1 Industry Design and Construction

References

1.1.1 All lab animal housing and care facilities must meet the standards as outlined in this Guide, used as a basis for performance of animal facilities by the Purdue University Animal Care and Use Committee and for accreditation of institutions by the Association for the Assessment and Accreditation of Laboratory Animal Care (AAALAC).
1.2 Planning and Designing Research Animal Facilities, The American College of Laboratory Medicine, First Edition, 2009
1.3 The Guide for the Care and Use of Agricultural Animals in Research and Teaching, Third Edition, January 2010
1.4 National Institute of Health (NIH), Biomedical and Animal Research Facilities Design Policies and Guidelines, Section 2.4, Design Considerations for Animal Research Facilities
1.5 ASHRAE Handbook – HVAC Applications, Chapter on "Environmental Control for Animals and Plants"

2 General Design Considerations

2.1 Corridors shall be a minimum 7'-0" wide.
2.2 Windows are generally not permitted in animal rooms.
2.3 Doors in all animal rooms shall be 42" (W) x 84" (H) and open into the animal room.
2.3.1 Doors shall be constructed of corrosion resistant materials.
2.3.2 Door closer shall have a delayed action feature.
2.3.3 Doors should be equipped with locks.
2.3.4 Provide entrance function lockset with knob trim inside room and flush ring pull to corridor side.
2.4 Walls and ceilings shall be smooth, moisture resistant, non-absorbent, and resistant to impact damage.
2.4.1 Animal room walls should be constructed of pre-glazed concrete masonry with epoxy grout with no voids in the masonry, to deter infestation of vermin.
2.4.2 Alternate wall construction may be metal stud wall framing with moisture-resistant drywall and rigid PVC wall panels.
2.5 Floors should be moisture resistant, impact resistant, seamless and monolithic with integral cove to the wall.

Note: Epoxy resins, hard-surface sealed concrete, methyl methacrylate, polyurethane, and special hardened rubber-base aggregates have proved satisfactory. Correct installation and substrate condition is essential to ensure the long-term stability of the surface.

3 Power and Lighting

3.1 In the event of a power failure, an alternative or emergency power supply should be available to maintain critical services and support functions in animal rooms, operating suites and other essential areas.
3.2 Use sealed, flush-mounted, light fixtures; pendant-mounted fixtures are not acceptable.
3.3 In general, provide 30 fc, approximately one meter above the floor for animal housing rooms.
3.3.1 Select proper illumination to meet specific and exceptional applications as required.
3.3.2 Animal room lights shall be controlled with auto-timer with switch override. Where required, provide two levels of lighting, with one level on a timer and one on the switch.
3.4 All conduit and junction boxes shall be weatherproof, sealed to deter infestation of vermin, mounted 48 inches above finished floor.
3.5 Outside each animal room, there shall be a water resistant recessed panel containing light switches, light timer for each animal cubicle, and mechanical gages for readouts for temperature and pressure, as required.
3.6 Rough-ins shall be made for card access systems to provide for secure access to animal facilities.
3.6.1 Conduit needs to be stubbed to the doorframe at the door strike pocket, run to above the doorframe and terminated at a 4x4 box.
3.6.2 Depending on the type of access control reader required, an additional wall box with conduit run up to the 4x4 doorframe box may be required.
3.6.3 In high security rooms the conduit needs to be installed in the wall.

4 Mechanical Guidelines

4.1 All penetrations shall be sealed watertight.
4.2 Where required, install a waste gutter with a sediment trap floor drain with a removable drain trap bucket to prevent material from clogging drains in animal rooms.
4.3 Minimize all exposed ductwork and piping. If ductwork must be exposed, it shall be stainless steel and have no exposed duct insulation. Provide access doors where required for equipment maintenance and to provide access for cleaning ductwork.

4.4 Exhaust grilles and supply diffusers should be corrosion resistant and able to be sanitized.

4.5 A visual indication of differential pressure should be installed close to the door of each room that has pressure requirements.

4.6 Mechanical equipment requiring maintenance should be located outside of the animal room.

4.7 If a heat recovery system is used, it should be “run around” with no means of cross contamination.

4.8 HVAC zone controls, including room temperature and humidity controls, should be housed in a corrosion resistant cabinet. Install the temperature sensor such that only a stainless steel or corrosion-resistant, waterproof plate is exposed inside the room.

4.9 In general, provide 10 to 15 fresh air changes per hours in animal housing rooms, unless a mechanical engineering evaluation indicates that more is required for a specific application.