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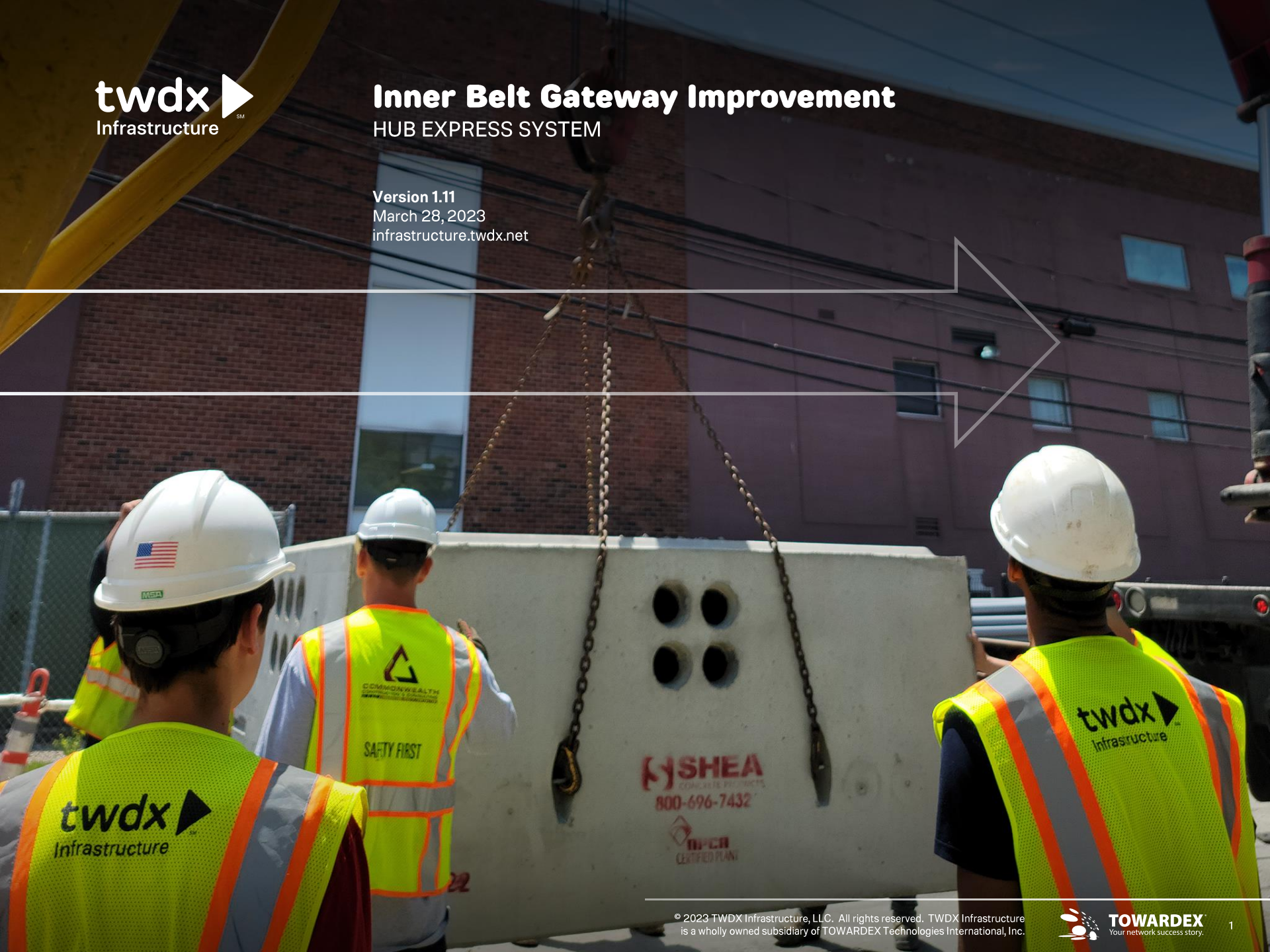
Inner Belt Gateway Improvement

