

c. Include UCB PTS in the design phase of new construction adjacent to parking areas, loading docks, etc.
d. Parking Lot Signage:
    1) To maintain campus consistency, signage for all new lots and docks will be provided by UCB PTS at the project's cost, however, UCB PTS does not provide road signs or fire lane signs.
e. Parking Structures:
    1) When designing a parking structure, include utility pathways for cellular service, Wi-Fi service, and radio or emergency broadcasting signals into the parking structure.
    2) The intent is to ensure the safety of parking structure occupants, and mitigate substantial future costs while fulfilling the UCB PTS mission in providing quality parking services to the campus.

7. Additional UCB Entities:
    a. Confirm with the UCB Project Manager which additional UCB entities the consultant is expected to meet with during the design of the project. Other entities include, but are not limited to the following:
        1) UCB Sustainability Officer
        2) UCB Facilities Management
        3) UCB Maintenance and Operations
        4) UCB Access Services
        5) UCB Outdoor Services
        6) UCB Trades
        7) UCB Custodial Services
        8) UCB Campus Building Services – including Integrated Pest Management (IPM) and Solid Waste and Recycling

A0023 – General CAD/BIM Requirements

Introduction

The overall intent of the university is to have consistent document submittals that are easy to reference in current and future construction projects, and to have simplified CAD standards to increase consultant efficiencies. Confirm project document submittal requirements with the UCB Project Manager.

UCB Requirements

1. Existing UCB Facility CAD Documents:
    a. Contact the UCB CAD Office for all available CAD drawing files, BIM models, and building information at the beginning of each project for reference.
    b. Consultant is required to provide hardware (i.e. flash drives) for downloading digital information.
    c. CAD data is provided for the convenience of the recipient only. This data has been gathered from a variety of sources and it may or may not conform to current CAD standards. The data may be incomplete or may not accurately reflect current facility conditions. CAD data submitted by consultants to the UCB CAD Office must be accurate and must conform to the current CAD standards, even if reference data provided by the UCB CAD Office was inaccurate or did not conform to the standards.
    d. The UCB CAD Office will not research and/or compile the necessary drawings needed for a specific project. It is the responsibility of the consultant or project manager to come to the UCB CAD Office, choose the appropriate information, and obtain copies. The UCB CAD Office will provide assistance by training researchers how to locate the information they are looking for.
    e. Confirm fees associated with downloading data or drawings with the UCB CAD Office prior to performing downloads.
    f. The consultant is encouraged to provide feedback on the content of the existing CAD documents to help the UCB CAD Office understand the current conditions of each project's design and construction process.
    g. Acquisition of Site Map Data: Map data provided by Facilities Management CAD Office is intended for the sole use of the contractor to satisfy obligations to the University of Colorado-Boulder construction contracts. The map information may include copyright Electronic Spatial Data from Boulder County and/or the City of Boulder and may not be copied, duplicated, or redistributed in any way, in whole or in part, without expressed written consent by Boulder County and/or City of Boulder. Agreement of "Electronic Data Limitations and Conditions of Use" must be entered into by and between the University of Colorado-Boulder and consultant prior to release of above mentioned electronic data.

2. Submittal Requirements:
    a. Refer to **Appendix A0023.1** for information pertaining to document submittal.

3. UCB Office of Information Technology (OIT) Submittal Requirements:
    a. UCB OIT requires technology drawings in '.dwg' format throughout all drawing iterations and reviews, and '.pdf' format is not acceptable for CD's.
    b. It is strongly recommended that drawings be done in CAD initially at all project phases (even if it is then converted to another format) so that data and other manipulations can be performed, which is often not feasible in '.pdf' format.
    c. All CD drawing sets need to include the T5 document, which shows jack counts and labeling assignments for all voice/phone/data/Wi-Fi locations.

4. Electronic Signatures/Seals:
    a. Electronic signature/sealing of professional work is required.
    b. The signature/seal must be:
        1) Unique and under the sole control of the person using it.
        2) Capable of verification.
        3) Linked to a document in such a manner that the electronic signature is invalidated if any data in the document are changed.
    c. Obtain FAQ's from the UCB CAD Office pertaining to Electronic Signature requirements.

A0030 – Document Management

UCB Requirements

1. File Formatting, Nomenclature and Submittal:
    a. Work with the UCB Project Manager to obtain current guidelines on file formatting, nomenclature and submittal process. UCB has very specific requirements on how to name files and submit them for review or record.

A0040 – Accessibility

Introduction

This section includes accessibility requirements for projects at the University of Colorado-Boulder (UCB) and apply to the design, documentation and construction of accessible buildings, surrounding sites, and accessible paths of travel. Not all accessibility requirements may be fully identified in this section, as specific standards for individual building components may be described elsewhere.

UCB is committed to the best practices of accessibility in the design, construction, renovation, alteration and repair of facilities for use or occupancy by faculty, academic personnel, students, staff and public.

