

DRAFT – Advisory, Consultative, Deliberative

2040 Roosevelt Boulevard Route for Change Project

Definition of Alternatives Report

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HNTB

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Definition of Alternatives

The purpose of this document is to describe the long list of candidate alternatives to be screened as part of the Tier 1 analysis of the 2040 *Roosevelt Boulevard Route for Change Planning and Environmental Linkages Study* (the PEL Study). The PEL approach brings agencies together early to achieve shared understanding on the technical approach to addressing mobility needs and system gaps in advance of a subsequent National Environmental Policy Act (NEPA) process. The strength of the PEL process is its flexibility and adaptability to changing needs. The process is directed at establishing early buy-in on key project decisions - including project purpose, alternatives to be examined, and evaluation criteria. The PEL framework builds on the collaboration established during the previous Route for Change phase, with the goal of avoiding project delays and emphasizing interagency collaboration. The anticipated outcomes from the PEL Study are to gain consensus on the Purpose and Need, conduct an analysis to screen alternatives, and identify a build alternative to be carried into subsequent project phases.

A long list of candidate alternatives will be comparatively assessed with the aim of selecting a short list of alternatives for a more detailed analysis in the Tier 2 phase of the project. The long list of candidate alternatives has been developed to allow for a comparative analysis of anticipated benefits, development of preliminary capital cost and operations and maintenance cost estimates, transit ridership forecasts, and other preliminary elements that focus on estimated safety, mobility, and environmental impacts. The long list of candidate alternatives will be the subject of public and stakeholder input and will help inform the selection of the short list of alternatives and any additional refinements to be made.

The long list of candidate alternatives will be presented during Public Meeting Round #1 (Fall 2024). The objective of the first round of public meetings is to present the long list of project alternatives, along with the preliminary ridership results, preliminary capital costs, and preliminary operating and maintenance costs. In addition, the evaluation criteria to be used to complete the comparative assessment of each alternative will be presented and, based on public and stakeholder input, will be further refined in advance of Public Meeting Round #2 (Spring 2025). The objective of the second round of public meetings is to present the results of the application of the Tier 1 evaluation criteria on the long list of alternatives and identify the short list of alternatives to be further studied. The application of the Evaluation Criteria will produce the short list of alternatives to be presented during Public Meeting Round #3 (Fall

2025), with the final range of alternatives (one build alternative and a no-build alternative) to be presented at Public Meeting Round #4 (Winter 2025 / 2026).

The long list of candidate alternatives draws from multiple prior studies and planning efforts—including the May 2021 *Roosevelt Boulevard Route for Change Study* (Route for Change Study) and the 2003 *Roosevelt Boulevard Corridor Transportation Investment Study* (2003 Study). Both analyses described the deteriorating performance of Roosevelt Boulevard and its multimodal transportation deficiencies. These previous analyses form the foundation of the 2040 *Roosevelt Boulevard Route for Change PEL Study* (PEL Study) and represent the starting point for the analysis of transportation network gaps this project intends to address. A summary of the adjustments made to the transit options between the 2003 Study, the Route for Change Study, and the current 2024 PEL Study is included in the last section titled “Summary of Adjustments from Previous Studies.”

The PEL Study proposes six total alternatives (i.e., the long list), two of which have been carried over from the Route for Change Study. The list of alternatives has been expanded to consider additional transit mobility concepts considered in the 2003 Study and other efforts. Table 1 provides an overview of the source of roadway and transit concepts that have integrated into the long list of Project alternatives. The outcome of this process has produced six candidate alternatives that assume a roadway reconfiguration matched with a transit capital investment.

Table 1. Source of Alternatives

Long List Alternative	Source of Concept
Alternative 1A: Partially Capped Expressway with Light Rail Transit (LRT)	Roadway concept carried over from Route for Change; Transit concept carried over from 2003 Study
Alternative 1B: Partially Capped Expressway with Bus Rapid Transit (BRT)	Carried over from Route for Change Study
Alternative 2A: Neighborhood Boulevard with LRT	Roadway concept carried over from Route for Change; Transit concept carried over from 2003 Study
Alternative 2B: Neighborhood Boulevard with BRT	Carried over from Route for Change Study
Alternative 3: Partially Capped Expressway with Subway	Subway concept carried over from 2003 Study
Alternative 4: Neighborhood Boulevard with Subway	Subway concept carried over from 2003 Study

Roadway Configurations

The development of each candidate alternative features a roadway configuration—either a **Partially Capped Expressway** or a **Neighborhood Boulevard**—as defined in the Route for Change Study.

The **Partially Capped Expressway** (Alternatives 1A, 1B, and 3), includes the following key roadway elements:

- 1 | Four grade-separated or limited/controlled access expressway (inner) lanes—two northbound and two southbound—in segments which vary between below-grade (full cap), trenched (partial cap), and at-grade segment alignments (see **Figure 1**). The posted speed limit will increase to 50 miles per hour (MPH) for these expressway lanes. The lengths of each roadway segment are as follows:
 - **Full Cap:** 4.8 miles
 - **Partial Cap/Trench:** 3.1 miles
 - **At-Grade:** 3.8 miles
- 2 | Four at-grade local (outer) lanes—two northbound and two southbound. The posted speed limit will decrease to 25 MPH for these outer (local) lanes.
 - Local buses will travel and stop in the outermost lane.
 - New entrance and exit ramps will connect the expressway lanes with the at-grade local lanes at nine approximate locations as shown in **Figure 2**—including near Hunting Park, Palethorpe Street, Smylie Road, Filmore Street, Benner Street, Knorr Street, Naple Street, Winchester Avenue, and Bowler Street.
- 3 | Twin bi-directional cycle tracks—one adjacent to northbound Roosevelt Boulevard local lanes and one adjacent to southbound Roosevelt Boulevard local lanes—buffered from traffic by landscaping and at the same height as the sidewalk.
- 4 | Widened sidewalks along both sides of the Roosevelt Boulevard.

