



External Engineering Consultant's Annual Report

Hudson Tunnel Project
Package 1B: Manhattan Tunnel

PREPARED BY

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Reporting Period: Calendar Year 2025

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■ Purpose

This Annual Report has been prepared in accordance with the Gateway Development Commission Act (GDC Act or The Act) of New York and New Jersey, which requires that major capital projects undertaken by the Gateway Development Commission (GDC) be monitored by independent external engineering consultants. The Act further requires that these consultants provide an annual report to the GDC Board and that the report be made available to the public. The report must include a comparison of actual and target performance measures, specifically cost and construction schedule performance, and provide narrative explanations for any variances. Under the GDC Act, a “Major Capital Project” is defined as an undertaking or program for the acquisition, creation, or development of any crossing, transportation facility, or commerce facility or any part thereof, with an estimated total Project cost in excess of \$500,000,000.

■ Delivery Partner Role

mPa Delivery Partners (comprised of Mace North America Limited, Parsons Transportation Group of New York, Inc., and Arcadis of New York, Inc.) serves as the Delivery Partner for the Hudson Tunnel Project (HTP). In this role, mPa provides engineering, professional, technical, construction management, project management, and other support services to the Commission, including preparation of materials necessary to satisfy the annual reporting requirements of the GDC Act. Consistent with Section 3.6 of the Delivery Partner’s Master Services Agreement, mPa performs these services as an independent contractor and not as an agent, partner, or representative of GDC.

■ Scope of this Annual Report

This report covers GDC Contract ‘GDC-25-007-HTP’, which was approved by the GDC Board on February 3, 2025, and received Notice to Proceed (NTP) on February 24, 2025. With a total contract value of \$1,177,700,000, Package 1B: Manhattan Tunnel is currently the only construction contract within HTP that exceeds the \$500,000,000 threshold defining a Major Capital Project under the GDC Act. Accordingly, it is the sole package included in this Annual Report. The following sections provide an overview of Package 1B, a summary of scope progress during Calendar Year 2025, an overview of schedule progress, and cost metrics as of year-end 2025.

Package Overview



Figure 1: Hudson Tunnel Project - Package Overview

The Hudson Tunnel Project’s governing agreements define a contract packaging strategy that identifies ten distinct packages with tailored delivery methodologies. Package 1B encompasses the design and construction of approximately 750 feet of twin tunnels extending from the Manhattan Bulkhead on the eastern side of the Hudson River, beneath Hudson River Park and 12th Avenue, and to the bounds of the Hudson Yards Concrete Casing (HYCC-3) package.



Figure 2: Hudson Tunnel Project - Manhattan Packages

Construction of these tunnels will clear obstructions and create a pathway for the tunnel boring operations of Package 1C: Hudson River Tunnel, which will travel underneath the Hudson River, through the Hudson River Bulkhead, and conclude at the 12th Avenue Shaft. The alignment passes through highly variable historic fill materials, complex ground conditions, active utilities, and numerous subsurface obstructions, making conventional tunneling infeasible and requiring a specialized approach. During the second half of 2024, GDC, the Delivery Partner, the Engineer of Record, and shortlisted bidders evaluated Alternative Technical Concepts (ATCs) submitted during procurement and selected the approach best suited to these technical challenges.

The selected technical approach includes mining with protective digger shields, operator-controlled excavators within a movable steel shield that provide increased worker safety as well as direct visibility of the tunnel face and flexibility to address obstructions as they may be encountered. Digger shields will be launched outwards from a main central access shaft (the 12th Avenue Shaft), which will also be constructed as a part of Package 1B and will serve as the primary staging area. This contractor-proposed methodology reduces project risk and provides greater schedule certainty compared with the sequential excavation method (SEM) mining contemplated in the Indicative Design.

