

Second Avenue Subway Phase 2 Technical Briefing

January 22, 2023





United States of America

U.S. Department of Transportation
Federal Transit Administration
Washington, D.C.

Full Funding Grant Agreement

Metropolitan Transportation Authority
Second Avenue Subway Phase 2

The government hereby awards this full funding grant
this 4th day of November 2023

Clayton S. Kopp
Clayton S. Kopp
Member, U.S. House of Representatives

Kathy Hochul
Kathy Hochul
Governor, New York State

Michelle Titone
Michelle Titone
Member, U.S. House of Representatives

Janet Egan
Janet Egan
Chair and CEO, MTA

Charles Schumer
Charles Schumer
Former Member, U.S. House of Representatives

Michelle Titone
Michelle Titone
Acting Regional Administrator, FTA



U.S. Department of Transportation
Federal Transit Administration



Second Avenue Subway has been long-promised



Demolition of the Second Avenue Elevated (1943)



Mayor Lindsay and Governor Rockefeller break ground (1972)



Opening of Second Avenue Subway Phase 1 (2017)

Phase 2 delivers the project East Harlem deserves



- 70% of residents rely on transit, 34% below poverty, 86% people of color
- Densest census tracts within the U.S.
- One of largest concentrations of affordable housing in U.S.



- Three new ADA-accessible stations
- Reduces crowding, increases reliability on 4/5/6
- Shorter commute times – some riders save up to 20 min
- One seat ride from East Harlem to UES, West Midtown, Coney Island



- 75,000 direct, indirect, and induced jobs
- Union-wage construction jobs
- Local hiring goals



- Helps MTA maintain high transit mode share
- Supports dense, energy-efficient land use

Project Overview



106 St



116 St



Exit 116th St & 2nd Avenue

Downtown & Brooklyn



Broadway Express
To Coney Island -
Stillwell Avenue

116

125 St



Subway



125 Street Station



125 St Sub

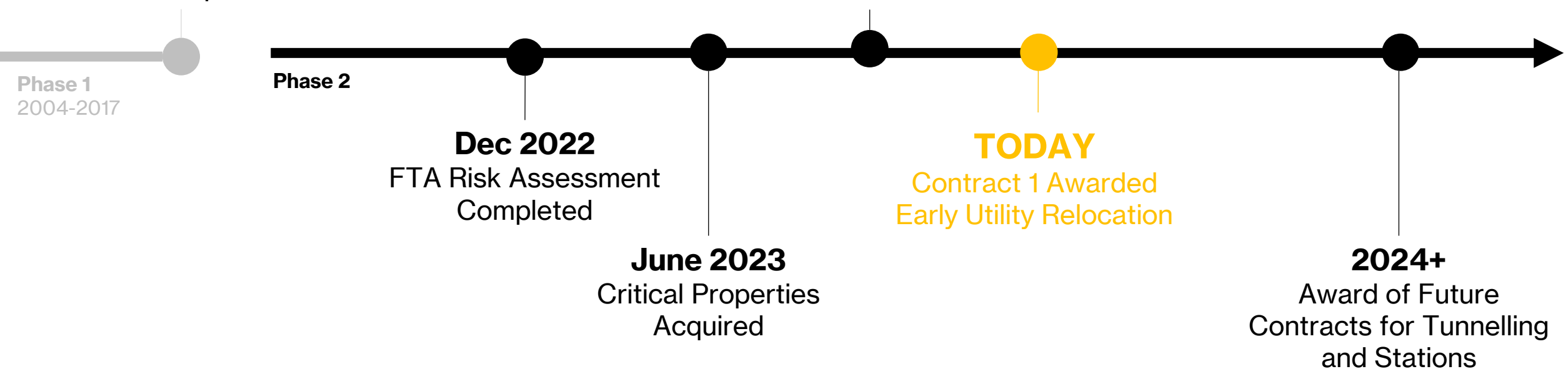
HARLEM

Today marks another milestone



Jan 2017
Phase 1 Opened

Nov 2023
FFGA Awarded



TODAY
Contract 1 Awarded
Early Utility Relocation

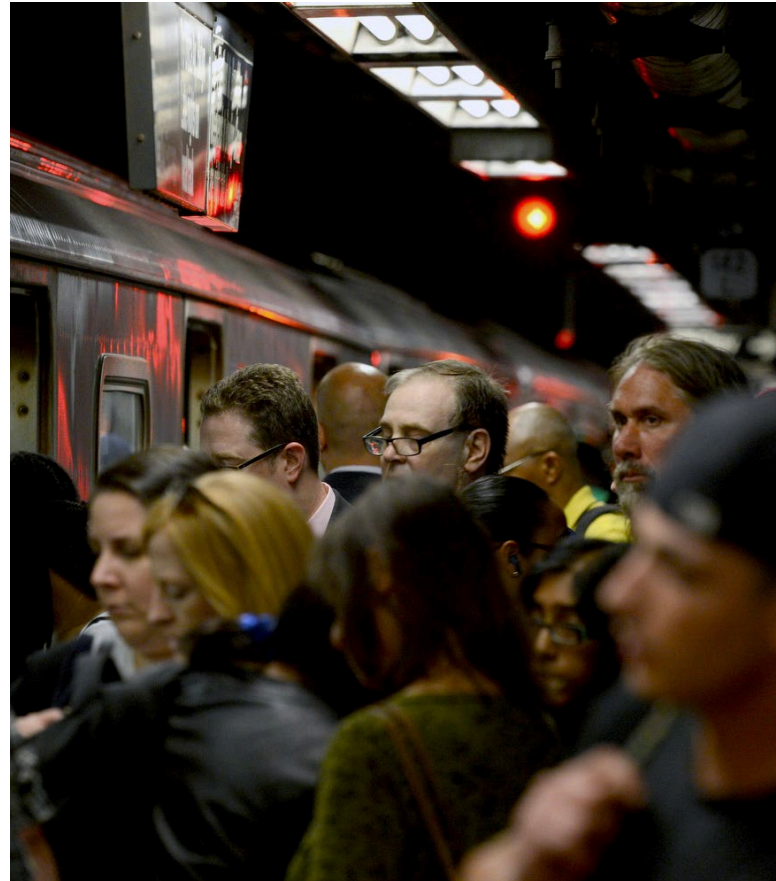
2024+
Award of Future Contracts for Tunnelling and Stations

Phase 1 has been a great success for our customers

From the moment it opened, its benefits have been clear.