In Alternatives 1A, 1B, and 3, Roosevelt Boulevard would become a below-grade (full cap) and trenched (partial cap) limited access expressway for approximately nine miles between a location near Old York Road and Bowler Street with a 50-mph posted speed limit. The lane configuration would reduce from the existing twelve at-grade lanes to four at-grade lanes and four expressway lanes. The expressway would have two northbound and two southbound

lanes—which are considered the “inner” lanes of the Partially Capped Expressway alternatives. North of Bowler Street, adjacent to the Northeast Philadelphia Airport, the roadway would transition to at-grade until Southampton Road. At-grade improvements would include reconstruction of the roadway to align lane configuration, lane reduction, new sidewalks, and bidirectional cycle tracks. The expressway would also return to at-grade at bridge crossings over both the Tacony Creek Park and the Pennypack Creek and Park. In addition, five segments of Roosevelt Boulevard are proposed to be fully capped, as shown in **Figure 1**. The purpose of the caps is to provide greater neighborhood connectivity across Roosevelt Boulevard and to minimize the visual and physical impact of the below-grade expressway. The proposed caps in the expressway alternatives are not intended to serve only local-road crossings. There will be opportunities for the caps to be designed with landscaping, parks, or other public uses.

The total length of roadway improvements envisioned under the Partially Capped Expressway alternatives would be approximately 11.6 miles between Old York Road and Southampton Road.

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Figure 1. Partially Capped Expressway Segments



Figure 2: Partially Capped Expressway Ramp Vicinities

The **Neighborhood Boulevard** (Alternatives 2A, 2B, and 4), includes the following key roadway elements:

- 1 | Six at-grade general-purpose lanes—three northbound and three southbound.
 - In each direction, two inner (express) lanes will be separated from two outer (local) lanes by the side median. The innermost lane of the two outer lanes will be a local general-purpose lane. The outermost lane of the two outer lanes will be a flex lane (as described below).
 - Local buses will travel and stop in the outermost of two outer lanes during off-peak hours.
 - The posted speed limit will decrease to 25 MPH for these six at-grade lanes.
- 2 | Two flex lanes—one northbound lane and one southbound lane in the outermost lane of the two outer lanes.
 - During non-peak hours, the flex lanes will be used to pick up bus riders at local bus stops, for on-street parking, and for loading/delivery.
 - During peak hours, the flex lanes will be converted to Business Access and Transit (BAT) lanes. The purpose of the BAT lanes is to allow for buses to travel in a lane separate from the general through-traffic lanes, and to only encounter vehicles in the lane that want to make right turns at permitted locations. BAT lanes will support both Direct Bus and local service along Roosevelt Boulevard while maintaining access to local businesses.
- 3 | Twin bi-directional cycle tracks—one adjacent to northbound Roosevelt Boulevard and one adjacent to southbound Roosevelt Boulevard—buffered from traffic by landscaping and at the same height as the sidewalk.
- 4 | Widened sidewalks along both sides of the Roosevelt Boulevard.

In Alternatives 2A, 2B, and 4, the number of existing travel lanes for Roosevelt Boulevard would be reduced and some lanes used for other transportation needs—such as transit, on-street parking, and deliveries. In Alternative 2B (Neighborhood Boulevard with BRT), the BRT lane would become an additional lane in the inner lanes (for a total of three inner lanes). The two outer lanes would remain the same under all Alternatives, with the innermost lane as a local general-purpose lane and the outermost lane being a flex lane. While the overall crossing distance will remain similar to the 2040 No-Build condition of the Roosevelt Boulevard, drivers on side streets and people crossing at intersections would cross eight to ten at-grade lanes

(depending on the alternative), compared to the twelve lanes in the existing condition. The proposed 25-mph posted speed limit on all lanes would alter the operation and character of the roadway, creating a much more comfortable environment for crossing—whether the user is driving, walking, or riding a bike.

In Alternatives 2A, 2B, and 4, the flex lane in each direction would operate as a BAT lane during the peak AM and PM periods, allowing for local bus travel and drivers to make right turns into businesses and onto side streets. These flex lanes would be used for on-street parking, loading, and deliveries during non-peak hours, and local buses would pull into these lanes to pick up and drop off riders. Other potential activities in the two outer general-purpose lanes could include electric charging stations for vehicles and ride hailing pick-up and drop-off locations. Alternatives 2A, 2B, and 4 propose 28 new signalized intersections that cross all at-grade lanes, increasing the number of full intersections to 84. These full intersections serve three key purposes. The first purpose is to reduce the long street-block length between signalized intersections and provide more locations for safe pedestrian crossings of Roosevelt Boulevard and reduce the risk for people now crossing at unsignalized locations. The second purpose is to provide drivers more options for left turn movements to help reduce queueing and congestion. The third purpose is to provide additional direct access into adjacent neighborhoods.

The total length of roadway improvements would be approximately 11.6 miles between Old York Road and Southampton Road.

Alternative 1A & Alternative 2A (LRT Concept)

Alternative 1A features a Partially Capped Expressway roadway configuration with a Light Rail Transit (LRT) concept, and Alternative 2A features a Neighborhood Boulevard roadway configuration with an LRT concept. The LRT route in each Alternative derives from the Phase A and Phase B routes for Direct Bus service from the Route for Change Study, as seen in **Figure 3**. The "A" service would be the same route as the current Boulevard Direct Phase A and would run transit between Frankford Transportation Center (FTC) in Northeast Philadelphia and the Neshaminy Mall in Bensalem Township (Bucks County). The "B" service, which is Boulevard Direct Phase B, would travel via Roosevelt Boulevard between FTC in Northeast Philadelphia to the Hunting Park Broad Street subway station in North Philadelphia. After stopping at a new transit facility at the Broad Street subway station, the service would continue to Northwest Philadelphia via Hunting Park Avenue, and would terminate at the Wissahickon Transportation Center (WTC).