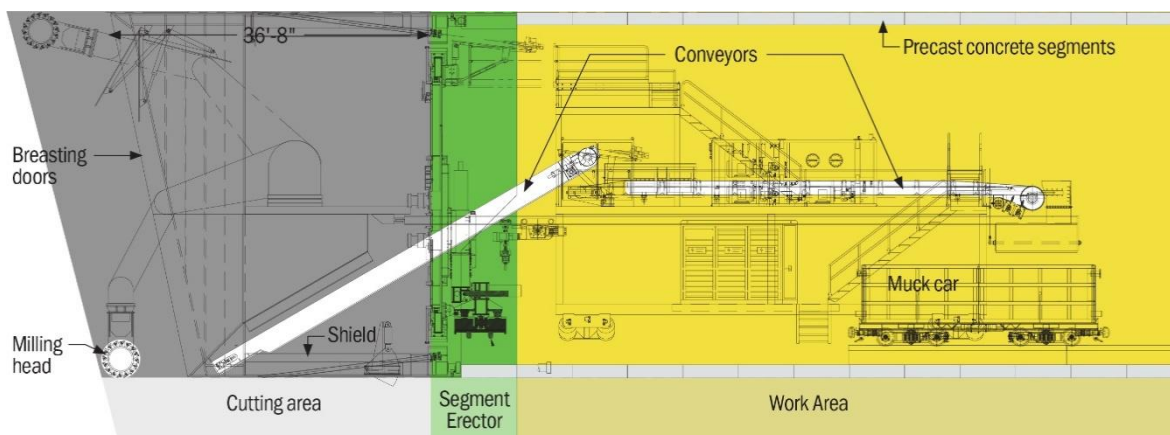


Figure 3: Digger Shield Diagram

Ground improvement and structural underpinning of existing structures constitute a significant portion of the package scope. Active utilities beneath 12th Avenue and West 30th Street require protection, underpinning, or temporary bypass construction. Also, the 1870's era Manhattan Bulkhead, a 150-foot wide timber and stone waterfront structure, presents both an obstruction and a stability concern. A combination of jet grouting, permeation grouting, and ground freezing will be used to address these items and must be completed before the digger shields pass underneath the structures and approach the Bulkhead. This work will be performed from surface locations above the alignment and from over-water positions in the Hudson River. To accommodate these operations, the Contractor is

constructing a temporary over-water work platform and implementing a temporary traffic management plan along 12th Avenue.

