

Hub Express System Network Siting Policy Board

September 3, 2024 Meeting

I. Approval of Minutes and Decisions

- a) No. 24-10: Extend Deadlines for Joint Build Participation, Inner Belt Road [Pg. 4](#)
- b) No. 24-11: Cablevision Lightpath, LLC Application for Conduit Attachment [Pg. 6](#)

II. C17A6 JTP-HEX System Cross Connection

- a) C17A6 Project Update [Pg. 10](#)
- b) Tunnel Vault (Large Pull Box) C19BA-206 [Pg. 11](#)
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III. Reports of the Joint Trench Administrator

- a) FY 2025 Operating Expenses [Pg. 15](#)
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Hub Express System
Network Siting Policy Board

Meeting Minutes

Date and Time:

Tuesday, September 3, 2024 at 12:30 PM

Location:

TWDX Infrastructure, LLC
One Marina Park Drive 14th Floor, Boston, Massachusetts 02210

Meeting Call-In Number: (415) 655-0001, Access # 26310493873

Request for Comments Parties:

TOWARDEX Technologies Int'l, Inc. – HEX Owner's Meetings ("Corporation" or "TOWARDEX")
TOWARDEX Technologies Int'l, Inc. – IP Network Services Division ("TWDX IP")
TWDX Infrastructure, LLC – Joint Trench Administrator ("JTA")
C17A6 Joint Trench Participants ("C17A6 Participant Companies")
HEX Mainline Attachment Licensees ("Attachers")

Opening Items:

- i. **Call the Meeting to Order**
- ii. **Approval of Minutes and Decisions:**
Motion: Approve and record NSPB decisions and matter resolutions from May 2024 to August 2024.
Resolved: Approved.

Business:

- i. **C17A6 JTP-HEX System Cross Connection**
Motion: Approve project to commence Construction Package 2 ("CP2"); approve new cost projections.
Resolved: Approved with modification: CP2 may proceed within requested capex amount, updated project costs provisionally approved, JTA to provide new estimates upon conclusion of CP2.
- ii. **Reports of the Joint Trench Administrator**
Motion: Approve FY 2025 operating budget, 20-year IRU rates for JNF duct customers in C17A6 section
Resolved: Approved.

Meeting Adjourned at 1:43 PM.

Submitted by,

TWDX INFRASTRUCTURE, LLC

/s/ Gavin R. Schoch
Gavin R. Schoch

Dated: September 6, 2024

I.
APPROVAL OF MINUTES AND
DECISIONS

**Hub Express System
Network Siting Policy Board**

In the Matter of:

TWDX Infrastructure, LLC

Motion to Extend Deadlines for Joint Build Participation on
Inner Belt Road

NSPB File No. 24-10

DECISION MEMO

In October 2023, NSPB approved publication of **Common Trench Letter** for HEXC# C17A6 “*JTP-HEX System Cross Connection*” occurring between 121 and 200 Inner Belt Road, Somerville, Massachusetts (2301923-NE Doc 3).

The Common Trench Letter provided the following deadlines for eligible telecommunications carriers to register their interest for participating in the joint trench construction:

2. Deadlines for Eligible Participants to Register Interest

To apply for participation in this joint trench construction, you must register your interest by the following deadlines:

Request to use 1.25” JNF duct:	August 23, 2024
Request to install your own conduit into the HEX Common Trench:	November 16, 2023

To register your interest before the deadline, send email to utility-licensing@towardex.com or write to:

TWDX Infrastructure, LLC
Attn: Joint Trench Administrator
1 Marina Park Drive, Suite 1474
Boston, Massachusetts 02210

TWDX Infrastructure, LLC, as the Joint Trench Administrator (the “JTA”) of the Hub Express System and as the delegated authority for the undertaking pursuant to PCHEX §§ 2 and 4, moves the NSPB to extend the above deadlines for eligible telecommunications providers to participate in the construction.

I. INTRODUCTION

The HEX project C17A6 experienced delays due to engineering change orders and differing site conditions encountered during the construction. In November 2023, the NSPB invalidated the previous construction plans for C17A6 and moved to divide up the project into three work sections known as “Construction Packages”: CP1, CP2 and CP3. CP1 was completed on April 26, 2024.

The JTA is working to commence works for CP2 and CP3 under a revised construction plan. In particular, the increase in number of conduits in the duct bank, and the requirement for installation of specially designed underground vaults significantly delayed the project. The project is now estimated to be completed in 2025.

