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CUTTERHEAD

Tunnel And Underground Newsletter

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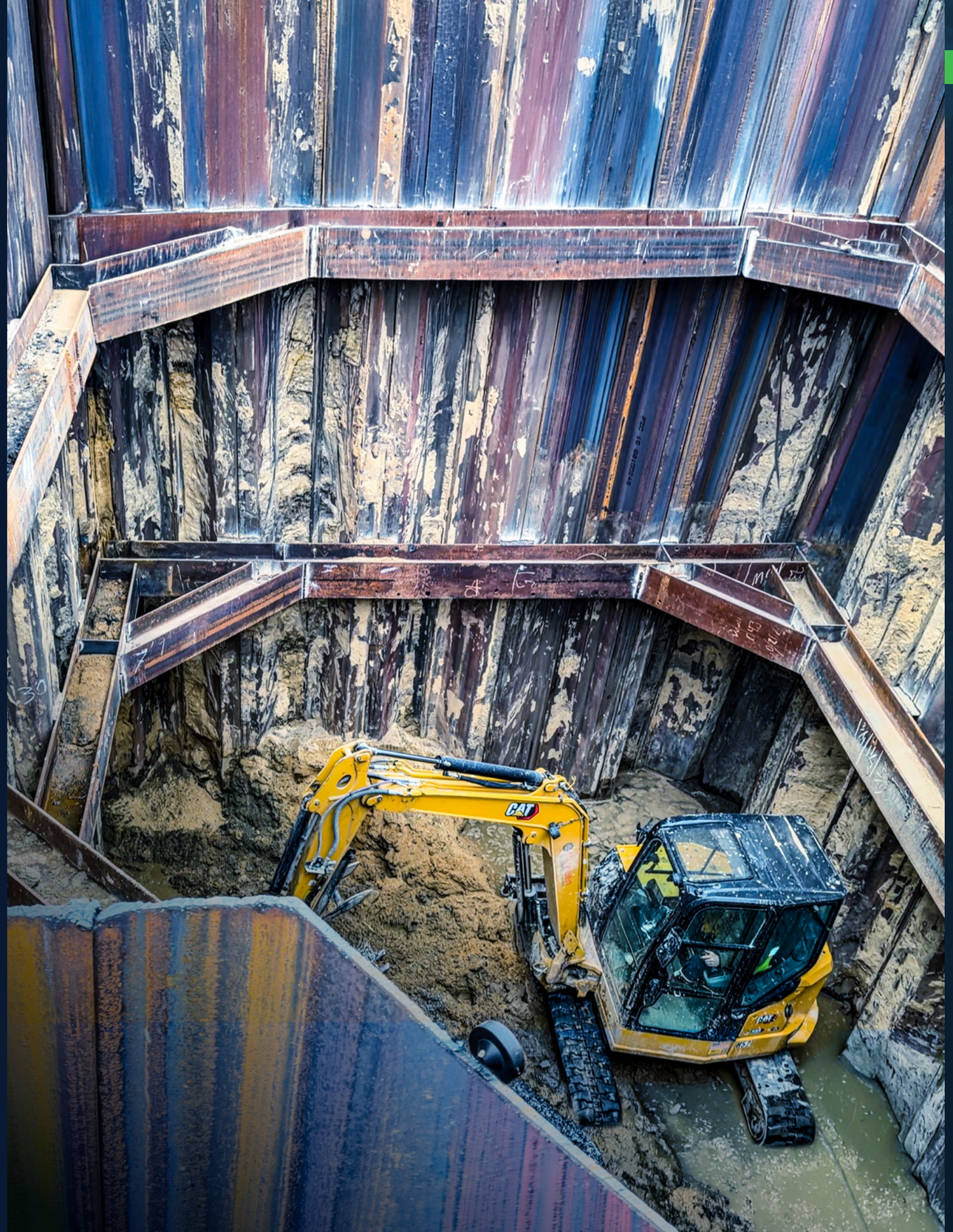
Cemetery Brook Drain Tunnel

INSIDE



FEATURED PROJECTS

CEMETERY BROOK DRAIN TUNNEL PROJECT

Manchester, New Hampshire

The Cemetery Brook Drain Tunnel (CBDT) is the tunneling centerpiece of Manchester's Phase II combined sewer overflow (CSO) program and a cornerstone of the city's 30-year strategy to improve Merrimack River water quality and reduce flooding. At its core is a 2-mile-long, 12-foot-inside-diameter tunnel constructed up to 80 feet below ground, with seven deep drop shafts and a new river outfall that together remove Cemetery Brook from the combined system and convey storm flows safely to the Merrimack. The City of Manchester owns the project, and Parsons supports the delivery as program manager and construction manager (PM/CM).

The tunnel alignment threads beneath dense residential neighborhoods, the Elliot Hospital district, and an active CSX rail corridor at River's Edge, connecting an inland receiving and inlet shaft to a riverfront launch site and outfall. Parsons' PM/CM team is helping the City sequence work under a 2020 consent decree that governs the broader Phase II CSO program, which includes more than $600 million in tunnel, separation, and treatment upgrades through 2040.

Subsurface investigations revealed a classic but challenging New England profile, such as fill, glaciofluvial and glaciolacustrine deposits, as well as boulder-laden glacial till overlying the crystalline Massabesic Complex gneiss, granite, and schist, which drove selection of a hard-rock tunnel-boring machine (TBM) and the need for disciplined wear management and careful handling of transitions. Each of the seven drop shafts is tailored to this complex and variable geology and to tight urban footprints. For example, DS6 extends to roughly 58 to 92 feet and lies close to an adjacent hospital, where deep construction must be delivered around live utilities that cannot be tied in until tunneling is complete. Ground improvement is central to managing risk at the launch zone and soil-rock interfaces. As an example, beneath the CSX tracks at the riverfront launch area, low-pressure permeation grouting is strengthening granular soils and reducing permeability to create a more uniform ground mass for TBM launch while meeting strict settlement tolerances for the railroad. Factory acceptance testing of the hard-rock TBM, which will be used to excavate the main tunnel, is complete, and the TBM launch is planned for late summer 2026, with the machine advancing from the riverfront under the CSX crossing and urban corridor to break through into DS7 for retrieval.

Working within the consent decree schedule, the City and its partners face a familiar but demanding set of tunneling challenges: variable ground conditions, multiple active work sites, a railroad crossing, disposal of tunnel and shaft spoils, and construction near sensitive receptors, including Elliot Hospital and residential neighborhoods. Parsons' PM/CM team is assisting the City in coordinating these interfaces, including monitoring risks tied to ground behavior, utilities, and schedule and supporting communication with regulators, railroad stakeholders, and the community.

For tunneling professionals, the CBDT illustrates the integration of hard-rock TBM mining, deep urban shafts, and targeted ground improvement in glacial geology, delivered under regulatory deadlines and in a dense urban environment to create a long-term backbone for CSO control and flood resilience in Manchester.

Cemetery Brook Drain Tunnel (shaft support of excavation)

HUDSON RIVER TUNNEL PROJECT

New York, New York / New Jersey

As a key member of MPA Delivery Partners—in a joint venture with Mace and Arcadis—Parsons is at the forefront of the Hudson Tunnel Project (HTP), one of the most critical infrastructure endeavors in the United States. Following a landmark $665 million contract extension awarded by the Gateway Development Commission (GDC) in late 2025, our team has fully integrated with the GDC to provide world-class program management, engineering oversight, and construction support. This innovative delivery-partner model allows us to manage the immense complexity of the program while streamlining decision-making and mitigating risks across multiple massive construction packages.

The Parsons team is proud to be supporting the project via full staff augmentation to the GDC. The MPA team assists in all aspects of program management for the HTP. Additional MPA staff are assigned to the various Supporting or Executing Partners (SEPs) to provide Subject Matter Experts (SMEs) and staff augmentation such as for Stabilization and P1 Tunnel Core and Shell and for Amtrak: Package P2 Tunnel and Rail Systems Fit-Out NY Penn Station to Secaucus.

Entering 2026, the program has successfully transitioned from early-stage preparation to heavy civil execution. A primary milestone was the completion of the Tonnelle Avenue Bridge and Utility Relocation Project, in North Bergen, New Jersey. This essential enabling work cleared the path for the next phase of the project by creating the necessary staging area for the Palisades Tunnel.

In early 2026, the team reached a pivotal moment with the arrival of the first 8.7-meter-diameter (28.5-foot-diameter) TBM components at the Tonnelle Avenue site. Our team is currently overseeing the complex assembly of this massive machine, which is scheduled to begin its drive later this year. Simultaneously, the second TBM has shipped from the Herrenknecht AG factory in Schwanau, Germany, marking the start of a continuous cycle of subterranean progress that will eventually create two new tracks under the Hudson River.

Parsons' expertise is being put to the test across several high-stakes work zones including in-river stabilization involving preparing the riverbed for the TBMs, with our team managing a sophisticated deep-soil-mixing operation. A 183-meter-long (600-foot-long) cofferdam has been successfully shifted to the east, for the second phase of this operation. We also put our expertise to work on the Hudson County Access Shaft, in New Jersey, where construction of the shaft's slurry wall panels has been completed, creating a watertight underground perimeter. Excavation is set to begin this spring, providing a critical entry point for tunnel support and future systems installation.

