



Photos: Frank Ooms

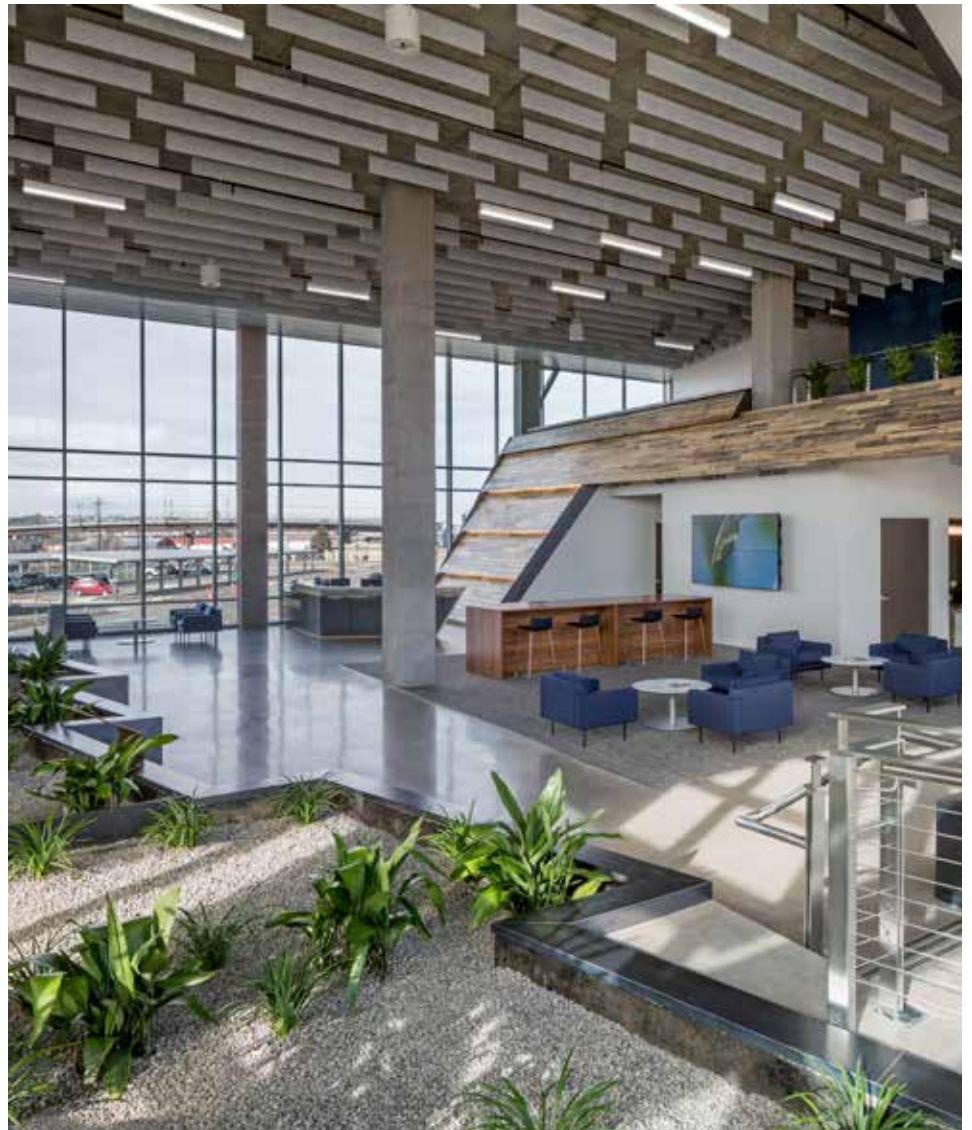
WATER POWER

Colorado's oldest and largest utility embodies environmental stewardship via its revamped operations center

By **Samantha Schwirck**

For Denver Water, it's all about the flow. Just as water flows to the utility's 1.5 million customers, lighting was designed to complement the flow of architectural elements within the company's new 186,000-sq ft administration building, as well as among seven other renovated facilities on its historic 34-acre operations complex.

At the helm of the complex's transformation was Stantec, which began working with Denver Water in 2013. "We conducted master planning [for Denver Water] to help them determine that staying on their current campus was indeed the best value and most impactful design approach," says Tony Thornton, senior associate and architectural project manager for Stantec. "We also helped the client to strategize how their campus could be phased to remain operational while nearly every building was being replaced or renovated."



