

MTA New York City Transit Canarsie Tunnel Project

Supplemental Environmental Assessment and Section 4(f) Review

Appendices

July 2018

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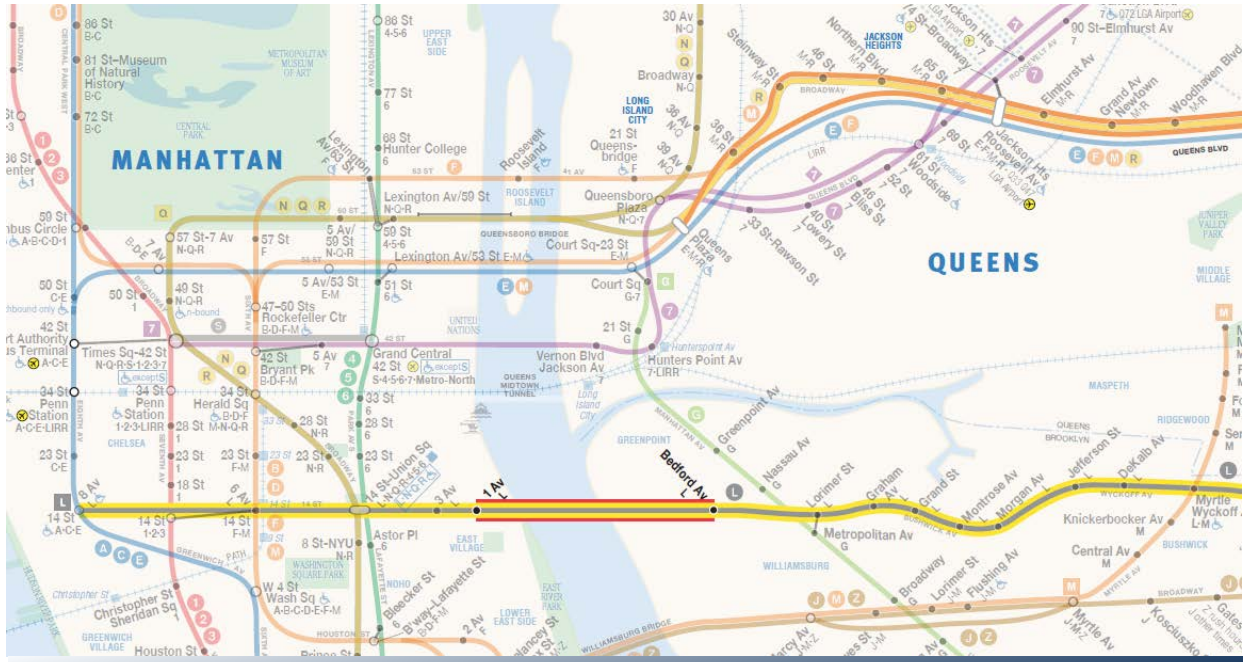
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Appendix A: Canarsie Tunnel Rehabilitation Project (L Tunnel Reconstruction) Alternatives Analysis

CANARSIE TUNNEL REHABILITATION PROJECT



Canarsie Tunnel Rehabilitation Project (L Tunnel Reconstruction) Alternatives Analysis

MTA NYCT Canarsie Tunnel Rehabilitation Project (L Tunnel Reconstruction) Alternatives Analysis

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This report documents the process NYCT used between 2013 and 2016 to identify reasonable construction alternatives for the Canarsie Tunnel Rehabilitation Project (the Project). NYCT developed and evaluated potential alternatives in consideration of its ability to achieve certain critical goals that were designed to meet the Project's Purpose and Need as described in Section 2 below. Those critical goals are to: 1) minimize overall passenger disruption; 2) minimize construction risk; 3) minimize the risk of operational impacts; and 4) maximize safety. Based on this evaluation and careful consideration of public input solicited through a robust public outreach process, only one alternative, double-track closure of the L train tunnel, has been found to be reasonable. The reasons for this conclusion are presented in this report.

1 Background

The Canarsie Tunnel provides the sole connection between Brooklyn and Manhattan for the MTA NYCT's Canarsie L Line, which operates for 10.1 miles between Canarsie-Rockaway Parkway in South Brooklyn and 14th Street and Eighth Avenue in Manhattan (as shown in Figure 1). The Canarsie Tunnel, located below the East River, consists of two cast-iron tubes, each with one track.

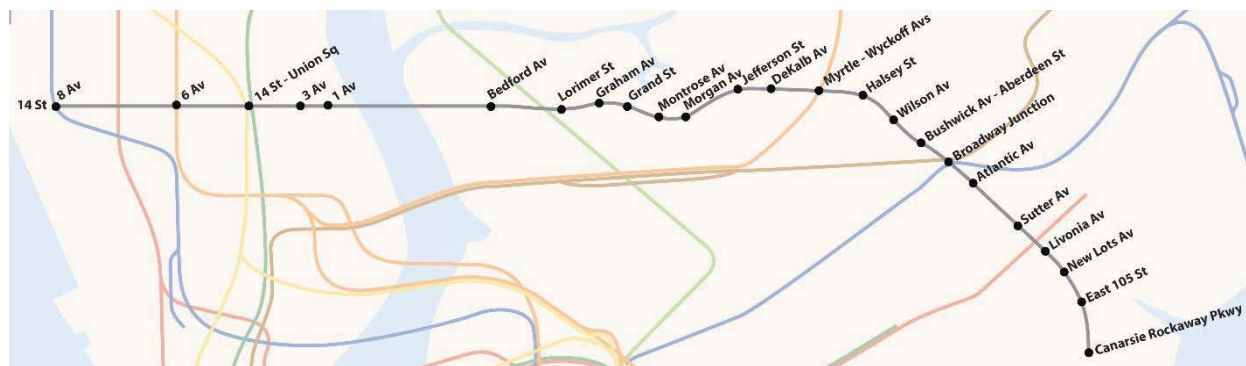


Figure 1 L Train Map

In October 2012, the Canarsie Tunnel was seriously damaged by Superstorm Sandy. The tunnel was inundated with seven million gallons of corrosive saltwater and silt that hardened and damaged beyond repair all cabling and electrical components in the tubes and circuit breaker houses servicing the tunnel. While the exterior tunnel structure was deemed safe, the interior structure, which received the most damage, has begun to fail. While NYCT inspects the tunnel regularly and the tunnel is currently safe for use, a comprehensive overhaul of the tunnel is needed.

Approximately 400,000 riders rely on the L line each day; the L line's limited connectivity with the rest of the NYCT subway network restricts alternate service options that can accommodate riders whose travel is disrupted by Project construction. Accessing the Canarsie Tunnel to undertake the critically needed repairs presents a unique challenge relative to NYCT's other under-river subway tunnels. The L Line has limited track connections to the rest of the NYCT subway network, making it impossible to run L trains over other lines as an alternate service route. In addition, there are limited parallel and/or nearby subway lines to absorb diverted passengers in the event of a temporary suspension of L line service through the tunnel (see Figure 1 above). Much of the subway system has three or four tracks (one or two express and two local tracks), which makes it easy for a local train to divert onto an express track to bypass a work zone or vice versa. However, the Canarsie Line (L train) is the only trunk line in the system

that is two tracks for its entire length, so it does not have adjacent tracks to divert to should a train need to bypass a segment of track. Segments therefore need to be closed or single-tracked during work periods. The closure approach employed for the construction of repairs must be carefully planned and executed to ensure that the 400,000 riders that rely on the L line each day are provided safe and reliable transit service to meet their daily travel needs.

Project construction could negatively impact operations of the rest of NYCT network. The nearest alternate East River crossings are the E/M/7 Trains to the north in Long Island City and the J/M/Z Trains to the south that travel over the Williamsburg Bridge. These lines are already operating at or near full capacity. In addition, key stations that L riders could use to access these alternate routes are likely to experience overcrowding that could further cause delay. NYCT's maximum loading guideline capacity is a seated load and 3 square feet per standee.¹ Trains that exceed these loading guideline capacities typically have longer station dwell times, since it takes longer for riders to exit and board the train. In turn, long dwell times can reduce train throughput, which reduces the number of trains in the peak hour and can exacerbate crowding and delays. The construction approach employed for the Canarsie Tunnel will have to be designed to limit negative operational impacts on the rest of the NYCT network and the riding public.

2 Purpose and Need

The purpose of the Project is to complete the critical reconstruction of the Canarsie Tunnel as quickly, safely, and efficiently as possible while minimizing service disruptions to affected L train passengers and operational impacts on the rest of the NYCT transit network during construction. Below are specific needs to be addressed by the construction method identified to complete the Project.

Critical assets in the Canarsie Tunnel are severely deteriorated due to Superstorm Sandy-related damage; the longer the tunnel is used without reconstruction taking place, the greater the risk of a catastrophic failure of these assets. Superstorm Sandy flooded the 92-year-old tubes of the Canarsie Tunnel with seven million gallons of salt water, damaging vital infrastructure and systems in the 7,110-foot-long tunnel. The damage Sandy left in its wake significantly shortened the serviceable life of critical assets in the tunnel. The most substantial damage in the interior of the tunnel was to the duct banks, conduits, and wiring, leaving the tunnel vulnerable to power outages and duct bank collapses. This has caused both the duct bank and wiring to be compromised. The Canarsie Tunnel is currently safe for use and NYCT continues to monitor conditions closely and make repairs as needed, but the longer the compromised elements stay in service, the greater the possibility of their failure. There have been several failures already which disrupted service; one was a partial duct bank collapse in 2013, and another was a manhole fire due to deteriorated power cables in 2016. Over time, these types of failures will become more severe and more frequent, causing longer unplanned service disruptions. A full reconstruction of the tunnel is required, and the construction approach employed must complete this effort as expeditiously as possible to minimize risk to safety.

¹ MTA New York City Transit Service Guidelines Manual, August 2010.

NYCT's experience with repairing Superstorm Sandy-related damage to the Montague Tunnel reveals significant potential risks to safe, efficient, and expeditious completion of the Project. Of the nine NYCT under river subway tunnels damaged by Superstorm Sandy in 2012, the Canarsie Tunnel was hit hardest. Also heavily damaged, the R train's Montague Tube underwent a full shutdown for similar top-to-bottom repairs and reconstruction of the interior structure for 13 months from September 2013 through September 2014. During the Montague Tube project, several lessons were learned about the necessity of approaching the reconstruction work required for Canarsie Tunnel in a manner that controls for several key risks to keep the riding public safe and complete construction in reasonable timeframe, including, but not limited to, silica dust control for duct bank demolition, tunnel ventilation, and debris removal. Associated R service through the Montague Tube was suspended, but the Montague Tube has much lower passenger demand than the L Train and has easily accessible and convenient alternatives for subway access to Manhattan (eliminating the need for a robust alternative service plan). Notably, the construction approach employed to repair the Montague Tube appropriately planned for key risks and resulted in the Project being completed safely, under budget, and almost three weeks ahead of schedule—allowing for R train service through the Montague Tube to be restored earlier than planned. The construction approach for the Canarsie Tunnel Rehabilitation Project will have to fully manage the potential risks to completing the work, as identified from the Montague Tube experience, in a timely manner that does not compromise safety.

2.1 Project Goals

In light of NYCT's Purpose and Need for the Project discussed above, the overarching objective of the Project is the safe and expeditious reconstruction of the damage caused to the Canarsie Tunnel by Superstorm Sandy, while minimizing service disruption and operational impacts. The following goals were established to assess the potential alternative construction methods to be employed in achieving that objective:

- Maximize safety.
- Minimize overall passenger disruption.
- Minimize construction risk.
- Minimize the risk of operational impacts.

Any approach that does not meet the Project Goals would not meet the Purpose and Need.

3 Screening Framework

NYCT applied a two-tiered screening methodology to identify the Preferred Alternative amongst reasonable Build Alternatives for construction of the Project. Reasonable alternatives were defined as those alternatives that are technically feasible and meet the Purpose and Need, .

3.1 Establish Universe of Alternatives

The first step was to define the universe of construction options that could be considered for completion of the Project. The list was generated based on the magnitude of the reconstruction activities to be performed as part of the Project, NYCT's standard approaches to large-scale construction projects within the subway system, and lessons learned from other under-river tube repairs.

3.2 Tier 1 (“Fatal Flaw”) Screening

The Tier 1 screening was designed to identify any construction alternatives that are not technically feasible and, therefore, should be eliminated from further consideration.

3.3 Tier 2 Screening

Alternatives that passed the Tier 1 screening were then advanced to the Tier 2 screening to evaluate the reasonableness of the alternatives relative to the Project Goals. Table 1 presents the evaluation criteria.

Table 1 Tier 2 Screening Criteria

Project Goal	Evaluation Criteria
Maximize safety	<ul style="list-style-type: none">• Ability to accomplish repairs expeditiously
Minimize overall passenger disruption	<ul style="list-style-type: none">• Ability to meet NYCT loading guidelines & maintain reliable service for affected passengers• Passenger travel time impacts• Ability to accomplish repairs expeditiously• Ability to avoid unplanned service disruptions during construction period
Minimize construction risk	<ul style="list-style-type: none">• Constructability assessment• Cost
Minimize the risk of operational impacts	<ul style="list-style-type: none">• Ability to accommodate diverted riders on alternate services• Ability to avoid unplanned service disruptions during construction period

4 Definition of Alternatives

In 2013-2014, NYCT developed a range of construction alternatives and evaluated their ability to achieve the Purpose and Need. Careful consideration was given to impacts that would result from the associated service interruptions. The alternatives were categorized by the nature of disruption to L train service (duration of service interruption and available tracks for passenger service). Three alternatives were identified and outlined below.

4.1 Alternative 1: Full-Time Double-Track Closure

This scenario would consist of shutting down both tubes of the Canarsie Tunnel simultaneously for 24 hours a day, 7 days a week. There would be no L Train service available between Brooklyn and Manhattan, and reduced L train service within Brooklyn. All Manhattan L train stations would be closed. The L train would run between Bedford Avenue and Canarsie-Rockaway Parkway on a six-minute peak headway (see map in Figure 1 as reference). The duration of this closure option was originally estimated to last 18 months, but was later reduced to 15 months. Subway service on intersecting and parallel lines would be increased to the extent possible. In addition, a proposed Alternative Service Plan including additional ferry and bus services, as well as temporary bus priority and other surface improvements, has been developed to serve customers during the closure.

4.2 Alternative 2: Full-Time Single-Track Closure

It is possible to close one of the two cast-iron tubes in the Canarsie Tunnel to perform construction work while running limited bi-directional (single-track) L train service in the other tube.

In this alternative, full double-track service would be available along most of the L route in Brooklyn while single-track service would run between Brooklyn and Manhattan. This service plan would run 24 hours a day, 7 days a week for the duration of the rehabilitation Project. Since work could only occur in one tube at a time, the closure would take 36 months to complete. Each tube would be closed for 18 months. An alternative service plan would be developed for this alternative that likely would entail providing additional bus service and other surface improvements in Manhattan and Brooklyn, but would not be likely to entail providing additional ferry service.

In 2013-2014, NYCT developed numerous operating plans for the single-track closure alternative, which can be broadly categorized as follows:

Through-Service Options

- A. Single-Track Through Option – run L trains along the full line, with northbound (towards Manhattan) and southbound (towards Canarsie-Rockaway Parkway) trains alternating along the single-track segment. The peak frequency of the L is normally 20 trains per hour per direction. In this scenario, that would be reduced to four trains per hour. This would result in a severe capacity reduction and station overcrowding along the entire length of the L train. Therefore, this alternative was eliminated from further consideration.
- B. “Double-Up” Through Option – two northbound L trains would alternate with two southbound L trains along the single-track segment. This would be less than twice the capacity of Option A, but would still be a large reduction in capacity compared with the existing L train service. There would be station overcrowding and more uneven headways, and this would be operationally difficult to achieve on a consistent basis.
- C. One-Way Peak Service Option – L train service would only operate northbound (towards Manhattan) during the AM peak and southbound during the PM peak. A frequency of 8 to 12 trains per hour for up to two hours may be possible, but it would be operationally difficult and vulnerable to disruptions. No midday service would be available.

Shuttle Service Options

- D. Two-Way Shuttle Options with Connection at Bedford – This would break the L train up into a single-track segment under the East River, connecting with a double-track segment in Brooklyn and potentially another segment solely within Manhattan. There would be no through service between segments and passengers would have to transfer at connecting stations. L train service under the East River would run every 12 to 15 minutes during rush hours.
- E. Two-Way Shuttle Options Without Connection at Bedford – In this scenario, the L train would be single-tracked between just north of 3 Avenue to just south of Bedford Av, but there would be no connection between the single-track segment – which would end at Bedford Avenue - and the double-track segment – which would end at Lorimer Street, one station away. This would help manage overcrowding that would be prevalent at intra-L transfer stations in Option D by

encouraging most L riders to switch to connecting transit routes to finish their journey to Manhattan. L train service under the East River would run every 12 to 15 minutes during rush hours.

NYCT evaluated the potential operational impacts of each of the five single-track operating plans on the L and alternative subway lines. That analysis found that running a reduced L train service along the entire route would cause severe overcrowding on trains and in select stations, with loading levels that would be physically impossible to accommodate. It was therefore necessary to segment the route into non-connecting sections.

Single-Track Service Plan Selected for Further Analysis

After conducting a comparative analysis of the single-track closure options, NYCT selected Option E in early 2015 as the best of the single-track options, since it would cause the least overall disruption to riders. The operating plan would include two separate services: 1) a double-track service between Lorimer Street and Canarsie-Rockaway Parkway in Brooklyn, and 2) a service that is single-tracked under the East River and double-tracked between Third Avenue and Eighth Avenue in Manhattan. Trains would not stop at Third Avenue to enable a 12- to 15-minute headway. There would be no through-rail service between Bedford Avenue and Lorimer Street in Brooklyn (although a bus would run between those stations), and customers along the outer segment in Brooklyn would be encouraged to connect with intersecting subway routes to reach Manhattan.

4.3 Alternative 3: Night and Weekend Closures

In this scenario, at least one tube of the Canarsie Tunnel would be closed weekday evenings and all day on weekends. The nature of the needed rehabilitation work and the narrow tunnel clearances under the East River necessitate that an entire track segment would have to be closed to revenue service trains when being worked on. Therefore, at least one track of L train service would be closed between Brooklyn and Manhattan during nights and weekends. Given that only a very limited amount of work could be done under these limited closures, the tunnel and structures within would continue to be used for an extended amount of time, well beyond the end of its expected useful life.²

This alternative represents how NYCT typically handles construction projects. Line segments are shut down overnights during the week and all weekend to perform construction work. Workers must mobilize, perform work, clean up, and demobilize within limited overnight and weekend timeframes. NYCT's goal with doing work this way is to make sure subway service during weekday peak hours is not affected.

NYCT frequently performs construction work on nights and weekends because demand for subway service is lower than it is during peak hours. During these service disruptions, alternative bus service is generally provided when there is no parallel subway service available. Typically for a service disruption of the L train, M14 bus service would be increased in Manhattan and a bus shuttle running between North Williamsburg and the J/M trains at Marcy Avenue would be provided. M train service would also be extended up Sixth Avenue in Manhattan during a weekend/overnight L train shutdown. On a typical Saturday, 175,000 riders take the L train between 8 Avenue in Manhattan and Bedford Avenue in Brooklyn and would be disrupted by weekend closures. With this alternative, subway service would

² In many places the critical ductbanks and track substructure are already beyond their useful life, even if the cast iron lining that defines the tunnel seems to have sufficient thickness based on non-destructive testing.

need to be restored in time for the morning rush hour on weekdays. The Project would take many years (up to a decade or more) to construct under this alternative.

5 Evaluation of Alternatives

5.1 Tier 1 (“Fatal Flaw”) Screening Results

Alternative 1 (Full-Time Double-track closure) and Alternative 2 (Full-Time Single-track closure) were considered technically feasible. Alternative 3 was found not to be technically feasible and did not meet the Purpose and Need for the reasons identified below and is the only Build Alternative that did not pass the Tier 1 screening.

Limiting work to nights and weekends would extend the duration of the Project for many years, requiring that the compromised assets in the tunnel remain in operation well beyond useful life. While estimating a duration of this alternative is difficult due to the infeasibility of completing work in time for morning rush hour service each weekend, a Project of this magnitude constructed during nights and weekends would span many years, and could exceed a decade in duration. Thus, the damaged tunnels would continue to operate for up to a decade or more with compromised electrical, signaling, and communications systems. There is a great risk that failure of one or both tunnels would lead to safety concerns as well as unplanned closures, which would suspend L service along this segment.

There is also a significant risk that construction activities would repeatedly disrupt weekday service because it would be infeasible to consistently accomplish the allotted daily work, demobilize, clear the area, clean up silica dust released by demolition activities, and test the air, as needed, to assure its safety in time to resume service at the beginning of the morning rush hour.

Detailed phasing of the work on the Canarsie Project reveals that the necessary tasks to demolish the duct benches in the tunnels is the most time intensive of the procedures that require the tunnels to be shutdown. To perform tunnel demolition with weekend-only shutdowns, it would be necessary to complete the following sequence of steps within a 55-hr service diversion (10PM Friday – 5AM Monday).

The relocation and temporary placement of water discharge line, communication cable, fan control cables, power and signal cables would need to be completed on a separate GO ahead of the demolition work. All remaining elements such as signal cases, negative cables, positive jumper cables, transponders, third rail, wiring for signal equipment that are required for the safe operation of trains would have to be removed, protected, and reinstalled in addition to the actual work of demolishing the concrete duct benches.

Looking at a typical section of tunnel, it would be necessary to complete the following sequence of steps during each 55-hr service diversion:

- Setup: 18-20 hours
 - Open the service diversion, confirm power-off, establish flagging protection and secure the work area.
 - Place work trains in the work area and unload tools, equipment and dust containment system.

- Remove third rail including protection boards, insulators, brackets and protect from damage during demolition.
- Remove, secure and protect CBTC transponders and signal cases to prevent damage during demolition. Removal and reinstallation of signal cases requires wiring to be disconnected.
- Setup dust containment zone including temporary power, air supply and exhaust lines.
- Demolition: 11-13 hours
 - Demolish the duct bench down to the tunnel wall with jack hammers and with hand-held chipping guns.
- Debris Removal: 8-10 hours
 - Bagging and hand-loading debris from the tunnel floor on to work train and clean-up of the work area.
- Breakdown: 8-10 hours
 - Breakdown and remove the dust containment system and load on to work trains.
- Restoration and Testing: 8-10 hours
 - Re-install the third rail and all other appurtenance and reconnect negative cables and positive jumper cables.
 - Re-install CBTC transponders and signal cases including re-connecting wiring.
 - Demobilization - load equipment and tools on to work train and release work train.
 - Inspect entire GO area to ensure the track is clear for safe operation of trains.
 - Restore power.
 - Run test train and address any issues* to ensure track and systems are safe for the resumption of service. *Due to the extent of cables and equipment, which will be disassembled and then reassembled, and also due to the fact that cables and equipment will be temporarily supported within construction zone, there is a high risk that something will get accidently damaged or otherwise malfunction, delaying the testing, repair and service restoration. Further, once service is restored, there is an elevated risk that these temporary installations will experience malfunctions during weekdays resulting in service disruptions, in worse case, during rush hours.

The complexity of the work that would be involved when demolition activities are performed is compounded by the issue of silica contained in the concrete duct bank and track bed that will be demolished. The demolition activity will generate silica dust which poses exposure risks for workers and the surrounding environment if not handled properly.

NYCT has adopted best management practices and work methods to minimize silica dust exposure to its employees, the public and the surrounding environment. These practices include assembling a custom-built air filtration system for the Canarsie Tunnel, operating that air filtration system while demolition activities are ongoing, inspecting for dust and debris during and after demolition, and air testing, as needed, throughout and post-demolition to ensure that silica dust concentration levels in the air are below the latest OSHA action level and permissible exposure limit. Before reopening for service after nighttime or weekend work involving demolition, a thorough visual inspection of the tunnel and adjacent stations would be performed to ensure that visible silica-containing dust in the air has cleared and debris has been removed. Based on the results of that visual inspection and prior air monitoring

testing results, a determination would be made as to whether air testing is needed to assure that silica dust concentrations are below acceptable levels.

The time required to complete the sequence of activities, as detailed above, can be expected to exceed 55 hours. Therefore -- given the time that necessarily would be consumed for mobilization, demolition/construction, cleanup and inspection activities -- it would not be feasible to perform all of the necessary demolition work during the 55 hours available for weekend work and the available hours for night time work without periodically spilling over into the weekday rush hour, even when air testing is not required. When testing is required, the turnaround time for air sampling results would extend the tunnel closure by 24-30 hours, causing an unacceptable suspension of service.

For these reasons, repeated unplanned service disruptions are highly likely due to construction spillover into the morning rush hour. Up to 400,000 weekday L train trips would therefore be affected by unplanned tunnel closures. Even if the planned weekend alternative bus service – increased M14 bus service and bus shuttle between North Williamsburg and the J/M trains at Marcy Avenue – were extended into the weekday, the service would not be able to accommodate weekday ridership. Without a more robust alternate service plan in place, parallel subway and bus routes would be overloaded – in excess of NYCT’s passenger loading guidelines – and stations on affected subway routes would result in unsafe crowding conditions. Even if a more robust alternate service plan, similar to Alternative 1 or Alternative 2, were implemented as part of this Night/Weekend Closure alternative, it would still take up to a decade or more to complete the reconstruction of the Tunnel. Safety for construction workers and to the public would be compromised because there would be a high risk that assets could fail during construction.

In June 2016, NYCT’s consulting engineers assessed the constructability of the alternatives considered in this alternatives analysis. They concluded that completing the required work solely on nights and weekends was infeasible.³

Summary - Tier 1 (“Fatal Flaw”) Screening Results

Based on the foregoing discussion, Alternative 3 was deemed fatally flawed and eliminated from further review. This alternative is technically infeasible and would not meet the Purpose and Need.

5.2 Tier 2 Screening Results

The Tier 2 screening results are presented below by Project goal, with a discussion of how the remaining two alternatives perform under each evaluation criteria.

5.2.1 Maximize Safety

Ability to accomplish repairs expeditiously

Under Alternative 1, repairs to the tunnel would be completed in 15 months. The double-track closure allows for work to be conducted in the tunnel as quickly and efficiently as possible. The urgently needed repairs under this alternative would be completed sooner than Alternative 2; therefore, the degradation of the components in the tunnel would be halted months earlier and potential operational failures that may affect the riding public averted.

³ Canarsie Tunnel Sandy Recovery Final Constructability Review prepared by Jacobs June 16, 2016.

Under Alternative 2, repairs to the tunnel would be completed in 36 months. The single-track closure requires that a damaged tube operate for an additional year and a half before being repaired. This would prolong the use of the deteriorating facility with compromised electrical, signaling and communications systems. Continued structural deterioration of the tube or outages in these systems would result in periodic suspensions of L train service beneath the East River to allow for emergency repairs. The open tube could also be impacted by construction work in the closed tube, and trains could get stranded in the open tube and along the isolated L train segment in Manhattan. Additionally, severely limited capacity along the single-track section would cause severe overcrowding on trains and along 14 St L train stations and at Bedford Avenue in Brooklyn.

Summary – Maximize Safety

Alternative 1 meets the criterion of maximizing safety. Alternative 2 does not.

5.2.2 Minimize Overall Passenger Disruption

Ability to Meet NYCT Loading Guidelines & Maintain Reliable Service for Affected Passengers

Alternative 1: Full-Time Double Track Closure

This closure would impact L train passengers between Bedford Avenue and Eighth Avenue for 15 months.⁴ L train service would run between Canarsie-Rockaway Parkway and Eighth Avenue on a six-minute peak headway. NYCT has proposed an Alternative Service Plan to deal with this closure, which would involve a combination of increased subway service on parallel and intersecting lines, supplemental bus and ferry service, and street treatments to support a robust bus service. NYCT would also implement station modifications to address crowding at critical transfer points.

With no Alternative Service Plan, NYCT predicts that the E, J, and M trains would have crowding well in excess of NYCT's maximum loading guideline capacity. Trains that exceed NYCT's maximum loading guideline capacities typically have longer station dwell times, since it takes longer for riders to exit and board the train. In turn, long dwell times can reduce train throughput, which reduces the number of trains in the peak hour and can exacerbate further crowding and delays. Initial modeling of subway service with the broader Alternative Service Plan that NYCT has proposed indicates that the E, F⁵ and M trains would have crowding in excess of NYCT's maximum loading guideline capacity. However, the crowding would be less than a condition with no Alternative Service Plan in place and would be similar to existing loads on the L train.

Alternative 2: Full-Time Single-Track Closure

This alternative would impact L train passengers traveling between Lorimer Street and 8 Avenue for 36 months. The L train would be single-tracked from just south of Bedford Avenue to just north of 3 Avenue. This would allow for 12 to 15 minute headways along this segment of the L train. To reduce overcrowding of the single-track segment, the L train would be run in two segments – from 8 Avenue to Bedford Avenue (skipping 3 Avenue in order to achieve needed throughput) and from Lorimer St to Canarsie. There would be no through service between Lorimer Street and Bedford Avenue, and

⁴ This was previously anticipated to take 18 months.

⁵ Many of the interborough shuttle bus passengers will transfer to the F at the Delancey St-Essex St station, resulting in higher F train loads with the ASP.

customers along the eastern (southern) segment of the L train would be encouraged to switch to other subway and bus lines to complete their trip into Manhattan.

A major concern NYCT identified with single-tracking is the severely reduced capacity of L train service operating under the East River with a 12 to 15 minute headway, which would reduce the carrying capacity of the Canarsie Tunnel to only 20 to 25 percent of its current capacity and result in overloaded trains. The L train would at times be in excess of NYCT's maximum loading guideline capacity by up to 15 percent and would be more crowded than any other subway line. There would also be severe overcrowding at affected stations for the entire three-year construction period. These adverse conditions may cause some riders to divert to other transportation options, but severe overloading and overcrowding would persist even with such diversions.

Crowding at the Bedford Avenue and First Avenue stations would be particularly acute. At the Bedford Avenue station, part of the platform would be needed by the contractor to access the tunnel. Platform clearance times for passengers exiting at Bedford Avenue in the PM peak are currently 54 seconds, which is already above NYCT's 30 second guideline for platform stair clearance times used for planning. With this alternative, platform clearance times at the Bedford Avenue exit would increase to 293 to 325 seconds (4.9 – 5.4 minutes), which is ten times over guideline clearance times, an unreasonable amount of time to wait to exit a platform that is likely to result in extremely crowded conditions. To mitigate this situation, station entries would have to be metered, which would result in longer trip times for affected passengers.

At 1st Avenue, inbound and outbound trains would share a single platform since this segment of the line will be single-tracked. During the AM peak, platform clearance times in this alternative are estimated to range between 256 seconds to 306 seconds. This is 9 to 10 times greater than guideline clearance times, an unreasonable amount of time to wait to exit the platform, that is likely to result in extremely crowded conditions.

The only way to reduce L train overcrowding in this scenario would be to provide a robust alternative service plan of a similar magnitude to the one proposed for the double-track closure, with increased subway service on parallel and intersecting lines and high frequency, high speed bus service between Bedford Avenue and Manhattan. However, a ferry would not be needed in this scenario since Bedford Avenue would be connected to Manhattan. Supplemental bus service would be needed between Bedford Avenue and Lorimer Street. Additional bus service along 14th Street would be needed given the relatively infrequent and crowded L service. This bus service could be somewhat less than the service envisioned by the proposed Alternative Service Plan, but would still require bus priority across 14th Street and would need to be provided for a longer duration than Alternative 1. Even with the supplemental bus service, trains would remain overloaded and stations would remain severely overcrowded.

Under Alternative 2, repair work on one of the compromised tubes would not begin until 18 months after Project construction in the tunnel commences, and the structure and systems in that tube would continue to deteriorate over that period. The prolonged use of the compromised tube poses the potential for increasingly frequent unplanned service disruptions, and NYCT would not have the resources in place to address such unplanned events.

Passenger Travel Time Impacts

NYCT analyzed the relative passenger impacts of Alternatives 1 and 2. As shown in Figure 2, without any additional mitigation (i.e., the remaining existing transit network accommodates diverted riders without any additional service), Alternative 1 has a smaller cumulative impact (measured in cumulative passenger-hours of additional travel time over the duration of the Project) than Alternative 2. This is due to the shorter Project duration. With the proposed Alternative Service Plan, the benefits of Alternative 1 are likely to increase, as mitigations can be focused on Williamsburg, the only area where Alternative 2 has a smaller impact than Alternative 1.

It is estimated that 80 percent of affected cross-river L train riders would experience a shorter cumulative travel time impact with Alternative 1 than with Alternative 2. Cross-river L train riders traveling to or from certain areas, particularly in western Williamsburg, would experience a greater increase in travel time with Alternative 1 assuming no Alternative Service Plan would be in place.

The majority of the L train corridor (Lorimer Street through Canarsie) would not have direct service to Manhattan in either Alternative 1 or Alternative 2. Those customers would experience a similar daily disruption in either scenario, and since Alternative 2 would take twice as long as Alternative 1, they would be more inconvenienced by Alternative 2.

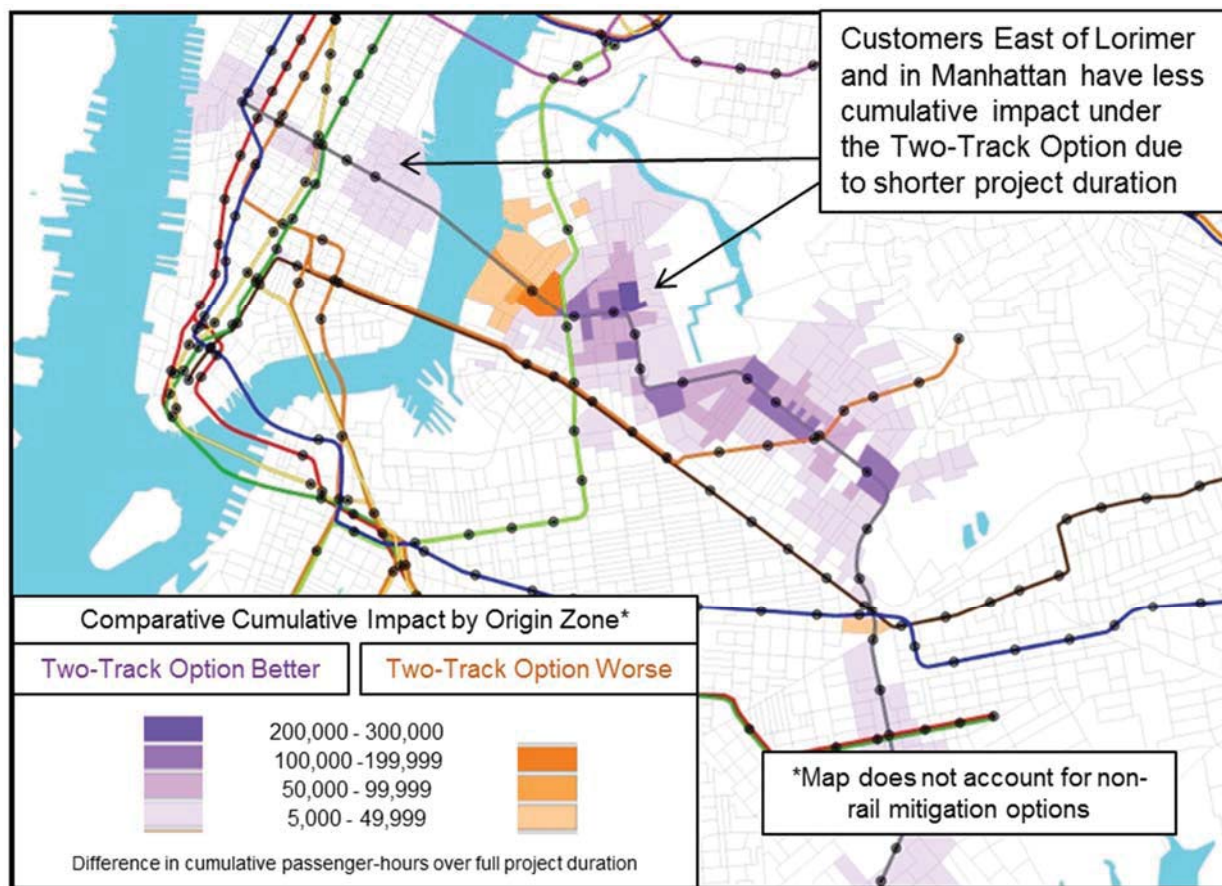


Figure 2 Relative Cumulative Passenger Impacts of Alternatives 1 and 2

Ability to Avoid Unplanned Service Disruptions

Alternative 1: Full-Time Double Track Closure

Alternative 1 will entail the closure of the tunnel for 15 months. NYCT, working with NYCDOT, has proposed an Alternative Service Plan to minimize disruption occurring during this period. Accordingly, there would be no incident involving unplanned service disruptions with Alternative 1.

Alternative 2: Full-Time Single-Track Closure

Alternative 2 would keep one of the compromised tubes in operation for 18 months after the commencement of Project construction in the tunnel. Continued deterioration of the structure and systems would result in the risk of more frequent unplanned service disruptions occurring in the operating tube during that extended period. NYCT would not have the resources in place to accommodate affected riders during those unplanned disruptions.

Summary – Minimize Overall Passenger Disruption

Alternative 1 meets the criterion of minimizing overall passenger disruption. Alternative 2 does not.

5.2.3 Minimize Construction Risk

Constructability Assessment

Alternative 1: Full-Time Double Track Closure

Sequencing and coordination of construction would be optimized, as all of the First Avenue station could be utilized for staging, and passenger safety concerns would not restrict demolition activity. Once duct bank demolition is completed, many elements of the construction activity could be completed simultaneously. This scenario has the shortest construction timeline of 15 months. There is no point during this closure where the L train would be single-tracked or where trains would operate through a portion of the tunnel that has not been reconstructed.

Alternative 2: Full-Time Single-Track Closure

Under this scenario, one of the tunnels would continue to be used in a compromised condition for an additional 18 months (pending reconstruction of the other tunnel), posing risks that would require continued monitoring to ensure that it is safe for continued passenger service. Duct bank demolition, removal, and installation of new systems would be completed in the first tube (Q2) prior to work commencing in the second tube (Q1). As train service would continue to operate, communications would need to be maintained at all times. Extensive temporary wiring and testing would be required to keep one of the tubes in operation during construction. Vibration from heavy construction work taking place in one tube could impact the adjacent (already compromised) tube, thereby affecting the construction schedule and resulting in the need for service shutdowns to repair the additional damage caused by such vibration on an emergency basis.

Cost

The faster construction timeline in Alternative 1 also leads to a lower construction cost and allows NYCT to incentivize early completion.

Summary – Minimize Construction Risk

Alternative 1 meets the criterion of minimizing construction risk. Alternative 2 does not.

5.2.4 Minimize the Risk of Operational Impacts

Ability to Accommodate Diverted Riders on Alternate Services

Alternative 1: Full-Time Double Track Closure

Under the double-track closure, there is no risk of an L train being stranded along a single-track segment, or of an unplanned tunnel closure. NYCT would have plans in place to handle diverted riders, and the tunnel – which contains critical assets nearing the end of their expected useful life – would be completely closed for reconstruction. Existing subway service would be increased to the extent feasible, and buses and ferries would be able to handle the estimated 20 percent of passengers who would experience the greatest travel delays and would not be fully accommodated on existing subway lines.

Alternative 2: Full-Time Single-Track Closure

The single-track closure poses significant operational risks. An L train that breaks down along the single-track segment would stop all service in both directions, effectively eliminating L train service within Manhattan and between Brooklyn and Manhattan. Similar to a late opening under the nights and weekends scenario, NYCT would not have sufficient additional trains on parallel and intersecting lines, buses, or ferries readily available to handle affected riders during an unplanned service change, so the impact of a delay would be significant.

A major breakdown would also strand all trains west of Bedford Avenue as there are no track connections between the L train and the rest of the subway network in Manhattan. NYCT would not have additional resources readily available to move affected riders.

Ability to Avoid Unplanned Service Disruptions

Alternative 1: Full-Time Double Track Closure

Alternative 1 will entail the closure of the tunnel for the duration of the Project. Accordingly, there will be no incident involving unplanned service disruptions with Alternative 1.

Alternative 2: Full-Time Single-Track Closure

Alternative 2 would keep one of the compromised tubes in operation for 18 months after the commencement of Project construction. Continued deterioration of the structure and systems would result in the risk of more frequent unplanned service disruptions occurring in the operating tube during that period.

Summary – Minimize the risk of operational impacts

Alternative 1 meets the criterion of minimizing the risk of operational impacts. Alternative 2 does not.

5.2.5 Tier 2 Screening Results Summary

The analysis conducted on Alternatives 1 and 2 using the evaluation criteria is summarized in the following table. Alternative 1 best meets the Project goals and, in fact, is the only alternative that meets all four goals. It, therefore, could be considered reasonable.

Table 2 Tier 2 Screening Results

	Alternative 1: Full-Time Double Track Closure	Alternative 2: Full-Time Single Track Closure
Maximize Safety	✓	✗
Minimize Passenger Disruption	✓	✗
Minimize Construction Risk	✓	✗
Minimize Operational Impacts	✓	✗
Achievement of Goals	Yes	No

5.3 Public Input

Public input also informed the evaluation of alternatives, with 80 percent of public comments received expressing a preference for Alternative 1. NYCT publicly announced the Canarsie Tunnel Rehabilitation Project in February 2016. As part of the announcement, NYCT proposed initial concepts of Alternative 1 and Alternative 2 for consideration.⁶ Stakeholder feedback indicated a strong preference (80 percent) for Alternative 1 because they preferred its shorter duration and the fact that it would disrupt their commutes for a shorter amount of time. At the time these public meetings took place, conceptual plans for alternative service were shown for both Alternative 1 and Alternative 2, but they were not developed in full detail.

6 Selection of Construction Method

Considering the cumulative results of the analysis discussed in this report, NYCT has determined that Alternative 1 is the only reasonable alternative for the Project. NYCT has come to this conclusion in light of the problems it has identified with respect to the ability of Alternatives 2 and 3 to meet NYCT’s critical goals.

Alternative 3 was rejected as technically infeasible. Among other things, limiting work to nights and weekends would extend the duration of the Project for many years, requiring that the compromised assets in the tunnel remain in operation well beyond useful life. Moreover, construction activities are likely to periodically disrupt weekday service because it would be infeasible to consistently accomplish the allotted daily work, demobilize, clear the area, clean up silica dust released by demolition activities, and test the air, as needed, to assure its safety in time to resume service at the beginning of the morning rush hour.

Even though technically feasible, Alternative 2 was found not to meet the Purpose and Need for the following reasons:

- keeping one tube in operation pending completion of work on the other tube would entail keeping a compromised facility in service for an additional 18 months;

⁶ Alternative 3 was not presented because it had already been eliminated from further review on the basis of technical infeasibility.

- continued deterioration of the structure and systems in the tube that is kept in operation during the course of work on the other tube would pose risks requiring continuous careful monitoring and maintenance to assure ridership safety, and also pose the potential for increasingly frequent unplanned service disruptions;
- vibration from ongoing heavy construction work in one tube could further damage the already compromised condition of the adjacent in-service tube, causing additional unplanned service disruptions;
- the suspension of service stopping a train at any location in the operating portion of the tunnel would require that the entire line segment be shut down, due to the one-track configuration of the facility;
- headways for trains running through the tunnel would be 12 to 15 minutes, reducing the capacity of the L line to 20 to 25 percent of its current capacity, and resulting in severe overloading of trains on the single-track segment of the L and severe overcrowding at affected stations along the L train corridor; and
- riders traveling from Manhattan to east of Bedford Avenue would not have through service and would be required to walk or take a bus to the Lorimer Street Station in order to connect with intra-Brooklyn L trains.

NYCT also recognizes the benefits that are offered by Alternative 1, considering that:

- 80 percent of L train riders are less impacted by the double-track closure than by the single-track closure;
- the connection between Bedford Avenue and the rest of Brooklyn is preserved by Alternative 1;
- the overall construction period for Alternative 1 is 21 months shorter than Alternative 2; and
- the overall cost of Alternative 1 would be lower than the other alternatives due to its shorter construction schedule, considerably more efficient construction logistics, and the shorter duration of its associated Alternate Service Plan.

Finally, NYCT notes that based on comments received, there is a strong public preference for the double-track closure. Since Alternative 3 was determined to be not technically feasible and Alternative 2 was determined to be not a reasonable alternative, both alternatives are eliminated from consideration.

Based on the above considerations, NYCT selected and announced the selection of Alternative 1 as the preferred alternative in July 2016.

Appendix B: Permanent Planned Projects that are Independent of the Canarsie Tunnel Project

Canarsie Tunnel Rehabilitation Project

Supplemental Environmental Assessment

Previously Planned Station Improvement Projects

MTA's 2015-2019 Capital Program includes critical station improvements at key locations to address issues such as access and crowding and to support the economic development and affordable housing strategy of the City of New York. NYCT has accelerated completion of capacity improvements at four stations in anticipation of increased passenger flows at these locations during the Canarsie Tunnel closure. The projects at these stations were previously planned, have independent utility, and are programmed separate from the Canarsie Tunnel Rehabilitation Project in MTA's Capital Program.

MTA's 2015-2019 Capital Program was originally approved on May 23, 2016 and has since been amended as follows: Amendment No. 2 was approved on July 31, 2017, and Amendment No. 3 was approved on May 31, 2018.

Below is a description of each project and its construction schedule. Following the descriptions are the pages from the current 2015-2019 Capital Program (Amendment No. 3) that include the projects. The current Capital Program may be viewed at this link:

http://web.mta.info/capital/pdf/April_2018_Amendment_Approved_Optimized.pdf

ADA: Court Square/ Crosstown (Stairs Phase)

Project will add stairs on the platform of the G Line, increase the capacity of the nearby control area, and widen two stairs (one of the widened stairs will later be used as an elevator shaft under a related project). Construction began in March 2017, and substantial completion is forecast for July 2018.

Current Capital Program ACEP: T-704-13-20

Station Capacity Enhancements: Marcy Ave / Jamaica

Project will widen one street stair to each platform on the J/M/Z Line, widen a portion of the outbound platform, and add turnstile capacity. Construction began in March 2018, and substantial completion is forecast for March 2019.

This station project was programmed in the original MTA 2015-2019 Capital Program in May 2016 under the Core Station Improvement Project Reserve (T-714-05-16). This station project was split out from the Core Station Improvement Project Reserve to its own ACEP in Amendment No. 2 of the Capital Program.

Current Capital Program ACEP: T-704-14-20

Station Capacity Enhancements: Broadway Junction / Jamaica

Project will add two stairs from the platform of the J/Z Line to the mezzanine level, and replace two existing stairs, and expand the mezzanine. Construction began in April 2018, and substantial completion is forecast for April 2019.

Capital Program ACEP: T-704-14-19

Station Capacity Enhancements: Metropolitan Avenue / Crosstown (Stair P11)

Project will add a new G Line platform to mezzanine stair. Construction is forecast to begin in September 2018, and substantial completion is forecast for January 2019.

Capital Program ACEP: T-704-14-18

New York City Transit

PASSENGER STATIONS

T - 704

Commitments
(\$ in millions)

ELEMENT DESCRIPTION/PROJECT	NEEDS CODE	Commitments (\$ in millions)					Total All Years
		2015	2016	2017	2018	2019	
12 STATION WORK							
G8 1 Stair: 79 St BW7 (S2/P2) [SBDP]	SGR	0.0	0.0	0.0	0.8	0.0	0.8
G9 Renewal: 95th St 4AV	SGR	0.0	0.0	0.0	15.0	0.0	15.0
Element Total 12		\$10.1	\$142.0	\$455.8	\$603.0	\$595.6	\$1,806.6
13 DISABLED ACCESSIBILITY							
01 ADA: Bedford Av CNR	SI	1.2	1.0	68.0	7.3	0.0	77.6
02 ADA: Astoria Blvd AST	SI	2.0	1.9	0.1	45.9	0.0	49.9
03 ADA: Bedford Pk Blvd BXC	SI	2.0	0.9	1.0	30.0	0.0	33.9
04 ADA: 86 St 4AV	SI	1.9	0.1	29.7	0.6	0.0	32.3
05 ADA: Gun Hill Road DYR	SI	3.1	1.5	0.9	51.4	0.0	56.9
06 ADA: Eastern Pkwy-Bklyn Museum EPK	SI	0.0	1.8	1.2	51.7	0.0	54.7
07 ADA: Times Square Complex, Ph 3 - Shuttle	SI	4.1	0.1	4.5	228.4	0.0	237.1
08 ADA: Chambers St NAS	SI	0.0	1.7	1.8	53.6	0.0	57.1
09 ADA: Greenpoint Av XTN	SI	0.0	1.3	1.9	41.6	0.0	44.9
10 ADA: 59 St 4AV	SI	0.0	1.3	2.2	59.8	0.0	63.3
11 ADA: Rockaway Parkway CNR	SI	0.0	0.5	0.2	10.2	0.0	10.8
12 ADA: 1 Av CNR	SI	0.1	1.1	31.9	11.7	0.0	44.9
14 ADA: Court Square XTN (Elevator Phase)	SI	0.0	0.0	0.0	1.1	15.5	16.6
15 ADA: 149 Street-Grand Concourse Complex	SI	0.0	0.0	0.0	1.6	83.4	85.0
16 ADA: Woodhaven Boulevard JAM	SI	0.0	0.0	0.0	2.4	32.6	35.0
17 ADA: Systemwide Study	SI	0.0	0.0	0.9	9.1	0.0	10.0
18 Visual Identification of ADA Boarding Areas PILOT	SI	0.0	0.0	0.0	0.0	0.2	0.2
20 ADA: Court Square XTN (Stairs Phase)	SI	0.0	0.7	12.1	0.2	0.0	13.1
21 ADA and Renewal: 77 St 4AV DESIGN/PREP	SI	0.0	0.0	0.0	0.0	5.0	5.0
22 ADA: 95 St 4AV	SI	0.0	0.0	0.0	0.0	35.0	35.0
23 ADA: 57 Street BWY Additional Support Costs	SI	0.0	0.0	43.9	5.4	0.0	49.2
24 ADA: 68 St-Hunter Col LEX Additional Support Costs	SI	0.0	0.0	0.0	48.0	0.0	48.0
26 ADA: Times Square Complex, Ph 3 - Shuttle [SBDP]	SI	0.0	0.0	0.0	5.0	0.0	5.0
27 ADA & Station Improvements: Westchester Sq PEL	SI	0.0	0.0	0.0	90.0	0.0	90.0
28 ADA Enhancements at Various Locations	SI	0.0	0.0	0.0	0.0	200.0	200.0
Element Total 13		\$14.5	\$14.0	\$200.4	\$755.0	\$371.7	\$1,355.5

* Represents values less than \$50,000

Numbers may not add due to rounding

New York City Transit

PASSENGER STATIONS

T - 704

Commitments
(\$ in millions)

ELEMENT DESCRIPTION/PROJECT	NEEDS CODE	2015	2016	2017	2018	2019	Total All Years
14 OTHER STATION IMPROVEMENTS							
01 Station Signage Improvements	NR	1.1	9.7	0.0	0.0	0.0	10.8
02 Access Improvements: Grand Central, Phase 2	SI	0.0	0.4	18.2	56.4	0.0	75.0
03 Reopen Station Entrance: 8 Av SEA	SI	0.0	1.4	14.3	0.6	0.0	16.3
04 Reconstruction: Times Sq Complex, Ph3 - Shuttle	SGR	1.1	0.0	0.9	27.4	0.0	29.4
05 2015 Water Condition Remedy	SGR	3.6	4.3	0.3	0.0	0.0	8.1
06 Station Railings	SGR	0.3	0.0	0.0	3.5	0.0	3.8
07 Station Condition Survey Update	NR	0.0	0.0	8.8	0.1	0.0	8.9
08 2017 Water Condition Remedy	SGR	0.0	0.0	0.2	5.0	0.0	5.2
09 Reconstruct Cortlandt St Station BW7	SGR	23.4	2.3	25.7	20.4	0.0	71.8
10 Church St Corridor Improvements	NR	0.0	0.0	14.9	15.1	0.0	30.0
11 New Street Stairs: 2 Locs CNR	SI	0.6	2.0	4.6	0.0	0.0	7.2
15 Station Capacity Enhancements at Various Locs	SI	0.0	0.0	0.5	6.1	0.0	6.6
16 Circulation Improvements: Union Square CNR	SI	0.0	0.0	2.2	12.8	0.0	15.0
17 Sutphin Blvd ARC Plan/Eng	NR	0.0	0.0	0.0	10.0	0.0	10.0
18 Stn Cap Enhancements: Metropolitan Av XTN	SI	0.0	0.0	0.2	1.2	0.0	1.4
19 Station Capacity Enhancements: Broadway Jct JAM	SI	0.0	0.0	0.8	0.0	9.4	10.2
20 Station Capacity Enhancements: Marcy Avenue JAM	SI	0.0	0.1	1.3	0.0	11.6	12.9
21 Station Circulation Enhancements at Various Locs	SI	0.0	0.0	0.0	0.0	100.0	100.0
Element Total 14		\$30.0	\$20.2	\$92.9	\$158.6	\$121.0	\$422.6
Category Total 704		\$61.5	\$180.4	\$1,235.5	\$1,768.5	\$1,361.9	\$4,607.9

* Represents values less than \$50,000

Numbers may not add due to rounding

Canarsie Tunnel Rehabilitation Project

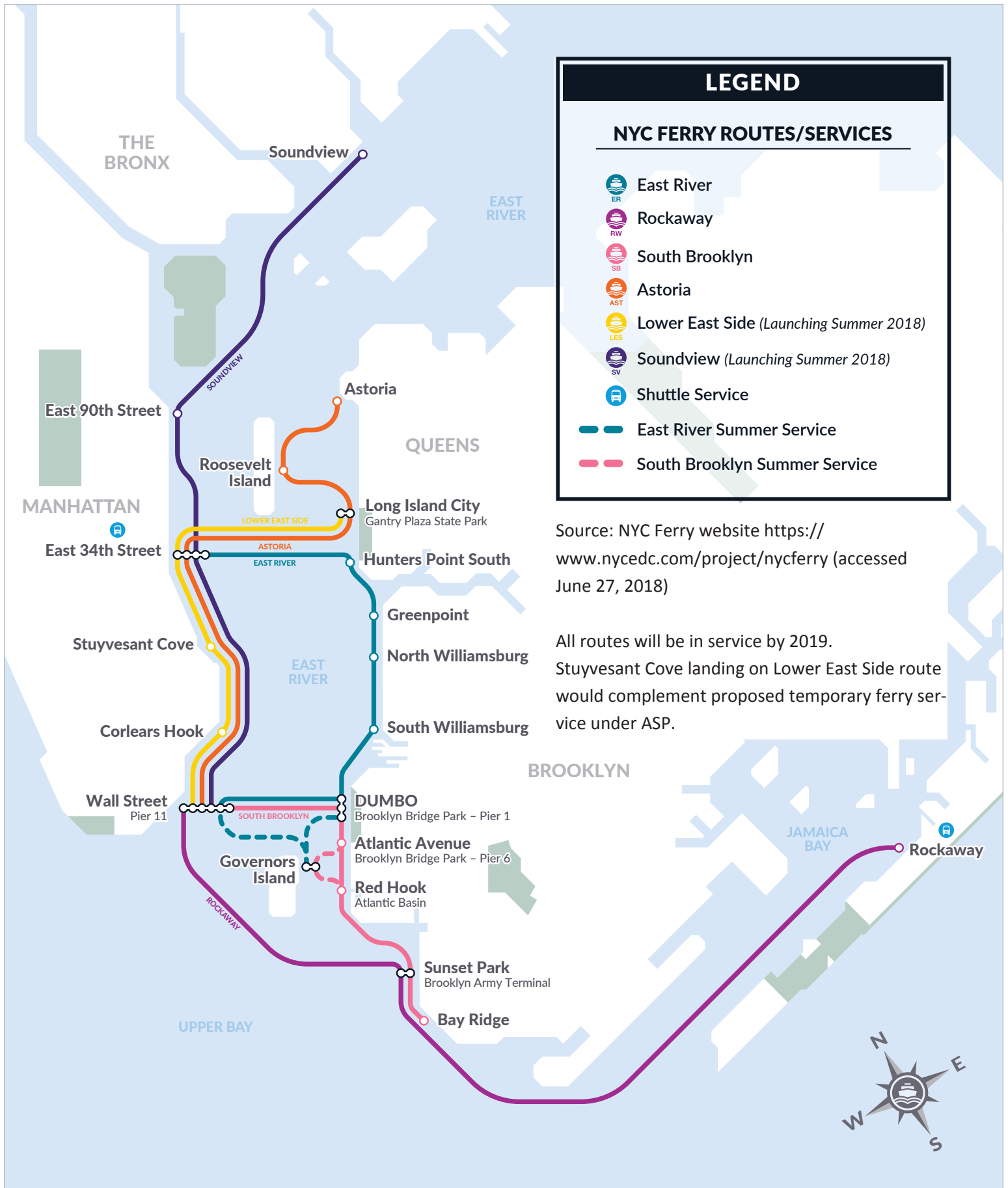
Supplemental Environmental Assessment

Previously Planned Procurement of New Buses

MTA has procured new buses as part of an initiative to revitalize bus operations. Some of these buses may be used to support the Alternative Service Plan. This bus procurement was previously planned separate from the Canarsie Tunnel Rehabilitation Project, as evidenced by the programming of the procurements on the Statewide Transportation Improvement Program (STIP). The STIP sheet showing the bus procurements is on the next page.