HUB EXPRESS SYSTEM

Version 1.11
March 28, 2023
infrastructure.twdx.net



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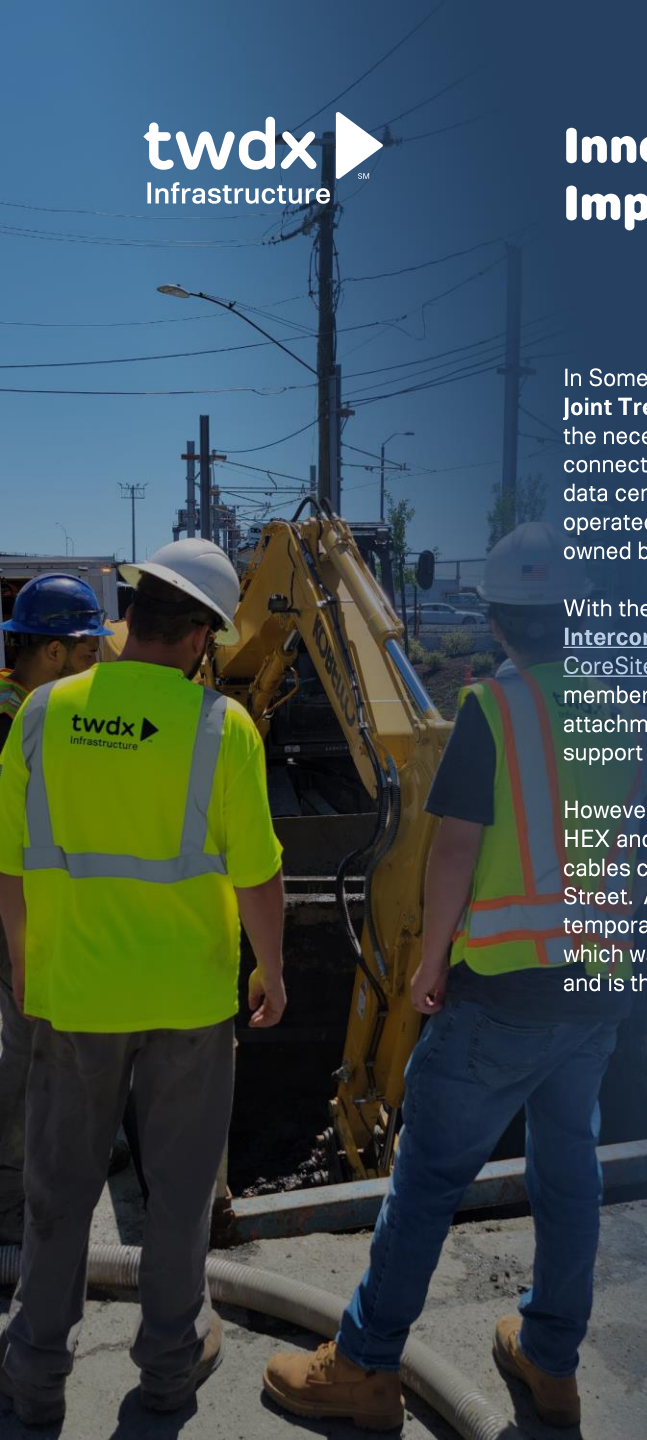


Inner Belt Gateway Improvement Overview

In Somerville's Inner Belt, **Hub Express (HEX)** and **Joint Trench Partners (JTP)** conduit systems provide the necessary infrastructure to feed massive connectivity into Boston's major internet hubs and data centers. HEX is owned by **TOWARDEX** and operated by **TWDX Infrastructure LLC**, while JTP is owned by Lumen and Zayo.

With the recent opening of **Third Avenue Interconnection** and new utility entrance into CoreSite's data center at 70 Inner Belt Road, members of the JTP system have been requesting attachments onto the HEX Conduit System to support their network expansions in Inner Belt.

However, existing interconnection facilities between HEX and JTP do not align for optimal routing of cables coming in from the north, via New Washington Street. As a result, network developers have been temporarily utilizing a single 4″ conduit in the area which was not designed for system interconnections, and is thus becoming congested.