Alternatives 1A and 2A are comprised of two dedicated transit routes—between the FTC and Neshaminy Mall (Route A), and between the FTC and the WTC (Route B). The phasing of the two routes in Alternative 1A and 2A is not mutually exclusive and is currently uncertain at this phase of the Project. The total length of LRT improvements would be approximately 18.5 miles between the WTC and Neshaminy Mall. The LRT alignment would be comprised of guideway in mixed traffic, semi-exclusive, and elevated in the following segments:

- **Mixed traffic (5.4 miles):** from WTC to Broad Street/Roosevelt Boulevard, on Pratt Street to FTC, and on Bustleton Avenue from FTC to Roosevelt Boulevard.
- **Semi-exclusive (7.5 miles):** from Broad Street/Roosevelt Boulevard to near Grant Avenue
- **Elevated (5.6 miles):** from near Grant Avenue to Neshaminy Mall

In LRT guideway existing in mixed traffic, the Light Rail Vehicle (LRV) would not have dedicated guideway and would share the roadway with other modes of transportation—comparable to SEPTA's trolley/streetcar system. In a semi-exclusive configuration, the LRV would travel on dedicated guideway separate from other traffic except at signalized intersections where it would interact with other modes. In an elevated configuration, the LRV would travel in its own dedicated guideway and would not interact with other modes.

The LRT system would serve 15 stations along Roosevelt Boulevard—with 22 total LRT stations, as shown in **Figure 3**, including the existing FTC and WTC stations. Different from

Direct Bus, an additional stop would be recommended at Harbison Street because there is a high population density within a 10-minute walk of the intersection as determined in the Route for Change study. All other station locations between WTC and Neshaminy Mall are the same as Direct Bus Phases A and B. Nine LRT stations are located along the five capped segments. The caps are located at key intersections on Roosevelt Boulevard, creating an attractive community hub with LRT stations. The last four stations (Red Lion, Southampton, Old Lincoln Highway, and Neshaminy Mall) are proposed to be elevated, as summarized in **Table 2**.

Table 2. Alternative 1A and 2A LRT Station Summary

LRT STATION	NO.
Wissahickon Transportation Center (WTC)	1
Ridge Ave / Midvale Ave	2
W Allegheny Ave / Ridge Ave	3
W Hunting Park Ave / W Allegheny Av	4
W Hunting Park Ave / Wissahickon Av	5
W Hunting Park Ave / Germantown Ave	6
Broad / Roosevelt	7
Broad / Erie	
9th / Roosevelt	8
5th / Roosevelt	9
Rising Sun / Roosevelt	10
Tower Center (Adams) / Roosevelt	11
Pratt / Roosevelt	12
Bustleton / Roosevelt	
Frankford Transportation Center (FTC)	13
Harbison / Roosevelt	14
Cottman / Roosevelt	15
Rhawn / Roosevelt	16
Welsh / Roosevelt	17
Welsh – Grant / Roosevelt (midpoint between Welsh and Grant)	
Grant / Roosevelt	18
Red Lion / Roosevelt	19
Southampton / Roosevelt	20
Old Lincoln Hwy / Roosevelt	21
Rockhill Drive / Neshaminy Mall / Roosevelt	22
<i>AT-GRADE</i>	<i>ELEVATED</i>

The total length of the Partially Capped Expressway (1A) and the Neighborhood Boulevard (2A) configuration would be approximately 11.6 miles between Old York Road and Southampton

Road. Under Alternative 1A, LRT semi-exclusive guideway would be located within the center median of Roosevelt Boulevard in a Full Cap segment, as shown in **Figure 4**. In sections with a trenched expressway, the LRT guideway would move to the outside of the expressway footprint to provide for local access as shown in **Figure 5**. North of Grant Avenue, the LRT guideway would continue on an elevated guideway until Neshaminy Mall, as shown in **Figure 6**. In the Neighborhood Boulevard configuration (2A), the LRT guideway would be located within the center median along Roosevelt Boulevard, as shown in **Figure 7**, until Grant Avenue where it would continue on elevated guideway (**Figure 6**). In both Alternatives 1A and 2A, the LRT guideway would return to mixed traffic when it deviates onto Pratt Street and Bustleton Avenue to access the FTC. A maintenance and storage facility would be required to support LRT operations.

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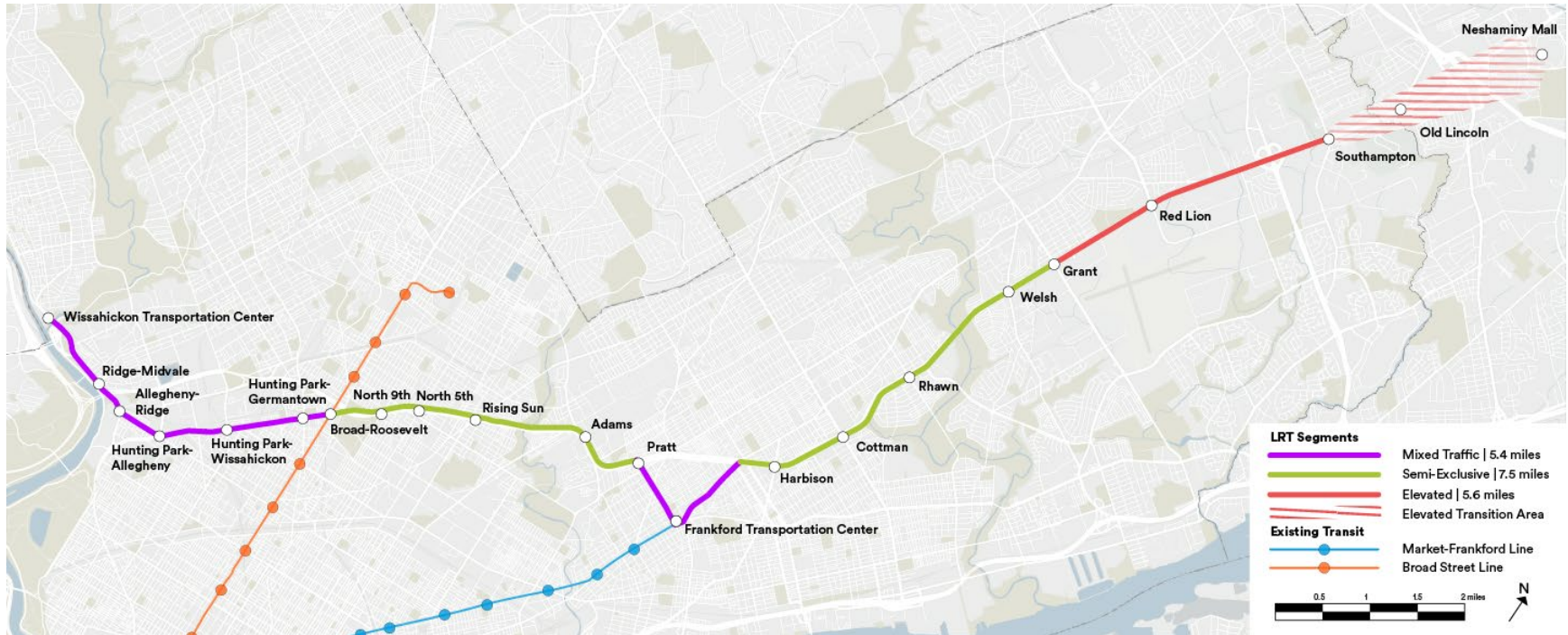


