



Building Tunnels and Bridges Underwater

By Ari Perez, Quinnipiac University

When I was a kid, I discovered a Calvin and Hobbes comic strip that posed one of my own burning questions: How do they know the load limit on bridges? Calvin's dad (incorrectly) tells him, "They drive bigger and bigger trucks over it until it breaks. Then they weigh the last truck and rebuild the bridge."

Several decades later, I'm a geotechnical engineer. That means that I work on any construction projects that involve soil. Now I know the real answers to those people wonder about infrastructure. Oftentimes, like Calvin's dad, they're thinking about things from the wrong direction. Engineers don't typically determine the load limit on a bridge; instead, they build the bridge to carry the load they're expecting.

It's the same with another question I hear from time to time: How do engineers build things underwater? They actually don't typically build things underwater—instead they build things that then end up underwater. Here's what I mean.

Building underground, beneath the water

Sometimes, when you're building underwater, you're really building underground. It's not about the water you see at the surface but rather what surrounds the actual structure you're building.

If there's rock or soil all around what you're constructing, that's typically thought of as underground construction—even if there's a layer of water above it and that's all you see from above.

Underground construction usually uses powerful tunnel-boring machines to excavate soil directly. This machine is often called a mole for a reason. Like the animal, it creates a tunnel similar to a burrow by excavating horizontally through the ground, removing the excavated material out behind it. Done with care, this method can successfully build a tunnel through the ground beneath a body of water that can then be lined and reinforced.

Engineers used this method to build the Channel, for instance, a railway tunnel beneath the English Channel that connects England and France.

While modern machinery is quite advanced, this method of construction started about two hundred years ago with the tunneling shield.



Initially, these were temporary support structures that provided a safe space from which workers could excavate. New temporary structures were built deeper and deeper as the tunnel grew. As the designs improved with experience, the shields

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Amtrak Design-Build Airo Facilities Sunnyside, New York
Amtrak Contract
Bid Date: July 17, 2024

Description of project:
Sunnyside Yard Airo Intercity Trainset Facility Project (known as "Airo Project") which consists of new, and renovate existing, trainset maintenance facilities within Amtrak's Sunnyside Yard (SSY) to accommodate trainset activities for existing and new fleet equipment; and Crew Base Facility (CBF) with Parking Garage Project (known as "CBF Project") which consists of new facility to consolidate existing yard groups/departments located in trailers and other functions within SSY and a new employee parking garage. Both projects shall include site improvements, pathways and roadway improvements, and storm water mitigation.

Many bidding opportunities are available: utilities, masonry, structural steel, miscellaneous metals, precast panels, wall panels, roofing, spray fireproofing, painting, waterproofing, precast parking garage, plumbing, HVAC, millwright work (industrial), fire suppression, electrical, signals, communications.

If you are interested in bidding on this project, please contact Skanska's Outreach Coordinator: Aislinn.Speranza@skanska.com • EOE/M/F/Vet/Disabled

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IS SOLICITING COST PROPOSALS FROM NEW YORK STATE DBE SUBCONTRACTORS AND VENDORS

Design-Build Services for LIRR West Side Yard Flood Mitigation Measures
MTA Construction and Development Contract No. 6401
Bid Date: July 26, 2024

Description of project:
Design, furnish, construct, and install concrete perimeter flood walls, seepage cut-off barriers below the concrete flood walls, flood gates, deployable flood barriers, sump pumps, a tide gate chamber, drainage system improvements, workable aisles and a diesel generator, an automatic transfer switch, ancillary electrical equipment, and required communications.

This project will develop flood protection solutions for the West Side Yard in order to prevent and mitigate flooding of the LIRR Tunnels. The flood protection along the WSY perimeter will be accomplished via a combination of permanent flood walls and deployable flood barriers.

Many bidding opportunities are available: deep foundations, minipiles, jetgrout, sheeting, rebar installation, concrete supply, site work, electrical work, painting, paving, curb and sidewalk, site utilities.