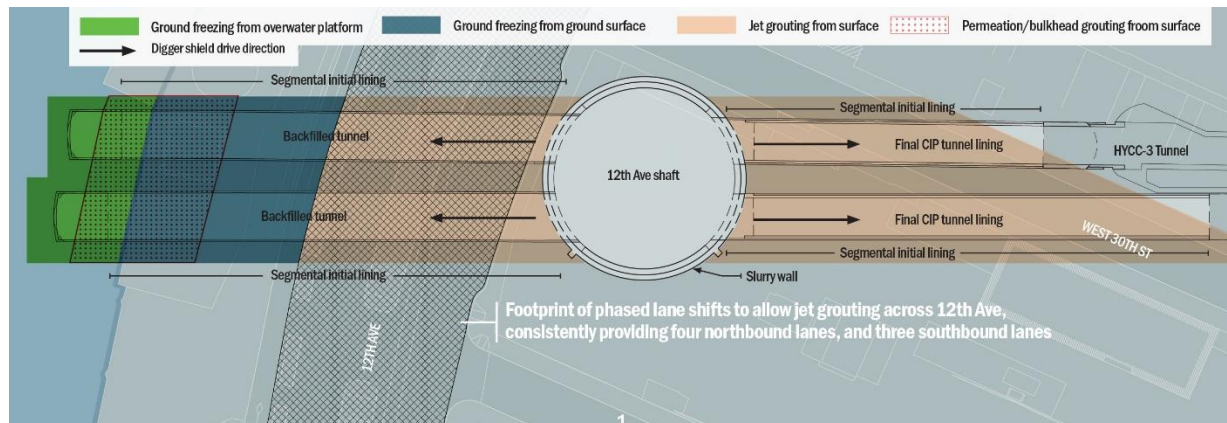


Figure 4: Summary Plan View

Consistent with HTP's Project Management Plan (PMP), Package 1B is being delivered under a Design-Build (DB) contract. In accordance with the HTP Project Development Agreement (PDA), GDC has partnered with the Port Authority of New York and New Jersey (PANYNJ) as the Supporting or Executing Partner (SEP) to deliver this package. PANYNJ contributes extensive major capital construction management experience on regional infrastructure projects, with demonstrated success in both DB and Design-Bid-Build delivery methodologies.

GDC conducted the procurement in compliance with Federal Transit Administration (FTA) Procurement Circular 4220.1G and applicable federal requirements. On February 20, 2025, GDC awarded a \$1,177,700,000 Design-Build Contract to the Frontier-Kemper-Tutor Perini Joint Venture (FKTP or Contractor) and Notice to Proceed (NTP) was issued on February 24, 2025.

Upon completion, Package 1B will establish the essential underground connection between the new Hudson River Tunnel and the Hudson Yards Concrete Casing, enabling direct rail access to New York Penn Station.

■ Scope Progress Overview

Calendar Year 2025 marked the first year of active construction for Package 1B. Following contract award to FKTP and issuance of NTP on February 24, 2025, the Contractor mobilized to the site and commenced the preconstruction, site preparation, and early construction activities required to advance this technically complex package.



Figure 5: April – Aerial View of Work Area Location (Looking West)

The Contractor and project team began holding project meetings in March with key agencies and stakeholders, including the New York City Department of Transportation (NYCDOT), New York City Department of Environmental Protection (NYCDEP), New York State Department of Transportation (NYSDOT), Con Edison, Hudson River Park Trust (HRPT), and Community Board 4. These meetings addressed permitting requirements, site access, and community notification. During this period, FKTP submitted project documents including the Baseline Schedule, Design Quality Management Plan, Construction Safety and Health Plan, Hudson River Bulkhead Protection Plan, Noise Monitoring Location Plan, and Subcontractor Approval Requests. Site security fencing and access gates were installed, and basic site surveying was completed in preparation for instrumentation and monitoring.

Investigative and site preparation work expanded through the spring. Tree and utility surveying commenced in mid-April and test pits at Block 675 Lot 1 and HRPT were completed in May. Surveying of the Con Edison High Voltage Oil-O-Static Line was also completed in May, with utility protection and coordination continuing thereafter. Hazardous materials sampling at the Quonset Hut was completed in April; demolition began in late May and was completed in June. The NYCDEP permit, which is required in order to discharge into the stormwater/sewer during the pre-excavation and slurry wall construction, was not yet obtained when pre-excavation activities were planned to begin in May. FKTP changed their means and methods to allow work to continue by installing a water treatment facility on-site (Block 675, Lot 1). Pre-excavation activities then began in late June. Noise and vibration monitoring instrumentation was installed and became operational in May. On the design front, the project was broken into several design units, allowing design units to be released in phases, enabling construction to start for critical deliverables. Major Design Units were submitted for review in May and June. Tree removal along 12th Avenue began in late June.



Figure 7: May – Geotechnical boring (Looking North)



Figure 6: May – Demolition of Quonset Hut

Major construction activities commenced in July. Guide wall trenching for the slurry wall began, initiating the excavation sequence for the 12th Avenue Shaft. The 12th Avenue bus stop was relocated, and water treatment plant installation commenced to support ground improvement operations. Geotechnical borings at Block 675 Lot 1 and the Air Pegasus heliport site were completed in July. Underground and above-ground storage tank removal was completed in August. Guide wall installation and pre-trenching were completed in September. A key milestone was achieved in September with the completion of many major permits, including deep easements, NYC/NYS DOT permits, and marine permits.