Figure 3: Alternatives 1A and 2A Transit Alignment (LRT)

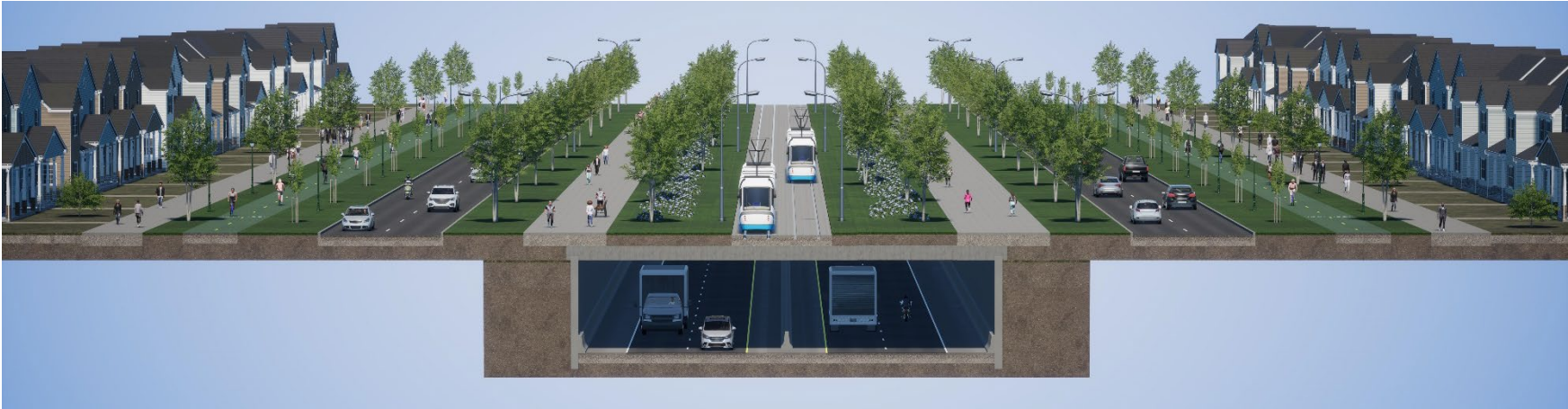


Figure 4 Alternative 1A: Full Cap Section with LRT in Semi-Exclusive Guideway

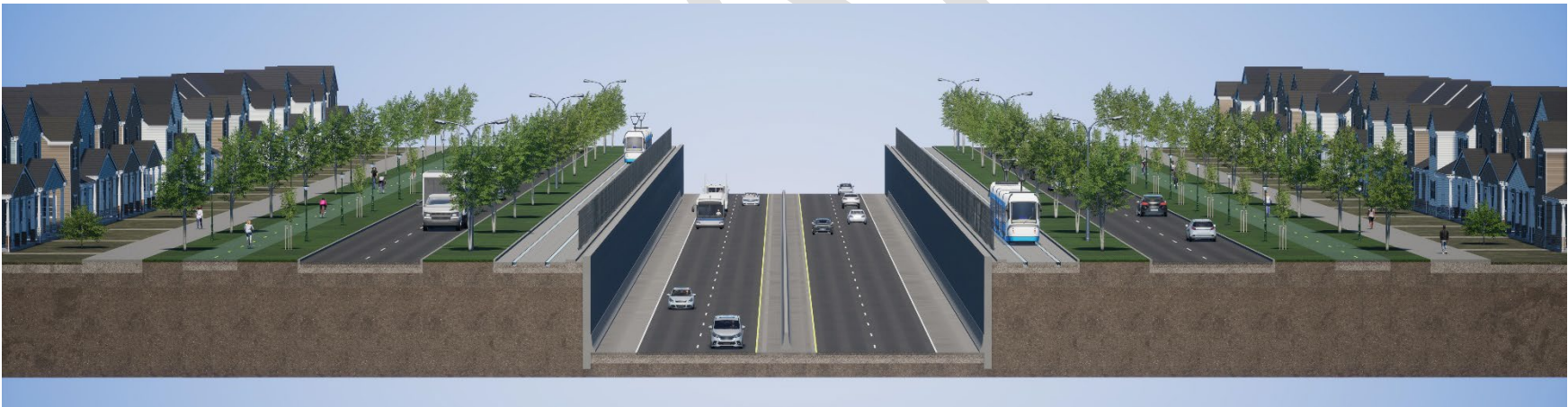


Figure 5. Alternative 1A: Partial Cap (Trenched) Section with LRT in Semi-Exclusive Guideway



Figure 6. Alternative 1A and Alternative 2A: LRT in Elevated Guideway



Figure 7. Alternative 2A: Neighborhood Boulevard with LRT in Semi-Exclusive Guideway

Alternative 1B & Alternative 2B (BRT Concept)

