

Photos: Frank Cooms

PAGING ALL FUTURE VETERINARIANS

Viewing platforms at a zoo's hospital give visitors a glimpse into specialized caretaking

By Michele Zimmerman

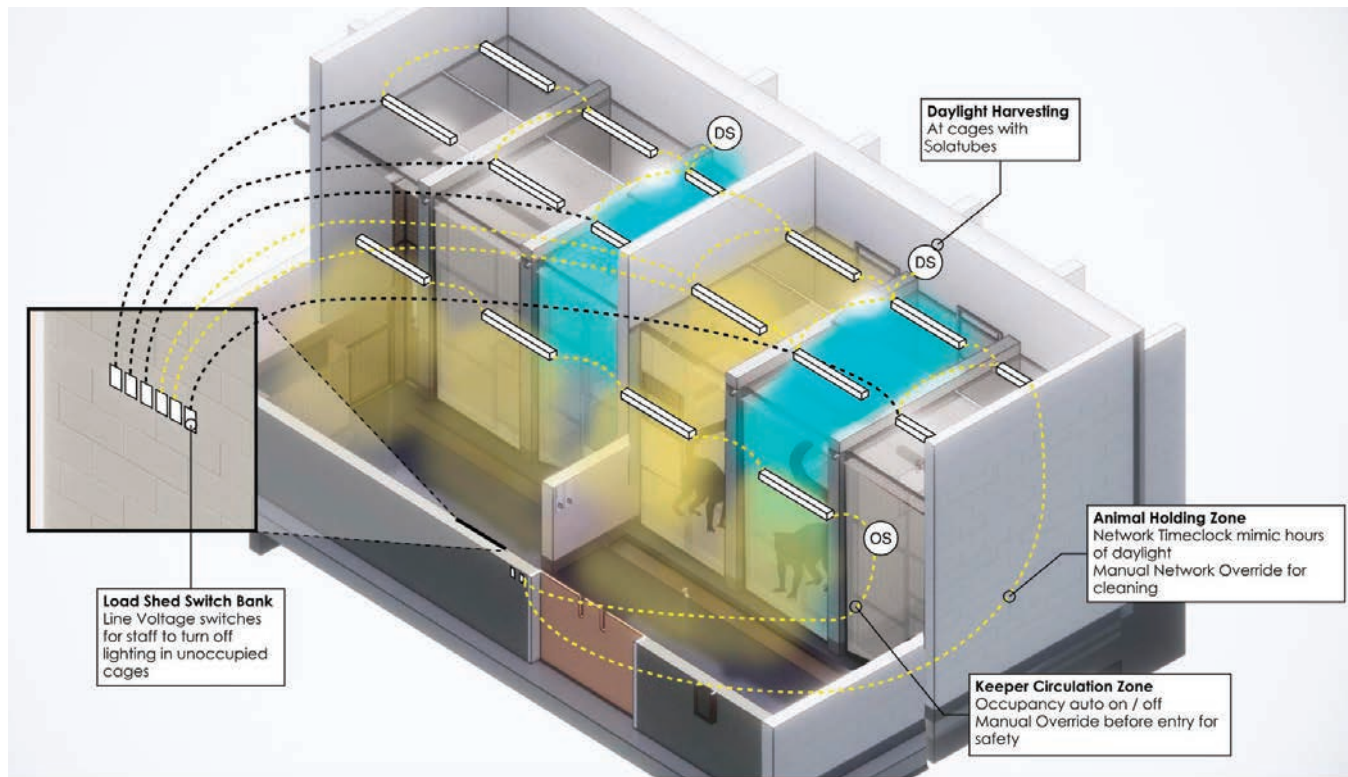
Denver Zoo is home to Red-Ruffed Lemurs, Frilled Lizards, a One-Horned Rhinoceros and more than 3,000 other animals. Caring for the animals is the veterinary staff at the conservation center's new 22,000-sq ft Helen and Arthur E. Johnson Animal Hospital—made visible to guests via an elevated platform. The expansion adds two treatment rooms, a diagnostic lab, a critical-care unit, a surgical suite as well as indoor and outdoor animal wards to the zoo. With highly advanced technology, such as a CT scanner specifically made for zoo inhabitants, these areas are equipped to hold animals as large as 800 pounds, like bears, while extra-large fauna such as elephants and giraffes remain in their own

Left: Illumination in surgical areas is comparable to that of human hospitals.