**** NEW YORK STATE DEPARTMENT OF TRANSPORTATION ****
STATEWIDE TRANSPORTATION IMPROVEMENT PROGRAM (STIP)
for REGION 11

AGENCY PIN	PROJECT DESCRIPTION	FUND SOURCES		TOTAL 4-YEAR PROGRAM in millions of dollars	PHASE	4-YEAR PROGRAM (FFY) Starting October 01, 2016				
		FFY	FFY			FFY 2017	FFY 2018	FFY 2019	FFY 2020	
AQ CODE	COUNTY	TOTAL PROJECT COST		TOTAL 4YR COST :		TOTAL 4YR COST :		TOTAL 4YR COST :		
MTA NYCT SF02-2452	PURCHASE 190 60'-FOOT LOW FLOOR ARTICULATED BUSES TO REPLACE AN EQUIVALENT NUMBER OF STANDARD BUSES FOR USE ON HIGH-VOLUME ROUTES.	NFA	2017	168.297	MISC	168.297				
AQC:B10Z	SYSTEM-WIDE	TPC : \$100-\$225 M		TOTAL 4YR COST :		TOTAL 4YR COST :		TOTAL 4YR COST :		
MTA NYCT SF02-2453	PURCHASE OF 50 EXPRESS OVER-THE-ROAD BUSES. BUSES WILL REPLACE OVER-AGE AND END-OF-LIFE BUSES, AS WELL AS INCLUDE ADDITIONAL VEHICLES FOR MODEST FORECAST RIDERSHIP GROWTH FOR THE 2015-2020 PERIOD.	FTA 5307	2019	15.000	MISC	15.000		15.000		
AQC:B10Z	SYSTEM-WIDE	TPC : \$32-\$50 M		TOTAL 4YR COST :		TOTAL 4YR COST :		TOTAL 4YR COST :		
MTA NYCT SF02-2454	PURCHASE OF 200 40-FOOT LOW FLOOR STANDARD DIESEL BUSES TO BE OPERATED THROUGHOUT NEW YORK CITY TO MAINTAIN A STATE OF GOOD REPAIR.	FTA 5307	2019	15.000	MISC	15.000		15.000		
AQC:B10Z	SYSTEM-WIDE	TPC : \$100-\$225 M		TOTAL 4YR COST :		TOTAL 4YR COST :		TOTAL 4YR COST :		
MTA NYCT SF02-2455	PURCHASE 75 STANDARD HYBRID ELECTRIC BUSES FOR USE SYSTEM-WIDE TO MAINTAIN A STATE OF GOOD REPAIR.	FTA 5307	2019	28.205	MISC	28.205		28.205		
AQC:B10Z	MULTI	TPC : \$50-\$85 M		TOTAL 4YR COST :		TOTAL 4YR COST :		TOTAL 4YR COST :		
MTA NYCT SF04-2426	PURCHASE TWO NEW CHASSIS WASHERS TO ACCOMMODATE ARTICULATED BUSES AT GRAND AVENUE BUS DEPOT. THE WORK WILL INCLUDE ALL REQUIRED UTILITIES AND SYSTEMS.	NFA	2017	2.635	MISC	2.635				
AQC:B4P	QUEENS	TPC : \$2-\$4 M		TOTAL 4YR COST :		TOTAL 4YR COST :		TOTAL 4YR COST :		
MTA NYCT SF04-6195	REPLACE THE OIL-WATER SEPARATOR AT THE CASEY STENGEL DEPOT, BRINGING IT UP TO BUS OPERATIONS INTERNAL GUIDELINE FOR STANDARD INDUSTRIAL PRACTICES WHICH WILL ALSO IMPROVE SAFETY.	NFA	2018	6.616	MISC	6.616		6.616		
AQC:B4Z	KINGS	TPC : \$6-\$9.4 M		TOTAL 4YR COST :		TOTAL 4YR COST :		TOTAL 4YR COST :		
MTA NYCT SF06-6024	PHASE ONE OF RECONSTRUCTION OF EXISTING JAMAICA DEPOT IN QUEENS TO ACHIEVE A STATE OF GOOD REPAIR. WORK WILL INCLUDE ADEQUATE SHOP, OFFICE, AND STORAGE SPACE, AS WELL AS, INSTALLATION OF EQUIPMENT, SUCH AS BUS LIFTS AND WASHERS.	FTA 5307	2018	40.000	MISC	40.000		40.000		
AQC:B8P	QUEENS	TPC : \$100-\$225 M		TOTAL 4YR COST :		TOTAL 4YR COST :		TOTAL 4YR COST :		



LEGEND

NYC FERRY ROUTES/SERVICES

-  East River
-  Rockaway
-  South Brooklyn
-  Astoria
-  Lower East Side (*Launching Summer 2018*)
-  Soundview (*Launching Summer 2018*)
-  Shuttle Service
-  East River Summer Service
-  South Brooklyn Summer Service

Source: NYC Ferry website <https://www.nycdc.com/project/nycferry> (accessed June 27, 2018)

All routes will be in service by 2019. Stuyvesant Cove landing on Lower East Side route would complement proposed temporary ferry service under ASP.

NYCDOT projects previously planned with ancillary benefits to support the L Train Closure. As informational to FTA (not subject to NEPA review).

Borough	Project	Description	Planning Status: new for L Train closure support, previously planned	Temporary* vs. Permanent	Projected Implementation Date	Notes
Manhattan & Brooklyn	bike parking expansion	Acceleration of City Rack program within the L Train catchment area with additional bike parking racks	Previously planned, accelerated implementation for L Train closure support	Permanent	Summer/Fall 18	NYCDOT is filling all practicable requests in the L train areas, generally these are installed first come, first serve citywide, but these locations in the L train catchment area will get priority.
Manhattan	Delancey St bikeway	Two-way protected bikeway along center median; operational implementation to begin Summer 18 with capital project currently in design	Previously planned	Permanent	Spring/Summer 18	http://www.nyc.gov/html/dot/downloads/pdf/delancey-st-mar2017.pdf
Manhattan	20th St bikeway	Existing Class II bike lane pair upgraded to two-way protected path offering better connection to East River Greenway	Previously planned	Permanent	Summer/Fall 18	http://www.nyc.gov/html/dot/html/bicyclists/bikemaps.shtml
Manhattan & Brooklyn	Bikeshare	Certain locations in Brooklyn and Manhattan	Previously planned, accelerated implementation for L Train closure support	Permanent	Spring 2019	To be installed consistent with the existing contract.
Brooklyn	Broadway, Hooper St to Flushing Ave ped enhancement	Slip lane closure, new neckdowns and crosswalks, extend concrete triangles, convert Montrose Ave to one-way westbound to improve pedestrian safety and alternative subway station access	Previously planned, accelerated implementation for L Train closure support	Permanent	Summer/Fall 18	This is a Vision Zero priority corridor. These treatments address those previously identified safety needs.
Brooklyn	Bedford Ave and Nassau Ave ped enhancement	Street direction changes, paint curb extensions, and signal timing improvements enhance pedestrian safety and alternative station access	Previously planned	Permanent	Summer/Fall 18	This project has been in development and has been subject to internal planning and coordination consistent with other pedestrian improvements throughout the City.
Brooklyn	E Williamsburg bike network expansion	Addition of bike lanes along Union Ave, Devoe St, Metropolitan Ave, Morgan Ave	Previously planned	Permanent	Summer/Fall 18	As part of the citywide goal of creating a safe and connected bike network, NYCDOT has been planning additional bike facilities to connect the bike network in Bushwick to the busiest East River crossing for cyclists, the Williamsburg Bridge.
Pedestrian safety improvements generally		https://www.nyc.gov/html/dot/downloads/pdf/ped-safety-action-plan-manhattan.pdf				

Appendix C: Public Outreach Supplemental Information

Canarsie Outreach - Meeting History			
#	Meeting	Date	Meeting Type
1	Brooklyn Electeds Briefing	5/19/2017	Briefing
2	Manhattan Electeds Briefing	5/19/2017	Briefing
3	Advocates Briefing	5/24/2017	Briefing
4	Man CB Chairs Briefing	5/30/2017	Briefing
5	BK CB Chairs Briefing	5/30/2017	Briefing
6	Brooklyn CB # 4	6/1/2017	Community Board Transp Comm
7	Manhattan CB # 6	6/5/2017	Community Board Transp Comm
8	Brooklyn CB # 1	6/8/2017	Community Board Transp Comm
9	Manhattan CB # 3	6/13/2017	Community Board Transp Comm
10	Manhattan CB # 4	6/21/2017	Community Board Transp Comm
11	Brooklyn CB # 18	6/21/2017	Community Board Transp Comm
12	Manhattan CB #5	6/26/2017	Community Board Transp Comm
13	Brooklyn CB # 5	6/26/2017	Community Board Transp Comm
14	Brooklyn CB # 16	6/27/2017	Community Board Transp Comm
15	Queens CB # 5	6/27/2017	Community Board Transp Comm
16	Manhattan CB # 2	7/6/2017	Community Board Transp Comm
17	Joint Electeds Briefing	12/13/2017	Briefing
18	City Council Transportation Committee Hearing	12/14/2017	Council Hearing
19	Advocates Briefing	12/20/2017	Briefing
20	Joint CB Chairs Briefing	12/20/2017	Briefing
21	Grand Street BID Briefing	1/18/2018	Stakeholder Briefing
22	Progress High School Briefing	1/18/2018	Stakeholder Briefing
23	Open House: Bushwick	1/24/2018	Open House
24	14th Street Parking Garage Representatives Briefing	1/26/2018	Stakeholder Briefing
25	Union Square Partnership Briefing	1/30/2018	Stakeholder Briefing
26	Open House: Manhattan East Side	1/31/2018	Open House
27	Manhattan CB # 6	2/5/2018	Community Board Transp Comm
28	Meatpacking BID Briefing	2/7/2018	Stakeholder Briefing
29	L Coalition Meeting	2/8/2018	Stakeholder Briefing
30	Open House: Williamsburg/East Williamsburg	2/8/2018	Open House
31	Stuyvesant Town Briefing	2/9/2018	Stakeholder Briefing
32	Manhattan CB# 3	2/13/2018	Community Board Transp Comm
33	Brooklyn CB# 1	2/13/2018	Community Board Full Board
34	Open House: Manhattan West Side	2/14/2018	Open House
35	Mt. Sinai Briefing	2/20/2018	Stakeholder Briefing
36	Brooklyn CB# 4	2/21/2018	Community Board Transp Comm
37	Brooklyn CB# 18	2/21/2018	Community Board Transp Comm
38	Manhattan CB# 4	2/21/2018	Community Board Transp Comm
39	Manhattan CB# 5	2/22/2018	Community Board Transp Comm
40	Brooklyn CB# 16	2/27/2018	Community Board Full Board
41	Queens CB# 5	2/27/2018	Community Board Transp Comm
42	Manhattan CB# 2	3/1/2018	Community Board Transp Comm
43	New School Briefing	3/2/2018	Stakeholder Briefing
44	Queens CB# 2	3/5/2018	Community Board Transp Comm
45	Speaker Corey Johnson and L Train Block Association	3/12/2018	Stakeholder Briefing
46	Stuy Town Open House	3/14/2018	Open House
47	Lenox Health Greenwich Village Briefing	3/20/2018	Stakeholder Briefing
48	L Coalition Meeting	3/22/2018	Stakeholder Briefing
49	Brooklyn CB# 5	3/26/2018	Community Board Transp Comm
50	Union Square Partnership Briefing	3/26/2018	Stakeholder Briefing
51	CM Rivera & CM Powers	4/3/2018	Briefing/ Construction Site Field Visit
52	Advocates Briefing	4/6/2018	Briefing
53	Open House: Ridgewood	4/12/2018	Open House
54	L Coalition Meeting	4/18/2018	Stakeholder Briefing

55	Manhattan Borough President	4/19/2018	Borough Board Meeting	Manhattan Borough President Gale A. Brewer, 1 Centre Street, 19th Floor, New York, NY 10007
56	Kenmare/ Cleveland Coalition	5/4/2018	Stakeholder Briefing	Bowery and Kenmare Street
57	Town Hall: Manhattan	5/9/2018	Public Town Hall	66 West 12th Street, 10011 - The Auditorium (at The New School)
58	Town Hall: Brooklyn	5/16/2018	Public Town Hall	Progress High School, 850 Grand St, Brooklyn, NY 11211
59	Union Square Partnership Briefing	5/24/2018	Stakeholder Briefing	MTA HQ, 2 Broadway, New York, NY 10004
60	Con Edison	6/7/2018	Stakeholder Briefing	4 Irving Plaza, New York, NY 10003
61	Trucking Association of New York	6/13/2018	Stakeholder Briefing	55 Water Street, New York, NY
62	CM Rivera & CM Powers	6/13/2018	Briefing/ Construction Site Field Visit	14th Street and Ave A
63	Advocates Briefing	6/25/2018	Briefing	MTA HQ, 2 Broadway, New York, NY 10004
64	Joint CB Chairs Briefing	6/25/2018	Briefing	MTA HQ, 2 Broadway, New York, NY 10004
65	Joint Electeds Briefing	6/25/2018	Briefing	MTA HQ, 2 Broadway, New York, NY 10004
66	City Council Oversight Hearing	6/27/2018	Council Hearing	Cardozo Law School, 14th Street
67	L Coalition Meeting	6/28/2018	Stakeholder Briefing	86 Kent Avenue, Brooklyn, NY 11249
68	Mn CBH 3	7/10/2018	Community Board Transp Comm	University Settlement, Speyer Hall - 184 Eldridge Street (btwn Livingston & Delancey Sts)
69	Mn CBH 2	7/11/2018	Community Board Transp Comm	32 Waverly Pl., Room 405*
70	Mn CBH 4	7/18/2018	Community Board Transp Comm	305 W. 44th Street, 10036 - 2nd Fl. - Hotel Trades Council

Appendix D: Temporary Proposed Alternative Service Plan Figures



TEMPORARY 14TH ST CORRIDOR DESIGN:

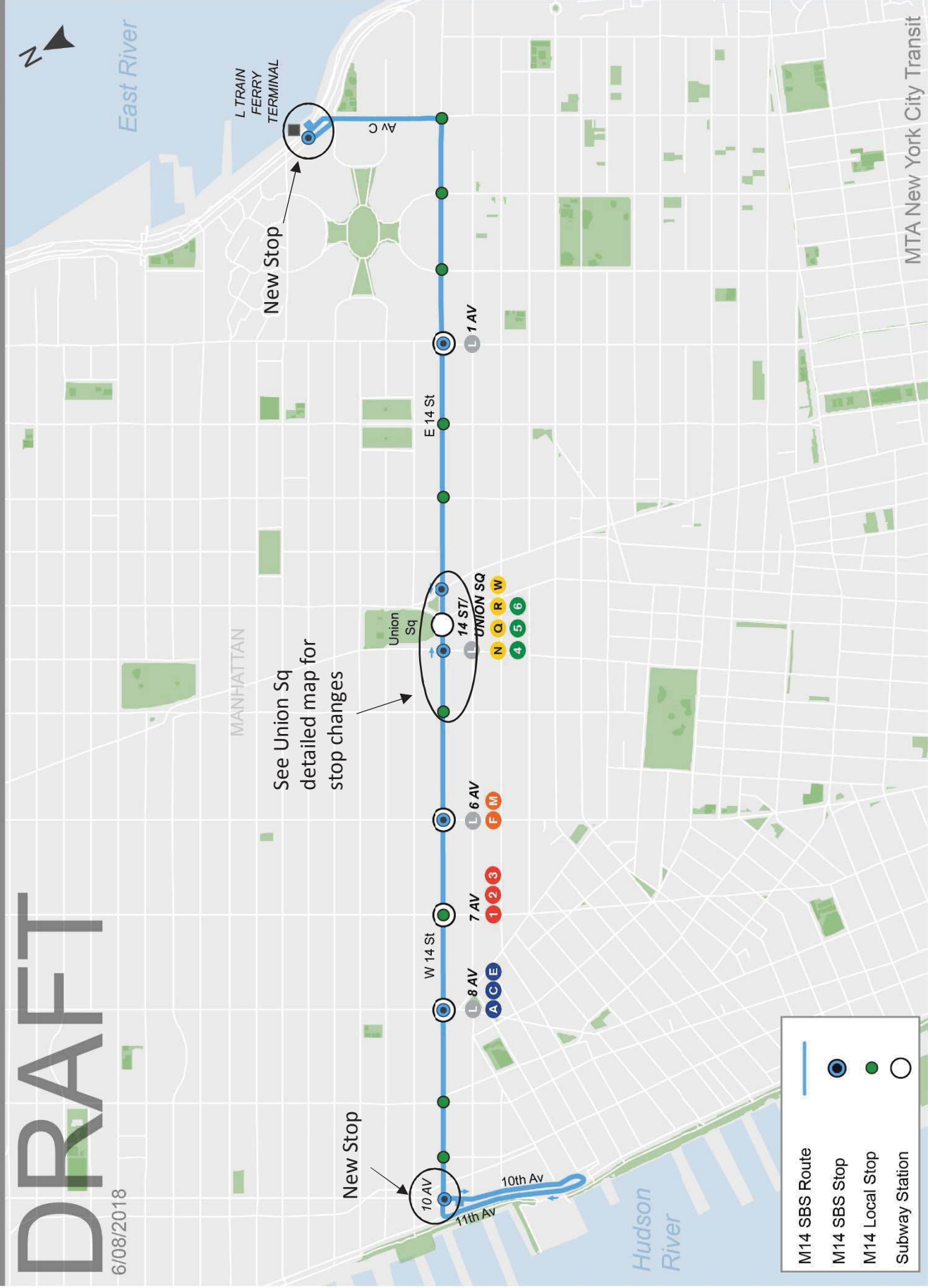
Figure D-1

M14 Select Bus Service

DRAFT

6/08/2018

L Train Tunnel Reconstruction Project



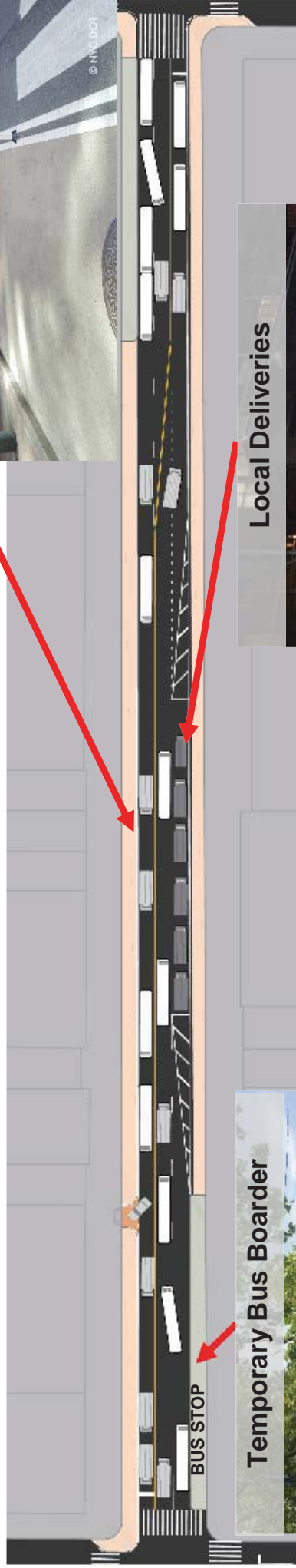
M14 Select Bus Service Figure D-2



M14/ M14SBS Stop Relocation Figure D-3



Pedestrian Space



BUS STOP

Temporary Bus Boarder

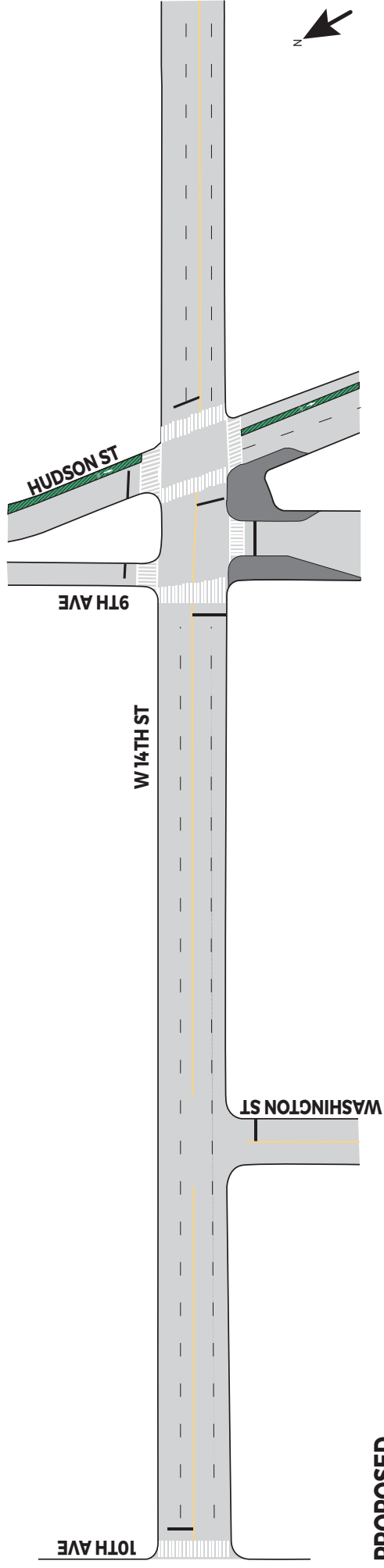
Local Deliveries



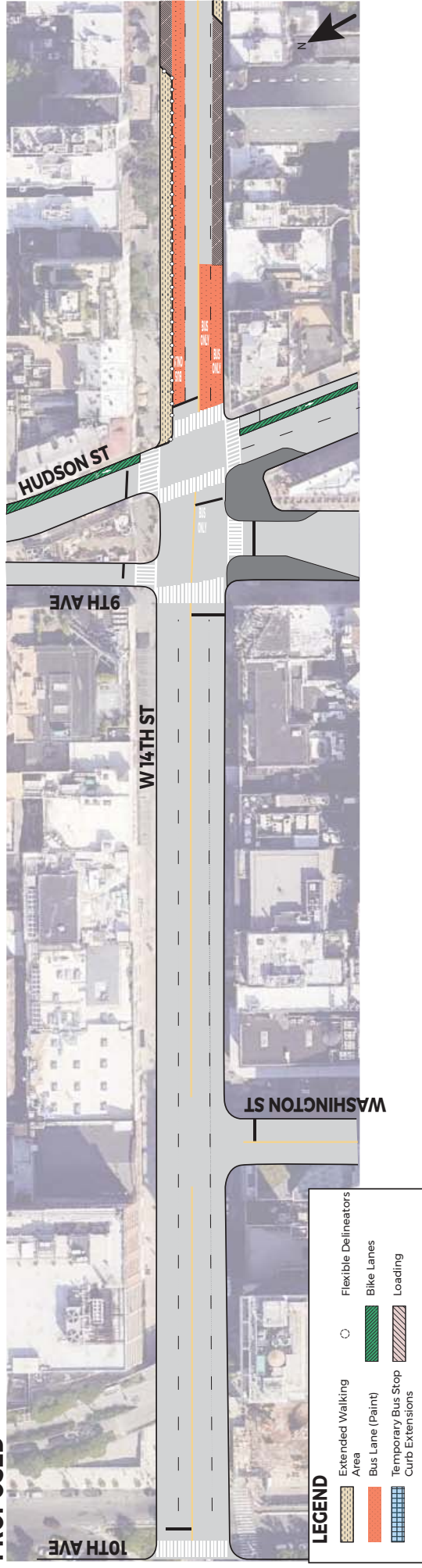
14th STREET BUSWAY DESIGN

Figure D-4

Draft Design 6/18/18
EXISTING



PROPOSED



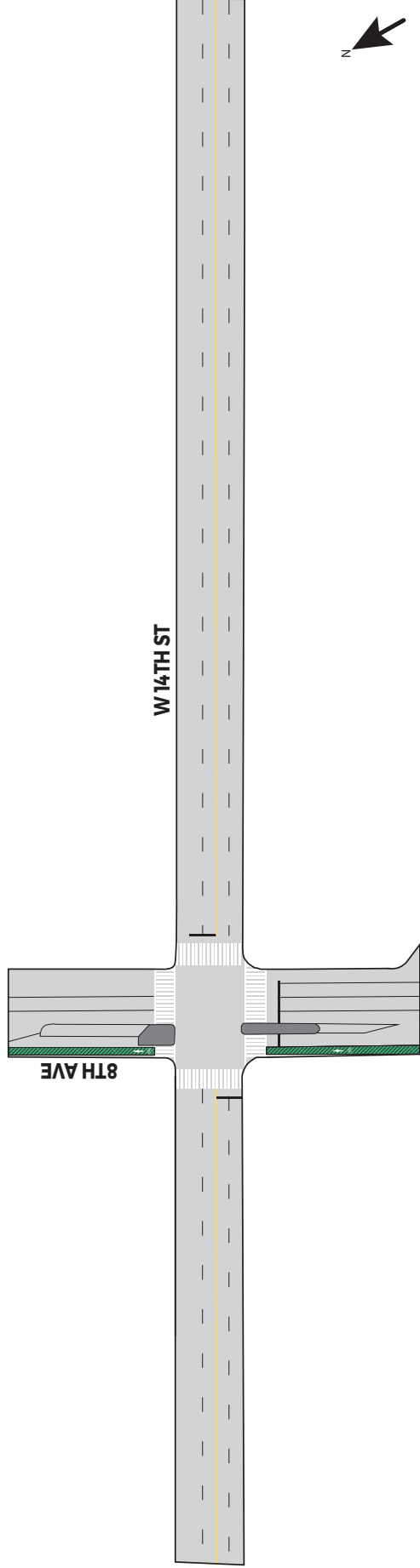
LEGEND

	Extended Walking Area		Flexible Delineators
	Bus Lane (Paint)		Bike Lanes
	Temporary Bus Stop Curb Extensions		Loading

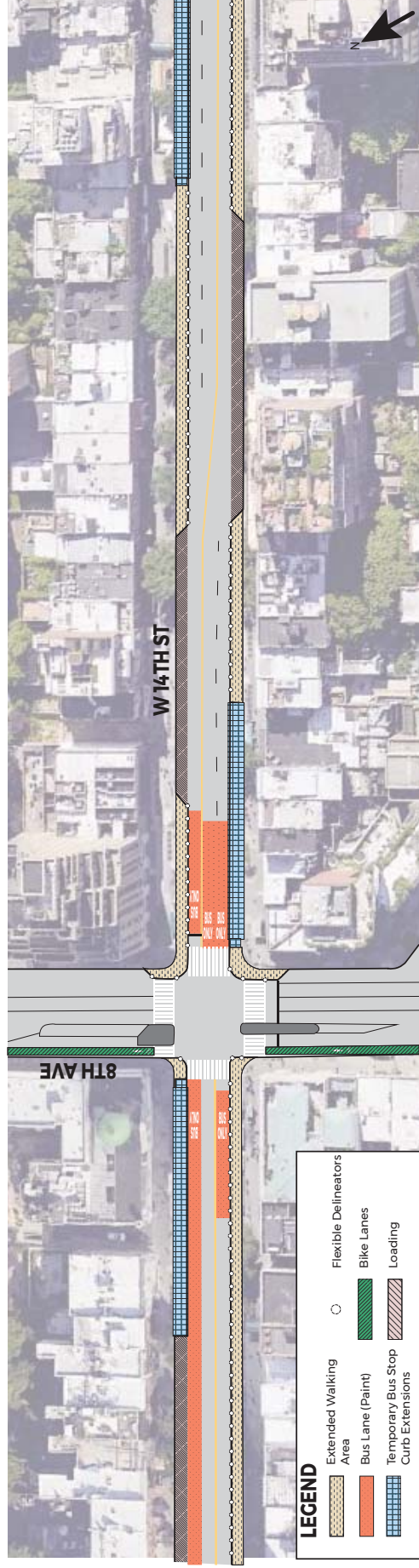
Temporary M14SBS Street and Sidewalk Treatments 10th Avenue - Hudson Street

Figure D-5

**Draft Design 6/18/18
EXISTING**



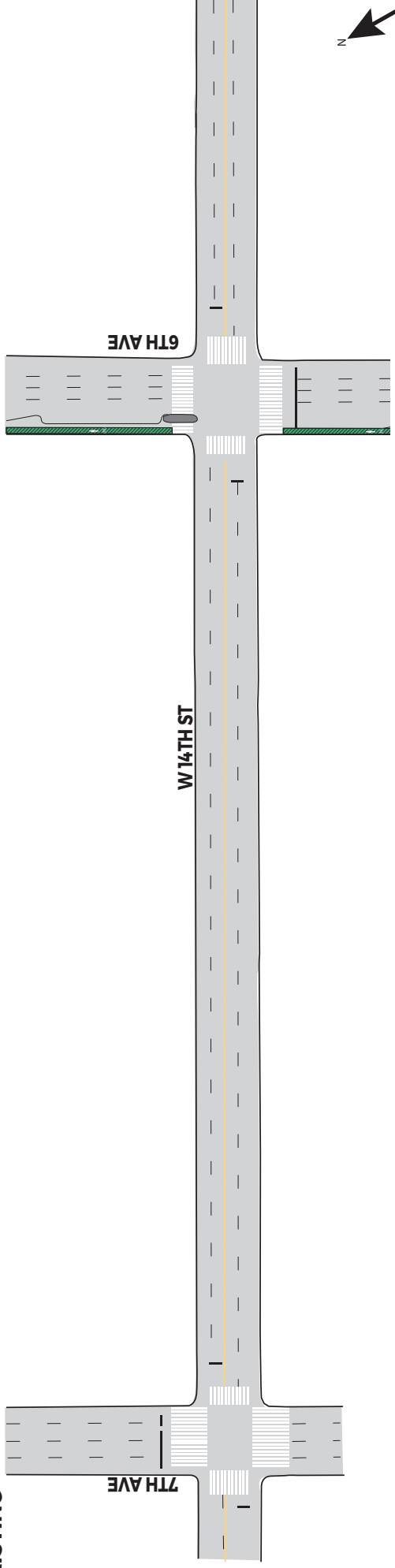
PROPOSED



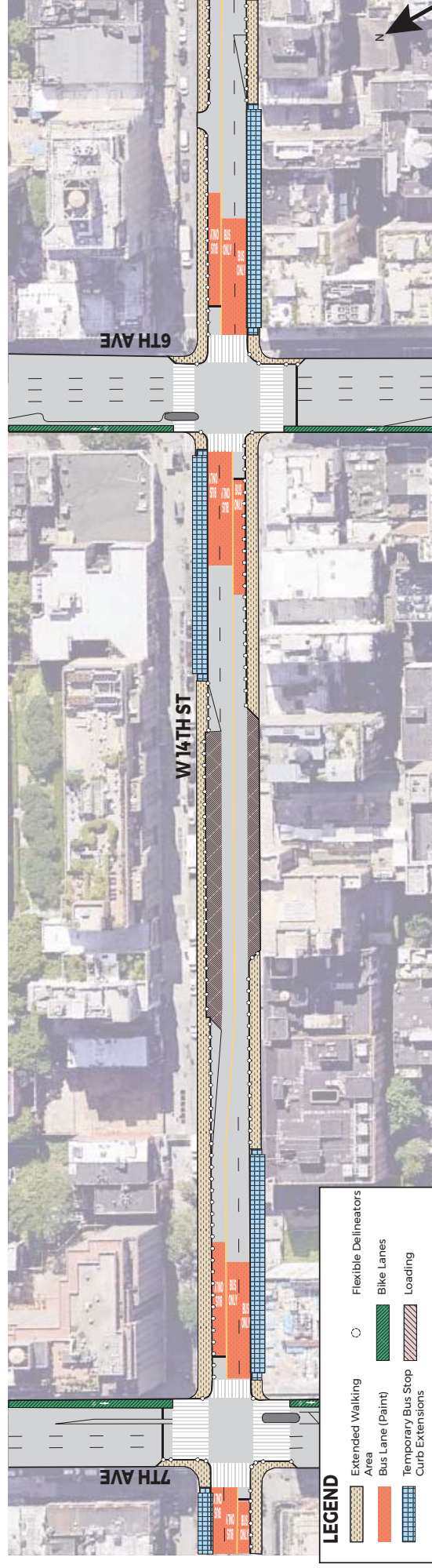
Temporary M14SBS Street and Sidewalk Treatments Hudson Street - 7th Avenue

Figure D-6

**Draft Design 6/18/18
EXISTING**



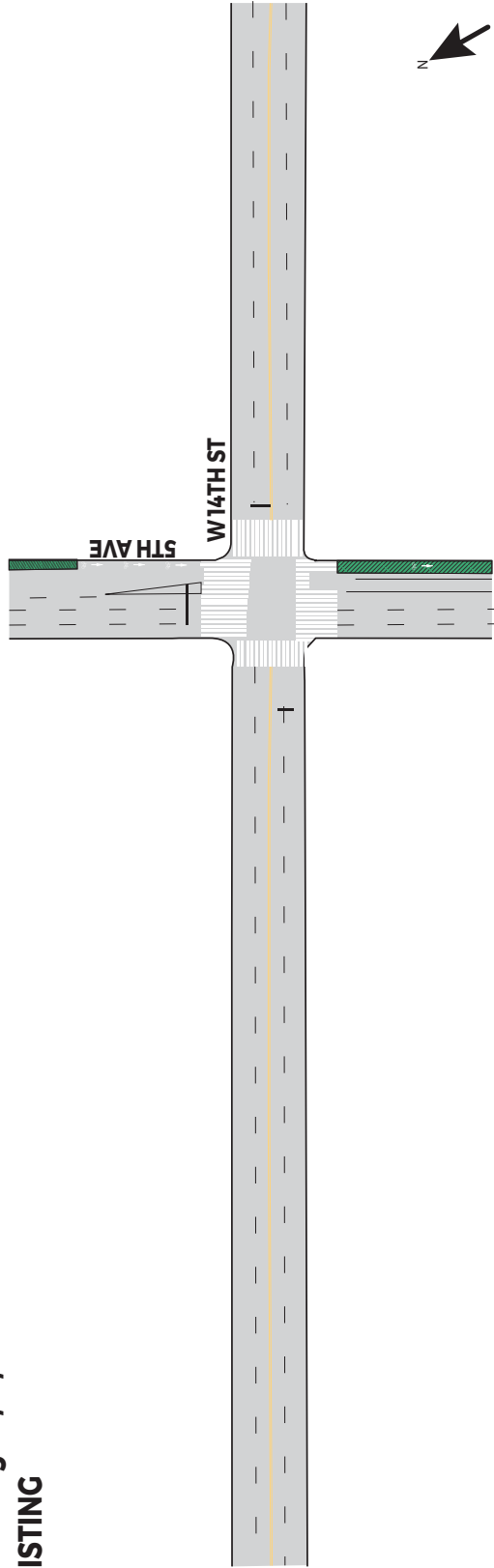
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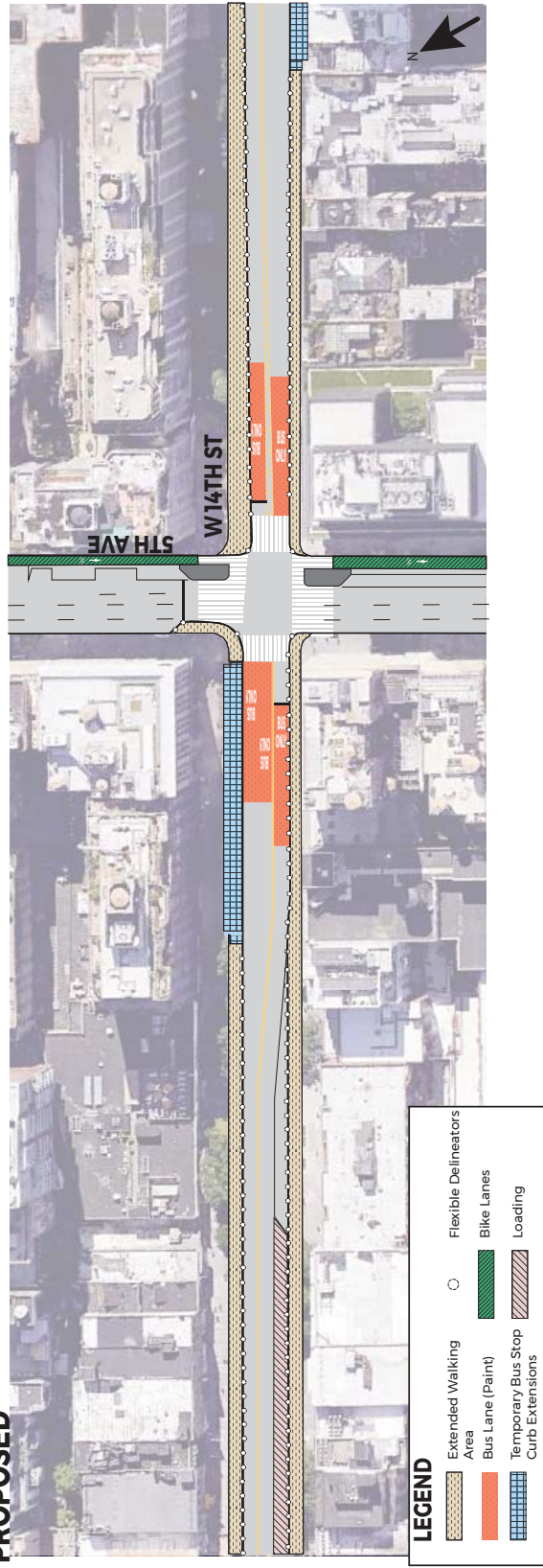
Temporary M14SBS Street and Sidewalk Treatments 7th Avenue - 6th Avenue

Figure D-7

Draft Design 6/18/18
EXISTING



PROPOSED

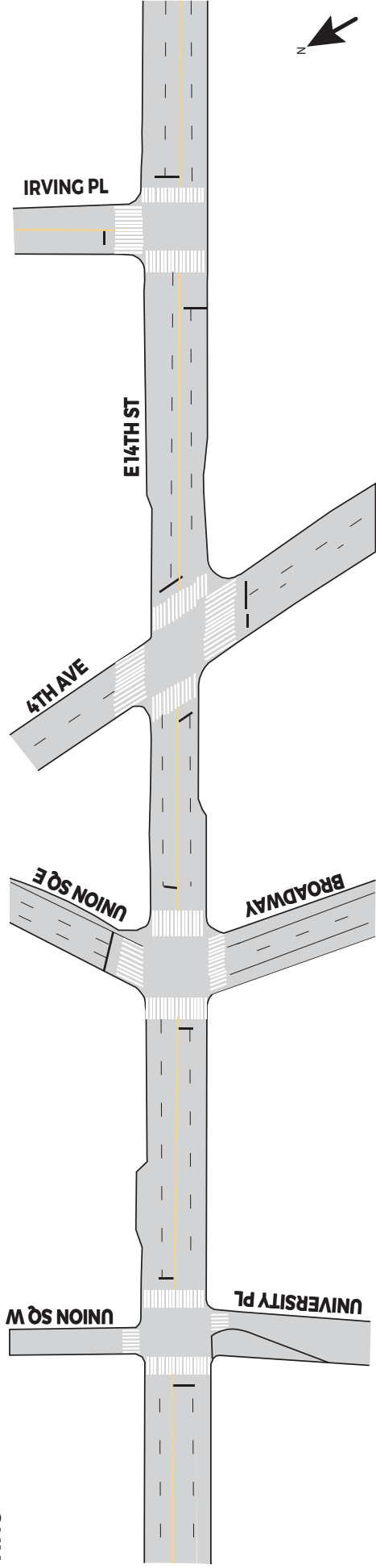


Temporary M14SBS Street and Sidewalk Treatments 6th Avenue - 5th Avenue

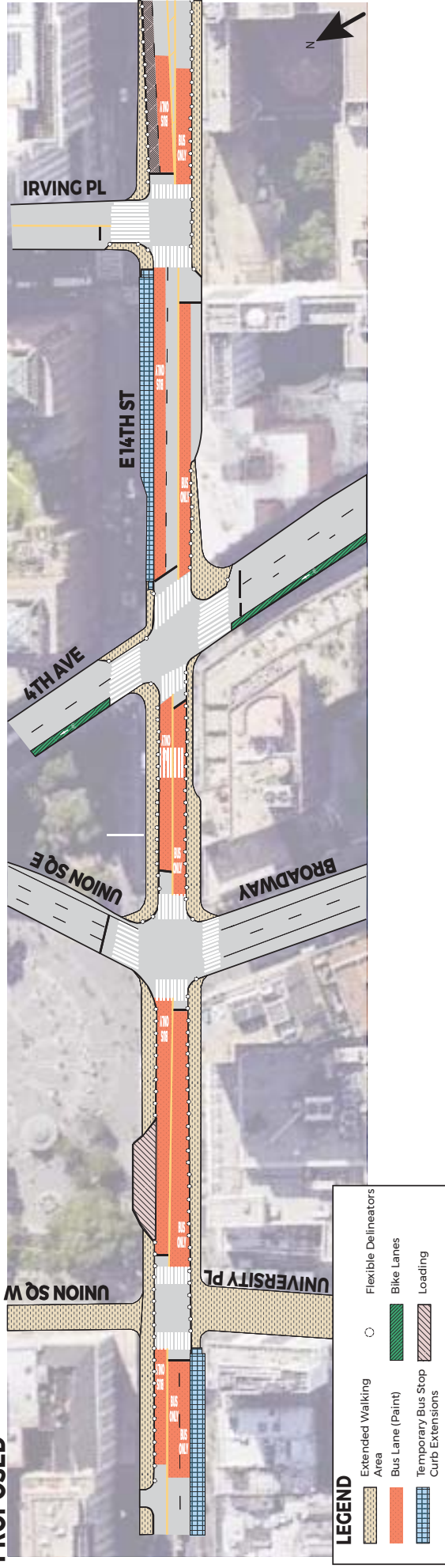
Figure D-8

Draft Design 6/18/18

EXISTING



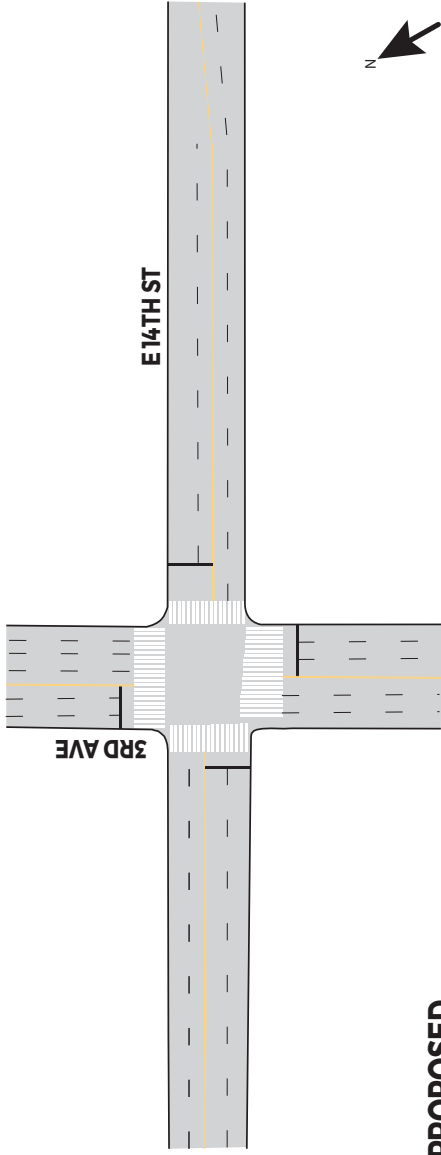
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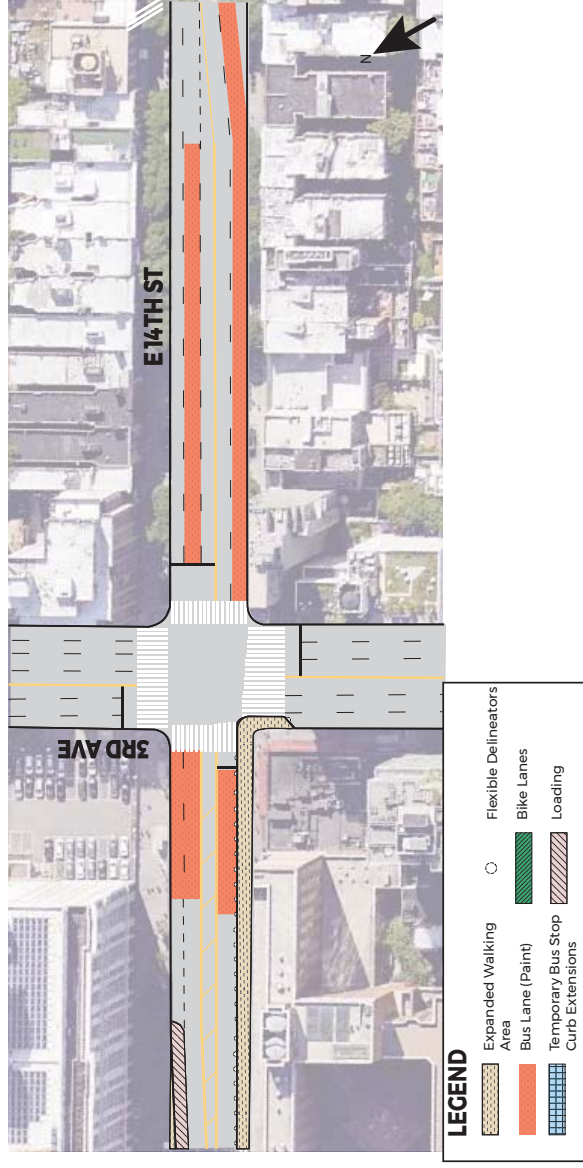
Temporary M14-SBS Street and Sidewalk Treatments 5th Avenue - Irving Place

Figure D-9

**Draft Design 6/18/18
EXISTING**



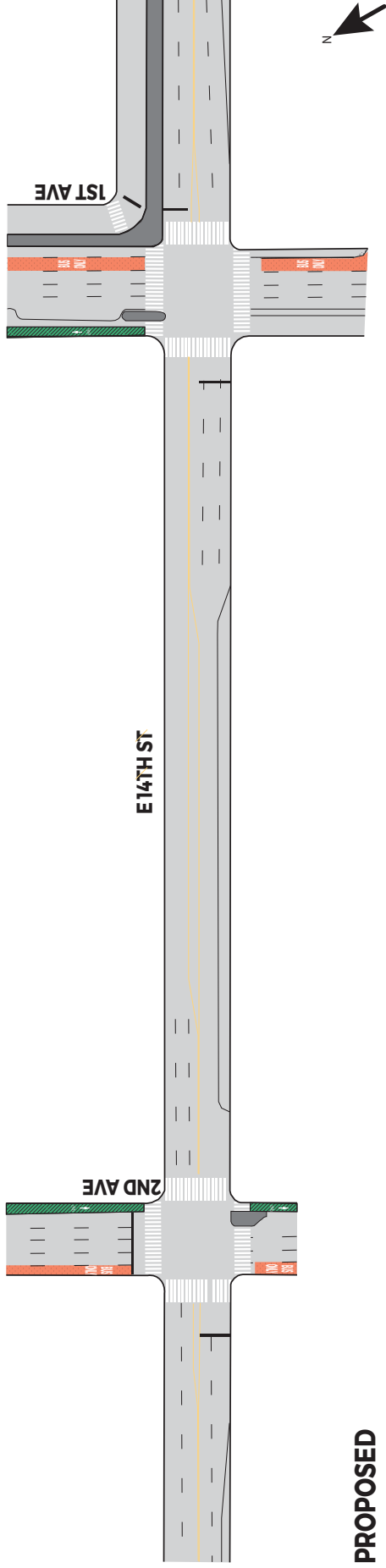
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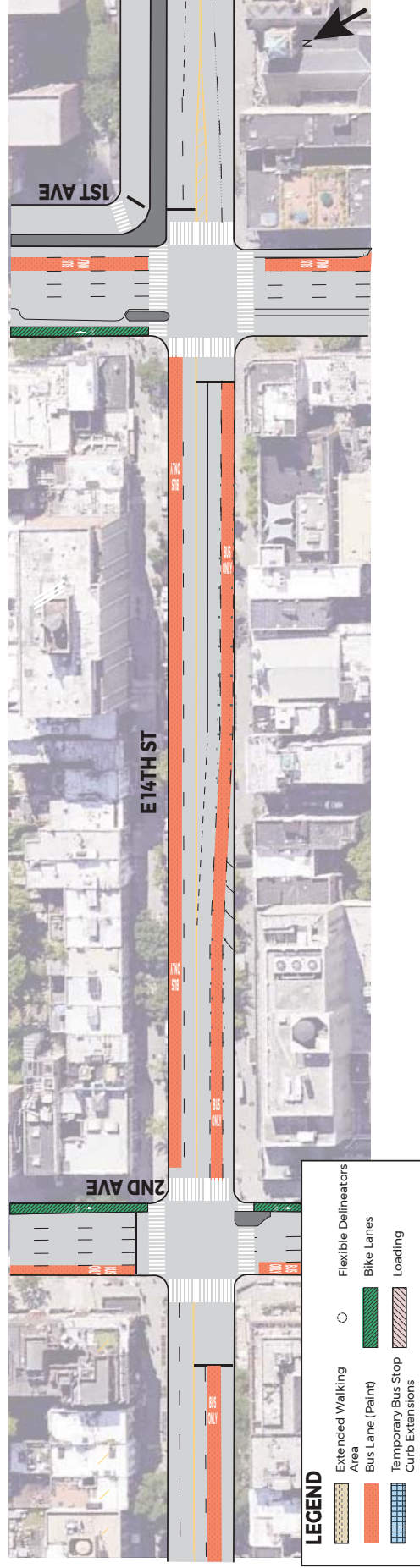
Temporary M14-SBS Street and Sidewalk Treatments Irving Place - 3rd Avenue