If you are interested in bidding on this project, please contact Skanska's Diversity and Outreach Coordinator: Aislinn.Speranza@skanska.com • EOE/M/F/Vet/Disabled

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IS CURRENTLY SOLICITING COST PROPOSALS FROM QUALIFIED AND CERTIFIED DBE SUBCONTRACTORS, VENDORS, SERVICE PROVIDERS

NJ TRANSIT—Delco Lead, County Yard Improvements, Storage and Inspection Facility GC.02 Superstorm Sandy Recovery Program Project
NJ TRANSIT IFB No. 0000004
Bid Date: August 8, 2024

Brief description of work:
The Delco Lead and County Yard Expansion is a multifaceted project that would address the operations, storage, and resiliency needs along the NEC and provide a safe haven for cars in the event of a major storm or flooding event. The project is the reconstruction of the existing Delco Lead track and the construction of adjacent track from County Yard to North Brunswick for the storage of NJ TRANSIT trains in the event of severe weather.

The project consists of 3.20 miles of rail and catenary construction in an area adjacent to the Northeast Corridor called the Delco Lead ("Delco") and another 1.27 miles containing a new electrified rail yard with five 2,200-foot-long storage and inspection tracks along with a 1,250-foot-long Service and Inspection facility building called County Yard ("Yard").

Invitation to Bid for DBE Participation 12%
ALL QUOTATIONS ARE DUE BY CLOSE OF BUSINESS Thursday, July 25, 2024.
 Administrative and technical proposal bid date August 8, 2024, time 2:00 pm. For further information concerning subcontracting and/or purchasing opportunities, and to register as a subcontractor or vendor, please respond to solicitations@tutorperini.com or contact Arlene McBayne at (914) 739-1908. Come and join our team!

Tutor Perini

TUTOR PERINI CORPORATION, AN EEO EMPLOYER

IS CURRENTLY SOLICITING COST PROPOSALS FROM QUALIFIED AND CERTIFIED MBE, WBE, SDVOB, AND ALL LBE SUBCONTRACTORS, VENDORS, SERVICE PROVIDERS

AirTrain Newark Replacement Program—Guideway and Stations Project in the City of Newark, New Jersey
PANYNJ RFP No. 6000001763
Bid Date: August 9, 2024

Brief description of work:
The New AirTrain will replace the existing AirTrain, which opened in 1996, has outlived its useful life, and does not currently provide customers with the modern customer service amenities and service reliability expected of a world-class automated people mover (APM) system. The New AirTrain will include three new stations, and connect to the new modern Terminal A, the future Terminal Two (currently Terminal B), the Airport's new ConRAC facility, and the Northeast Corridor Rail Link Station, linking AirTrain customers to regional rail and light rail networks, and thereby encouraging customers and Airport employees to use public transit to and from the Airport. The New AirTrain will be designed to maximize customer convenience with seamless connections to other forms of transportation and provide modern amenities in AirTrain stations and in vehicles (e.g., high-speed Wi-Fi, count-down clocks, and real-time flight information) to enhance the customer's end-to-end journey.

Invitation to Bid for M/W/SDVOB/LBE Firms: MBE 20%, WBE 10%, SDVOB 3%, and LBE 10%
ALL QUOTATIONS ARE DUE BY CLOSE OF BUSINESS Friday, August 2, 2024.
 Administrative and technical proposal bid date August 9, 2024. For further information concerning subcontracting and/or purchasing opportunities, and to register as a subcontractor or vendor, please respond to solicitations@tutorperini.com or contact Arlene McBayne at (914) 739-1908. Come and join our team!

New York City Football Club Stadium Project

Turner

IS SOLICITING COST PROPOSALS FROM NEW YORK CITY CERTIFIED, MWBE and LOCAL CONTRACTORS AND CONSTRUCTION SUPPLIERS. PLEASE NOTE THIS IS A UNION PROJECT.