Alternative 1B features a Partially Capped Expressway roadway configuration with a Bus Rapid Transit (BRT) concept, and Alternative 2B features a Neighborhood Boulevard configuration with a BRT concept. The BRT route in each Alternative derives from the Phase A and Phase B routes for Direct Bus service from the Route for Change Study, as shown in **Figure 8**. The "A" service would be the same route as the current Boulevard Direct Phase A and would run transit between FTC in Northeast Philadelphia and the Neshaminy Mall in Bensalem Township (Bucks County). The "B" service, which would be the same as Boulevard Direct Phase B, would travel via Roosevelt Boulevard between FTC in Northeast Philadelphia to the Hunting Park Broad Street subway station in North Philadelphia. After stopping at a new transit facility at the Broad Street subway station, the service would continue to Northwest Philadelphia via Hunting Park Avenue, and would terminate at the WTC. The total length of BRT improvements would be approximately 18.7 miles between the Neshaminy Mall and the WTC. The BRT alignment would be comprised of guideway in mixed traffic and semi-exclusive in the following segments:

- **Mixed traffic** (8.0 miles):
 - from WTC to Broad Street/Roosevelt Boulevard,
 - from Roosevelt Boulevard to FTC on Pratt Street,
 - from FTC to Roosevelt Boulevard on Bustleton Avenue, and
 - from Southampton Road to Neshaminy Mall.
- **Semi-exclusive** (10.7 miles):
 - from Broad Street/Roosevelt Boulevard to Pratt Street and
 - from Bustleton Avenue to Southampton Road.

In BRT guideway in mixed traffic, the bus would not have a dedicated guideway and would share the roadway with other modes of transportation comparable to SEPTA's bus trolley system and all other SEPTA bus lines. In a semi-exclusive configuration, the bus would travel on dedicated lanes separate from other traffic except at signalized intersections where it would interact with other modes. In both alternatives, the two BRT lanes would be separate from the flex lanes and would remain in place 24 hours/day. In Alternative 2B only, the inclusion of two outermost flex lanes would be in addition to the BRT lanes and would operate

as BAT lanes during the peak AM and PM periods—allowing for local bus travel and drivers to make right turns into businesses and onto side streets.

The BRT services would have 15 stations along Roosevelt Boulevard (**Table 3**), with 22 BRT stations in total, as shown in **Figure 8**, including the existing WTC and FTC stations. Distinct from the existing Direct Bus service, which provides express service with high amenity stops between FTC and the Neshaminy Mall, a new stop is proposed at Harbison Street because of population density within a 10-minute walk of the intersection as determined in the Route for Change study. All other station locations are similar to Direct Bus Phases A and B. Additionally, nine BRT stops are located along the five fully capped segments. The caps are located at key intersections on Roosevelt Boulevard, creating the opportunity for a community/mobility hub with BRT stations. The proposed caps in the expressway alternative are not meant to serve only local-road crossings. There would be opportunities for the caps to be designed with landscaping, parks, or other public uses.

Table 3: Alternative 1B and 2B BRT Station Summary

BRT STATION	NO.
Wissahickon Transportation Center (WTC)	1
Ridge Ave / Midvale Ave	2
W Allegheny Ave / Ridge Ave	3
W Hunting Park Ave / W Allegheny Av	4
W Hunting Park Ave / Wissahickon Av	5
W Hunting Park Ave / Germantown Ave	6
Broad / Roosevelt	7
Broad / Erie	
9 th / Roosevelt	8
5 th / Roosevelt	9
Rising Sun / Roosevelt	10
Tower Center (Adams) / Roosevelt	11
Pratt / Roosevelt	12
Bustleton / Roosevelt	
Frankford Transportation Center (FTC)	13
Harbison / Roosevelt	14
Cottman / Roosevelt	15
Rhawn / Roosevelt	16
Welsh / Roosevelt	17
Welsh – Grant / Roosevelt (midpoint between Welsh and Grant)	
Grant / Roosevelt	18
Red Lion / Roosevelt	19
Southampton / Roosevelt	20

BRT STATION	NO.
Old Lincoln Hwy / Roosevelt	21
Rockhill Drive / Neshaminy Mall / Roosevelt	22
<i>AT-GRADE</i>	

The total length of the Partially Capped Expressway (1B) and the Neighborhood Boulevard (2B) configuration would be approximately 11.6 miles between Old York Road and Southampton Road. Under Alternative 1B, BRT semi-exclusive guideway would be in two dedicated bus lanes located between the center and side medians of Roosevelt Boulevard in a Full Cap segment, as shown in **Figure 9**. In sections with a trenched expressway, the BRT lanes would move to the outside of the expressway footprint to provide for local access as shown in **Figure 10**. In both Alternatives 1B and 2B, the BRT lanes would return to mixed traffic when deviating onto Pratt Street and Bustleton Avenue to access the FTC as shown in **Figure 11**. In both alternatives, the roadway configuration would be the same north of Southampton Road with BRT operating in mixed traffic. **Figure 12** provides a visualization of the BRT dedicated lanes running down the center of the center median. The BRT Alternatives would be an evolution of the Direct Bus program—in that dedicated BRT lanes would be installed in the semi-exclusive segments as part of the 2040 alternatives. A maintenance and storage facility would be required to support BRT operations.