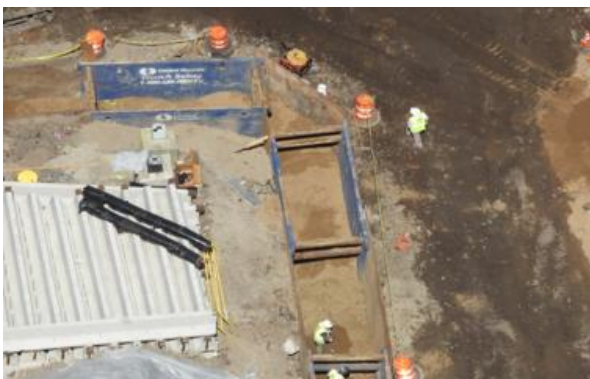


Figure 8: July – Shoring Installation for Utilities Work



Figure 9: July – 12th Ave Shaft pre trenching operations

Construction advanced across multiple fronts during the fourth quarter. Slurry wall excavation progressed, including rebar cage assembly, though the Contractor encountered subsurface obstructions requiring additional mitigation. The Route 9A/12th Avenue center median was demolished to support future drilling operations, and temporary Maintenance and Protection of Traffic (MPT) phasing was implemented in alignment with the MPT plan for the package. Ground improvement support facilities were installed, including jet-grout silos and pumps and the bentonite plant, along with temporary and permanent power infrastructure. An NYCDEP discharge permit was obtained in December, allowing FKTP to revert their methods back to the baseline approach of discharging and not treating

wastewater. A full agreement is yet to be reached, but GDC and NYCDEP continue to work towards this full agreement. Coordination with NYCDEP on ground movement limits and sewer flow capacity requirements is ongoing. Also ongoing is coordination with Con Edison regarding the High Voltage Oil-O-Static Line.

Following approval of NEPA Reevaluation #7, FKTP initiated over-water and in-water construction for the temporary work platform. Twelve template piles were driven offshore, followed by twelve battered piles. An Omega Beam was installed on three landside footings, and installation of dolphin platforms on the battered piles commenced late in the year.



Figure 10: August – 12th Ave Shaft Guide Wall Installation



Figure 11: September – Over-Water Borings

As of December 31, 2025, 63 letters were submitted by the contractor related to change and relief events. The Delivery Partner has worked with the SEP team to consolidate these letters into roughly 37 unique changes at various stages of resolution with the contractor. Geotechnical boring and freeze pipe installation remained in progress, with 14 of 40 geotechnical borings and 47 of 1,127 freeze pipe casings completed. Work platform construction continued with dolphin platform installation ongoing at year-end.



