



Design Guidelines Summary* **Architectural**

1. Follow the UCB Design and Construction Standards.*

Restroom Fixtures

2. Perform the plumbing-fixture calculations during schematic design, for review and approval by University AHJ, based on IBC requirements for educational facilities classified under colleges and universities. Floors having both offices and classrooms need only have enough fixtures to meet the classroom requirement, since it is assumed that the peak load will occur during the inter-class time. Specify drinking fountains (with exterior traps), not refrigerated-water coolers.

Energy Conservation

3. The following minimum insulation values shall be provided:
 - R19 for walls and R30 for roofs. Wrap under-roof beams with R19.
 - The wall insulation shall be specified to fill the full cavity between metal studs (e.g., for 16" stud spacing, the insulation will be 16" wide, not 14.5").
 - Include insulation details for wall/roof interfaces to avoid ice damming.
 - Exposed batt insulation is only allowed below roofs and in crawlspaces and inside of mechanical-room walls above 8 ft. AFF, but not where it can be damaged.. The vapor barrier shall meet the 25/50 fire/smoke spread ratings. All exterior walls, including those for elevator shafts and heated stairwells shall be insulated.
 - Buildings requiring winter humidification shall be specified to have fully-taped insulation, including along the bottom and top plates. Wall penetrations shall be avoided (e.g., electrical outlets).
 - The University has specific guidelines on how the exposed insulation should be installed. For example, exposed roof insulation shall have all its longitudinal "seams" double folded and stapled every 4" (we can provide a sample spec.).
4. Vestibules (airlocks) shall be provided at all main entrances and exits that are not for emergencies only. The spacing between doors should be at least 8 feet apart. The airlocks shall not have magnetic hold-opens for the doors. Airlocks that are incorporated to stairwells shall not have magnetic hold-opens for doors at any level. Ascertain that heating is provided.
5. Windows:
 - Minimize glazing in stairwells, since these are typically not cooled.
 - Windows shall be non-operable in all classrooms, public areas of classroom and office buildings, and in all laboratory buildings requiring pressurization control. Operable windows may be used in offices of buildings not requiring pressurization or humidity control. Awning windows are recommended, and casement windows are allowed if they open against the predominant winds (typically W, NW & N).
 - Specify a 10-year warranty against seal failure.

- Double glazing with a Low-E coating on surface 2 (1 being the exterior surface) shall be used as a minimum in all occupied spaces. Heat Mirror® may also be used. Light-gray outer lites are typical for all glazing in E, S & W façades of new buildings, but not necessary on the north side. The light-gray outer lite is used to "mask" the mirror look that can be present with Low-E coatings, and to reduce solar gain and glare. The Low-E windows shall approximate the following parameters:
 - Emissivity less than .05
 - UV transmission less than .10
 - Visible light transmission greater than .50
 - Reflectance in/out less than .20/.20
 - U-value (winter/summer) no greater than .30/.35
- Avoid windows with interior wood components and wooden window sills. Even with UV filtration, the wood will discolor and the finishes will not last.
- Daylighting is encouraged. However, solar-energy gain from daylighting shall not cause the cooling energy to be greater than the electrical-lighting energy it displaces. Also, overlighting and glare shall be avoided. Daylighting, shading and cooling-load calculations is required per ASHRAE Standard 90 is required. Skylights are strongly discouraged.

Health and Safety

6. Air intakes shall not be close to loading docks and other sources of vehicle exhaust and other fumes, or downwind from them.

Miscellaneous

7. Include room numbers as of DD drawings.
8. Ascertain that mechanical and electrical devices are shown on reflected-ceiling drawings.
9. Include the detail of housekeeping pad for mechanical equipment per UCB Standards.
10. Include foot-fall-vibration analysis in all new-building structural design. Consider performing vibration analysis for above-grade floors and/or roofs supporting mechanical equipment.
11. Include commissioning checklists in the specifications.
12. Coordinate duct-shaft size with engineer to make sure there is enough space for 45-degree takeoffs and dampers within shaft and wall.
13. Paint mechanical room walls (and ceiling if covered with gypboard) a light color.
14. Waterproof all mechanical-room floors, and provide floor areas where water can be contained and drained, in rooms where coils and other components have water, and the floors are located over crawlspaces and in upper levels.
15. Make sure that noise radiated through walls and floors of mechanical-rooms is addressed
16. Provide exhaust in rooms that have or are planned to have microwave ovens.
17. Laboratory buildings are expected to be built per Labs 21 guidelines.
18. Since it is likely that convectors will be used for much of the perimeter heating, please be reminded that we prefer them to be surface-mounted (sloped top) or semi-recessed, with piping connections through the floor (i.e., fed from the floor below).
19. If semi-recessed convectors are used, poly-isocyanurate insulation shall be installed by the GC behind the convectors.

20. Any mechanical or plumbing piping that is routed through outside walls shall have polyisocyanurate insulation installed by the GC between the piping and the sheathing. This includes roof drains.
21. Please be reminded about the UCB detail for the gutter downspout/wall/snowmelt-cable detail.
22. Please be reminded about UCB detail for the mechanical house-keeping pads.

**This is not an exhaustive summary of "best practices" or the UCB Design and Construction Standards. Rather, it is a list of items overlooked in the past by design consultants.*