After securing the project bid, the Stantec team—which was ultimately responsible for architecture, interior design, landscape architecture, lighting design and sustainable design—began the seven-year process of transforming the client’s multifaceted vision into a reality. The goal was to redevelop Denver Water’s aging and inefficient existing operations complex into a modern campus with the ability to improve productivity and become a region-wide leader in sustainability and wellness initiatives—especially regarding smart water conservation and reuse. The complex is also a local showpiece, meant to “promote employee and community equity, attract and retain the best employees, and redefine development as whole in its region by rejuvenating an industrial area of town which was ready for change,” Thornton says.

Left: Site lighting draws visitors into a breezeway that connects to a welcoming atrium.

Right: Ambient lighting throughout mimics the pattern of stones skimming on the surface of water.

The administration building is the centerpiece of the transformation. Designed to achieve LEED Platinum certification and for compliance with WELL Building and Net-Zero Energy standards, the building integrates sustainable features including on-site solar; a radiant slab powered by the complex’s central utility plant to conserve heat and energy; a high-efficiency triple pane-glazed window system; and biophilic design.

Evoking a canyon sculpted by the natural flow of water over many years, the structure’s long, thin geometry maximizes daylight and views. A minimalist lighting system complements the ebb and flow of its form, while also addressing efficiency and user comfort. Throughout, lighting and acoustical baffle layouts reference flowing water, and ambient lighting mimics the pattern of stones skimming on water surfaces. The stone-skimming



concept allowed the design team flexibility in fixture placement, as the building's post-tension construction limited mounting locations. "The clean post-tension floor/ceiling construction required that every junction box was coordinated and dimensioned with a web of structural rebar in the structure," says Vanessa Pederson, senior lighting designer with Stantec. "Rounds of coordination went into avoiding surface-mounted conduit."

Communal spaces in the administration building include a central café, which features layers of adjustable ambient lighting for various uses and decorative pendants over booths. Nearby, a shared break room evokes calm, with a blue accent wall complemented by a perimeter wall-wash cove and cascading pendants to represent a waterfall.

Office areas are illuminated by indirect lighting that creates a feeling of brightness and accents exposed concrete. Numerous photometric iterations were performed to ensure WELL circadian compliance. Additionally, the campus's trade shops were designed with electric and daylight simulations to ensure adequate light levels and safe working environments, both day and night. All shop and warehouse areas utilize the same high-bay luminaire to simplify stock and replacement throughout campus, while various spacing layouts allowed different light levels based on specific space-type needs.



Top: The café features layers of adjustable, ambient light for various uses.

Bottom: Cascading pendants in front of a blue accent wall evoke a waterfall in the break room.

Extensive daylight simulations were overlaid with electric lighting control zones for optimized performance. Control strategies include perimeter and skylight daylight harvesting, occupancy and vacancy sensors, local dimming and task tuning. "Encelium was used for its ability [to provide] a connected campus that could be controlled at a single workstation," Pederson says. "Additionally, the system provided customization that the maintenance crew desired as they plan to continually adjust lighting and sensors to optimize energy demand."



At A Glance

- The complex was designed to achieve LEED Platinum and for compliance with WELL Building and Net-Zero Energy standards.
- The connected lighting load is 0.82 watts per sq ft, a 36% code reduction based on IECC 2015.
- The project received a 2021 IES Illumination Award of Merit.

The overall connected lighting load is 0.82 watts per sq ft, a 36% code reduction based on IECC 2015. However, usage is greatly reduced via 50-75% trim levels set in office areas. Users are encouraged to utilize locally provided task lights to supplement the available ambient lighting. Illuminance levels were balanced with IES recommendations and WELL Building EML requirements for circadian lighting, resulting in higher vertical and horizontal light levels than traditional office spaces.

“Daylight is abundant and present at all workstations, and light levels between the overhead ambient lighting system and task lights provided at workstations are very customizable,” Pederson says. “The lighting controls were also extensively coordinated with the facility operations and maintenance staff. The staff is well trained on the system and regularly task tunes various departments to lower energy usage when occupants are accepting of lower light levels.”

Indirect illumination and individually controllable task lamps supplement abundant daylight in office areas.

In addition to the rigorous sustainability and well-being goals, designing within an affordable budget was key to the project’s success. “The largest challenge was balancing the cost, aesthetic and resulting impact to occupant wellness,” says Rachel Fitzgerald, senior associate and lighting design discipline leader for Stantec. “Numerous solutions and lighting products were reviewed in rounds of value engineering with our construction partners, and each went through vetting for energy efficiency and WELL compliance.”

Following many iterations of vertical and horizontal photometrics to ensure performance goals would be met, the project was completed in 2020, and the complex has been successfully sending—and conserving—water to millions of Coloradans in the metropolitan area ever since. ©

THE DESIGNERS | Rachel Fitzgerald, CLD, LC, IALD, Member IES, LEED AP BD+C, is a senior associate and lighting design discipline leader for Stantec.

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