

Northgate Link Extension Sound Transit

Location: Seattle, Washington

Date: 2012 - 2017

Structure: (SEM) Cross passages

Length: Cross passages are approximately 40 feet (12 meters)

Cross-Section: Height: 18.5 feet (5.7 meters)
Width: 17 feet (5.2 meter)

Geology: Soft soils with intermittent lenses of granular soils; high groundwater table

Cost: Approximately \$1.9 Billion

Client: Jaydee / Coluccio / Michels JV (JCM)

Owner: Sound Transit



Figure 1. Ground freeze pipe during the ground treatment for the cross passage.

Design and Construction Support Services for SEM Cross Passages:

Northgate Link is a 4.3 mile (6.9 kilometer) extension of Washington Sound Transit's light rail system. The line connects the Northgate, Roosevelt, and U District neighborhoods to downtown Seattle and the airport. Construction began in late 2012 with demolition of Roosevelt station. The line opened for passenger service in October 2021.

Gall Zeidler Consultants (GZ) provided expert consulting to the contractor including the development of construction drawings for the excavation of 23 cross passages. The geological conditions on site called for the development of a systematic depressurization scheme to lower the groundwater pressure in the immediate area of the cross passage excavation. Some areas required ground freezing to provide stable opening face to facilitate construction of cross passages. The prevailing geology is comprised of soft cohesive and non-cohesive soils with intermittent lenses of granular soils that are prone to running. The SEM cross passage design includes systematic pre-support with self-drilling grouted pipe spilling as required by the ground conditions.

GZ assigned SEM experts to provide site support services during cross passages construction.

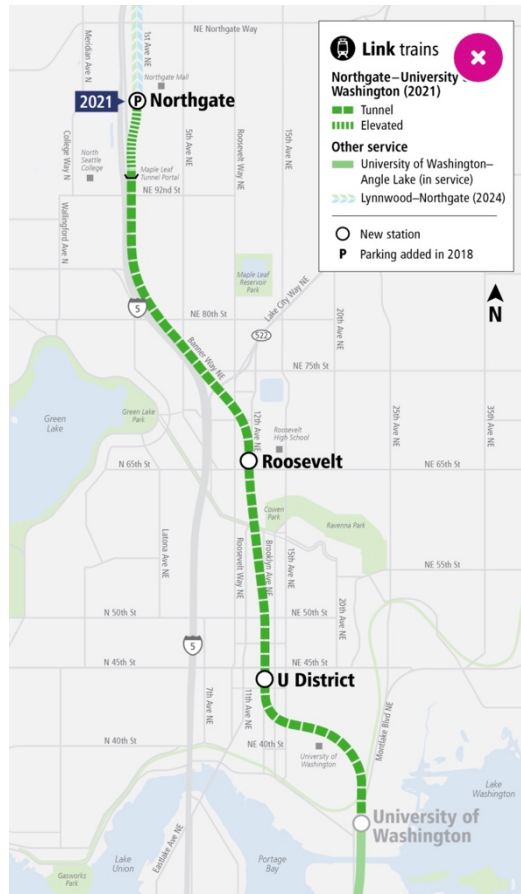


Figure 2. Northgate Link Extension alignment (Courtesy of Sound Transit).