

### 3. Executive Summary



The PDXNext Portland International Airport Terminal Balancing and Concourse E Extension project added six new gates, passenger concessions, amenities, and airline operation spaces to Portland International Airport (PDX). It included improvements to the existing airport facilities to balance the number of passengers using the north and south sides of the airport and extended Concourse E by more than 800-ft.

From the beginning, it was clear that this new concourse extension would be different than previous PDX concourses. Gone were the columns framing the edges of the central corridors due to the desire for a flexible space. Gone were the skylights, necessitating the need for alternative solutions to bring natural light into the center of the building.

These two early design decisions drove the structural design team to provide the unique bent “z-girder” roof design that shapes the interior and exterior Concourse E experience. These “z-girders” clear span the width of the concourse (spans between 60 to 80-ft). At concession nodes, the girders change shape to create a large open space with tall window walls creating an inviting space for passengers to relax and look out towards the Pacific Northwest nature beyond.

The new concourse extension is designed as an Essential Facility for seismic structural performance. The lateral system includes SidePlate moment frames and steel buckling-restrained braced frames. South sloping columns, important to the façade design along Airport Way and responding to the outward projection of the adjacent Headquarters Building, led to the building experiencing a permanent lateral force.

A pile supported foundation and a structured slab on grade was provided in lieu of a more typical slab on grade due to the project soil conditions, liquefaction, and high-ground water levels. The structured slab is designed to span between deep pile foundations after a major seismic event when the soils are anticipated to experience liquefaction induced settlement of up to 12 to 18-inches.

The east end roof and east end façade extend 20-ft beyond the building to create a frame around the east end window that looks east towards Mt. Hood. Anticipating a future Concourse E expansion to the east, the roof framing is designed with a bolted splice connection to enable easy removal of the cantilever sections. The roof framing tapers from a 21” deep member to a structural depth of 6” max at the east edge.

Together the structural shape and architecture create a dynamic and light space that brings the Pacific NW into the concourse extension.