The HTP is vital to the economic health of the region, replacing the 115-year-old North River Tunnel that currently serves 200,000 daily passengers. Once the new twin-bore tunnel is completed in 2035, it will allow for the full rehabilitation of the existing Superstorm Sandy–damaged tubes without interrupting service. By leveraging our global experience in mega-project delivery, we are ensuring that this 10-mile modernization effort remains on track to deliver a more reliable, resilient, and high-capacity rail connection between New York and New Jersey for the next century.

Gateway Hudson River Ground Stabilization Mixing Equipment and Cofferdam Crane and Barge (photo credit: P_Wei)

FREDERICK DOUGLASS TUNNEL PROGRAM

Baltimore, Maryland

Parsons, in a joint venture with WSP, continues to lead the design and construction support for the Frederick Douglass Tunnel Program. Entering 2026, the program has transitioned from the design and early-construction-work phase into a period of high-intensity construction. Using a Construction-Manager-at-Risk (CMAR) delivery model, the program is scheduled to be completed by 2035, with significant milestones achieved over the past year that pave the way for the arrival of the TBMs in 2027.

In February 2026, the program reached a critical construction milestone with the successful breakthrough of the 345-foot-long utility siphon tunnel. Located 100 feet beneath the Northeast Corridor (NEC) railroad tracks, this 10-foot-diameter tunnel was completed using controlled blasting to navigate complex rock formations.

This siphon tunnel is a vital “enabling project” that allows the program to relocate major Baltimore City water, sewer, electrical, and communication lines out of the path of the future rail tunnel. With the breakthrough complete, crews are now transitioning to the installation of new utility lines within the siphon, a process expected to continue through 2027.

As the design lead since the conceptual stage, Parsons/WSP is now supporting the execution of the following three major construction packages that are progressing simultaneously:

- **Southern Approach (Package B):** Major work is underway to realign the NEC, including the demolition of aging structures.
- **Tunnel Construction (Package A):** Awarded to the Kiewit/J.F. Shea JV and focused on the twin-bore Frederick Douglass Tunnel, site preparation continues on the surface, while the two massive TBMs that will dig the 2-mile tubes are currently being manufactured.
- **Fit-Out and Systems (Package C):** Planning is finalized for the final phase, which will equip the tunnels with tracks, catenary, and advanced fire and life safety systems.

The transformation of the West Baltimore MARC Station has moved from the drawing board to the field. Initial infrastructure work is underway to shift the station’s footprint 100 feet west, allowing for the construction of a fully ADA-accessible facility with high-level platforms. In March 2026, Amtrak officially launched a $50 million Community Investment Program (CIP), which is now accepting applications to fund local projects in parks, recreation, and workforce development, ensuring the project leaves a lasting positive legacy in the neighborhood.

The existing 150-year-old B&P Tunnel remains the single largest bottleneck on the NEC, causing delays nearly every weekday. Once the new Frederick Douglass Tunnel is operational, it will support fully electric passenger trains at speeds of up to 100 mph, a significant increase from the current 30 mph limit.

Along with the tunnel, our team continues to oversee the replacement of five critical bridges. This includes the signature Edmondson Avenue Bridge, a twin tied-arch structure that will serve as a visual landmark for Baltimore while supporting a modernized rail corridor that will serve more than 12 million annual riders with unprecedented reliability.

Frederick Douglass Tunnel Program

WESTSIDE PURPLE LINE EXTENSION SECTION 1

Los Angeles, California

Parsons is the prime designer and design engineer of record (EOR) for Section 1 of the Los Angeles Metro Westside Purple Line (D Line) Extension, which has officially transitioned from a complex subterranean construction site into a fully tested, operational transit asset. This 3.92-mile foundational segment, which extends the subway from the existing Wilshire/Western station to Beverly Hills, is now in its final weeks of preparation before opening to the public. The project also consists of three new stations constructed along the alignment. The permanent underground structures include stations at Wilshire/La Brea, Wilshire/Fairfax, and Wilshire/La Cienega, and a transition structure at Wilshire/Western.

The past year marked a monumental shift as the project moved from 91% completion to a state of total readiness. On July 5, 2025, the project reached substantial completion, a definitive milestone that signaled the end of major heavy construction. Currently, overall project completion stands at 99%.

System Integration and Testing (SIT): A critical highlight of recent efforts was the successful conclusion of SIT, which is now 100% complete. This phase ensured that the “brain” of the subway—including communication-based train control, fire and life safety systems, third-rail power distribution, and ventilation—functions as a seamless and reliable network. With testing finished, the infrastructure is proven safe for high-frequency passenger service.

Surface Restoration and Station Finishes: While the heavy engineering was completed deep underground, the project team has also been focused on the Wilshire Boulevard corridor. Street restoration, station finishes, and plaza construction are now 99% complete at the three new stations: Wilshire/La Brea, Wilshire/Fairfax, and Wilshire/La Cienega. Final improvements include new pavement, street lighting, traffic signals, and bus pads.

The Road to Revenue Service: The project is currently in the final stages of pre-revenue operations, during which Metro staff are conducting simulated service runs to finalize training and schedules. We are proud to announce that revenue service is scheduled to begin on May 8, 2026, fulfilling a long-term vision to provide a high-capacity transit alternative to one of the nation’s most congested corridors.

Project Updates at a Glance

- Overall Completion: 99%
- Substantial Completion: Reached July 5, 2025
- Systems Testing: SIT 100% complete
- Street and Station Finishes: 99% complete
- Public Opening (Revenue Service): May 8, 2026

Westside Purple Line Extension Phase 1 (photo courtesy of Los Angeles Metro)

CALIFORNIA HIGH-SPEED RAIL: CONSTRUCTION PACKAGE 1

Madera to Fresno, California

Construction Package 1 (CP-1) represents the foundational segment of California’s ambitious new high-speed rail system, which will connect San Francisco to the Greater Los Angeles Area, with subsequent phases combining to ultimately span 800 miles and connecting Sacramento to San Diego. Designed to accommodate trains traveling at speeds exceeding 200 mph, this initial 29-mile alignment (later extended to 32 miles) serves as the system's backbone through the Central Valley, beginning in Madera County and extending just south of Fresno. CP-1 is primarily a civil infrastructure project featuring more than 30 grade separations, a 350-foot top-down construction box, 3.4 miles of aerial structures, a major crossing over the San Joaquin River, and 1.7 miles of trench.

As a joint venture partner and the lead designer for the Tutor Perini/Zachry/Parsons (TPZP) Joint Venture, Parsons has been instrumental in delivering the first significant design-build contract for the California High-Speed Rail Authority. To meet demanding schedules and budgets, Parsons used a matrix structure to advance multiple design packages simultaneously across multiple geographic segments.

Innovation has been a hallmark of Parsons’ contribution. The team employed 3D modeling to identify cost-saving alternatives, which allowed for the reduction of trench structures, optimization of embankments, and the replacement of high-maintenance steel trusses with long-lasting concrete arches. These efforts significantly reduced costs while improving long-term system maintainability.

Successful completion of trenchless crossings highlight Parsons’ ability to deliver high-precision engineering beneath active rail lines. The team successfully completed the following two geotechnically challenging jack-and-bore crossings:

- Church Avenue: A 90.5-inch steel casing was driven 225 feet beneath active railroad tracks. To mitigate risks in shallow sand deposits, the team implemented a demonstration zone and full-time geotechnical observation.
- H Street/Dry Creek: A 74-inch casing was advanced 261 feet beneath four active tracks with only 6 to 7 feet of cover. This high-risk operation required an extensive permeation grouting program and non-revenue-hour tunneling to avoid track closures.

As of late 2025, the CP-1 project is progressing through advanced civil-stage delivery. Additionally, 90% of utility relocations are finished, and 99.8% of right-of-way parcels have been delivered to the design-build teams.

High-Speed Rail CP-1 – Cedar Viaduct (rendering courtesy of California High-Speed Rail Authority)

LOUIS-HIPPOLYTE-LA FONTAINE TUNNEL

Quebec, Canada

The Louis-Hippolyte-La Fontaine Tunnel is undergoing a major rehabilitation led by Le Ministère des Transports et de la Mobilité Durable du Québec (MTMD). The objective is to enhance the performance and extend the service life of the structure so it can continue to fulfill its essential role in the movement of people and goods along Highways 20 and 25. Since 1967, the tunnel has served as a vital corridor, linking the east end of the Island of Montréal to Longueuil via l'Île Charron. It is a critical piece of infrastructure not only for the Montréal region but also for Quebec and Canada as a whole.

Parsons and Tetra Tech, working together in a joint venture, have served as the owner's engineer on this project since 2018, under a design-build-finance delivery model. The team contributed to the development of technical specifications and performance requirements and supported the client throughout the request-for-proposals phase. It continues to provide technical support during construction. The national significance of this project is widely recognized: the Louis-Hippolyte-La Fontaine Tunnel is ranked 35th in ReNew's Top 100 Infrastructure Projects in Canada.