200,000+ peak daily riders



Relieved crowding on the 4 5 6

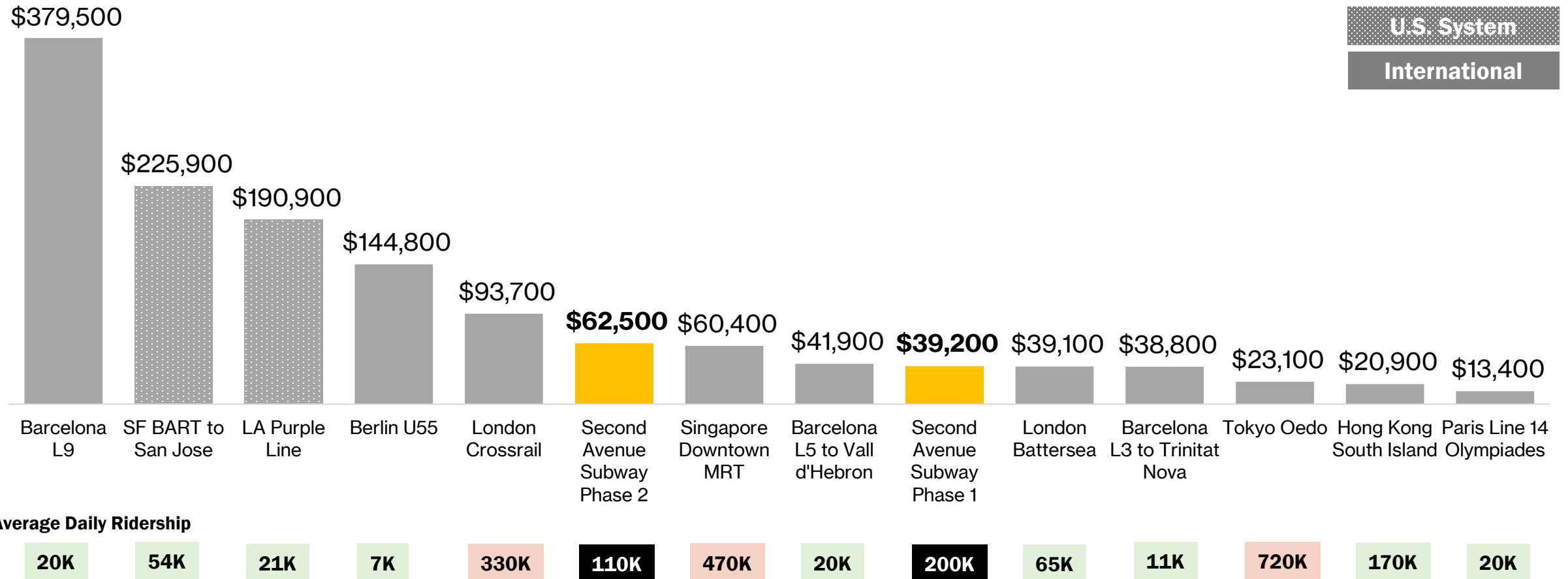


High customer satisfaction

And per-rider, its cost-benefit compares favorably

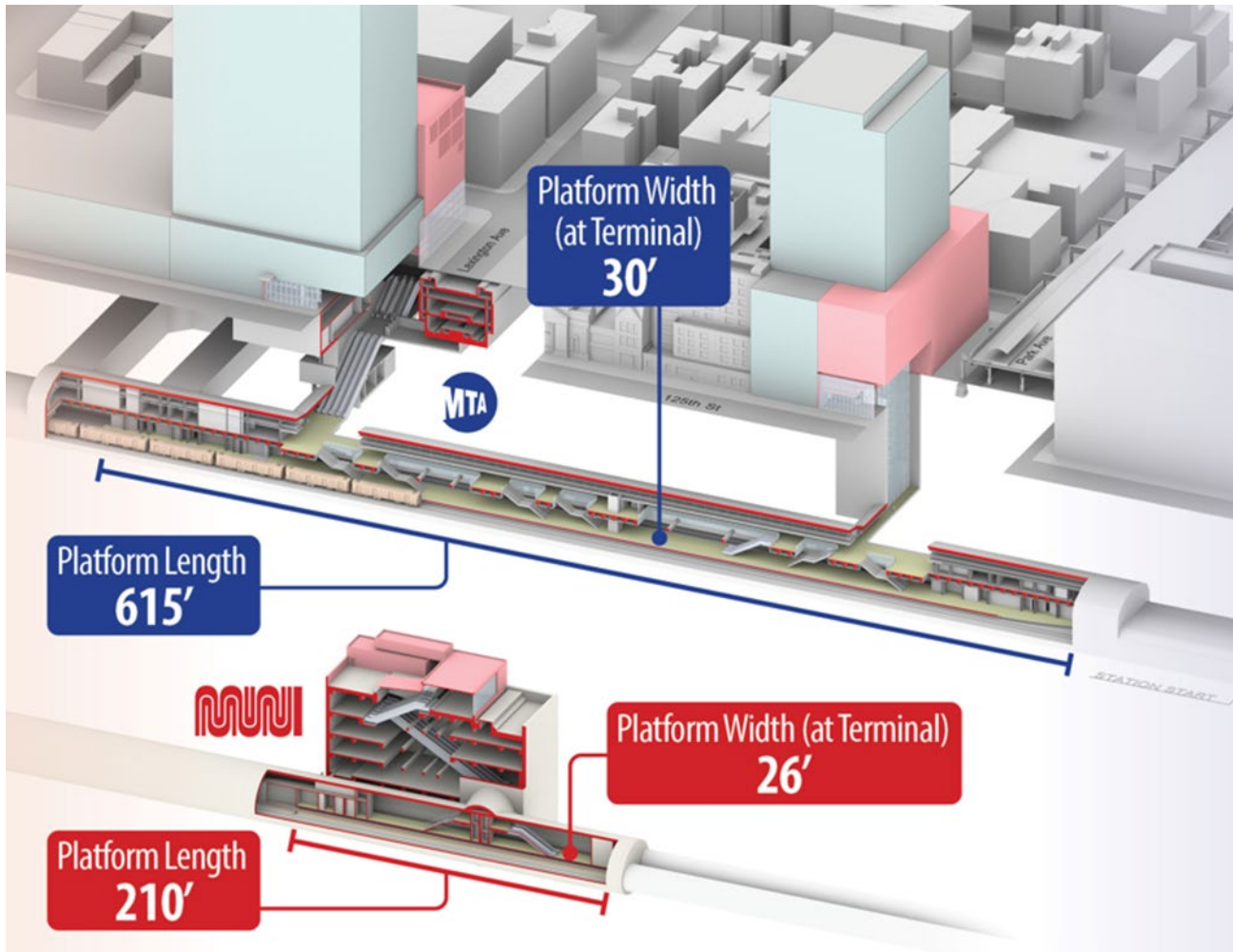
In context, its high price tag delivered even higher benefits

Underground Rail Cost Per Average Daily Rider (2027 \$M)



High ridership drives high costs

Meeting life safety codes means bigger stations than smaller systems



Second Avenue Subway		MTA
Operates 24 / 7		
Train Cars	10	
Ridership (extension only)	100,000	
Passenger Capacity per Train	2,400	
Emergency Egress Load	4,115	
Station Spacing	2,536' & 3,447'	
Storage Tracks Beyond Terminal	2,300' (6 trains)	
Crossovers	2	
Emergency Ventilation Facilities	2	
Emergency Ventilation Fans	8	

San Francisco Muni		Muni
6am - 12am / 7 Days a Week		
Train Cars	3	
Ridership (extension only)	35,000	
Passenger Capacity per Train	345*	
Emergency Egress Load	800*	
Station Spacing	1,800', 1,800', 3,400'	
Storage Tracks Beyond Terminal	359' (2 trains)	
Crossovers	1	
Emergency Ventilation Facilities	1	
Emergency Ventilation Fans	3	

*Train capacity and emergency egress load based on typical vehicles similar to those used by SF Muni

