

SUSTAINABILITY

AT DENVER WATER'S OPERATIONS COMPLEX



Photo Credit: Katie Fletcher, Denver Water



A rendering of Denver Water Administration Building during redevelopment of the 35-acre Operations Complex. Photo credit: Denver Water.

BACKGROUND

In 1878, Denver Water began to use land just west of Denver to store and pump water from the South Platte River into the city's piped water system. Since that time, use of the site evolved, supporting horse-drawn wagons with a blacksmith shop, building wood-stave pipe with on-staff coopers and servicing the first vehicles and trucks. Today, Denver Water's 35-acre Operations Complex supports operations across 10 counties with a Warehouse, Fleet Services, Meter Shop, Trade Shops (electrical, metal, mechanical, plumbing, construction), headquarters for pipe crews, a wellness building, and administrative offices.

In 2012, an assessment of existing facilities showed that nearly all buildings on the Operations Complex had significant structural, electrical, mechanical and safety issues. At that time, Denver Water's Board directed staff to develop a plan for an operationally efficient campus that would be sustainable, customer-friendly, promote employee health and wellness and showcase the future of sustainable, urban water use.

THE PROJECT

Denver Water partnered with Trammel Crow as owner's representative, Stantec (formerly RNL) as lead architect and Mortenson as general contractor to design and redevelop its Operations Complex. Standard design principles were augmented by Denver Water's Continuous Improvement Program, which is based upon Lean principles. That effort resulted in buildings which were designed to maximize workflow, efficiency (EAc1) and daylight (IEQc8.1,8.2) while optimizing size and cost. The Administration Building was relocated from the center of the Operations Complex to the northern edge, improving access by customers and business partners, and creating a stronger connection to the local community (SSc2). The team was challenged to construct the project in a way that allowed operations to continue throughout demolition and construction. Over four years and two construction phases, eleven buildings were demolished, six new buildings and a parking structure were constructed, and two existing buildings were remodeled (MRc1).

SUSTAINABILITY AND WELLNESS

In terms of certifications, the plan is for the four operations buildings and the Wellness Building to reach LEED Gold certification, the two remodeled buildings to reach LEED Silver certification and the Administration Building LEED Platinum.

In addition to LEED Certification, many of the WELL Building Standard's optimizations were included in design for the health and wellness of occupants.

Building features include:

- Natural daylighting in all buildings through large windows and skylights (IEQc8.1,8.2).
- 100% LED lighting with daylight harvesting (IEQc6, EAc1).
- Radiant heating and cooling from a Central Utility Plant that uses water from a large water pipeline for pre-heating and pre-cooling (similar to geothermal) (EAc1, IEQc7.1, 7.2).
- Net zero energy for the Administration Building (offset with 1.3 MW of onsite solar) (EAc1).
- Blackwater capture with onsite treatment and reuse for toilet flushing and irrigation (WEc2, WEc3).
- Rainwater capture for irrigation (WEc1).
- Passive treatment of stormwater through rain gardens and detention ponds (SSc6.1,6.2).
- Automatic window blinds in the Administration Building for heat and glare control (IEQc7.1, 8.1).
- Controlled outlets in non-operations buildings that turn off computer monitors and other unneeded equipment when the space is not occupied (EAc1).
- Centralized waste for garbage, recycling and compost (MRp1).
- Robust building envelopes that include triple-pane glass and extra insulation (IEQc7.1, 7.2, EAc1).

The Operations Complex also includes several wellness features for employees and visitors, including:

- Wellness track and centrally located sidewalk to encourage walking (SSc4.2).
- Onsite fitness center and health clinic.
- Treadmills to promote movement while working.
- Open breakrooms and collaborative spaces, many with exterior views (IEQc8.1, 8.2).
- Copy machines and large printers in dedicated rooms with separate ventilation (IEQc5).
- Grand staircase in the Administration Building with magnificent views to entice use.
- Exterior artwork that celebrates water.
- Improved access to light rail and bus service (SSc4.1).



Solar panels were installed on Denver Water's Administration Building to achieve a net zero energy goal for the building. Photo Credit: Denver Water (EAc1, EAc2).



Wetland planter beds in Denver Water's Administration Building lobby provide additional filtration and nutrient removal for the building's onsite wastewater recycling process (WEc1, WEc2).



Design strategies throughout Denver Water's Operations Complex were selected to improve work efficiency and well-being. As an example, the Fleet Building includes standardized tool carts, centralized fluids, natural light and white concrete that reflects light up and under vehicles. Photo credit: Denver Water

LEED CREDITS REFERENCED:

SSc2 Development Density and Community Connectivity
SSc4.1 Alternative Transportation, Public Transportation Access
SSc4.2 Alternative Transportation, Bicycle Storage & Changing Rooms
SSc6.1 Stormwater Design Quantity Control
SSc6.2 Stormwater Design Quality Control

WEc1 Water Efficient Landscaping
WEc2 Innovative Wastewater Technologies
WEc3 Water Use Reduction

EAc1 Optimize Energy Performance
EAc2 On-Site Renewable Energy

MRp1 Storage & Collection of Recyclables
MRc1 Building Reuse

IEQc5 Indoor Chemical & Pollutant Source Control
IEQc6.1 Controllability of Systems, Lighting
IEQc7.1, 7.2 Thermal Comfort
IEQc8.1, 8.2 Daylight and Views