The rehabilitation program covers both traffic tubes and the central corridor. It includes repairs to tunnel walls, vaults, portals, and approach walls, and the replacement of supporting concrete beams. The work also involves the addition of emergency evacuation airlocks, the installation of a Saccardo-type ventilation system, and the refurbishment of the ventilation towers and the structures of the Souligny interchange. Other measures include the construction of protective shelters at the portals; the overhaul of interior tunnel components such as the concrete wearing surface, joints, and drainage systems; and the upgrading of electrical, lighting, ventilation, monitoring, and communication systems.

The project also includes roadway improvements along Highway 20, notably pavement rehabilitation, enhanced drainage, and updated signage, as well as concrete pavement work on Highway 25 on both approaches to the tunnel. Surrounding infrastructure has been improved with the addition of a multipurpose path and a noise barrier wall along Curatteau Street. Architectural enhancements, including covered structures at the portals, modernized lighting, and landscaping, are also part of the program.

Three park-and-ride lots for public transit users have been constructed, and several mitigation measures have been implemented within the transit network, including the widening of certain highway sections and the addition of reserved bus lanes at key locations.

Rehabilitation of the southbound traffic tube was completed in April 2025, and traffic now uses this tube while full rehabilitation of the northbound tube is in progress. A partial reopening of the north tube, with two lanes in each direction, is planned for fall 2026. Finishing work and landscaping will continue until 2027, with full project completion anticipated in the same year.

Louis-Hippolyte-La Fontaine Tunnel (photo credit: Ministère des Transports et de la Mobilité Durable)

MATTAWA DUNDAS SANITARY TRUNK SEWER PROJECT

Region of Peel, Ontario, Canada

Parsons provided design and engineering services during construction to the Regional Municipality of Peel (Peel Region) for the Mattawa Dundas Sanitary Trunk Sewer Project in the city of Mississauga, Ontario, Canada. Peel Region's Waterand Wastewater Master Plan identified the need for upgrades to the existing sanitary trunk sewers and water mains in the southeast area of the city of Mississauga to address forecasted long-term servicing needs in the region to the year 2031. Specifically, 650 meters of new 1,200-mm-diameter sanitary trunk sewer was proposed to address the needed improvements at several locations within the existing sanitary trunk sewer network near Dundas Street East and Mattawa Avenue, as well as to provide security and operational redundancy to the region's sanitary trunk sewer network.

The design and construction strategy minimized impacts to the public, minimized impacts to the environment within the regulatory boundary limits, and reduced the property acquisition requirements. The project's total estimated construction cost is approximately $22 million.

The tunneling construction works were substantially performed by the contractor, Ward & Burke Construction. The 1,200-mm-diameter TBM production rate was approximately 10 meters per day. Ward & Burke conducted the tunneling operation in 12-hour shifts each day. The contract allowed for 24-hour tunneling operation; however, Ward & Burke did not feel the need to use a 24-hour continuous operation of TBM. The tunneling construction alignment encountered mixed-face shale limestone formation consisting of overburden soils and boulders, as well as the shale limestone bedrock. There were no significant issues during the tunneling operations, and TBM advanced and processed all the encountered materials without issue. The project was substantially completed in August 2025.

Mattawa Dundas Sanitary Trunk Sewer Project (microtunnel break-out)

DUBAI STRATEGIC SEWERAGE TUNNELS

Dubai, United Arab Emirates

Since being awarded the Dubai Strategic Sewerage Tunnel (DSST) project in 2016, Parsons has continued to support Dubai Municipality (DM) in implementing a deep sewerage system vital to the city's strategic 50-year master plan. The project is transforming the city's infrastructure by building two massive deep wastewater tunnels and associated link sewers that will convert the current network into a full gravity system. Once complete, the project will eliminate more than 100 existing pump stations, significantly reducing wastewater treatment costs, power consumption, and carbon emissions.

The project has reached significant milestones in its transition to a public-private partnership (PPP) model, which was approved by the Executive Council of Dubai in June 2023. Following the launch of the first two PPP tender packages in early 2025, Parsons is currently serving as technical advisor to DM. In this capacity, our team provides expert guidance on the technical aspects of the procurement process, ensuring that design, construction, operation, and maintenance meet the highest contractual and performance standards.

Spanning more than 75 kilometers of deep tunnels and 220 kilometers of link sewers, the project uses modern TBM technology to reach depths exceeding 100 meters. Innovation remains a cornerstone of our delivery; we developed a project management information system (PMIS) that now includes full building information modeling (BIM) capabilities—a first for the client. Additionally, we have implemented advanced risk management procedures, including system-wide vulnerability assessments and risk registers aligned with international standards.

Sustainability is integrated into every phase, from the careful selection of shaft sites to minimize traffic and public disruption to the evaluation of advanced treatment technologies. Conceptual designs for the Jebel Ali (JSTP) and Warsan (WSTP) sewage treatment plants incorporate energy recovery methods such as biogas-based power generation and heat recovery from sewers. These efforts ensure the system can sustainably accommodate Dubai's projected population growth while significantly reducing the overall energy footprint of the municipality.

The DSST project remains on track to decommission the existing pumped system and provide a sustainable, innovative, and reliable service for future generations, with project activities continuing through 2028.

Dubai Strategic Sewerage Tunnels

WEST VAUGHAN SEWAGE TUNNEL PROJECT

West Vaughan, Ontario, Canada

Parsons is providing detailed design and construction contract administration services for a new sewer trunk tunnel and pumping station upgrade to provide additional capacity for future development in the city of Vaughan. The Regional Municipality of York intends to implement regional sewage servicing, particularly in the West Vaughan area. This project, valued at $530 million, will accommodate future growth servicing demands and provide sustainable wastewater servicing.

Our work includes the construction contract administration of the Tunnel Phase 1 trunk sewer and related shafts. The trunk sewer tunnel is approximately 11.4 kilometers long with a 3.0-meter internal diameter and will run primarily along Highways 27 and 7, terminating at the York Region Humber Sewage Pumping Station off Steeles Avenue. The shafts and tunnel will convey sanitary flow from connections at Huntington Road and other local connections to the upgraded Humber Sewage Pumping Station. The sewer alignment is divided into three segments (South, Central, and West), where two earth pressure balance (EPB) TBMs are used for excavation with 250-mm-thick precast concrete segments (PCTL) for tunnel liners.

This contract is preceded by the Humber Sewage Pumping Station advanced contract (Contract A), where a new pump station is being built and commissioned. Construction of the shaft (7L) was part of Contract A's scope, which will be handed over to the tunnel contractor to be used as the TBM receiving point for the South Segment drive.

Project Updates

- Five out of seven shafts, including the main tunnel launching shaft, are now fully supported and excavated.
- Overall, approximately 82% of total shaft excavation is complete.
- Both TBMs are now on site, and approximately 20% of the PCTL segments have been produced.
- Approximately 200 meters of starter and blind tunnels have been excavated using a roadheader and supported with rock bolts, mesh, and shotcrete.
- The first tunnel drive has reached the 120-meter mark, and the TBM is now positioned to proceed with full production mining.
- Sinking of a 20-meter-diameter-by-20-meter-deep shaft using the sunken caisson method has been successfully completed.

Notable Services

- Peer-reviewed two major value-engineering proposals by the contractor, resulting in cost savings through the redesign of PCTL using steel-fiber reinforcement and the conversion of a two-pass conventional structure to a permanent sunken caisson solution.
- Developed a master chart to track all permits and agency contacts and assigned a single point of contact for utility locate clearances to facilitate faster turnaround times.
- Careful review of as-built records and collaboration on design updates facilitated the development of strategies to incorporate new work with existing facilities, enhancing safety and mitigating risks to critical infrastructure.

West Vaughan Sewage Tunnel Project (shaft aerial view)

RUA AL-MADINAH PROJECT

Al-Madinah Al-Munawarah, Saudi Arabia

Parsons continues to provide construction project management consultancy (PMC) and contract administration services for the Rua Al-Madinah project. As a key initiative of Saudi Arabia's Vision 2030, the project aims to elevate the city's cultural heritage and improve the visitor experience for the 30 million Islamic pilgrims expected to visit over time.

Rua Al Madinah Holding is the master developer of this mega-development, which represents the first phase of the Madinah Central Area (MCA). Under a revised PMC contract, Parsons is managing the delivery of the city's main infrastructure.

The project site covers a 1.4-square-kilometer area adjacent to the Prophet's Mosque. The extensive infrastructure scope includes the Jadat Al Haram Main Tunnel, Haram Services Tunnels, the KAAR Tunnel, and the Airport Road Tunnel, alongside dry and wet utility culverts and pedestrian bridges. A significant update to the project scope includes an additional 420-meter-long tunnel, extending King Abdul Aziz Road to provide essential underground parking access. The 1.5-million-square-meter development will ultimately provide 47,000 hotel rooms and dedicate 63% of its area to open green spaces.

Recent progress and achievements on site include the installation of mechanical, electrical, and plumbing (MEP) services within the tunnels and culverts. Architectural finishing has also commenced inside the MEP rooms, the construction of which is currently being prioritized and closely monitored. Despite various project challenges, the team has maintained steady progress across all work fronts.

"The Kingdom has several mega-projects that are driving the economic and social transformation of the region while highlighting its hospitality and heritage," said Parsons' Infrastructure EMEA President, Pierre Santoni. "Parsons is dedicated to helping our client achieve their vision of reforming Madinah into a modern Islamic and cultural destination for pilgrims and a revitalized urban center for its residents."