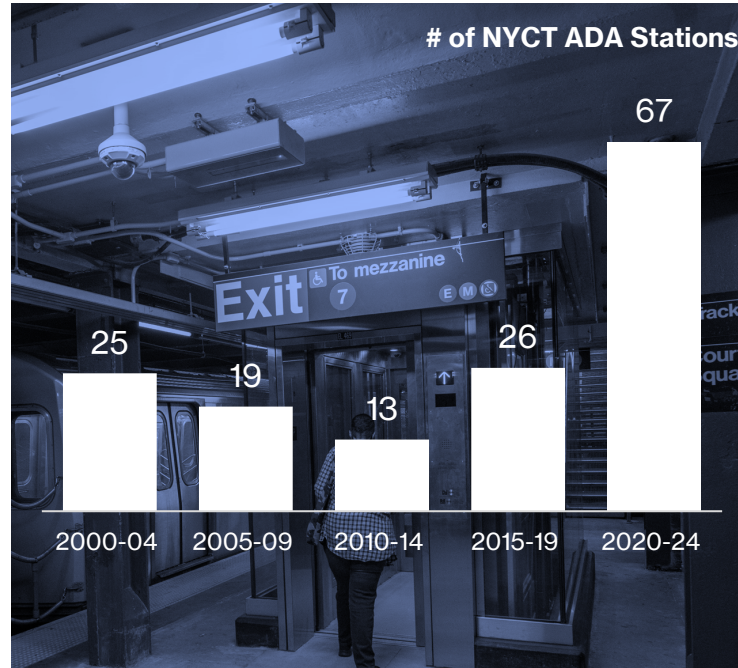
This MTA is different

With the creation of MTA Construction & Development, these challenges are being addressed head on



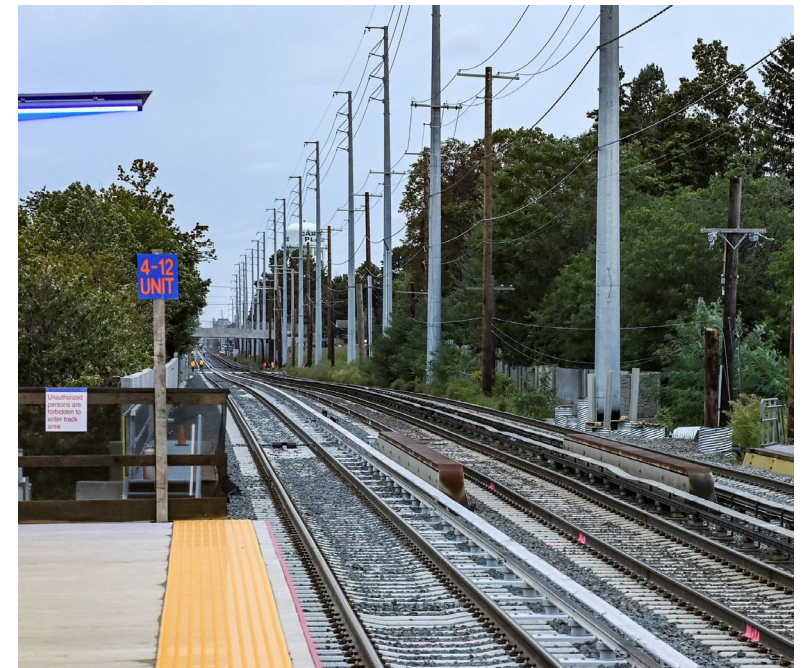
Better

From **Third Track** to **L Train Tunnel** to **LIRR Concourse**, major projects completed on time and budget.



Faster

Faster pace and faster projects – including **2x number of ADA projects** in this capital program.



Cheaper

Projects came in **\$272 million under estimate** in 2023.

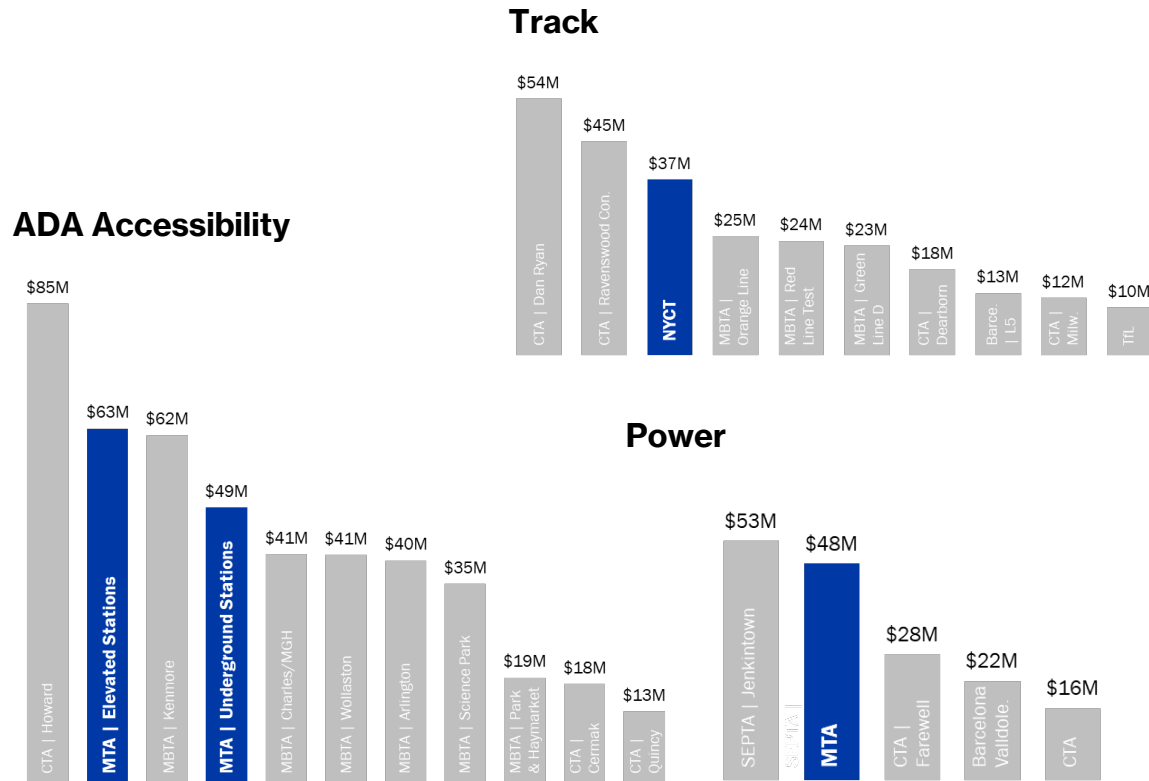


This MTA is different

C&D is addressing NYC cost drivers, with demonstrated results

Cost for core infrastructure in line with peer agencies...

