DESIGN GUIDELINE 5.2
ANIMAL FACILITIES

Scope

Obtain approval of the Provost's Office and Office of the Vice President for Research (OVPR) for all new animal facilities. Secure the written approval of the Provost's Office (Vice Provost for Academic and Budgetary Affairs) prior to finalizing program documentation. It is the responsibility of the unit requesting such spaces to obtain approval prior to initiating design activities.

In addition to the requirements of this Guideline, comply with the American Association for the Accreditation of Laboratory Animal Care (AAALAC) and the National Institutes of Health (NIH) criteria for the housing, handling and caring of laboratory animals. If a conflict should arise during the design of a specific project, the requirements of AAALAC and NIH will typically take precedence. Consult with the Design Manager who will coordinate with University Committee for the Use and Care of Animals (UCUCA) and the Attending Veterinarian (AV).

The Enforcing Agency for Animal Facilities is the UCUCA, which includes the University's AV. Design Manager will arrange for consultations with the UCUCA Office and the AV early in Schematic Design.

Related Sections

U-M Design Guideline Section:
4.7 SBA Building Access Control
6.0 DG 230030 - Laboratory Ventilation
6.0 DG 263000 - Engine-Generator System

Reference Documents:
"Guide for Care and Use of Laboratory Animals" , promulgated by United States Department of Health and Human Services, and the Regulations of the Federal Animal Welfare Act 9, CFR Parts ,1 2 and 3

Project Documents

Eliminate sensitive terms from the project drawings, specifications, and other review and bidding documents. "Sensitive terms and descriptions" include both specific and general information regarding the animal species and research activities conducted in animal facilities. Appropriate terminology includes research laboratory, support space, procedure room, operating room, clean and/or dirty room, housing, etc. Consult with the Design Manager early in the design process to review terminology requirements.

Location

Separate animal suites including procedure rooms from offices and main pedestrian corridors to discourage unauthorized access and to mitigate odors.

Animal areas need to be secured with access restricted to only authorized personnel. Provide access control system connected to Campus or Hospital central system depending on the location of the facility.

Determine whether a closed circuit TV system is needed for the facility being designed.

Wherever possible, provide ready access to an elevator that can be segregated and secured from the public for the transportation of animals, cages, feed, bedding, waste, etc. Determine whether a dedicated elevator is required for the facility.

Do not locate the animal suite above electrical rooms, telephone/data rooms, or other rooms that could be damaged if water leaks down after wash-down of the animal rooms.

When positioned along a perimeter wall, do not install exterior windows in animal rooms.

House noisy species apart from other quieter species. Consider impacts of building environmental noise when locating individual species housing and procedure areas.

Strategically locate support areas (including but not limited to food and bedding storage rooms, hazardous agent storage rooms, clean and soiled cage holding rooms, cage washer rooms, refuse rooms, animal care equipment storage rooms, and animal care personnel lavatory, shower and locker rooms) to isolate housing rooms from rooms requiring more frequent / less restricted access.

Corridors

Main corridors shall be 7 feet wide. Branch corridors shall not be less than 5 feet-6 inches wide.

Surfaces

Surfaces shall be constructed of materials that are waterproof and easily sanitized.

Use epoxy painted cement block walls, epoxy painted plaster ceilings, and smooth texture acid and solvent resistant monolithic floors with integral coved base . All pinholes must be filled.

Protect walls with guard rails.

In renovations of existing facilities, certain less-desirable features may be unavoidable. The following compromises are examples. Obtain permission from Design Manager for these and other deviations from stated requirements:

- Water-resistant gypsum drywall-on-metal-stud partitions.
- Vinyl-covered gypsum lay-in suspended ceiling panel ceilings in galvanized grid with hold down clips.
- Projecting items such as thermostats are undesirable, but if absolutely necessary, shall be protected with bumpers or guards.
- Exposed overhead pipes and conduits.If required, the penetrations shall be sleeved and sealed. All floor penetrations shall have sleeves and be sealed watertight.
- Above-ceiling devices requiring service or maintenance. If required, provide waterproof access panels. Utility valves should be located above the corridor ceiling.

Doors

- Size: 42 inches wide by 84 inches high minimum
- Type: Galvanized hollow metal. Review viewing window and related light control requirements with Design Manager.
- Configuration: Typically in-swinging into housing rooms; however, direction may vary based on code requirements and traffic flow. In some locations, closing direction should be coordinated with air flow direction..
- Hardware:
    - University Standard mortise digital combination lock.
    - Delayed action closer.
    - Door protection - armor plates and trim protection.
    - Tight fitting self-sealing neoprene sweeps or surface mounted automatic door bottoms.Avoid projecting thresholds for ease of cart traffic.