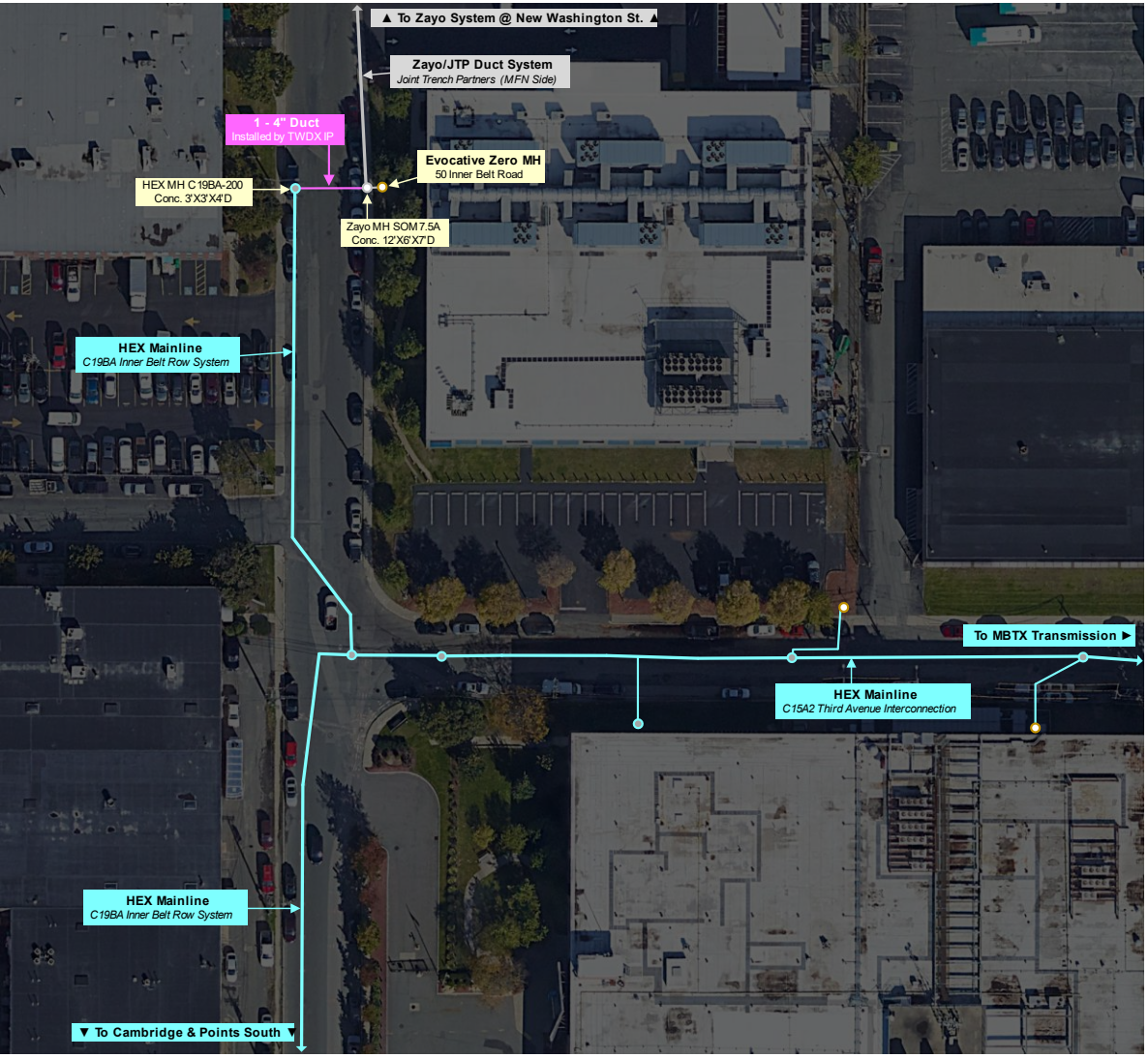
In order to meet current and future requests for attachments onto the HEX Conduit System by JTP members in the area, we're upgrading utilities in front of 50 Inner Belt Road to improve access.

This work is being embarked by TOWARDEX in accordance with the Project Charter of the Hub Express System. Separately from this work, additional **JTP—HEX System Cross Connections** are also being planned to increase capacities for internet backbone providers coming into Inner Belt.

For background information:

- Visit our web site at infrastructure.twdx.net
- Read NSPB February 6th Meeting Memorandum