Right: Washable LEDs are on a networked time clock.

habitats for treatment. The unique hospital ward serves a dual purpose: when live surgeries are not being performed, or creatures are not receiving other treatments, the area doubles as an educational exhibit displaying interactive videos to pique the interest of all the young animal lovers and future vets in the room.

Along with Stantec designers, multiple stakeholders—from the vet staff to marketing and special events teams—influenced the final project. It was essential that the lighting design and controls system could accommodate for the well-being of animals, safety of humans, and adjustments for seasonal and private events, all while upholding the zoo's core values surrounding conservation



and community engagement.

“The reality was that the lighting controls were critical for the safety of the zoo’s staff. The head veterinarian tasked us with imagining that there is a lion on the other side of every door—the lighting controls need to be located such that vet staff can see that lion before entering and risking their lives without relying on occupancy sensors alone,” says Stantec lighting designer Vanessa Pederson. The resulting control system includes four layers: one, a networked time-based control to re-create natural light cycles and shift for nocturnal species in recovery areas; two, a network override switch for nighttime cleaning and other miscellanea; three, daylight zones, including Solatube skylights, to ensure sick and recovering animals experience sunlight; and four, a load-shed switch bank of basic non-networked line-voltage switches in holding areas, which staff is trained to turn On/Off in the presence/absence of animals. “We spent a lot of time tuning in on the animal holding areas, where animals may be held in short quarantine when entering the zoo or where animals recover. These [sections] cover a good portion of the square footage and need to accommodate [a variety of species],” says Pederson.

Skylights and control systems combine to ensure effective animal care and worker safety.

Much like in hospitals for *Homo Sapiens*, ambient, localized and undercabinet task lighting in the ward’s surgical areas were necessary for the doctors to do their best work in mending wounds, healing illnesses and saving lives. The quality of lighting implemented in this project is indeed comparable to that of surgical lighting used in human hospitals: gasketed and wipeable LEDs provide approximately 100 footcandles of illumination at a color temperature of 3500K. Additionally, recessed and suspended linear luminaires provide 30 fc of illumination in hospital corridors adjacent to surgical areas, and 15 fc of illumination in other corridors. The mixture in fixture types keep a “continuous [visual aesthetic] regardless of ceiling type,” says Pederson. To accommodate deck areas with exposed systems and a drop grid, the design team “had to essentially create the feeling of a ceiling plane in areas with exposed structure with suspended linears, instead of recessing in areas with grid.”

Exterior light leading to the new exhibit was just as important as the interior illumination. A combination of tall pedestrian poles on frequently traveled pathways and shorter bollards on winding paths-less-traveled provide visitor wayfinding in evening hours. While the aesthetic of the poles



At A Glance

- The project earned a 2022 IES Illumination Award of Merit
- The design includes robust vapor-proof fixtures that can be sprayed/washed down.
- Varied exterior lighting earned the project a LEED Light Trespass credit.

mimics the materiality of the building’s façade like the calls of a parrot, bollards blend into their outside environment (during daytime hours) like chameleons. Pole-mounted LED luminaires set to 3000K provide a 1-fc average; LED bollards also set to 3000K provide an average of less than 0.5 fc, making for a deep-forest-like experience of decreased illumination to match decreased pedestrian activity. At the surgical viewing platform entryway, 2-in. downlights set to 3000K are nestled into the building’s overhang to provide an average of 5 fc and help greet guests.

Though Pederson’s role in the project was all about illumination, the highlight of her experience was working with the veterinary staff. She says, “They are truly inspirational, humble people who prioritize the health and comfort of animals in all that they do. One meeting stands out as a testament to their dedication: we were discussing value engineering ideas and the possibility of

Left: When animals are not receiving treatment, viewing platforms double as educational exhibits.

Right: Wayfinding poles reflect the material of the hospital, while short bollards blend into natural settings.



removing skylights from the project—however, vet staff adamantly argued that these would be necessary for animal recovery and well-being instead suggesting to remove the human standing-comfort pads. These people spend all day on their feet, yet still insisted on sacrificing their own comfort over that of the animals. Fortunately, we found another solution, but the offer really stood out to me regarding how much they care. An aside to that, staff referred to animals by their names instead of their species, so they referred to ‘Tonks’ instead of an ‘Aye-Aye,’ which was always a refreshing departure from normal design meetings.” ©

THE DESIGNER | Vanessa Pederson is a lighting designer with Stantec.