Notable Services:

- Managing contractors and consultants to ensure timely delivery of project deliverables.
- Administering contracts, including robust change control and cost management.
- Overseeing project quality and health, safety, and environment (HSE) standards across all construction activities.
- Reviewing contractor execution plans to verify technical and schedule feasibility.
- Monitoring and reporting progress against the performance measurement baseline.
- Coordinating with third-party developers for project handover and further development.

STRATEGIC SURFACE WATER AND GROUNDWATER NETWORK

Doha, Qatar

Qatar is implementing an extensive strategic surface and groundwater (SGW) network, managed by the Public Works Authority (Ashghal), to provide robust flood protection and achieve sustainability goals under Qatar's 2030 National Vision. Ashghal has commissioned Parsons to undertake a comprehensive review and update of the SGW concept design, minimizing environmental impacts and whole-life costs while maximizing operational flexibility that enables future real-time control (RTC).

The SGW network includes more than 76 kilometers of strategic tunnels, ranging in diameter from 3 to 8 meters, and more than 273 kilometers of connecting lateral tunnels, across two systems, the New District of Doha (NDoD) to the north and the South of Wakrah (SoW) to the south. The strategic tunnels will be constructed, operated, and maintained via deep shafts, and will convey their flows to multiple pump stations before being treated for potential reuse with excess discharged to the sea.

Through close collaboration and coordination with the client, Parsons significantly progressed the project's concept design over the past year. During the last few months, the team optimized the design using our InfoWorks ICM 1D and 2D hydraulic models, which resulted in raising the tunnel profile and reducing tunnel diameters, leading to significant cost reductions. This culminated in the release of the tender documents for the SoW package in March 2026, with a target construction start date by fall 2026. The SoW packages include approximately 30 kilometers of soft rock tunnels ranging in diameter between 4 and 8 meters, with 20 shafts ranging in diameter between 10 and 40 meters and reaching depths exceeding 45 meters. The system will connect to a pump station with an estimated capacity of 40 cubic meters per second. A construction duration of about five years is anticipated, using five TBMs. The concept design and tender documents for the remaining NDoD packages are in progress and are expected to be completed later this year.

One of our key successes on this project has been collaborating with the client, including embedding our staff in the client's office, allowing a joint effort focused on achieving high-priority tasks. This agile project management approach, rather than a conventional approach, expedited model delivery and client approval despite the design challenges. We will continue in progressing the design, shifting focus from the strategic tunnels to the lateral networks, pump stations, treatment facilities, and marine outfalls over the coming year.

Once completed, the SGW network will be a landmark system for stormwater and groundwater management for Qatar and across the globe. This project will be a critical backbone in supporting Qatar's evolving infrastructure, fueling the growth of construction and tunneling markets, and creating numerous business and job opportunities for the region.

DELTA CONVEYANCE PROJECT

Sacramento, California

California continues to advance the Delta Conveyance Project at a time when the state's increasingly volatile weather patterns are underscoring the need for more resilient water infrastructure. This year offered a clear example: a delayed wet season and below-average Sierra Nevada snowpack left the state with less water in storage heading into the dry months.

These conditions highlight the growing challenge of managing water in a system built for a more predictable climate. The Delta Conveyance Project is a modern, engineered upgrade to California's primary water delivery system. The project includes two new intakes on the Sacramento River and a single 45-mile underground tunnel that conveys water to existing infrastructure for the State Water Project, improving operational flexibility while reducing reliance on vulnerable Delta channels.

Parsons delivers program management services to the Delta Conveyance Design and Construction Authority (DCA), supporting overall program coordination and technical execution. This includes project controls such as scheduling and reporting, risk management, cost planning and monitoring, and performance tracking, alongside broader engineering and construction management support.

DCA is continuing to advance the project's engineering and design to support a more-detailed, Class 3–level cost estimate. This work builds on an already well-defined project and includes additional geotechnical investigations, design refinements, and constructability reviews to further reduce uncertainty and improve cost confidence. Ongoing engineering efforts are also identifying opportunities to streamline construction, optimize major facilities, and reduce overall project costs and schedule.

This project is a key component of California's long-term water strategy, helping to do the following:

- Capture and move more water during wet periods for use in dry conditions
- Improve resilience to climate-driven hydrologic variability
- Protect against disruptions from earthquakes and sea-level rise
- Maintain compliance with water-quality standards and environmental regulations
- Enhance protections for fish and wildlife through modernized infrastructure and operations
- Include a community benefits program that supports local priorities and long-term outcomes

The State Water Project supplies water to more than 27 million Californians and 750,000 acres of farmland. Because the system relies on natural Delta channels, it remains vulnerable to climate extremes and seismic events. The Delta Conveyance Project is designed to address these risks and support long-term reliability.

Delta Conveyance Project – Bethany Discharge Structure

THE KENSICO-EASTVIEW CONNECTION

Westchester County, New York

The Kensico-Eastview Connection (KEC) Project continues to make significant progress as it advances into critical stages of construction. Located within the Town of Mount Pleasant, the project spans two primary sites—the Kensico Campus along the western shore of the Kensico Reservoir and the Eastview site at the Catskill-Delaware Ultraviolet (CDUV) Disinfection Facility. Together, these sites anchor a major infrastructure effort designed to enhance the reliability and capacity of New York City's water supply system.

At the core of the project is a new 10,300-foot-long, 27-foot-finished-diameter deep rock tunnel that will provide a second connection between the Kensico Reservoir and the CDUV Disinfection Facility. Excavated through Manhattan formation bedrock using a Robbins Main Beam TBM, the tunnel represents a major engineering undertaking. Two shafts—Shaft 1C at Kensico and Shaft 2C at Eastview—will serve as key access and ventilation points, connecting the tunnel to surface and facility infrastructure.

The KEC program is being delivered through five coordinated construction contracts, each progressing at varying stages. KENS-EAST-2, which includes the relocation of Westlake Drive and major site preparation at Kensico, is now approximately 60% complete, with substantial completion anticipated in October 2026. This work has been critical in preparing the site for subsequent excavation and construction activities.

KENS-EAST-1 (KE-1), which encompasses tunnel excavation, shaft construction, and major rock work, began in March 2025 and is currently underway. At the Eastview site, utility relocations required for Shaft 2C have been completed, allowing shaft excavation activities to commence. At Kensico, the contractor has mobilized for Shaft 1C construction, completed permitting, and initiated test blasting operations. Overall, KE-1 progress stands at approximately 10% complete as tunneling preparations continue.

Additional supporting contracts are also moving forward. A shoreline stabilization contract, designed to address erosion along approximately 1,600 feet of the Kensico Reservoir's western shoreline following damage from Superstorm Sandy, is expected to be awarded soon. Similarly, a wetland mitigation contract will offset impacts to approximately 2.33 acres of wetlands through the creation of a new off-site mitigation area.

Looking ahead, the KENS-EAST-3 contract will deliver key above- and below-ground structures, including the new screen chamber at Kensico and the Eastview connection chamber. These facilities will play a vital role in managing water flow, debris removal, and treatment integration with the CDUV Facility. The screen chamber alone is designed to handle flows up to 2.645 billion gallons per day, underscoring the scale of the system upgrades.

Once complete, the KEC Project will significantly enhance operational flexibility within New York City's water supply system. By providing a redundant connection between Kensico Reservoir and the CDUV Disinfection Facility, the project will support improved water quality, increased system resilience, and compliance with regulatory requirements tied to ongoing upgrades at the Hillview Reservoir.

With major milestones achieved and construction accelerating across multiple fronts, this project continues to demonstrate Parsons' leadership in delivering complex tunneling and water infrastructure projects that will serve millions for generations to come.

Kensico-Eastview Connection

THE ZACATE CREEK INTERCEPTOR PROJECT

Laredo, Texas

The City of Laredo is currently advancing a critical wastewater infrastructure improvement: the Zacate Creek Interceptor project. Parsons, serving as a specialty subconsultant to Ardurra, is providing essential tunneling engineering services for this high-profile project, which is designed to modernize the city's utility system and protect its vital natural resources.

The core objective of the project is the design and construction of a new wastewater interceptor approximately 7,100 feet in length with a 42-inch diameter. This interceptor is being installed along and near the banks of the Rio Grande.

The primary purpose of this new infrastructure is to divert wastewater flow from the existing Zacate Creek Wastewater Treatment Plant (WWTP) to another interceptor, which ultimately conveys the flow to the more modern and efficient Southside WWTP for treatment. The Zacate Creek WWTP is the city's oldest plant, with sections more than 60 years old. Because it is located within a flood plain and faces high operational costs, this project is the most critical step in decommissioning the aging plant. Once the plant is closed, the riverside site can be reutilized for other community uses, fulfilling a longstanding 30-year promise to the residents of Laredo.

To minimize surface disruptions in the busy riverside area, the project is being constructed using microtunneling for the majority of its 7,100-foot length. This state-of-the-art trenchless technology allows for the installation of the interceptor deep under city streets and the Kansas South Railyard while mitigating impacts on traffic and the public.