...and C&D committed to driving down costs further



\$272 million

Savings in project cost compared to estimate in 2023

\$395 million

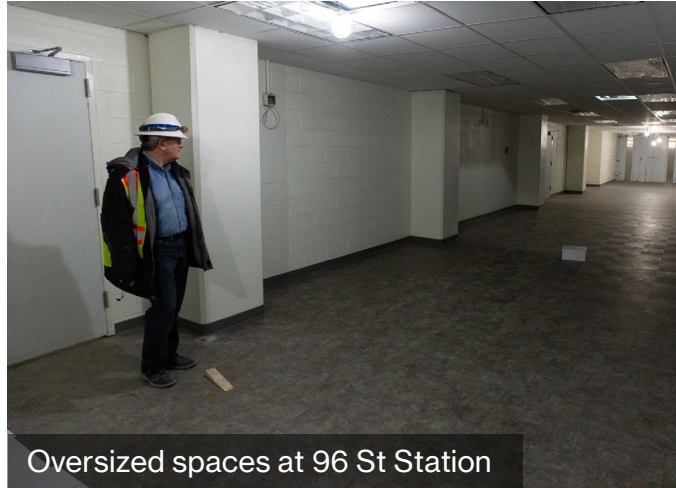
Savings in insurance costs in 2022 and 2023

\$200 million

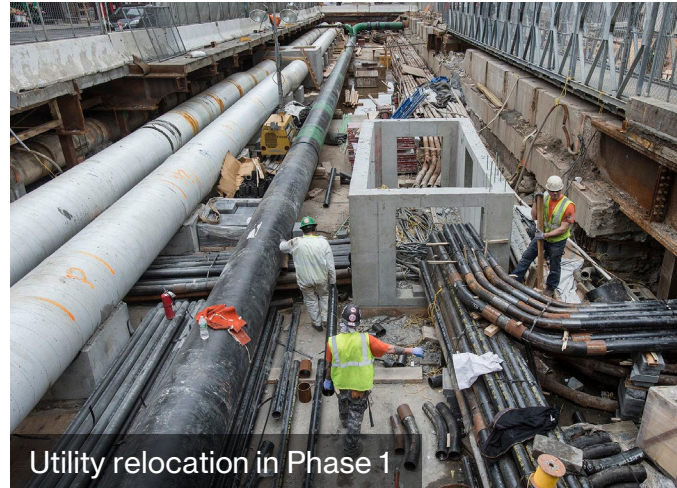
Savings in annual force account costs

And so is our approach to Phase 2

Phase 2 incorporates key lessons learned from Phase 1



Oversized spaces at 96 St Station



Utility relocation in Phase 1



Ten contracts – and even more contractors

SCOPE

PLANNING

MANAGEMENT

**Phase 1
Lesson**

Build only what you need

Avoid surprises with utilities
and real estate

Streamline contracts,
especially at key interfaces

**Phase 2
Approach**

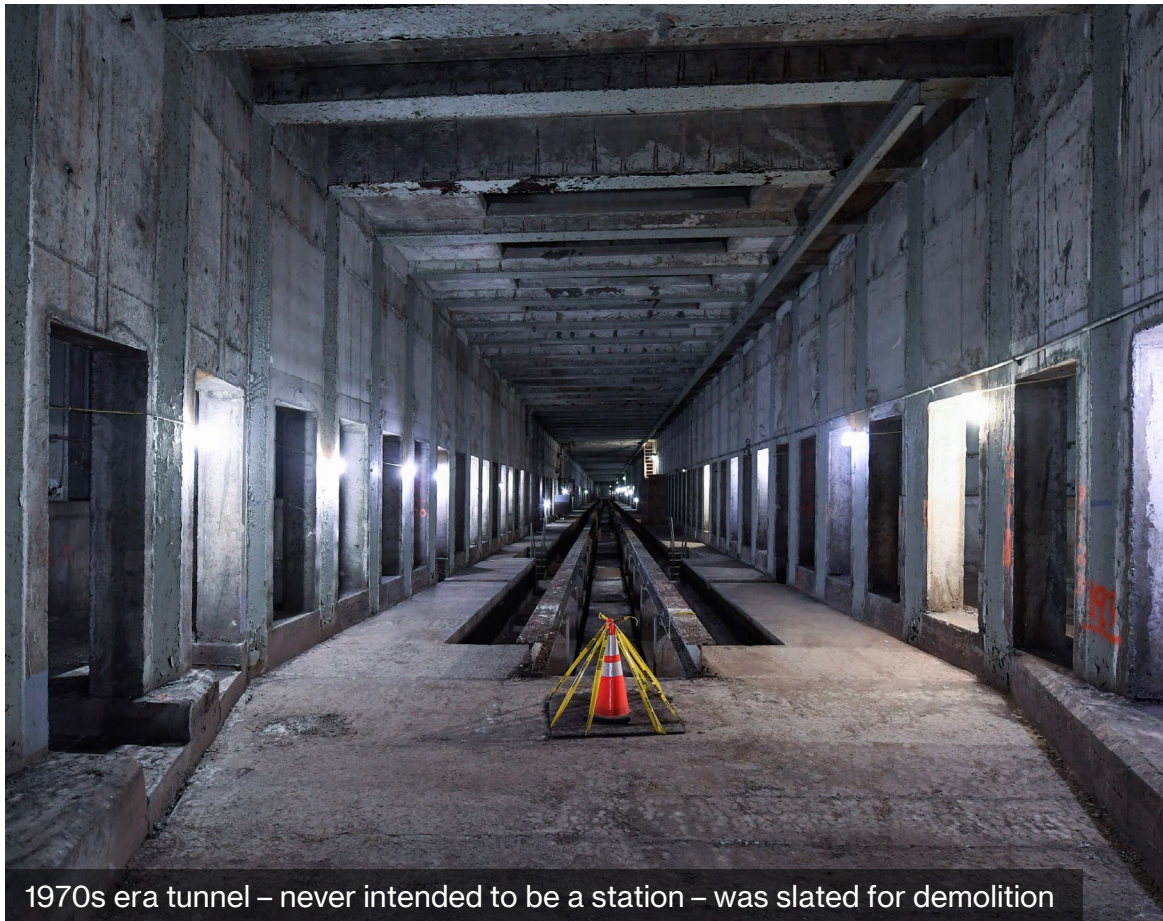
Reuse the old tunnels
Reduce station sizes
Reduce back-of house