Figure 12: October – Installation of freeze pipe/grout sleeves

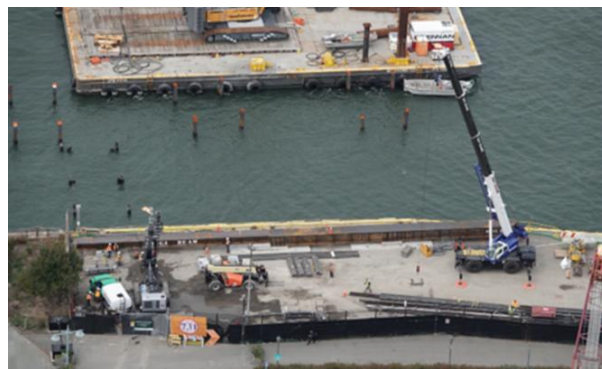


Figure 13: October – Aerial View of Omega Beam and In-Water Template Piles

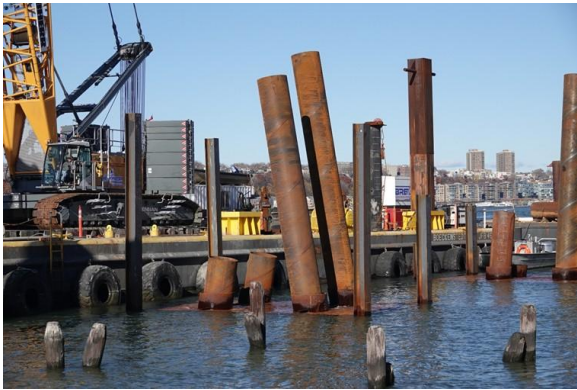


Figure 14: November – Offshore Piles for Over-Water Platform



Figure 15: November – Driving Offshore Piles

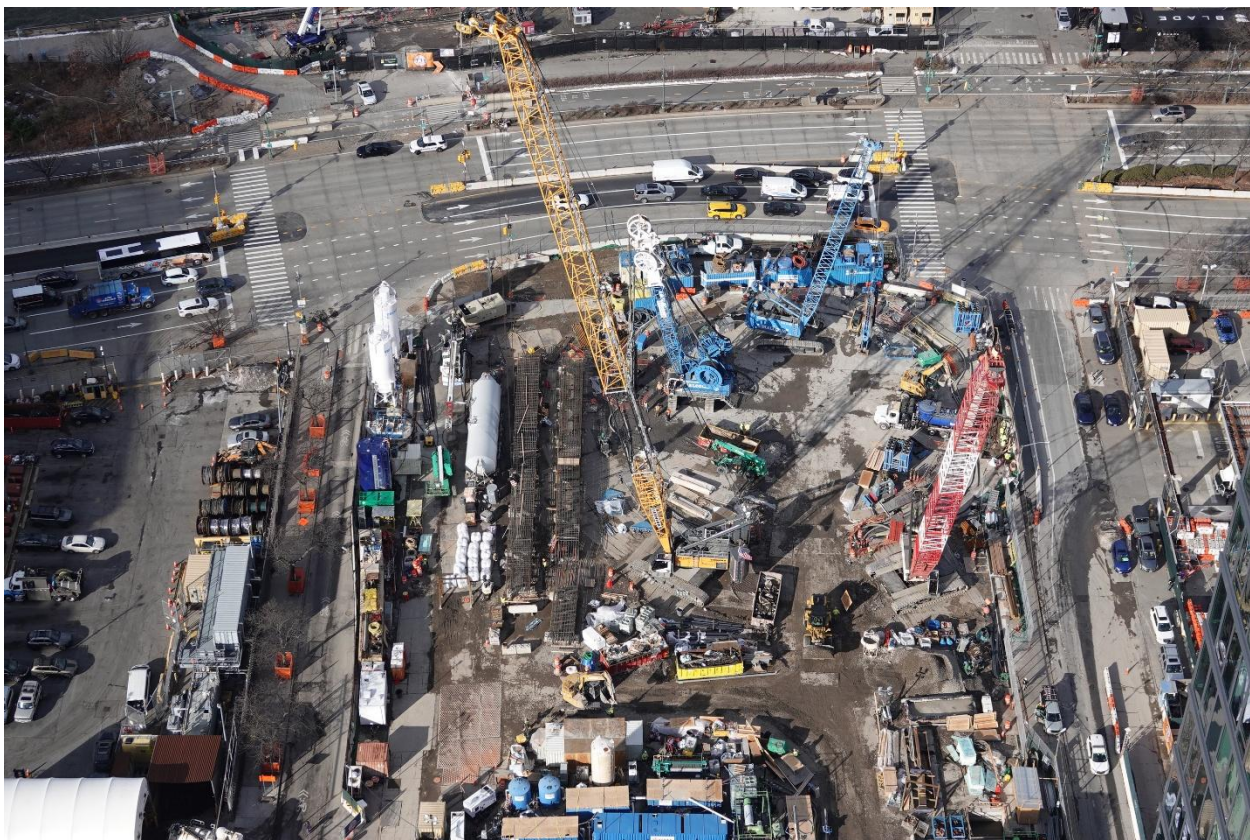


Figure 16: December – Aerial View of Work Site

■ Schedule Overview

GDC developed and maintains a program schedule consistent with FTA requirements and HTP's PDA. The Program Baseline was approved by the States of New York and New Jersey and Amtrak in June of 2024 and approved by the GDC Board of Commissioners in July of 2024. In June of 2025, GDC completed a formal baseline revision process to incorporate previously implemented changes across several of the program's packages. The baseline revision captured a reduction in program contingency from 18.2 months to 14.7 months, driven primarily by a three-month delay in the Package 1B NTP date. This shift resulted from

an extended procurement process and RFP period, along with a final procurement addendum issued at the proposer’s request.

The Manhattan Tunnel alignment passes through historic fill containing timber piles, abandoned concrete structures, and other obstructions from 19th-century land reclamation. Slurry wall construction in 2025 encountered several such obstructions, and this led to month-end September 2025 data submitted by the Contractor indicating delays in reported progress on-site, leading to an additional four-month forecast slippage against the revised baseline, and resulting in drawdown of schedule contingency. PANYNJ and FKTP are developing a mitigation plan and recovery schedule to address these variances. At this time, the handover of the 12th Avenue Shaft from Package 1B to Package 2B remains on the Program Critical Path. Accordingly, any delay to this milestone will directly result in further consumption of program schedule contingency.

FTA Milestones	Original Baseline	Current Baseline	Dec-2025 Master Schedule ¹	Variance vs Baseline
Package 1B: Manhattan Tunnels - Issue Advertise (Issue Request for Qualification)	31-Aug-23	31-Aug-23	31-Aug-23 (A)	0