Figure D-10

**Draft Design 6/18/18
EXISTING**



PROPOSED



Temporary M14SBS Street and Sidewalk Treatments 3rd Avenue - 1st Avenue

Figure D-11

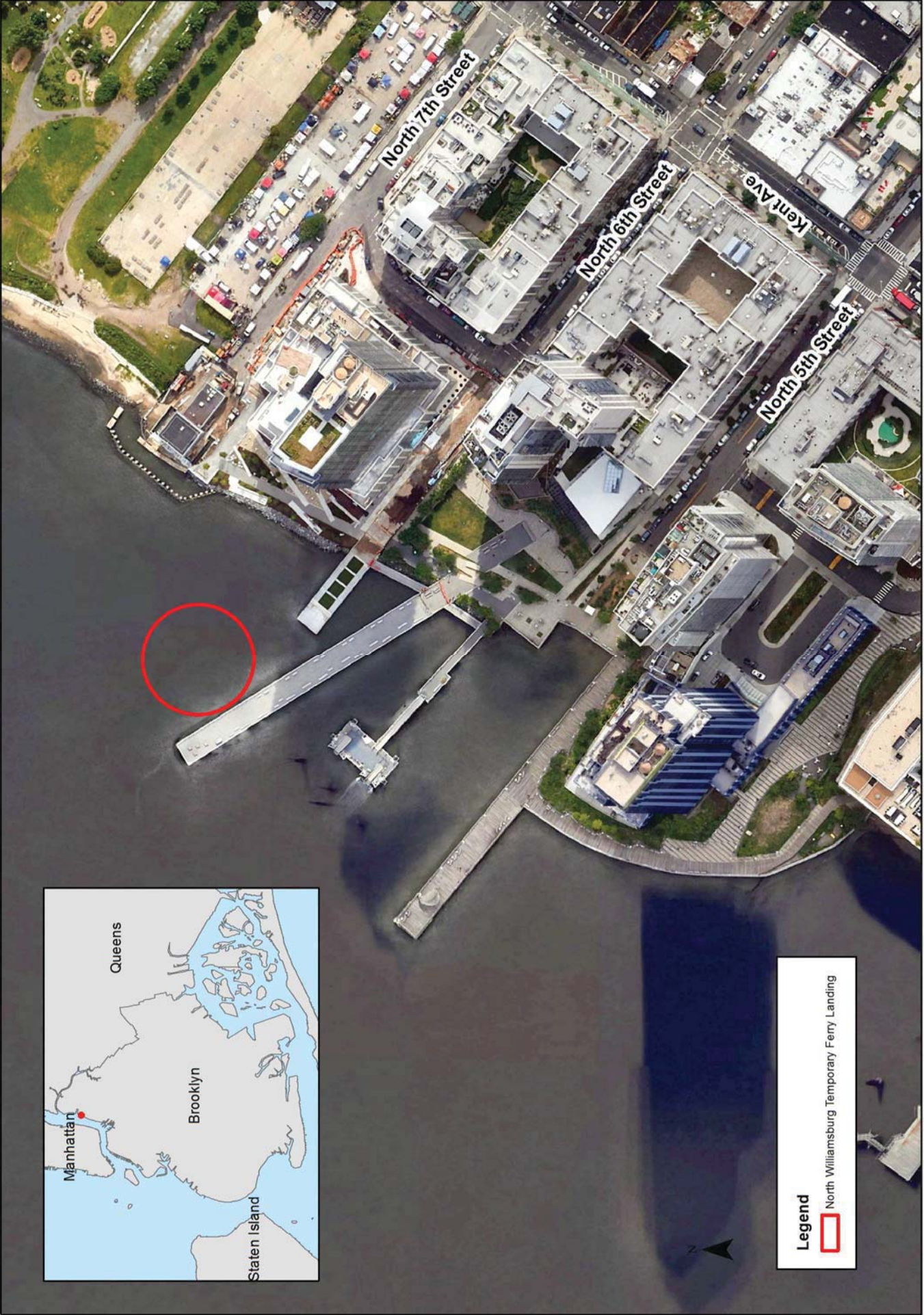


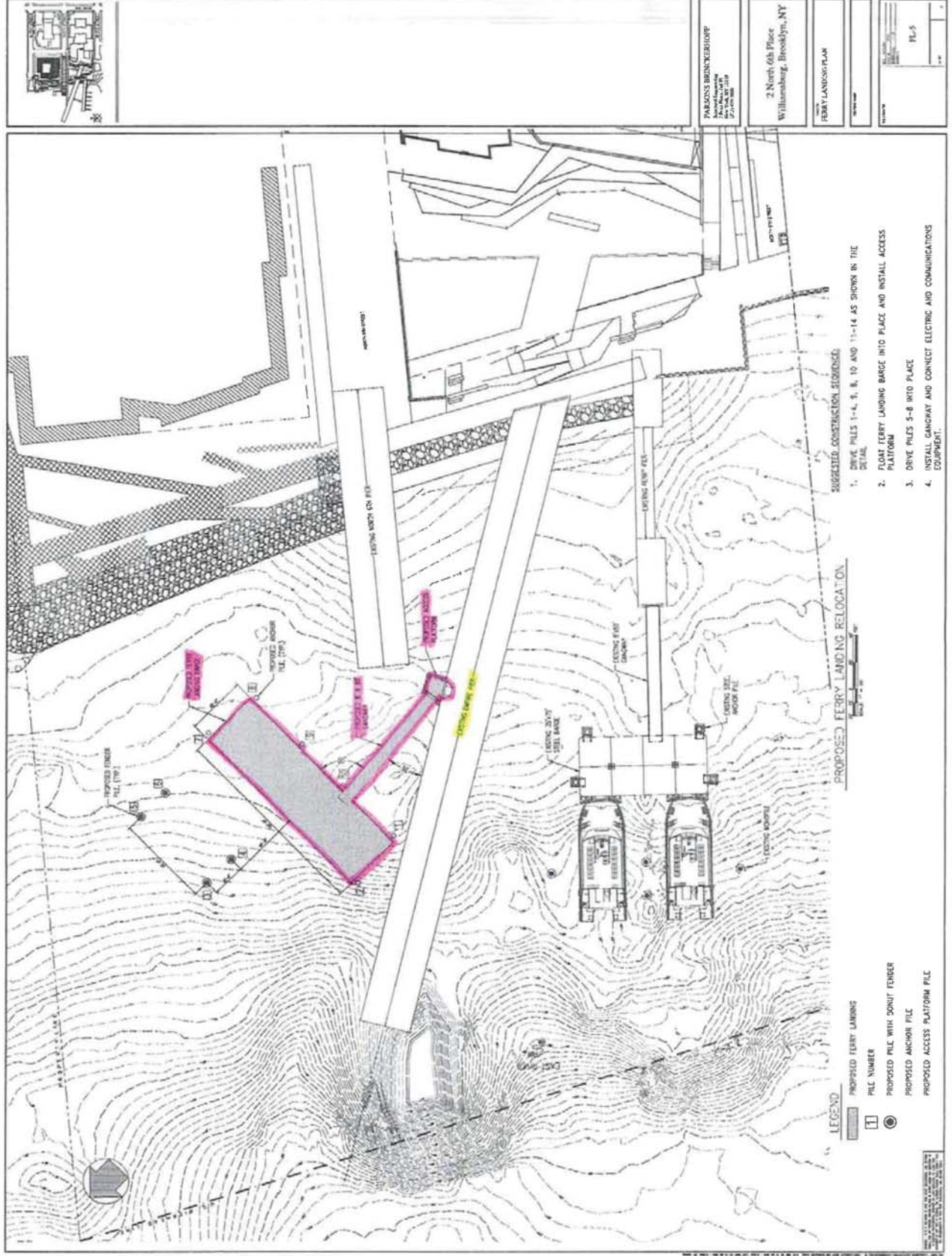
Legend:

- *** Ferry Landings
- Proposed Route

Figure D-12

PROJECT TITLE:
CANARSIE FERRY
PROPOSED FERRY ROUTE
LOCATION MAP





Detail Map of North Williamsburg Temporary Ferry Landing Figure D-14

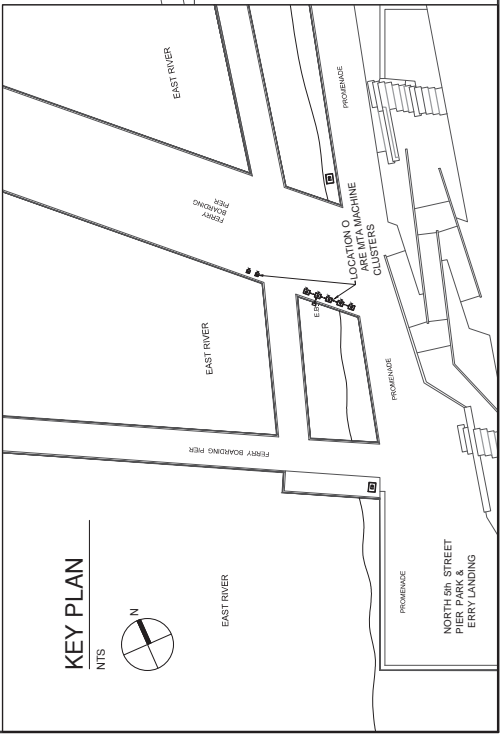
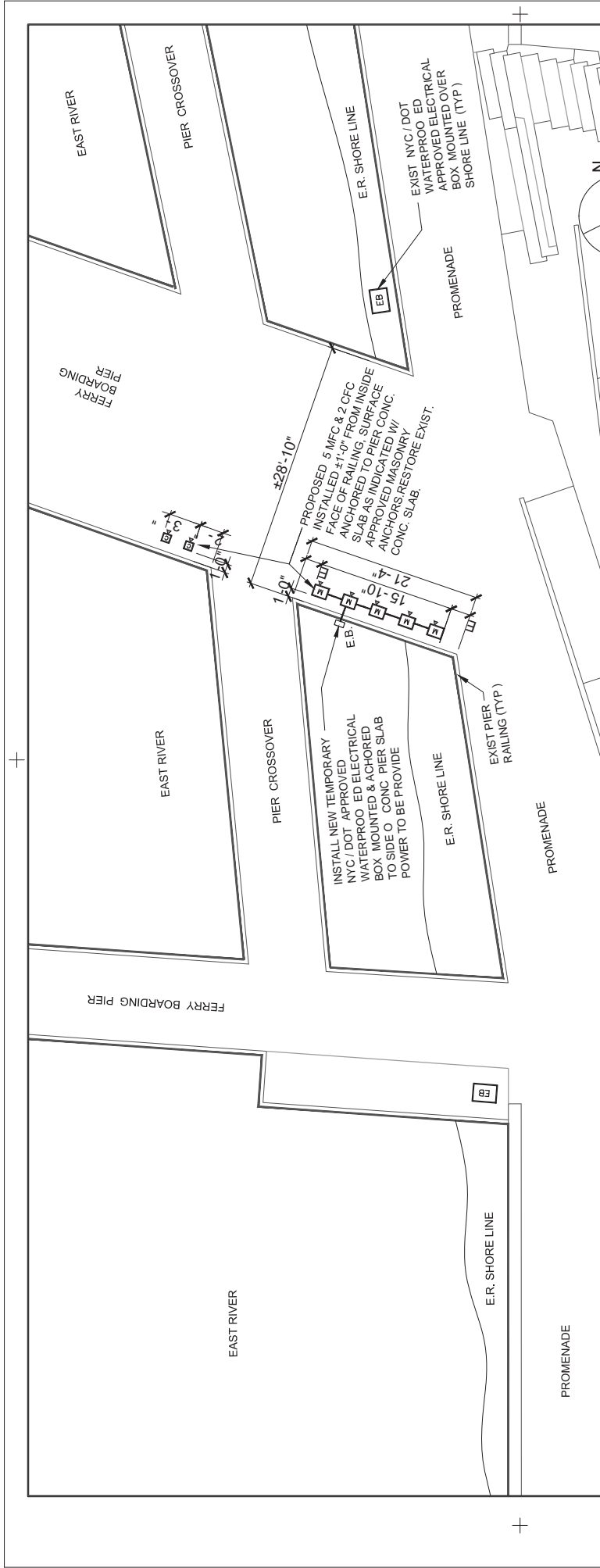


Figure D-15 M14-00 C

REVISION	DESCRIPTION	DATE	APPROVED

<p>JTA Bus Company <small>DEPARTMENT OF BUSSES CAPITAL PROJECTS AND NUMBERING</small></p>		<p>L TRAIN TUNNEL RECONSTRUCTION <small>SSISE UPIPMENT INSTALLATION IN THE BOROUGH OF MANHATTAN & BROOKLYN</small></p>	
<p>ARCHITECTURE / ENGINEERING</p>		<p>DATE: 03/20/17</p>	
<p>DRAWN BY: A. MESSE, R.A.</p>	<p>CHECKED BY: A. SMITH</p>	<p>PROJECT NO.:</p>	<p>REVISION:</p>
<p>DESIGNED BY: A. SMITH</p>	<p>APPROVED BY: S. MANTON, R.A.</p>	<p>M14-00 C</p>	<p>USER: \$NAME</p>

LEGEND	CONT.	NOTES
<ul style="list-style-type: none"> UTILITY LIGHT POLE POWER SOURCE NYC/DOT APPROVED ELECTRICAL CONDUIT NYC/DOT APPROVED ELECTRICAL SPICE BOX M.C. METROCARD ARE CARD MACHINE TRIANGLE C.C. COIN ARE CARD MACHINE TRIANGLE FRONT INDICATE O-MACHINE BUS STOP POLE W/ SIGN CONCRETE EXPANSION JOINT TRAFFIC POLE W/ SIGN DRAINAGE DRAIN 	<ul style="list-style-type: none"> CONCRETE MAN HOLE WAY UNDER TREE & PIT MTA CONTRACTOR INSTALLATION AREA WAY UNDER CONTRACTOR INSTALLATION AREA SHELTER CONTRACTOR INSTALLATION AREA CATCH BASIN 	<ol style="list-style-type: none"> FIELD VERIFY ALL DIMENSIONS AND FIELD CONDITIONS. PRESERVE AND RESTORE SIDEWALK PAVING CONDITION DISTURBED BY THIS EQUIPMENT INSTALLATION. ABIDE BY ALL D.O.T. SITE SAFETY REGULATIONS WHILE PERFORMING THE WORK. PARKS DEPT. PERMIT REQUIRED WHERE WORK IS TO OCCUR WITH 50' OF TREE. MTA CONTRACTOR & SIM (DOT) TO COORDINATE ON MEDIAN ISLAND EQUIPMENT INSTALLATIONS.

PRINT AS OF \$DATE\$ OF \$PLOT\$ IN \$\$\$\$

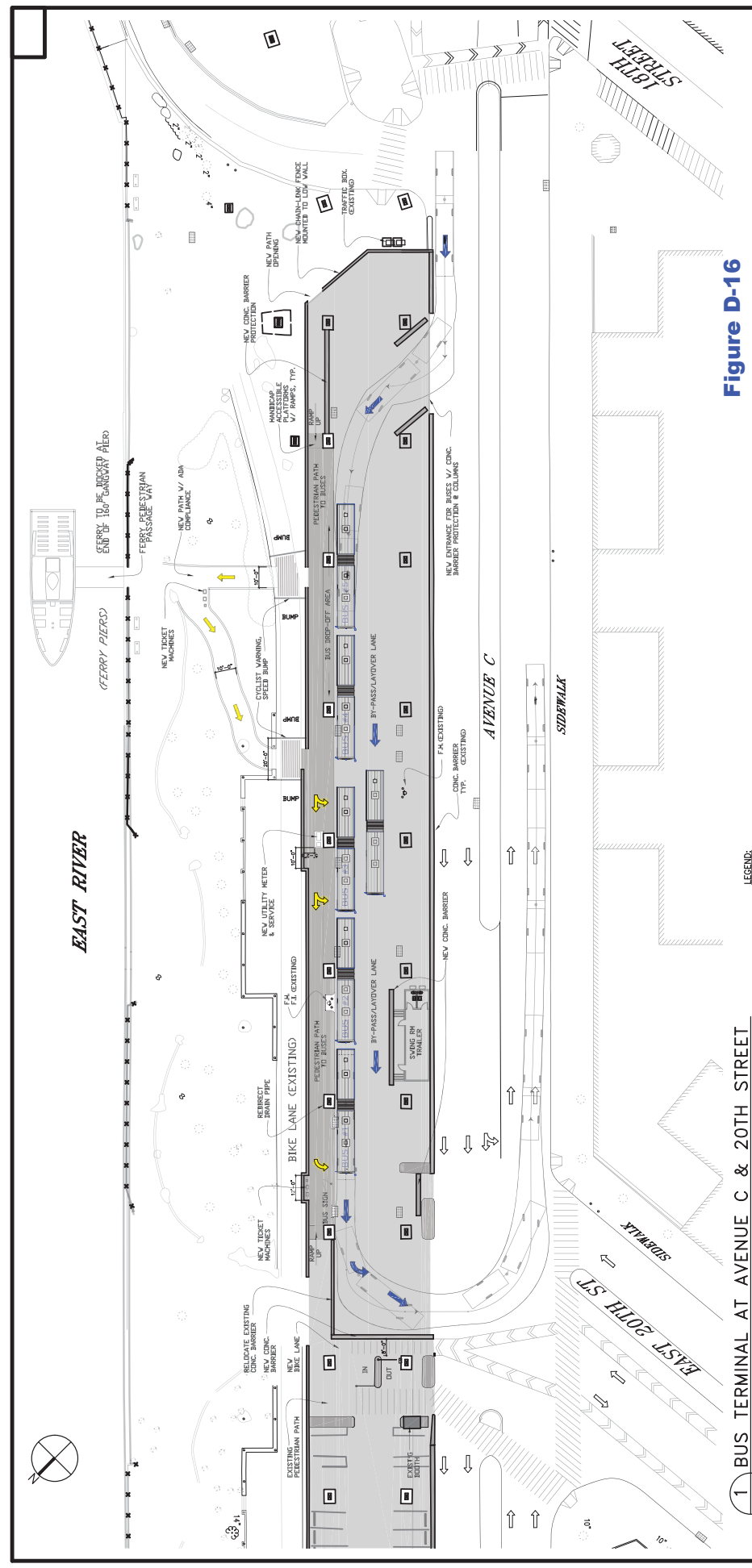


Figure D-16

1 BUS TERMINAL AT AVENUE C & 20TH STREET
A-1 SCALE
 PLAN VIEW

- LEGEND:**
- AREA OF WORK
 - ➔ PROPOSED BUS ROUTE
 - ➔ FERRY PASSENGER/PEDESTRIAN PASSAGEWAY TO BUS
 - ⊠ EXISTING COLUMN LOCATIONS (FOR EAST RIVER DRIVE ELEVATED ABOVE)
 - ⊠ F.H. (EXISTING FIRE HYDRANT)
 - ⊠ STORMWATER DRAINAGE GRATE (EXISTING)
 - ⊠ TICKET MACHINES: (2) METRO CARD FARE COLLECTOR & (1) COIN FARE COLLECTOR
 - ⊠ BIKE LANES (EXISTING)

- NOTES:**
1. LAYOUT PROVIDES FOR 5 ARTIC BUS STOPS W/ TEMPORARY HANDICAP ACCESSIBLE PLATFORM.
 2. AUTO-TURN PERFORMED WITH 60' ARTICULATED BUS. THE EXACT LOCATIONS OF BUS STOPS AND TURNING MAY VARY.
 3. SWING ROOM TRAILER W/TOILET FACILITIES (45' X 12').
 4. REMOVAL OF CONCRETE BARRIERS AND MODIFICATION OF GRADE & CURB IS REQUIRED AT BUS ENTRANCE POINT.
 5. EXISTING TRAFFIC LIGHT TO CONTROL EXITING OF BUSES.
 6. THE PRIVATE PARKING AREA ADJACENT AREA OF WORK TO BE CLOSED AT 20TH STREET.
 7. UPGRADE TO LIGHTING, SIGNAGE AND BIRD CONTROL IS REQUIRED.

REVISION	DESCRIPTION	DATE	APPROVED

 New York City Transit Authority DEPARTMENT OF BUSES ENGINEERING SUPPORT SERVICES FACILITY OPERATIONS DIVISION	SCHEMATIC PLAN	
	BUS TERMINAL LAYOUT PLAN @ AVENUE C & 20TH STREET	
ARCHITECTURE G. RITACCO, R.A./E. LEDOU G. RITACCO, R.A./E. LEDOU	DATE: 02/02/2018 DRAWING NO.: A - 1	APPROVED BY: Y. CHAN, R.A. G. MONTOSH, R.A.

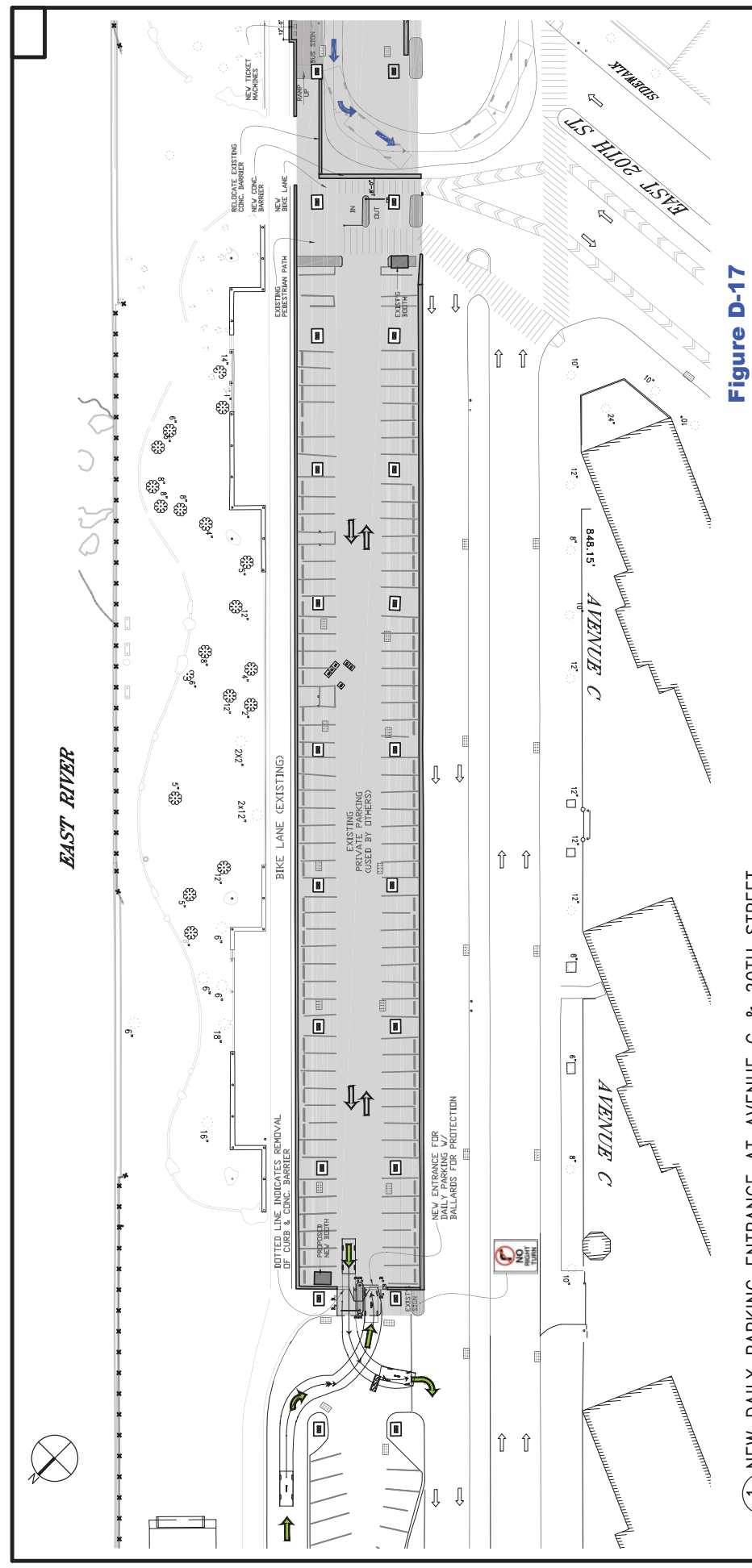


Figure D-17

1 NEW DAILY PARKING ENTRANCE AT AVENUE C & 20TH STREET
 PLAN VIEW
 SCALE: A-2

- LEGEND:**
- DIRECTIONAL PATH: ENTRANCE/EXIT TO DAILY PARKING LOT
 - PROPOSED BUS ROUTE
 - NEW BALLARD
 - EXISTING COLUMN LOCATIONS (FOR EAST RIVER DRIVE ELEVATED ABOVE)

REVISION	DESCRIPTION	DATE	APPROVED

 New York City Transit Authority DEPARTMENT OF BUSES ENGINEERING SUPPORT SERVICES FACILITY OPERATIONS DIVISION	ARCHITECTURE G. RITACCO, P.A./ E. LEONG G. RITACCO, P.A./ E. LEONG	DATE: 3/20/2018 DRAWING NO.: A-2
	DESIGNED BY: Y. CHAN, P.E. CHECKED BY: Y. CHAN, P.E. APPROVED BY: G. MONTOSH, P.E.	SCHEMATIC PLAN NEW DAILY PARKING ENTRANCE @ AVENUE C & 20TH STREET

INNER ROADWAY:

- Buses and trucks not permitted on inner roadway
- Traffic from BQE and local streets backs up past inner/outer roadway split



OUTER ROADWAY:

- Not wide enough for two true lanes when buses, trucks are present
- Queues for heavy right turn at Clinton St in Manhattan lead to spillback congestion

WILLIAMSBURG BRIDGE: EXISTING CONDITIONS

Figure D-18

- Shifting 2,200+ cars currently using outer deck to inner deck for a bus lane would lead to very long queues spilling on to local streets
- Even with bus lanes on approach streets, traffic sorting at ingress and egress of bridge slows buses to “do nothing” speeds

HOV 3 restrictions on all lanes are necessary to reduce traffic volume enough to make bus lane work



WILLIAMSBURG BRIDGE: DURING THE SHUTDOWN

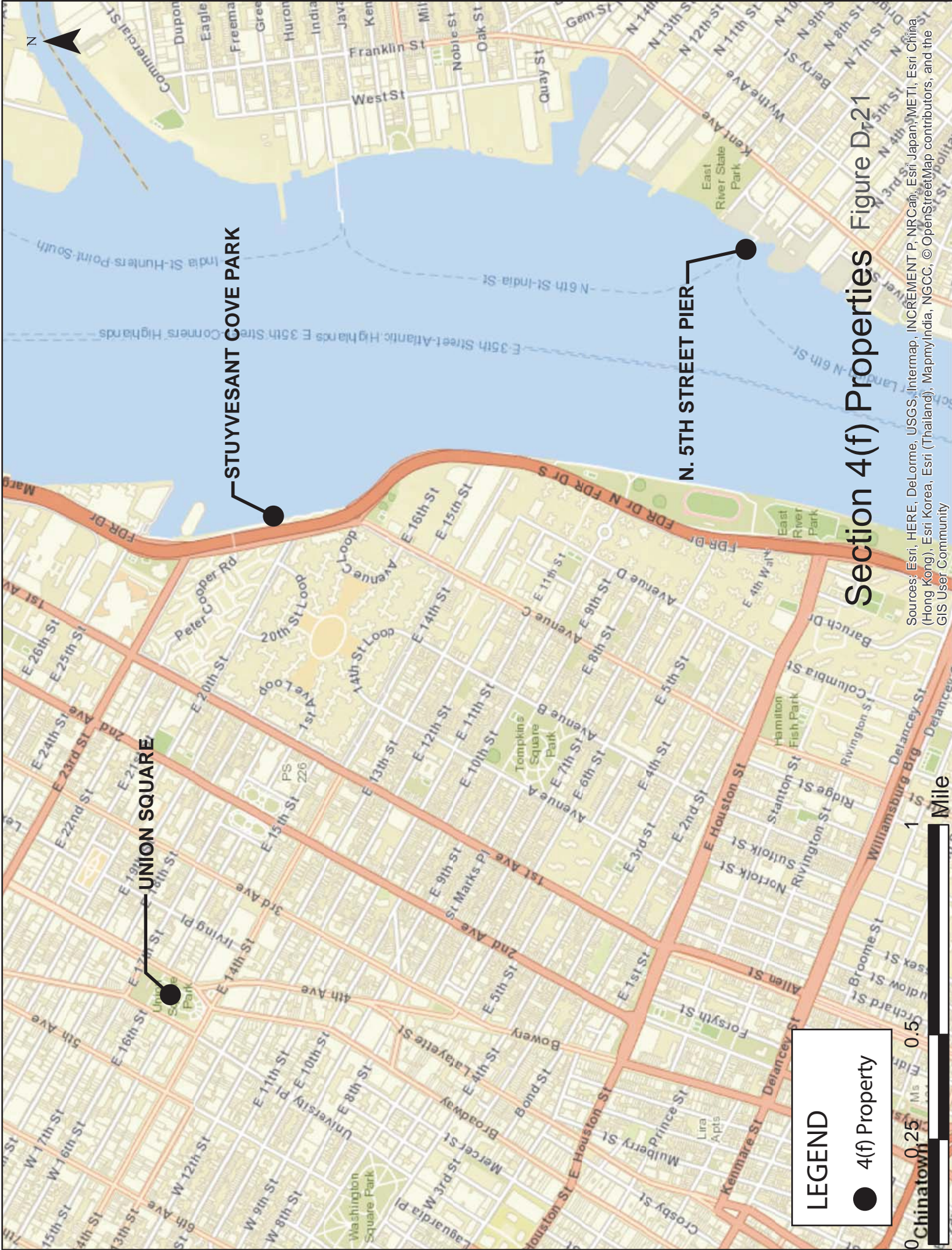
Figure D-19



Figure D-20
HOV Restrictions
 on Williamsburg Bridge

*Signage to alert drivers to the HOV restrictions would be placed well before the start of restrictions

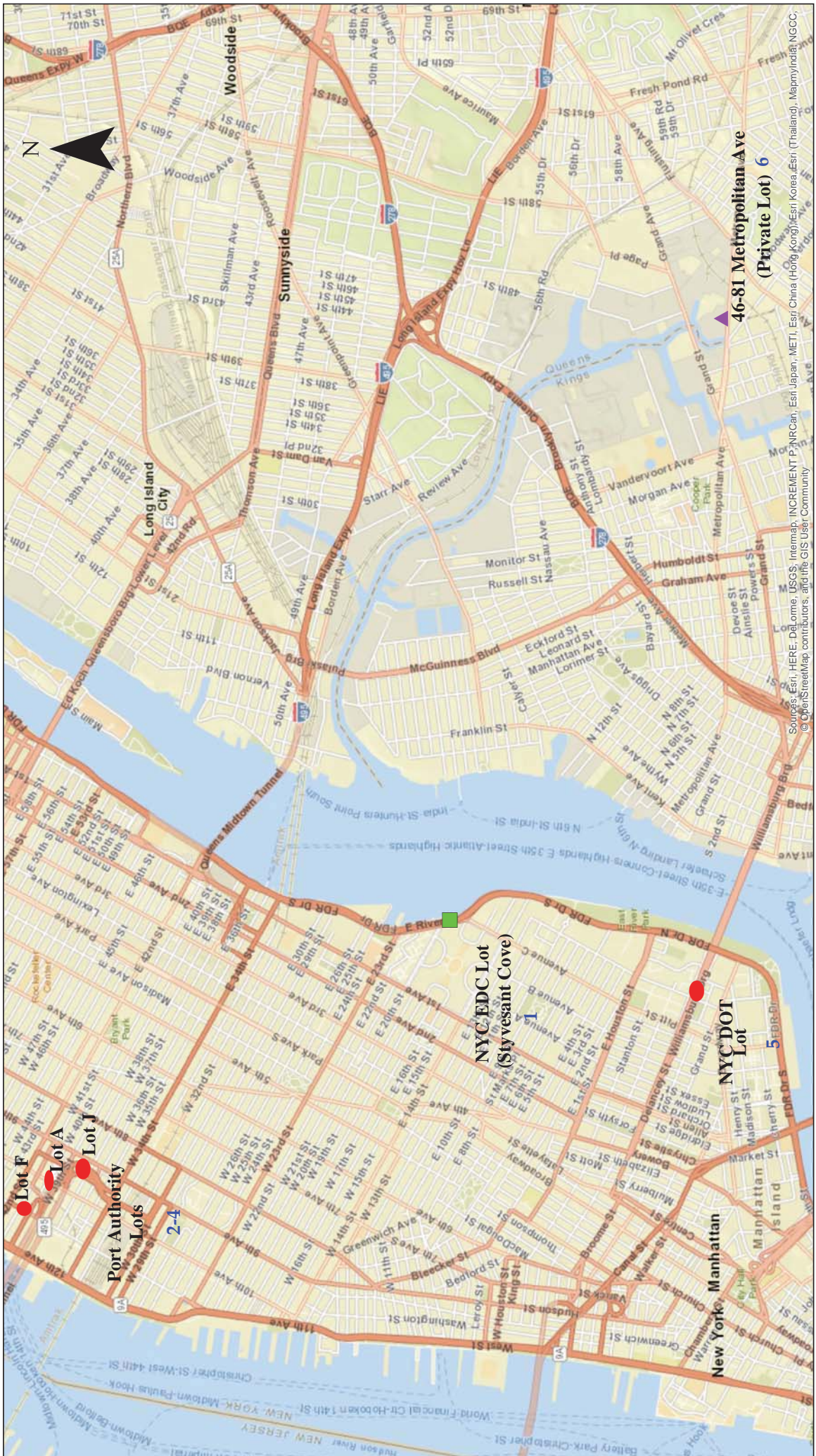
- Westbound HOV Between Roebling St (BK) and Clinton St (MN)
- Eastbound HOV Between Clinton St (MN) and Roebling St, Havemeyer St, Brooklyn-Queens Expressway (BK)



LEGEND
 ● 4(f) Property

Section 4(f) Properties Figure D.21

Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, Mapbox, OpenStreetMap contributors, and the GIS User Community



Date: 12/9/2017

- Legend:**
- M14 SBS Storage
 - Temporary Bus Terminal
 - ▲ Inter-Borough Storage

LOCATION MAP

ALL SITES CONSIDERED FOR OVERNIGHT STORAGE:
 CANARSIE ALTERNATIVE SERVICE PLAN IN MANHATTAN

Figure D-22



Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community

Appendix E: 14th Street Corridor Traffic Analysis Overview

14th Street Corridor Traffic Analysis Overview

Introduction

In late October 2012, Hurricane Sandy devastated New York City and left 43 New Yorkers dead, 2 million people without power, flooding in 17% of the city affecting some 90,000 buildings, and \$19 billion in damages to the City alone.

The effects of the extensive damage to the subway system serve as a reminder of Sandy's huge impact. All six of the MTA-NYCT's East River subway tunnels were inundated with storm water surges, corroding the various mechanical, electrical and communications components with saltwater.

The 92-year-old tubes of the Canarsie Tunnel, connecting Brooklyn and Manhattan via the L Line, were flooded with seven million gallons of salt water. While the tubes were drained and service was restored just 10 days after the storm, it was clear that a full reconstruction of the tunnel was required.

Service Planning for the Canarsie Tube Closure

Starting in April 2019, the 15-month closure of the L train's Canarsie Tunnel will **directly affect 275,000 daily customers**. While MTA New York City Transit (NYCT) and the New York City Department of Transportation (DOT) have been working together to provide alternatives and new travel options, it is difficult to overstate the significant disruption and inconvenience being brought to the lives of hundreds of thousands of New Yorkers.

With most L commuters moving to other subways, even those New Yorkers who do not ride the L will see their commutes affected by the influx of L riders on their subway lines. But for displaced customers looking to travel between Brooklyn and Manhattan, and along 14th Street within Manhattan, the L train closure will demand new surface transit alternatives.

When L train service is suspended, the 14th Street corridor will need to serve up to **84,000 bus transit customers each day**, making it the busiest bus corridor per mile in the entire United States. In addition to the subway service the MTA plans to add on other lines, the unprecedented disruption will be mitigated by a number of planned changes, including new temporary ferry service, temporary L-Alternative bus service, and -- with cycling and pedestrian volumes expected, at minimum, to double along the Manhattan portion of the L -- widened sidewalks and new bike lanes.

Proposed Design and Service Plan

Fourteenth Street is a mixed-use corridor that supports dozens of residential buildings along with a vibrant mix of commercial, health care and educational institutions. The corridor today is a

major destination for 16 subway lines including the L train. In addition to L train passengers, the M14A/D local bus service carries 30,000 daily passengers on the street’s surface today.

To accommodate this extraordinary ridership for the duration of the closure, NYCT and NYC DOT are proposing a robust service plan of additional bus service, made possible by critical updates to the street’s design to accommodate the surge of commuters at street level.

Based on the analysis described below, NYCT plans to run very frequent bus service on 14th Street. A new M14 Select Bus Service (SBS) route – featuring off-board fare collection and all-door boarding – is planned to operate between a temporary East Side ferry terminal at 20th Street and Avenue C and a West Side terminus at 14th Street and Tenth Avenue, supplementing the existing M14A and M14D bus routes. Together, these routes are expected provide a bus every 1-2 minutes at peak times in each direction along the street.



Figure 1: Busway extents and proposed M14SBS stops

To deliver reliable service to the large number of new crosstown bus passengers, NYCT aims for an end-to-end run time of approximately 17 minutes – a **37% reduction** from current M14A/D travel times. If these ambitious travel-time goals are not met, or are inconsistent, would-be passengers are more likely to seek out alternative modes including personal or for-hire vehicles only exacerbating traffic conditions.

To support the extraordinary transit demand at street level, DOT must also balance sometimes competing demands: the need for increased pedestrian activity and protected bikeways; commercial loading needs for trucks, taxis, FHVs and Access-A-Ride; and the effects of temporarily displaced traffic as a result of street design changes. All of this must be done while maintaining the agency’s foremost Vision Zero focus on safety.

To best achieve this, DOT has developed the following proposed designs.

14th Street Busway

The core of 14th Street (Ninth to Third Avenues eastbound and Third to Eighth Avenues westbound) is expected to serve as an exclusive “Busway” with peak hour restrictions. Additionally, offset bus lanes are planned to be added from Eighth Avenue to Ninth Avenue westbound, and a combination of curbside and offset bus lanes are expected to be added from First Avenue to Third

WHO CAN USE THE BUSWAY?	
✓ buses	✗ taxis/FHVs
✓ local deliveries	✗ through trucks
✓ cars accessing garages	✗ general traffic
✓ Access-A-Ride and emergency vehicles	

Avenue in both directions. The street redesign would likely bring temporary bus bulbs and expanded sidewalks to the corridor. DOT also plans to add new pedestrian space along Union Square West from 14th to 15th Streets and 16th to 17th Streets.

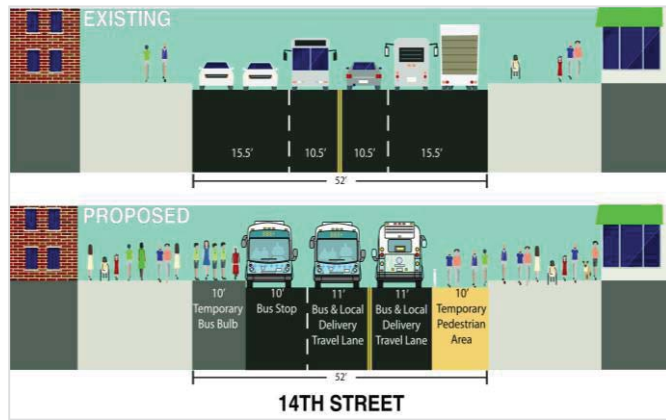


Figure 2: Existing and proposed typical 14th Street busway cross section

Under this plan, access to the Busway would be mostly limited to M14 local and SBS buses; however, Access-A-Ride vehicles, local deliveries, emergency vehicles, and private cars accessing parking garages would also be permitted.

14th Street bus priority treatments would be in effect during peak periods, with specific hours still to be determined.

13th Street Bike Path

With the L Train closure, DOT expects bike ridership to double at a minimum, and we anticipate as many as 5,000 new daily cyclists will use streets around Union Square. We must provide safe crosstown routes to major north-south bike lanes on avenues, destinations along 14th Street, and for other short trips that now use the L Train. The projected heavy bus and pedestrian uses along 14th Street will make the street not conducive to cycling. In order to meet the anticipated increased demand, DOT has planned a protected bike lane along 13th Street.

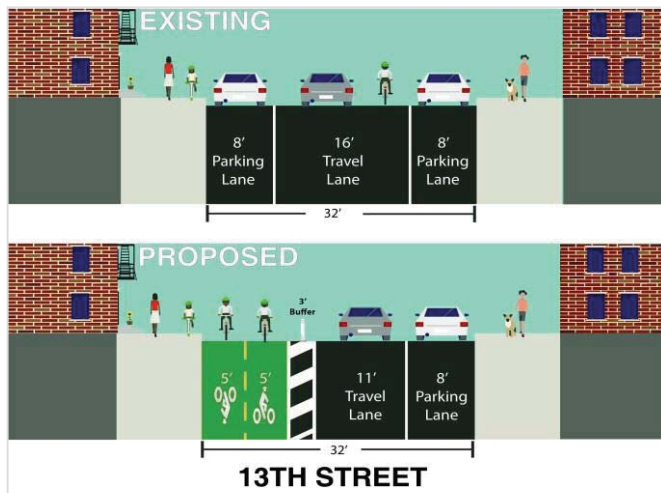


Figure 3: Existing and proposed typical 13th Street bike path cross section

A 13th Street bikeway would provide a path in both directions that is separated from traffic, offering a safe, accessible option for thousands of daily cyclists. Parking on the south side of the street would be removed and replaced with a standard 2-way path separated from the roadway by a buffer and flexible delineators. The effective width of the roadway would remain the same and sidewalk space would not be altered in any way. DOT is reviewing the curb regulations along the northern curb to accommodate other curb access needs, including local access. In order to minimize heavy parking loss associated with a protected lane, 13th

Street was chosen as a two-way bike corridor rather than splitting the lanes into a one-way pair.

While 236 parking spaces along the street's south curb would be lost, all vehicular travel lanes would remain. Intersections would be widened to increase capacity at key points, bikes would be physically separated so they would not be contending for space on the roadway, and most

importantly, protected lanes would increase ridership and shift people away from taking for-hire vehicles on an already over-burdened street. Overall, a 13th Street bikeway would dramatically increase what is known among traffic planners as “*person throughput*,” greater capacity that would improve mobility for area residents and visitors during the L Train shutdown period.

Why a bike lane on 13th Street?

- **13th Street Two-Way Path: DOT Preferred option**
 - Minimizes parking loss
 - Closest street to 14th Street, providing the greatest benefit to L train commuters
 - Provides longest continuous east-west connectivity (1.5 miles from Avenue C to Eighth Avenue) – with potential to continue along shared or standard lanes to Hudson St.
 - A two-way path provides 14th Street access to the greatest number of riders, reduces the overall parking loss (vs. two one-way paths), and is the most direct route to connect both eastbound and westbound riders to the every existing north/south protected lane to and from midtown Manhattan.

Why other streets (14th Street, 12th Street, or 15th/16th Street) are less desirable

14th Street

- Tens of thousands of new pedestrians and frequent bus service along new 14th Street Busway would create high capacity for conflicts.

12th Street

- Farther from key retail and transit destinations on 14th Street
- 12th St is a cobblestoned roadway west of Greenwich Ave, and does not allow full east-west connections (street shifts southwest as it goes west of Greenwich Ave)

15th/16th Street

- These streets do not offer a full east-west connection, as they are interrupted by Union Square Park, Stuyvesant Square Park, and Stuyvesant Town.
- Bikes could not be diverted through parks due to the potential for unsafe conflicts with high pedestrian volumes.
- Existing conventional bike lanes will serve as feeder and alternate routes for riders heading north of 14th Street
- Estimated parking loss: over 400 spaces

A one-way pair on 12th/13th Streets is feasible, but...

- Any protected bike lane would require removing parking on one side of the street, doubling the parking loss of the 13th St proposal.

- A two-way path is most efficient: because of narrowness of these crosstown streets, any protected lane requires parking loss. Most streets in the area are 29-33 feet wide. A parking-protected, one-way bike path with parking on both sides requires at least 34 feet and a 2-way lane requires at least 37 feet.

What are the projections for increased bike usage?

- Based on the experience in 2012 after Hurricane Sandy closed the Canarsie Tunnel for more than a week, we project bike ridership over the Williamsburg Bridge will increase at least 300% from today's average volume of 7,100. This volume will disperse throughout Manhattan using the existing network and new protected lanes along Grand Street, Delancey Street, First Avenue, Second Avenue, as well as onto 13th Street.
- DOT projects 2,000 to 5,000 daily cyclists would use the 13th Street protected lane during the L Train's closure. This number is based on cyclist counts on existing lanes near Union Square and the growth of cycling expected on the Williamsburg Bridge, and experience on similar protected bike lane projects where ridership has grown by at least 300%. DOT anticipates that the loss of the L train will also spur cycling volume among Manhattan residents.

Union Square Pedestrian Plaza Expansions

As a result of the Canarsie Tunnel closure, the Union Square subway station is projected to see some of the greatest changes in passenger flows. With that, increased pedestrian space and bicycle parking space would be needed to provide relief to already congested sidewalks and meet the new pedestrian and cycling demand.

Along with additional temporary pedestrian space along the curb lanes of 14th Street, DOT is considering creating much-needed new pedestrian space on Union Square West from East 17th Street to East 16th Street, and from East 15th Street to East 14th Street, a formal bike connection from Broadway to University Place, and space for market truck parking to ease pedestrian congestion at the northwest end of the square near the N/Q/R/W train entrance. The block between East 16th Street and East 15th Street will remain open for local access and circulation for deliveries and passenger pick-up and drop-off.

DOT is exploring either a similar pedestrian treatment on the block of University Place between E 14th Street and E 13th Street, just south of Union Square. In addition to an expanded pedestrian zone, this block is anticipated to be programmed for both a high-capacity, secure bike parking facility and a Citi Bike valet station.

Traffic volume on these particular streets is already relatively low. With access to 14th Street already restricted to accommodate the Busway, these streets offer limited utility for traffic management. Further refinement of the traffic analysis will take these closures into account, but the overall effects on traffic are expected to be negligible.

Traffic Analysis Findings

Introduction

DOT recognizes that the analysis of the 14th Street corridor during the L train closure relies on the full network of streets adjacent to 14th Street. The side streets near 14th Street have a more residential character than 14th Street, and carry a fraction of the people, so the plan reflects the imperative to balance the needs of local access on these streets while addressing the larger challenge of accommodating tens of thousands of crosstown subway riders who will shift to buses, bikes and walking. The following analysis presents the effects of traffic shifts as a result of the proposed plan both along side streets in the area and along 14th Street itself – the crosstown street we estimate will carry the vast majority of crosstown commuters displaced by the L train closure.

Analysis was conducted using the industry-standard Advanced Interactive Simulator for Urban and Non-Urban Networks (known as “*Aimsun*”) micro-simulation tool. Planners examined the effects of crosstown travel on 12th–16th Streets based on scenarios that modeled various bus priority configurations and general traffic access along 14th Street. The scenarios modeled were: 1) **Existing Conditions** with the L train running and estimated traffic growth for 2019; 2) a **Do Nothing** scenario where the L train is closed, NYCT runs additional bus service to support the corridor, but DOT makes no changes to the street; 3) an **SBS** scenario that offers standard transit priority lanes and typical turn restrictions found along other crosstown SBS routes; 4) a ‘**Short Busway**’ that restricts general traffic access on 14th Street between Third Avenue and Sixth Avenue; and 5) a similar **Busway** scenario spanning from Third Avenue to Eighth Avenue in the westbound direction and Ninth Avenue/Hudson Street to Third Avenue in the eastbound direction. Additionally, both Busway options offer standard bus lanes outside of the blocks with restricted access.

The *Aimsun* simulation tool uses state-of-the art technology that has thus far proven invaluable in planning for the L train’s disruption. However, even with the best planning, we expect that on-the-street results will vary from simulations. After April 2019, some adjustments to the final plans developed using those simulations will be both inevitable and necessary.

Full outputs of DOT’s *Aimsun* model are presented in the attached appendices, along with processed results and turning movement count summaries.

Existing Conditions

Existing 14th Street traffic volumes, as with most Manhattan crosstown streets, begins trending upwards in the traditional AM peak period. While there is some slight decrease in volume during the midday, this is more likely attributed to higher traffic saturation on the surrounding street network and frequent double parking than any true decrease in demand.

When charted, bus passenger rates show more clearly defined peak periods. However, it is important to view this in context. Even with a midday dip in ridership, this reduced passenger demand is still higher than almost any other bus route’s peak hour ridership.

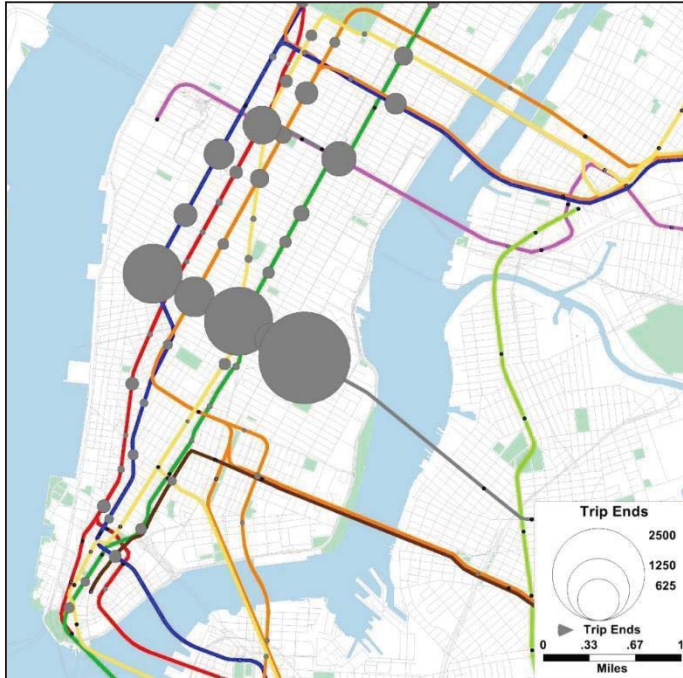


Figure 4: AM Peak Hour Trip Ends of Intra-Manhattan L Riders

The 15 month closure of the L Train running under 14th Street represents an order of magnitude higher demand for surface transportation across the corridor. While most L Train customers use the line to travel to other parts of the city, 114,000 L Train riders have their final destination along 14th Street. Of that, 50,000 originate in Manhattan and 64,000 originate their trip in Brooklyn.

NYCT projects that 84,000 daily customers, consisting of 57% of the intra-Manhattan L Train customers, 11% of the Brooklyn L riders, and the 30,000 current M14A/D riders, will require a fast and reliable surface transit option across the corridor.