Advanced utility relocation
Early real estate acquisition

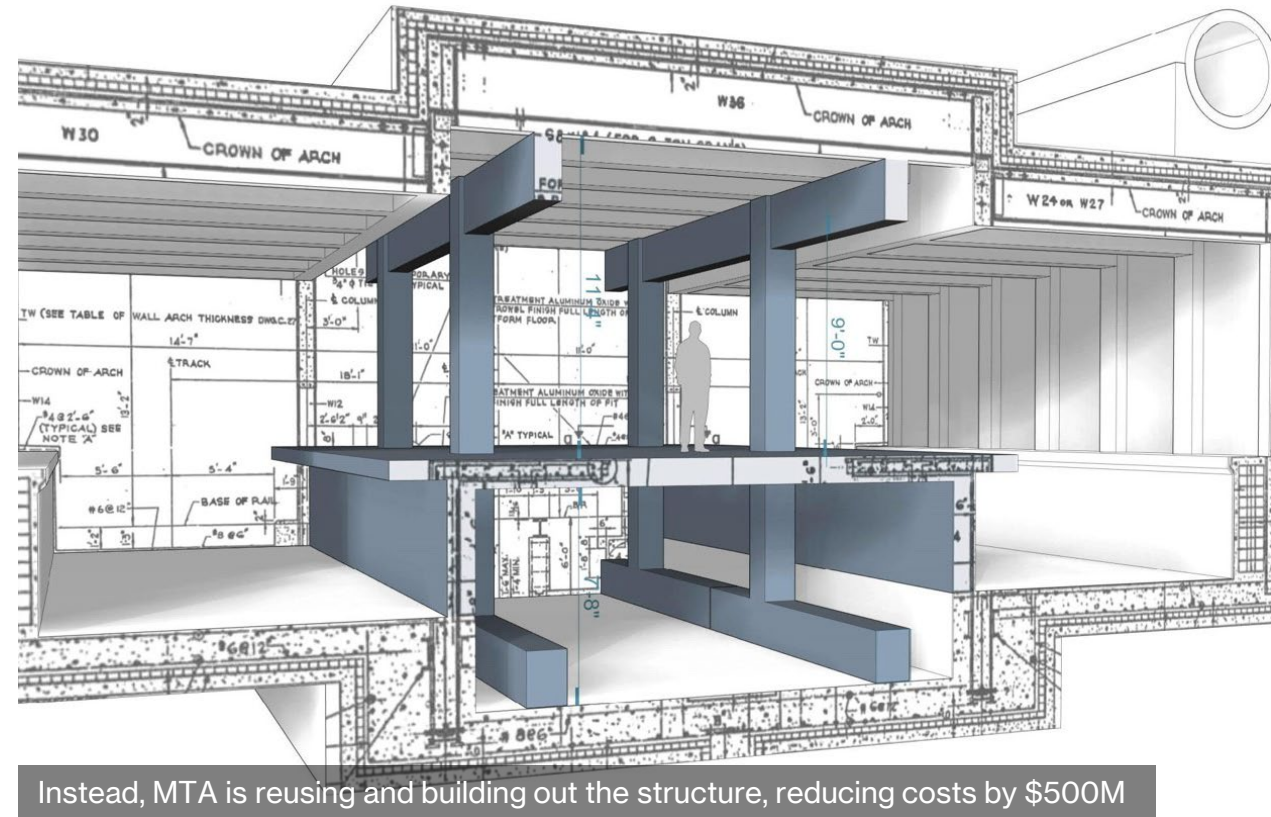
Fewer contracts
Smart use of Design-Build
Outside expertise

Scope: Reusing the old tunnels

Initial plans would have demolished the existing 1970s tunnels. Instead, we're putting them to good use.



1970s era tunnel – never intended to be a station – was slated for demolition

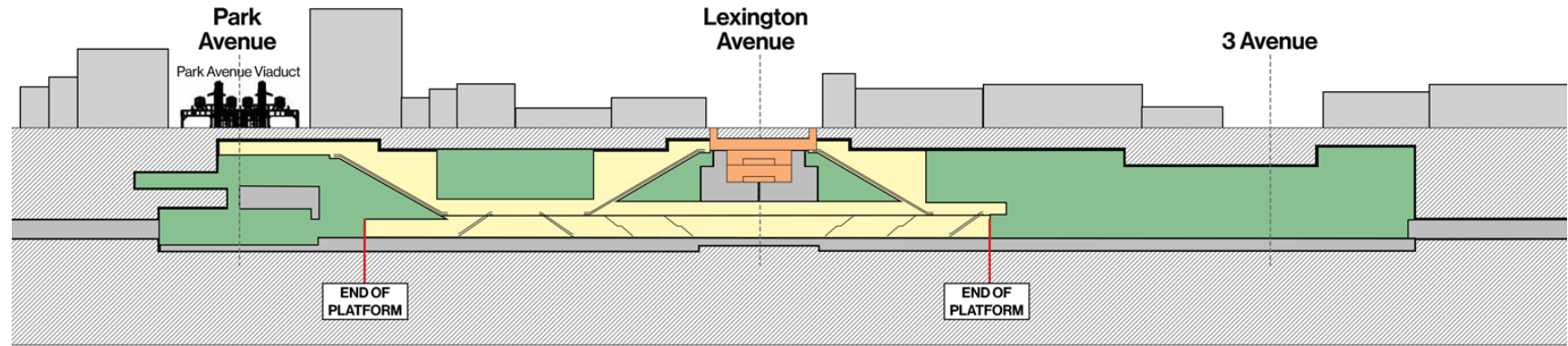


Instead, MTA is reusing and building out the structure, reducing costs by \$500M

Scope: Reducing Station Size

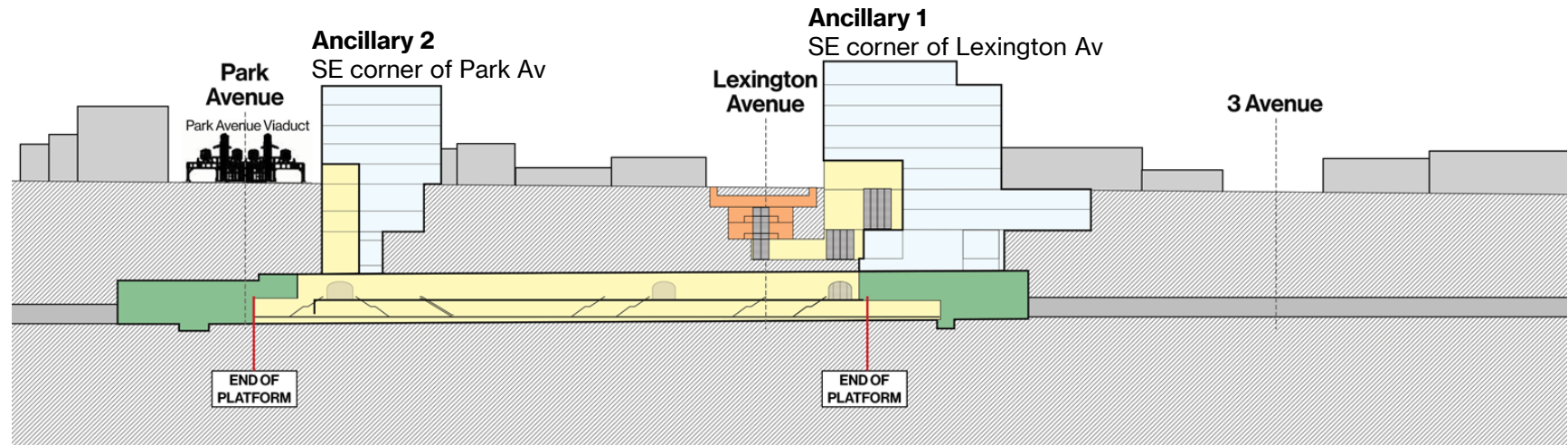
Stations design has been drastically reduced from original design while serving 100,000+ riders and meeting safety codes.