50-63 Inner Belt Current Architecture

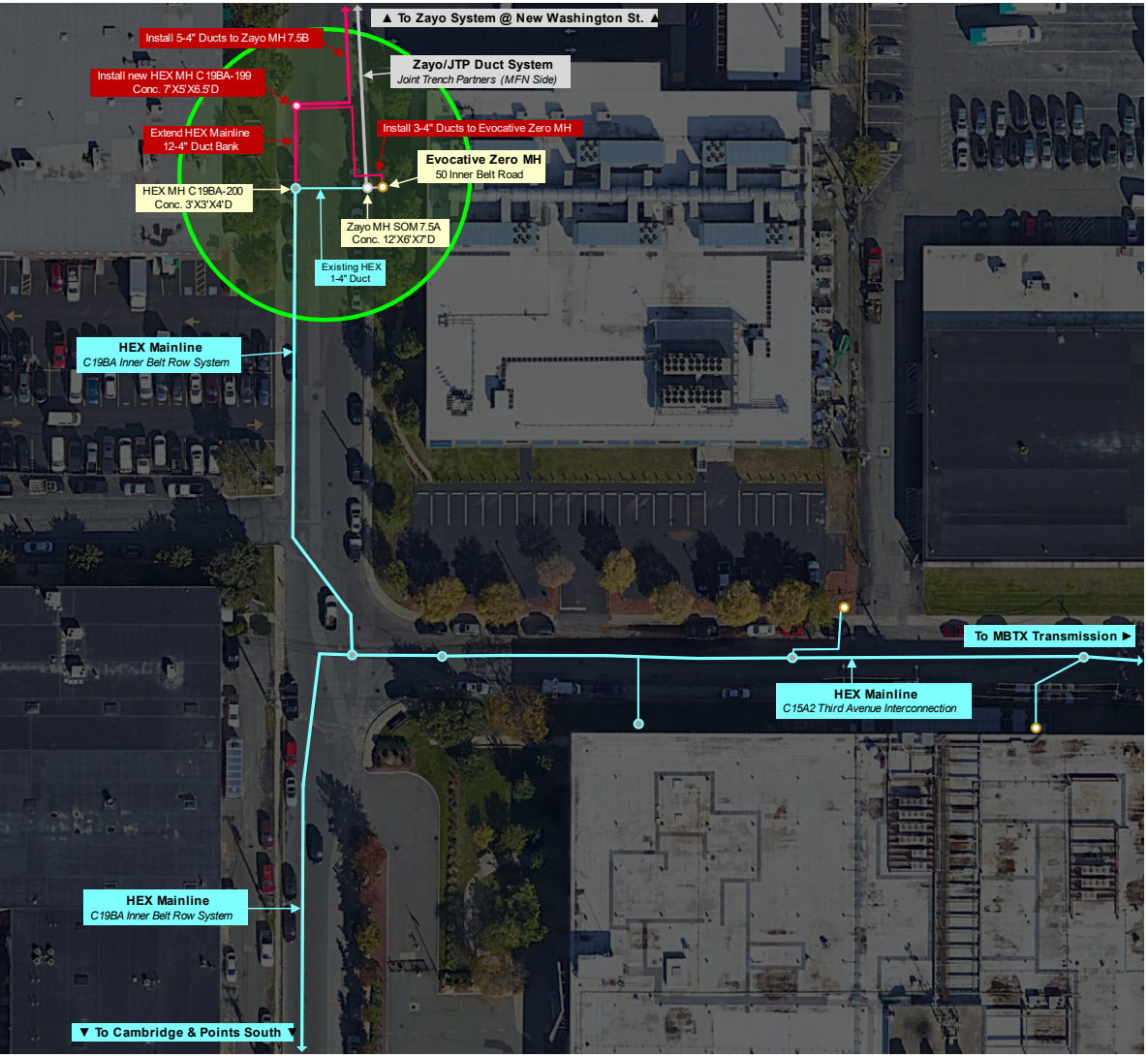


Bottleneck exists between Zayo's JTP duct system and HEX at 50-63 Inner Belt Road

Currently, there is only 1—4″ conduit connecting JTP and HEX duct systems along 50-63 Inner Belt Road, between Zayo manhole 7.5A and HEX manhole C19BA-200. This duct was originally constructed by TWDX IP in 2021 to support its own network build into the Evocative data center at 50 Inner Belt Rd.

With the opening of the Third Avenue Interconnection, JTP members are requesting attachments onto HEX system from Zayo manhole 7.5A, creating congestion at this single 4″ conduit.

50–63 Inner Belt Access Improvement



Upgraded Capacity and Access Improvements for JTP Members and Inner Belt's Data Centers

TWDX Infrastructure, on behalf of TOWARDEX and in coordination with Zayo, will construct additional 5—4″ conduits into Zayo manhole **7.5B**. The existing 1—4″ duct built by TWDX IP will continue to remain in service, thereby increasing the total number of ducts connecting two systems in this area to 6.