Transit Ridership Modeling

Methodology

NYCT bases estimates of customers' origins based on where the MetroCard is swiped first in a day. NYCT bases estimates of customers' destinations based on where the MetroCard is swiped the next time. Not everyone enters the subway in the same general area where they exited last, but the vast majority do. These estimates are supplemented by survey data and census data.

NYCT then "assigns" which path people use based on travel times, crowding levels and other factors. This is handled in a standard industry modeling software package called TransCAD.

The model is not 100% accurate, but it can match observed loads on trains to reasonable levels of accuracy (+/- 5% for most routes, and within 2% on the L train as it enters Manhattan), and has been successfully used to predict patterns during other service changes. Notable among these is the Second Avenue Subway, where current observed volumes of 190,000 riders per day are within 5% of modeled projections, and peak hour ridership has been within 2% of projections.

Effects of Williamsburg Bridge HOV

A primary component of the alternative service plan is to provide shuttle bus service from neighborhoods in Brooklyn to subway connections in Manhattan via the Williamsburg Bridge. Providing fast and reliable bus service is critical to alleviate potential overcrowding on the J/M lines and prevent large shifts to private and for-hire vehicles.

Currently, Williamsburg Bridge travel times are highly variable, ranging from 10-40 minutes. To ensure reliability, DOT will be implementing a policy of HOV 3+, buses and trucks only in both directions on the bridge during peak hours.

Regional modeling of this policy suggests a **traffic volume reduction of 5%** on the larger 14th Street corridor as a result of this policy. Although this reduction has not been reflected in the local modeling results shown in this document, this would result in improved travel times compared to those presented here.

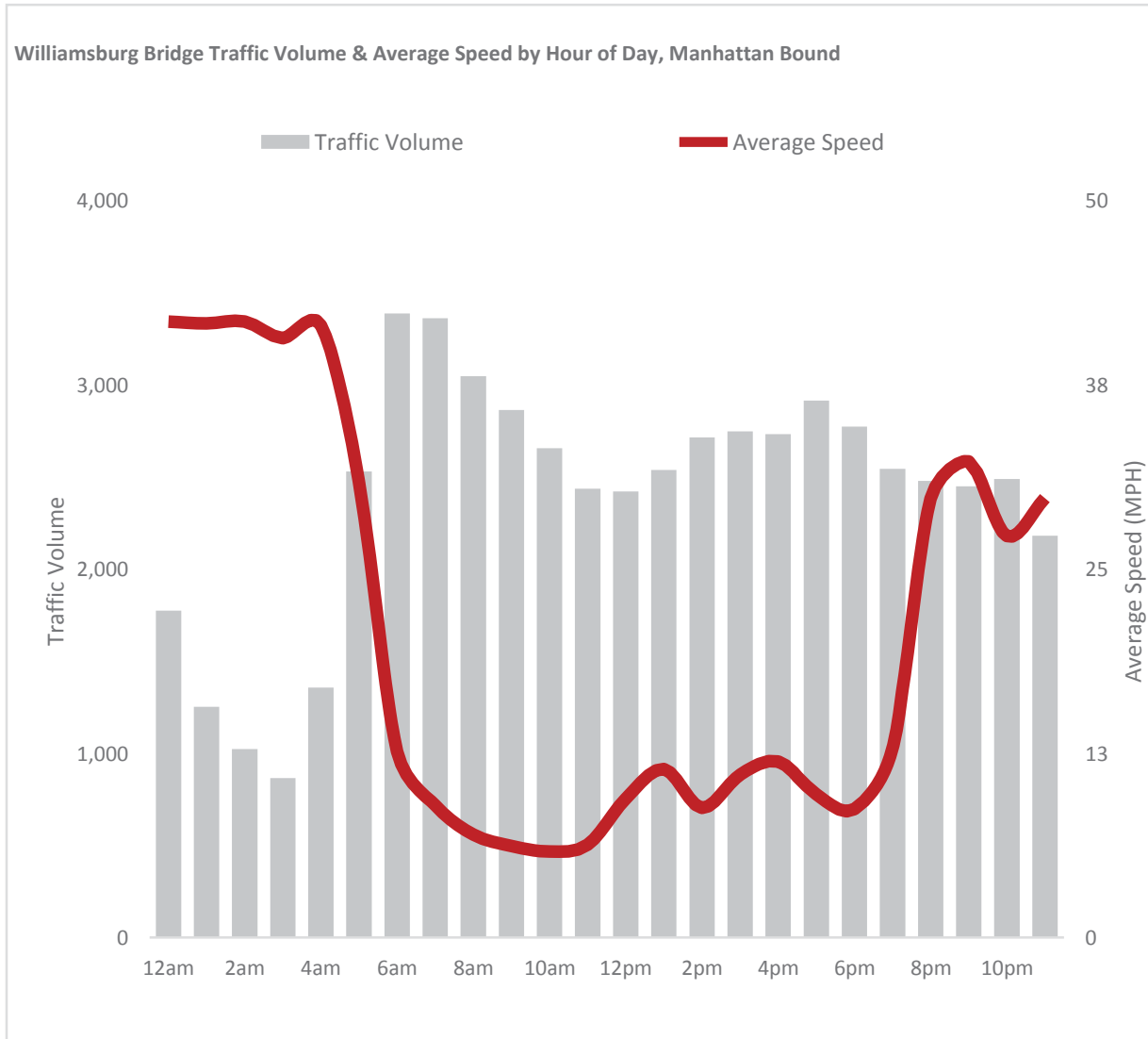


Figure 5: Existing 24 hour Williamsburg Bridge traffic volume and speed

Do-Nothing Scenario

DOT evaluated traffic conditions in a scenario where bus service is increased in response to the L train closure, and the L train is closed between Bedford Avenue and Eighth Avenue, but no changes are made to 14th Street. In this scenario, 14th Street can process slightly more buses, but due to the long travel times, the projected ridership targets cannot be met. In this scenario, 14th

Street sees some traffic volume reduction, resulting in increases on the side streets. This does not take into consideration a likely induced shift to personal and for-hire vehicles which would further increase volumes and travel times.

In this scenario, **bus throughput and travel times are not sufficient to meet demand**, and adjacent side streets see an average traffic **increase of 18%**. As a result, **NYCDOT and NYCT believe that doing nothing to prioritize buses on 14th Street is not a viable option.**

Select Bus Service (SBS)

For other crosstown bus improvement projects, DOT has implemented a mix of curbside and offset bus lanes to create dedicated space for buses.

This design approach has been effective at balancing the needs of through traffic, turning vehicles, parking and loading on other corridors. On these corridors, buses driving in offset bus lanes are occasionally delayed behind vehicles entering bus lanes to make legal right turns, or behind illegal bus lane blockages, and these disruptions are manageable on bus routes with 5-10 minute frequencies. However, on 14th Street during the shutdown, peak period bus volumes will be well in excess of a bus per minute, so the limitations of standard bus lanes would be magnified by the presence of multiple buses. Furthermore, very frequent service means multiple buses at stops simultaneously, which in an SBS scenario then become delayed as they wait to pull out into passing traffic. Blockage factors are applied to bus lanes and bus stops in DOT traffic models, but modeling efforts still tend to underrepresent the degree to which these instances can bring bus service to a halt for multiple signal cycles.

As commuters are no longer able to rely on the L train for crosstown and inter-borough service, DOT and NYCT anticipate significant increases in pedestrians doing one or more of the following things on 14th Street:

- Waiting for M14 SBS and M14 A/D buses
- Entering or exiting stations for north-south subway lines carrying inter-borough trips previously taken on the L line
- Walking across 14th Street for trips previously taken on the L line

With these increases in pedestrian activity, DOT has identified the need to add pedestrian space along the busiest stretch of 14th Street. Select Bus Service bus lanes preclude the ability to provide this space.

For the reasons above, DOT and MTA eliminated the Select Bus Service design option.

Short Busway

DOT tested a version of the Busway restrictions on 14th Street applied to a more targeted section where bus and pedestrian activity is busiest, between Third and Sixth Avenues. While it would

seem intuitive that allowing traffic on most blocks of 14th Street would more equitably balance the needs of motorists and bus riders, the results do not confirm that hypothesis. This scenario processes buses with a similar level of efficiency as the longer, recommended Busway option, but there are a handful of significant side effects.

First, allowing general traffic to circulate well into the core of Manhattan before forcing turns off of 14th Street leads to degraded performance on the side streets in the core relative to all other options, particularly at busy turn locations such as the left turn from Fifth Avenue to 12th Street, as vehicles traveling southbound on Fifth Avenue seek the next available opportunity to head east. The Short Busway yields a **projected average 67% increase in traffic volume on the side streets compared to the Do Nothing option.**

Second, all eastbound general traffic would need to turn left at Sixth Avenue to exit 14th Street at the start of the Busway. This heavy turn volume would conflict with very heavy pedestrian volumes crossing 14th Street at this intersection (3,100 more pedestrians in the AM peak period than under current conditions), entering or exiting the heavily burdened F/M subway and PATH station on the north corners. The intersection of 14th Street and Sixth Avenue has already been designated a Vision Zero priority intersection even without the additional pedestrian activity that will be generated by the L shutdown, so DOT eliminated this option from consideration.

Busway Scenario

In this scenario, the blocks between Third and Eighth Avenues in the westbound direction, and Ninth Avenue/Hudson Street and Third Avenue in the eastbound direction, would be restricted to buses and a limited group of other permitted vehicles only.

Outside of these restricted blocks, general traffic will be able to travel east until Ninth Avenue before being diverted south. General traffic may also travel east as far as Ninth Avenue before being diverted south on Hudson Street. Standard bus lanes will be provided both eastbound and westbound between First and Third Avenues, and westbound from Eighth to Ninth Avenue.

Analysis shows that with the Busway design, buses are able to meet NYCT's target travel times and bus volumes, ensuring reliable service for bus customers during at least peak hours when ridership spikes.

Fast and reliable bus service on 14th Street leads to increased traffic on adjacent side streets, where **volume increases an average of 57 vehicles during the AM peak hour and 96 in the PM peak hour** compared to the Do Nothing option. Similarly, **vehicular travel times are modeled to increase by 0.4 minutes in the AM peak hour and 0.6 minutes in the PM peak hour.**

Not reflected in these results, is an inherent uncertainty in the number of bus passengers accommodated by the Busway who would shift to taxi or for hire vehicles (FHV) if the buses are stuck in traffic. With an anticipated 10,000 bus riders in the AM peak hour, if only 3%-5% of those riders choose taxi instead, the "Do Nothing" scenario could actually see worse traffic conditions on the side streets than with the proposed Busway. Similarly in the PM peak hour, if

only 5%-7% of projected bus riders choose a taxi or FHV instead the side streets would have more traffic under “Do Nothing” than with the Busway.

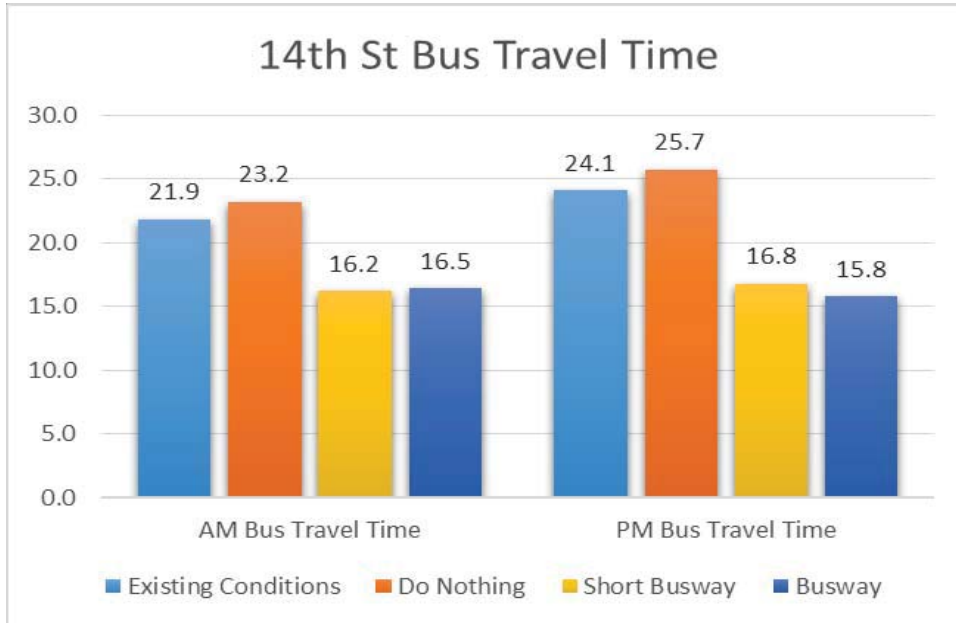
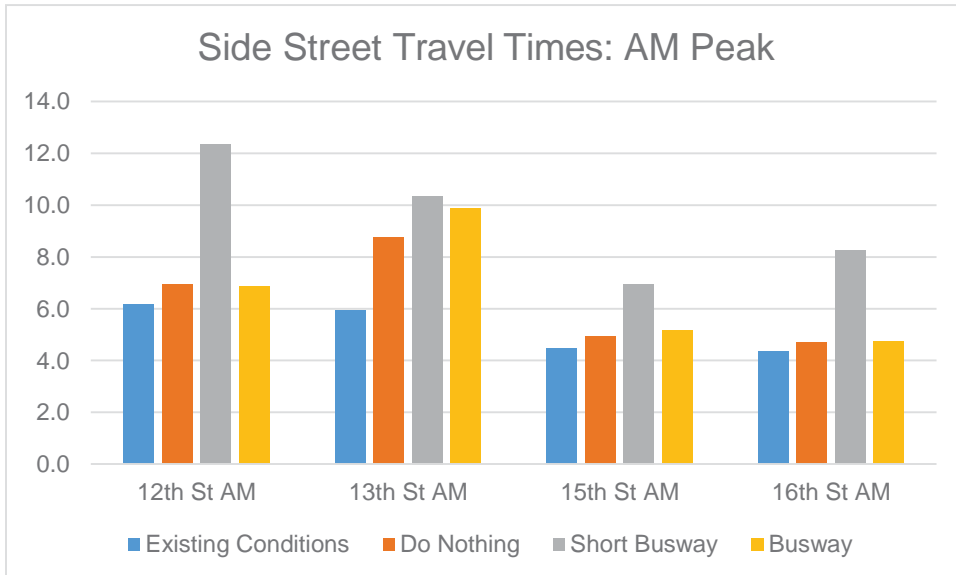


Figure 6: Bus travel time across studied options



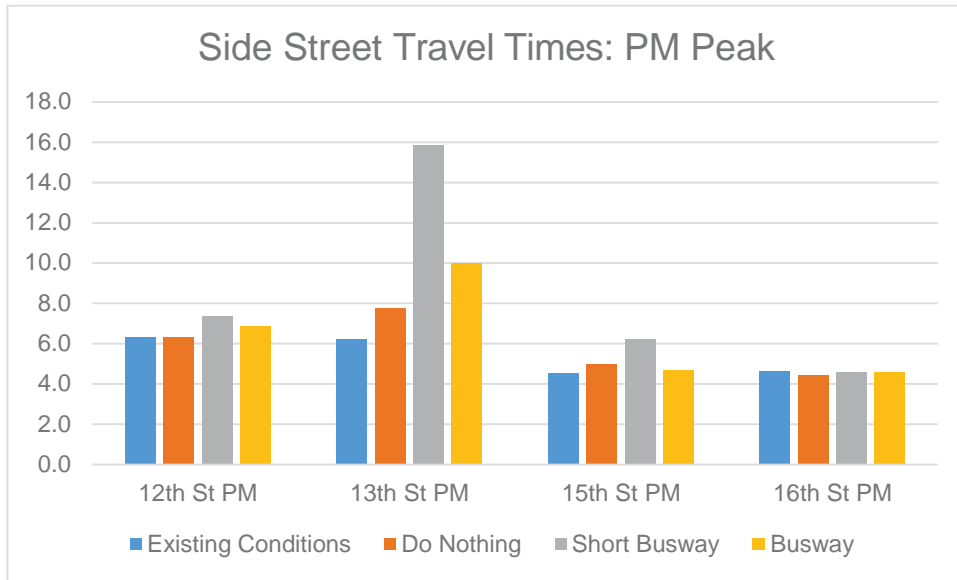


Figure 7: Side streets travel time across studied options

Projected Volume Changes

Traffic Volume 8:00 - 9:00 AM				
	Existing to Busway		Do Nothing to Busway	
	Car	Bus	Car	Bus
* 14th	-405	90	-284	36
12th	122		68	
13th	145		126	
15th	47		35	
16th	41		-1	
Side Sts Average	89		57	

*total for both directions

Traffic Volume 5:00 - 6:00 PM				
	Existing to Busway		Do Nothing to Busway	
	Car	Bus	Car	Bus
14th	-542	92	-277	41
12th	61		91	
13th	111		179	
15th	53		76	
16th	32		38	
Side Sts Average	64		96	

Table 1: Peak-hour modeled traffic volume changes

Traffic Volume 8:00 - 9:00 AM									
	Existing (Base)		Do Nothing (L closed)		Short Busway (3Av - 6Av)		Busway (3rd Av - 8th/9th Av)		
	Car	Bus	Car	Bus	Car	Bus	Car	Bus	
14th	584	41	463	96	156	126	179	131	
12th	172	0	226	0	339		294	0	
13th	232	0	251	0	361		377	0	
15th	132	0	143	0	178		178	0	
16th	157	0	199	0	197		197	0	
Side Sts	693	0	819	0	1075		1047	0	

Traffic Volume 5:00 - 6:00 PM								
	Existing (Base)		Do Nothing (L closed)		Short Busway (3Av - 6Av)		Busway (3rd Av - 8th/9th Av)	
	Car	Bus	Car	Bus	Car	Bus	Car	Bus
14th	650	30	385	81	108	126	108	122
12th	209	0	178	0	316		270	0
13th	296	0	228	0	394		407	0
15th	151	0	127	0	192		204	0
16th	179	0	173	0	211		211	0
Side Sts	834	0	708	0	1113		1092	0

Table 2: Peak-hour modeled traffic volumes

Travel Time 8:00 - 9:00 AM								
	Existing (Base)		Do Nothing (L closed)		Short Busway (3Av - 6Av)		Busway (3rd Av - 8th/9th Av)	
	Car	Bus	Car	Bus	Car	Bus	Car	Bus
14th	9.6	21.7	16.7	22.6	8.1	16.7	5.5	17.1
12th	6.2		7.0		12.3		6.9	
13th	5.9		8.7		10.4		9.9	
15th	4.5		4.9		7.0		5.2	
16th	4.3		4.7		8.3		4.7	
Side Sts	5.2		6.3		9.5		6.7	

Travel Time 5:00 - 6:00 PM								
	Existing (Base)		Do Nothing (L closed)		Short Busway (3Av - 6Av)		Busway (3rd Av - 8th/9th Av)	
	Car	Bus	Car	Bus	Car	Bus	Car	Bus
14th	10.5	23.2	16.2	21.3	6.8	16.8	4.8	15.8
12th	6.3		6.3		7.4		6.9	
13th	6.2		7.7		15.8		10.0	
15th	4.5		5.0		6.2		4.7	
16th	4.6		4.4		4.6		4.6	
Side Sts	5.4		5.9		8.5		6.5	

Table 3: Average peak-hour travel time change, from Avenue C to Eighth Avenue (Note: for streets that are not contiguous from Avenue C to Eighth Av, only the blocks within those extents are modeled)

*“Car” volumes and travel times along 14th Street in the Busway analysis only reflect permitted uses.

Measuring People, Not Cars

While changes in traffic volume can affect travel patterns and times across a corridor – and certainly is felt by businesses and residents of that street – simply measuring vehicle numbers without accounting for the people inside the vehicles can lead to a skewed analysis that underrepresents those who travel in more efficient, higher-capacity vehicles.

To account for the variance in passengers, the model results of the different scenarios evaluated “person delay.” This analysis provides a more complete picture of the effects on people’s trips, not just counts of vehicles. This metric is a more broad-based approach to analyzing the effects of possible changes to our city streets.

Analyzing the 14th Street corridor as a network of several streets, and measuring changes for people traveling in the right of way, provides a more comprehensive view. The results show the busway providing a **decrease in person delay of 51%** during peak periods compared to the Do Nothing option.

Moreover, the total delay for just people in cars is greater in the Do Nothing option than in the Busway, both in the AM and PM peaks. In other words, while individual blocks may vary, there would be less total auto congestion for the corridor taken as a whole with the Busway. This may seem counter-intuitive, but is possible because a large portion of current auto demand would avoid the corridor altogether.

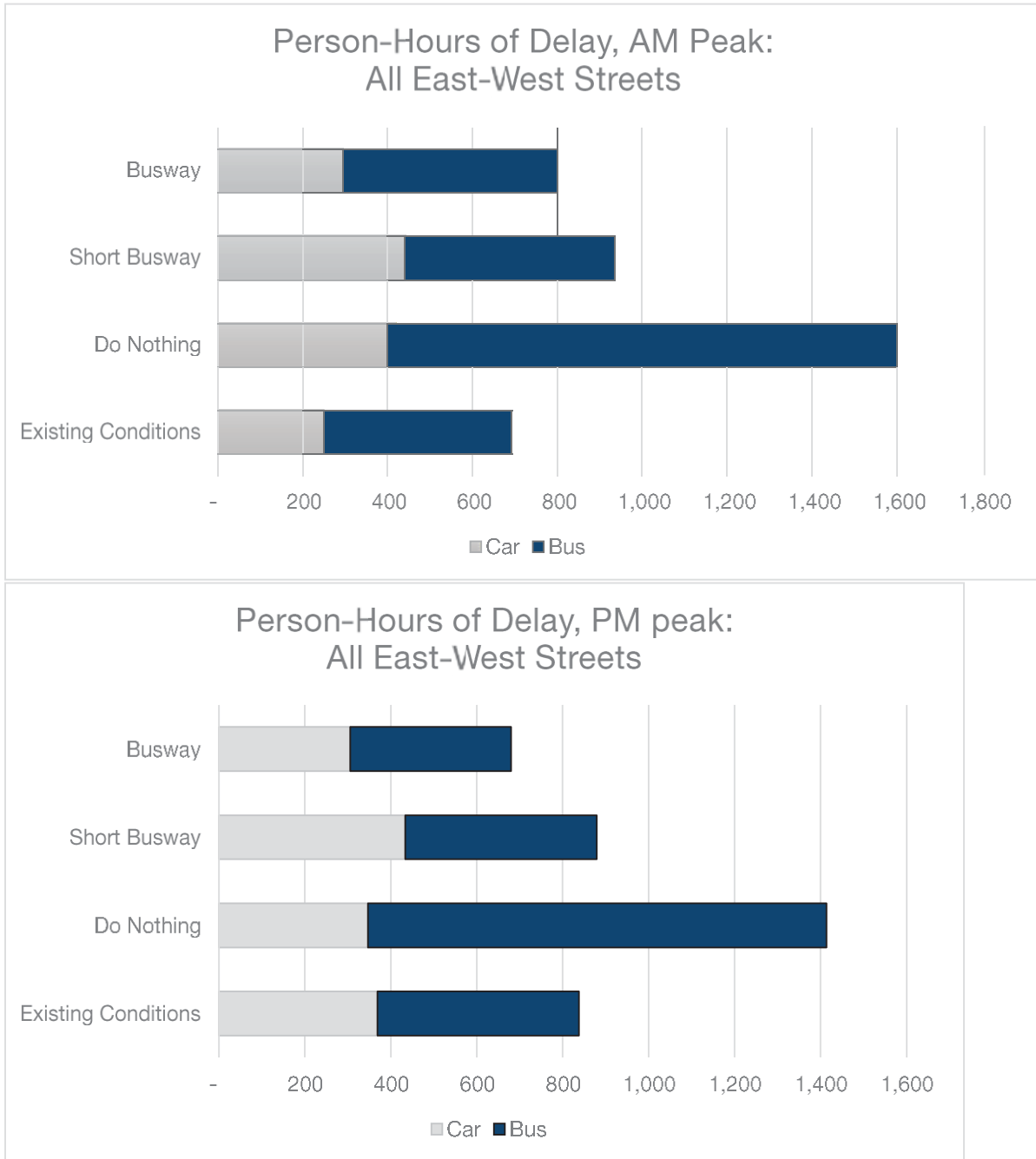


Figure 8: Peak-hour modeled person-hours delay

Market Segment	Sub-Market	Current Riders	Use Busway During Shutdown	% of Current Market Using Busway
Bus	M14	30,000	30,000	100%
Intra-Manhattan L Riders	1 Av	25,000	18,500	74%
	Other	25,000	10,000	40%
	Total	50,000	28,500	57%
Brooklyn-Manhattan L Riders	To/From 14th St Destinations	64,000	23,300	36%
	Other Destinations	161,000	2,200	1%
	Total Along 14th	225,000	25,500	11%
Total Riders 14th St	To/From 14th St Destinations	144,000	81,800	57%
	Total Along 14th	305,000	84,000	28%

Table 4: 14th Street bus ridership projections

L Train AM Peak Destinations

Corridor	Riders	Share
Wall/Broad	5,065	2%
Fulton	2,479	1%
Chambers Park Pl	4,764	2%
Canal St/Delancey	4,732	2%
Spring-Houston	8,711	4%
Downtown	25,750	11%
W4 - 8 St	3,619	2%
14 St	64,026	28%
18 St	279	0.10%
23 St	12,776	6%
28 St	5,755	3%
Valley	86,454	38%
34 St	22,060	10%
42 St	26,359	12%
49-53 St	15,566	7%
57-63 St	14,822	7%
Midtown	78,807	35%
N of 63rd (Uptown and Bronx)	31,139	14%
Brooklyn	2,624	1%
Queens	225	0.10%
Total	225,000	100%

Table 5: Existing AM peak L Train subway station destinations

February 22, 2018

Hour	Estimated	2017 14th St Origins/Destinations		Combined
	M14-SBS Ridership	M14A Ridership	M14D Ridership	14th St Ridership
0	292	34	53	379
1	111	15	29	155
2	55	15	18	88
3	29	11	15	55
4	58	30	92	180
5	360	82	272	714
6	1,284	292	848	2,424
7	3,314	771	1,950	6,035
8	6,992	806	2,271	10,069
9	5,288	479	1,198	6,965
10	2,658	394	872	3,924
11	2,258	389	843	3,489
12	2,418	439	892	3,749
13	2,514	466	1,067	4,047
14	2,691	597	1,325	4,613
15	3,090	675	1,640	5,405
16	3,494	663	1,663	5,820
17	5,434	731	1,633	7,799
18	4,853	672	1,386	6,910
19	2,750	467	1,040	4,257
20	1,597	334	829	2,760
21	1,177	247	610	2,034
22	825	168	508	1,501
23	498	138	364	1,000
<i>Average Weekday</i>	<i>54,039</i>	<i>8,915</i>	<i>21,417</i>	<i>84,370</i>

Table 6: Projected hourly 14th Street bus ridership

Projected 14th Street Bus Frequencies			
Hour	M14 A/D	M14SBS	Total
0100-0200	2	3	5
0200-0300	2	3	5
0300-0400	2	3	5
0400-0500	2	3	5
0500-0600	6	6	12
0600-0700	11	8	19
0700-0800	23	17	40
0800-0900	25	33	58
0900-1000	18	25	43
1000-1100	15	19	34
1100-1200	13	17	30
1200-1300	13	18	31
1300-1400	13	20	33
1400-1500	16	20	36
1500-1600	17	22	39
1600-1700	18	20	38
1700-1800	15	34	49
1800-1900	15	32	47
1900-2000	13	18	31
2000-2100	13	17	30
2100-2200	12	13	25
2200-2300	11	9	20
2300-2400	8	6	14
2400-0100	7	6	13

Table 7: Projected hourly 14th Street bus frequency in peak direction

Next Steps

Ongoing Corridor Design

DOT and NYCT will continue to refine street configurations and service plans to best meet the needs of a variety of stakeholders. DOT will continue to work with businesses and residents on adjacent streets regarding traffic-calming strategies and curb access needs ahead of implementation, and will continue to respond to concerns once the L train closure begins.

Outreach

DOT and NYCT are committed to ongoing community outreach and dialogue throughout the planning and implementation of this project. Updates and further information can be found at <http://web.mta.info/sandy/rebuildingCanarsieTunnel.html>, where questions and concerns can be submitted.

Implementation

L train service between Brooklyn and Manhattan, as well as intra-Manhattan service, will be suspended starting in April 2019. The shutdown is anticipated to last 15 months.

DOT plans to begin implementation of the proposed street treatments beginning in late summer 2018, with substantial completion expected in winter 2018. The anticipated start date of restricted traffic access along 14th Street is still pending, and is largely dependent on NYCT’s launch date of M14 SBS.

DOT and NYCT were planning to install the M14 SBS route with bus priority and pedestrian safety enhancements typically implemented on SBS routes before the L train shutdown was scheduled. Any other traffic restrictions, including the 13th Street bike lanes, are temporary measures during the closure of the L train. If DOT decides to consider making them permanent, DOT would conduct further evaluation.

Continued Analysis

As DOT and NYCT refine street designs and service plans, and as both agencies weigh community feedback on the draft plan, additional traffic analysis will be conducted to analyze and refine for planned operations. Both agencies are committed to monitoring the performance of 14th Street as well as adjacent side streets as the closure begins and make any necessary adjustments.

Traffic Analysis FAQ

What is a traffic model?

A traffic model is a computer program used to estimate a project's effects on the volume and speed of vehicles. Two types of traffic models were used in the analysis of the L train shutdown and development of alternative service plans and traffic management:

- 1) **Regional Model:** DOT and MTA utilized the New York Metropolitan Transportation Council's Best Practice Model (BPM) to look at the effects of the L train shutdown at a broad scale, including how people may change their mode or route of travel. However, this model does not estimate exactly how much traffic might use any individual street.
- 2) **Local Models:** DOT and MTA utilized *Aimsun* software to examine the traffic effects of transit service plans and traffic management strategies on individual streets and intersections, including 14th Street, nearby parallel streets and intersecting avenues. These models help to illustrate changes in local traffic volumes and travel times but do not look at changes in travel mode or destination.

As the L train closure and potential traffic and transit solutions may have both local and regional effects, both types of models have been used to help DOT and NYCT plan any street changes. The models work together: the regional model estimates how many people would change their travel patterns or switch from subway to car or bus (or vice versa), those results were then used to update the local traffic model.

Do traffic models tell us exactly what will happen?

No. These models provide DOT and the MTA with a basic understanding of travel patterns, and are useful tools to help us make informed policy decisions to best keep New Yorkers moving while minimizing local access challenges. It is not a 'hard and fast' indicator of what should be done, but rather gives an idea of relative traffic effects that help shape planning decisions informed by community involvement.

The models are also a high-level, theoretical snapshot of street design and operational planning. Based on these coarse results, planners can fine-tune roadway geometry, signal timing and service patterns to optimize desired results.

For an unprecedented event such as the L train tunnel shutdown, DOT and NYCT will closely monitor traffic management and transit service plans once the Canarsie Tunnel goes out of service and will adjust policies based on observed demand and congestion.

What scenarios were studied, and how were they measured?

The MTA and NYC DOT first analyzed an **Existing Conditions** traffic condition that included assumed growth for a 2019 build year, with L train subway service in operation. The agencies then modeled a **Do Nothing** scenario with the L train shut down, alternative bus service provided, and no changes made to street design or traffic management. From there, a typical Select Bus Service (**SBS**) scenario was considered with bus priority lanes and through traffic on 14th Street. Two more expansive bus priority streets were measured in detail: a **Short Busway** that restricts general through traffic from Third through Sixth Avenues; and a more robust **Busway** that extends from Third to Eighth Avenue in the westbound direction and Ninth Avenue/Hudson Street to Third Avenue in the eastbound direction.

Each of these scenarios was evaluated for bus travel time, bus reliability, and side street traffic effects. Pedestrian safety and bus operational needs were also considered in the street design and service plans, but are not reflected in this summary.

Which streets were analyzed?

The micro-simulation focused on 12th to 16th Street, end-to-end, with traffic data collected for all needed intersections in that area. Similarly, north-south traffic was collected and modeled between Ninth Avenue and Avenue C.

While the extent of this network may seem limited, the chosen streets are representative of overall network effects, allowing DOT to evaluate traffic changes on other streets as well. Additionally, the regional simulation model provides input regarding traffic volume changes beyond this immediate study area.

The areas north and south of the analyzed streets will see spillover traffic effects begin to taper off, particularly in the West Village, where the grid is broken up and the ability for traffic to travel through is greatly diminished. North of 14th Street, through traffic is generally diminished by the diversion around Union Square Park.

Appendix F: Agency Consultation



May 21, 2018

National Marine Fisheries Service

Protected Resource Division
55 Great Republic Drive
Gloucester, MA 01930

RE: New York City Transit North Williamsburg Pier Temporary Ferry Landing

Dear Sir/Madam:

New York City Transit (NYCT) is proposing to construct a temporary ferry landing adjacent to Empire Pier in the East River in North Williamsburg, Brooklyn, New York (see Figure 1). The temporary ferry landing (see Figure 2) will consist of a pile-supported access platform (4, 16" diameter steel piles) connected to the existing Empire Pier, and a gangway connected from the pile-supported access platform to the anchored ferry landing barge (5, 36" diameter steel anchor piles), which will provide access to the ferry. Four guide piles (4, 36" steel piles) with donut fenders will be located to the north of the ferry landing to guide the ferry as it approaches the landing.

The temporary ferry landing will be used to transport passengers during the closure of the Canarsie tubes for a period of 15 months. The temporary ferry landing will be removed upon completion of the rehabilitation of the Canarsie tubes.

WSP has been retained by NYCT to obtain environmental approvals for the North Williamsburg ferry landing. Please advise as to whether there are any endangered or threatened marine species in the vicinity of the project. Your prompt response is greatly appreciated.

Please send or e-mail your response to:

Andrea Rosenthal, ENV SP
WSP USA
One Penn Plaza, 2nd Floor
New York, NY 10119
andrea.rosenthal@wsp.com

Thank you for your time and assistance.

Sincerely,

Andrea Rosenthal, ENV SP

cc: A. Elmi (NYCT)
D. Braithwaite (NYCT)
D. Pollack (NYCT)

Encl. : Figure 1 Location Map; Figure 2 Plan

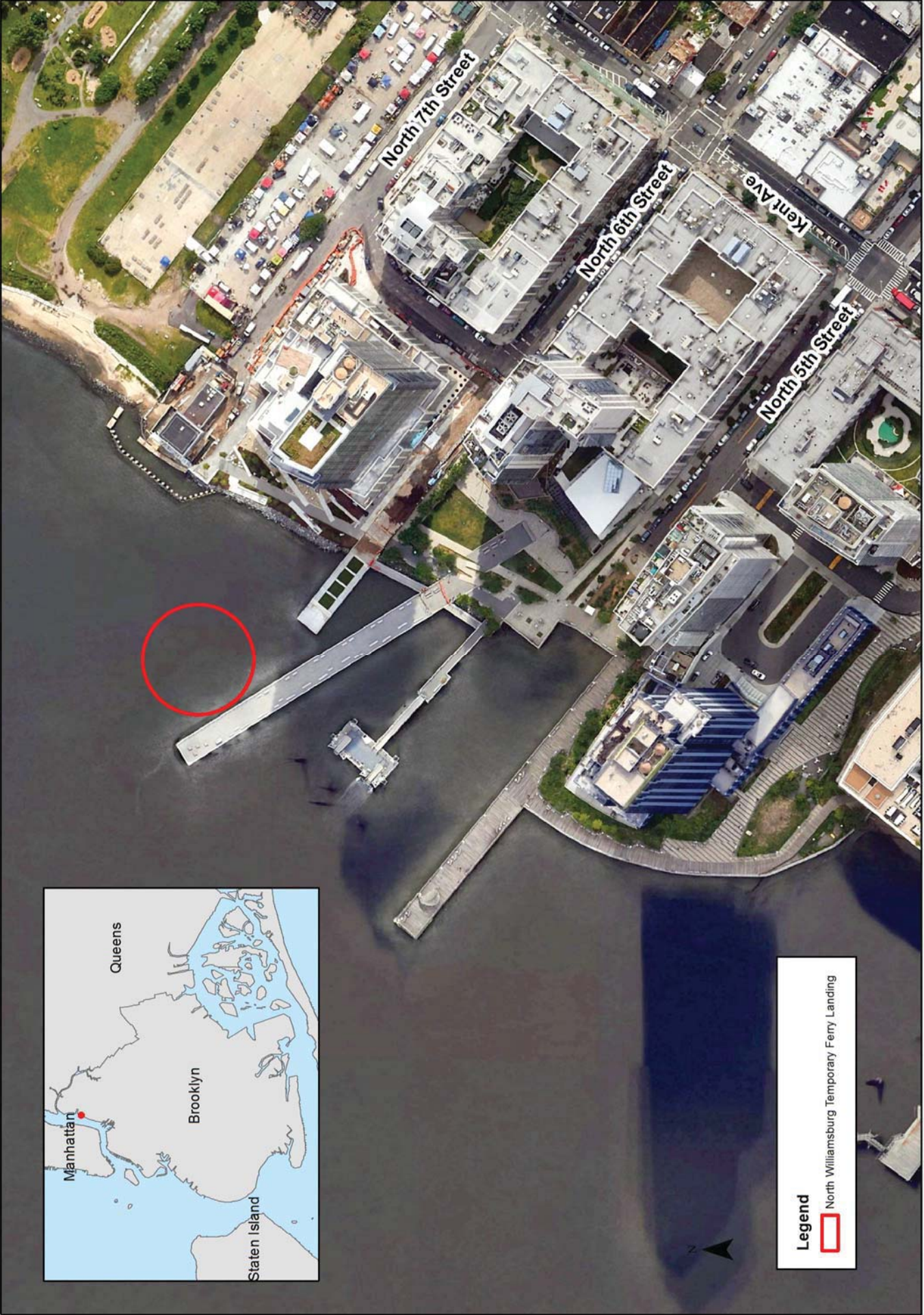
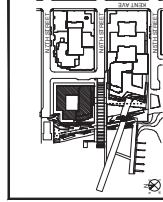


Figure 1 Project Location Map



30 % DESIGN

New York City
Transit Authority

WSP - PARSONS BRINCKERHOFF
Structural Engineering
New York, NY 10119
(212) 465-5000

North Williamsburg
Temporary Ferry Landing
Canarsie Tunnel Rehabilitation

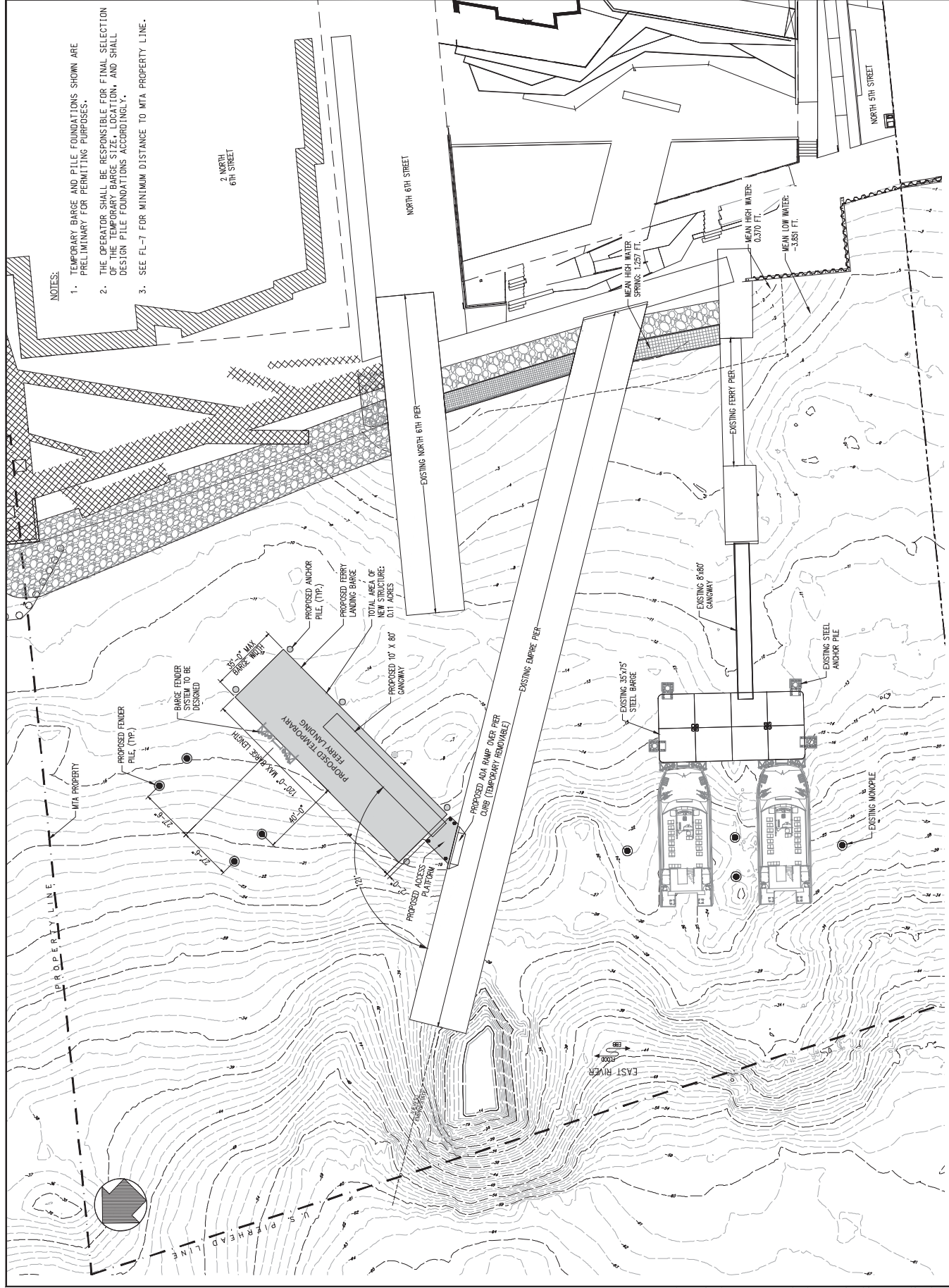
PROJECT NO. PRELIMINARY PROPOSED FERRY LANDING PLAN

DATE: 08/20/2018
DRAWN BY: J. L. [unreadable]
CHECKED BY: [unreadable]

FL-2

Figure 2 Plan

- NOTES:
1. TEMPORARY BARGE AND PILE FOUNDATIONS SHOWN ARE PRELIMINARY FOR PERMITTING PURPOSES.
 2. THE OPERATOR SHALL BE RESPONSIBLE FOR FINAL SELECTION OF THE TEMPORARY BARGE SIZE, LOCATION, AND SHALL DESIGN PILE FOUNDATIONS ACCORDINGLY.
 3. SEE FL-7 FOR MINIMUM DISTANCE TO MTA PROPERTY LINE.



PROPOSED TEMPORARY FERRY LANDING PLAN



- LEGEND
- PROPOSED TEMPORARY FERRY LANDING
 - PROPOSED FENDER PILE WITH DONUT
 - PROPOSED ANCHOR PILE
 - PROPOSED ACCESS PLATFORM PILE

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United States Department of the Interior



FISH AND WILDLIFE SERVICE
Long Island Ecological Services Field Office
340 Smith Road
Shirley, NY 11967-2258
Phone: (631) 286-0485 Fax: (631) 286-4003

In Reply Refer To:

May 21, 2018

Consultation Code: 05E1LI00-2018-SLI-0581

Event Code: 05E1LI00-2018-E-01315

Project Name: NYCT North Williamsburg Temporary Ferry Landing

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (<http://www.fws.gov/windenergy/>) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm>; <http://www.towerkill.com>; and <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html>.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
-

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Long Island Ecological Services Field Office
340 Smith Road
Shirley, NY 11967-2258
(631) 286-0485

Project Summary

Consultation Code: 05E1LI00-2018-SLI-0581

Event Code: 05E1LI00-2018-E-01315

Project Name: NYCT North Williamsburg Temporary Ferry Landing

Project Type: TRANSPORTATION

Project Description: New York City Transit (NYCT) is proposing to construct a temporary ferry landing adjacent to Empire Pier in the East River in North Williamsburg, Brooklyn, New York (see Figure 1). The temporary ferry landing will be used to transport passengers during the closure of the Canarsie tubes for a period of 15 months and will be removed upon completion of the rehabilitation of the Canarsie tubes.

The temporary ferry landing will consist of a pile-supported access platform (4, 16" diameter steel piles) connected to the existing Empire Pier, and a gangway connected from the pile-supported access platform to the anchored ferry landing barge (5, 36" diameter steel anchor piles), which will provide access to the ferry. Four guide piles (4, 36" steel piles) with donut fenders will be located to the north of the ferry landing to guide the ferry as it approaches the landing.

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/place/40.72101622980015N73.96432987283569W>



Counties: Kings, NY | New York, NY

Endangered Species Act Species

There is a total of 4 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

-
1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Birds

NAME	STATUS
Piping Plover <i>Charadrius melodus</i> Population: [Atlantic Coast and Northern Great Plains populations] - Wherever found, except those areas where listed as endangered. There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6039	Threatened
Red Knot <i>Calidris canutus rufa</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1864	Threatened
Roseate Tern <i>Sterna dougallii dougallii</i> Population: northeast U.S. nesting pop. No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2083	Endangered

Flowering Plants

NAME	STATUS
Seabeach Amaranth <i>Amaranthus pumilus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8549	Threatened

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.



NYC Parks

Alyssa Cobb Konon
Deputy Commissioner
Planning and Development

T 212.360.3402
F 212.360.3453

E alyssa.cobb@parks.nyc.gov

City of New York
Parks & Recreation

The Arsenal
Central Park
New York, NY 10065
www.nyc.gov/parks

May 23, 2018

Via Regular Mail and E-Mail

Ms. Linda Tonn
Chief Architect
New York City Transit
2 Broadway, Office D6.115
New York, NY 10004

Re: Canarsie Tunnel Reconstruction Related Roadway Treatments at Union Square Park

Dear Ms. Tonn:

This letter is written in response to a query by the Metropolitan Transportation Authority ("MTA") as to whether various roadway treatments being considered by the New York City Department of Transportation ("DOT") to be implemented at Union Square West during the Canarsie Tunnel Reconstruction would trigger evaluation under Section 4(f) of the United States Department of Transportation Act of 1966. After discussing the matter with appropriate Department of Parks and Recreation ("DPR"), DOT, and City staff, and a review of DPR records for the property, DPR has determined that Union Square West is not a public park or recreation area or wildlife or waterfowl refuge for 4(f) purposes.

Union Square West, which runs from East 17th Street to East 14th Street, is under DPR jurisdiction pursuant to an 1832 local law. Although under DPR jurisdiction, Union Square West is not a public park or recreation area, or mapped parkland, and has always been operated and managed by DOT as a right of way. Therefore, the roadway is not a park, recreation area, or wildlife and waterfowl refuge for the purposes of 4(f).

Furthermore, DPR understands that the various measures being considered by DOT, including expanded pedestrian space and traffic reconfigurations, are measures that DOT regularly implements on roadways throughout the City and would not change Union Square West's existing use in any way. See 23 C.F.R. § 774.17. Although 4(f) evaluation is not appropriate for these actions, measures to increase pedestrian access would complement existing park uses at Union Square Park. DOT will consult with and obtain DPR's concurrence regarding a decision on whether the temporary measures can or should be made permanent.

If you have any questions regarding this matter, please contact me at 212-360-3402.

Sincerely,


Alyssa Cobb Konon

Weymouth, Nicole

From: Edith Carson - NOAA Federal <edith.carson@noaa.gov>
Sent: Friday, May 25, 2018 10:26 AM
To: Rosenthal, Andrea
Cc: Braithwaite, Dean; Debra Winthrop Pollack (dpollack@mtahq.org); Elmi, Angelo; Ursula Howson - NOAA Affiliate
Subject: Re: NYCT North Williamsburg Temporary Ferry Landing

Ms. Rosenthal,

We received your email on May 22, 2018, regarding the proposed temporary ferry landing adjacent to Empire Pier in the East River, North Williamsburg, Brooklyn, New York. In your email, you requested any available data regarding protected endangered/threatened species in the area. We offer the following comments.

Endangered Species Act

Atlantic Sturgeon

Atlantic sturgeon are present in the waters of the East River and its adjacent bays and tributaries. The New York Bight, Chesapeake Bay, Carolina and South Atlantic Distinct Population Segments (DPS) of Atlantic sturgeon are endangered; the Gulf of Maine DPS is threatened. Adult and subadult Atlantic sturgeon originating from any of these DPSs could occur in the proposed project area. As young remain in their natal river/estuary until approximately age 2, and early life stages are not tolerant of saline waters, no eggs, larvae, or juvenile Atlantic sturgeon will occur within the East River and its adjacent bays and tributaries.

Shortnose Sturgeon

Shortnose sturgeon are present in the East River and could occur in its adjacent bays and tributaries. Shortnose sturgeon are listed as endangered throughout their range. As early life stages are not tolerant of saline water, no eggs, larvae, or juvenile shortnose sturgeon will occur within the saline waters of the East River and its adjacent bays and tributaries.

As project details develop, we recommend you consider the following effects of the project on Atlantic and shortnose sturgeon:

- For activities that increase levels of suspended sediment, consider the use of silt management and/or soil erosion best practices (i.e., silt curtains and/or cofferdams).
- For pile driving or other activities that may affect underwater noise levels, consider the use of cushion blocks and other noise attenuating tools to avoid reaching noise levels that will cause injury or behavioral disturbance to sturgeon - see the table below for more information regarding noise criteria for injury/behavioral disturbance in sturgeon.

Organism	Injury	Behavioral Modification
Sturgeon	206 dB re 1 μ PaPeak and 187 dB cSEL	150 dB re 1 μ PaRMS

The federal action agency will be responsible for determining whether the proposed action may affect listed species. If they determine that the proposed action may affect a listed species, they should submit their determination of effects, along with justification and a request for concurrence to the attention of the Section 7 Coordinator, NMFS, Greater Atlantic Regional Fisheries Office, Protected Resources Division, 55 Great Republic Drive, Gloucester, MA 01930 or nmfs.gar.esa.section7@noaa.gov. Please be aware that we have recently provided on our website guidance and tools to assist action agencies with their description of the action and analysis of effects to support their determination. See - <http://www.greateratlantic.fisheries.noaa.gov/section7>. After receiving a complete, accurate comprehensive request for consultation, in accordance to the guidance and instructions on our website, we would then be able to conduct a consultation under section 7 of the ESA. Should project plans change or new information become available that changes the basis for this determination, further coordination should be pursued. If you have any questions regarding these comments, please contact Edith Carson (978-282-8490; Edith.Carson@noaa.gov).

Magnuson-Stevens Fishery Conservation and Management Act - Essential Fish Habitat

Recent changes to the Corps of Engineers' Nationwide Permits have removed the requirement that NMFS be contacted for information on essential fish habitat and that applicants provide evidence of the contact and our resources. You now access the information on your own from our websites. The Habitat Conservation Division's website is: <https://www.greateratlantic.fisheries.noaa.gov/habitat/index.html> Information on essential fish habitat can be found there.

Thank you,

Edith

Edith Carson-Supino, M.Sc.

Section 7/Shortnose Sturgeon Fish Biologist

NOAA Fisheries

U.S. Department of Commerce

Greater Atlantic Regional Fisheries Office

Phone: 978-282-8490

edith.carson@noaa.gov

For ESA Section 7 guidance please see:

<https://www.greateratlantic.fisheries.noaa.gov/section7>



----- Forwarded message -----

From: **Rosenthal, Andrea** <

Andrea.Rosenthal@wsp.com>

Date: Tue, May 22, 2018 at 10:01 AM

Subject: NYCT North Williamsburg Temporary Ferry Landing

To: "nmfs.gar.esa.section7@noaa.gov" <nmfs.gar.esa.section7@noaa.gov>

Cc: "Braithwaite, Dean" <dean.braithwaite@wsp.com>, "Debra Winthrop Pollack (dpollack@mtahq.org)" <dpollack@mtahq.org>, "Elmi, Angelo" <Angelo.Elmi@nyct.com>

Dear Sir/Madam:

New York City Transit is proposing to construct a temporary ferry landing adjacent to Empire Pier in the East River in North Williamsburg, Brooklyn. The ferry landing will be used to transport passengers to Manhattan during the closure of the Canarsie tubes for a period of 15 months and will be removed upon completion of the rehabilitation of the tubes. Please advise as to whether there are any endangered or threatened marine species in the vicinity of the project study area (see attached letter and Figures).

Thank you for your time and assistance. Your prompt response is greatly appreciated.

Regards,

Andrea

Andrea Rosenthal, ENV SP

Assistant Vice President

Senior Principal Marine Environmental Engineer

Senior Technical Principal

Project Manager



Phone 212 465-5228

WSP USA

One Penn Plaza

New York, NY 10119

212-465-5228

e-mail andrea.rosenthal@wsp.com

WSP | Parsons Brinckerhoff is now WSP.