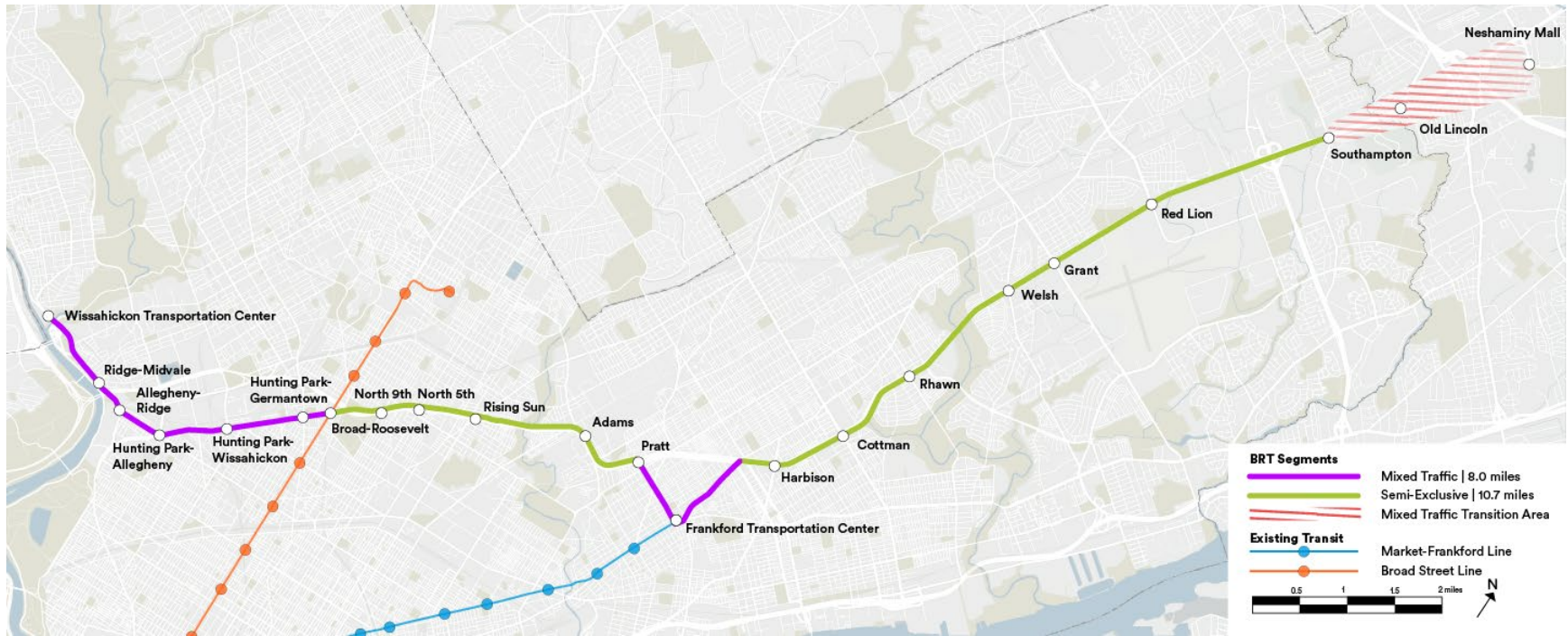


Figure 8: Alternative 1B and 2B Transit Alignment (BRT)



Figure 9: Alternative 1B: Full Cap Section with BRT in Semi-Exclusive Guideway



Figure 10: Alternative 1B: Partial Cap Section with BRT in Semi-Exclusive Guideway



Figure 11: Alternative 1B: At-grade Section in Partially Capped Expressway with BRT in Semi-Exclusive Guideway



Figure 12. Alternative 2B: Neighborhood Boulevard with BRT in Semi-Exclusive Guideway in Inner Lanes



Figure 13. Alternative 2B: Neighborhood Boulevard with BRT in Semi-Exclusive Guideway in Center Median Option

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Alternatives 3 and 4 (Subway)

Alternative 3 features a Partially Capped Expressway roadway configuration with a Subway along Roosevelt Boulevard and Alternative 4 features a Neighborhood Boulevard roadway configuration with a Subway. The Subway alignment would begin north of the Erie Avenue Station on Broad Street and would terminate at Neshaminy Mall and Rockhill Drive in Bucks County. The current alignment would mostly follow the one examined in the 2003 Study, except that the northern terminus would be extended to Neshaminy Mall instead of Southampton Road (see **Summary of Adjustments from Previous Studies**).

Alternatives 3 and 4 would extend the Broad Street Line along Roosevelt Boulevard via a branch extending from the Erie Avenue Station to the Neshaminy Mall in Bucks County. From Walnut-Locust and City Hall to Erie Station, the Roosevelt Boulevard subway service would operate via the existing express tracks to a point just north of Pike Street, where it would turn to the northeast into a new tunnel/underground structure. An underground station is proposed at the intersection of 9th Street and Roosevelt Boulevard.

Continuing north, an underground center platform station is proposed in the vicinity of Rising Sun Avenue and Roosevelt Boulevard. Between the Rising Sun and Adams stations, the alignment would emerge and travel at-grade to cross Tacony Creek—consistent with previous examinations. Continuing north along the S-curve of Roosevelt Boulevard, underground stations are proposed at Adams Avenue, Pratt Street, and Bustleton Avenue with a connection to a potential extension of the Market-Frankford Line (MFL) which is discussed in the next section of this report.

From Bustleton Avenue, the alignment would continue under the center median of Roosevelt Boulevard until its approach to Cottman Avenue. Cottman Station would be an underground, center-platform station. As the alignment continues north of Cottman Station, it would operate underneath the center median of Roosevelt Boulevard until Rhawn Avenue, where an underground station is proposed.

North of Rhawn Avenue, the alignment would begin to ascend to the surface in the median of Roosevelt Boulevard where it would run at-grade across Pennypack Park to avoid environmental impacts to the creek and natural resources in the area. After crossing Pennypack Creek, the alignment would potentially return to a tunnel structure north of the bridge, where it would be located underneath the center median until it reached a point between Welsh Road and Grant Avenue where an underground station is proposed. Welsh-Grant Station would be located in the vicinity of the Northeast Shopping Center. North of the

Welsh-Grant Station, the alignment would ascend onto an elevated guideway structure in the vicinity of the Northeast Philadelphia Airport in the median of the roadway. From this point, the alignment would travel on an elevated structure to its northern terminus adjacent to Neshaminy Mall. The final four stations would be elevated—either within the Roosevelt Boulevard median or adjacent to the roadway footprint. Red Lion Station would be in the vicinity of the Red Lion Shopping Center. North of Red Lion Road, the alignment would traverse over Woodhaven Road, continue to an elevated station at Southampton Road/Old Lincoln Highway, and terminate at Neshaminy Mall where the northernmost station would be located. Following Southampton Road, the alignment would potentially traverse over the northbound lanes of Roosevelt Boulevard or adjacent to the roadway, to travel over State Route 132 and Interstate 276, terminating either at or near the Neshaminy Mall.