Furthermore, additional 3—4″ ducts will be built into Evocative data center's zero manhole at 50 Inner Belt Rd., adding direct connections into the HEX system from the data center.

All conduit and manhole constructions proposed herein are owned by TOWARDEX—telecommunications providers can obtain license to install fiber optic cable in HEX Mainline conduits. For more information about utility licensing, visit infrastructure.twdx.net.

New HEX Manhole C19BA-199

New Underground Cable Vault C19BA-199

To facilitate new conduit connections and ease cable routing & splicing by network developers, a new underground vault designated as **HEX Manhole C19BA-199** will be built nearby, as the existing HEX manhole in the area (C19BA-200) is only a pull box and thus too small (3′x3′) to support network deployments.

The new vault C19BA-199 will be **7′x5′x6.5′D** in size and will connect back to the existing pull box manhole C19BA-200 via a mainline duct package of 12—4″ conduits.

Project engineers had initially sought to install a larger 12′x6′ vault in the area, but due to conflicts with other utilities, engineers determined that a 7′x5′ vault is the maximum size that could be sited at the right-of-way for this particular location.

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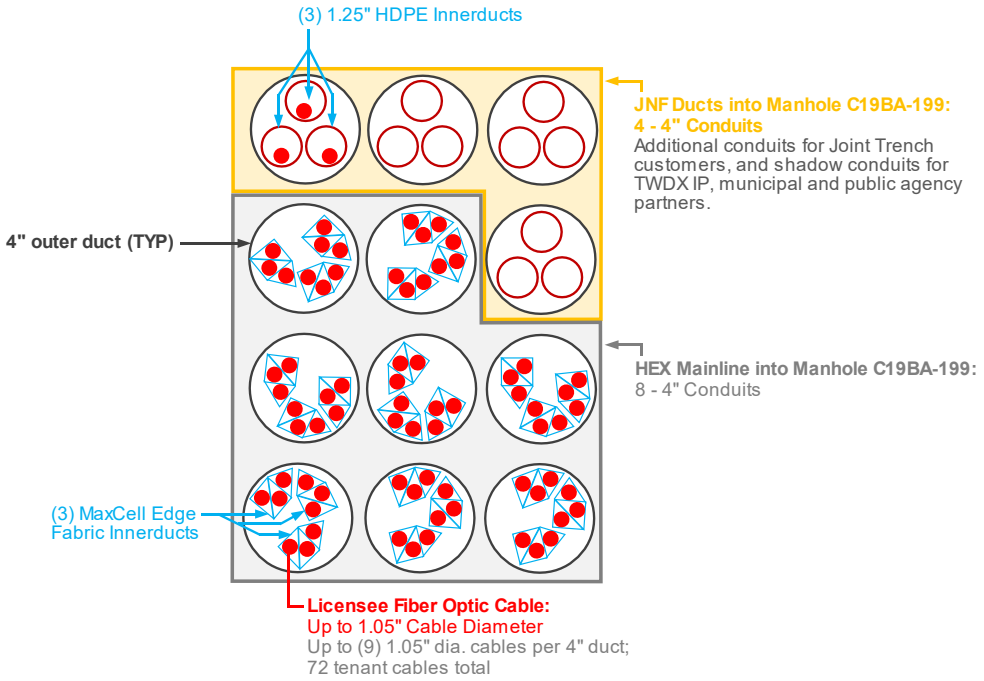
Common Trench Detail

HEX Mainline Extension into New Underground Vault C19BA-199:

HEX Mainline will be extended from the existing 3′x3′ pull box manhole C19BA-200 and into the new underground vault C19BA-199.

C19BA-199 Arriving Common Trench Detail:

HEX Mainline at 50—63 Inner Belt Road is 8—4″ conduits, with each duct fitted out with MaxCell for total of 72 fabric innerducts. Each fabric innerduct can accommodate a fiber optic cable sized up to 1.05″ in diameter. Additional 12—1.25″ HDPE innerducts are also added for Joint Trench customers & shadow conduits, totaling to 12—4″ ducts in the common trench.



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Construction Details

Street Opening and Utility Work

TOWARDEX received siting approval and permit from the City of Somerville for this work in March 2023. Pursuant to Winter Moratorium in effect, no public right-of-way may be excavated (except for emergencies or with City approval) during winter months. The City of Somerville Winter Moratorium ends on April 3, 2023. TWDX Infrastructure will mobilize and commence construction on **April 5, 2023**. The work is expected to take about 2-3 weeks.