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Fish and Wildlife, New York Natural Heritage Program
625 Broadway, Fifth Floor, Albany, NY 12233-4757
P: (518) 402-8935 | F: (518) 402-8925
www.dec.ny.gov

June 13, 2018

Andrea Rosenthal
WSP
One Penn Plaza, 2nd Fl
New York, NY 10119

Re: North Williamsburg Pier Temporary Ferry Landing
County: Kings Town/City: Brooklyncity Of New York

Dear Ms. Rosenthal:

In response to your recent request, we have reviewed the New York Natural Heritage Program database with respect to the above project.

We have no records of rare or state-listed animals or plants, or significant natural communities at the project site or in its immediate vicinity.

The absence of data does not necessarily mean that rare or state-listed species, significant natural communities, or other significant habitats do not exist on or adjacent to the proposed site. Rather, our files currently do not contain information that indicates their presence. For most sites, comprehensive field surveys have not been conducted. We cannot provide a definitive statement on the presence or absence of all rare or state-listed species or significant natural communities. Depending on the nature of the project and the conditions at the project site, further information from on-site surveys or other resources may be required to fully assess impacts on biological resources.

This response applies only to known occurrences of rare or state-listed animals and plants, significant natural communities, and other significant habitats maintained in the Natural Heritage database. Your project may require additional review or permits; for information regarding other permits that may be required under state law for regulated areas or activities (e.g., regulated wetlands), please contact the NYS DEC Region 2 Office, Division of Environmental Permits, as listed at www.dec.ny.gov/about/39381.html.

Sincerely,



Heidi Krahlting
Environmental Review Specialist
New York Natural Heritage Program

2 Broadway
New York, NY 10004

Andy Byford
President



June 21, 2018

Ms. Olivia Brazee
Historic Preservation Technical Specialist
Division for Historic Preservation
NYS Office of Parks, Recreation and Historic Preservation
Peebles Island State Park, PO Box 189
Waterford, New York 12188

**Re: MTA New York City Transit
Contract: P-36437
Proposed Canarsie Tunnel Alternative Service Plan
Boroughs of Manhattan & Brooklyn**

Dear Ms. Brazee:

The purpose of this letter is to request SHPO's review and concurrence on the proposed determination of effect, pursuant to Section 106, for the NYCT Canarsie Tunnel Project (Project) as well as the proposed Areas of Potential Effect (APEs) for the Project.

NYCT was awarded Federal Transit Administration funds for the Project and is proposing a change, including closing the Canarsie Line Tunnel that runs between Manhattan and Brooklyn full time for approximately 15 months and providing temporary alternative transit services, known as the Alternative Service Plan, or ASP, NYCT, in coordination with the New York City Department of Transportation (NYCDOT), proposes to temporarily implement the ASP for displaced customers, including the introduction of new pedestrian-only areas and new bike lanes.

For environmental review purposes, including Section 106, the Canarsie Tunnel Project includes the Canarsie Tunnel Rehabilitation Project as well as the Canarsie Core Capacity Project. This submission has been prepared to continue to comply with the requirements of Section 106 and is specific to the proposed ASP, which is a change to the previously approved Project

To provide a general overview, we first describe the proposed ASP measures and street treatments by mode along with their locations. Then, we provide specific locations where there will be a potential Section 106 impact. NYCT is also providing proposed Section 106 determinations for those locations with potential impacts. We understand that a Section 106 determination is made for the full Project, not for each element.

The proposed ASP has been developed to support the nearly 400,000 daily riders of the L Train who will be disrupted by the temporary shutdown of the Canarsie Tunnel. All available temporary transportation measures were analyzed to help support the displaced riders while also reducing the demand for subway lines projected to be overcrowded during the Tunnel shutdown.

GENERAL ASP OVERVIEW by MODE

Elements of the ASP include the following:

Subway: Implementing some permanent station improvements utilizing closed station entrances. All work will take place within the station footprint. None of the stations are historic resources.

Bus: Bus service will be temporarily added to serve displaced L train riders in the form of interborough bus services (4 routes) and an enhanced 14th Street Select Bus Service. A temporary bus terminal will be constructed at Stuyvesant Cove to facilitate connection for riders between the temporary ferry landing at Stuyvesant Cove Park and 14th Street Select Bus Service. Typical street treatments and materials for the temporary bus service measures will be:

- **Roadway Resurfacing:** Repave 14th Street between 1st and 9th Avenues to accommodate the temporary bus service and allow for, among other things, additional areas for bus boarding. Repaving involves milling followed by asphalt paving of the roadway.
- **Thermoplastic Markings:** Paint lane lines, symbols and word messages that delineate the use of roadway lanes.
- **Flexible Delineators:** Deploy plastic vertical bollards that delineate the edge between pedestrian space and the roadway.
- **Metrocard and Coin SBS Fare Machines & Wayfinding Totems:** Install fare machines on the existing sidewalk for customers to use a Metrocard or coins to obtain proof of payment receipts for M14 SBS and Interborough L1, L2, L3 and L4 routes. And install wayfinding totems.
- **Pedestrian Space:** Asphalt roadway spaces painted beige to designate additions to existing sidewalk space, but flush with the roadway.
- **Red Painted Bus Lanes:** Paint travel lanes red (“terra-cotta”) to designate exclusive bus lanes.
- **Loading Space:** Provide loading space, which is depicted in the drawings but not specifically marked with a roadway treatment. No construction will be involved for this.
- **Detachable Warning Strips:** Install mats at the edge of pedestrian spaces to delineate the change from roadway to pedestrian space for pedestrians with limited vision or other disabilities.
- **Bus Stop Curb Extensions:** Install temporary recycled plastic modular curb pieces that are attached to the roadway surface and create a bridge to the existing sidewalk using a flap that is deployed over the curb.

Almost all of these temporary treatments (except for the fare machines and wayfinding totems) will be located in the streetbed and will not require excavation or construction.

Ferry: Temporary ferry service will be implemented between North Williamsburg in Brooklyn, NY and Stuyvesant Cove in Manhattan, NY. The North Williamsburg ferry location does not include any excavation activities that could impact archaeological resources. An existing pier will be utilized for

the temporary ferry service. The Stuyvesant Cove temporary terminal will be described below. Typical street treatments and materials for the temporary ferry service measures will be:

- **Metrocard and Coin SBS Fare Machines:** Install fare machines on the existing sidewalk for customers to use a Metrocard or coins to obtain proof of payment receipts for ferry and M14 SBS.
- **Loading Space:** Provide loading spaces, which are depicted in the drawings but not specifically marked with a roadway treatment. No construction is involved for this.

Bicycles: Temporary protected one-way bike lanes along 12th and 13th Streets in Manhattan will be implemented under the ASP. Temporary upgrades will be implemented along the Grand Street bike lane in Brooklyn. NYCDOT may add temporary high capacity valet bike parking and bike parking sleds at intervals along 12th and 13th Streets. NYCDOT will implement standard geometric street treatments consistent with the City's Street Design Manual (see generally Section 2.1) for the temporary bike lanes:

- **Roadway Resurfacing:** Mill the roadway and then pave the roadway with asphalt. This will occur in select locations for smoothing of the road surface prior to installation of temporary bike lanes and upgrades in Manhattan and Brooklyn, specifically for the 12th Street (Manhattan, NY), 13th Street (Manhattan, NY), and Grand Street (Brooklyn, NY) bike lanes. No historic street surfaces will be affected; all roadbeds are currently asphalt. This is a standard NYCDOT maintenance procedure.
- **Thermoplastic Markings:** Paint lane lines, symbols and word messages that delineate the use of roadway lanes.
- **Flexible Delineators:** Deploy plastic vertical bollards that delineate the edge between pedestrian space and the roadway.
- **Detachable Warning Strips:** Install mats at the edge of pedestrian spaces to delineate the change from roadway to pedestrian space for pedestrians with limited vision or other disabilities.
- **Green painted bike lanes:** Paint travel lanes green to designate exclusive bike lanes

All of these temporary treatments will be located in the streetbed and will not require excavation or construction.

Pedestrians: Temporary vehicle restrictions on Union Square West and University Place along with temporary bus stop curb and sidewalk extensions on 14th Street and Houston Street will allow for additional pedestrian space. Typical street treatments and materials for the temporary bus service measures will be:

- **Thermoplastic Markings:** Painting lane lines, symbols and word messages that delineate the use of roadway lanes.
- **Flexible Delineators:** Plastic vertical bollards that delineate the edge between pedestrian space and the roadway.
- **Pedestrian Space:** Asphalt roadway spaces painted beige to designate additions to existing sidewalk space, but flush with the roadway.
- **Detachable Warning Strips:** Mats installed at the edge of pedestrian spaces to delineate the

change from roadway to pedestrian space for pedestrians with limited vision or other disabilities.

All of these temporary treatments will be located in the streetbed and will not require excavation or construction, and are considered to be of No Effect to adjacent historical resources.

LOCATIONS WITH POTENTIAL IMPACTS

Temporary Stuyvesant Cove Ferry Landing and Select Bus Service Stop and Passenger Loading Location:

Stuyvesant Cove: Between East 18th and 20th Streets, under the FDR Highway, installing a temporary parking lot for bus storage and connection to the temporary Ferry Terminal. This will involve moving jersey barriers and minor adjustment of the asphalt curbs as this area is already used for onsite parking. Additionally, within the temporary parking lot, a temporary Select Bus Service Stop will be installed with two Metrocard Fare Machines. The machines will be installed within the parking area and along the Ferry Pedestrian Passageway near the waterfront. The parking area is paved asphalt and will remain asphalt. A temporary Swing Room Trailer will be located within the parking lot and will be removed once the Canarsie Tunnel is reopened for service, which is approximately after 15 months.

The historic resources with the proposed Area of Potential Effect (APE) at these locations are as follows:

- Stuyvesant Town, between 1st Avenue, 20th Street, Avenue C, and East 14th Street, New York, NY (NRHP: 06101.015023) located within 150 foot APE.
- Peter Cooper Village, 342 1st Avenue, New York, NY (NRHP: 06101.018754) located within 150 foot APE.

The proposed temporary ferry location and bus stop/passenger loading location will not have an impact on any historic resources within the above noted APE. **We anticipate no historic resources will be affected at this location.**

Union Square West and 14th Street Select Bus Service Location:

Union Square West:

NYCDOT, as part of the ASP, proposes to temporarily close the roadway at Union Square West between 16th and 17th Streets and 14th and 15th Streets to vehicular traffic and delineate a bicycle path in order to temporarily provide more pedestrian and cyclist travel space. Union Square West between 15th and 16th Streets will remain open to vehicular traffic. To enhance this additional temporary pedestrian and bicycle space, NYCDOT intends to repair portions of the roadway to ensure that all parts of the roadway are safe for pedestrian and cyclists. In 2000, the section of Union Square West between 14th and 15th Streets was reconstructed with contemporary granite pavers and concrete pavement. Over time, large portions of the concrete have cracked and some portions of the granite pavers are sinking. NYCDOT intends to remove the cracked concrete and granite pavers at

crosswalks and a narrow strip of granite pavers on the west side of the street. It is currently anticipated that the pavers and concrete will be replaced with asphalt to provide a smooth surface for cyclists and pedestrians. Once the Canarsie Tunnel is rehabilitated and re-opened for service, NYCDOT anticipates that the asphalt will remain in place but that the street sections will be re-opened for vehicles, (please see attached photo and plan for more information).

Additionally, NYCDOT will be restricting private vehicle access along 14th Street and adding temporary pedestrian space in the bed of the roadway (asphalt road will be painted beige), including between Union Square West and Union Square East. Only the East 14th Street streetbed will be painted beige; Union Square West and Union Square East will not be painted beige. Portions of the road along East 14th Street below Union Square will be painted to delineate walking areas. Flexible delineators to create protected bike lanes will be installed along East 14th Street below Union Square. NYCDOT's temporary treatments are all within the existing right of way and, while access to areas of the right of way will be modified for the ASP, Union Square West and 14th Street will remain right of way.

The proposed temporary pedestrian and cyclist spaces on Union Square West and temporary pedestrian spaces on 14th Street between Union Square West and Union Square East will be located within the boundaries of Union Square, which is a National Historic Landmark (04NR05375) and listed on the State and National Registers of Historic Places. Union Square was historically the location for the Labor Movement to stage protests and the surrounding roadways of the park were where the Labor Day marches originated. The proposed changes will not affect the layout of the park or roadways and will expand public and pedestrian access to the roadways that were involved in the historic events underlying the Square's landmark designation. **Therefore, we anticipate No Adverse Effect on Union Square for this location.**

Additional APE and historic resource information for the Union Square West work below:

- In addition to the Union Square historic resource, work along Union Square West is within 150 feet of the Decker Building, 33 Union Square West, New York, NY (NRHP: 06101.008582 & LP-1538); Bank of the Metropolis at 31 Union Square West, New York, NY (NRHP: 06101.013164 & LP-00966); Lincoln Building at 1 Union Square West (NRHP: 06101.001799 & LP-01536); and 14th Street/Union Square Subway Station (NRHP: 06101.015188).

14th Street Select Bus Service Route Location:

New Metrocard and Coin SBS Fare Machines and Wayfinding Totems will be installed temporarily at locations with new Select Bus Service Stops. However, some fare machines and wayfinding totems will remain after the Project. The installation of the fare machines may require removal of the existing sidewalk and curb to connect to electrical utilities. Excavation for the fare machines and totems can reach a depth of 18" within the sidewalk area and street and up to 30" for electrical boxes. All work will take place within the sidewalk and road bed in previously disturbed areas. Archaeological resources will not be impacted by this work.

Proposed Scope of Work and Historic Resources:

- 14th Street and 10th Avenue: Machines and totems will be located on the east side of 10th Avenue on the south sidewalk of West 14th Street. A small trench will run in the road from the machines across to the north side of West 14th Street to connect to existing utilities. This intersection is located within the Gansevoort Market Historic District (NRHP: 05NR05491). The existing sidewalk is concrete with a granite curb and the adjacent roadbed is asphalt. The existing conditions will remain and any damaged granite curbs will be replaced to match.
- 14th Street and 8th Avenue: Machines and totems will be located on the northwest corner and southeast corner on West 14th Street. The machines will be located within 150 feet of New York Savings Bank at 81 Eighth Avenue, New York, NY (NRHP: 06101.007391 & LP-01635); Manufacturers Hanover Trust Company Building at 77 Eighth Avenue, New York, NY (LP-01633); and the Greenwich Village Historic District (NRHP: 90NR00758 & LP-0489). The existing sidewalk is concrete with a granite curb and the adjacent roadbed is asphalt. The existing conditions will remain and any damaged granite curbs will be replaced to match.
- 14th Street and 6th Avenue: Machines and totems will be located on the northwest corner and southeast corner on West 14th Street. The machines will be located within 150 feet of 510 Sixth Avenue, New York, NY (NRHP: 06101.008628) and R.H. Macy & Co. Store, 14th Street Annex at 56 West 14th Street, New York, NY (LP-02474). The existing sidewalk is concrete with a granite curb and the adjacent roadbed is asphalt. The existing conditions will remain and any damaged granite curbs will be replaced to match.
- 14th Street and University Place: Machines and totems will be located on the southwest corner at East 14th Street. The machines will be located within 150 feet of the Lincoln Building at 1 Union Square West, New York, NY (NRHP: 06101.001799 & LP-01536); and Union Square (NRHP: 98NR01315 & LP-00965). The existing sidewalk is concrete with a granite curb and the adjacent roadbed is asphalt. The existing conditions will remain and any damaged granite curbs will be replaced to match.
- 14th Street and 4th Avenue: Machines and totems will be located at the northeast corner at East 14th Street. A short trench will run in the road from the new machines on East 14th Street to 4th Avenue to connect to existing utilities. The machines will be located within 150 feet of the Union Square (NRHP: 98NR01315 & LP-00965) and 14th Street/Union Square Station (NRHP: 06101.015188). The existing sidewalk is concrete with a granite curb and the adjacent roadbed is asphalt. The existing conditions will remain and any damaged granite curbs will be replaced to match.
- East 14th Street and 2nd Avenue: Machines will be located at the northwest section of 2nd Avenue at the intersection of East 14th Street and 2nd Avenue. The machines will be located within 150 feet of Mabel Dean Bacon Vocation High School at 240 2nd Avenue, New York, NY (NRHP: 06101.010647); the Hebrew Technical School for Girls at 238-246 2nd Avenue, New York, NY (NRHP: 06101.017035); 242 East 15 Street, New York, NY (NRHP: 06101.002710 & LP-00893); and 240 East 15 Street, New York, NY (NRHP: 06101.002709 & LP-00893). The existing sidewalk is concrete with a granite curb and the adjacent roadbed is asphalt. The existing conditions will remain and any damaged granite curbs will be replaced to match. ***These machines will also be used for the temporary Interborough Bus Route.
- 14th Street and 1st Avenue: Machines will be located at the north and southeast corners at East

14th Street. The machines will be located within 150 feet of the Church of the Immaculate Conception and Clergy House at 406-414 East 14th Street, New York, NY (NRHP: 06101.001682 & LP-00226/7). The existing sidewalk is concrete with a granite curb and the adjacent roadbed is asphalt. The existing conditions will remain and any damaged granite curbs will be replaced to match.

The proposed ticket machine and wayfinding totem locations and related sidewalk and roadbed construction work will not physically or visually impact adjacent historic resources or historic districts and will not impact archaeological resources. **We anticipate no historic resources will be affected at this location.**

Interborough Bus Route (Manhattan and Brooklyn):

New Metrocard and Coin SBS Fare Machines will be installed temporarily at locations within the temporary Interborough Bus Route. The installation of the fare machines may require removal of the existing sidewalk and curb to connect to electrical utilities. Excavation for the fare machine can reach a depth of 18” within the sidewalk area and street. All work will take place within the sidewalk and road bed in previously disturbed areas.

Proposed Scope of Work and Historic Resources:

- Bushwick Avenue and Grand Street (Brooklyn): Machines will be located at the southeast corner of the intersection of Grand Street and Bushwalk Avenues. The machines will be installed within 150 feet of the Williamsburg Houses at 122-192 Bushwick Avenue (NRHP: 04701.015499). A portion of the sidewalk will be removed for the installation of the machines and their supporting utilities/junction boxes. A trench will run north along Bushwick Avenue and turn east along Grand Street to connect to nearby utilities. The asphalt road and concrete sidewalk/curb will be restored to match existing.
- Delancey Street and Essex Street (Manhattan): Machines will be located along Delancey Street at the southeast and southwest corners of intersections adjacent to Ludlow Street and Essex Street; at the northwest side of Delancey at the intersection of Delancey and Essex Streets; and at the northeast side of Delancey at the intersection of Delancey and Essex Streets. The machines will be located within the Lower East Side Historic District (NRHP: 00NR01620); A portion of the sidewalk will be removed for the installation of the machines and their supporting utilities/junction boxes. The existing concrete sidewalks and metal curbs will be restored to match existing.
- East Houston Street between Mulberry and Mott Streets (Manhattan): Machines will be located along the south side of East Houston Street at the east and west ends of the street. A short trench in the street from the southeast corner of East Houston Street and Mulberry Street will run across Mulberry Street to connect to existing utilities at the southwest corner of the intersection of Mulberry Street and East Houston Street. The machines will be installed within 150 feet of the Puck Building at 273 Mulberry Street, New York, NY (NRHP: 06101.001564 & LP-01226); the Chinatown and Little Italy Historic District (NRHP: 09NR06033), the SoHo-Cast Iron Historic District Extension (LP-02362); the NoHo Historic District (LP-02039 & NRHP: 03SD00449); 311-321 Mott Street, New York, NY (NRHP: 06101.014016); NoHo East Historic District (LP-02129 & NRHP: 04SD00457); and 302

Mott Street, New York, NY (NRHP: 06101.019121). A portion of the sidewalk will be removed for the installation of the machines and their supporting utilities/junction boxes. A portion of the roadbed will be trenched for the connection to utilities. The existing asphalt road surface, concrete sidewalks and granite curbs will be restored to match existing.

- Delancey Street and Norfolk Street (Manhattan): Machines will be installed at the southeast corner of Delancey Street at the intersection of Delancey and Norfolk Streets. A small trench will run in the road from the machines to connect to existing utilities on Norfolk Street. The machines will be located within 150 feet of the Essex Street Market at 78-90 Essex Street, New York, NY (NRHP: 06101.010494). The existing asphalt road surface, concrete sidewalks and metal curbs will be restored to match existing.

The proposed ticket machine locations and related sidewalk and roadbed construction work will not physically or visually impact adjacent historic resources or historic districts and will not impact archaeological resources. **We anticipate no historic resources will be affected at this location.**

PROTECTION PROCEDURES

A Construction Protection Procedure will be included with the construction documents requiring protection of all adjacent historical resources. Technical Policy and Procedure Notice #: 10/88 from the NYC DOB for Construction adjacent to Historic Structures will be utilized for all work adjacent to historical resources or within historic districts.

Please feel free to contact me at 646-252-2051 or Sara McIvor at 646-252-4081, if you have any comments or questions.

Sincerely,



Linda Tonn, R.A.
D.V.P. & Chief Architect
Capital Program Management

cc:	D. Burns (FTA)	S. McIvor
	N. Chung (FTA)	D. Moser (FTA)
	P. Crociata	D. Pollack
	A. Elmi	S. Pondish (DOT)
	T. Fackelman	H. Roth (DOT)
	J. Mateo (FTA)	H. Stein (NYC Law)
	J. McClain	B. Schmitter



June 22, 2018
New York City Economic Development Corporation
110 William Street
New York, NY 10038

Attention: James Wong, AICP, VP, Director of Passenger Transportation & Ferries

Reference: MTA New York City Transit
Canarsie Tunnel Project
4(f) *de minimis* for: Stuyvesant Cove

Dear Mr. Wong,

The purpose of this letter is to inform the New York City Economic Development Corporation (NYCEDC) of New York City Transit's (NYCT) intent, in coordination with the Federal Transportation Administration and the NYCEDC, to make a Section 4(f) *de minimis* impact determination as defined in 23 C.F.R. Part 774.17 for the use of Stuyvesant Cove Park, located in New York, NY. We are requesting concurrence from NYCEDC that the proposed Canarsie Tunnel Project (Project) will not adversely affect the activities, features, or attributes that make Stuyvesant Cove Park eligible for Section 4(f) protection.

MTA New York City Transit (NYCT) is working with New York City Department of Transportation (NYCDOT) to provide alternative service during the proposed Project, which entails closure of the Canarsie Tunnel and temporary provision of ferries, additional buses, street treatments, and other temporary alternative services. The proposed ferry service will require access through NYCEDC's Stuyvesant Cove Park, which is considered a Section 4(f) [of the U.S. Department of Transportation Act of 1966] resource as a recreation area. The temporary services are proposed to operate for approximately 16 months.

Stuyvesant Cove Park used to be the site of a cement plant; however, once the facility closed it was considered a brownfield. In the late 1990s, under the direction of NYCEDC, the area was restored and became an open recreation area. The recreation area spans 1.9 acres (82764 ft²) along the East River waterfront in Manhattan from E 18th Street to E 23rd Street.

Plans to install a pier at Stuyvesant Cove Park had already been initiated by NYCEDC prior to the Canarsie Tunnel Project. NYCEDC intends to provide another stop for the NYC Ferry Service, which operates along the East River and Rockaways. This added service is anticipated to add an additional 1192 passengers during each peak hour. There will be no adverse effects to the recreation area or to the ability of users to access this recreation area. Proper wayfinding signage will help alleviate any crowding.

The proposed changes to this Section 4(f) property are minimal and temporary. With the intention to use the nearest parking lot under the FDR Drive (between Ave C & E 20th Street) as a bus terminal, two paths will be constructed to provide a direct connection between the bus



service and the ferry. A total of approximately 7000 ft² of the 82,764 ft² property will be temporarily modified to accommodate the new ferry access paths (paved asphalt) and ticketing machines—7000 ft² for the path and 12 ft² for the ticketing machines. Ticketing services will be installed in the form of MTA SBS ticket transfer machines. The area proposed to be modified will be small in comparison to the overall size of the recreation area and will be restored to its original state or better once the shutdown is complete. Estimated start date of temporary service is March 2019.

The proposed Project has no other anticipated impacts to regular activities at Stuyvesant Cove Park. During the operation of the ferry service, best management practices will be utilized to limit temporary impacts. Noise and vibration impacts will be limited by local laws. NYCT will coordinate with NYCEDC regarding temporary impacts to the Stuyvesant Cove Park.

In addition to a potential meeting at a site and date to be determined, public notice and opportunity for public review and comment concerning the effects on the 4(f) property will be provided in conjunction with the public comment period for the Supplemental Environmental Assessment document being prepared for the Project (anticipated to be publicly available July 2018).

This public review period aims to solicit comments on the proposed Project to support a Section 4(f) *de minimis* finding, pursuant to 23 C.F.R Part 774.5 (b) to acknowledge that the proposed Project will not adversely affect the activities, features, and attributes of the Stuyvesant Cove Park. NYCT will accept comments from the public regarding potential recreation area impacts for 30 days from the date the EA and 4(f) evaluation are posted on the MTA website. NYCEDC will be notified of any questions concerning the recreation area that arise during this time.

NYCT appreciates the continued attention from NYCEDC on this matter. Any questions on this project should be sent to Angelo Elmi, P.E. at 646-252-3608 or angelo.elmi@nyct.com.

Sincerely,

A handwritten signature in black ink that reads "Angelo Elmi".

Angelo Elmi, P.E.,
MTA New York City Transit, CPM Environmental Engineering

Cc: Donald Burns, FTA
Nina Chung, FTA
Daniel Moser, FTA
Judy McClain, MTA
Paul Dowd, MTA

Attachment: Bus Terminal Layout Plan



Parks, Recreation, and Historic Preservation

ANDREW M. CUOMO
Governor

ROSE HARVEY
Commissioner

June 25, 2018

Ms. Nina Chung
Federal Transit Authority
Bowling Green
New York, NY 10004

Re: FTA
Canarsie Tunnel Shutdown Alternative Service Plan
18PR03859

Dear Ms. Chung:

Thank you for requesting the comments of the State Historic Preservation Office (SHPO). We have reviewed the project in accordance with Section 106 of the National Historic Preservation Act of 1966. These comments are those of the SHPO and relate only to Historic/Cultural resources. They do not include potential environmental impacts to New York State Parkland that may be involved in or near your project. Such impacts must be considered as part of the environmental review of the project pursuant to the National Environmental Policy Act and/or the State Environmental Quality Review Act (New York Environmental Conservation Law Article 8).

As you know the project's area of potential effect includes several areas within the city of New York, which are considered historic. Preeminent among these resources is Union Square, which was designated as a National Historic Landmark in 1997. In addition, the 14th Street /Union Square Subway Station beneath Union Square was listed in the New York State and National Registers of Historic Places in 2005.

The Union Square NHL was found to be nationally significant for the "role it played in the history of labor in the county." The square and its surrounding streets, which served as the location of numerous rallies, demonstrations, marches and parades, were found to be character defining elements of the landmark. While the streets and the park itself have changed over more than a century of historic use, they nevertheless continue to convey the historical importance of the events that occurred and continue to occur at the square.

In reviewing your agency's proposed undertaking, the NYSHPO notes that the work will not directly or indirectly impact historic fabric, visual elements or other character defining features associated with the landmark. As a result, it is the NYSHPO's opinion that the project will have no effect upon the Union Square NHL or other eligible or listed resources.

Division for Historic Preservation

P.O. Box 189, Waterford, New York 12188-0189 • (518) 237-8643 • www.nysparks.com

We also recommend that no additional archaeological survey will be required for the undertaking. However, we do ask that as your agency completes its construction protection plans that a copy be submitted to our office.

If you have any questions, I can be reached at 5 18-268-2181.

Sincerely,



Beth A. Cumming
Senior Historic Site Restoration Coordinator
e-mail: beth.cumming@parks.ny.gov

via e-mail only

cc: L. Tonn – MTA, S. McIvor - MTA



June 26, 2018
New York City Parks Department
The Arsenal, Central Park
830 Fifth Avenue
New York, NY 10065

Attention: Brendan Shera, New York City Parks Department, Interagency Coordination

Reference: MTA New York City Transit
Canarsie Tunnel Project
4(f) *de minimis* for: North 5th Street Park

Dear Mr. Shera,

The purpose of this letter is to inform the New York City Department of Parks and Recreation (NYC Parks) of New York City Transit's (NYCT) intent, in coordination with the Federal Transportation Administration and the NYC Parks, to make a Section 4(f) *de minimis* impact determination as defined in 23 C.F.R. 774.17 for the use of North 5th Street Park, located in North Williamsburg, Brooklyn, NY. We are requesting concurrence from NYC Parks that the proposed Canarsie Tunnel Project (Project) will not adversely affect the activities, features, or attributes that make North 5th Street Park eligible for Section 4(f) protection.

MTA New York City Transit (NYCT) is working with New York City Department of Transportation (NYCDOT) to provide alternative service during the proposed Project, which entails closure of the Canarsie Tunnel and temporary provision of ferries, additional buses, street treatments, and other temporary alternative services. The proposed ferry service will require access through NYC Park's North 5th Street Park, which is considered a Section 4(f) [of the U.S. Department of Transportation Act of 1966] resource as it is a publicly owned parkland. The temporary services are proposed to operate for approximately 16 months.

NYCT proposes to construct a temporary ferry landing on NYCDPR's existing Empire Pier—which is to the immediate north of New York City Economic Development Corporation's (NYCEDC) pier currently used for East River ferry service. This temporary landing will involve a gangway connecting the Empire Pier with a small spud barge and fenders. Passengers will have to walk through the NYC Parks property, North 5th Street Park, to access the proposed North Williamsburg ferry landing.

The changes to this Section 4(f) property are minimal and temporary. A total of approximately 54 ft² will be temporarily modified of the 50,911 ft² property. These modifications include the installation of a 40 ft² ferry landing connection and seven ticket machines with a total area of 14 ft². Other temporary impacts include, a maximum of 1192 patrons for each peak hour accessing the park to use the ferry, a cut in the existing guard rail on the Empire Pier to accommodate the ferry landing connection, and an extension of park hours from 12 AM to 2 AM on Fridays and Saturdays.



The proposed area to be modified will be small in comparison to the overall size of North 5th Street Park. All temporary infrastructure will be removed at the end of the proposed Project, and the site will be restored to its original condition or better. Estimated start date of temporary service is March 2019.

The proposed Project has no other anticipated impacts to regular activities at the North 5th Street Park. During the operation of the ferry service, best management practices will be utilized to limit temporary impacts. Noise and vibration impacts will be limited by local laws. NYCT will coordinate with NYC Parks regarding temporary impacts to the North 5th Street Park.

In addition to a public meeting at a site and date to be determined, public notice and opportunity for public review and comment concerning the effects on the 4(f) property will be provided in conjunction with the public comment period for the Supplemental Environmental Assessment document being prepared for the Project (anticipated to be publicly available July 2018).

This public review period aims to solicit comments on the proposed Project to support a Section 4(f) *de minimis* finding, pursuant to 23 C.F.R Part 774.5 (b) to acknowledge that the proposed Project will not adversely affect the activities, features, and attributes of the North 5th Street Park. NYCT will accept comments from the public regarding potential park impacts for 30 days from the date the EA and 4(f) evaluation are posted on the MTA website. NYC Parks will be notified of any questions concerning the parkland that arise during this time.

NYCT appreciates the continued attention from NYC Parks on this matter. Any questions on this project should be sent to Angelo Elmi, P.E. at 646-252-3608 or angelo.elmi@nyct.com.

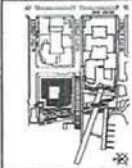
Sincerely,

A handwritten signature in black ink that reads "Angelo Elmi".

Angelo Elmi, P.E.,
MTA New York City Transit, CPM Environmental Engineering

Cc: Donald Burns, FTA
Nina Chung, FTA
Daniel Moser, FTA
Judy McClain, MTA
Paul Dowd, MTA

Attachment: Ferry Landing Plan

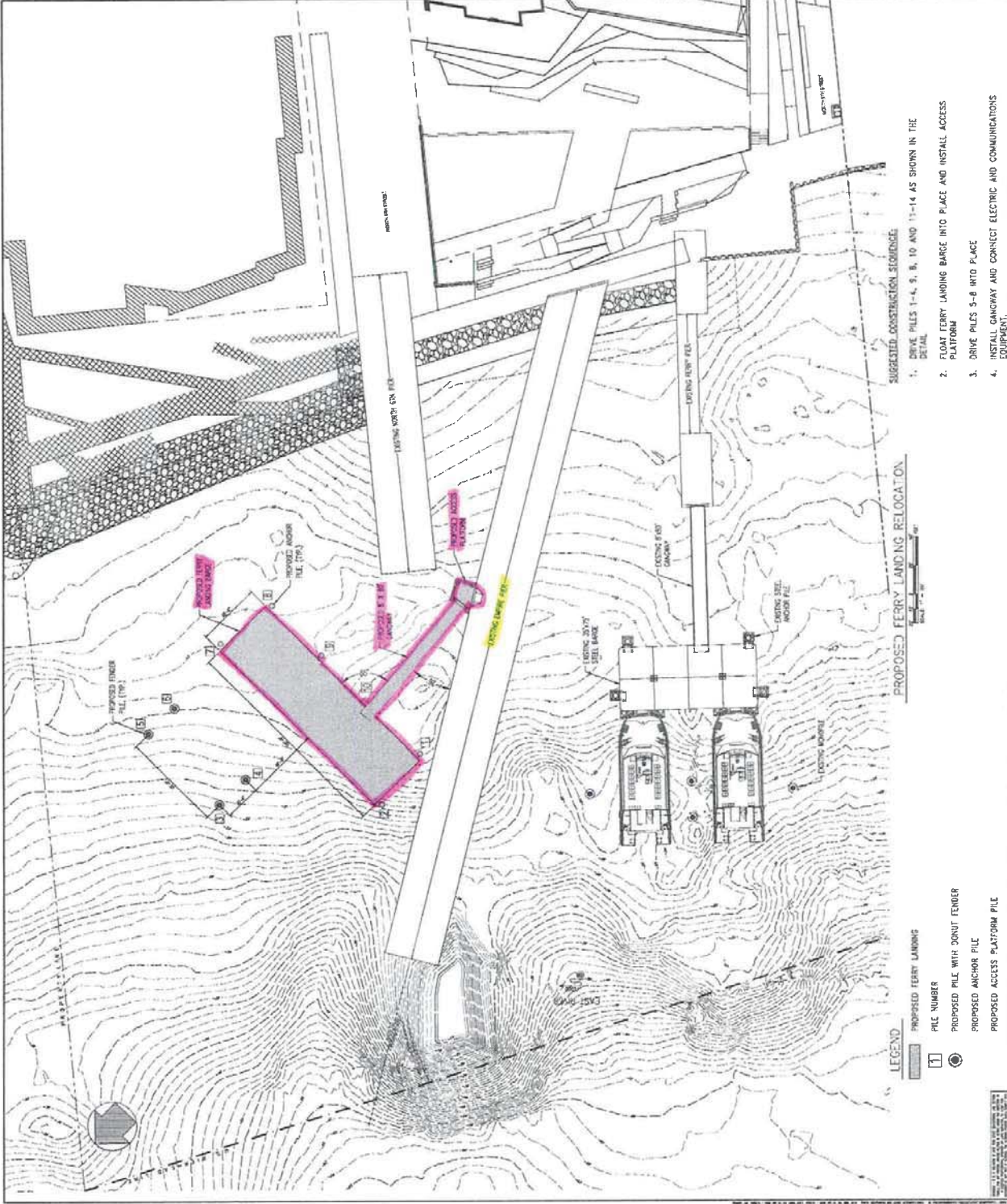


PARSONS BRINCKERHOFF
300 Park Avenue South
New York, NY 10017
212.512.2000
www.pbworld.com

2 North 6th Place
Williamsburg, Brooklyn, NY
FERRY LANDING PLAN

DATE: 07/14/09
SCALE: 1/4" = 1'-0"

NO.	DESCRIPTION	DATE
1	ISSUED FOR PERMITS	07/14/09
2	ISSUED FOR CONSTRUCTION	07/14/09
3	ISSUED FOR CONSTRUCTION	07/14/09
4	ISSUED FOR CONSTRUCTION	07/14/09



PROPOSED FERRY LANDING RELOCATION

LEGEND

- PROPOSED FERRY LANDING PILE NUMBER
- PROPOSED PILE WITH DONUT FENDER
- PROPOSED ANCHOR PILE
- PROPOSED ACCESS PLATFORM PILE

SUGGESTED CONSTRUCTION SEQUENCE:

1. DRIVE PILES 1-4, 8, 10 AND 11-14 AS SHOWN IN THE DETAIL.
2. FLOAT FERRY LANDING BARGE INTO PLACE AND INSTALL ACCESS PLATFORM
3. DRIVE PILES 5-8 INTO PLACE
4. INSTALL GANGWAY AND CONNECT ELECTRIC AND COMMUNICATIONS EQUIPMENT.



U.S. Department
of Transportation
**Federal Transit
Administration**

REGION II
New Jersey
New York

One Bowling Green
Room 428
New York, NY 10004-1415
212-668-2170
212-668-2136 (fax)

June 29, 2018

Ms. Michaela E. Noble
Director – Office of Environmental Policy and Compliance
U.S. Department of Interior
1849 C Street, NW, (MS 5538-MIB)
Washington, D.C. 20240

Re: MTA New York City Transit Canarsie Tunnel Project Supplemental Environmental Assessment, Proposed Section 106 Finding and Proposed Section 4(f) De Minimis Impact Determination

Dear Ms. Noble:

The Federal Transit Administration (FTA) is seeking the U.S. Department of Interior's concurrence on a proposed Section 106 finding and Section 4(f) de minimis impact determination for the Union Square National Historic Landmark (NHL) in conjunction with the Metropolitan Transportation Authority, New York City Transit's (NYCT) proposed project to repair and rehabilitate both Canarsie railway tunnels. The Canarsie tunnels serve the NYCT "L" subway line connecting the Borough of Manhattan (New York County) to the Borough of Brooklyn (Kings County), New York. The Federal Transit Administration (FTA) is the federal lead agency for the proposed project.

The Canarsie tunnels run under the East River and were extensively damaged by flooding during Superstorm Sandy in 2012. NYCT plans to close the tunnels to passenger rail traffic for 15 months to complete the repairs. NYCT is preparing an Alternate Service Plan to provide transit service to the 275,000 weekday subway riders affected by the shutdown. The plan includes increased capacity on other subway lines, a temporary ferry service, temporary bike lanes, temporary increases in bus service, and street alterations. The proposed street alterations are being developed in coordination with the New York City Department of Transportation.

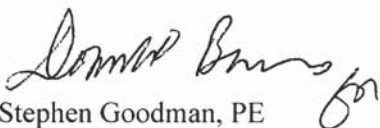
As part of the Alternate Service Plan, NYCT is proposing to increase bus service on 14th Street in Manhattan that will require temporary reconfiguration of the street right-of-way to accommodate the additional bus traffic, pedestrian traffic, temporary bus stop waiting areas and temporary bicycle lanes, both on 14th street and connecting side streets. Some of the proposed temporary street alterations would occur within the Union Square NHL. The landmark consists of a central public plaza/park and surrounding street right-of-way. The proposed project would not require encroachment on the public plaza park/recreation portion of the NHL. The attachments to this letter illustrate the location and nature of the proposed work.

Pursuant to the National Environmental Policy Act (NEPA) (42 U.S.C. §4321 et seq.), FTA's Joint NEPA implementing regulations (23 CFR Part 771), Section 106 of the National Historic Preservation Act (Section 106) the Department of Transportation Act of 1966, codified at 49 U.S.C. § 303 (Section 4(f)), and FTA's Joint Section 4(f) implementing regulations (23 CFR Part 774), FTA is preparing a Supplemental Environmental Assessment for the Canarsie Tunnel Project and has consulted with the New York State Office of Parks, Recreation, and Historic Preservation (NYSOPRHP) and the New York City Department of Parks and Recreation (NYC Parks) regarding Union Square. The NYSOPRHP, in its letter dated June 25, 2018 (attached), concluded there would be No Effect on historic or archaeological resources, based on project information provided by NYCT. The NYC Parks, in its letter of May 23, 2018 (attached), indicated that the project would not occur in the portions of the Union Square NHL that are maintained as a public park.

Based on the attached information and the above consultations, FTA is proposing to find that the project will have No Effect on Section 106 resources and make a de minimis impact finding on the Union Square NHL, in accordance with 23 CFR 774.3 (b).

FTA requests DOI's review of and concurrence on the proposed Section 106 finding and Section 4(f) determination. Due to the critical timing of this proposed project, FTA would greatly appreciate any expedited review DOI can provide. Please contact Daniel Moser of our staff at 212-668-2326 or daniel.moser@dot.gov if you have any questions or need further information to process this review.

Sincerely,


Stephen Goodman, PE
Regional Administrator

Attachments: Project location map, Union Square NHL project site diagram, Union Square NHL aerial photo, Union Square West proposed construction details, Union Square West project location photos (2), MTA NYCT Section 106 letter to NYSHPO (June 20, 2018), NYSHPO Section 106 response letter (June 25, 2018), NYC Parks letter (May 23, 2018).

c: Nina Chung, FTA
Donald Burns, FTA
Michael Culotta, FTA
Bonnie Halda, NPS NE Regional Office
Cheryl Sams O'Neill, NPS NE Regional Office
Crystal Cummings, MTA
Judith McLean, MTA
Louis Oliva, MTA
Debra Pollack, MTA

ATTACHMENT

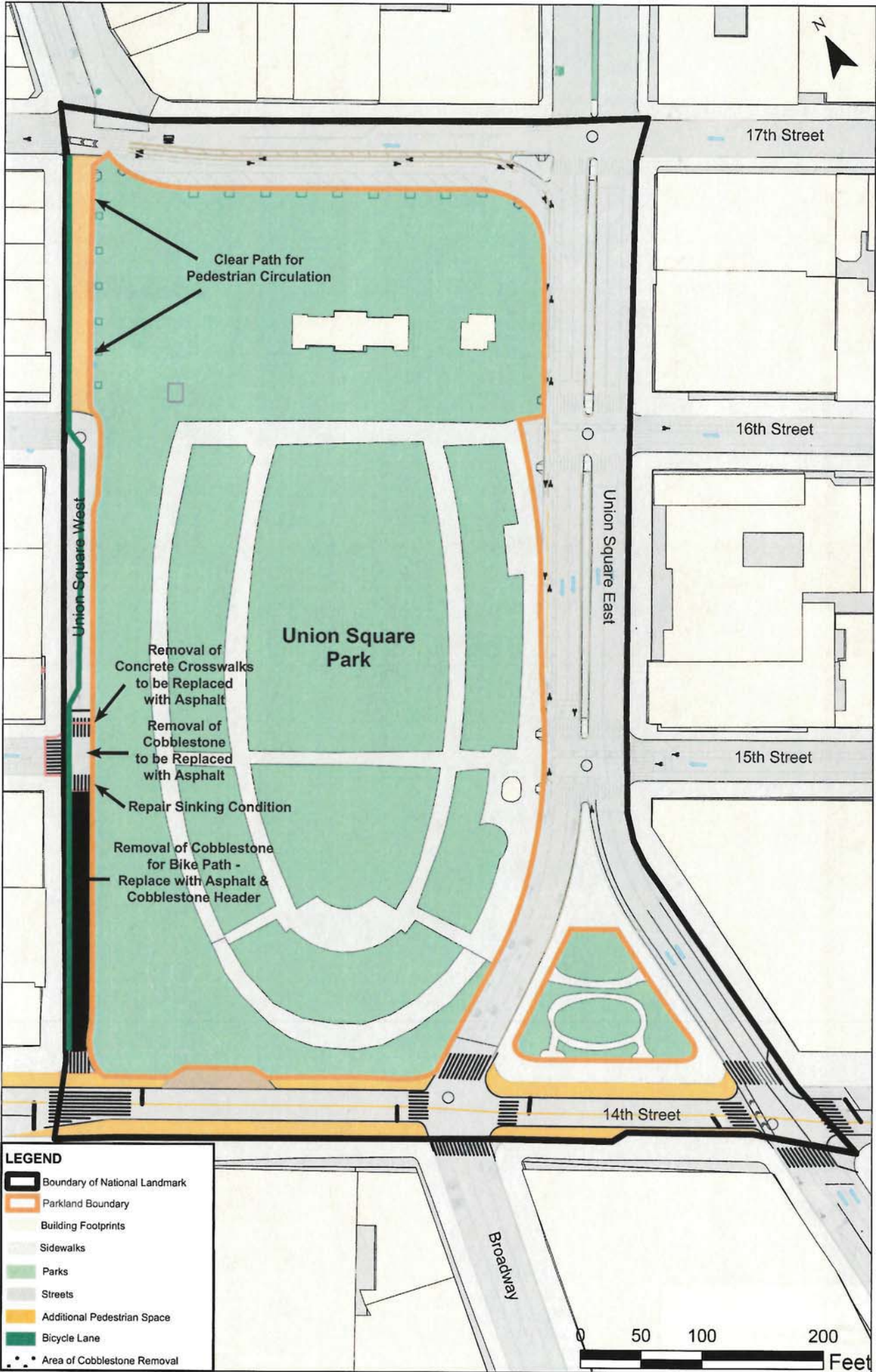
FTA Region 2 Letter to U.S. Department of Interior Director of Office of Environmental Policy
and Compliance

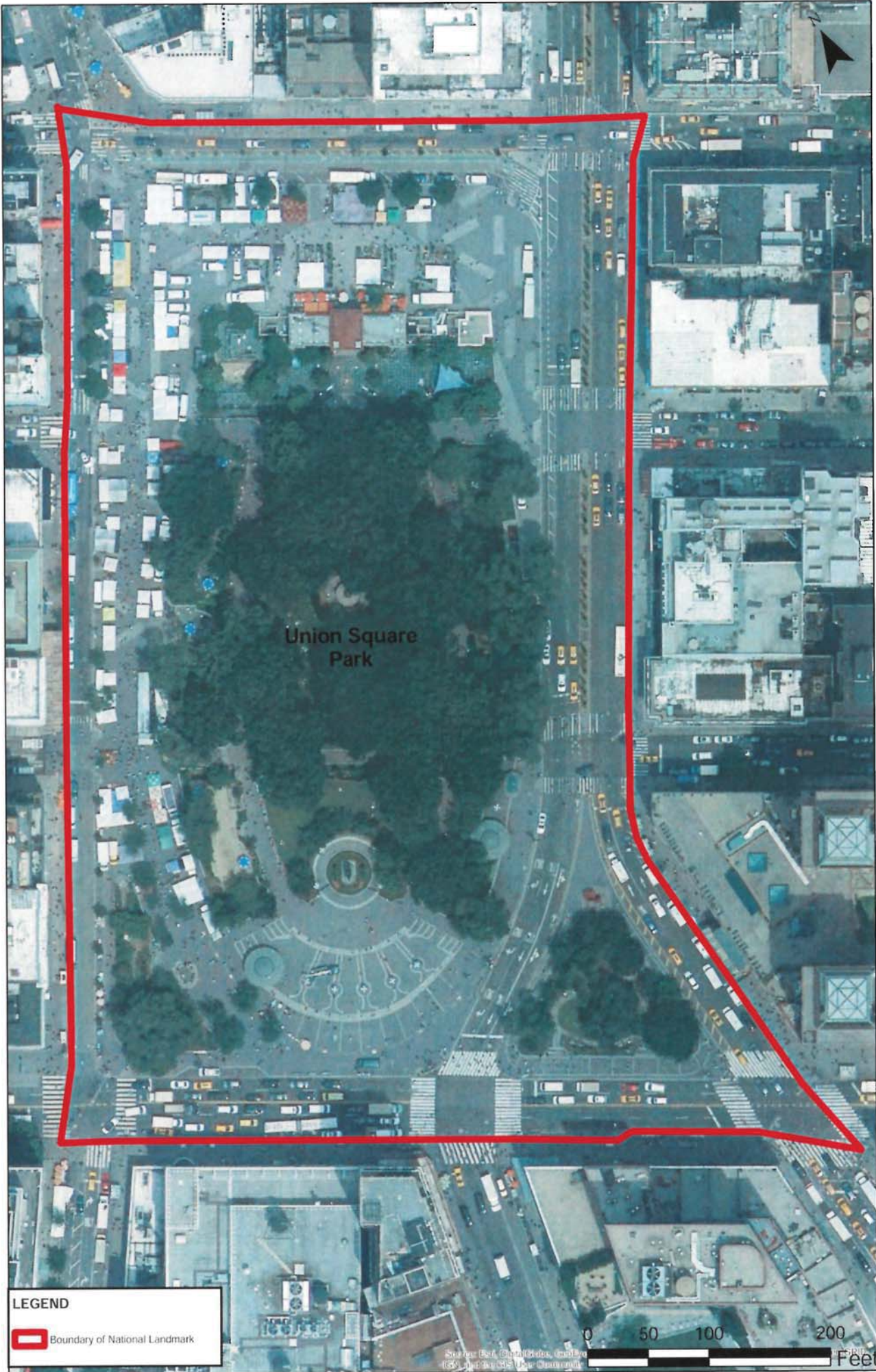
RE: MTA New York City Transit Canarsie Tunnel Project Supplemental Environmental
Assessment, Section 106 Finding and 4(f) De Minimis Impact Determination

June 29, 2018

Union Square Overview



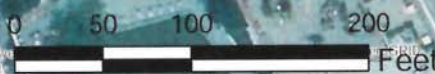




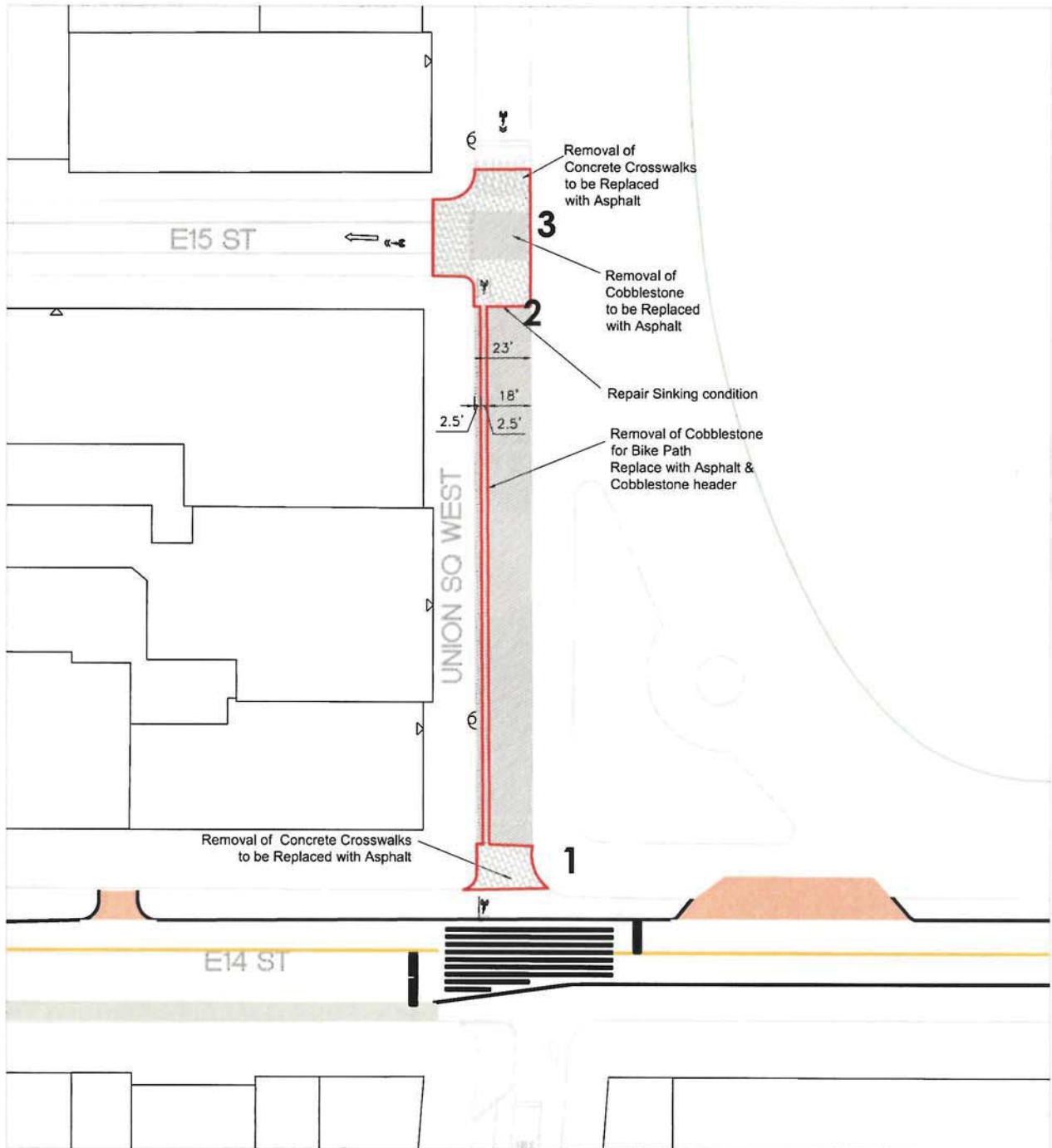
Union Square
Park

LEGEND

 Boundary of National Landmark



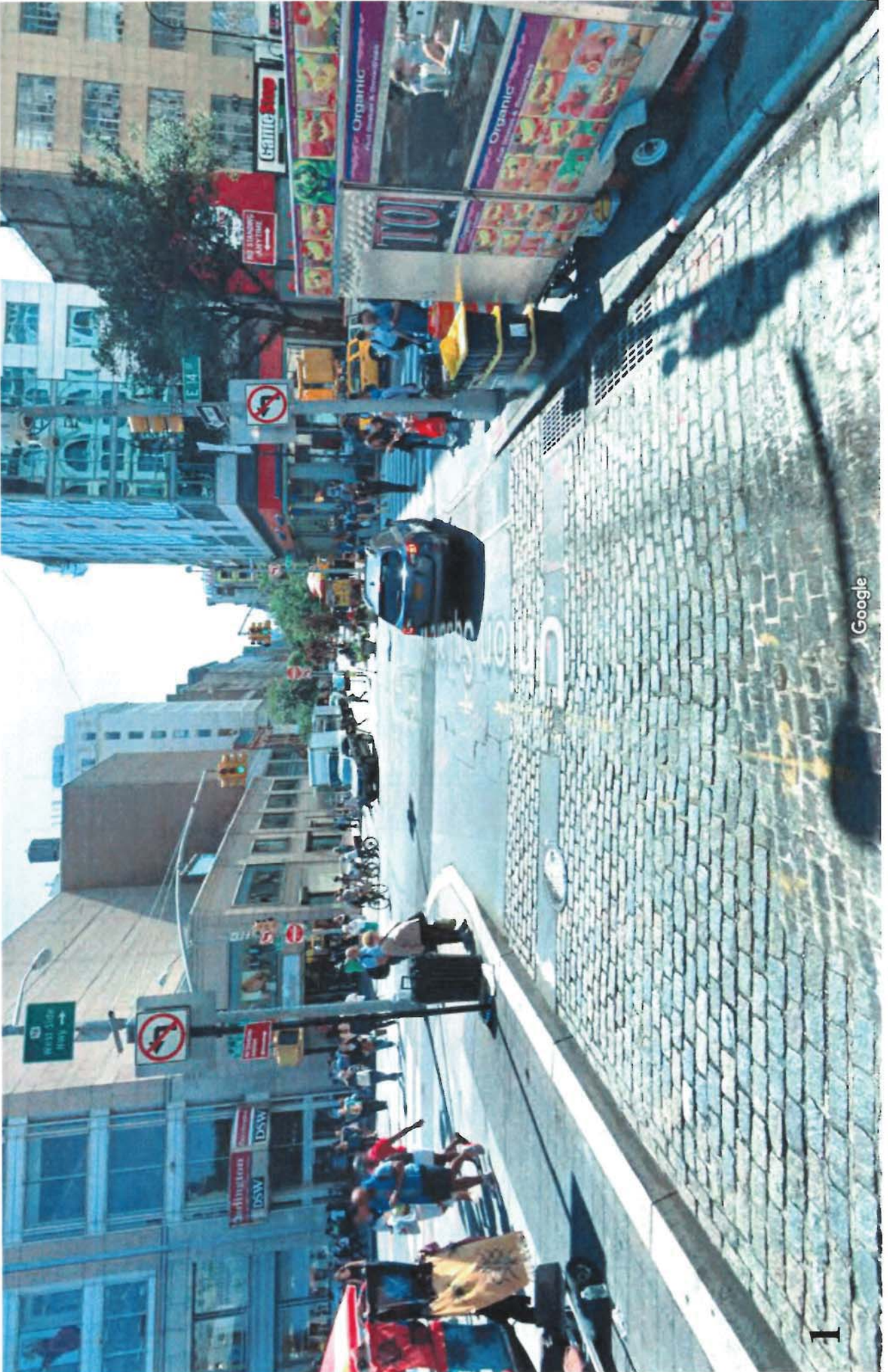
Source: Esri, DigitalGlobe, GeoEye, IGN, GeoEye, and the USGS Imagery



Option 02- Necessary Repairs & Bike Path

	SIM Scope of work:	
	- Concrete Crosswalks	Aprox 1,750 SF
	- Cobblestone	Aprox 1,000 SF
	- Total	Aprox 2,750 SF
Existing conditions:		
	- Concrete Crosswalks	Aprox 1,750 SF
	- Cobblestone	Aprox 5,250 SF
	- Total	Aprox 7,000 SF

corresponding photos



Google

I



NEW YORK CITY WATERFRONT REVITALIZATION PROGRAM Consistency Assessment Form

Proposed actions that are subject to CEQR, ULURP or other local, state or federal discretionary review procedures, and that are within New York City's Coastal Zone, must be reviewed and assessed for their consistency with the [New York City Waterfront Revitalization Program](#) (WRP) which has been approved as part of the State's Coastal Management Program.