125 St Station
2004 FEIS
 Illustrative drawing



- Back of House
- Platform & Mezzanine
- 125 St 4 5 6 Station

2023 Design

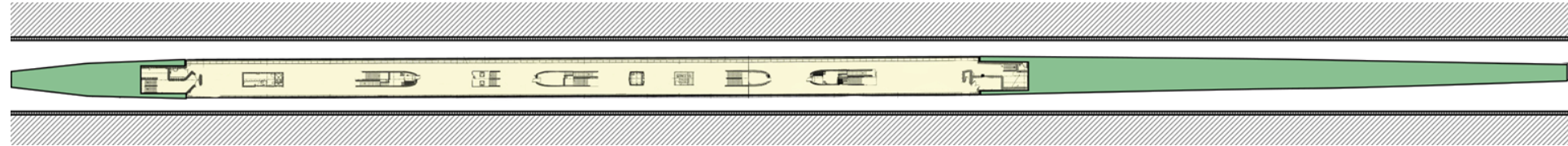


- Ancillary
- Back of House
- Platform & Mezzanine
- 125 St 4 5 6 Station

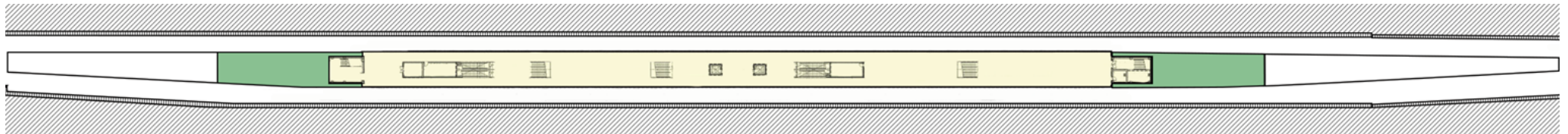
Scope: Reducing Station Size

Stations have same 10-car platform length as Phase 1, with significantly less back-of-house in the cavern.

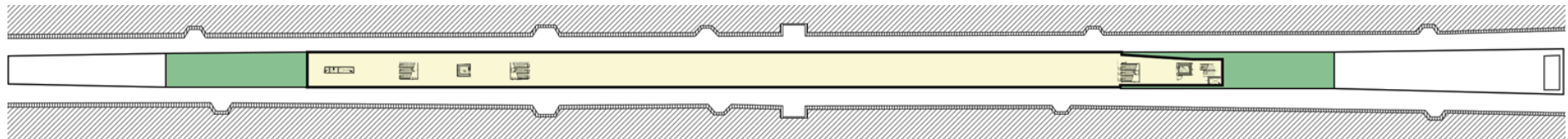
96 St Station
Phase 1 terminal station



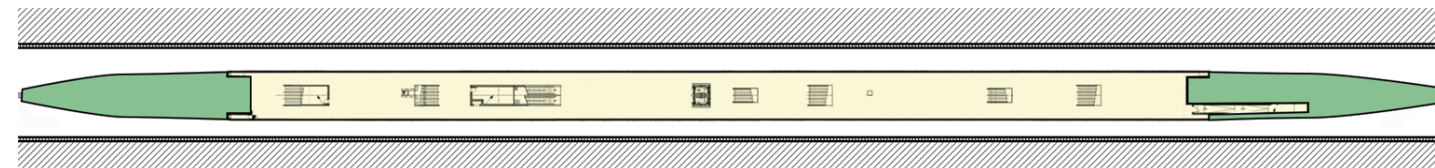
106 St Station





116 St Station



125 St Station
Phase 2 terminal station



 Back of House
 Platform & Mezzanine

Scope: All told, these steps saved more than \$1 billion

We're not done – as design advances, we're continuing to value engineer.

Reuse tunnels

Reduce station size

Reduce/relocate back-of-house

**\$1 billion+
savings**

Value engineering underway:

Eliminate tunnel “bellmouth” opening

Reduce platform width for capacity

Relocate mezzanine at 116 St to avoid utilities

Further reduce user space at 125 St

Improve tunnel launch location

**\$300 million+
savings**

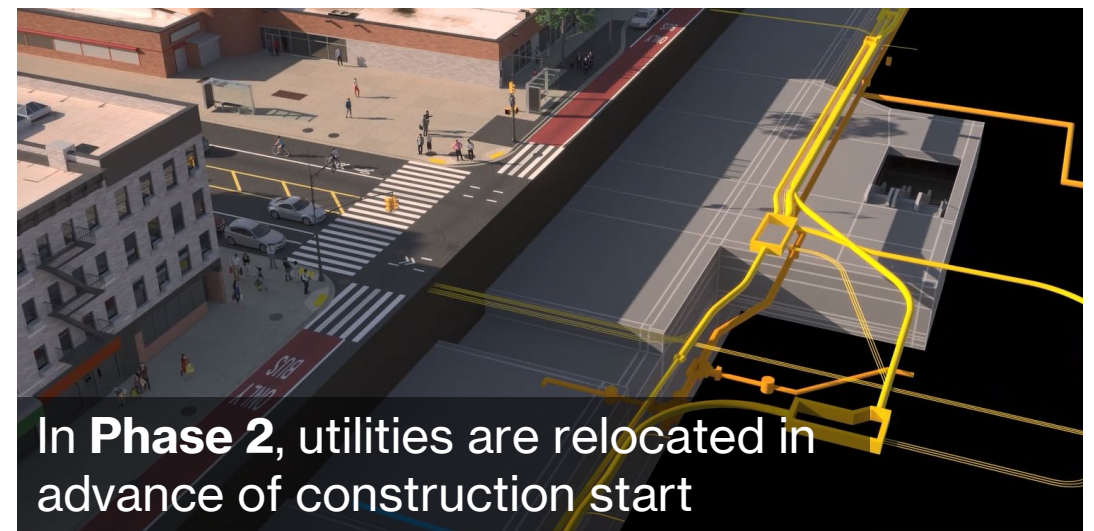
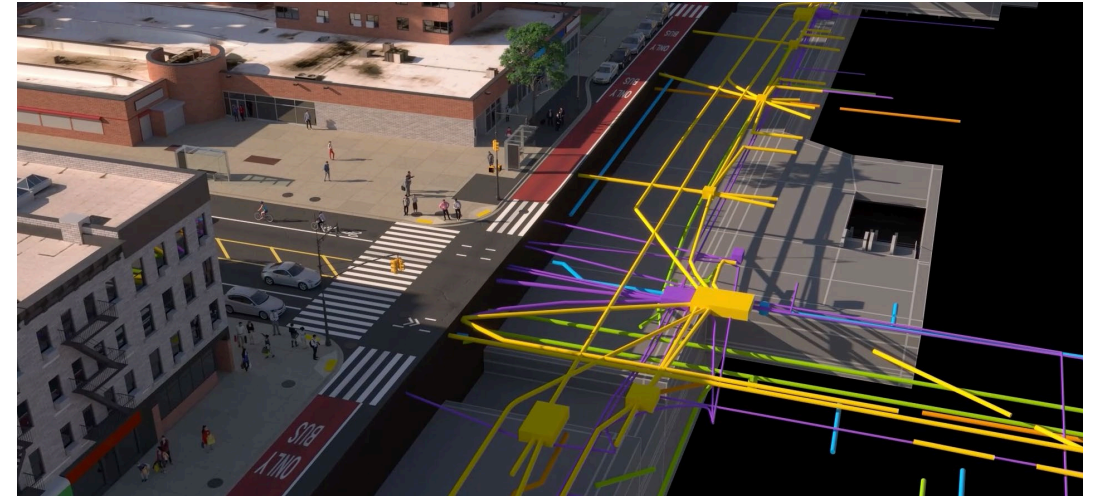
+ Design-Build will yield more efficient delivery concepts

Planning: Advanced Utility Relocation

By getting utilities addressed first, we reduce risk.