During the project's groundbreaking, the tunneling machine—traditionally named to mark the start of its voyage—was unveiled as "Tunneling Teresa." Parsons' specialty tunneling expertise is vital to navigating the complex geotechnical and geological formations found along the Rio Grande, ensuring the state-of-the-art equipment accurately bores the path for the new transmission lines.

The project is currently under construction, with work progressing at the project staging area near Slaughter Park. The total investment for this infrastructure upgrade is estimated at $29 million. Following the successful groundbreaking in October 2024, completion of the Zacate Creek Interceptor is expected in the third quarter of 2026.

Zacate Creek Interceptor Project

THE PORTAL, AKA THE DOWNTOWN RAIL EXTENSION

San Francisco, California

The Portal, aka the Downtown Rail Extension (DTX), is a transformative rail infrastructure project in San Francisco that will extend Caltrain service from its current terminus at Fourth and King streets into the city's downtown core and serve as a critical connection for the California High-Speed Rail. The project is led by the Transbay Joint Powers Authority (TJPA) and is a critical component of the State's long-term transit vision, improving connectivity between regional rail, local transit, and the multimodal Salesforce Transit Center. The Portal includes a combination of surface, cut-and-cover, and underground elements, ultimately enabling direct rail access to the heart of downtown San Francisco and serving as a lynchpin to future regional and state rail connections through the second Transbay tube.

The Portal's preliminary engineering "project development" phase was completed in the fall of 2022 by the Parsons general engineering consultant design team. Since then, it has continued to advance through planning and procurement phases. The Portal entered the FTA's New Starts engineering phase in May 2024. Tunnel design activities have been on pause and are currently pending award of the project's progressive design-build civil and tunnel contract, for which the request for proposals was released to shortlisted teams in late 2025 and award is anticipated in early 2027. In the meantime, design progress has continued for enabling works and supporting design packages.

Parsons has played a key role in advancing The Portal over the past several years, particularly through tunnel and underground design support, construction impact assessments, and development of enabling works packages. Over the past year, Parsons' efforts have focused on progressing design for enabling projects that are critical to future tunnel construction, while earlier phases included extensive technical analysis and design development related to underground elements. More specifically, Parsons has advanced the utility relocation, building demolition, and railyard site clearing enabling works contract packages to a 60% design level. Collectively, these contributions reflect our deep expertise in complex urban tunneling and our support of one of California's most significant and transformational rail infrastructure projects.

Salesforce Transit Center Cross Section (rendering courtesy of TJPA)

HORIZON LATERAL PROJECT, SOUTHERN NEVADA WATER AUTHORITY PROGRAM AND CONSTRUCTION MANAGEMENT

Las Vegas, Nevada

Parsons continues to provide program and construction management services to the Southern Nevada Water Authority (SNWA) on its major capital program. Over the past 30+ years, this program has grown into a vast and complex infrastructure effort.

As we continue to manage such a large and evolving program, we are implementing many innovations and efficiencies such as a unique project control system that provides transparency to monitor how funds are used throughout the construction process; programmatic environmental impact statements that reduce delays; detailed analysis to categorize contracts by type and size generating competitive pricing; design suggestions to use similar structures and equipment across multiple facilities saving more than $29 million in construction costs; and value engineering applied to three major components resulting in an estimated savings of $35 million.

We recently provided planning, project development, design management, and construction management services for SNWA's new Intake No. 3, a deep-water intake designed to maintain access to Lake Mead's water supply despite historic drought conditions and declining lake levels. This intake ensures that Southern Nevada will retain water access even if the lake's elevation drops below the operating levels of the existing intakes.

Currently, we are delivering program and construction management for the Intake No. 3 Low-Lake-Level Pumping Station (L3PS). L3PS will connect the newly completed intake to SNWA's two main water-treatment facilities. The project includes the construction of a new pumping station, 144-inch-diameter aqueducts to tie into existing infrastructure, and a new 69-kilovolt electrical service. Once complete, it will have the capacity to pump up to 900 million gallons of water per day, further strengthening the region's drought resilience.

Continuing our collaboration, we were selected to provide program and construction management services under the 2020 Major Construction and Capital Plan (MCCP). This seven-year, $150 million contract covers program support for a range of capital projects. Under this initiative, we are managing key projects such as the Garnet Valley water and wastewater infrastructure, Stage II reliability improvements, ozone equipment upgrades, microbiology lab expansion, lower Las Vegas wash stabilization, the Horizon Lateral Program, flocculation area rehabilitation, and the River Mountains engineering and operations building.

Supporting more than $4 billion in infrastructure development, we have helped build essential facilities and used innovative technologies and processes to meet the demands of growth and impacts of drought in Southern Nevada.

Horizon Lateral Project (photo credit: Mike Cowan)

PROJECT WINS

DUBAI METRO BLUE LINE

Dubai, United Arab Emirates

The Government of Dubai's Roads and Transport Authority (RTA) has awarded Parsons, as part of a joint venture with AtkinsRéalis Group, PMC services on the Dubai Metro Blue Line project. The contract represents new work for Parsons and spans five years.

Under the contract, the joint venture will provide comprehensive project management services including design review, procurement support, construction supervision, testing and commissioning oversight, and project handover management. The Dubai Metro Blue Line, expected to commence operations in 2029, is a key component of Dubai's D33 Economic Agenda, which aims to position Dubai among the world's fastest, safest, and most connected cities by 2033.

"We are proud of our long-standing partnership with the RTA and are committed to working with their expert team on expanding the Dubai Metro network in line with the RTA's goal to provide seamless, safe, and sustainable mobility solutions that cater to the needs of Dubai's growing population," said Parsons' Infrastructure EMEA President, Pierre Santoni. "Our team will leverage our 80-plus years of global experience coupled with our local knowledge to deliver a world-class transportation system using the safest methods and most-innovative technology available."

Malek Ramadan Mishmish, director of rail planning and project development at the RTA, said, "We are pleased to appoint Parsons as the project management consultant for the Dubai Metro Blue Line, particularly given the company's extensive and proven experience in delivering projects awarded by the RTA since its establishment in Dubai. Parsons is a key partner in the RTA's success and achievements, which it continues to deliver."

Mishmish added, "The RTA is committed to working with leading global companies to implement its various projects and initiatives in line with the vision and ambitions of the Government of Dubai to make the Emirate the smartest and happiest city in the world. The RTA also strives to play an active role in achieving this vision, which is based on excellence, innovation, and future foresight, while leveraging advanced technologies in the field of smart and sustainable transportation."

The Dubai Metro Blue Line will span 30 kilometers and include 14 stations, enhancing connectivity between key districts, including Mirdif, Dubai Silicon Oasis, Dubai Creek Harbour, and Dubai Festival City. Upon completion, the line is expected to accommodate up to 320,000 passengers per day, supporting Dubai's 2040 Urban Master Plan for sustainable urban mobility.

Dubai Metro Blue Line

NEW WATER FOR SOUTH TEXAS PROJECT

Uvalde, Texas

Parsons, in collaboration with Ardurra, was selected to provide conveyance system engineering and consulting services associated with the New Water for South Texas Project. The project, which was initiated by the Nueces River Authority (NRA), is a regional effort to address critical water shortages caused by prolonged drought and projected supply deficits. The project's infrastructure includes a 100-million-gallon-per-day seawater desalination plant on Harbor Island and an extensive conveyance system consisting of approximately 190 miles of large-diameter pipe (ranging from 48 to 84 inches), pump stations, and a SCADA system to serve the 17,500-square-mile Nueces River Basin. This initiative seeks to provide a sustainable, long-term potable water supply through advanced treatment and a complex distribution network.

The scope of work specifically emphasizes the design of 50 trenchless pipeline crossings for roads, creeks, and petroleum corridors where traditional open-cut construction is not feasible. This includes 14 state roads, 9 major creeks, and 27 various petroleum and natural gas pipelines or corridors. Key technical responsibilities for these trenchless segments involve recommending geotechnical investigation programs, selecting shaft locations, and determining acceptable construction methods based on site-specific geotechnical results and regulatory requirements from the Texas Department of Transportation and pipeline companies. Furthermore, the scope includes providing detailed drawings (plan and profile sheets for each crossing), developing specifications for tunnel pipe installation, and recommending instrumentation for monitoring surface impacts during construction.

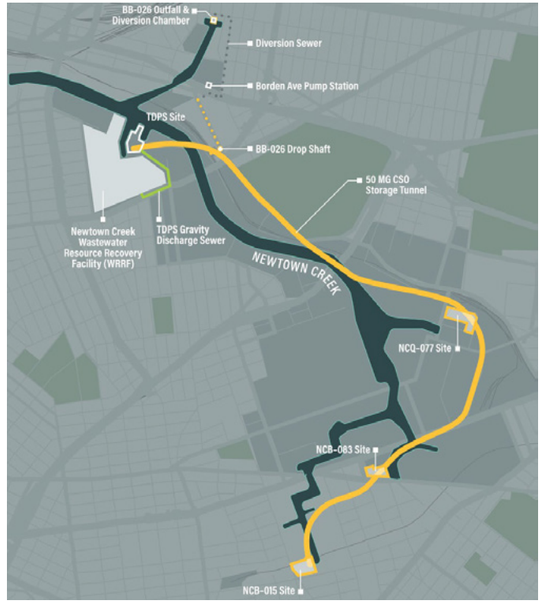
NEWTOWN CREEK COMBINED SEWER OVERFLOW STORAGE TUNNEL PROJECT

New York, New York

Newtown Creek CSO Partners, a joint venture consisting of AECOM, Parsons Corporation, and EPC Consultants Inc., has been selected by the New York City Department of Environmental Protection (NYCDEP) to provide construction supervision services for the city's first combined sewer overflow (CSO) storage tunnel and pump station project. This massive environmental initiative is designed to modernize wastewater infrastructure and significantly improve the health of Newtown Creek, a federally designated Superfund site. The scope of work involves overseeing the delivery of a 3.25-mile-long, 26-foot-diameter tunnel located 80 to 130 feet underground, capable of providing up to 50 million gallons of storage capacity to capture wet-weather flows that currently discharge into the creek.

