

CASE STUDY

POPULUS DENVER, COLORADO





POPULUS: THE COUNTRY'S FIRST CARBON-POSITIVE HOTEL

With its eco-conscious architecture and nature-inspired facade, Populus is a landmark building in Denver, Colorado, that integrates architectural innovation and biophilic design. Standing as the first carbon-positive hotel in the United States, the distinctive 13-story facade was inspired by the "Aspen eyes" of Colorado's native Aspen tree, *Populus tremuloides*. Denver combines the vibrant city skyline with some of the country's most beautiful landscapes, making this the perfect setting for this pioneering, environmentally responsible project.

Populus features a variety of Kawneer's high-performing architectural aluminum systems, including our Trifab® VersaGlaze® 450 Framing System, 350T Insulpour® Thermal Entrances and 1600 Wall System®2 and System®3 Curtain Wall.

Architect: Studio Gang, Chicago, Illinois
General Contractor: The Beck Group, Denver, Colorado
Glazing Contractor: 8G Solutions, Denver, Colorado

Photography: © Jason O'Rear



ELEVATING THE GUEST EXPERIENCE

Populus represents a model of environmentally conscious accommodations that will forever change the guest experience for mindful travelers. The distinctive elliptical windows on the exterior of the facade help optimize energy efficiency by reducing solar gain through the outwardly extending 'lids' that shade the interior, while also channeling rainfall to reduce water consumption.

The thoughtful use of sustainable materials and architectural design contributes to Populus' ability to withstand Denver's varying climate conditions, marking Studio Gang's first project in Colorado as both a visual and environmental success. With its eco-conscious architecture and nature-inspired facade, Populus is a landmark project that integrates architectural innovation with biophilic design principles.

AN 'EYE' FOR DISTINCTIVE ARCHITECTURAL DESIGN

The hotel's most defining feature is its array of eye-shaped openings on the exterior of the facade, which the architects designed to resemble the dark markings found on the bark of aspen trees. Varying in size while offering expansive views of the Denver skyline, the windows play a functional role and were incorporated to optimize energy efficiency by reducing solar gain through outwardly extending 'lids' that shade the interior.

SUPPORTING ENERGY EFFICIENCY AND DESIGN FLEXIBILITY

To support the building's thermal performance behind its eye-shaped openings, Kawneer's 1600 Wall System^{®2} and System^{®3} Curtain Wall were specified and installed to further the building's versatility and energy efficiency. Kawneer's IsoStrut[®] thermal barrier technology in our 1600 Wall System^{®3} Curtain Wall helps reduce solar heat gain, enhance thermal performance and promote energy efficiency while enabling architectural design freedom. The patented IsoStrut[®] Thermal Break method achieves a high-strength bond between the aluminum and the thermal break material, which creates a composite assembly suitable for use in high-rise curtain wall systems.

Setting the standard for performance and fabrication flexibility, our structural silicone glazed (SSG) Trifab[®] VersaGlaze[®] 450 Framing System with 1-3/4" sightline was specified and installed for the project to provide durability, thermal performance and energy efficiency on the first floor of the building. Further, Kawneer's 350T Insulpour[®] Thermal Entrances were installed throughout the building. Featuring our innovative IsoPour[™] technology, these entrances provide superior thermal performance for the hotel.



BEYOND NET ZERO: DESIGNING A CARBON POSITIVE BUILDING

The hotel was designed to be carbon positive. Targeting LEED Gold®, the facade features highly recycled building materials and fewer finish materials, maximizing structural efficiency and minimizing waste. Populus' ongoing building operations will also be carbon positive. In addition to the building's embodied carbon, the hotel's operational carbon and every guest stay help offset its carbon footprint. For every night spent at the hotel, a tree is planted, creating a direct impact on the environment. Featuring highly sustainable design features, Populus goes beyond net zero to help the planet thrive.

REDEFINING DENVER'S SKYLINE

Populus was designed to be the center for a thriving community, contributing to Denver's ever-evolving landscape. One of the project's main goals was to combine the urban character of the city's downtown with its rich ecology to create a building that would redefine the Denver skyline. The project features a variety of Kawneer's architectural aluminum systems to achieve its ambitious design and sustainability goals. Further, the facade features proprietary thermal barrier technology for outstanding thermal performance.

Populus inspires and encourages the adoption of more sustainable innovations in all areas of construction, planning and urban development.



CHALLENGES

- One of the primary goals was to combine Denver's urban character with its rich ecology to create a building that would define the city's skyline.
- Optimizing energy efficiency in Denver's variable climate while maintaining visual appeal was one of the project's key objectives.
- The architects envisioned uniquely shaped windows with varying sizes and shading elements to reflect biophilic design principles and the patterns found on Aspen trees (*Populus tremuloides*).
- The building owner's goal was to design the hotel to be carbon positive, promote sustainability, minimize material waste and promote eco-conscious construction practices and high-performing architectural aluminum systems.

SOLUTIONS

- Populus was designed to be a distinctive facade that features elliptical windows of varying sizes designed to reflect the "Aspen eyes" of Colorado's native Aspen tree, *Populus tremuloides*.
- Kawneer's 1600 Wall System®3 Curtain Wall, with its highly versatile IsoStrut® thermal barrier technology, was specified to help reduce solar gain, enhancing thermal performance and energy efficiency behind the facade's eye-shaped windows while enabling design freedom.
- Kawneer's 1600 Wall System®2 supported the distinctive elliptical windows with its versatility and enhanced visual impact.
- Highly recycled aluminum and fewer finish materials in Kawneer systems helped the project to help meet its ambitious sustainability goals, including developing the hotel to be carbon positive and targeting LEED Gold®.

PRODUCTS USED

- 1600 Wall System®2 Curtain Wall
- 1600 Wall System®3 Curtain Wall
- 350T Insulpour® Thermal Entrances
- Trifab® VersaGlaze® 450 Framing System