Once Dig Safe One Call Locate is complete, contractors for TWDX Infrastructure will first perform test pitting and dig pilot holes to confirm soil conditions and existing utilities. Due to presence of utilities in the area, hydro-vac excavation will be heavily used in this project.

Manhole Installation

Shea Concrete Products, Inc. of Wilmington, Massachusetts has been selected for precast cable vault and installation. Contractor working for TWDX Infrastructure will dig the vault pit and install trench protection to prevent cave-ins. Areas surrounding the manhole will be backfilled with excavatable Controlled Density Fill (CDF) to meet compaction requirements for traffic loading, while allowing re-excavations to later add additional conduits into the manhole.

Duct Bank Installation

All duct banks will be encased in min. 3,000 psi concrete. Tenants with existing cable plant at pull box manhole C19BA-200 will be notified, as TWDX Infrastructure will need to temporarily and carefully lift and move aside their cable plant out of the 3′x3′ manhole into a cordoned off area. This will allow crews to cut open the north wall in the existing pull box manhole without disturbing tenant networks. Tenants are allowed to have their representatives present at the job site during the work, subject to procedures provided under their license agreement.

Zayo Manholes

In coordination with Zayo, TWDX Infrastructure will mate new conduits from the HEX system into Zayo manhole 7.5B, located outside of 50 Inner Belt Road. Furthermore, at Zayo manhole 7.5A nearby, TWDX Infrastructure will rebuild sidewalks, and on behalf of Zayo, replace the old Metromedia Fiber Network manhole cover with new Zayo-branded cover and frame.

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Restoration

Street Restoration

At the conclusion of the project, TWDX Infrastructure will engage a MassDOT approved contractor to mill and repave 5,240 sq. ft. along the work area in Inner Belt Road. Any sidewalk panels disturbed by the project will be replaced with brand new concrete panels in accordance with Somerville IAM's Permit Manual and public works standards.

Extents of Repaving on Inner Belt Road:

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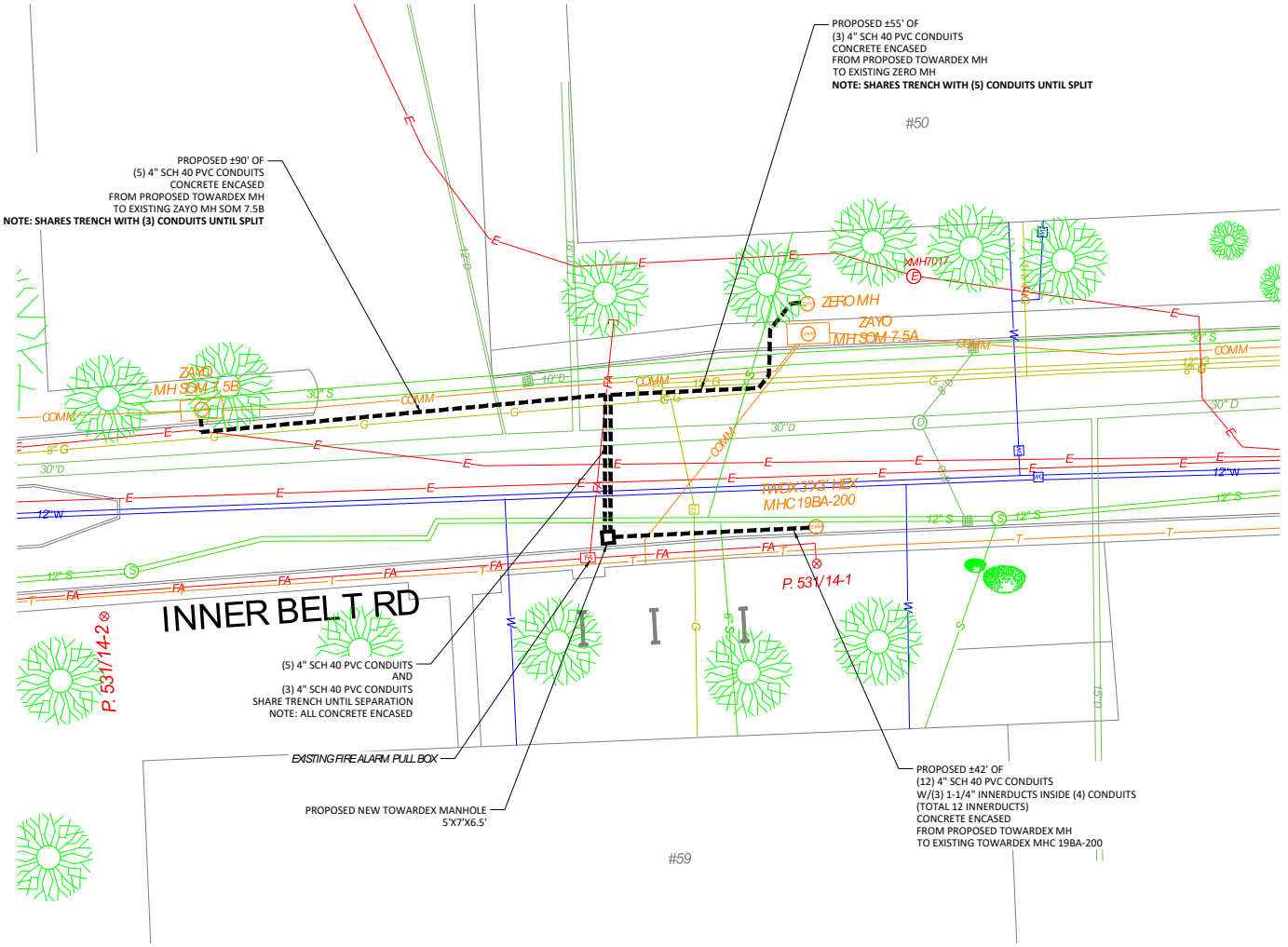
Conduit Placement Plan