This form is intended to assist an applicant in certifying that the proposed activity is consistent with the WRP. It should be completed when the local, state, or federal application is prepared. The completed form and accompanying information will be used by the New York State Department of State, the New York City Department of City Planning, or other city or state agencies in their review of the applicant's certification of consistency.

A. APPLICANT INFORMATION

Name of Applicant: Metropolitan Transportation Authority (MTA) - New York City Transit Authority (NYCT)

Name of Applicant Representative: Angelo Elmi, PE

Address: 2 Broadway, New York, NY 10004

Telephone: 646-252-3608 Email: angelo.elmi@nyct.com

Project site owner (if different than above): _____

B. PROPOSED ACTIVITY

If more space is needed, include as an attachment.

1. Brief description of activity

The proposed activity would include: (i) a temporary bus terminal on an existing parking lot (resurfacing the current lot) at Stuyvesant Cove, between East 20th and East 23rd Streets in Manhattan; (ii) construction of a temporary ferry landing at Empire Pier in North Williamsburg, Brooklyn for service to and from Stuyvesant Cove in Manhattan; and (iii) a bus parking on an existing parking lot (resurfacing the current lot) at 46-81 Metropolitan Ave, Maspeth, Queens. These temporary structures and facilities are scheduled to be removed shortly after L train service resumes in 2020.

2. Purpose of activity

The purpose of the proposed activity is to provide temporary ferry service to the L train riders between Manhattan and Brooklyn during the 15-month L-train tunnel (Canarsie Tunnel) shutdown as part of an Alternative Service Plan (ASP).

In 2012, the Canarsie Tunnel was seriously damaged by Hurricane Sandy, and while the exterior structure was deemed safe, structural and other components within the tunnel were severely damaged and have begun to fail. Continuing to use the Canarsie Tunnel without necessary repairs would likely cause unexpected power outages and interior structural failure, resulting in an indefinite closure to L train service with little predictability about when that would occur. Therefore, MTA determined the tunnel would need to be shut down full-time for 15 months to be able to repair the tunnel in a safe and expeditious manner to minimize risk of unexpected structural failure and service disruptions. The tunnel closure is not part of the proposed Alternative Service Plan as it is considered a No Action and has already been approved.

C. PROJECT LOCATION

Borough: MN, BK, QN Tax Block/Lot(s): n/a

Street Address: n/a

Name of water body (if located on the waterfront): East River

D. REQUIRED ACTIONS OR APPROVALS

Check all that apply.

City Actions/Approvals/Funding

City Planning Commission

Yes No

- City Map Amendment
 - Zoning Map Amendment
 - Zoning Text Amendment
 - Site Selection – Public Facility
 - Housing Plan & Project
 - Special Permit
 - Zoning Certification
 - Zoning Authorizations
 - Acquisition – Real Property
 - Disposition – Real Property
 - Other, explain: _____
 - Concession
 - UDAAP
 - Revocable Consent
 - Franchise
- (if appropriate, specify type: Modification Renewal other) Expiration Date: _____

Board of Standards and Appeals

Yes No

- Variance (use)
 - Variance (bulk)
 - Special Permit
- (if appropriate, specify type: Modification Renewal other) Expiration Date: _____

Other City Approvals

- Legislation
- Rulemaking
- Construction of Public Facilities
- 384 (b) (4) Approval
- Other, explain: _____
- Funding for Construction, specify: _____
- Policy or Plan, specify: _____
- Funding of Program, specify: _____
- Permits, specify: _____

State Actions/Approvals/Funding

- State permit or license, specify Agency: _____ Permit type and number: _____
- Funding for Construction, specify: _____
- Funding of a Program, specify: _____
- Other, explain: _____

Federal Actions/Approvals/Funding

- Federal permit or license, specify Agency: USACE Permit type and number: Individual USACE Permit
- Funding for Construction, specify: _____
- Funding of a Program, specify: _____
- Other, explain: _____

Is this being reviewed in conjunction with a [Joint Application for Permits?](#) Yes No

E. LOCATION QUESTIONS

- 1. Does the project require a waterfront site? Yes No
- 2. Would the action result in a physical alteration to a waterfront site, including land along the shoreline, land under water or coastal waters? Yes No
- 3. Is the project located on publicly owned land or receiving public assistance? Yes No
- 4. Is the project located within a FEMA 1% annual chance floodplain? (6.2) Yes No
- 5. Is the project located within a FEMA 0.2% annual chance floodplain? (6.2) Yes No
- 6. Is the project located adjacent to or within a special area designation? See [Maps – Part III](#) of the NYC WRP. If so, check appropriate boxes below and evaluate policies noted in parentheses as part of WRP Policy Assessment (Section F).
 - Significant Maritime and Industrial Area (SMIA) (2.1)
 - Special Natural Waterfront Area (SNWA) (4.1)
 - Priority Maritime Activity Zone (PMAZ) (3.5)
 - Recognized Ecological Complex (REC) (4.4)
 - West Shore Ecologically Sensitive Maritime and Industrial Area (ESMIA) (2.2, 4.2)

F. WRP POLICY ASSESSMENT

Review the project or action for consistency with the WRP policies. For each policy, check Promote, Hinder or Not Applicable (N/A). For more information about consistency review process and determination, see **Part I** of the [NYC Waterfront Revitalization Program](#). When assessing each policy, review the full policy language, including all sub-policies, contained within **Part II** of the WRP. The relevance of each applicable policy may vary depending upon the project type and where it is located (i.e. if it is located within one of the special area designations).

For those policies checked Promote or Hinder, provide a written statement on a separate page that assesses the effects of the proposed activity on the relevant policies or standards. If the project or action promotes a policy, explain how the action would be consistent with the goals of the policy. If it hinders a policy, consideration should be given toward any practical means of altering or modifying the project to eliminate the hindrance. Policies that would be advanced by the project should be balanced against those that would be hindered by the project. If reasonable modifications to eliminate the hindrance are not possible, consideration should be given as to whether the hindrance is of such a degree as to be substantial, and if so, those adverse effects should be mitigated to the extent practicable.

		Promote	Hinder	N/A
I	Support and facilitate commercial and residential redevelopment in areas well-suited to such development.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
I.1	Encourage commercial and residential redevelopment in appropriate Coastal Zone areas.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
I.2	Encourage non-industrial development with uses and design features that enliven the waterfront and attract the public.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
I.3	Encourage redevelopment in the Coastal Zone where public facilities and infrastructure are adequate or will be developed.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
I.4	In areas adjacent to SMIA's, ensure new residential development maximizes compatibility with existing adjacent maritime and industrial uses.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
I.5	Integrate consideration of climate change and sea level rise into the planning and design of waterfront residential and commercial development, pursuant to WRP Policy 6.2.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

		Promote	Hinder	N/A
2	Support water-dependent and industrial uses in New York City coastal areas that are well-suited to their continued operation.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.1	Promote water-dependent and industrial uses in Significant Maritime and Industrial Areas.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.2	Encourage a compatible relationship between working waterfront uses, upland development and natural resources within the Ecologically Sensitive Maritime and Industrial Area.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2.3	Encourage working waterfront uses at appropriate sites outside the Significant Maritime and Industrial Areas or Ecologically Sensitive Maritime Industrial Area.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2.4	Provide infrastructure improvements necessary to support working waterfront uses.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2.5	Incorporate consideration of climate change and sea level rise into the planning and design of waterfront industrial development and infrastructure, pursuant to WRP Policy 6.2.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	Promote use of New York City's waterways for commercial and recreational boating and water-dependent transportation.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3.1	Support and encourage in-water recreational activities in suitable locations.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3.2	Support and encourage recreational, educational and commercial boating in New York City's maritime centers.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3.3	Minimize conflicts between recreational boating and commercial ship operations.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3.4	Minimize impact of commercial and recreational boating activities on the aquatic environment and surrounding land and water uses.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3.5	In Priority Marine Activity Zones, support the ongoing maintenance of maritime infrastructure for water-dependent uses.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4	Protect and restore the quality and function of ecological systems within the New York City coastal area.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.1	Protect and restore the ecological quality and component habitats and resources within the Special Natural Waterfront Areas.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4.2	Protect and restore the ecological quality and component habitats and resources within the Ecologically Sensitive Maritime and Industrial Area.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4.3	Protect designated Significant Coastal Fish and Wildlife Habitats.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4.4	Identify, remediate and restore ecological functions within Recognized Ecological Complexes.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4.5	Protect and restore tidal and freshwater wetlands.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4.6	In addition to wetlands, seek opportunities to create a mosaic of habitats with high ecological value and function that provide environmental and societal benefits. Restoration should strive to incorporate multiple habitat characteristics to achieve the greatest ecological benefit at a single location.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4.7	Protect vulnerable plant, fish and wildlife species, and rare ecological communities. Design and develop land and water uses to maximize their integration or compatibility with the identified ecological community.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.8	Maintain and protect living aquatic resources.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

		Promote	Hinder	N/A
5	Protect and improve water quality in the New York City coastal area.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5.1	Manage direct or indirect discharges to waterbodies.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5.2	Protect the quality of New York City's waters by managing activities that generate nonpoint source pollution.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5.3	Protect water quality when excavating or placing fill in navigable waters and in or near marshes, estuaries, tidal marshes, and wetlands.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5.4	Protect the quality and quantity of groundwater, streams, and the sources of water for wetlands.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5.5	Protect and improve water quality through cost-effective grey-infrastructure and in-water ecological strategies.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6	Minimize loss of life, structures, infrastructure, and natural resources caused by flooding and erosion, and increase resilience to future conditions created by climate change.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.1	Minimize losses from flooding and erosion by employing non-structural and structural management measures appropriate to the site, the use of the property to be protected, and the surrounding area.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6.2	Integrate consideration of the latest New York City projections of climate change and sea level rise (as published in <i>New York City Panel on Climate Change 2015 Report, Chapter 2: Sea Level Rise and Coastal Storms</i>) into the planning and design of projects in the city's Coastal Zone.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.3	Direct public funding for flood prevention or erosion control measures to those locations where the investment will yield significant public benefit.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6.4	Protect and preserve non-renewable sources of sand for beach nourishment.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
7	Minimize environmental degradation and negative impacts on public health from solid waste, toxic pollutants, hazardous materials, and industrial materials that may pose risks to the environment and public health and safety.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.1	Manage solid waste material, hazardous wastes, toxic pollutants, substances hazardous to the environment, and the unenclosed storage of industrial materials to protect public health, control pollution and prevent degradation of coastal ecosystems.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.2	Prevent and remediate discharge of petroleum products.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
7.3	Transport solid waste and hazardous materials and site solid and hazardous waste facilities in a manner that minimizes potential degradation of coastal resources.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8	Provide public access to, from, and along New York City's coastal waters.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8.1	Preserve, protect, maintain, and enhance physical, visual and recreational access to the waterfront.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8.2	Incorporate public access into new public and private development where compatible with proposed land use and coastal location.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8.3	Provide visual access to the waterfront where physically practical.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8.4	Preserve and develop waterfront open space and recreation on publicly owned land at suitable locations.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

		Promote	Hinder	N/A
8.5	Preserve the public interest in and use of lands and waters held in public trust by the State and City.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8.6	Design waterfront public spaces to encourage the waterfront's identity and encourage stewardship.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
9	Protect scenic resources that contribute to the visual quality of the New York City coastal area.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9.1	Protect and improve visual quality associated with New York City's urban context and the historic and working waterfront.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9.2	Protect and enhance scenic values associated with natural resources.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10	Protect, preserve, and enhance resources significant to the historical, archaeological, architectural, and cultural legacy of the New York City coastal area.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
10.1	Retain and preserve historic resources, and enhance resources significant to the coastal culture of New York City.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
10.2	Protect and preserve archaeological resources and artifacts.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

G. CERTIFICATION

The applicant or agent must certify that the proposed activity is consistent with New York City's approved Local Waterfront Revitalization Program, pursuant to New York State's Coastal Management Program. If this certification cannot be made, the proposed activity shall not be undertaken. If this certification can be made, complete this Section.

"The proposed activity complies with New York State's approved Coastal Management Program as expressed in New York City's approved Local Waterfront Revitalization Program, pursuant to New York State's Coastal Management Program, and will be conducted in a manner consistent with such program."

Applicant/Agent's Name: Angelo Elmi

Address: 2 Broadway

Telephone: 646-252-3608 Email: angelo.elmi@nyct.com

Applicant/Agent's Signature: Angelo Elmi

Date: 7/10/2018

MTA NEW YORK CITY TRANSIT CANARSIE TUNNEL REHABILITATION PROJECT

NEW YORK CITY WATERFRONT REVITALIZATION PROGRAM

COASTAL CONSISTENCY FORM POLICY STATEMENTS

Policy 2 – Support water-dependent and industrial uses in New York City coastal areas that are well-suited to their continued operation.

Policy 2.1 – Promote water-dependent and industrial uses in Significant Maritime and Industrial Areas.

Policy Statement: The proposed activity includes the Maspeth Bus Depot that would be located at 46-81 Metropolitan Avenue in Maspeth, New York. This site is currently a paved parking lot that would be used as a bus depot to hold overnight buses for the inter-borough shuttle bus service during the 15-month project span. The area would be repaved to make the site level and no further changes would be made to the existing site. Even though the site is within an area designated as a Significant Maritime and Industrial Area (SMIA), and use of the site for the proposed activity would not be considered a water-dependent use, the site does not currently promote water-dependent or industrial uses and the temporary use of the site by a non-water-dependent use would not preclude such use at a later date. Therefore, the preferred alternative would be consistent with Policy 2.1.

Policy 2.5 – Incorporate consideration of climate change and sea level rise into the planning and design of waterfront industrial development and infrastructure, pursuant to WRP Policy 6.2.

Policy Statement: The proposed activity includes construction of a temporary ferry landing at Empire Pier in North Williamsburg, Brooklyn to provide a resilient transit alternative to L train riders who travel between Brooklyn and Manhattan during the 15-month shutdown of the Canarsie Tunnel. The design of the ferry landing includes measures to protect the landing from major storm surge or tidal events. For example, the anchor piles for the ferry landing would extend to an elevation of approximately 24 feet NAVD88, approximately 14 feet above the current 100-year flood elevation at the landing, to account for storm surge and to prevent the landing from detaching from the anchor piles during a combination of high tide and storm event. Emergency plans would be developed for the landing to ensure that landing infrastructure (such as gangways) and amenities would be secured prior to a storm event. These and similar measures would allow the ferry service to resume operations immediately following a storm event. Therefore, the proposed activity would be consistent with Policy 2.5.

Policy 4 - Protect and restore the quality and function of ecological systems within the New York City coastal area.

Policy 4.7 – Protect vulnerable plant, fish and wildlife species, and rare ecological communities. Design and develop land and water uses to maximize their integration or compatibility with the identified ecological community.

Policy 4.8 - Maintain and protect living aquatic resources.

Policy Statement: The construction or operation of the temporary ferry landing would not adversely affect water quality or the habitat of the East River. In-water construction activities would not generate underwater noise levels that could potentially impact vulnerable species such as sturgeon or other fish. Turbidity generated from pile installation and removal activities would be prevented from potentially impacting aquatic species through the use of silt curtains. Construction barges and the barge landing platform would not contact the river bottom. MTA New York City Transit is engaged in consultation with NOAA National Marine Fisheries Service (NMFS) and will comply with time of year restrictions on in-water construction activities and other conditions issued with the USACE Permit for construction of the ferry landing. The same techniques would be utilized for the removal of the temporary facilities expected to occur shortly after the resumption of L train service in 2020. Therefore, the proposed activity is consistent with Policy 4, 4.7 and 4.8.

Policy 6 - Minimize loss of life, structures, infrastructure and natural resources caused by flooding and erosion and increase resilience to future conditions created by climate change.

Policy Statement: Policy 6 speaks to reducing risks posed by current and future coastal hazards, especially major storms that are likely to increase due to climate change and sea level rise. The proposed temporary facility will be built to reduce risks posed by current coastal hazards and would be expected to be removed by 2020. During the time it is in place and operational, the proposed resilient ferry terminal would support emergency response and disaster recovery efforts in the event of a future storm and resultant flooding. Therefore, the proposed activity is consistent with Policy 6.

Policy 6.2 - Integrate consideration of the latest New York City projections of climate change and sea level rise (as published in New York City Panel on Climate Change 2015 Report, Chapter 2: Sea Level Rise and Coastal Storms) into the planning and design of projects in the city's Coastal Zone.

Policy Statement: Three of the temporary proposed activity elements are located within the 1 percent Annual Chance of Flooding as mapped (see Figures 1, 2 and 3). The temporary ferry landing, which involves in-water construction, is the most vulnerable to coastal flooding and erosion and, if a permanent fixture, to future conditions created by climate change. Since the new facility would only be in use through 2020, it is unlikely to have a future implication.

Nonetheless, City guidance was followed to consider the temporary facility, including completion of the attached Excel worksheet. Since the project will be complete and removed within the baseline period, this is the point of comparison for evaluating coastal flooding. The key element of the infrastructure would be the anchor piers, which would be built to a height of 23.45 NAVD88, approximately 14 feet above current flood elevation. The access piles and platforms would be lower in elevation similar to the existing pier it would be connected with. The floating barge, while typically at an elevation similar to the access platform, would rise and fall with changing water levels and since it would be securely attached to the anchor piles rising well above flood elevations, it would not be vulnerable to separation.

Overall, as described above, the design of the temporary ferry landing includes measures to protect the landing from major storm surge or tidal events. Emergency plans would be developed for the landing to ensure that landing infrastructure (such as gangways) and

amenities would be secured prior to a storm event. These and similar measures would allow the ferry service to resume operations immediately following a storm event. Therefore, the proposed activity would be consistent with Policy 6.2.

Policy 7 - Minimize environmental degradation and negative impacts on public health from solid waste, toxic pollutants, hazardous materials, and industrial materials that may pose risk to the environment and public health and safety.

Policy Statement: The proposed activity would not require any ground disturbance that might expose previously contaminated soil to the public or to the water. Any contamination associated with the Maspeth Bus Depot site would like remain in its existing condition. Therefore, the proposed activity is consistent with Policy 7.

Policy 7.1 - Manage solid waste material, hazardous waste, toxic pollutants, substances hazardous to the environment, and the unenclosed storage of industrial materials to protect public health, control pollution and prevention degradation of coastal ecosystems.

Policy Statement: In securing and upgrading pavement and maintenance of the existing parking facility for temporary use as a bus depot, the proposed activity would effectively minimize potential environmental hazards. Construction and removal of the ferry landing at Empire Pier in North Williamsburg, Brooklyn may result in limited turbidity, which will be intermittent and temporary. Silt curtains and other best management practices specified in permit conditions will be complied with to minimize impacts and prevent degradation of aquatic ecosystems. Therefore, the proposed activity is consistent with Policy 7.1.

Policy 8 - Provide public access to, from, and along New York City's coastal waters.

Policy 8.1 – Preserve, protect, maintain, and enhance physical, visual and recreational access to the waterfront.

Policy 8.3 – Provide visual access to the waterfront where physically practical

Policy Statement: The proposed ferry landing is located adjacent to existing NYCEDC ferry terminal and publicly accessible open space along the waterfront that currently provides visual access to the waterfront. The proposed landing is temporary and would not interrupt open space adjacent to the ferry terminal or access to the waterfront and would be consistent with the current ferry use. Therefore, the proposed activity is consistent with Policy 8.1.

Policy 8.5 - Preserve the public interest in and use of lands and water held in public trust by the State and City.

Policy Statement: The temporary ferry landing would be located on a private pier that would be transferred over to the New York City Department of Parks and Recreation (DPR). The pier would be maintained as a public pier while the temporary ferry service is in place. After the 15-month operational period, the ferry terminal would be removed and the parking lot would be returned to its original state. This temporary use of the private pier would not add to lands held in public trust. Therefore, the proposed activity is consistent with Policy 8.5.

Policy 9 - Protect scenic resources that contribute to the visual quality of the New York City coastal area.

Policy Statement: The proposed activity would protect scenic resources that contribute to the visual quality of the New York City coastal area. The proposed activity would not construct any temporary structures during the 15-month project period that would hinder publicly-accessible views of scenic resources. Therefore, the proposed activity is consistent with Policy 9.

Policy 9.1 – Protect and improve visual quality associated with New York City’s urban context and the historic and working waterfront.

Policy Statement: The proposed activity would protect visual quality associated with New York City’s urban context and waterfront, but would not improve visual quality on the existing sites. The temporary action would not construct structures that would adversely impact the visual quality of the waterfront. Therefore, the proposed activity is consistent with Policy 9.1.

Policy 9.2 – Protect and enhance scenic values associated with natural resources.

Policy Statement: The proposed activity would protect, but not enhance, scenic values associated with natural resources. Therefore, the proposed activity is consistent with Policy 9.2.



July 10, 2018
Consistency Review Unit
Office of Planning and Development
New York State Department of State
Suite 1010
One Commerce Place
99 Washington Avenue
Albany, New York 12231-0001

Attention: Ms. Denise Caldwell, Consistency Review Coordinator

Reference: New York City Transit
Canarsie Tunnel Project: Alternative Service Plan(ASP)

Dear Ms. Caldwell,

In accordance with the Coastal Zone Management Act, the Metropolitan Transportation Authority – New York City Transit (MTA-NYCT) is submitting the Canarsie Tunnel Project: Alternative Service Plan (see **Attachments**). Federal funding is being sought for this project.

In 2012, the Canarsie Tunnel was seriously damaged by Superstorm Sandy. The tunnel was inundated with corrosive saltwater and silt that hardened and caused significant damage. While the exterior tunnel structure was deemed safe, structural and other components within the tunnel, such as the duct banks and power and communications cables, were severely damaged and have begun to fail. To repair and replace these features, the tunnel must be temporarily closed between Brooklyn and Manhattan. Because the temporary closure of the Canarsie Tunnel would result in disruption to nearly 400,000 daily L train riders, alternative service plans have been provided; a temporary ferry service between North Williamsburg and Stuyvesant Cove and added bus services along the L train route.

The following activities related to the ASP will occur in the coastal zone:

- Temporary ferry service
- Temporary bus storage/terminal at Stuyvesant Cove
- Temporary bus storage/terminal at 46-81 Metropolitan Ave, Maspeth, Queens

In order to accommodate the new temporary ferry service, construction activities within the East River will need to take place. The proposed temporary ferry service would require the construction of a new temporary ferry landing immediately north of the existing North Williamsburg ferry landing, at the existing Empire Pier, to add new passenger capacity.

Based on the results of underwater noise, turbidity, and vessel strike effects analyses conducted to obtain a Not Likely to Adversely Affect (NLAA) determination and an Essential Fish Habitat Assessment (EFH) approval from NOAA NMFS, construction of the new temporary ferry landing in North Williamsburg would not result in significant adverse impacts on threatened and endangered species (i.e., Atlantic and shortnose sturgeon) or other aquatic resources.

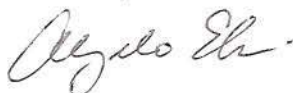
There will be no loss of NYSDEC littoral zone tidal wetlands within the footprint of the temporary ferry landing. The temporary ferry landing modifications in North Williamsburg would be designed to be flood resistant and would not affect flood levels, flood risk, or the flow of flood waters within or around the project sites. Therefore, there would be no significant impacts to the floodplain.

In order to provide the additional bus services along the L train route, two temporary bus storage/terminal locations will be needed. One will be located on an existing parking lot at Stuyvesant Cove, between East 20th and East 23rd Street in Manhattan. The other location will be on an existing parking lot at 46-81 Metropolitan Ave, Maspeth, Queens. The work that will take place at both locations to accommodate the buses will be simple resurfacing with negligible elevation change.

Due to the temporary nature and limited extent of project activities in the coastal zone, the proposed action would be consistent with state coastal policies. We seek your review and concurrence on the proposed project, and we seek the appropriate certification of consistency with the New York State Coastal Management Program.

Please do not hesitate to contact me at (646) 252-3608 or angelo.elmi@nyct.com should you require any other information.

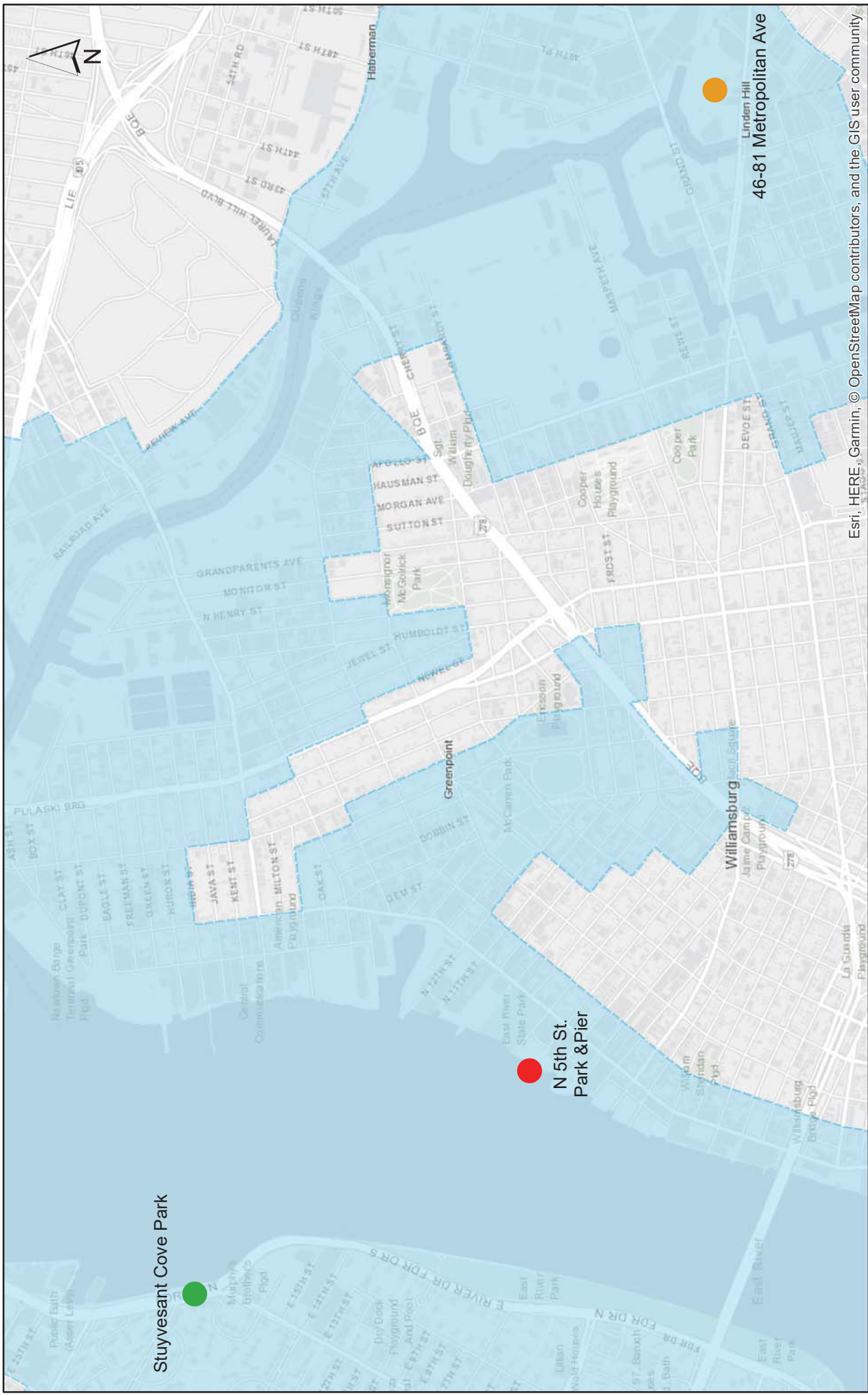
Sincerely,



Angelo Elmi, P.E.
Principal Engineer

- Attachments:
1. Coastal Zone Map
 2. Temporary Ferry Landing Floodplain Map
 3. Temporary Bus Terminal Floodplain Map
 4. Temporary Overnight Bus Storage Floodplain Map

Cc: NYC Dept of City Planning, Local Waterfront Revitalization Program



Esri, HERE, Garmin, © OpenStreetMap contributors, and the GIS user community

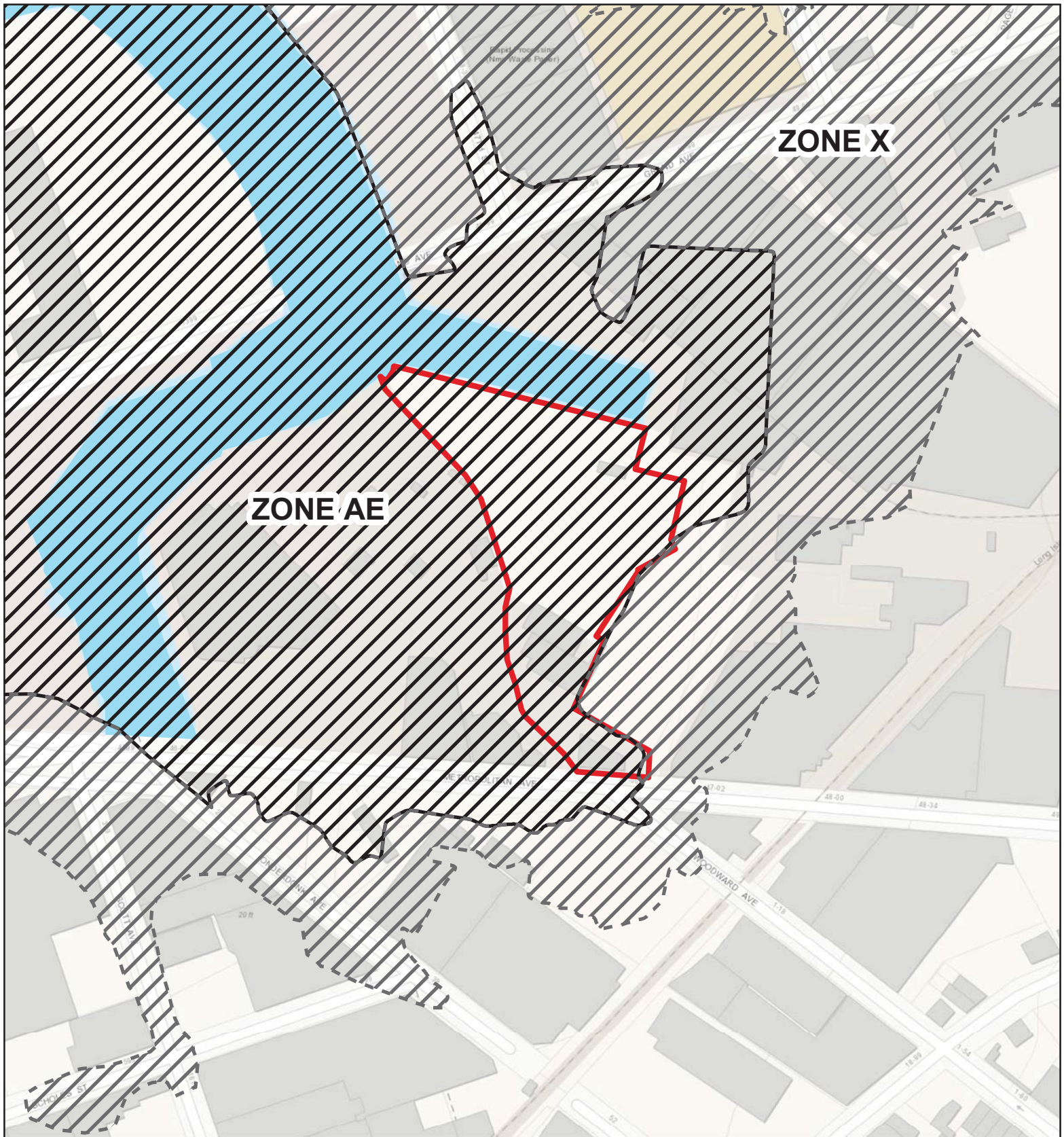
CANARSIE TUNNEL PROJECT ALTERNATIVE SERVICE PLAN TEMPORARY LOCATIONS COASTAL ZONE MAP




Location	Lat. (Approx)	Long. (Approx)	BFE ¹ Elevation At 1% (NAVD88)	BFE +1 Elevation At 1% (NAVD88)
46-81 Metropolitan Ave	40.714128	-73.921156	10	11
N 5 th St Park & Pier	40.721287	-73.964736	15	16
Stuyvesant Cove Park	40.732268	-73.973934	13	14

- Legend:**
- Temporary Bus Storage
 - Temporary Ferry Landing
 - Temporary Bus Terminal
 - Coastal Zone Boundary

CURRENT FLOODPLAIN MAP

Bus Depot Site - 46-18 Metropolitan Avenue



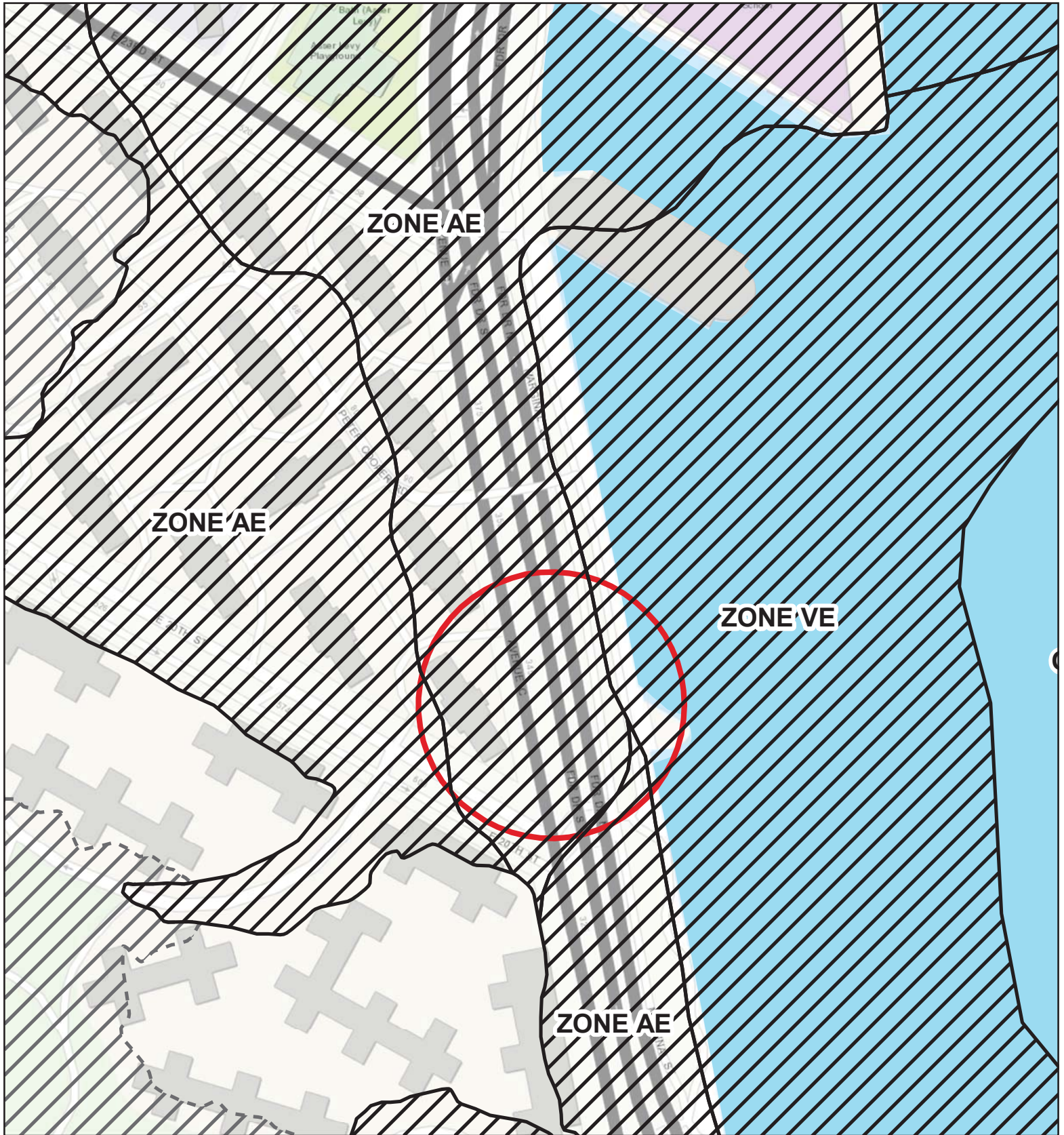
-  1% Annual Chance of Flood (Zone AE)
-  0.2% Chance of Flood (Zone X)
-  Bus Depot Site (46-18 Metropolitan Avenue, Queens, NY; Block 2611, Lot 71)




N



CURRENT FLOODPLAIN MAP

Stuyvesant Cove Bus Terminal



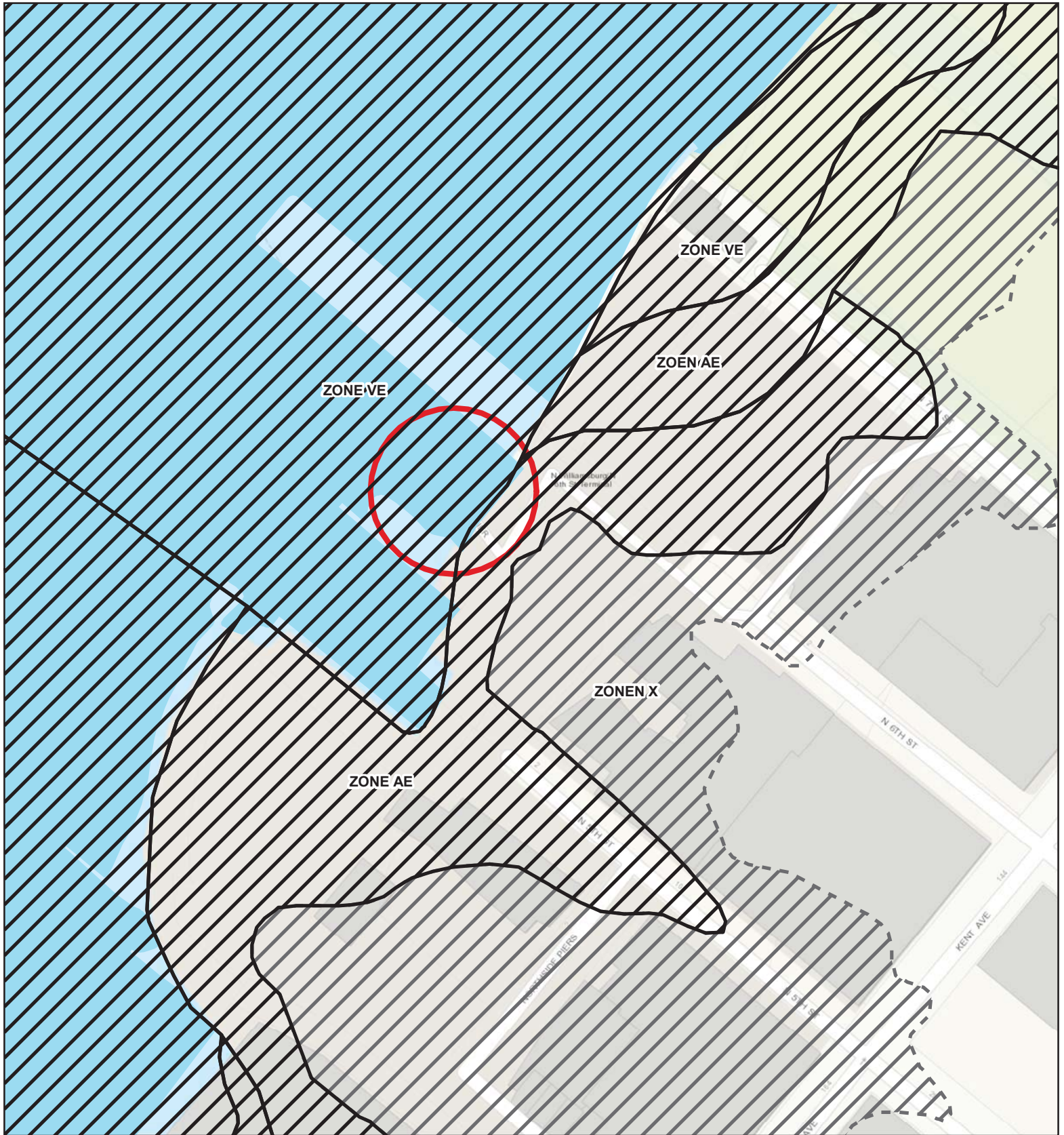
-  Stuyvesant Cove Bus Terminal
-  1% Annual Chance of Flood (Zone VE & AE)
-  0.2% Chance of Flood (Zone X)




N



CURRENT FLOODPLAIN MAP

Ferry Landing at Empire Pier in North Williamsburg, Brooklyn

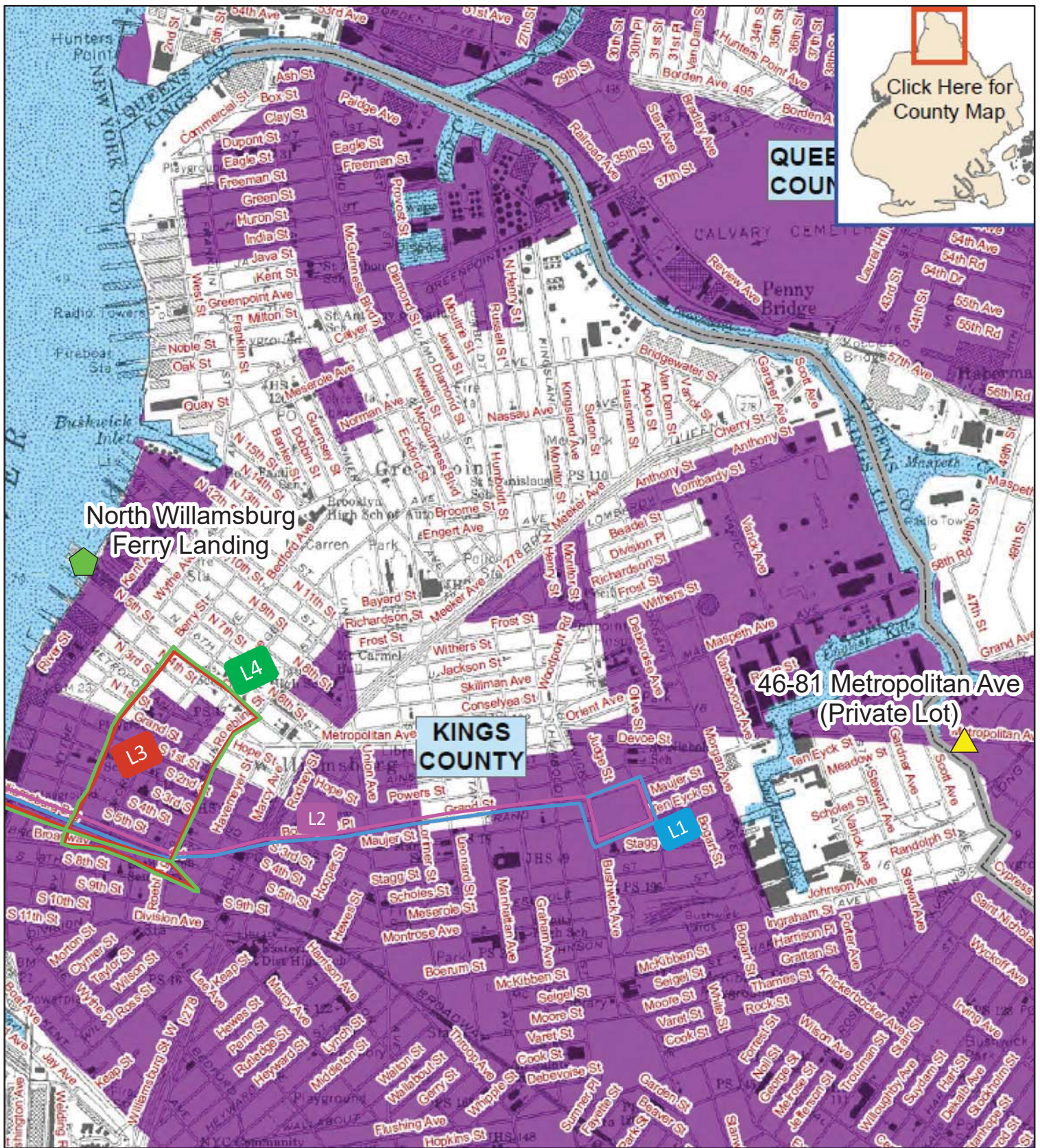


-  Proposed Temporary Ferry Landing
-  1% Annual Chance of Flood (Zone VE & AE)
-  0.2% Chance of Flood (Zone X)



Source: fema, Preliminary 2015 Flood Maps & Data

Appendix G: Environmental Justice



QUEENS COUNTY

KINGS COUNTY

North Willamsburg Ferry Landing

46-81 Metropolitan Ave (Private Lot)

Legend

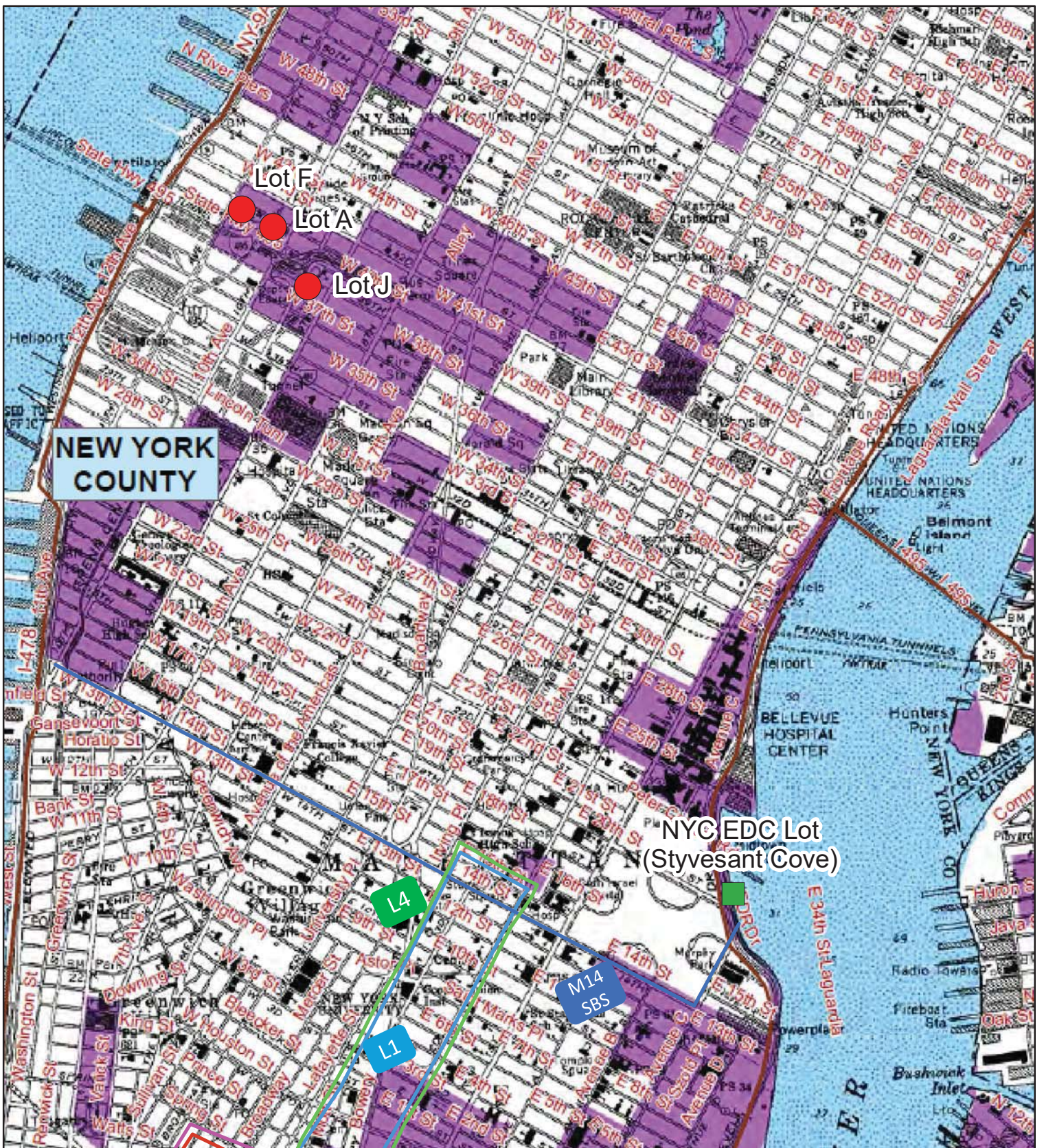
- Potential EJ Area
- County Boundary
- Waterbodies
- North Willamsburg Landing
- Inter Borough Storage