Phase 1 unanticipated utility relocation led to 12 months of delays across the 10 contracts



In Phase 2, utilities are relocated in advance of construction start

Planning: Early Real Estate Acquisition

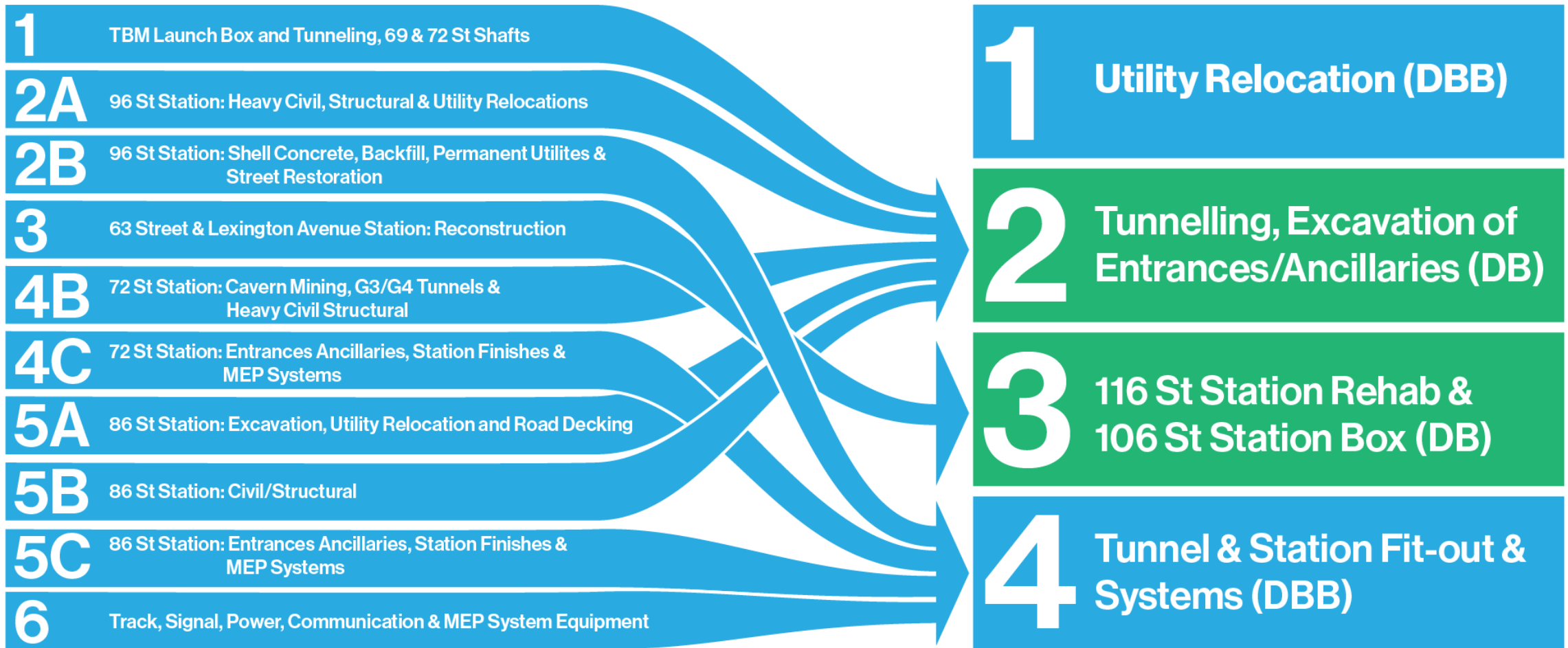
Critical properties are secured, with joint development opportunities preserved.

Facility	Status
106 St	Acquisition underway for all four sites
116 St	One site acquired (including launchbox) Remaining two sites underway
125 St	Acquisition complete
Ancillary A	Acquisition complete



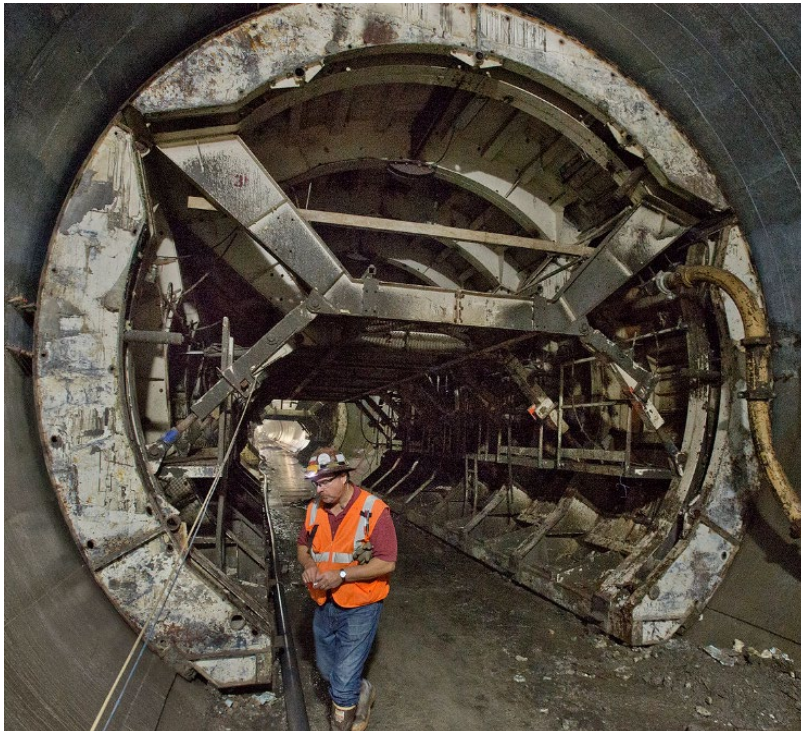
Management: A Completely Different Approach

Fewer contracts with strategic use of design-build



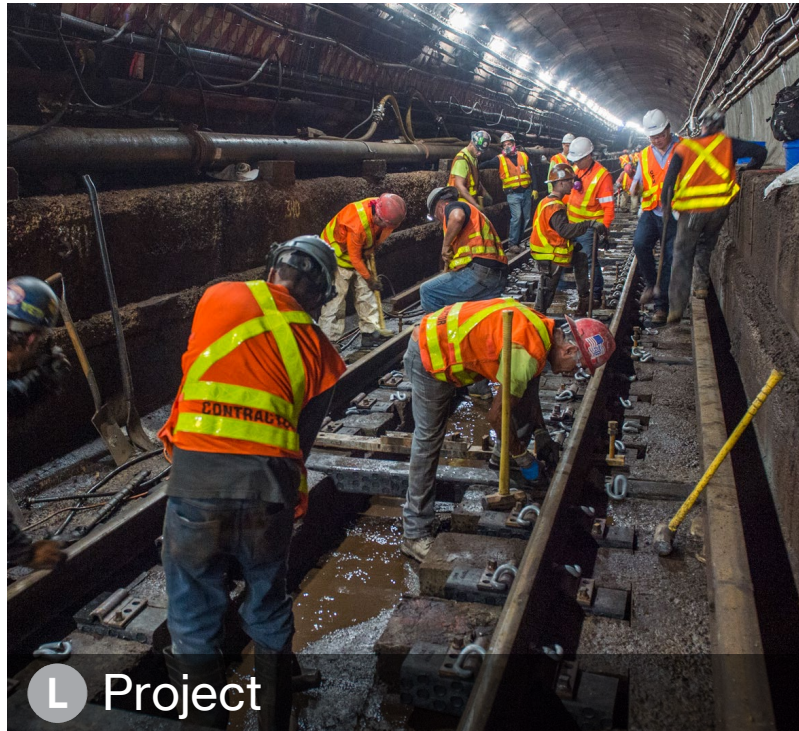
Management: A Completely Different Approach

Bringing outside expertise to bear.