Package 1B: NTP Property Acquisitions Complete (FTA Milestone: Real Estate Midpoint)	29-Oct-24	29-Oct-24	31-Aug-24 (A)	+59 days
Package 1B: Manhattan Tunnels - Issue Notice To Proceed	1-Nov-24	24-Feb-25	24-Feb-25 (A)	0
Package 1B: Manhattan Tunnels - Completion	26-Apr-30	26-Apr-30	26-Apr-30	0

■ Cost Metrics

P1B Construction Contract Budget Summary (\$ Millions) ²					
Contract Cost Category	Base Contract	Directives / Authorizations	Current Budget	Cumulative Cost of Work in Place	Budget % Spent to Date
Base Construction	\$ 1,048.500	\$0.000	\$ 1,048.500	\$ 279.951	23.77%
Allowances	\$ 94.200	\$0.000	\$ 94.200		
Owner’s Contingency	\$ 35.000	\$0.000	\$ 35.000		

¹ Milestones with dates in the past are shown as actuals and identified by “(A)”.

² Cumulative Cost of Work in Place includes up to Invoice #8 (Nov 2025) + planned values for month-end Dec 2025 as anticipated costs by GDC.

P1B Construction Contract Budget Summary (\$ Millions) ²					
Contract Cost Category	Base Contract	Directives / Authorizations	Current Budget	Cumulative Cost of Work in Place	Budget % Spent to Date
Contract Value	\$ 1,177.700	\$0.000	\$ 1,177.700		

■ Closing Assessment

Calendar Year 2025 marked the first year of construction for Package 1B, with the project team mobilizing, advancing early works and permitting, and progressing early construction activities across the site. The initiation of over-water platform construction, slurry wall construction, and freeze pipe installation represents important first steps. However, this progress has come alongside measurable schedule erosion. The revised baseline, which had already reduced available program contingency, experienced roughly four months of additional slippage by mid-year. The Delivery Partner is actively engaged with the Contractor and SEP to develop a mitigation plan to address delays encountered. The Delivery Partner will continue to monitor and report on Package 1B performance in accordance with its obligations under the GDC Act and the Master Services Agreement, providing the Commission with the transparent and factual assessments necessary to support informed decision-making throughout this critical phase of the Hudson Tunnel Project.