

Grand Central Madison (East Side Access) New York Metropolitan Transportation Authority / Long Island Rail Road

Location: New York, New York

Date: 2001 – 2023

Structure: Manhattan Tunnels, Crossover Caverns, GCT Station Caverns

Length: Manhattan Tunnels: Approx. 25,000 feet (7,620 meters)
Each Station Caverns: 60 ft (18m) wide x 65 ft (20m) high x 1200 ft (365) long

Cross-Section: 4,200 square feet (390 square meters)

Geology: Schist, Schistose Gneiss, Gneiss, Granofels, Amphibolite, and Pegmatite

Cost: Approximately \$8.4 Billion

Client: General Engineering Consultant (GEC) a JV of Parsons Brinckerhoff, STV, and Parsons (design phase), Mott McDonald (construction phase)

Owner: Metropolitan Transportation Authority / Long Island Rail Road (MTA / LIRR) Authority (VTA)

Manhattan streets for a length of about 25,000 feet. The project is completed and in operation since January 2023. It has won several awards including the ACEC New York Top Award and the ACEC's Grand Conceptor Award for AECOM's work on the Grand Central Madison project on behalf of the New York City MTA.



Figure 1. Completed Terminal at Grand Central Madison, formerly known as East Side Access.

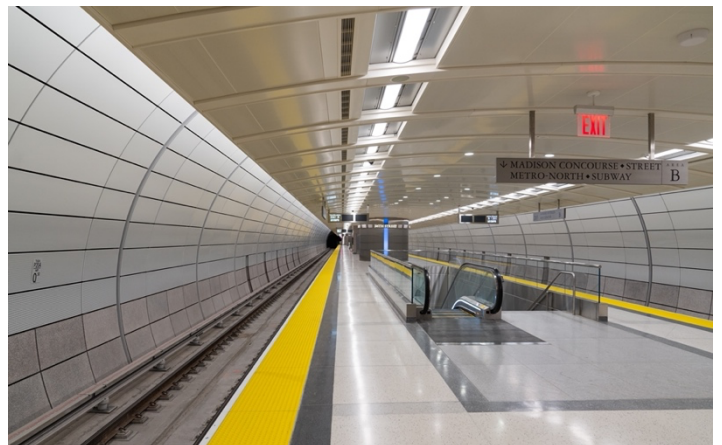


Figure 2. Finished underground train station at the new terminal at Grand Central Terminal.

Consulting, Tunnel Design, and Construction Support Services:

The Grand Central Madison also known as East Side Access (ESA), was one of the most complex transportation projects in the United States. The project connects the Long Island Rail Road's (LIRR) Main and Port Washington lines in Queens to a new LIRR terminal beneath Grand Central Terminal (GCT) in Manhattan. The connection increases the LIRR's capacity into Manhattan and dramatically shorten travel time for Long Island and eastern Queens commuters traveling to the East Side of Manhattan.

Gall Zeidler Consultants (GZ) has been involved in the tunnel engineering and construction support for this project for more than 21 years and has advised on the design, structural and geotechnical instrumentation and monitoring programs, construction, and waterproofing and final lining alternatives, and construction management and inspection services. Construction used two hard rock Tunnel Boring Machines for running tunnels, roadheads and drill and blast methods for the caverns, cross passages, shafts, and ventilation structures. The East Side Access Project entailed excavating tunnels approximately 120 feet beneath