Shuttle and Existing Routes

- L1
- L2
- L3
- L4
- M14 SBS

Figure - G1

**SHUTTLE BUS ROUTES AND STORAGE:
CANARSIE ALTERNATIVE SERVICE PLAN IN MANHATTAN
DEC ENVIRONMENTAL JUSTICE MAP**



Legend











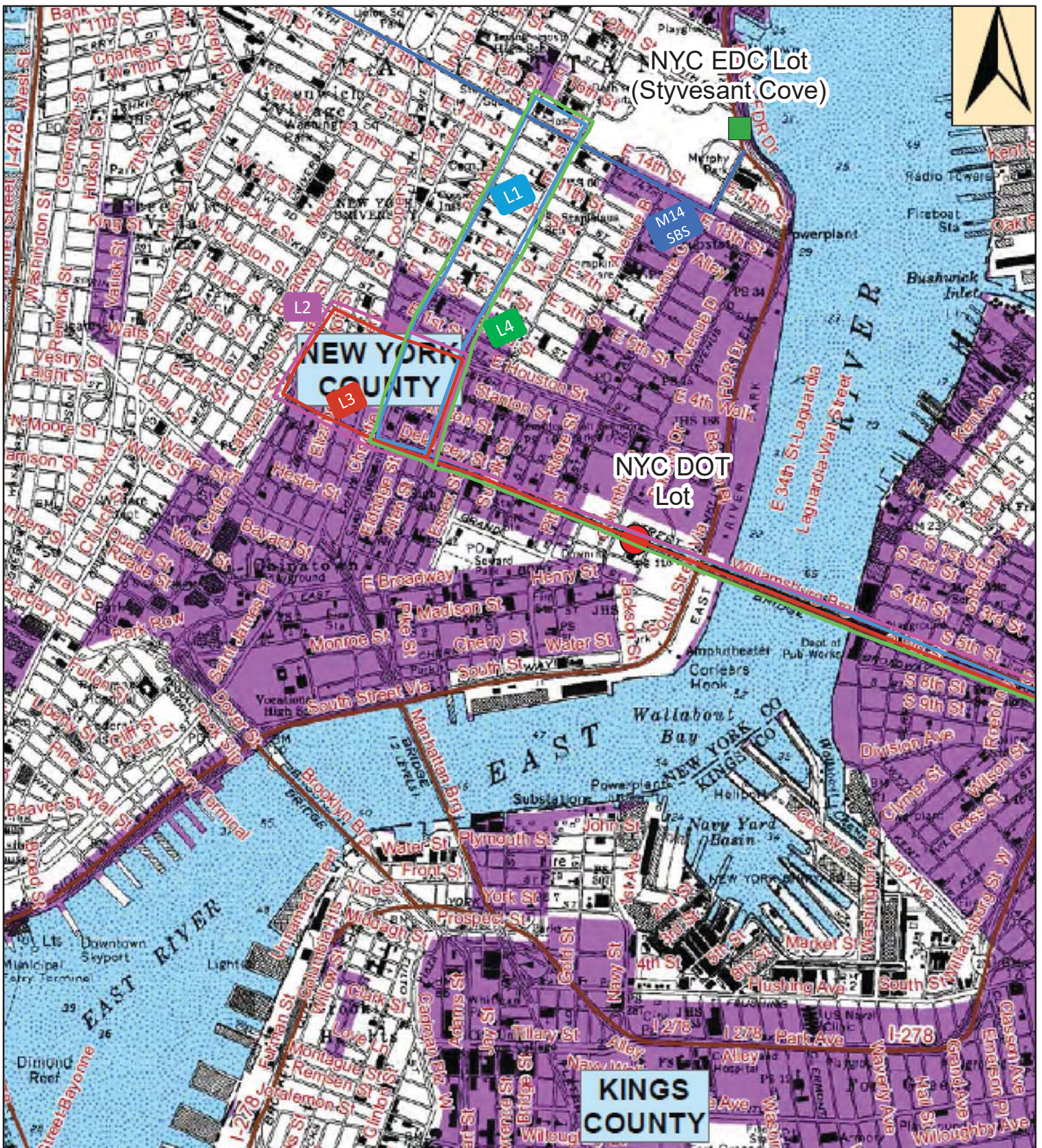










- | | | | |
|--|------------------------|---|---------|
|  | Potential EJ Area |  | L1 |
|  | County Boundary |  | L2 |
|  | Waterbodies |  | L3 |
|  | M14 Storage |  | L4 |
|  | Temporary Bus Terminal |  | M14 SBS |

Figure - G2

**SHUTTLE BUS ROUTES AND STORAGE:
CANARSIE ALTERNATIVE SERVICE PLAN IN MANHATTAN
DEC ENVIRONMENTAL JUSTICE MAP**



Legend

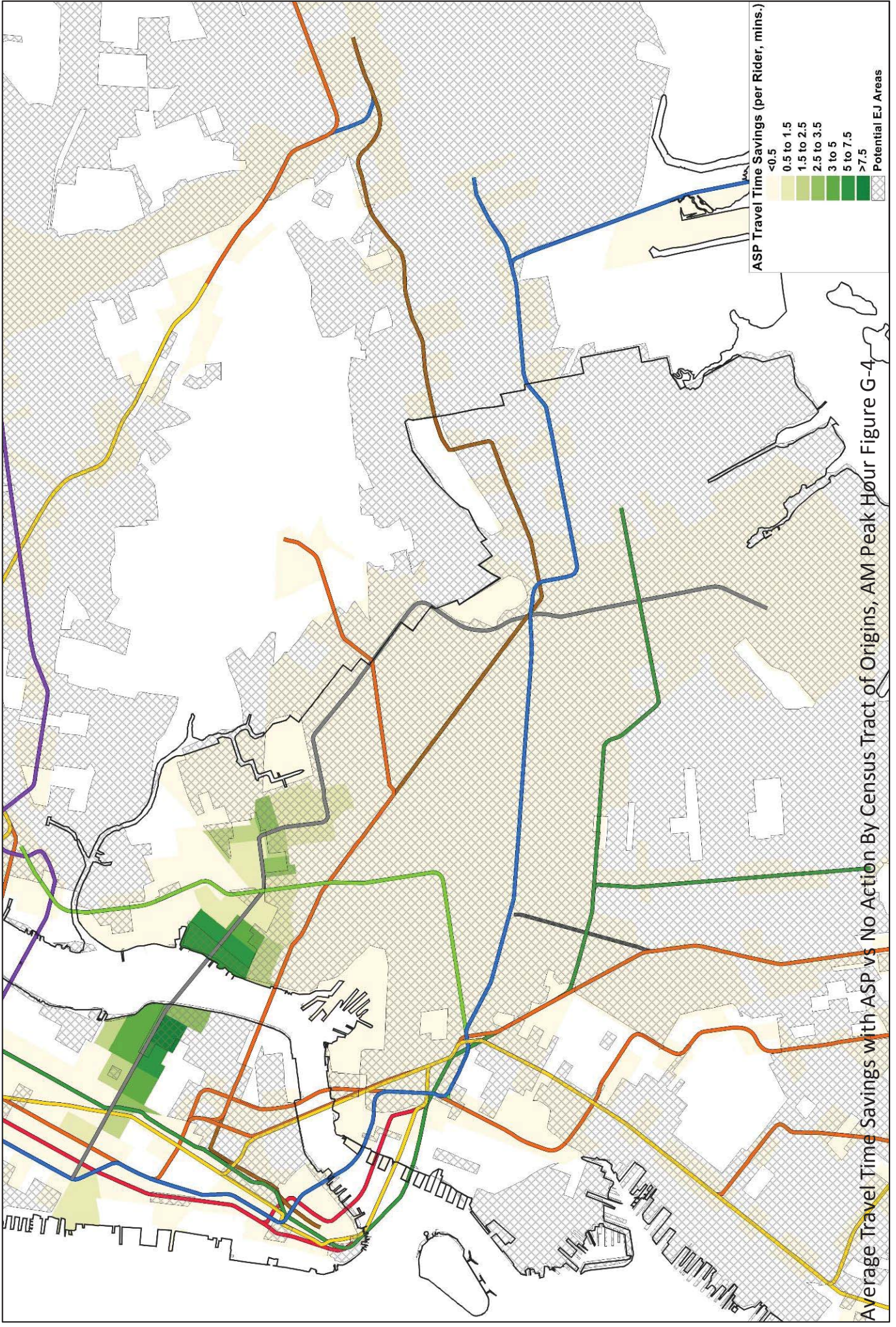
- | | | | |
|--|------------------------|---|---------|
|  | Potential EJ Area |  | L1 |
|  | County Boundary |  | L2 |
|  | Waterbodies |  | L3 |
|  | Temporary Bus Terminal |  | L4 |
|  | M14 Storage |  | M14 SBS |

Shuttle and Existing Routes

Figure - G3

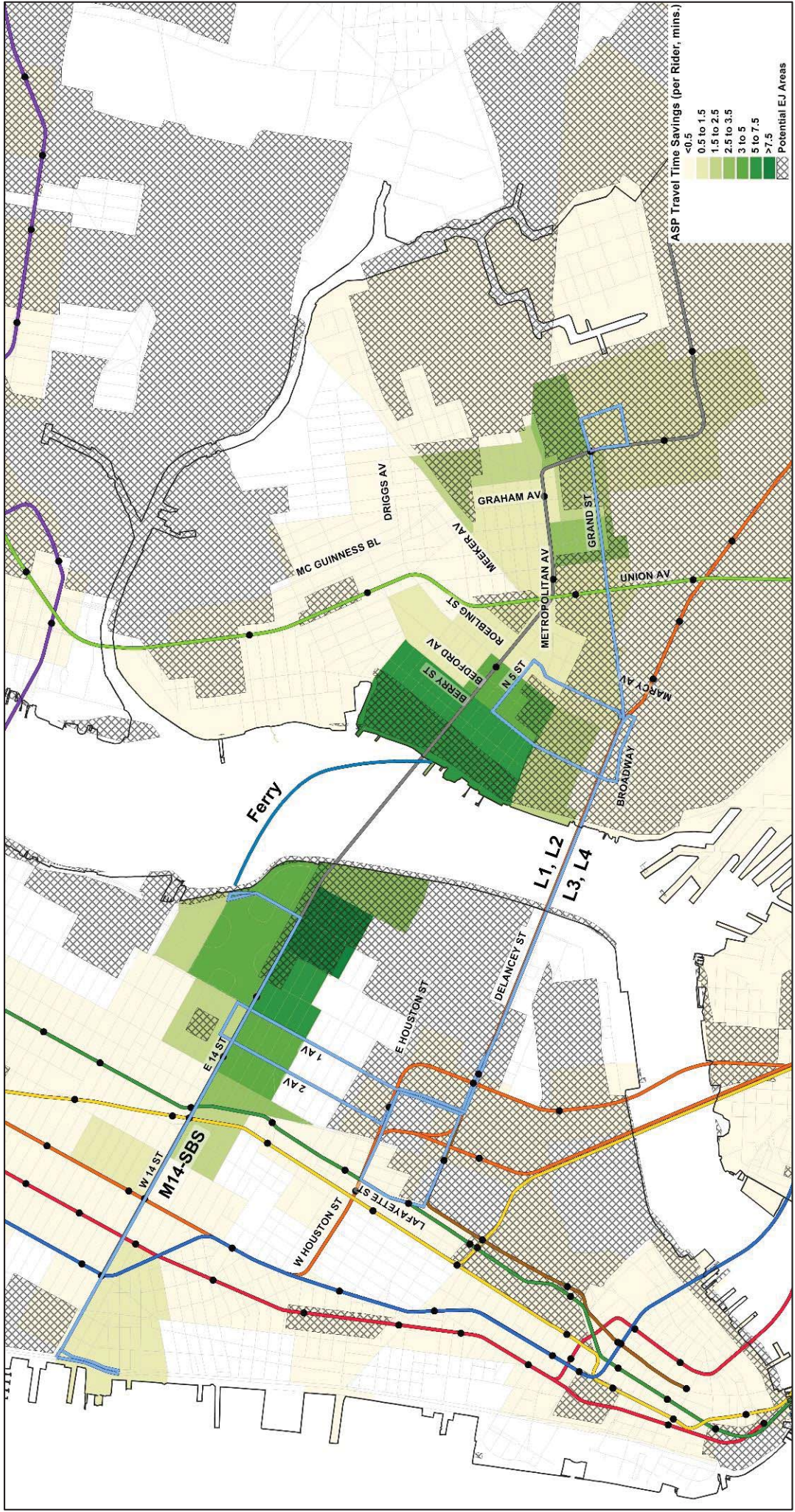
**SHUTTLE BUS ROUTES AND STORAGE:
CANARSIE ALTERNATIVE SERVICE PLAN IN MANHATTAN
DEC ENVIRONMENTAL JUSTICE MAP**

Average Travel Time Savings with ASP vs No Action By Census Tract of Origins, AM Peak Hour



Average Travel Time Savings with ASP vs No Action By Census Tract of Origins, AM Peak Hour Figure G-4

Average Travel Time Savings with ASP vs No Action By Census Tract of Origins, AM Peak Hour



Average Travel Time Savings with ASP vs No Action By Census Tract of Origins, AM Peak Hour Figure G-5

Appendix H: Natural Resources

DRAFT

**NOAA FISHERIES
GREATER ATLANTIC REGIONAL FISHERIES OFFICE
EFH ASSESSMENT WORKSHEET**

For

MTA NEW YORK CITY TRANSIT CANARSIE TUNNEL REHABILITATION PROJECT
North Williamsburg Temporary Ferry Landing
North Williamsburg, Brooklyn, NY

July 10, 2018

PREPARED BY:

Amy S. Greene Environmental Consultants, Inc.
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Flemington, NJ 08822

ATTACHMENT A

MTA New York City Transit Canarsie Tunnel Rehabilitation Project
North Williamsburg Temporary Ferry Landing
North Williamsburg, Brooklyn, NY
ASGECI #4303

**SUMMARY OF ESSENTIAL FISH HABITAT DESIGNATIONS
FOR THE
MTA NEW YORK CITY TRANSIT CANARSIE TUNNEL REHABILITATION PROJECT**

EFH ASSESSMENT WORKSHEET FOR FEDERAL AGENCIES (Revised 3/0/00)

PROJECT NAME: MTA NEW YORK CITY TRANSIT CANARSIE TUNNEL REHABILITATION PROJECT
North Williamsburg Temporary Ferry Landing

DATE: 07/10/2018

PROJECT NO.:

LOCATION (Water body, county, physical address):

East River near N. 6th St., North Williamsburg, Brooklyn, NY

PREPARER: Amy S. Greene Environmental Consultants, Inc.

Step 1: Use NOAA's [EFH Mapper](#) to generate the list of designated EFH for federally-managed species and life stages for the geographic area of interest. Use this list as part of the initial screening process to determine if EFH for those species occurs in the vicinity of the proposed action. The list can be included as an attachment to the worksheet. Make a preliminary determination on the need to conduct an EFH consultation.

1. INITIAL CONSIDERATIONS		
EFH Designations	Yes	No
<p>Is the action located in or adjacent to EFH designated for eggs? List the species:</p>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<p>Is the action located in or adjacent to EFH designated for larvae? List the species: Atlantic butterfish, summer flounder</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<p>Is the action located in or adjacent to EFH designated for juveniles? List the species: bluefish, summer flounder</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

<p>Is the action located in or adjacent to EFH designated for adults or spawning adults? List the species:</p> <p>Bluefish, summer flounder</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<p>If you answered 'no' to all questions above, then an EFH consultation is not required - go to Section 5. If you answered 'yes' to any of the above questions, proceed to Section 2 and complete the remainder of the worksheet.</p>		

Step 2: In order to assess impacts, it is critical to know the habitat characteristics of the site before the activity is undertaken. Use existing information, to the extent possible, in answering these questions. Identify the sources of the information provided and provide as much description as available. These should not be yes or no answers. Please note that there may be circumstances in which new information must be collected to appropriately characterize the site and assess impacts. Project plans that show the location and extent of sensitive habitats, as well as water depths, the HTL, MHW and MLW should be provided.

2. SITE CHARACTERISTICS	
Site Characteristics	Description
<p>Is the site intertidal, sub-tidal, or water column?</p>	<p>The project area includes intertidal, sub-tidal, and water column components. Depths range from approximately 10ft to 22ft (3m to 6.7m). The mean high water (MHW) elevation is 3.06 ft (NGVD29) and the mean low water (MLW) elevation is -1.47ft (NGVD29).</p>
<p>What are the sediment characteristics?</p>	<p>Subsurface sections obtained during construction of the adjacent Empire Pier indicate that the surface layer of the East River within the project area consists of "miscellaneous fill", underlain by various substrates ranging from coarse (sand) to fine (silt and clay) particle sizes.</p>
<p>Is there submerged aquatic vegetation (SAV) at or adjacent to project site? If so describe the SAV species and spatial extent.</p>	<p>There is no SAV present at the project site.</p>
<p>Are there wetlands present on or adjacent to the site? If so, describe the spatial extent and vegetation types.</p>	<p>There are no wetlands within, or adjacent to the project area.</p>

<p>Is there shellfish present at or adjacent to the project site? If so, please describe the spatial extent and species present.</p>	<p>No targeted shellfish surveys have been conducted; however, various species of shellfish are well documented within the East River, including mud dog whelks, blue mussels, soft shell clams, and oysters.</p>
<p>Are there mudflats present at or adjacent to the project site? If so please describe the spatial extent.</p>	<p>There are no mudflats present within or adjacent to the project site.</p>
<p>Is there rocky or cobble bottom habitat present at or adjacent to the project site? If so, please describe the spatial extent.</p>	<p>Subsurface sections obtained during construction of the adjacent Empire Pier indicate that the surface layer of the East River within the project area consists of "miscellaneous fill", which likely contains rocky & cobble substrates. Additionally, the construction of Empire Pier included hard armoring of the adjacent shoreline with rip-rap. This area is adjacent to the current temporary ferry landing project area.</p>
<p>Is Habitat Area of Particular Concern (HAPC) designated at or near the site? If so for which species, what type habitat type, size, characteristics?</p>	<p>According to the NOAA EFH mapper, there is no HAPC designated in the vicinity of the project area.</p>
<p>What is the typical salinity, depth and water temperature regime/range?</p>	<p>Salinity varies with tidal, seasonal and precipitation influence; however, Stevens Institute of Technology reports that typical salinities range from 22 - 30 psu. According to NOAA's National Center for Environmental Information, water temperatures near the project area range seasonally from 36-74 degrees Fahrenheit.</p>
<p>What is the normal frequency of site disturbance, both natural and man-made?</p>	<p>The area within and surrounding the proposed temporary ferry landing has recently undergone several redevelopment projects, including the recent reconstruction of Empire Pier. Following construction, the primary form of disturbance will be related to the daily ferry service. It is anticipated that up to eight (8) round trip routes will be made between the proposed temporary ferry landing and the recently constructed East Stuyvesant terminal during peak service hours. Currently, six (6) ferries operate in the waters of the East River between Manhattan and Brooklyn; the proposed service will be for a temporary duration of approximately fifteen (15) months.</p>
<p>What is the area of proposed impact (work footprint & far afield)?</p>	<p>The constructed project footprint will be approximately 0.1003 acre, which includes 0.0018 acre associated with piles, and 0.1015 acre associated with the supported landing and access platforms.</p>

Step 3: This section is used to describe the anticipated impacts from the proposed action on the physical/chemical/biological environment at the project site and areas adjacent to the site that may be affected.

3. DESCRIPTION OF IMPACTS			
Impacts	Y	N	Description
Nature and duration of activity(s). Clearly describe the activities proposed and the duration of any disturbances.			<p>A temporary ferry landing adjacent to Empire Pier in the East River will be constructed to implement temporary ferry service during the closure and rehabilitation of the Canarsie Tunnel damaged by Hurricane Sandy. Construction of the ferry landing will begin on January 1, 2019 and will be completed on February 28, 2019. The ferry landing will be in operation from April 13, 2019 to July 13, 2020, while the L train service associated with the Canarsie Tunnel is suspended. The ferry landing will be completely removed upon completion of the 15-month tunnel rehabilitation (anticipated July, 2020).</p> <p>The ferry landing will accommodate one (1) ferry boat and will consist of an access platform, a gangway, ferry landing barge, and guide piles with donut fenders. The access platform will be connected to the existing Empire Pier, will be supported by four (4), 16-inch diameter steel piles and will provide access to the ferry landing barge. The ferry landing barge will be supported by six (6) 36-inch diameter steel anchor piles. Four (4), 36-inch diameter steel guide piles with donut fenders will be located north of the ferry landing to guide the ferry as it approaches the landing.</p>
Will the benthic community be disturbed? If no, why not? If yes, describe in detail how the benthos will be impacted.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>The physical disturbance to approximately 0.0018 acre of benthic habitat will have a negligible and temporary impact on benthic fauna located within the work area. Similarly, impacts to pelagic & benthic fauna associated with the shading effects to 0.1015 acre of the water column are also negligible. Mobile fauna will likely avoid harm by avoidance of the proposed impact area and recolonization of the area following construction. Therefore, it is anticipated that there will be an insignificant and temporary impact on benthos within the area of direct impact; however, it is anticipated that this area will be recolonized within a short period of time after the completion of the project.</p>
Will SAV be impacted? If no, why not? If yes, describe in detail how the SAV will be impacted. Consider both direct and indirect impacts. Provide details of any SAV survey conducted at the site.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<p>There is no SAV present within the project area.</p>
Will salt marsh habitat be impacted? If no, why not? If yes, describe in detail how wetlands will be impacted. What is the aerial extent of the impacts? Are the effects temporary or permanent?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<p>There is no salt marsh habitat located within or adjacent to the project area. Water depths range from approximately 10ft to 22ft (3m to 6.7m), and the adjacent shoreline is developed with hard armoring (rip rap).</p>

<p>Will mudflat habitat be impacted? If no, why not? If yes, describe in detail how mudflats will be impacted. What is the aerial extent of the impacts? Are the effects temporary or permanent?</p>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<p>There are no mudflats present within, or adjacent to the project area.</p>
<p>Will shellfish habitat be impacted? If so, provide in detail how the shellfish habitat will be impacted. What is the aerial extent of the impact? Provide details of any shellfish survey conducted at the site.</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>The physical disturbance to approximately 0.0018 acre of shellfish habitat will have a negligible and temporary impact on shellfish potentially present within the work area. Similarly, impacts associated with the shading effects to 0.1015 acre of the water column are also negligible. It is anticipated that mobile fauna will likely avoid harm by avoidance of the proposed impact area. Therefore, it is anticipated that there will be an insignificant and temporary impact on the availability of shellfish habitat within the area of direct impact; however, it is anticipated that this area will be recolonized within a short period of time after the completion of the project.</p>
<p>Will hard bottom (rocky, cobble, gravel) habitat be impacted at the site? If so, provide in detail how the hard bottom will be impacted. What is the aerial extent of the impact?</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>Subsurface sections obtained during construction of the adjacent Empire Pier indicate that the surface layer of the East River within the project area consists of "miscellaneous fill", which likely contains rocky & cobble substrates. Additionally, the construction of Empire Pier included hard armoring of the adjacent shoreline with rip-rap. This area is adjacent to the current temporary ferry landing project area. The physical disturbance to approximately 0.0018 acre of potential hard bottom will occur during construction due to pile driving in the direct project footprint area. No other disturbance to hard bottom is proposed.</p>
<p>Will sediments be altered and/or sedimentation rates change? If no, why not? If yes, describe how.</p>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<p>Sediment composition will not be altered as a result of the proposed project. Sedimentation rates will not change, except for temporary turbidity impacts during construction, which are discussed below.</p>
<p>Will turbidity increase? If no, why not? If yes, describe the causes, the extent of the effects, and the duration.</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>The installation and removal of piles will result in the disturbance of sediment and create some turbidity in the water column. Increases in total suspended sediments (TSS) during pile driving are expected to be minimal and localized, and of a short duration. Subsurface sections obtained during construction of the adjacent Empire Pier indicate that the surface layer of the East River within the project area consists of "miscellaneous fill", underlain by various substrates ranging from coarse (sand) to fine (silt and clay) particle sizes. All piles will be enclosed within a full depth turbidity curtain driving to minimize the effects of re-suspended sediments. The ferry landing will be completely removed upon completion of the 15-month tunnel rehabilitation, in July, 2020. Piles will be vibrated out of place within the confines of a floating turbidity barrier.</p>

<p>Will water depth change? What are the current and proposed depths?</p>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<p>Water depths will not change as a result of the proposed project.</p>
<p>Will contaminants be released into sediments or water column? If yes, describe the nature of the contaminants and the extent of the effects.</p>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<p>It is not anticipated that contaminants will be released into sediments or the water column during construction and operation of the proposed project. Construction barges and motorized equipment will implement protections to avoid spills into the East River, and a spill kit will be present onsite in case of inadvertent spills. The use of a full-depth turbidity curtain is proposed to limit turbidity and contain floating debris.</p> <p>The vessel selected to provide ferry service must meet the design and operational standards of the U.S. Coast Guard, be capable of safely and reliably operating the proposed route across the East River under typical environmental conditions, and may be subject to an inspection by NYCEDC and/or the MTA.</p>
<p>Will tidal flow, currents, or wave patterns be altered? If no, why not? If yes, describe in detail how.</p>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<p>Tidal flow, currents, and wave patterns will not change as a result of the proposed project. Currently, vessel wake associated with the six (6) operational ferry routes and additional recreational vessels impact the wave dynamics in the East River between Manhattan and Brooklyn/Queens. Operation of the proposed project will add one (1) additional vessel, for a temporary operational duration of fifteen (15) months. Any increase in wake to the temporary addition of one (1) vessel is not anticipated to result in any measurable change in wake in the East River, and therefore effects are expected to be negligible and discountable.</p>
<p>Will water quality be altered? If no, why not? If yes, describe in detail how. If the effects are temporary, describe the duration of the impact.</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>It is anticipated that water quality effects of the proposed project will be localized, contained, and temporary. These effects are primarily associated with increased turbidity during pile driving activities.</p> <p>The vessel selected to provide ferry service must meet the design and operational standards of the U.S. Coast Guard, be capable of safely and reliably operating the proposed route across the East River under typical environmental conditions, and may be subject to an inspection by NYCEDC and/or the MTA.</p> <p>All work will be performed in accordance with environmental conditions and commitments of authorizing permits, including those implemented by New York State Department of Environmental Conservation (NYSDEC) and the U.S. Army Corps of Engineers (USACE).</p>
<p>Will ambient noise levels change? If no, why not? If yes, describe in detail how. If the effects are temporary, describe the duration and degree of impact.</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>Pile driving will result in a temporary increase in ambient noise levels. An acoustic analysis indicates that behavioral modification thresholds for fish are exceeded under all pile driving scenarios. It is anticipated that these behavior modifications will primarily be exhibited through avoidance behavior during construction where the threshold is exceeded - within 22 to 68m of pile driving activities. Single-strike noise thresholds for recoverable injury (sSEL) are exceeded for the driving of 36" piles under both vibratory and cushioned impact hammer installation scenarios, distances ranging from 48m to 60m. Since the anticipated avoidance area encompasses the area where injury could occur, fish would not be expected to be close enough to the pile driving activities to experience injury. If impact hammer installation is required, a wood cushion block will be utilized to attenuate noise, and a "soft start" technique will be utilized to encourage fish avoidance prior to full impact hammering.</p>
<p>Does the action have the potential to impact prey species of federally managed fish with EFH designations?</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>Physical disturbance to approximately 0.0018 acre of benthic habitat will have a negligible and temporary impact on benthic fauna located within the work area. Similarly, impacts to pelagic & benthic fauna associated with the shading effects to 0.1015 acre of the water column are also negligible. It is not anticipated that any aquatic flora will be impacted by the project, and mobile fauna will likely avoid harm by avoidance of the proposed impact area. Therefore, it is anticipated that there will be an insignificant and temporary impact on the availability of prey species within the area of direct impact, and that the area will be recolonized within a short period of time after the completion of the project.</p>

Step 4: This section is used to evaluate the consequences of the proposed action on the functions and values of EFH as well as the vulnerability of the EFH species and their life stages. Identify which species (from the list generated in Step 1) will be adversely impacted from the action. Assessment of EFH impacts should be based upon the site characteristics identified in Step 2 and the nature of the impacts described within Step 3. NOAA's [EFH Mapper](#) should be used during this assessment to determine the ecological parameters/ preferences associated with each species listed and the potential impact to those parameters.

4. EFH ASSESSMENT			
Functions and Values	Y	N	Describe habitat type, species and life stages to be adversely impacted
Will functions and values of EFH be impacted for:			
<u>Spawning</u> If yes, describe in detail how, and for which species. Describe how adverse effects will be avoided and minimized.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	The proposed project will be constructed in January and February of 2019, which does not correspond to the spawning season of any of the identified EFH species. Furthermore, the EFH mapper does not identify the presence of eggs for any of the identified EFH species within the project area.
<u>Nursery</u> If yes, describe in detail how and for which species. Describe how adverse effects will be avoided and minimized.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<u>Forage</u> If yes, describe in detail how and for which species. Describe how adverse effects will be avoided and minimized.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Bluefish, Atlantic butterfish, and summer flounder could potentially experience a reduction in available forage area during construction of the proposed ferry landing. These impacts will be temporary in nature and foraging behavior as well as abundance of available forage is anticipated to return to pre-construction levels shortly after the completion of construction.
<u>Shelter</u> If yes, describe in detail how and for which species. Describe how adverse effects will be avoided and minimized.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Bluefish, Atlantic butterfish, and summer flounder could potentially experience a reduction in available shelter area during construction of the proposed ferry landing, as they are expected to avoid the project area. It is anticipated that the area will be recolonized following construction, with the exception of the 0.0018 acre pile footprint. The temporary landing and access platforms may provide additional cover to the EFH species for the 15 month operational duration of the project. All piles and platforms will be removed at the conclusion of the operational period.

<p>Will impacts be temporary or permanent? Please indicate in description box and describe the duration of the impacts.</p>			<p>Impacts associated with this project are temporary, as described below:</p> <p>Construction: January 2019 - February 2019 Operation: 15 months beginning April 13, 2019 (Date of Canarsie Tunnel closure) Removal: at conclusion of operational period - July, 2020</p>
<p>Will compensatory mitigation be used? If no, why not? Describe plans for mitigation and how this will offset impacts to EFH. Include a conceptual compensatory mitigation plan, if applicable.</p>		<input checked="" type="checkbox"/>	<p>Mitigation for these impacts should not be required. All of the impacts associated with the proposed project are temporary in nature, as the temporary ferry landing will be removed in July, 2020. Additionally, with the exception of the 0.0018 acre of pile footprint, the project area can continue to serve as EFH during the 15 month operational period of the project.</p>

Step 5: This section provides the federal agency's determination on the degree of impact to EFH from the proposed action. The EFH determination also dictates the type of EFH consultation that will be required with NOAA Fisheries.

Please note: if information provided in the worksheet is insufficient to allow NOAA Fisheries to complete the EFH consultation additional information will be requested.

<p>5. DETERMINATION OF IMPACT</p>		
<p>Federal Agency's EFH Determination</p>		
<p>Overall degree of adverse effects on EFH (not including compensatory mitigation) will be: (check the appropriate statement)</p>	<input type="checkbox"/>	<p>There is no adverse effect on EFH or no EFH is designated at the project site. EFH Consultation is not required.</p>
	<input checked="" type="checkbox"/>	<p>The adverse effect on EFH is not substantial. This means that the adverse effects are either no more than minimal, temporary, or that they can be alleviated with minor project modifications or conservation recommendations. This is a request for an abbreviated EFH consultation.</p>
	<input type="checkbox"/>	<p>The adverse effect on EFH is substantial. This is a request for an expanded EFH consultation.</p>

Step 6: Consultation with NOAA Fisheries may also be required if the proposed action results in adverse impacts to other NOAA-trust resources, such as anadromous fish, shellfish, crustaceans, or their habitats as part of the Fish and Wildlife Coordination Act. Some examples of other NOAA-trust resources are listed below. Inquiries regarding potential impacts to marine mammals or threatened/endangered species should be directed to NOAA Fisheries' Protected Resources Division.

6. OTHER NOAA-TRUST RESOURCES IMPACT ASSESSMENT	
Species known to occur at site (list others that may apply)	Describe habitat impact type (i.e., physical, chemical, or biological disruption of spawning and/or egg development habitat, juvenile nursery and/or adult feeding or migration habitat). Please note, impacts to federally listed species of fish, sea turtles, and marine mammals must be coordinated with the GARFO Protected Resources Division.
alewife	Alewife migrate up and down the Hudson River Estuary, and could be present within the East River. Alewife are occasional transient species within the project area, but they prefer to winter in waters greater than 56 meters deep. The proposed project will likely result in a temporary avoidance behavior; however, this behavior will return to normal upon the completion of the project.
American eel	American eels migrate up the Atlantic coast from spawning grounds in the Sargasso Sea to their inland freshwater habitats. There is an abundance of records for American eel within the East River. The proposed project will likely result in a temporary avoidance behavior; however, this behavior will return to normal upon the completion of the project.
American shad	American shad migrate up and down the Hudson River Estuary, and could be present within the East River. They tend to swim in schools. Shad are occasional transient species within the project area. Their habitat during non-spawning seasons varies widely and they are known to inhabit depths ranging from 0 to 250 meters, but they tend to favor deeper water during winter months. The proposed project will likely result in a temporary avoidance behavior; however, this behavior will return to normal upon the completion of the project.
Atlantic menhaden	Atlantic menhaden tend to migrate along the coast in large schools. Adults migrate north in spring and south in fall; whereas, juveniles tend to stay in estuarine waters until they mature. Menhaden are occasional transient species within the project area, and they could be in the vicinity of the project area during their spring and fall migration. The proposed project will likely result in a temporary avoidance behavior; however, this behavior will return to normal upon the completion of the project.
blue crab	The blue crab is primarily an estuarine species, with ample records in the East River. This species is highly mobile and should be able to avoid any impact that might be associated with the proposed project.
blue mussel	Blue mussels are present within the East River, but they require a hard substrate to bind to utilizing byssal threads. There is potential for blue mussels to colonize miscellaneous fill and nearby rip-rap within the project area. The project impact to approximately 0.0018 acre of benthic habitat will have a negligible and temporary impact to blue mussel located within the work area.
blueback herring	Blueback herring migrate up and down the Hudson River Estuary, and could be present within the East River. These herring would be occasional transient species within the project area. The proposed project will likely result in a temporary avoidance behavior; however, this behavior will return to normal upon the completion of the project.

<p>Eastern oyster</p>	<p>Oysters used to be an ecologically important and prolific part of the Hudson-Raritan Estuary ecosystem. However, due to development and pollution oyster populations in the East River plummeted to insignificant numbers. Small populations can be found in parts of the estuary, and recent improvement in the East River's water quality has resulted in multiple efforts to restore oyster reefs in the river. Given the limited status of Eastern oyster within the East River, it is not expected that they would be present within the project area.</p>
<p>horseshoe crab</p>	<p>There are records of horseshoe crabs in the East River. The project area could provide marginal habitat for adults, which spend most of their lives in deeper water with sand or mud substrates. This species is highly mobile and should be able to avoid any impact that might be associated with the proposed project.</p>
<p>quahog</p>	<p>Northern quahog are not expected to be present in the project area. The Northern quahog or hard clam inhabits sandy or mud substrates in intertidal and subtidal waters. This species can inhabit offshore coastal waters and estuarine waters, but they are not tolerant of low salinities. The population density of hard clams is significantly higher in areas that are also inhabited by submerged aquatic vegetation (SAV), particularly eel grass.</p>
<p>soft-shell clams</p>	<p>There are records for soft-shell clams within the East River. If there are soft-shell clams within the proposed work area, they can be crushed or buried by the proposed construction activities; however, the proposed work area is small compared to the surrounding available habitat and the project is not expected to have a significant impact on the soft-shell clam population.</p>
<p>striped bass</p>	<p>Adult striped bass are anadromous and travel into inland waters to spawn. There are records for striped bass in the East River, and an occasional transient could pass through the project area. The proposed project will likely result in a temporary avoidance behavior; however, this behavior will return to normal upon the completion of the project.</p>
<p>other species:</p>	<p>Other fish species with the potential to occur within the East River but for which EFH is not mapped include winter flounder and scup, as well as Atlantic herring, Atlantic silverside, Atlantic tomcod, bay anchovy, mummichog, northern searobin, and white perch.</p> <p>Additionally, it has been determined that Atlantic sturgeon (adults and sub-adults) as well as shortnose sturgeon (adult) may be present within the project area. These species are listed under the Federal Endangered Species Act (ESA) of 1973, and Section 7 Consultation has been initiated for the proposed activities.</p>

ATTACHMENT B

MTA New York City Transit Canarsie Tunnel Rehabilitation Project
North Williamsburg Temporary Ferry Landing
North Williamsburg, Brooklyn, NY
ASGECI #4303

EFH MAPPER

EFH Data Notice: Essential Fish Habitat (EFH) is defined by textual descriptions contained in the fishery management plans developed by the regional Fishery Management Councils. In most cases mapping data can not fully represent the complexity of the habitats that make up EFH. This report should be used for general interest queries only and should not be interpreted as a definitive evaluation of EFH at this location. A location-specific evaluation of EFH for any official purposes must be performed by a regional expert. Please refer to the following links for the appropriate regional resources.

Greater Atlantic Regional Office
Atlantic Highly Migratory Species Management Division

Query Results

Map Scale = 1:9,028

Degrees, Minutes, Seconds: Latitude = 40°43'19" N, Longitude = 73°57'52" E

Decimal Degrees: Latitude = 40.72, Longitude = -73.96

The query location intersects with spatial data representing EFH and/or HAPCs for the following species/management units.










*** WARNING ***

The list provided below is incomplete due to current data limitations* (please refer to the warnings posted for this region elsewhere on the EFH Mapper). For a complete list of EFH species and life stages designated at this location please consult with the regional office. Regional contact links have been provided above.

Spatial data for species managed by the New England Fishery Management Council will be added to the EFH Mapper as soon as they are available.

Please note under "Life Stage(s) Found at Location" the category "ALL" indicates that one or more life stage of a species (the one or ones listed) is mapped as EFH at the queried location. In cases where "ALL" is the only entry in the table, all life stages of that species share the same map and are designated at the queried location.

EFH

Show	Link	Data Caveats	Species/Management Unit	Life stage(s) Found at Location	Management Council	FMP
			Bluefish	Adult Juvenile ALL	Mid-Atlantic	Bluefish
			Atlantic Butterfish	Larvae ALL	Mid-Atlantic	Atlantic Mackerel, Squid, & Butterfish Amendment 11
			Summer Flounder	Larvae Juvenile Adult ALL	Mid-Atlantic	Summer Flounder, Scup, Black Sea Bass

Pacific Salmon EFH

No Pacific Salmon Essential Fish Habitat (EFH) were identified at the report location.

HAPCs

No Habitat Areas of Particular Concern (HAPC) were identified at the report location.

EFH Areas Protected from Fishing

No EFH Areas Protected from Fishing (EFHA) were identified at the report location.

Spatial data does not currently exist for all the managed species in this area. The following is a list of species or management units for which there is no spatial data.

****For links to all EFH text descriptions see the complete data inventory: [open data inventory -->](#)**

New England Council EFH,

All 28 species managed by this Council,

New England Council HAPCs,

All existing and recently designated HAPCs,

Mid-Atlantic Council HAPCs,

No spatial data for summer flounder SAV HAPC.

ATTACHMENT C

MTA New York City Transit Canarsie Tunnel Rehabilitation Project
North Williamsburg Temporary Ferry Landing
North Williamsburg, Brooklyn, NY
ASGECI #4303

ACOUSTIC ANALYSIS

All guide piles (4), anchor piles (6), and access support piles (4), will be installed using a vibratory hammer, with a contingency plan to use a cushioned impact hammer only if an obstruction such as rock is encountered during installation. If impact hammer installation is required, a wood cushion block will be utilized to attenuate noise, and a “soft start” technique will be used to encourage fish avoidance prior to the initiation of impact hammering. At the conclusion of operations (July 2020), the piles will be removed, also using vibratory methods.

An acoustic analysis has been conducted to approximate the noise levels associated with the proposed pile installation. Representative case studies, or “proxy projects”, along with their corresponding underwater noise levels were selected from the NMFS Greater Atlantic Regional Fisheries Office (GARFO) Acoustic Tool Spreadsheet. The GARFO Acoustic Tool (NOAA 2016) is a valuable method to determine whether a project might have noise related impacts on aquatic life. The tool utilizes threshold values for physiological and behavioral impacts developed from various research projects, anticipated noise levels from a variety of construction activities, an attenuation factor, and other physical characteristics of the work area to determine how far construction noise will travel from its source before it reaches its non-sonified, or effective quiet limit. Although the GARFO Acoustic Tool provides data specific to sturgeon/salmon thresholds, it is the standard recommended by NMFS to evaluate noise impacts to all fishes expected to occur within a project action area.

The effective quiet limit is the point at which no noise impacts are anticipated. Multiple variables adjust the formula to make the analysis site specific. These variables include pile type, pile size, pile composition, and depth of water at the project site. Where exact pile sizes and installation methods were not available, a more conservative proxy project was selected. This occurred in two instances: 1) in the case of 16” piles to be installed with a vibratory hammer, the data for 16” piles installed with a direct impact hammer was selected, and 2) in the case of 36” piles to be installed with a cushioned impact hammer, the data for a direct impact hammer was selected. The selected proxy projects and corresponding noise levels are listed in Table 1 and Table 2.

Table 1. Proxy Project Data for Estimating Underwater Noise Levels and Attenuation

Project Location	Water Depth (m)	Pile Size (inches)	Pile Type	Hammer Type	Attenuation rate (dB/10m)
Oakley, CA - Sand Mound Slough	3	16"	Steel Pipe	Impact	5
Oakley, CA - Sand Mound Slough	3	16"	Steel Pipe	Cushioned Impact	5
Not Available	<5	36"	Steel Pipe	Impact	5
Not Available	5	36"	Steel Pipe	Vibratory	5

Table 2. Proxy Based Estimates for Underwater Noise

Type of Pile	Hammer Type	Estimated Peak Noise Level (dB _{Peak})	Estimated Pressure Level (dB _{RMS})	Estimated Single Strike Sound Exposure Level (dB _{sSEL})
16" Steel Pipe	Impact	182	167	158
16" Steel Pipe	Cushioned Impact	171	156	147
36" Steel Pipe	Impact	208	190	180
36" Steel Pipe	Vibratory	185	175	175

Since the available proxy project data is overly conservative for the 16” piles to be installed with a vibratory hammer, and the 36” piles to be installed with a cushioned impact hammer (*if necessary*), the estimated noise levels were then adjusted by subtracting dB associated with a selected attenuation device, as identified in the GARFO Acoustic Tool “Attenuation Information” tab. Use of a vibratory hammer in lieu of an impact hammer can be expected to result in a 10-20 dB reduction in underwater noise levels, while use of a wood cushion block with an impact hammer can be expected to result in a 11-26 dB reduction in underwater noise levels. Therefore, proxy estimates for these pile activities were conservatively reduced by 10 dB and 11 dB, respectively. The resulting estimated attenuated noise levels are presented in Table 3, below.

Table 3. Proxy Estimates for Underwater Noise Adjusted for Attenuation Techniques

Type of Pile	Hammer Type	Attenuation Method	Estimated Peak Noise Level (dB _{Peak})	Estimated Pressure Level (dB _{RMS})	Estimated Single Strike Sound Exposure Level (dB _{sSEL})
16" Steel Pipe	Impact	Vibratory Hammer – 10 dB reduction	172	157	148
16" Steel Pipe	Cushioned Impact	N/A	171	156	147
36" Steel Pipe	Impact	Wood Cushion Blocks – 11 dB reduction	197	179	169
36" Steel Pipe	Vibratory	N/A	185	175	175

Using the attenuated noise levels identified above, Table 4 below illustrates the anticipated distance to effective quiet for fish.

Table 4. Estimated Distances to Sturgeon/Salmon Injury and Behavioral Thresholds (based on attenuated noise levels)

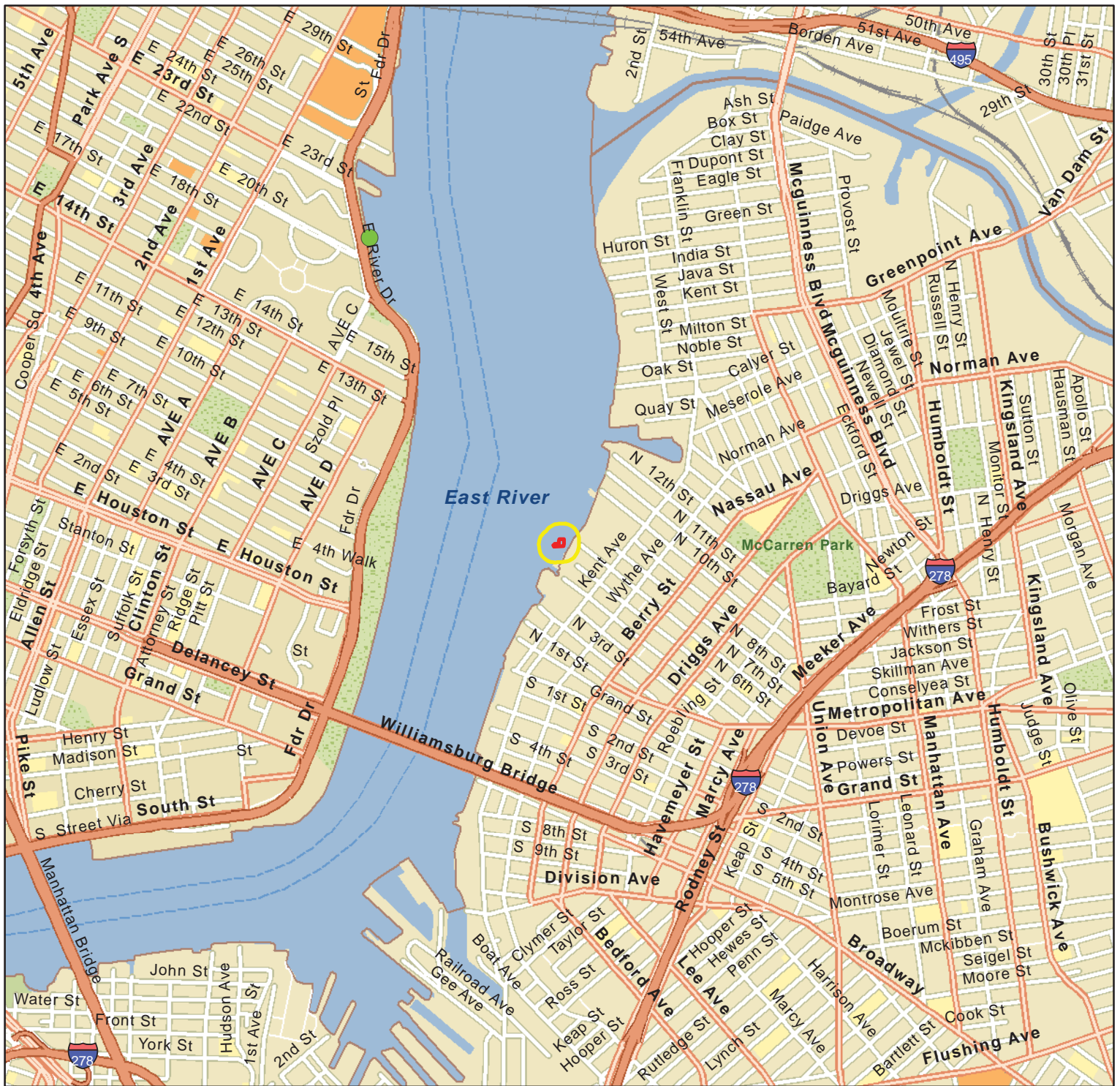
Type of Pile	Hammer Type	Distance (m) to 206dB_{Peak} (injury)	Distance (m) to sSEL of 150 dB (surrogate for 187 dBcSEL injury)	Distance (m) to Behavioral Disturbance Threshold (150 dB_{RMS})
16" Steel Pipe	Vibratory	NA	NA	24.0
16" Steel Pipe	Cushioned Impact	NA	NA	22.0
36" Steel Pipe	Cushioned Impact	NA	48.0	68.0
36" Steel Pipe	Vibratory	NA	60.0	60.0

Based on this analysis, the maximum distance at which fish could experience effects associated with underwater noise levels is at 68m from a pile driving location of 36" steel pipe piles installed with a cushioned impact hammer.

ATTACHMENT D

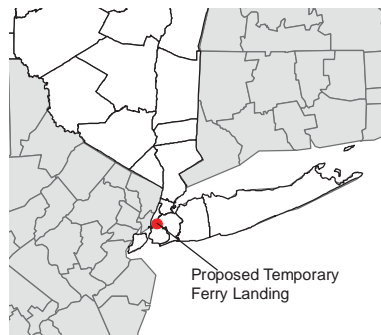
MTA New York City Transit Canarsie Tunnel Rehabilitation Project
North Williamsburg Temporary Ferry Landing
North Williamsburg, Brooklyn, NY
ASGECI #4303

SITE FIGURES



Legend

- Proposed Temporary Ferry Landing
- Project Action Area
- Stuyvesant Cove, Manhattan - Service Connection

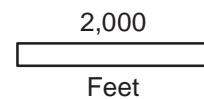
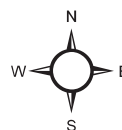


Sources:
 Proposed Temporary Ferry Landing provided by New York City Transit Authority, Preliminary Proposed Ferry Landing Plan, Sheet FL-2 (Figure 2 Plan), April 13, 2018.
 ESRI Street Map North America, Tele Atlas North America, Inc., published by ESRI® Data & Maps, Redlands, California, 2010.

**Figure H-1
 Site Location Map**

MTA New York City Transit
 Canarsie Tunnel Rehabilitation Project
 North Williamsburg Temporary Ferry Landing
 North Williamsburg, Brooklyn
 Kings County, New York

ASGECI Project # 4303





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Legend

- Proposed Temporary Ferry Landing
- Project Action Area
- Stuyvesant Cove, Manhattan - Service Connection

Latitude and Longitude Coordinates in NAD83 for the approximate center of site -
 N: 40° 43' 16.68" / W: 73° 57' 51.42"

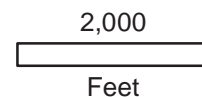
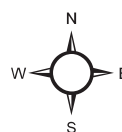


Sources:
 Proposed Temporary Ferry Landing provided by New York City Transit Authority, Preliminary Proposed Ferry Landing Plan, Sheet FL-2 (Figure 2 Plan), April 13, 2018.
 NYS Department of Transportation Raster Quadrangle, Brooklyn NY USGS quadrangle updated by NYSDOT, NYSDOT edition 1990.