II. TWDX IP STATEMENTS

TWDX IP does not object to JTA’s proposed motion to extend deadlines for Joint Build participants to apply for installations of their conduit into the C17A6 Common Trench. TWDX IP, however, implores that a more nuanced and disciplined approach to the joint trench project management is necessary to avoid further preventable delays.

By way of example, TWDX IP notes that a considerable delay occurred during the design process for a proposed underground “tunnel vault” structure at installation location 61+28. By information and belief, TWDX IP notes that in particular, a user’s requirement for an earth ground connection and HEX requirements for hermetic sealing of the structure had caused significant design disagreements and disputes, requiring the JTA to narrow the scope of the design changes and adding months of delay to the entire process.

TWDX IP adds that there are still 1-1/4” JNF ducts available via **Indefeasible Right of Use Agreement** and agrees with JTA’s motion to extend the deadline for eligible telecommunications providers to request attachments along JNF conduits

on a first-come, first-serve basis. TWDX IP suggests that telecommunications providers should consider utilizing JNF conduits if their network development needs can be met, as JNF attachments provide the quickest and easiest method to jump into the Common Trench without adding further delays or costs to the project.

III. JOINT TRENCH ADMINISTRATOR STATEMENTS

The JTA petitions that NSPB move to approve the following revised deadlines for the C17A6 Common Trench Letter:

Request to use 1.25" JNF duct:	August 25, 2025
Request to install your own conduit into the HEX Common Trench:	April 15, 2025

IV. RESOLUTION

After due notice and consideration, it is hereby

RESOLVED: That JTA's petition to extend the Joint Build participation for C17A6 is GRANTED; and it is

FURTHER RESOLVED: JTA shall issue a revision to the published Common Trench Letter (2301923-NE Doc 3) on the construction project's web site at <https://infrastructure.twdx.net/JTPHEX> within 60 days of this resolution.

SO RESOLVED, this 18th day of August, 2024.

/s/ Gavin R. Schoch
Gavin Rowe Schoch
Vice Chair, Network Siting Policy Board

**Hub Express System
Network Siting Policy Board**

In the Matter of:

Cablevision Lightpath, LLC

Application for Conduit Attachment License and Request to
Modify Attachment Terms and Conditions

NSPB File No. 24-11

DECISION MEMO

On July 11, 2024, Cablevision Lightpath, LLC (the “**Applicant**”) applied for a HEX Mainline attachment along Inner Belt Road and Third Avenue. The Applicant raised an inquiry regarding an agreement term in the Revocable License for Conduit Occupancy (the “**Agreement**”) under Section 7.3 Relocation Costs.

The Applicant explained that during a local authority required relocation of the HEX system (the “**Absolute Property**”), the Licensor should be liable for Relocation Costs of the Absolute Property, and that Applicant, as a Licensee renting duct space, should only be responsible for costs of relocating and rearranging its own attachments in the Absolute Property which is being relocated. The Applicant further explained that it would be unusual for such Absolute Property relocation and reconstruction costs to be incidentally passed onto licensees, as they don’t have ownership in the facilities.

The existing language of the term Section 7.3 Relocation Costs, which is being contested, is as follows:

7.3 Relocation Costs. If Licensor is required by any municipal or public authority to relocate the Absolute Property or any portions thereof which contain Licensee’s properties within the Licensed Facilities under this Agreement, Licensee shall pay its proportionate share of total relocation costs. Such proportion shall be determined by multiplying such total costs by a fraction, the numerator of which shall be the proportionate amount of conduit capacities used by the Licensee and the denominator of which shall be the aggregate amount of conduit capacities used by Licensee, Licensor and any other persons or licensees in the Premises. The cost shall include all relocation costs and tie up costs reasonably incurred under the circumstances at the usual rates recoverable by Licensor in relocation projects.

I. INTRODUCTION

Although TOWARDEX does not accept redline changes to any terms of the Agreement, when an applicant raises a concern regarding the validity or reasonableness of any Agreement terms, pursuant to PCHEX § 6, the matter will be deferred to the **Network Siting Policy Board (NSPB)** for resolution. After receiving the inquiry from the Applicant, **Item 24-11** was entered into the agenda for NSPB discussion via virtual meeting held on Friday, July 12, 2024.

At the beginning of the meeting, the representative for TOWARDEX explained that the language for § 7.3 was derived from the **Joint Build Agreement**, which is a lead company and participant agreement used for joint trench projects involving the HEX system.