Ventilation Systems

See Design Guideline technical section, *Laboratory Ventilation* for vivarium ventilation requirements.

Environmental Controls

Individual room temperature shall be DDC and have local setpoint adjustment. Review temperature and humidity requirements with Design Manger and ULAM management early in design process. Temperature (and to a lesser degree, humidity) must be tightly controlled to setpoints on a year-round basis. This stringency must be accounted for in all future constructions and renovations of animal housing facilities.

Temperature and pressure within the room shall be monitored in the hallway, and contained in a flush-mounted panel. Temperature alarms should provide feedback to the U-M central BAS.

Lighting, Power, Data, and Fire Alarm

Typically, illumination should be dual level with a high level of 100 to 140 fc (measured at 36" AFF with all lights on) and a low level of 50 to 70 fc (measured at 36" AFF with one half of lights on). A manual one-hour timer located just inside of the room door, under a

waterproof cover, should control one half of the lights. The other half of the lights should be controlled by the U-M central BAS. Optical sensors (photocells) shall provide feedback to BAS for the trending of both room light levels. In special rooms, one half of the lighting may require red lamps or standard lamps with red covers.

Provide waterproof lighting fixtures to prevent entry of insects and water spray from wash-down hoses. Electrical receptacles shall have waterproof covers, and may need to be explosion-proof. Provide GFCI receptacles in all areas subject to wash-down or within 6 feet of sinks.

Provide data jacks with waterproof covers in each animal housing and procedure room. Provide sufficient wireless points for complete coverage of animal facility. Review wall phone locations with Design Manager.

Provide waterproof fire alarm devices in all areas subject to wash-down. For animal suites that house mice or other small rodents, the fire alarm audible sound shall be a Temporal Code 3 slow whoop with a peak frequency of less than 500 Hz. If the building is a high rise, the Code-required evacuation message shall also be less than 500 Hz. Contact the AEC Electrical Department through the Design Manager for the latest recommendation on audible devices. Fire alarm visual devices (strobe lights) shall be located in corridors only because animal rooms are not considered public or common spaces.

Standby Power:

Standby power may be critical to maintain animal health in a power outage, especially in locations using ventilated racks. Early in the design process, review the following considerations with the Design Team:

- Need for standby power including, how much power, how quickly, and for how long.
- Specific loads requiring power.
- Spare capacity of existing generators.
- Ability to add a generator, including available space, available fuel, and exhaust, noise and vibration impacts.
- Cost impact on the project.
- Alternatives, such as moving the animals elsewhere, connecting a portable generator to the building within a few hours, etc.

Plumbing

Animal rooms should have hot and cold water and a stainless steel wall sink with a drain board. Heavy water use areas should have hot and cold water hose bibs located under the sink.

Floor drains capable of being capped (4") are desirable in all rooms, but may be excluded in certain circumstances. Heavy water use areas shall have the floor sloped 1/4" per yard and contain rim-flush drains. Drains should have locking covers and contain a bucket trap.

Large animal rooms have special plumbing requirements (eg., trench drains, flush drains).

Determine whether an automated animal drinking water system is required.

Operating Rooms

Operating rooms cannot be used as offices, laboratories, or storage rooms.

Air from operating rooms shall be 100% exhausted. Supply and exhaust grilles must be located to provide proper airflow within an occupied room. Typically non-aspirating (perforated) supply air diffusers should be selected and located so that incoming air does not disturb the natural thermal plume that develops over the surgical site. The room shall be maintained at a positive pressure with respect to the adjacent preparation area or corridor.

Typically provide the following:

- Surgical light
- Easily sanitized surgical table
- Appropriate scavenging vacuum or alternate means of gas exhaust
- Plumbed oxygen from a central tank location
- Hot and cold water
- Explosion-proof electrical receptacles and conductive flooring if explosive anesthesia is used

Surgical Support Rooms

Provide at least 2 surgical support rooms separate from the operating room. One is for surgeon preparation, and the other for animal preparation. The former may also be used for instrument and pack preparation and the latter for post-operative recovery. However, prolonged and complex post-operative recovery should be performed in a recovery room separate from both the surgeon preparation room and the animal preparation room. The surgeon preparation room should be contiguous with the operating room; whereas the animal preparation room need not be. Provide an autoclave in close proximity.