The construction management (CM) team will be responsible for coordinating a complex, multi-phase program expected to span approximately 11 years of construction. Key management priorities include overseeing three major construction packages: site preparation at the former Greenpoint Marine Transfer Station (CP-1); the construction of the main tunnel and four critical diversion facilities at major outfalls (CP-2); and the delivery of the Tunnel Dewatering Pump Station (TDPS) and its discharge pipe to the Newtown Creek Wastewater Resource Recovery Facility (CP-3). The team will supervise highly technical operations, including the launch and operation of a TBM, the installation of specialized slurry wall support systems for six shafts, and the implementation of microtunneling and drill-and-blast techniques.

Beyond technical oversight, the role focuses on delivering sustainable legacies by applying global best practices to achieve measurable improvements in water quality, public health, and climate resilience for the Brooklyn and Queens communities. The CM JV will manage rigorous environmental compliance goals and coordinate with multiple city agencies to mitigate construction impacts such as noise and traffic. By effectively managing these complex urban tunneling and infrastructure components, the project will ensure that approximately 90% of the total CSO volume currently affecting these tributaries is captured and treated, fulfilling long-term environmental mandates and restoring vital urban waterways.



Newtown Creek CSO Storage Tunnel Project

TECHNICAL ARTICLE

CEMETERY BROOK DRAIN TUNNEL PROJECT: FACTORY ACCEPTANCE TEST MILESTONE

By Molly Foster, PE

The CBDT project reached a major milestone this March with the successful factory acceptance test (FAT) of its custom TBM at Herrenknecht's headquarters, in Schwanau, Germany. Over three days, from March 3 to 5, representatives from Parsons, the City of Manchester, and CDM Smith gathered on the factory floor to verify that the machine's performance, safety systems, and configuration align with CBDT's technical requirements.

Parsons was represented by Steve Minassian, Edward Pietrasz, and Molly Foster, who joined counterparts from the City of Manchester and CDM Smith to form a joint owner-designer-consultant review team. Working closely with Herrenknecht's engineers, the group followed a detailed FAT protocol that mirrored how the TBM will be operated once it is launched in Manchester.

A custom EPB TBM for urban drainage

The CBDT TBM is a custom-designed EPB machine for a challenging urban drainage tunnel in Manchester, New Hampshire. The shield has an outer diameter of more than 13 feet, with a tunnel drive length of approximately 2.25 miles. Behind the shield, 19 gantries extend the total machine length to more than 500 feet, housing power, slurry-handling, segment-logistics, ventilation, and control systems.

The machine is configured as a Mixshield/EPB-type TBM optimized for water infrastructure work, with a cutterhead equipped with 19 face disc cutters, four center discs, and multiple buckets and rippers. The FAT verified that the configuration matched the design and that cutter tooling, change-out equipment, and wear-detection systems were correctly installed and functional.

CBDT TBM (longitudinal section)

CBDT TBM (cross section)

What was tested in Schwanau

Herrenknecht's FAT process for the TBM was a rigorous, evidence-based evaluation designed to ensure every component of the massive machine operates in harmony before it leaves the assembly floor. For CBDT, the protocol covered all major subsystems from the front shield through the entire backup train, focusing on the following four primary functional areas:

- Structural and Mechanical Integrity: The team verified the power and resilience of the TBM, ensuring the shield could articulate, thrust, and maintain a watertight seal. These tests confirmed the machine's ability to navigate the planned alignment while protecting the interior from groundwater and soil pressure.
- Operational Vital Systems: Testing extended to the machine's circulatory systems, including high-pressure hydraulics, lubrication, and grout injection. Our engineers observed these systems through manual and fully automated cycles to ensure the TBM can reliably stabilize the ground and power the massive cutting head simultaneously.
- Segment Handling and Logistics: Because a TBM is essentially a moving factory, the robotic systems that lift, transport, and place the PCTL were extensively vetted. Using a scale-weight model, the team confirmed the precision of the segment cranes and the erector arm, ensuring the tunnel lining can be built safely and accurately.
- Life Safety and Environmental Controls: The most critical focus remained on the safety of the personnel. This included pressure-testing the hyperbaric chambers, verifying fire suppression and gas detection systems, and ensuring that emergency communication and life-support lines were fully integrated and functional.

By conducting this holistic "walk-down" in a controlled factory setting, the project team validated that the TBM is mechanically sound and ready for the high-stakes environment of subterranean construction.

A key schedule and risk milestone

With the FAT successfully completed and the acceptance certificate signed, disassembly, shipping, and reassembly can proceed, keeping CBDT on its critical schedule path.

Parsons' on-site involvement in Schwanau—side by side with the City of Manchester, CDM Smith, and Herrenknecht—helped ensure that design intent, construction needs, and operating requirements are fully aligned. That collaboration during FAT reduces technical risk, supports smoother on-site commissioning, and strengthens confidence as CBDT moves from fabrication into tunneling.

AWARDS AND RECOGNITIONS

American Council of Engineering Companies of Missouri – 2025 Grand Award in Waste and Storm Water Category

The Deer Creek Sanitary Tunnel and Pump Station was presented with a Grand Award by ACEC-Missouri at their annual gala held on Thursday, March 6, 2025, at the Marriott in downtown Kansas City, Missouri.

Photo from Left to Right: Timothy Broyles and Nancy Matteoni, Parsons; Jeff Smith, Metropolitan St. Louis Sewer District

2025 ACEC Honor Awards

The Deer Creek Sanitary Tunnel and Pump Station was presented with an Honor Award by ACEC-National at their Annual Black-Tie Gala, held on Tuesday, May 20, 2025, at the Grand Hyatt in Washington, DC. Of the 194 projects submitted, the Deer Creek Sanitary Tunnel and Pump Station was in the top 24 in the nation.

Photo from Left to Right: Gary Raba, ACEC Chair; Jon Kaneshiro, Eric Dawson, Nancy Matteoni, Pooyan Asadollahi, and Ardalan Shahkar, Parsons Design Team; Linda Bauer, President and CEO of ACEC

St. Louis Council of Construction Consumers – 2025 Inspiring Infrastructure Project Honorable Mention

The Deer Creek Sanitary Tunnel and Pump Station was presented with an Honorable Mention by the St. Louis Council of Construction Consumers at their annual gala held on Wednesday, March 26, 2025, at the Hilton St. Louis Frontenac.

Photo from Left to Right: Jeff Marchetto, KAI D-B, Pump Station Construction Manager; Rich Unverferth, Metropolitan St. Louis Sewer District, Owner; Nancy Matteoni, Parsons Design Team; Bernadette Ayers, KAI D-B, Pump Station Construction Manager; Rich Rounds, KCI Construction, Pump Station Contractor; Roger Archibald and Angie Hirtz, SAK Construction, Tunnel Contractor

PARSONS NAMED AS ONE OF THE WORLD'S MOST ETHICAL COMPANIES FOR THE 17TH CONSECUTIVE YEAR

For the 17th year in a row, we have been recognized by Ethisphere as one of the World's Most Ethical Companies®—an honor that reflects our sustained commitment to business integrity and our focus on leading with best-in-class ethics, compliance, and governance.

This achievement is rooted in the heart of our ethics program: strong employee engagement and transparency from our executive and management leadership, which together form the ethos of how we do business. Our long-standing commitment to integrity also sets the standard and expectation for our suppliers and vendors.

Building on this recognition, our 2025 Ethics Program data highlights how these values show up in practice—through higher employee engagement, faster case resolution, and the continued commitment of our employees to integrity, accountability, and our core values.

Thank you to every employee who spoke up this year. Your commitment strengthens our culture and helps ensure that we continue to lead with integrity.

STANDING OVATION AWARD

Outstanding contributions of the following three key members of Parsons' Tunnel and Underground Structure Practice were recognized with a "Standing Ovation Award":

- **Ardalan Shahkar, PE, Supervising Tunnel Engineer:** Ardalan exemplifies the award's spirit through his commitment to quality, problem solving, and forward momentum in complex conditions. As the joint venture's geotechnical engineer, he ensures foundation and earthwork meet the highest technical and compliance standards through meticulous review of materials, tests, and reports, and by providing practical solutions to evolving field conditions. Ardalan embodies integrity by taking a firm but fair stance to ensure procedures are followed, and his persistence and technical expertise directly support project success.
- **Molly Foster, PE, Senior Structural Engineer:** Molly serves as the office engineer for the CBDT, leading PMIS implementation, office setup, initial contract management, workflow organization, and contractor negotiations. She is the 2025 ACEC/MA Young Professional of the Year and earned her Massachusetts professional engineering license in August 2024. She is also a senior structural engineer for the Frederick Douglass Tunnel Program, where she leads design, coordinates personnel, presents to the client, and drives cost-effective innovation. As design engineer in charge with Engineers in Action, she mentors students on a suspension bridge project in Eswatini.
- **Danson Kelii, PE, Program Director:** As the project manager on the Joint Water Pollution Control Plant (JWPCP) Effluent Outfall Tunnel project, Danson has done an outstanding job of balancing risk management while maintaining a strong, collaborative relationship with the client. Danson's effort and leadership in a challenging environment have been extraordinary.