Construction Services for the New York City Football Club Stadium Project

Description of Project: The project consists of an over 600,000 GSF open-air soccer stadium with an approximate 25,000-seat capacity including State-of-the-art video, scoreboards, & sound system. The stadium will be located adjacent to Citi Field in Flushing Meadows, NY. The Stadium will also be the location of the NYFCFC and City in the Community Non-Profit Headquarters. This project will include concrete, structural steel, HVAC, Electrical, Fire Protection, and much more.

Available Opportunities and Bidding Dates:

- MEP Trades – Package to be released April 2024
- MEP Trades – Package to be released 3rd Quarter 2024
- Architectural Trades – Packages to be released 3rd and 4th Quarter 2024

If you are interested in getting involved in the construction portion of this project, please scan the QR code and fill out the attached form. All questions should be directed to NYFCFC@TCSCO

Building the Future

Turner PROJECT INTEREST

If you have any interest in working on the New York City Football Club Stadium Project, please scan the QR Code and fill out the form.

Prime Contractor

- Large volume contractor
- Prior experience handling packages of this size and complexity

Sub-Tier

- Lower volume contractor
- Contractor looking to perform work under a prime contractor

Supplier

- Construction supplier that can deliver materials to Queens New York

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2024

8(a) Orientation and SAM Registration Webinar
Wednesday, July 17, 2024, 10:30 am–11:30 am
Online
Main Sponsor(s): US Small Business Administration
Contact: SBA@llinois.gov, 312-353-4528, illinois.do@sba.gov
Fee: Free; registration required
 Join the Small Business Administration (SBA) Illinois District Office for a virtual workshop providing an overview of the 8(a) Business Development program, eligibility requirements, and program benefits. Also learn how to increase your potential for federal contract opportunities through System for Award Management (SAM) registration, including information that you need for the registration process. SBA presenters will offer additional tips, address FAQs, give directions on where to get further assistance, and answer your other questions. To register for this free webinar, visit <https://www.eventbrite.com/e/8a-orientation-sam-registration-tickets-518989961947>

Federal Contracting: Woman-Owned Small Business (WOSB) Program Webinar
Thursday, July 18, 2024, 10:00 am–11:00 am
Online
Main Sponsor(s): US Small Business Administration
Contact: <https://www.eventbrite.com/e/welcome-to-wosb-webinar-tickets-482397041537>
Fee: Free; registration required
 Welcome to the WOSB webinar series! Are you a woman owner of a small business? The federal government's goal is to award at least five percent of all federal contracting dollars to woman-owned small businesses each year. Join us for training on how to register for SBA's Woman-Owned Small Business (WOSB) program, which helps eligible small businesses to qualify for federal contracting opportunities. The monthly sessions will include an overview of the self-certification process, as well as a discussion of the NAICS codes that qualify as WOSB or EDWOSB. Register for this free webinar at <https://www.eventbrite.com/e/welcome-to-wosb-webinar-tickets-482397041537>

Selling to the Federal Government Webinar
Thursday, July 25, 2024, 1:00 pm–4:00 pm
Online
Main Sponsor(s): US Small Business Administration
Contact: George.Tapia@sb.gov, 610-382-3086, george.tapia@sba.gov
Fee: Free; registration required
 Did you know that the federal government is the largest purchaser of goods and services in the world? Interested in learning how your business can market your services or goods to the federal government? Register on line at <https://www.eventbrite.com/e/how-to-sell-to-the-federal-government-tickets-21790713611> SBA helps to ensure small businesses get fair opportunities to share federal government prime contracts. Topics will include: How to Register, Small Business Certifications, Finding Opportunities, Marketing Your Firm, Federal Supply Schedules, Getting Paid, Tips to Prepare Your Offer, How to Seek Additional Assistance. All training sessions are held via Microsoft Teams Meeting. Participants must ensure Microsoft Teams is functioning.