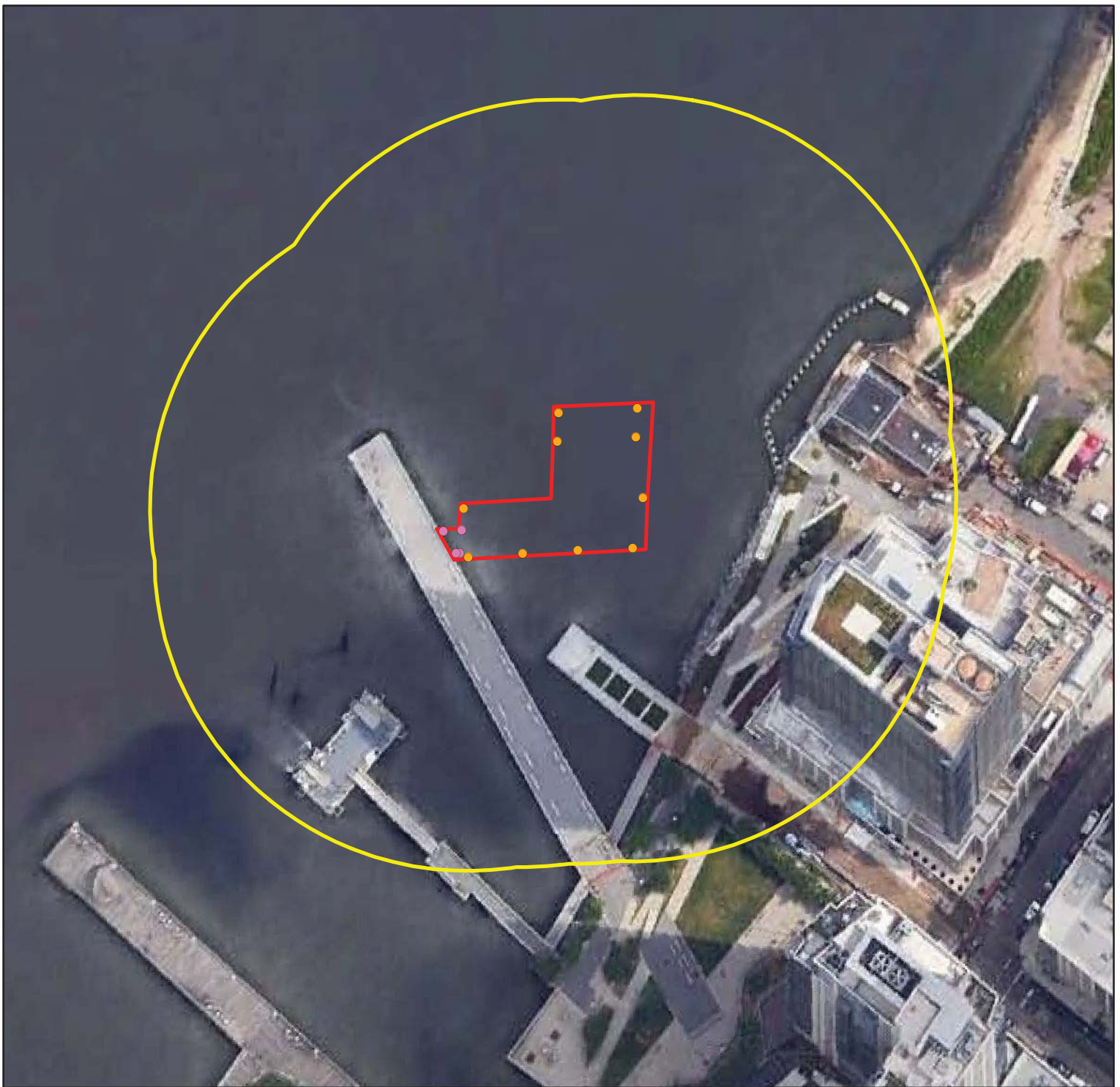
Figure H-2
 USGS Topographic Map

MTA New York City Transit
 Canarsie Tunnel Rehabilitation Project
 North Williamsburg Temporary Ferry Landing
 North Williamsburg, Brooklyn
 Kings County, New York

ASGECI Project # 4303



AMY S. GREENE
ENVIRONMENTAL
CONSULTANTS



Legend

- Proposed Temporary Ferry Landing
- Proposed 16" Piles
- Proposed 36" Piles
- Project Action Area

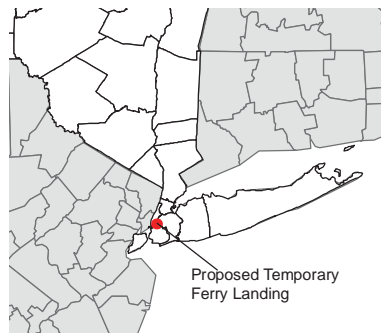
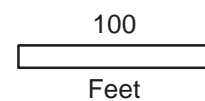
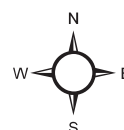


Figure H-3
Aerial Map

MTA New York City Transit
Canarsie Tunnel Rehabilitation Project
North Williamsburg Temporary Ferry Landing
North Williamsburg, Brooklyn
Kings County, New York

ASGECI Project # 4303

Sources:
Proposed Temporary Ferry Landing and Proposed Piles provided by New York City Transit Authority, Preliminary Proposed Ferry Landing Plan, Sheet FL-2 (Figure 2 Plan), April 13, 2018.
2016 Imagery in King County, NY Statewide Digital Orthoimagery Program (NYS DOP) Imagery Coverage, Statewide Web Map Service Regional Coverage from 2000 to 2016, NYS Division of Homeland Security and Emergency Services (DHSES), NYS Cyber Security, distributed 2017.



ATTACHMENT E

MTA New York City Transit Canarsie Tunnel Rehabilitation Project
North Williamsburg Temporary Ferry Landing
North Williamsburg, Brooklyn, NY
ASGECI #4303

PHOTOGRAPHS



Photo A: View of East River facing east toward Manhattan from existing Empire Pier, adjacent to the project area.

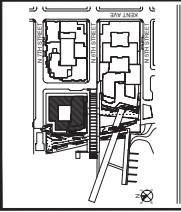


Photo B: View of East River facing east toward Manhattan at location of existing ferry pier to the south of proposed project location.

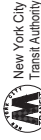
ATTACHMENT F

MTA New York City Transit Canarsie Tunnel Rehabilitation Project
North Williamsburg Temporary Ferry Landing
North Williamsburg, Brooklyn, NY
ASGECI #4303

PROJECT PLANS



30 % DESIGN



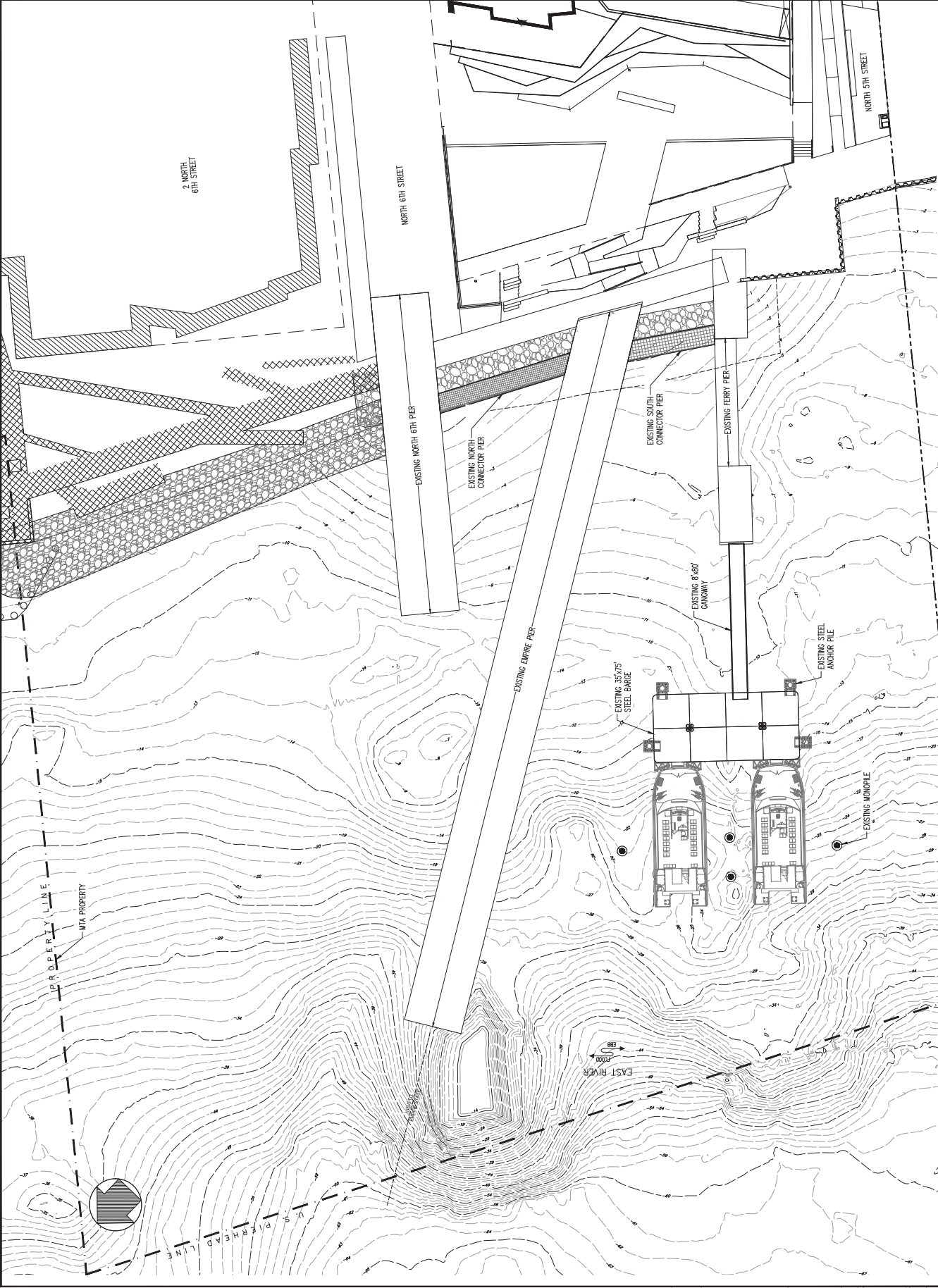
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 Canarsie Tunnel Rehabilitation

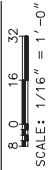
EXISTING SITE PLAN

DATE: 08/10/2018

PROJECT NO.	18-001
DATE	08/10/2018
SCALE	1/16" = 1'-0"
FL-1	



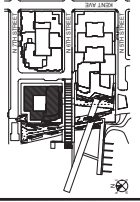
EXISTING SITE PLAN



SCALE: 1/16" = 1'-0"

- NOTES:
1. HYDROGRAPHIC INFORMATION AND SURVEY DATA SHOWN ARE APPROXIMATE. OPERATOR SHALL SURVEY AND VERIFY EXISTING FIELD CONDITIONS AND MIDLINES.
 2. ELEVATIONS SHOWN REFERENCE BROOKLYN HIGHWAY DATUM (BHD).

DATE: 08/10/2018 10:58:00 AM
 PROJECT: 18-001
 DRAWING: FL-1
 SHEET: 1 OF 1
 SCALE: 1/16" = 1'-0"



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North Williamsburg
 Temporary Ferry Landing
 Canarsie Tunnel Rehabilitation

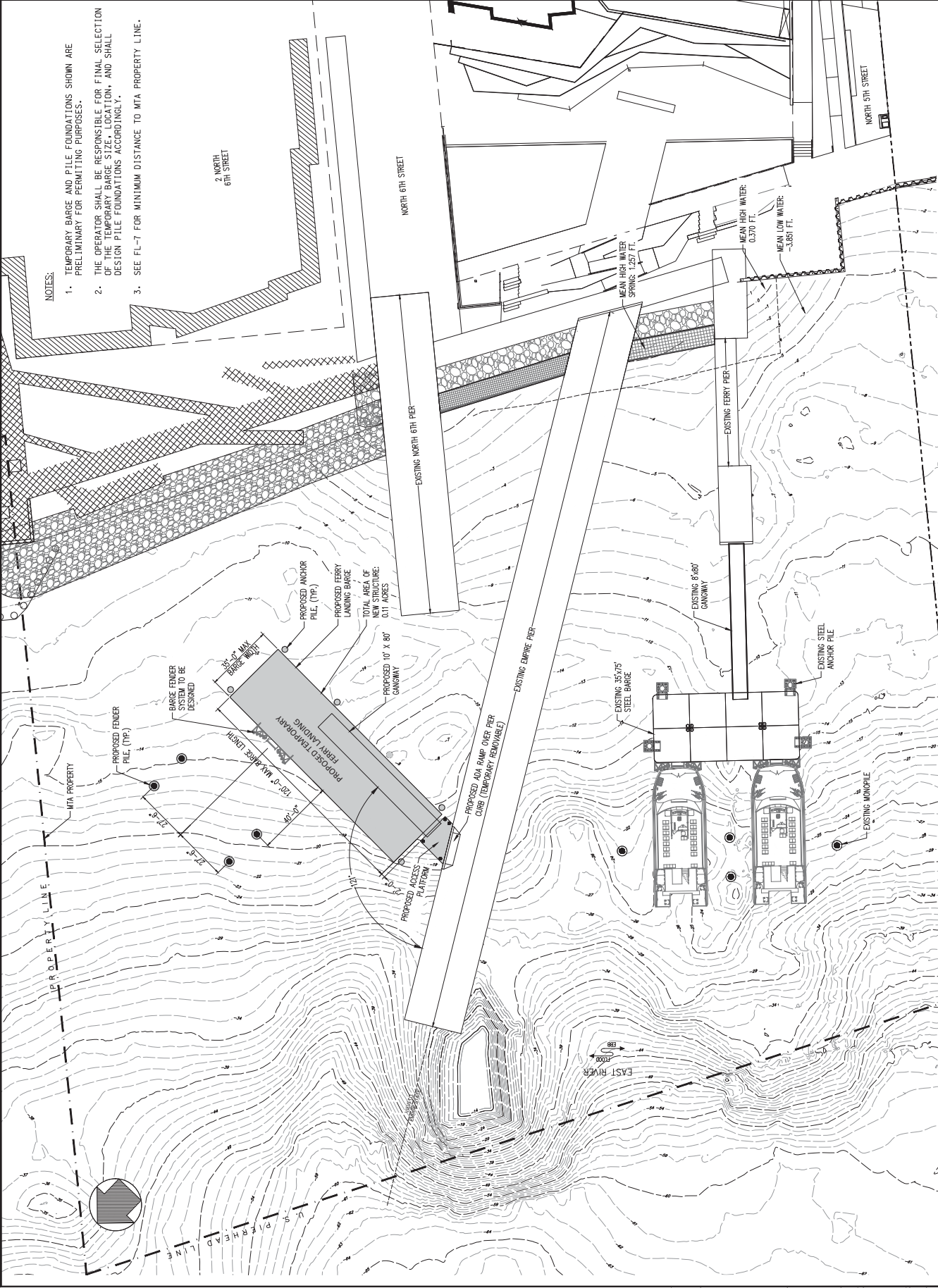
PREPARED BY PROPOSED FERRY
 LANDING PLAN

DATE: 10/10/13

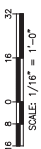
FL-2

13

- NOTES:
1. TEMPORARY BARGE AND PILE FOUNDATIONS SHOWN ARE PRELIMINARY FOR PERMITTING PURPOSES.
 2. THE OPERATOR SHALL BE RESPONSIBLE FOR FINAL SELECTION OF TEMPORARY BARGE, SIZE, LOCATION, AND SHALL DESIGN PILE FOUNDATIONS ACCORDINGLY.
 3. SEE FL-7 FOR MINIMUM DISTANCE TO MTA PROPERTY LINE.



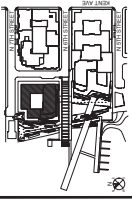
PROPOSED TEMPORARY FERRY LANDING PLAN



- LEGEND
- PROPOSED TEMPORARY FERRY LANDING
 - PROPOSED FENDER PILE WITH DONUT
 - PROPOSED ANCHOR PILE
 - PROPOSED ACCESS PLATFORM PILE

DATE: 10/10/13 10:10 AM
 PROJECT: NORTH WILLIAMSBURG TEMPORARY FERRY LANDING
 DRAWING: FL-2
 SHEET: 13 OF 13

30 % DESIGN



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Transit Authority

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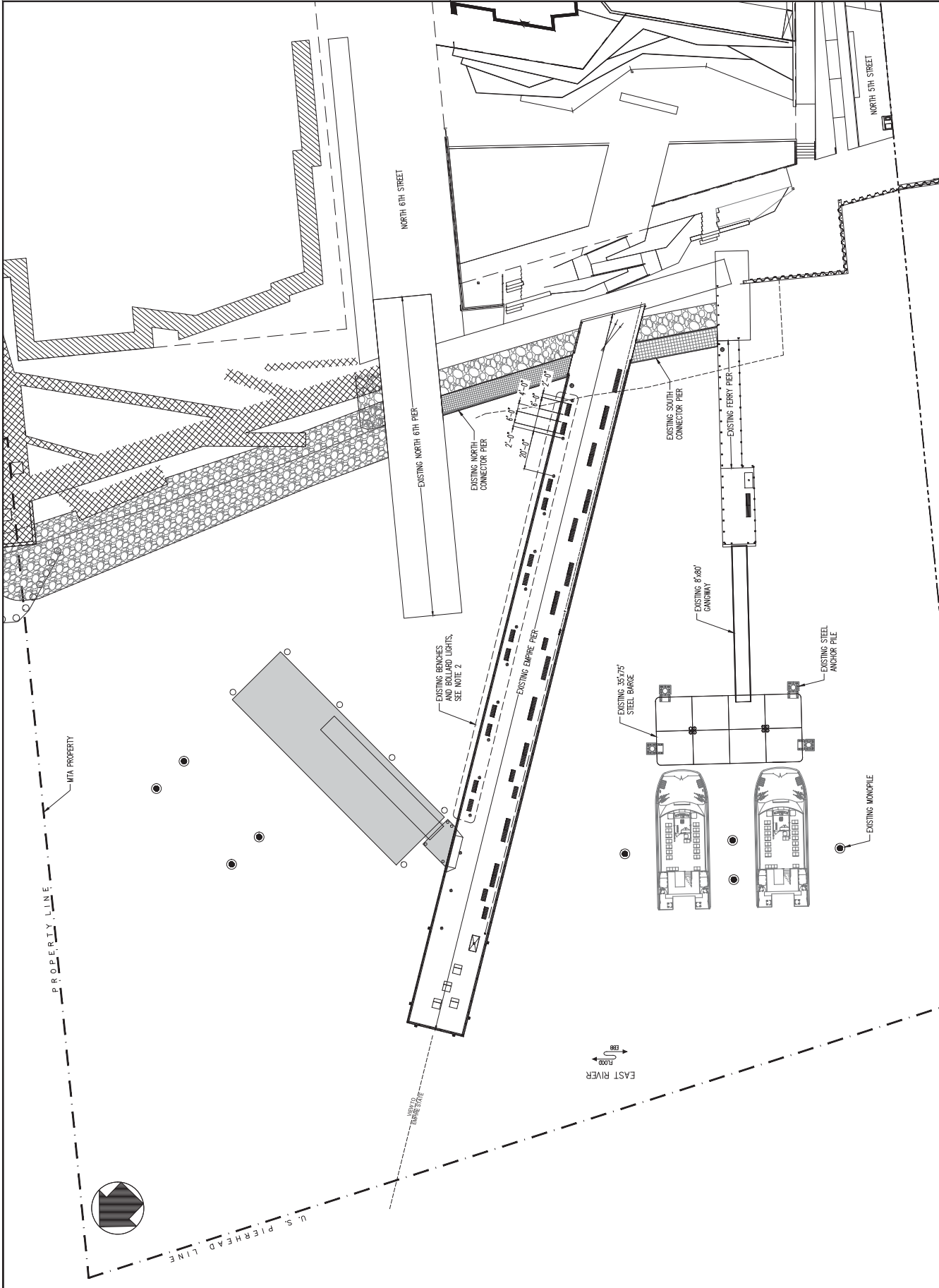
North Williamsburg
Temporary Ferry Landing
Canarsie Tunnel Rehabilitation

TEMPORARY REMOVALS PLAN

TEMPORARY REMOVALS

FL-3

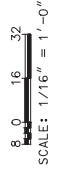
DATE: 08/20/18
DRAWN: JLD
CHECKED: JLD
SCALE: AS SHOWN



NOTES:

1. THE OPERATOR SHALL CONSTRUCT THE TEMPORARY FERRY LANDING AFFERED TO THE EXISTING EMPIRE PIER AND REMOVE THE LANDING AND RESTORE THE EMPIRE PIER AT THE CONCLUSION OF TEMPORARY SERVICE.
2. THE OPERATOR SHALL REMOVE, STORE FOR THE DURATION OF FERRY OPERATIONS, AND REINSTALL THE BENCHES, LIGHTING, AND FERRY OPERATIONS ARE CONCLUDED. LIGHTING BOLLARD LIGHTS ARE TO REMAIN.
3. FOR BIDDING PURPOSES, OPERATOR SHALL CONSIDER REMOVAL OF LIGHTING BOLLARDS (5 TOTAL) WITHIN THE VICINITY OF THE ACCESS PLATFORM.

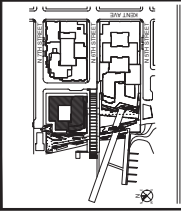
REMOVALS PLAN



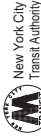
LEGEND

- █ BENCH
- ⊕ BOLLARD LIGHT

THIS PLAN IS A PART OF A PROJECT OF THE NEW YORK CITY TRANSIT AUTHORITY, 1 PENN PLAZA, 29TH FLOOR, NEW YORK, NY 10119. THE PROJECT IS THE CANARSIE TUNNEL REHABILITATION AND TEMPORARY FERRY LANDING. THE PROJECT IS BEING DESIGNED BY WSP | PARSONS BRINCKERHOFF, 1 PENN PLAZA, 29TH FLOOR, NEW YORK, NY 10119.



30 % DESIGN

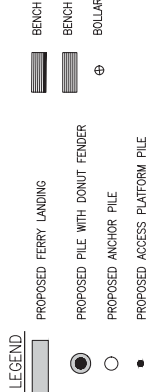
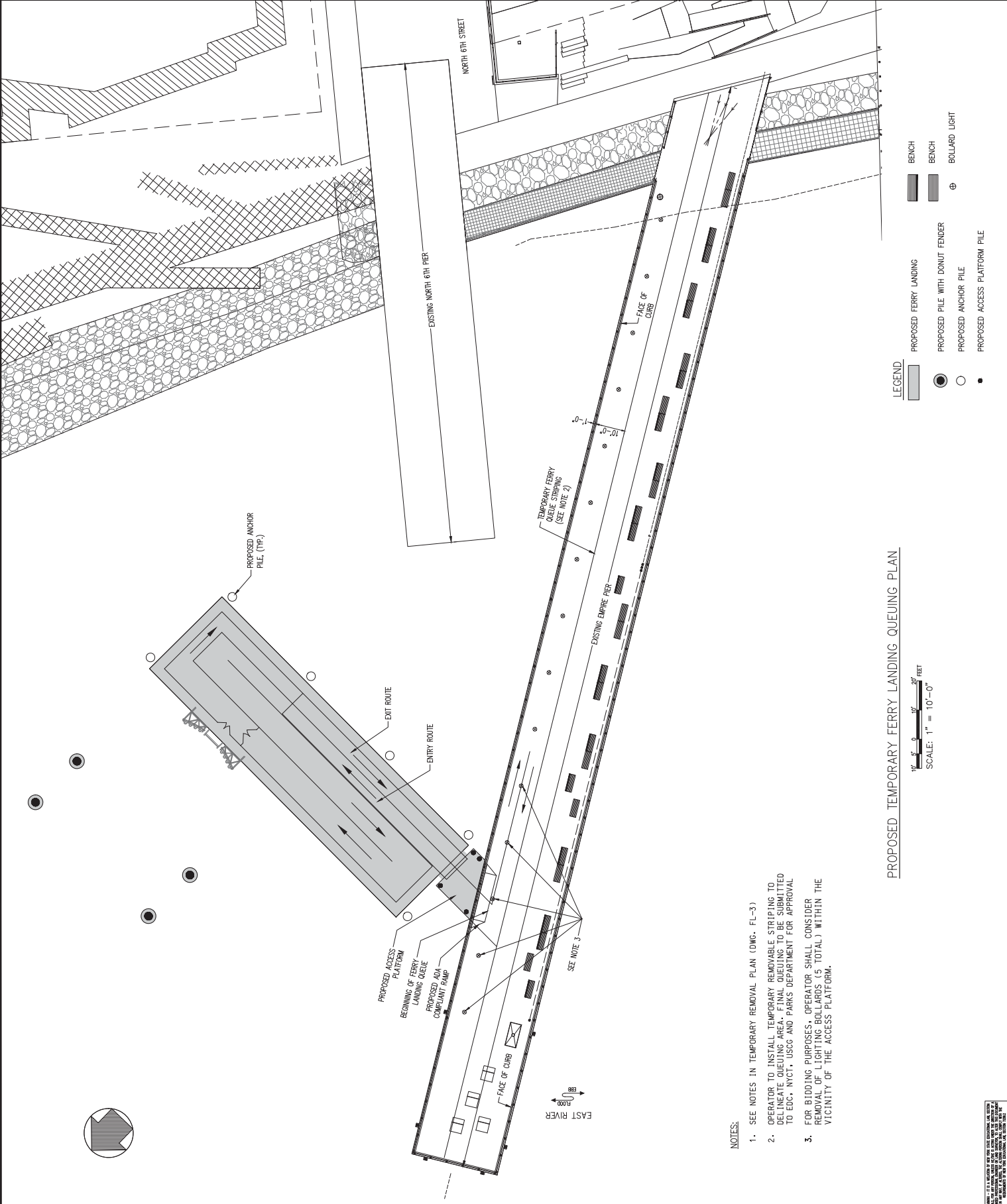


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North Williamsburg
 Temporary Ferry Landing
 Canarsie Tunnel Rehabilitation

PRELIMINARY PROPOSED TEMPORARY
 FERRY LANDING QUEUING PLAN

DATE: 08/14/2018	FL-4
PROJECT: NORTH WILLIAMSBURG	
SCALE: 1" = 10'-0"	

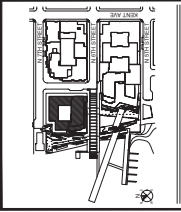


PROPOSED TEMPORARY FERRY LANDING QUEUING PLAN

SCALE: 1" = 10'-0"

- NOTES:
- SEE NOTES IN TEMPORARY REMOVAL PLAN (DWG. FL-3).
 - OPERATOR TO INSTALL TEMPORARY REMOVABLE STRIPING TO DELINEATE QUEUING AREA. STRIPING TO BE SUBMITTED TO EDC, NYCT, USCG AND PARKS DEPARTMENT FOR APPROVAL.
 - FOR BIDDING PURPOSES, OPERATOR SHALL CONSIDER REMOVAL OF LIGHTING BOLLARDS (5 TOTAL) WITHIN THE VICINITY OF THE ACCESS PLATFORM.

DATE: 08/14/2018 10:52:00 AM
 PROJECT: NORTH WILLIAMSBURG
 DRAWING: FL-4
 SCALE: 1" = 10'-0"
 SHEET: 1 OF 1



30 % DESIGN

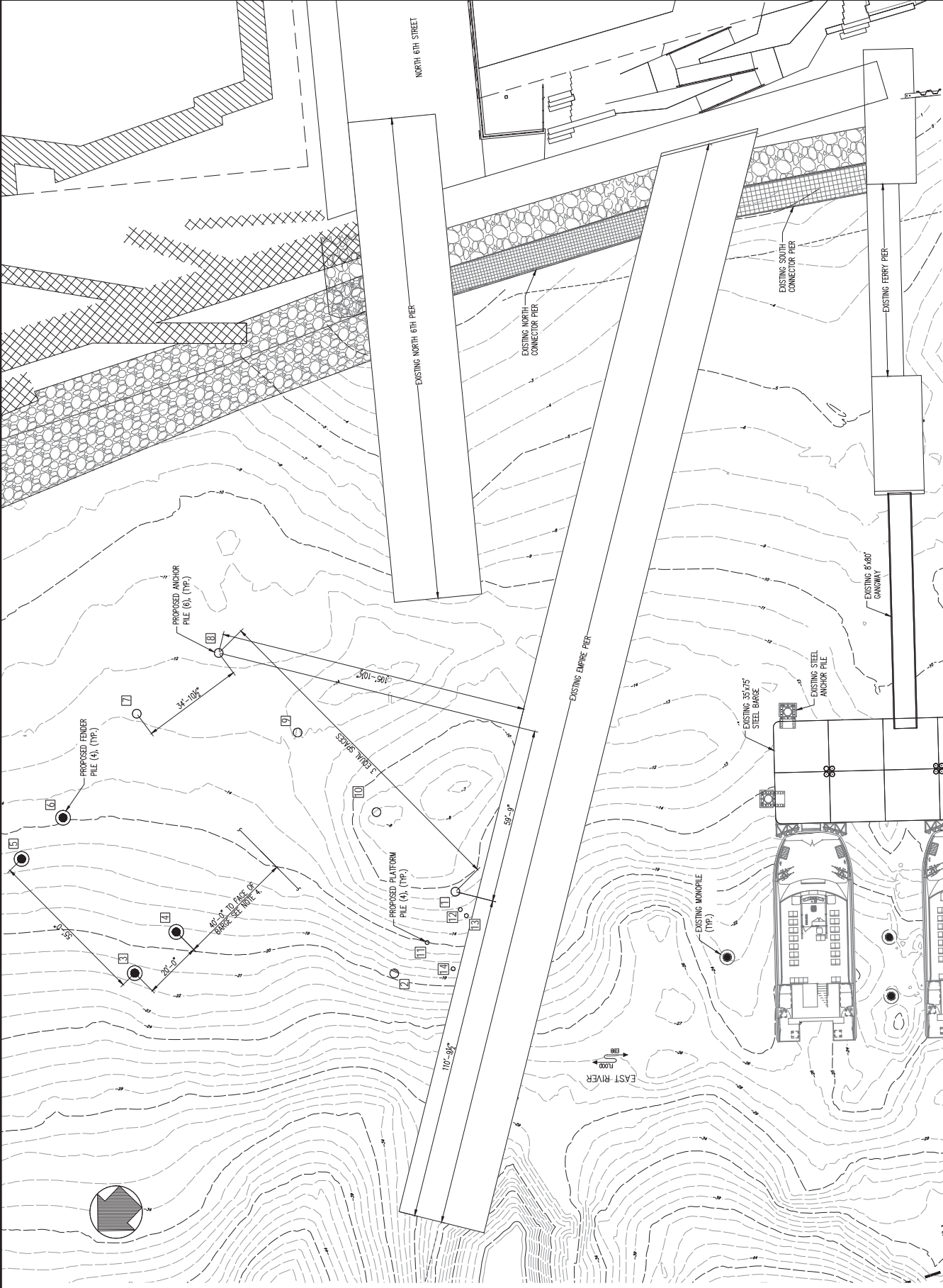


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North Williamsburg
 Temporary Ferry Landing
 Canarsie Tunnel Rehabilitation

PROJECT NAME:
 PILE FOUNDATION PLAN

DATE:	NOV 2013
SCALE:	1" = 3'-0"
PROJECT NO.:	FL-6
REVISIONS:	

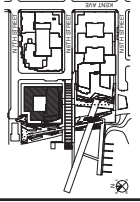


- NOTES:**
- ELEVATIONS SHOWN REFERENCE BROOKLYN HIGHWAY DATUM (BHD)
 - PROPOSED PILE FOUNDATION AND SURVEY DATA SHOWN ARE APPROXIMATE. THE OPERATOR SHALL SURVEY AND VERIFY EXISTING CONDITIONS.
 - PILE CONFIGURATION SHOWN ON THIS DRAWING IS BASED ON A 120' X 35' BARGE WITH 4FT DRAFT AND 7FT FACEBOARD FOR PERMITTING PURPOSE.
 - LENGTH OF BARGE SELECTED WILL DETERMINE DIMENSION BETWEEN PILES. INSTALL PILES WITH 3 EQUAL SPACES FROM PILE 6 TO PILE 14.
 - THE OPERATOR SHALL PERFORM SUBSURFACE INVESTIGATION AND SURVEY, NECESSARY FOR DESIGN OF PILE FOUNDATIONS.

PROPOSED PILE PLAN
 SCALE: 3/32" = 1'-0"
 0 16 32

- LEGEND**
- 1 PILE NUMBER
 - PROPOSED 36" (MIN.) X 3/4" (MIN.) WALL STEEL PIPE PILE WITH DONUT FENDER
 - PROPOSED 36" (MIN.) X 3/4" (MIN.) WALL STEEL PIPE ANCHOR PILE
 - PROPOSED 18" X 1/2" WALL STEEL PIPE ACCESS PLATFORM PILE

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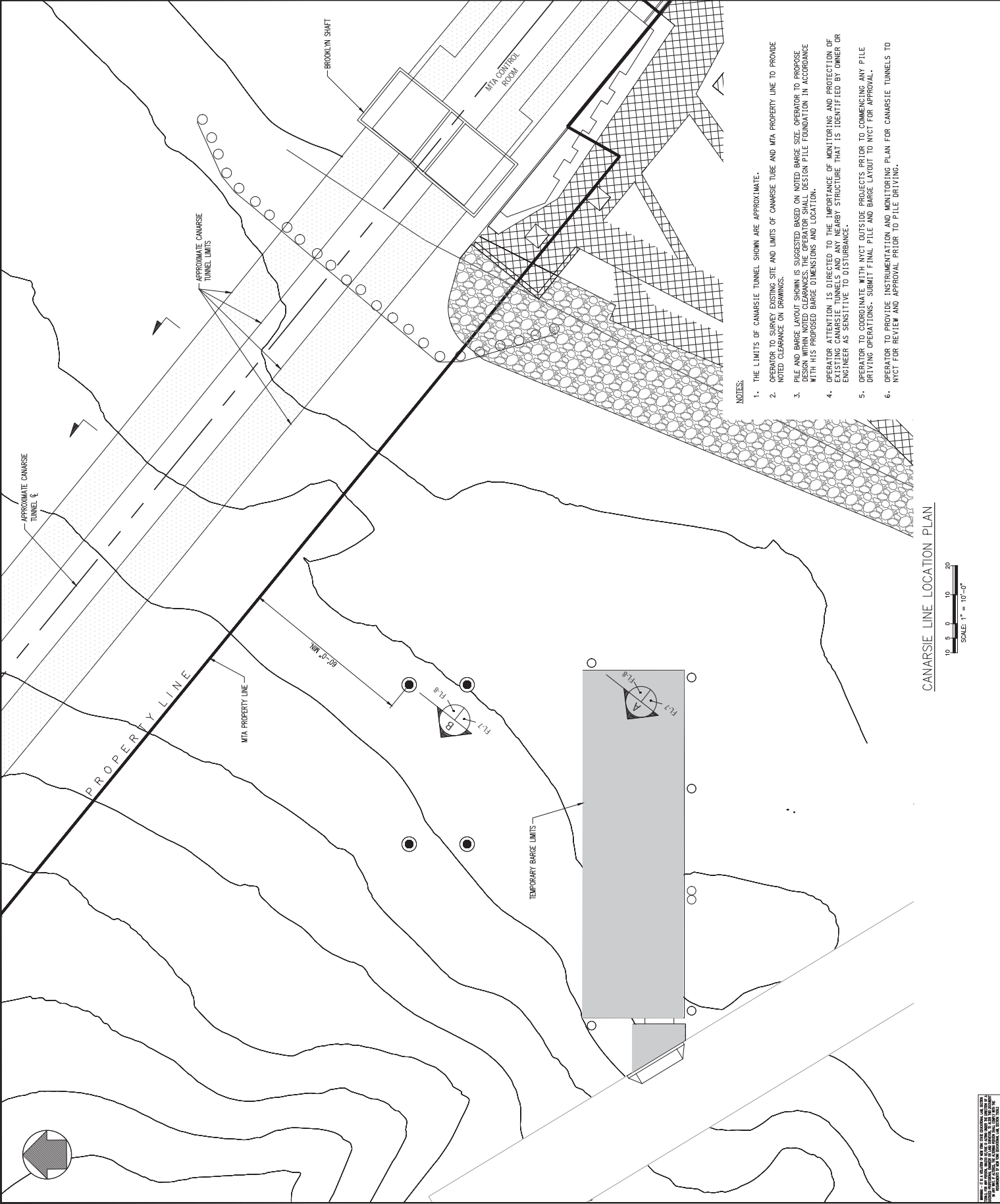
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North Williamsburg
 Temporary Ferry Landing
 Canarsie Tunnel Rehabilitation

CANARSIE TUNNELS LOCATION PLAN

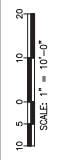
DATE: 08/11/10

PROJECT NO.	FL-7
DATE	08/11/10
SCALE	1" = 10'-0"
DESIGNER	
CHECKER	
DATE	

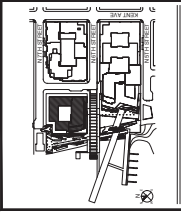


- NOTES:
1. THE LIMITS OF CANARSIE TUNNEL SHOWN ARE APPROXIMATE.
 2. OPERATOR TO SURVEY EXISTING SITE AND LIMITS OF CANARSIE TUBE AND MTA PROPERTY LINE TO PROVIDE NOTED CLEARANCE ON DRAWINGS.
 3. PILE AND BARGE LAUNCH SWATH IS SUGGESTED BASED ON NOTED BARGE SIZE. OPERATOR TO PROPOSE DESIGN WITHIN NOTED CLEARANCES. THE OPERATOR SHALL DESIGN PILE FOUNDATION IN ACCORDANCE WITH HIS PROPOSED BARGE DIMENSIONS AND LOCATION.
 4. OPERATOR ATTENTION IS DIRECTED TO THE IMPORTANCE OF MONITORING AND PROTECTION OF EXISTING NEARBY STRUCTURE THAT IS IDENTIFIED BY OWNER OR ENGINEER AS SENSITIVE TO DISTURBANCE.
 5. OPERATOR TO COORDINATE WITH NYCT OUTSIDE PROJECTS PRIOR TO COMMENCING ANY PILE DRIVING OPERATIONS. SUBMIT FINAL PILE AND BARGE LAYOUT TO NYCT FOR APPROVAL.
 6. OPERATOR TO PROVIDE INSTRUMENTATION AND MONITORING PLAN FOR CANARSIE TUNNELS TO NYCT FOR REVIEW AND APPROVAL PRIOR TO PILE DRIVING.

CANARSIE LINE LOCATION PLAN



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30 % DESIGN



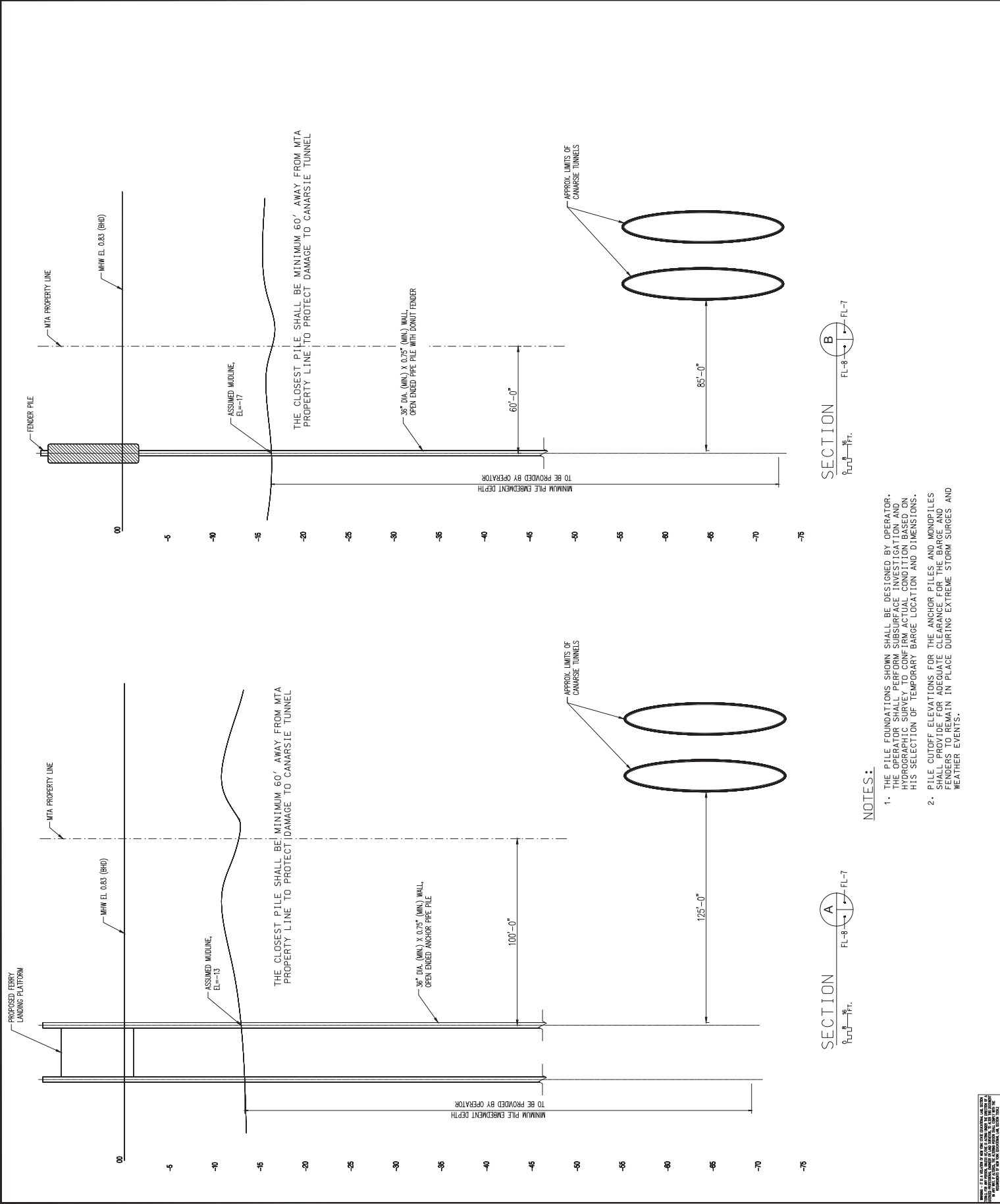
WSP - PARSONS BRINCKERHOFF
 1 Penn Plaza, 29th Fl.
 New York, NY 10119
 (212) 512-5000

North Williamsburg
 Temporary Ferry Landing
 Canarsie Tunnel Rehabilitation

PILE FOUNDATION SECTIONS

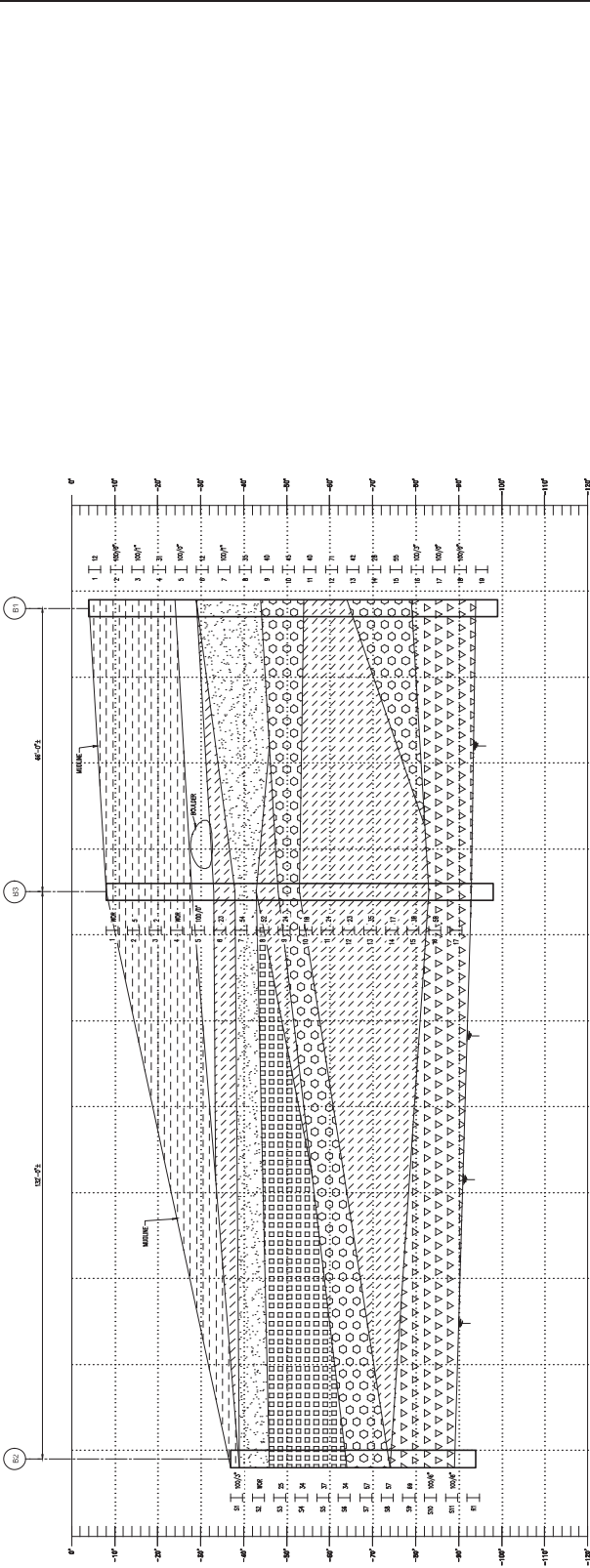
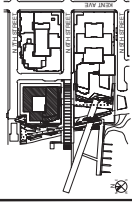
SECTION

PROJECT NO.	FL-8
DATE	
SCALE	
DESIGNER	
CHECKER	
DATE	



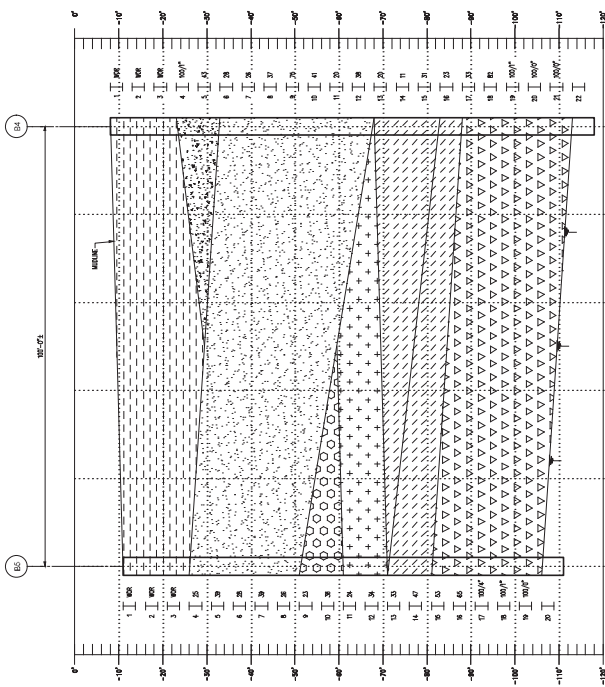
- NOTES:**
1. THE PILE FOUNDATIONS SHOWN SHALL BE DESIGNED BY OPERATOR. THE OPERATOR SHALL PERFORM SUBSURFACE INVESTIGATION AND HYDROGRAPHIC SURVEY TO CONFIRM ACTUAL CONDITION BASED ON HIS SELECTION OF TEMPORARY BARGE LOCATION AND DIMENSIONS.
 2. PILE CUTOFF ELEVATIONS FOR THE ANCHOR PILES AND MONOPILES SHALL PROVIDE FOR ADEQUATE CLEARANCE FOR THE BARGE AND FENDERS TO REMAIN IN PLACE DURING EXTREME STORM SURGES AND WEATHER EVENTS.

DATE: 11/15/2011 10:58 AM
 PROJECT: NORTH WILLIAMSBURG TEMPORARY FERRY LANDING
 DRAWING: PILE FOUNDATION SECTIONS
 SHEET: FL-8 OF 10



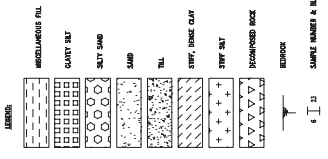
A SUBSURFACE SECTION - 1
 SCALE: 1" = 10'
 1" = 10'

NOTES:
 1. BORING DATA COMPLETED BY LABORATORY NUMBER IS IDENTIFIED IN SECTION 2014.
 2. SEE INFORMATION SHEET BETWEEN DRAWING LOCATIONS ASSIGNED.



B SUBSURFACE SECTION - 2
 SCALE: 1" = 10'
 1" = 10'

NOTES:
 1. BORING DATA COMPLETED BY LABORATORY NUMBER IS IDENTIFIED IN SECTION 2014.
 2. SEE INFORMATION SHEET BETWEEN DRAWING LOCATIONS ASSIGNED.



0.000000	100% CONSTRUCTION DOCUMENTS
M.G. McLaren P.C. Marine Engineers 100 West 11th Street, 10th Floor New York, NY 10011	
The Stephen B. Jacobs Group, PC Architects and Planners 100 West 11th Street, 10th Floor New York, NY 10011	
WSP USA 220 East 43rd Street, 4th Fl. New York, NY 10017 (212) 697-5000	
Edwards & Zick Engineers Mechanical, Electrical and Plumbing Engineers 110 Park Avenue South, 17th Fl., New York, NY 10003 (212) 697-5000	
2 North 6th Place Williamsburg, Brooklyn, NY	
APP. NO. 2008255	SUBSURFACE SECTIONS
DRAWN BY MR-0.5	CHECKED BY MR-0.5
DATE 08/11/08	SCALE AS SHOWN
PROJECT NO. 08-001	SHEET NO. 1 OF 2

100% CONSTRUCTION DOCUMENTS
 ISS: ED 0.0 11.01.08

Federal Interagency Comment Form

Applicant: Metropolitan Transit Authority (MTA) / New York City Transit (NYCT)
Appl. Number: N/A
Commenting Agency: NOAA Fisheries / Habitat Conservation Division
Waterway/Location: East River near N. 6th St, North Williamsburg, Brooklyn, NY
Activity: Construction of a temporary ferry landing connected to Empire Pier, including access platform, gangway, ferry landing barge, and guide piles. Access platform will be supported by six 36" diameter steel anchor piles. Four 36" diameter steel guide piles will be located north of the ferry landing.

ESSENTIAL FISH HABITAT (EFH)

Project may adversely affect EFH.

ESSENTIAL FISH HABITAT CONSERVATION RECOMMENDATIONS

Note: EFH CRs require a response from the federal action agency within 30 days of receipt or 10 days before a permit is issued if CRs are not included as a special condition of the permit. In addition, a distinct and further EFH consultation must be reinitiated pursuant to 50 CFR 600.920 (j) if new information becomes available, or if the project is revised in such a manner that affects the basis of the EFH determination or EFH conservation recommendations.

1. The temporary barge should float at all stages of the tide.
2. Piles should be vibrated out to the extent possible. A vibratory hammer for pile installation is preferred. If an impact hammer is used, soft starts and a wooden block should be used to buffer the noise and vibrations during hammering.

FISH AND WILDLIFE COORDINATION ACT CONSERVATION RECOMMENDATIONS

1. BMPs should be employed to ensure turbidity is minimized in the water.
2. Efforts should be made to ensure no construction materials or debris enter the waterway.

ENDANGERED SPECIES ACT

Threatened or endangered species under the jurisdiction of NMFS may be present in the project area. The federal action agency will be responsible for determining whether the proposed action may affect listed species. If they determine that the proposed action may affect a listed species, they should submit their determination of effects, along with justification and a request for concurrence to the attention of the Section 7 Coordinator, NMFS, Greater Atlantic Regional Fisheries Office, Protected Resources Division, 55 Great Republic Drive, Gloucester, MA 01930 or nmfs.gar.esa.section7@noaa.gov. Please be aware that we have recently provided on our website guidance and tools to assist action agencies with their description of the action and analysis of effects to support their determination. See <http://www.greateratlantic.fisheries.noaa.gov/section7>. After receiving a complete, accurate comprehensive request for consultation, in accordance to the guidance and instructions on our website, we would then be able to conduct a consultation under section 7 of the ESA. Should project plans change or new information become available that changes the basis for this determination, further coordination should be pursued. If you have any questions regarding these comments, please contact Edith Carson (978-282-8490; Edith.Carson@noaa.gov).

OTHER

1. Send NMFS a copy of the permit when issued.

SIGNATURE: Ursula Howson DATE: 7/13/18

Appendix I: Greenhouse Gas Emissions

Daily AM Peak Period VMT Reduction (6am-10am)

Results of Best Practices Model Output Scenario Year 2020

AM Peak Period* VMT By Borough

Borough	No Bus Priority**		Total	HOV3+		Reduction: Option C vs TM
	Auto	Truck		Auto	Truck	
Manhattan	1,580,314	84,043	1,769,146	1,564,094	84,371	-15,847
Brooklyn	2,477,398	61,872	2,685,714	2,472,991	60,770	-5,007
Queens	1,496,541	98,200	1,630,061	1,492,899	98,195	-3,646
Total	5,554,253	244,115	6,084,921	5,529,984	243,336	-24,500

Source: NYCT/NYCDOT/WSP, BPM Outputs, Scenario year 2020

*6 a.m.-10 a.m.

**No Bus Priority as proxy for No Action Alternative. Note bus levels in this modeling scenario were the same as in HOV3+. Daily VMT by bus will increase by approximately 9,200 miles.