Design teams are encouraged, but not required, to retain an accessibility consultant to help ensure accessibility compliance is achieved.

UCB Requirements

1. General Design Requirements:
    a. UCB requirements may exceed federal accessibility requirements. If conflicts arise regarding regulatory requirements and UCB standards, develop design/construction solutions that provide for the greater accessibility and usability while continuing to meet regulatory requirements.
    b. Design assemblies and construction details and select materials for walking surfaces that maintain conformance with accessibility regulations and standards over time with little or no maintenance.
    c. Verify adherence to regulations regarding protruding objects for all construction.
    d. Verify adherence to regulations regarding reach ranges where digitally interactive equipment is provided.

2. Accessibility Prioritization:
    a. Coordinate with the UCB Accessibility Officer to identify project requirements relating to the Department of Justice ADA "path of travel" statute, which requires accessibility improvements to existing facilities. All upgrades and improvement will be prioritized as follows:
        1) Accessible entrance
        2) Accessible route to the altered area
        3) At least one accessible restroom for each sex or unisex restroom
        4) Telephones (if applicable)
        5) Drinking fountains (if applicable)

3. Universal Design Principles:
    a. Apply universal design principles whenever possible including the specification of products, the design of facilities and campus landscapes to make campus usable by people of all ages, sizes, and abilities (including disabilities) without the need for special assistance or specialized design. For example, design all entrances in a manner that a person with a disability, a stroller, on crutches or an ambulatory person could all use the same entrance.
    b. Make the distinction between accessible and inaccessible indiscernible in the design of the facility or specification of components of a facility. Consider site arrival, access paths (interior and exterior), functional spaces and shared services, special features, furnishings, millwork, fixtures and appliances, and exhibits and media to facilitate full participation in activities offered at a facility or site.

4. UCB Review:
    a. Accessible Path of Travel Routes:
        1) Identify potential accessible route(s) during the planning phase.
            i. Provide accessible routes from the facility entrance(s) to the public way, which may be to on-site parking lots, sidewalks, and/or plazas, if applicable.

ii. If on-site parking is included in the project scope of work, develop proposed parking layouts at the earliest feasible design phase and determine the accessible route(s) to the nearest building entrance(s) and pedestrian ways.
iii. During construction, maintain public accessibility pathways around the construction site, including providing all necessary temporary construction, detour pathways, etc.

b. Construction Documentation:
   1) Ensure that construction documents clearly identify the project accessibility requirements.
c. Construction Conformance:
   1) UCB will review and test, as applicable, all accessibility pathway constructions and components for conformance with the accessible design as indicated in the construction documents.
   2) Remedial action for items not conforming to accessibility requirements will typically require total removal and replacement of affected work.
   3) UCB, at its sole discretion, may request and consider other options for correcting nonconforming work, taking into consideration the affect that remediation efforts may have on the project construction time, cost, performance and appearance.
d. Renovation/Remodel Projects:
   1) As it pertains to renovation of existing facilities, coordinate with the UCB Accessibility Officer during the planning, programming, and design phases and through the construction phase, as applicable. Produce accessibility review documentation including, but not limited to: plans, diagrams and specifications that show how the new, renovation or alteration project conforms to accessibility requirements.
   2) Recommend appropriate improvements to be integrated into the renovation project based on code and accessibility requirements. Include proposals for reasonable accommodations when accessibility is not practically achievable.

5. Entries, Doors, and Hardware:
   a. Where practical, design all new facility entrances to be accessible and an integral part of the facility accessible pathway.
   b. Automatic door operators are required at all accessible exterior entries.
   c. Refer to **Facility Standards A0020, B3011 and B3012** for additional information.

6. Wayfinding/Signage Requirements:
   a. Ensure compliance of all signage, wayfinding and other communication elements and features with the UCB Campus Wayfinding/Signage Guidelines and Graphics Program. Refer to **Facility Standard A0050** for additional information.

7. Construction and Manufacturing Tolerances:
   a. Employ best design practices to account for commonly-accepted construction tolerances for all accessible components and constructions, including variables which may negatively affect

accessibility compliance. Because ADA compliance requirements are absolute, the following list of items are a source of common non-compliance issues for UCB projects:

1) Ramps and walking surface maximum as-constructed slopes.
2) Guardrail and handrail heights that do not meet minimum and maximum rail heights.

A0050 – Signage and Wayfinding

Introduction

This section includes requirements when designing and specifying signage packages for projects at University of Colorado-Boulder (UCB).

