



Design Guidelines Summary*

Mechanical

1. Follow the UCB Design and Construction Standards*
2. Make sure to read the design guidelines in each section of the Standards.

Plumbing/Piping

3. Ascertain that Architect provides 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 only.
4. For floor-drain primers, specify those that connect to WC tailpieces (e.g., Sloan).
5. Cleanouts are required above all urinals and for each group of lavs (above lav flood level if possible).
6. Specify drinking fountains (with exterior traps), not refrigerated-water coolers.
7. Pairs of drinking fountains shall have one with a water-bottle fill tube.
8. Specify Schedule 80 steam piping for threaded pipe.
9. Specify extra-heavy-duty no-hub couplings for all but sanitary above-grade installation.

Resource Conservation (for your information)

10. The following minimum building insulation values shall be provided:
11. R19 for walls and R30 for roofs, including stairwells and elevator shafts with exterior walls.
12. Confirm that architect is incorporating these into the design before performing load calculations.
13. Double glazing with a Low-E coating shall be used as a minimum in all occupied spaces. Request performance parameters from Architect.
14. Daylighting is encouraged. However, solar-energy gain from daylighting shall not cause the cooling energy to be greater than the electrical lighting energy it replaces. Also, overlighting and glare shall be avoided. Daylighting, shading and cooling-load calculations may be necessary.
15. Compliance with ASHRAE Standard 90 is required.

HVAC

16. Include a heating source in all vestibules/airlocks and stairwells with exterior walls.
17. Match heating and cooling zones, and control with one heating/cooling thermostat per zone.
18. The use of fan-powered boxes is typically not acceptable, unless they are the only heating source (discuss with UCB engineer).
19. Perimeter heating can be provided by fin-tube radiation or convectors. Use of convectors is encouraged because they take up less wall space.
20. Use of reheat VAV boxes needs to have early discussion with UCB staff. We think there are very few instances when they are needed.

21. In AHUs, we need service access between heating and cooling coils
22. Provide exhaust in rooms that have or are planned to have microwave ovens.
23. ASHRAE Standard 62 shall be implemented.

Life/Safety

24. The use of smoke/fire dampers needs to be minimized to the amount required by codes. They are expensive and require frequent testing.
25. Air intakes shall not be close to loading docks and other sources of vehicle exhaust and other fumes, or downwind from them.
26. All floor-mounted mechanical equipment shall be anchored.

Controls

27. The University's HVAC Shop shall provide information on panel layout and labeling of points, based on points list provided by consultant.

Miscellaneous

28. Include room numbers as of DD drawings.
29. Lead consultant shall include the housekeeping pad detail per UCB Standards.
30. Lead consultant shall include commissioning checklists in the specifications.
31. All utilities shall be brought up to inside surface of the building by the utilities contractors.
32. Insect screen material needs to be specified for all condensing units and condensers located near Boulder Creek due to cottonwood-tree seeds.

Drawings

33. Draw duct transitions as they are described in the specs (15 degrees max per side).
34. Do not show mitered elbows (draw radius elbows).
35. Show radius elbows wherever they can fit (vs. rectangular). Make sure they are drawn to meet specs (inside radius no smaller than duct width or depth).
36. Bulkhead tees and 45-degree take-offs for horizontal main ducts runs need to be avoided.
37. Coordinate duct-shaft size with architect to make sure there is enough space for 45-degree takeoffs and dampers within shaft and wall.
38. Coil-pull spaces need to be confirmed and shown.
39. Show cross-sections of AHUs along the airflow axis and perpendicular to them within the mech room.

Specifications

40. Specifications shall require that all floor-supported equipment shall be anchored.

**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.*