Publications

Title	Author(s)
World Tunnel Congress (WTC); May 15–21, 2026; Montréal, Canada	
Delivering Sustainable Wastewater Infrastructure in York Region: Design and Construction of an 11-km Tunnel System	A. Baca, S. Butorsky & I. King, **K. Elnabolsky,** and **S. Jabini Asli**
A Landmark Case of Design and Execution of 42-m-Diameter Twin Deep Shafts in Qatar	**Muhammad Humza, Mannan Ali,** Zaid Hussei, and Asif Riaz
49th Southwest Geotechnical Engineering Conference; May 12–14, 2026; Tempe, Arizona	
Integrated Structural and Geotechnical Analysis of Sheet Pile Systems for Urban Bridge Excavation	**Hassan Abbasi** and **Mostafa Sotoodeh**
21st International Symposium on Aerodynamics, Ventilation, and Fire in Tunnels – ISAVFT 2026; November 30 to December 2, 2026; Melbourne, Australia	
CFD Investigation of Unconventional Induction Fans Design for Architecturally Complex Road Tunnels	**Ibrahima Khalil Mbaye**

Presentations

Title	Presenter(s)
Panel Discussion: Microtunneling and Underground Construction in Houston Region; October 22, 2025; Houston, Texas	
Tunnel and Microtunnel Design Considerations	**Pooyan Asadollahi**
ASCE Chapter at Missouri University of Science and Technology; March 4, 2026; St. Louis, Missouri	
The Design Engineer's Role During Construction	**Nancy Matteoni**
Rapid Excavation and Tunneling Conference (RETC); June 9, 2025; Dallas, Texas	
Navigating Changing Ground Conditions in the Beach Interceptor Tunnel, Laguna Beach, California	**Scott Zylstra**

NEW HIRES

Danson Kelii
West Regional Tunnel Lead

Danson rejoined Parsons in October 2025 after a short leave. He is a project and engineering manager with extensive heavy civil experience on tunnels, bridges, and roadways. He has managed more than $200 million in construction work and $500 million as a regional engineering manager and currently serves as Parsons' project and design manager for the JWPCP Effluent Outfall Tunnel project. He has led contracts from $17 million to $110 million, managing teams of up to 100 engineers and 75 craft personnel, and has developed falsework and shoring designs for major tunnel and freeway contractors.

Omar Baltaji
Lead Tunnel Design Engineer

Omar has more than 13 years of research and design experience in geotechnical, structural, and hydraulic systems. His research focused on geotechnical data analysis, soil-structure interaction, numerical modeling, wireless communication, artificial intelligence, deep excavations, and tunneling. He had key roles in more than 10 large-diameter tunneling projects in soil and rock across the United States and Canada. He is currently the lead tunneling engineer in Doha, Qatar, working on the Strategic Surface and Groundwater Tunneling Network project.

Mark Guay
Principal Construction Manager

We are pleased to welcome Mark, a tunneling expert with 45 years of experience in mining and geotechnical engineering. Mark has managed major infrastructure projects, including the Narragansett Bay Commission CSO Tunnel and Indianapolis' world-record-breaking TBM excavations. His versatile background spans contractor, owner, and design perspectives across the transportation and utility sectors. He holds a BS in mining engineering from the New Mexico Institute of Mining and Technology.

Brian Muldoon
Senior Inspector

Brian is an experienced TBM mechanic with more than 10 years of experience on major tunneling and infrastructure projects in the United Kingdom, Ireland, and the United States, specializing in TBM-driven tunnels and shotcrete works. He has led teams of mechanics and welders on large Herrenknecht TBM drives and complex tunnel fit-outs, overseeing maintenance, disassembly, and plant operations to support safe, efficient delivery. He is currently a tunneling inspector on the CBDT project.

John Minassian
Inspector

John is a construction inspector supporting complex infrastructure works, including the CBDT project in Manchester, New Hampshire. He is responsible for ensuring that all construction activities comply with project specifications, applicable codes, and safety standards. He conducts regular site inspections, monitors progress, and verifies the quality of materials and workmanship. Working closely with contractors and project managers, he resolves field issues, supports schedule adherence, and helps deliver safe, high-quality, and compliant infrastructure.

NEW HIRES

Conor Varga
Senior Engineer

Conor is an assistant resident engineer for the CBDT project with experience on major transportation and water infrastructure projects for NYCDEP, New York State Department of Transportation, and the Port Authority. Drawing on his experience in concrete, soils, and asphalt testing, he oversees field activities for compliance with contract documents, standards, and agency requirements. He monitors construction progress, coordinates with contractors and inspectors, and helps deliver work that is safe, high-quality, and technically compliant.

Michael Liao
Resident Engineer – Tunnels and Shafts

Michael has more than 14 years of experience in linear water and wastewater infrastructure, specializing in TBM-driven tunnels, microtunneling, and pipe jacking. He has served as a construction project manager, engineer, and cost estimator, leading teams on tunneling projects of various sizes. With a structural and geotechnical background, he resolves constructability and technical challenges to deliver safe, efficient, and cost-effective solutions. He is currently resident engineer for the West Vaughan Sanitary Sewer Project.

Paul Kulesha
Construction Manager – Tunnels and Rail and Transit

Paul has more than 24 years of local and international underground experience across rail, road, and water tunnels. This includes TBM, drill/blast, and roadheader work. He has served as a construction manager, engineering manager, and third-party lead certifier on design-build and design-bid-build projects leading teams on tunneling projects of various sizes. With a structural background and work experience with contractors, construction managers, and owner's representatives, he brings outstanding organizational and interpersonal communication skills and excels at solving complicated and arduous technical issues. He is currently a construction manager for the Gateway Development Project.

Sahand Jabini Asli
Senior Inspector – Tunnels and Shafts

Sahand holds a bachelor's degree in civil engineering and master's degrees in structural engineering and water resources engineering, along with a Project Management Professional (PMP) certification. He has experience working on residential building projects, water distribution networks, and tunneling projects. His work has included project coordination, site inspection, construction supervision, and structural modeling using engineering software, contributing to project execution and quality control.

Bryant Cote
Senior Project Manager

Bryant has more than 12 years of experience in heavy civil construction management and materials testing. He has served as a deputy program manager, construction manager, and quality manager, leading teams on water and wastewater linear and vertical projects of various sizes. With a civil and construction material background, he resolves administrative and technical challenges to deliver safe, efficient, and cost-effective solutions. He is currently deputy program manager for the SNWA PMCM contract.

Simon Rutledge
Construction Manager

Simon is a senior construction manager with Parsons, bringing more than 27 years of experience delivering complex infrastructure programs across the water, energy, and industrial sectors. He is currently leading the Horizon Lateral Program and Stage 2 Reliability Upgrades for SNWA and Las Vegas Valley Water District, supporting critical underground infrastructure and long-term system resilience. With a background in mechanical and civil engineering, Simon provides disciplined construction leadership focused on safety, quality, and predictable project delivery.

Martin Markonic
Senior Inspector

Marty is a construction inspector with 30 years of experience managing and supervising the construction of major transit and infrastructure projects. In his current role as a senior inspector, Marty is responsible for monitoring contractor activities; verifying compliance with drawings, specifications, and safety requirements; and documenting site progress and issues and supplying guidance to younger staff. He coordinates closely with designers, contractors, and project managers to resolve field conflicts, maintain accurate records, and support timely delivery of safe, high-quality, and compliant infrastructure.

Stephen Piccirello
Senior Inspector

Steve is a tunnel and shaft inspector and safety manager with extensive experience on major water, bridge, and transit infrastructure projects for NYCDEP, New York City Transit Authority, and Metropolitan Transportation Authority Construction and Development. He has overseen underground construction, including deep shafts and TBM-driven tunnels, ensuring compliance with contract documents, permits, and safety standards. In his role on the CBDT project, he conducts field inspections and monitors contractor performance to deliver work that is safe, high-quality, and technically compliant.