The total length of roadway improvements in Alternatives 3 and 4 would be approximately 11.6 miles between Old York Road and Southampton Road. The total length of Subway improvements would be 14.7 miles between the intersection of Broad and Erie Streets and the Neshaminy Mall. Dedicated Subway guideway would be segmented based on the assumptions outlined in the 2003 Study, and as shown in **Figure 12**:

- **Underground:** 8.4 miles
- **At-grade:** 0.7 miles (over Tacony Creek and Pennypack Creek)
- **Elevated:** 5.6 miles (from near Grant Avenue to Neshaminy Mall)

Thirteen total Subway stations are proposed in the vicinity of the intersections detailed in **Table 4**. Nine stations would be underground, and the last four stations would be on an elevated structure (Red Lion, Southampton, Old Lincoln, and Neshaminy Mall). Red Lion and Southampton Station would be elevated with side platform structures located in the median of the Boulevard. The median dissipates north of Southampton, so the location of Old Lincoln Station would still need determined. The final station at Neshaminy Mall would be located within the footprint of Neshaminy Mall.

Table 4: Alternative 3 and 4 Subway Station Summary

SUBWAY STATION	NO.
Wissahickon Transportation Center (WTC)	
Ridge Ave / Midvale Ave	
W Allegheny Ave / Ridge Ave	
W Hunting Park Ave / W Allegheny Av	
W Hunting Park Ave / Wissahickon Av	

SUBWAY STATION	NO.
W Hunting Park Ave / Germantown Ave	
Broad / Roosevelt	
Broad / Erie	1
9th / Roosevelt	2
5th / Roosevelt	
Rising Sun / Roosevelt	3
Tower Center (Adams) / Roosevelt	4
Pratt / Roosevelt	5
Bustleton / Roosevelt	6
Frankford Transportation Center (FTC)	
Harbison / Roosevelt	
Cottman / Roosevelt	7
Rhawn / Roosevelt	8
Welsh / Roosevelt	
Welsh – Grant / Roosevelt (midpoint between Welsh and Grant)	9
Grant / Roosevelt	
Red Lion / Roosevelt	10
Southampton / Roosevelt	11
Old Lincoln Hwy / Roosevelt	12
Rockhill Drive / Neshaminy Mall / Roosevelt	13
<i>UNDERGROUND</i>	<i>ELEVATED</i>

The total length of the Partially Capped Expressway (Alt. 3) and the Neighborhood Boulevard (Alt. 4) configuration would be approximately 11.6 miles between Old York Road and Southampton Road. Under Alternative 3, the Subway would be located underneath the center median of Roosevelt Boulevard in a Full Cap segment, as shown in **Figure 15**. **Figure 16** shows a section of the Subway traveling through a partial cap or trenched expressway. North of Grant Avenue, the Subway would continue on an elevated guideway until Neshaminy Mall, as shown in **Figure 17**. In the Neighborhood Boulevard configuration (Alt. 4), the Subway would be located underneath the center median of Roosevelt Boulevard, as shown in **Figure 18**, until Grant Avenue where it would continue on elevated guideway. **Figure 19** shows the elevated guideway north of Southampton Road, where the built environment and land uses change to suburban. No determination has been made about the location of a maintenance facility for the Subway transit concept, although the extension of the line would require additional vehicles.