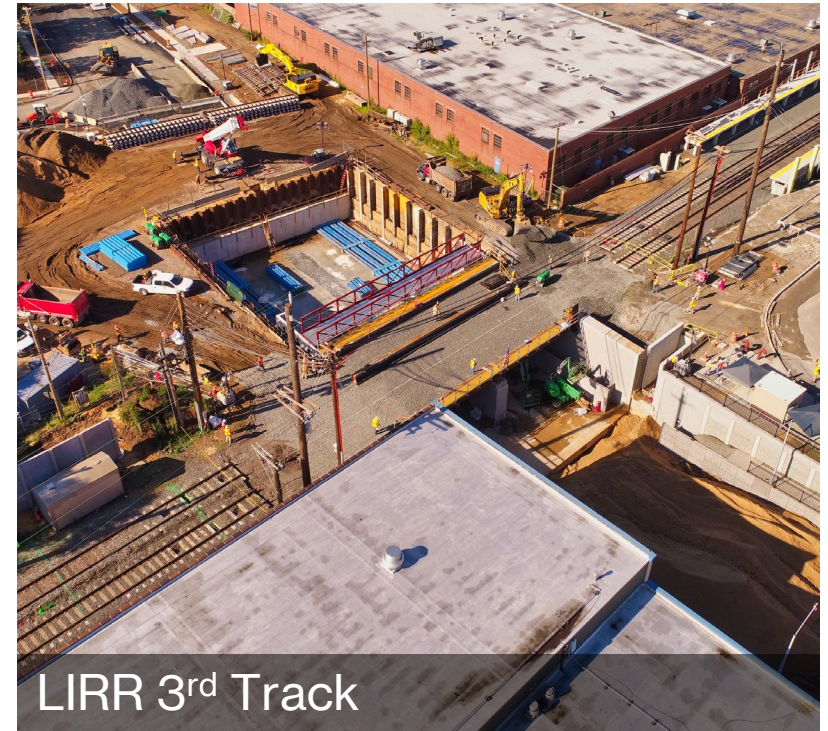
Peer Review

Completed four rounds of technical review on all contracts



Major Capital Review Unit

Panel with international expertise assembled to review design and contractual documents



LIRR 3rd Track

Alternative Technical Concepts

During procurement, solicit alternative design concepts from proposers that minimize cost

The result will be a better, faster, cheaper Phase 2

We've already saved over **\$1 billion** – and we're not done yet.

Scope

- **Tunnel:** Reuse of existing 1970s era tunnel.
- **Station:** Sized to meet capacity, safety, and code with mezzanines reduced or eliminated.
- **Back-of-House:** Essential needs relocated to ancillary buildings, 5-10x less costly to build.

Planning

- **Advanced utility relocation** removes surprises – which led to 12 months delay in Phase 1.
- **Real estate acquisition** complete or in progress.

Management

- **Fewer contracts** reduces tricky interfaces.
- **Strategic use of Design Build** to incentivize innovation and cost-cutting, balances risk with contractor.

Contract 1 is a key milestone toward cost containment

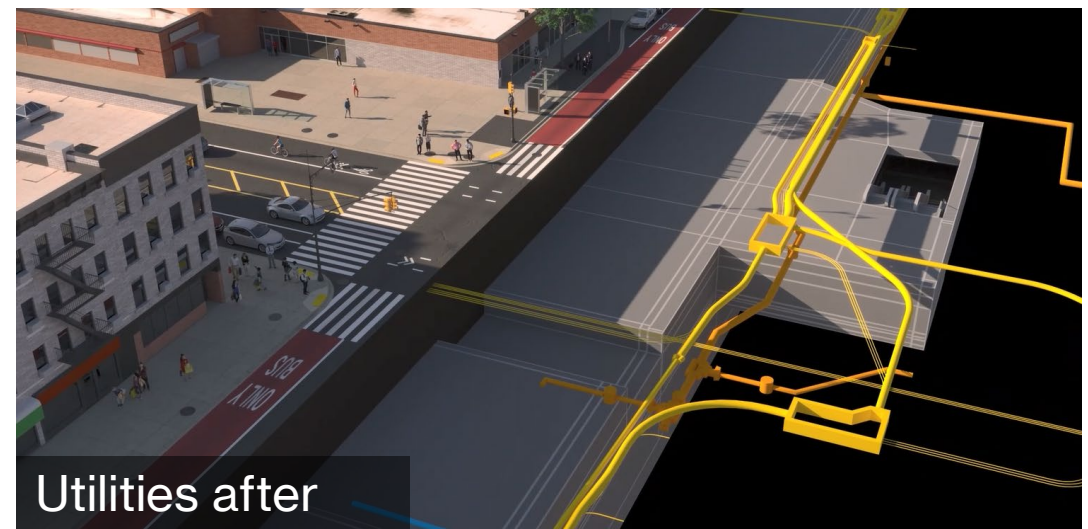
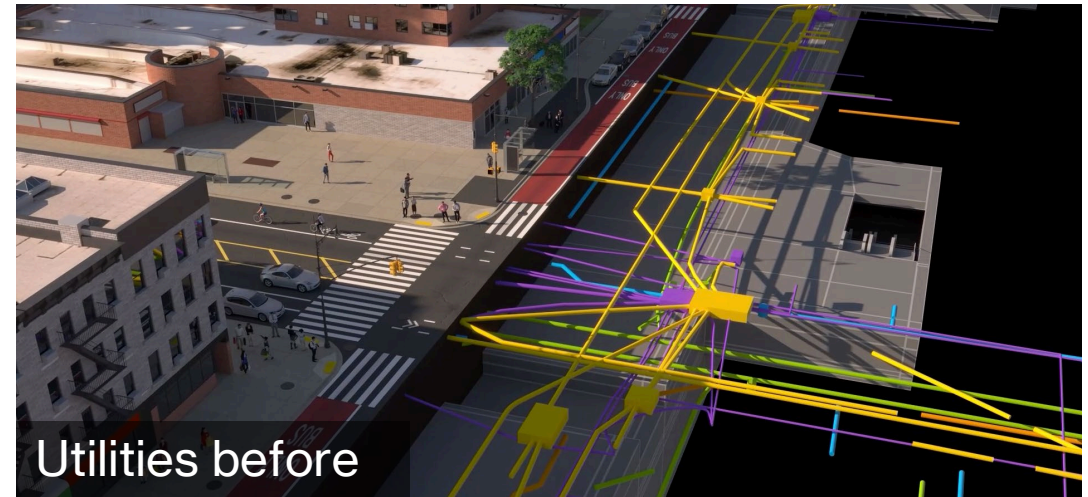
Details

Contractor: C.A.C. Industries, Inc.

Budget: \$182 million, including third-party contract and support costs

Scope:

- Relocate underground utilities from 105 St to 110 St
- Temporary streetscape modifications, including new bike lanes
- Building remediation, strengthening, and underpinning in preparation for new 106 St station



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