II. TWDX IP STATEMENTS

The Applicant is proposing attachment along Joint Network Facilities (JNF) conduits, originating from Zayo manhole 8A, passing through TWDX IP manhole C19E1-104, and terminating at HEX manhole C15A2-001.

TWDX IP does not object to the Applicant’s proposed attachment along its JNF conduits. As far as authorizations are concerned, TWDX IP issues its Revocable Consent to the HEX Program Office to include portions of the JNF facilities proposed for attachment into the Agreement.

TWDX IP argues that the requirement to share conduit relocation costs is just and reasonable, as provided by 47 USC § 224(d)(1), because the current language of § 7.3 proportionally shares such relocation costs over the actual capital costs of the utility attributable to the entire pole, duct, conduit or right-of-way. TWDX IP petitions the NSPB to sustain the existing Agreement term § 7.3 as it is presently written and remains in force.

III. JOINT TRENCH ADMINISTRATOR STATEMENTS

Pursuant to PCHEX § 6, the Joint Trench Administrator (JTA), as the administrator of the undertaking (Id. § 4), may act as a neutral liaison to provide research and recommendations to the network siting policy board.

The JTA challenges TWDX IP's argument that existing terms which were inadvertently incorporated from the Joint Build Agreement is just and reasonable for the purposes of 47 USC § 224. First, notwithstanding the interpretation of § 224(d)(1) as cited, TWDX IP lacks standing to reference this section to form the basis of its argument, as pursuant to 47 USC § 224(b), (c), the Massachusetts Department of Telecommunications and Cable is the certified authority to regulate "such rates, terms, and conditions." See M.G.L. c. 166 § 25A; *States that have Certified that they Regulate Pole Attachments*, WC Docket No. 20-302, Public Notice (FCC Mar. 19, 2020).

The JTA argues that in order to recover capital costs incurred over the operation of the Absolute Property, the computation of determining just and reasonable rates shall be made using the formula adopted for calculating reasonable attachment rates in Massachusetts (See M.G.L. c. 166 § 25A; 220 CMR §§ 45.01, 45.03, 45.04). In computing the rates, the formula should consider: (i) gross investment by the utility for the pole lines; (ii) the investment by the utility in appurtenances not used by or useful to the licensee; (iii) the depreciation reserve for the gross pole line investment; (iv) the total number of poles (A) owned; and (B) controlled or used by the utility; (v) the annual carrying charges attributable to the cost of owning a pole, and specific factors used in the determination of these charges; and (vi) the average amount of useable space per pole for those poles used for pole attachments.

The current universal attachment rate across the HEX Mainline is \$1.54/foot/year (See *Guide to Utility Conduit Licensing*, 2021, <https://infrastructure.twdx.net>), derived from the above ratemaking formula adopted for calculating reasonable attachment rates in Massachusetts.

JTA asserts that a relocation of the Absolute Property is a capital improvement project. Therefore, recovery of such relocation costs shall be made in accordance with the above discussed ratemaking formula to derive and publish a new HEX Mainline attachment rates and terms in accordance with 220 CMR 45.03. JTA argues that incidental passing of proportional costs of Absolute Property relocations to attachment licensees is improper and is not just and reasonable for the purposes of M.G.L. c.166 § 25A.

Wherefore, JTA petitions that NSPB move to invalidate and remove the current Agreement § 7.3 and require the corporation counsel to include a new updated language for § 7.3 provided by JTA herewith.

IV. RESOLUTION

After due notice and consideration, it is hereby

RESOLVED: That TWDX IP's petition to sustain the current Agreement terms for § 7.3 is DENIED; and it is

FURTHER RESOLVED: That JTA's petition to invalidate the current Agreement § 7.3 is GRANTED; and it is

FURTHER RESOLVED: That the corporation counsel will replace the Agreement § 7.3 with the following updated language proposed by JTA:

<p>7.3 Relocation. If Licensor replaces or relocates any portions of the Absolute Property, for any reason other than pursuant to Section 7.2 above, on which Licensee has facilities, Licensee must transfer its facilities to the new relocated portion of the Absolute Property, at its sole expense, within fifteen (15) days from receiving notification from Licensor or Joint Trench Administrator, unless such notice provides for a different time period. If the Parties utilize National Joint Utilities Notification System (NJUNS) or other similar notifying systems, then Licensee must transfer its facilities to the new relocated portion of the Absolute Property within fifteen (15) days of receiving the "next-to-go" notification. If Licensee fails to transfer its facilities within the prescribed timeframe, Licensor may, but will not be obligated to, transfer Licensee's facilities at Licensee's sole expense. If Licensor transfers Licensee's facilities, Licensor will invoice Licensee for Licensor's cost to perform the work and Licensee will pay such invoice within thirty (30) days of receipt.</p>
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; and it is

FURTHER RESOLVED: In so far as to any HEX attachment license agreements for the Absolute Property that may be in force, the Joint Trench Administrator shall, in accordance with 220 CMR 45.03(3)(a), provide affected licensees no less than 60 days written notice notifying each licensee that a change in attachment terms and conditions is required to revise § 7.3 as provided herein. The Joint Trench Administrator shall also update the Sample Conduit License specimen available on its web site at <https://infrastructure.twdx.net> within 15 days of this resolution.

SO RESOLVED, this 15th day of July, 2024.

/s/ Gavin R. Schoch
Gavin Rowe Schoch
Vice Chair, Network Siting Policy Board

II.
C17A6 JTP-HEX SYSTEM
CROSS CONNECTION

C17A6 Project Update

Project Background

The HEX Contract Section **C17A6**, known as **JTP-HEX System Cross Connection**, is a major telecommunications interconnection project in Somerville, Massachusetts, occurring at the end of Inner Belt Road (between 121 and 200 Inner Belt Rd.), roughly 600 linear feet in length.

The C17A6 aims to provide a significant upgrade to connectivity between the downtown Boston's fiber optic loop known as the Joint Trench Partners (JTP) system and the Hub Express (HEX) system in Somerville's Inner Belt.

Because HEX is an open access underground utility built for internet networks, numerous ISPs, CDNs, hyperscalers, subsea networks, public agencies and enterprises rely on the HEX duct system to purchase bulk network capacities from telecom providers in the JTP system.

Furthermore, the HEX system also constructed new diverse and unique utility entrances to two large data centers in the area at both 70 Inner Belt Rd. and 50 Inner Belt Rd., as well as tie-ins for the Lynn cable landing station. These new constructions have resulted in new attachment requests from telecom providers looking to utilize these new pathways.

To meet all of these developing requirements by various parties, on behalf of TOWARDEX and in coordination with Zayo, TWDX Infrastructure is delivering a new large-scale interconnection facility between JTP and HEX duct systems, with a new point of connection at Zayo manhole 11A at the end of Inner Belt Road. A total of 19 – 4” conduits will connect the two systems together. The point of connection at Zayo manhole 11A is important because 11A is also where the Lumen (formerly Level 3) operated section of the JTP system arrives from Lumen manhole 0515-3800.

Project Work Sections

The C17A6 contract is divided into three sub-contracts called Construction Packages, as follows:

C17A6CP1 (Construction Package 1):

Approximately 100 linear feet of 24 – 4” conduits, with 19 – 4” ducts connecting from Zayo/JTP manhole 11A and over to the new HEX manhole C17A6-207. 5 – 4” conduits are also installed to support a possible new data center development at 150 and 200 Inner Belt Road. The new manhole C17A6-207 is a 12’x6’x7’D underground vault built to TWDX Infrastructure’s specifications for Meet-Me Hole (MMH). C17A6CP1 was completed on April 26, 2024.

C17A6CP2 (Construction Package 2):

Approximately 250 linear feet of 24 – 4” conduits, starting from the new HEX manhole C17A6-207 and going south. At the southern terminus, a new tunnel vault known as Large Pull Box (LPB) identified as C19BA-206 will be installed. The LPB functions as the interfacing between C17A6 and C19BA transmission lines, and will facilitate future duct installations to support future data center and high-tech lab developments at 121—200 Inner Belt Road.

C17A6CP3 (Construction Package 3):

Approximately 250 linear feet of 24 – 4” conduits, starting from the new LPB above and terminating south at existing HEX pullbox C19BA-205, where the current C19BA transmission lines terminate. This tie-in and interfacing work will connect the entire C17A6 project onto the rest of the HEX Conduit System, providing significantly upgraded continuity to the end of Inner Belt Road and the JTP system.

Current Project Status as of August 2024

C17A6CP1 was completed on April 26, 2024. Currently as of August ‘24, TWDX Infrastructure is working to finalize the design and engineering for the C17A6CP2 section. A particular challenge with the C17A6CP2 is the construction of a tunnel vault structure known as Large Pull Box (LPB C19BA-206), as described in further detail below. Once the design for the LPB has been finalized and receives final approvals, TWDX Infrastructure will begin scheduling capital delivery and construction for C17A6CP2.

Tunnel Vault (Large Pull Box) C19BA-206

The Tunnel Vault C19BA-206 (LPB 206) is a large pull box to be located approximately +/- at station 61+28, about at the middle of the 600' trench extension. The LPB 206 will function as the project interface and a transition point between **C19BA Inner Belt Row System** and **C17A6 JTP-HEX System Cross Connection** sections of the HEX network.

The condition of Inner Belt Road near 61+28 is such that there is no room available to accommodate a 12'x6' Meet-Me Hole—the area can accommodate a maximum of a 4-foot-wide manhole. The original design for C17A6CP2 specified the installation of two 3'x5' pull box handholes to facilitate cable insertion and removal in dense MaxCell-based configurations. The pull box would not allow any cable slacks or splice cases. Since the pull box vault is too small, it would barely be able to accommodate the volume of straight-running cables themselves, never mind any cable slacks or splice enclosures.

However, the above design was rejected during the NSPB meeting held in November 2023. Because member utilities are installing too many “cross connect” fiber cables to create express network connections between each other, HEX transmission lines need to provide the highest available capacity for cable transits through their duct banks and manholes in order to support the ever-growing density of street interconnections.

Indeed, the size of the C17A6 Common Trench was increased accordingly from 16 – 4” ducts to 24 – 4” ducts in August 2023. The NSPB meeting in November concluded that transporting the anticipated cable volumes in a 24 – 4” duct bank using small pull boxes would be unfeasible, potentially compromising the Minimum Right of Transit for future conduit system users. Additionally, maintaining the small pull box under high cable loads in such a large duct bank would be impractical. Furthermore, installing two small pull boxes would double the number of cast iron covers in the roadway, causing traffic bumps for the traveling public and increasing safety risks for line workers.

In November, the NSPB determined that small pull boxes are not suitable for use. Instead, the NSPB decided to construct an underground tunnel structure that would house a single large pull box, fit within the street's limited confines (4 feet of maximum width), and provide sufficient working areas for line workers to support the insertion and removal of cables over the entire 24 – 4” duct bank.

Since the November meeting, TWDX Infrastructure had come up with the following design proposal:

- **LPB Tunnel Vault 3187 (Conc. 3'x18'x7'D):**
Link to Drawing: https://infrastructure.twdx.net/hex/DWG_3187_C19BA_206.pdf

Floor-to-ceiling height is 7 feet and wall-to-wall inside width of the hallway is 3 feet, where 1' is reserved for cable transits and 2' is reserved to function as a maintenance catwalk for line workers. Vault is a tunnel structure with a length of 18 feet to support the transit of large volumes of cables, with facilities for restoration slacks for cables that allow tighter bend radiuses of $\leq 6''$.

North and south receiving walls are configured to support up to 30 – 4” conduits each.

Although no splice cases will be allowed during the initial opening, the design permits a limited number of splice cases to be accommodated in the future, with installation of additional facilities. The tunnel vault will feature a complete hermetic sealing (watertight and gastight) and locking security manhole cover.

Grade Ring Risers

Manhole structures should have a grade adjustment layer between the concrete vault structure and the cast-iron manhole cover assembly (manhole frame). Traditionally in the northeast and throughout New England, it is common for tradesmen to use layers of bricks, with mortar being set between each brick layer, attempting to set the height of the manhole frame as close to the road surface as can be achieved with a 1 ½” thick sewer brick.

The use of brick chimney for grade adjustment allows flexibility and easy readjustment of the manhole structure during street resurfacing projects. However, brick adjustment layers are labor-intensive to waterproof, requiring a thorough application of hydraulic cement; otherwise, rainwater and stormwater run-offs can infiltrate through the brick chimney and bypass the waterproof manhole cover.

Furthermore, brick chimneys increase maintenance costs across the HEX system. On heavily traveled streets, as the hot top asphalt degrades around the manhole, repeated axle loading from the road traffic will often begin to transfer

loads more pronouncedly onto the brick layers. This can cause the mortar between each brick layer to crack and could eventually cause the entire manhole frame to shift from its originally installed position, requiring repairs, and compromise the waterproofing of the manhole structure.

To eliminate the high maintenance associated with brick chimneys, TWDX Infrastructure is proposing a series of precast concrete-based grade ring adjustment risers. Commonly used in west coast regions (e.g., California), precast concrete grade risers offer low maintenance costs, significantly increased structural durability, and, most importantly, complete and assured waterproofing of the manhole chimney structure. However, precast grade risers are more expensive to install and costlier to re-adjust.

Precast grade risers are planned to be employed for the first time in the HEX system for the Tunnel Vault LPB 206 installation.

Next Steps

The next steps for the LPB 206 delivery are as follows:

1. Independent Peer Review:

A PE will need to review the design for the LPB Tunnel Vault, including a peer review and cross checking of TWDX Infrastructure's loading calculations and ensuring that the provided designs are in compliance with AASHTO requirements for minimum of HS20-44 traffic loading. A follow-on validation is also needed to ensure that the precast manufacturer meets the design specification, including Grade 60 steel reinforcement in accordance with ASTM A615 and specified measures for waterproofing.

2. Precast Manufacturer Selection:

An NPCA certified precast plant will be selected to construct the LPB 206 tunnel vault. The primary selection process will involve interview with the manufacturer, on-site plant tours, and accommodation for walkthrough inspection of the LPB tunnel vault during manufacturing. Additionally, delivery and on-site installation (crane hoisting, etc.) may also be offered by the precaster, which will be considered into the final delivery contract.

To meet waterproofing requirements, minimum of 5,000 psi high performance self-consolidating concrete (SCC) is specified.

Once the above procurement steps are completed, TWDX Infrastructure will engage with the general contractor for C17A6 to issue the final delivery specification and contract for NSPB approval. After NSPB approvals are complete, purchase orders and Notice to Proceed will be issued for the construction to commence, along with renewals of roadway encroachment and trench permits with local authorities.

C17A6 Updated Cost Projections

As of Q3 2024, the currently projected cost for **C17A6 (JTP-HEX System Cross Connection)** is: **\$1,019,965.00**.

The cost breakdown as follows:

Project Line Item	Requested Budget
C17A6 Construction Package 1 (100 feet) <i>Construct ~100' LF duct bank between JTP/Zayo manhole SOM11A and HEX system. Install and fit out new 12'x6' HEX manhole C17A6-207.</i>	\$139,000.00
C17A6 Construction Package 2 (250 feet) <i>Construct ~250' LF duct bank facing south starting from HEX manhole C17A6-207 toward C19BA interface. Install Large Pull Box tunnel vault C19BA-206 to serve as the point of interface between C17A6 and C19BA sections.</i>	\$263,000.00
C17A6 Construction Package 3 (250 feet) C19BA T4 Interfacing Work <i>Construct ~250' LF duct bank from Large Pull Box C19BA-206 and connect to existing C19BA transmission line at manhole C19BA-205 @ 63+50.</i>	\$221,000.00
Street Restoration Costs <i>Breakdown as follows:</i> <ul style="list-style-type: none"> • Mill and repave 44,022 SF of Inner Belt Road: \$330,165 • Casting repairs for utility owners: \$9,800 • 121-200 Inner Belt Road Accessibility Improvements: \$31,000 • Traffic Control and Police Detail costs: \$26,000 	\$396,965.00
Subtotal anticipated costs for C17A6 JTP-HEX System Cross Connection:	\$1,019,965.00

Due to the large size of the C17A6 transmission line (at least 24 – 4” ducts) and specialized manholes required for HEX cable vaults, the project cost is expected to be high, coming out to roughly **\$1,700 per linear foot of trench**.

The estimated costs herein are budgetary in nature; they are not final and may be subject to change. TWDX Infrastructure will continue identifying any value engineering opportunities to lower costs, work closely with our trade partners and suppliers to minimize change risks, and update our project stakeholders, including joint trench customers, on any changes to cost projections.

III.
REPORTS OF THE JOINT TRENCH
ADMINISTRATOR

Joint Trench Administrator FY 2025 Operating Expenses

Each year, TWDX Infrastructure is required to submit a proposed annual operating budget for the following year’s required operating expenses to maintain the HEX system. These expenses are for covering Operations & Maintenance (O&M) costs for the upkeep of the HEX duct system and its associated common facilities. TWDX Infrastructure’s operating budget serves as a reference for calculating the attachment rates of the conduit system’s member utilities.

FY 2025 Operating Budget:

Budget Line Item	Cost for FY2025
Dig Safe and Plant Protection Costs	\$11,000.00
Insurance and Indemnification for HEX Conduit System	\$28,242.00
JTA Incidental Budget for 2 FSVs <i>Incidental budget for operation of up to 2 Field Service Vehicles, including budget for purchasing tools and fit outs as required.</i>	\$18,000.00
JTA Payroll and Benefits for 1 Additional Field Inspector (Plantmaster) <i>Budget for one additional full-time employee (FTE) for field inspection and damage prevention across the HEX duct system for member utilities. The new FTE will be hired and paid by the parent company (TOWARDEX), however, costs and job function are assigned to the TWDX Infrastructure division.</i>	\$90,000.00
JTA Fleet Maintenance Budget <i>Annual budget to support ongoing expenses (including maintenance, upkeep) of FSVs, safety equipment, confined space entrance facilities and traffic control devices.</i>	\$16,200.00
JTA EPD (Engineering & Projects Division) Yard Lease <i>Lease of construction yard in Bellingham, Massachusetts for TWDX Infrastructure use.</i>	\$10,000.00
Work Order Fulfilment for Maintenance & Operations <i>Budget for repairs and maintenance expenses across the HEX facilities, such as: (i) repairs falling under the “de-minimis” safe harbor (invoiced \$2,500 or less); (ii) basic repairs and routine maintenance which do not qualify as capital improvements; and (iii) minor roadway maintenance and warranty repairs provided by TWDX Infrastructure on behalf of public authority partners on streets occupied by the HEX duct system.</i>	\$36,572.00
Subtotal FY 2025 Operating Budget:	\$210,014.00

C17A6 Joint Trench Participation

Some telecommunications providers have expressed confusion about their joint trench participation in the HEX project areas—most of these confusions came from customers who were expecting similar administrative rules and participation guidelines as City of Boston’s PIC joint trench rules, which is what they were primarily used to.

For any constructions that are subject to municipally governed Dig Once rules (e.g. City of Boston PIC Joint Build Policy, Cambridge Pole & Conduit Siting Policy, etc.), TOWARDEX is required (as provided by MGL c.166 § 25) to comply with the enacted Dig Once ordinances of each respective local authority.

However, HEX installations in the Inner Belt are under the authority of an Easement Agreement between TOWARDEX and the City of Somerville, and as such, TOWARDEX, as the owner of the HEX system and a licensed common carrier under MGL c.159 (Mass. D.P.U. 93-98, *Order at 12 (May 11, 1994) (“Common Carrier Regulatory Treatment Order”)*), is the party who is responsible for implementing Dig Once policies over the majority of HEX projects in Somerville.

Consequently in 2021, TOWARDEX adopted the [Project Charter of the Hub Express System \(PCHEX\)](#). Under the Charter, each HEX system construction will comply with local authority requirements for joint building, and in the absence of local authority regulations, HEX would then endeavor to exercise the latest best practices in joint building as adopted by the utility industry ([PCHEX § 2](#)). Furthermore, TWDX Infrastructure, LLC was delegated with the authority to manage the HEX system, including the development and administration of the system’s Dig Once policies in the absence of local authority ordinances to the same ([id.](#) § 4).

Therefore, TWDX Infrastructure is the delegated authority who administers the joint trench rules in these projects, including areas in the Inner Belt and projects proposed in any agency rights-of-way where HEX is responsible for implementing Dig Once rules.

Ways to Participate in C17A6 Joint Trench

As outlined in the [C17A6 Common Trench Letter](#) published on September 29, 2023, eligible telecommunications companies can partake in the joint trench construction through one of the following means:

(1) Participant’s own construction in the Common Trench

The participant may propose its own installation in the HEX Common Trench while the street is open. TWDX Infrastructure will install the participant’s conduit in accordance with the **Joint Build Agreement**.

TWDX Infrastructure will not connect the participant’s conduit to HEX manholes and underground vaults without a **Manhole Transit License**. The participant may, at its own cost and expense, propose its own utility siting to the City of Somerville (e.g. Grant of Location) and pick up its conduit out of the HEX Common Trench and extend it over to its own manhole.

(2) 20-Year Indefeasible Right of Use (IRU) in Joint Network Facilities (“JNF”) Duct Bank

To maximize efficiencies across the limited space in the public rights-of-way, TOWARDEX installs additional 1-1/4 inch equivalent “shadow conduits” in the HEX Common Trench, known as “JNF” ducts. These JNF ducts are constructed in the same manner and routing as the HEX Mainline conduits and are connected into HEX manholes. JNF offers a “turn-key” solution, where the participant does not need to be responsible for proposing or undertaking construction of its own facilities, and will be provided access to the finished pathway and HEX manholes in accordance to the terms of the IRU Agreement.

JNF conduits are owned by **TWDX IP**, which is TOWARDEX’s IP network service provider division. While TWDX Infrastructure will administer the access to facilities and set regulations, TWDX IP is the licensing authority for issuing consents for conduit attachments across JNF ducts.

We’ve found that most telecommunications companies prefer the “turn-key” nature of purchasing IRU in JNF conduits instead of proposing their own constructions in the Common Trench. JNF conduits offer lower costs and easier mode of participation than the traditional joint trench practice of each party individually proposing its own installation.

20-Year IRU Rates for JNF Conduits Across C17A6 Work Areas

The current price for purchasing a 20-year IRU on a JNF 1-1/4" equivalent conduit across C17A6 work areas totaling approximately 600 linear feet is estimated to be: **\$46,793.60**

The above price is inclusive of TWDX Infrastructure's operation and maintenance (O&M) costs, baked into the total ratemaking formula as discussed below. Furthermore, unlike renting a duct from the HEX Mainline, IRU purchasers receive long-term rental price protection, where the customer cannot be subject to changes to their rental rate for the duration of the IRU. However, the customer is still subject to all other ancillary fees and support costs (such as labor costs, inspection fees, permit fees, force account costs, etc. and so forth) when accessing and working in the HEX system, at same pricing schedule and rates as any other user working in the duct system.

Ratemaking Formula for C17A6 JNF Conduits

To determine pricing for 20-Year IRU on a JNF conduit, utility ratemaking formula adopted for calculating just and reasonable rates in Massachusetts in accordance with **MGL c.166 § 25A** and **220 CMR 45.04(d)** is used, as follows:

$Revenue\ Required = Assets \times Allowed\ Rate\ of\ Return + OPEX + Depreciation\ Costs + Taxes$
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Definitions:

Assets: Capital costs of the construction for the C17A6 section, currently anticipated at \$1,019,965.

Allowed Rate of Return: 10%

OPEX: Annual operating expenses for TWDX Infrastructure in maintaining HEX facilities, currently at \$210,014 per year.

Depreciation Costs: \$50,998.25 per year (20 yrs. MACRS S/L)

Taxes: Anticipated property taxes upon delivery; currently estimated to be \$11,338.60 per published FY 2024 rates by City of Somerville Assessing Department.

Revenue Required Worksheet:

a.	C17A6 Revenue Required per above ratemaking formula:	\$374,347.35 per year
b.	Max. design load occupancies across C17A6 Common Trench:	162 attachments, each $\leq 1.05''$ cable OD
c.	Less city and public agency shadow conduits: <i>Usable Space per 47 USC § 224(d)(1)</i>	160 attachments
d.	C17A6 Revenue Required adjusted for each attachment:	\$2,339.67 per year
e.	Maximum # of attachments requested by TOWARDEX: <i>Imputation of costs pursuant to 220 CMR 45.10 for HEX Mainline services (post-construction conduit licensing), operation of the Fiber Optic Exchange cross connects and for attachments used by TWDX IP's telecommunications services.</i>	≤ 139 attachments
f.	Less TOWARDEX's pro-rata share of costs: <i>TOWARDEX's imputed costs to support its own declared uses of the duct system pursuant to 220 CMR 45.10.</i>	(\$325,214.13) per year
g.	C17A6 Revenue Required adjusted for JNF Duct Bank:	\$49,133.22 per year
h.	Attachments left available for the JNF Duct Bank: <i>Subtract row E from row B.</i>	23 attachments, each $\leq 1.05''$ cable OD
i.	Less city and public agency shadow conduits: <i>Usable Space per 47 USC § 224(d)(1)</i>	21 attachments
j.	Divide Revenue Required by Usable Space above:	\$2,339.68 per year for each cable
k.	Multiply by 20 years for fixed price IRU per user:	\$46,793.60 per JNF 1.25" Duct (20 yrs IRU) <i>Approximately \$3.90/foot per year (at 600' LF)</i>