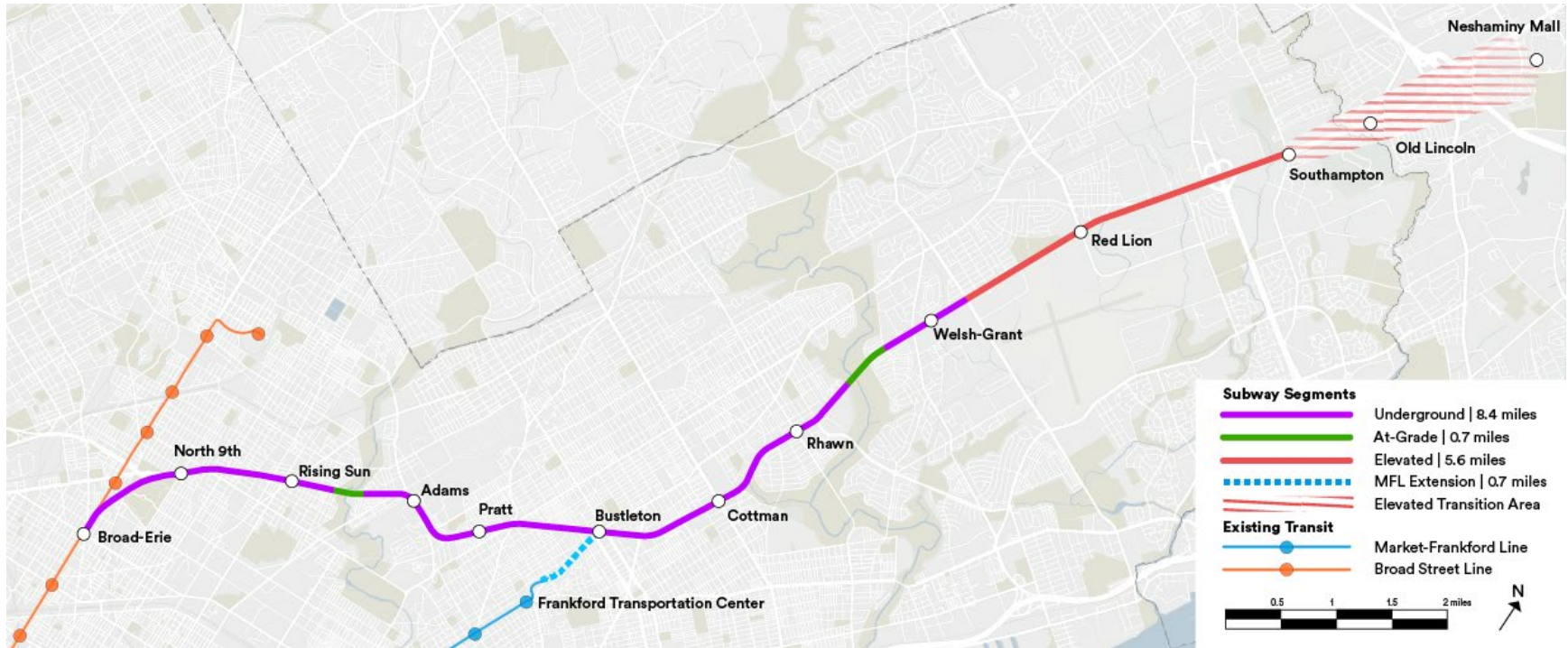


Figure 14. Alternative 3 and 4 Subway Alignment with Segmentation

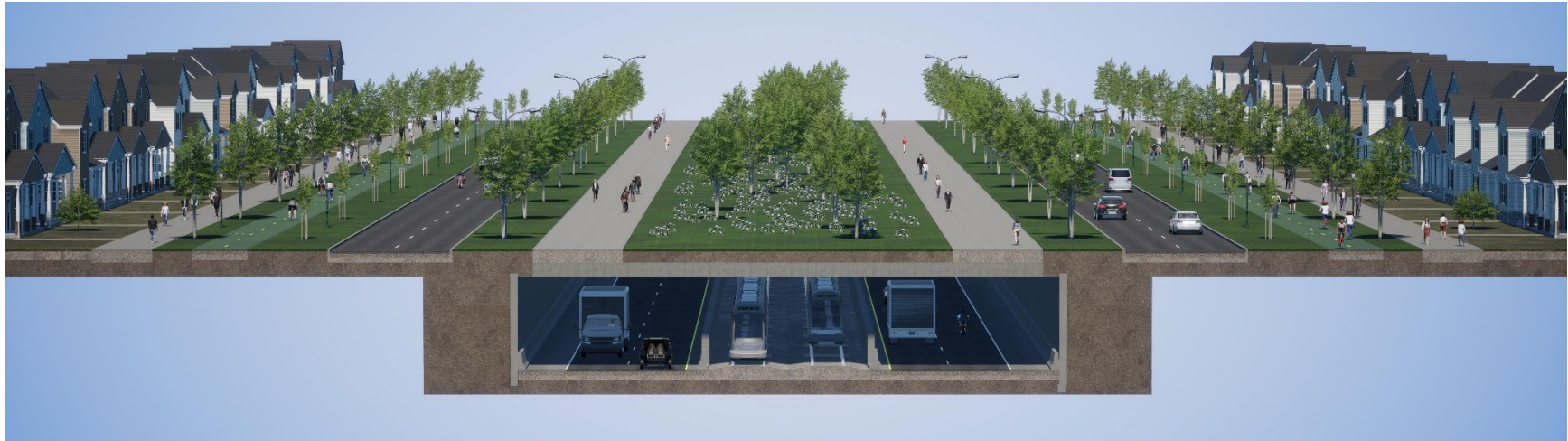


Figure 15. Alternative 3: Full Cap Section with Subway



Figure 16. Alternative 3: Partial Cap Section with Subway



Figure 17: Alternative 3 and 4: Elevated Segments with Subway (North of Grant Avenue)



Figure 18: Alternative 4: Neighborhood Boulevard with Subway



Figure 19: Alternative 3 and 4: Elevated Segment with Subway North of Southampton Road

DRAFT

Focus Area: North of Southampton Road

In the northern section of the Project Area, Roosevelt Boulevard transitions to six lanes at a point just north of Southampton Road. It is in this transition area that the three transit concept alignments will require further analysis and community feedback. In the BRT Alternatives (1B and 2B), the BRT alignment would remain on the roadway and return to mixed traffic near the Neshaminy Mall. In the LRT Alternatives (1A and 2A), and Subway Alternatives (3 and 4) the elevated alignment will be constrained in the existing roadway bed due to the narrow geometry, and therefore an off-alignment scenario will need to be evaluated.

All three transit concepts will require the following considerations in the Tier 2 Analysis of the Project:

- Path of elevated LRT or Subway section and terminus location,
- Terminus point for BRT Alternatives,
- Location of maintenance and vehicle storage facility
- Possibility of right-of-way acquisition in LRT and Subway Alternatives, and
- Location of Stations.

Focus Area: Potential Market-Frankford Line Extension

Alternatives 3 and 4 will be evaluated under several iterations including a potential underground or elevated extension of the Market-Frankford Line (MFL), between the FTC and the proposed Roosevelt Boulevard Subway Bustleton Station. The MFL extension is envisioned to be approximately 0.7 linear miles and would originate as a northward extension proceeding along Bustleton Avenue in either an underground or elevated structure, terminating at the Bustleton Station at Roosevelt Boulevard and providing a transfer point to the Roosevelt Boulevard subway service.

If underground, it is assumed the MFL would extend from the FTC station and descend into a portal within Bridge Street Yard or the footprint of the existing FTC parking garage before shifting northeast to a point directly underneath Bustleton Avenue. The underground Bustleton Avenue Station at Roosevelt Boulevard could potentially provide cross-platform transfers between MFL service and the Roosevelt Boulevard Subway service. If elevated, the extension would similarly continue from the FTC platform, but move to a structure centered over Bustleton Avenue in the vicinity of the FTC parking garage. Both approaches would require removing or modifying the parking garage and reconfiguring trackwork connections to the Bridge Street Yard facility.

As part of the evaluation of Alternatives 3 and 4, the following iterations of the MFL extension will be examined:

- Alternative 3 (Capped Expressway with Subway, No Extension to MFL)
- Alternative 3.2 (Capped Expressway with Subway, Underground Extension to MFL)
- Alternative 3.3 (Capped Expressway with Subway, Elevated Extension to MFL)
- Alternative 4 (Neighborhood Boulevard with Subway, No Extension to MFL)
- Alternative 4.2 (Neighborhood Boulevard with Subway, Underground Extension to MFL)
- Alternative 4.3 (Neighborhood Boulevard with Subway, Elevated Extension to MFL)

Summary of Stations by Alternative

Table 5 summarizes the station areas proposed for each alternative. The BRT and LRT Stations were designed to mimic the stations proposed as part of the Route for Change Study in 2021. The Subway station locations were identified based on the 2003 Study. An explanation of the identification of stations and the adjustments made from the 2003 recommendations is included on the following page. