Wall Construction in Vivariums

Vivarium walls have extremely stringent performance requirements. The Guide for the Care and Use of Laboratory Animals requires walls to be “...smooth, moisture resistant, nonabsorbent and resistant to damage from impact”. The DRM requires that all laboratory walls be “...capable of withstanding washing with strong detergents...”, and that vivarium walls specifically be “...constructed of concrete, concrete block, or surfaced with a heavy duty, impenetrable veneer...”.

The performance of vivarium walls is crucial due to a number of factors:

1. Durability: Vivariums are subject to extreme wear and tear, including impacts, pressure washing and strong detergents.
2. Cost: Vivariums are very expensive to build and to operate. Delays during construction and downtime after completion are to be avoided.
3. Criticality: Vivarium operations are critical to research programs, and once in operation should not be disrupted for repair and maintenance.

A number of wall construction systems have met these requirements, and their selection should be based on the parameters and conditions specific to the project.

Base Walls

Base walls can be concrete (concrete masonry units (CMU) or formed concrete), or steel framing. Advantages and disadvantages include:

Concrete Advantages:

- Impact resistance. This is important in areas subject to heavy cart, cage and other wheeled traffic.
- Water resistance. This is important in areas that are subject to high humidity and wash downs.
- High mass: The high mass of concrete walls gives them good sound damping characteristics.

Concrete Disadvantages:

- Difficulty routing piping and conduit. Surface-mounted services are to be avoided, so services must be cast in concrete or routed through hollow CMU cores. This will negatively impact construction schedule and cost.
- Difficulty making modifications. Concrete and CMU, by its nature, is not easy to cut and patch, and modifications are costly and disruptive.

Steel Framing Advantages:

- Fast construction. Steel framing is a familiar and fast construction method. One advantage is the ability to route services through the walls. Vivarium-specific detailing is required, including the capping and sealing of hollow wall spaces.