RECENT TUNNEL EXPERIENCE

Project Title	Drill and Blast	Adits to Tunnel Connection	Deep Shaft	Conventional Support	Water Control Grouting	Critical Schedule	Underground Safety	Design	Study	Geotech	Program Management	Construction Management	Construction	Inspection Services	General Engineering Consultant	Procurement Method	Ground Type	Tunnel Methodology	Tunnel Type	Year(s)
Kensico to Eastview Connection Tunnel	✓		✓		✓	✓	✓					✓		✓		DBB	HR	TBM	W	2024–2036
San Francisco Downtown Rail Extension, DB		✓		✓	✓	✓	✓	✓	✓	✓					✓	DB	S	TBM, NATM	TR	2005–2031
Dubai Strategic Sewerage Tunnel, DB								✓	✓		✓					DB	SR	EPB	WW	2016–2030
Cemetery Brook Drainage Tunnel		✓		✓	✓	✓	✓					✓		✓		DBB	SR, HR	TBM	W	2024–2028
West Vaughan Sewer Tunnel			✓	✓	✓	✓	✓	✓	✓	✓						DBB	S	EPB	WW	2015–2028
LACSD JWPCP Tunnel and Ocean Outfall			✓		✓	✓	✓	✓	✓	✓						DBB	SR	EPB	WW	2002–2027
NYDEP Delaware Aqueduct Bypass Tunnel	✓		✓	✓	✓	✓	✓					✓			✓	DBB	HR	TBM, D&B	W	2012–2025
Beach Interceptor Tunnel Stabilization		✓		✓		✓	✓		✓			✓			✓	DBB	HR	Roadheader	WW	2017–2023
LA Metro Purple Line Extension, DB		✓		✓	✓	✓	✓	✓		✓						DB	SR	EPB, NATM	TR	2014–2023
California High-Speed Rail, CP1, DB				✓	✓	✓		✓	✓	✓			✓			DB	S	CC	TR	2013–2023
South Hartford Conveyance and Storage Tunnel	✓			✓			✓		✓			✓				DBB	HR	TBM	WW	2013–2023
Deer Creek Sanitary Tunnel			✓	✓	✓		✓	✓		✓	✓					DBB	HR	TBM	WW	2012–2023
Riyadh Metro, DB		✓		✓	✓	✓	✓				✓	✓			✓	DB	SR	EPB, CC	TR	2013–2021
Dubai Metro Route 2020: Red Line Extension to EXPO 2020, DB					✓	✓	✓				✓	✓				DB	S	EPB	TR	2016–2020
Ohio Canal Interceptor Tunnel	✓	✓	✓	✓	✓	✓	✓					✓		✓	✓	DBB	S	EPB, D&B	WW	2014–2020
Maliakos-Kleidi Motorway and Tunnels, Greece, P3	✓	✓	✓	✓	✓		✓	✓								PPP	HR, SR	D&B	TR	2010–2018
DC Water Anacostia River Tunnel, DB		✓	✓	✓	✓	✓	✓	✓		✓			✓	✓		DB	S	EPB, NATM	WW	2013–2017
Eglinton Crosstown East Tunnel, Canada, P3		✓	✓	✓	✓	✓	✓					✓		✓		PPP	S	EPB	TR	2013–2017
Ohio River Bridges – East End Crossing Tunnel, P3	✓			✓	✓	✓	✓		✓	✓		✓			✓	PPP	HR	NATM, D&B	TR	2007–2017
SNWA Lake Mead Intake Tunnel #3	✓	✓	✓	✓	✓	✓	✓		✓		✓	✓		✓	✓	DB	HR	TBM, D&B	W	2008–2017
Downtown Tunnel/Midtown Tunnel/MLK Extension, P3							✓		✓		✓					PPP	S	Immersed Tube	TR	2012–2016
SFPUC Bay Tunnel			✓	✓		✓	✓				✓					DBB	S, HR	EPB	W	2012–2015
SFPUC New Irvington Tunnel	✓		✓	✓	✓	✓	✓				✓					DBB	SR, HR	D&B, RH	W	2010–2015
South Cobb SSO Tunnel	✓		✓	✓	✓	✓	✓					✓		✓	✓	DBB	HR	TBM, D&B	WW	2008–2015
Caldecott Tunnel New Fourth Bore				✓		✓	✓	✓	✓		✓					DBB	SR	NATM	TR	2009–2014
SFPUC New Crystal Springs Bypass Tunnel			✓			✓	✓				✓					DBB	SR, HR	TBM	W	2008–2011
Dubai Metro Red and Green Lines						✓	✓				✓	✓				DBB	S	EPB	TR	2005–2011
San Vicente Pipeline Tunnels	✓		✓	✓	✓	✓	✓		✓		✓	✓		✓	✓	DBB	HR, SR	TBM, D&B	W	2001–2011
SNWA Lake Mead Intake Tunnel #2	✓		✓	✓	✓	✓	✓				✓	✓		✓	✓	DBB	HR	D&B	W	1998–2002

LEGEND

DBB: Design-Bid-Build
PPP: Public-Private Partnership
DB: Design-Build
HR: Hard Rock
WR: Weathered Rock
S: Soil
SR: Soft Rock
NATM: New Austrian Tunneling Method
TBM: Tunnel Boring Machine
EPB: Earth Pressure Balance
SPB: Slurry Pressure Balance
D&B: Drill and Blast
CC: Cut-and-Cover
TR: Transportation Tunnel
WW: Wastewater Tunnel
W: Water Tunnel

PARSONS TUNNEL PRACTICE GROUP

Who We Are

Parsons knows and understands the challenges associated with tunnels and underground structures. Our depth and range of expertise coupled with our innovative and sustainable solutions help us meet the needs of our customers today and in the future. Our expertise is illustrated through our commitment to our core values of safety, quality, integrity, diversity, innovation, and sustainability, and through our many award-winning projects.

130+
Subject Matter Experts

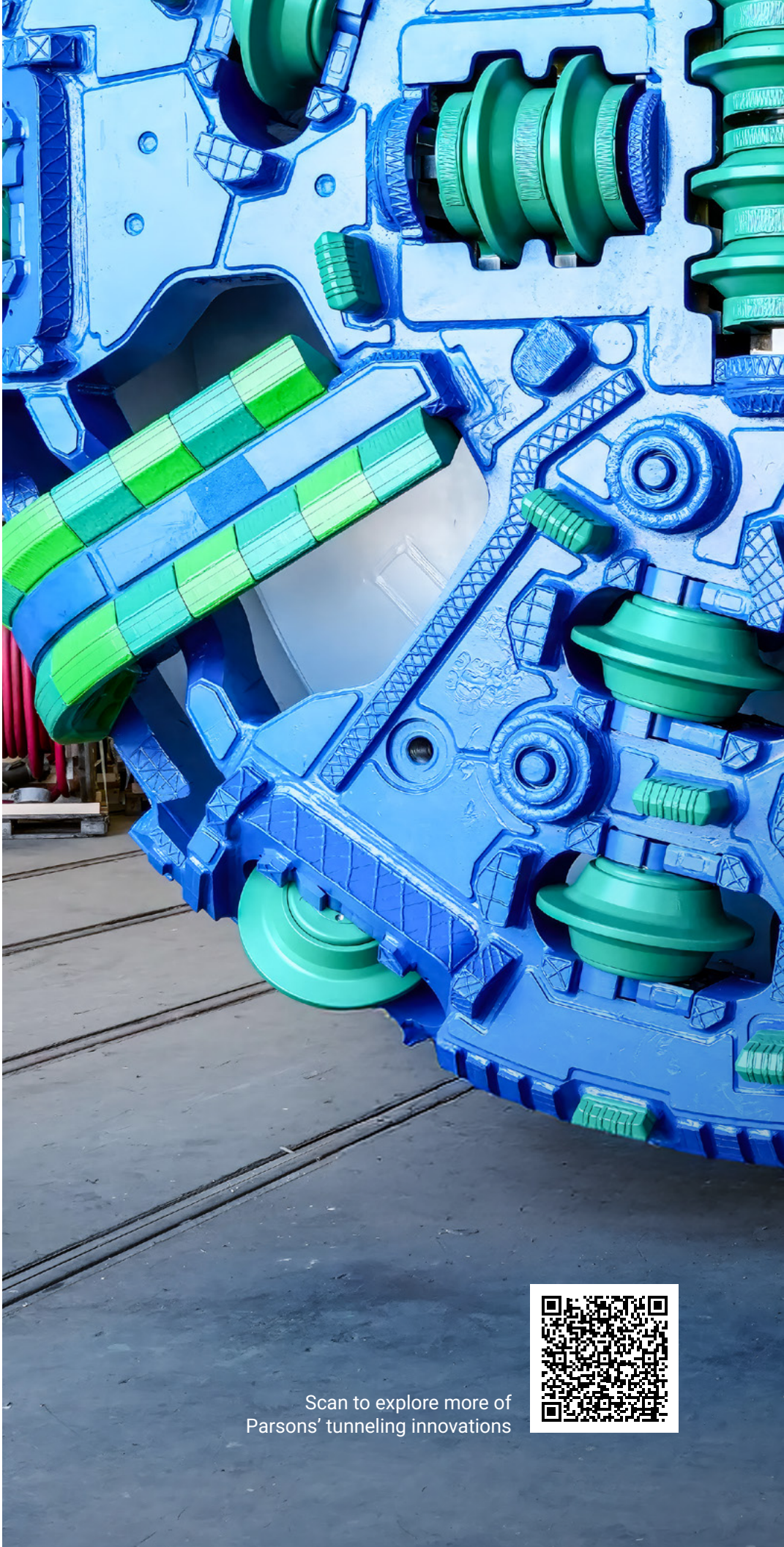
250+
Tunnels

27+
Avg. Years of Experience

20+
Countries

60%
Staff With Post-Graduate Degrees

$100B+
Construction Value



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