LEGEND

ELECTRIC POLE		STREET LIGHT	
JOINT UTILITY POLE		ELECTRIC HH	
LAMP POST		TEL HH	
TRAFFIC LIGHT		CATV HH	
SEWER MH		COMM PEDESTAL	
DRAIN MH		IRRIGATION VALVE	
TELEPHONE MH		WATER METER	
ELECTRIC MH		GAS METER	
CATV MH		SEWER GATE	
WATER MH		GAS GATE	
PAG		WATER GATE	
BUSH/SHRUB		HYDRANT	
RIGHT OF WAY		MAIL BOX	
CULVERT		STONE BOUND	
GUARD RAIL		PARKING METER(S)	
FENCE		STEEL POST	
ELECTRIC VAULT		SIGN POLE	
TRAFFIC HH		UG CABLE MARKER	
PROPOSED HH		TRANSFORMER	
PROPOSED CONDUIT		CATCH BASIN	

NOTE:
EXISTING UTILITIES SHOWN ARE APPROXIMATE AND NOT WARRANTED TO BE CORRECT. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL PUBLIC AND PRIVATE UTILITIES PRIOR TO BEGINNING ANY EXCAVATION.

CALL BEFORE YOU DIG
UNDERGROUND SERVICE ALERT
72 HOURS NOTICE REQUIRED.
ENTER 1-888-DIG-SAFE

PREPARED BY:
AXIS ENGINEERING GROUP

PREPARED FOR:
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REV #	DESCRIPTION	DATE

TITLE:
PROPOSED CONDUIT INSTALLATION
50 INNER BELT RD
SOMERVILLE, MA

SURVEYED BY:	AXIS ENGINEERING	PRINT NO:	1 OF 2
DRAWN BY:	MB	SCALE:	1" = 10'
DATE:	3/16/2023	SHEET SIZE:	D (36" X 24")

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Contacts

Hub Express System Inquiries:

Leasing Office and Conduit Licensing Inquiries: utility-licensing@towardex.com
Permitting and Access Requests: cmc@towardex.com

Joint Trench Helpdesk:

Contact	**Gavin Schoch** General Manager
Hours Office Hours	**Monday — Thursday** 10:30 AM — 4:30 PM
Phone	**617-863-8325**
Email	plantmaster@towardex.com
Address	**TWDX Infrastructure, LLC** 70 Inner Belt Road, Suite M1 Somerville, MA 02143

Utility Locating:

811
Know what's below. Call before you dig.

811
or 888-DIG-SAFE (344-7233)

State law requires that you notify Dig Safe® at least 72 hours prior to any excavation (MGL c.82 § 40A).

Corporate Headquarters:

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Boston, MA 02210

For general inquiries and dark fiber sales: inquiry@towardex.com
For network operations: ip-admin@twdx.net 1-844-290-TWDX

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