UCB Requirements

1. General Signage Requirements:
    a. Verify scope of signage to be included in the contract with UCB Campus Architect and UCB Access Services. The following signage categories are typically provided and installed by the construction contract:
        1) Interior wayfinding signage.
        2) Exterior facility identification signage.
        3) Monuments, plaques, and other signage should be included in construction contract.
    b. Fabricate signs to comply with the UCB Campus Facilities Identification System guidelines.
    c. Use concealed fasteners wherever possible. Fasteners must be non-corrosive to either sign materials or mounting surfaces.
    d. Metal letters and numbers mounted on vertical surfaces are not to be used unless approved by the UCB Campus Architect.
        1) If approved by UCB, use non-ferrous metal or hot-dipped galvanized anchors and inserts for exterior installation and elsewhere as required for corrosion resistance. Use toothed steel and lead expansion bolt devices for drilled-in-place anchors.
    e. Bracket mounted units are not permitted unless approved by UCB Campus Architect.
        1) If approved, provide brackets and fittings for bracket mounted signs from extruded aluminum to suit panel construction and mounting requirements. Bracket mounted signage is typically provided and installed by UCB.

2. Interior Signage:
    a. Because rooms often change uses, names, and/or numbers, provide signs which provide for room information to be changed without destroying sign.
    b. Preferred Signage Materials and Manufacturers:
        1) Materials as manufactured by New Hermes or approved substitute.
        2) General Signage:
            i. Gravoply/Rowmark or approved substitute.
        3) Raised Lettering and Braille Signage:
            i. Gravo-Tac 2-ply or approved substitute.

4) Limit use of vinyl film to areas where other signage is not practical or to areas where painted lettering or vinyl film is to be replaced.
    i. Opaque non-reflective vinyl film, .0035” minimum thickness. Suitable for exterior and interior use.
5) Other materials for specific designated uses as approved by UCB.

c. Interior Signage Requirements:
1) Room number sign
2) Two nameplate holders per room
3) Directional signs
4) Accessibility signage
5) Code required signage
    i. Location of all code required signage needs to be coordinated with the UCB Fire Marshal.
6) Maximum occupancy signage for classrooms and assembly areas.
7) Emergency and life safety signage.
8) Building directory, where applicable.

d. Interior Room Signs:
1) White plastic with edges mechanically and smooth finished with square cut edges and 3/8” radiused corners. Sign face shall be edged with a recessed 1/8” black border.
2) Size:
    i. Room Signs: 6”x6”
    ii. Bathroom Signs: 8” wide x 9” high; and are to be numbered with a sign on the upper frame of the door.
3) Black lettering in Helvetica Medium letter style.
4) Provide 1.125" letter height for room numbers, centered 2” from the top of the letter to the top of the sign. Center a 1/2” wide black braille lettering panel 3/8” from the bottom of the sign.
5) Provide raised copy and recessed braille lettering in copy thickness not less than 0.03125" thick as required by ADAAG.
6) Locate surface-mounted signs on the wall adjacent to the latch side of the door (or the nearest adjacent wall) at 60" AFF from the centerline of the sign (any size) and out of the swing of the door. Mount signs with edge 4" from inside face of the door jamb.
7) Attach signs to wall surfaces using mounting tape squares in each corner of the sign except at each top corner and one centered at bottom of sign for 6"x6" units.

e. Sleeve Inserts for Occupant Use:
1) Size: 1”x6” open-ended horizontal sleeve.
2) Where required for informational signage, provide 6”x6” black anodized insert sleeve open at the top.
3) Provide a blank white 90-pound card stock insert covered with a clear acrylic matte strip 0.625” (1/16”) thick.
4) Locate sleeves centered below the room sign in multiples as necessary, each spaced one 1” apart.

f. Directional Signage:
   1) White plastic with edges mechanically and smooth finished with square cut edges and 3/8" radiused corners. Sign face shall be edged with a recessed 1/8" black border.
   2) Size: 6"x6"
   3) Provide upper and lower case black vinyl die-cut letters in the Helvetica Medium letter style.
   4) Provide black vinyl die-cut left, right, up, or down arrows as required.

g. Room Numbering:
   1) All room numbers will be provided by FM Facilities Planning Office. Identify room numbers on plans prior to final issuance of schematic design drawings.

3. Accessibility Designation:
   a. Provide symbol for accessible route on signage designating those areas accessible in conformance with Society for Environmental Graphic Designers (SEGD) recommendations for accessible signage, most recent edition.

4. Life-Safety Signage:
   a. Provide surface-mounted directional signs and as required by applicable Building and Fire Codes for life safety which may include stair and exit-way doors, areas of refuge, elevator lobbies, elevators, fire command center and standpipe valve cabinets.

5. Evacuation Plans:
   a. Black acrylic mounting panel with clear acrylic cover screwed to mounting panel.
   b. Size: 12" x 18" x 1/8" to accept 11" x 17" exit map.
   c. Location and orientation to be approved by UCB Fire Marshal.
   d. Use standard campus symbols and text on evacuation plans.

6. Exterior Signage:
   a. Refer to **Appendix A0050.1**.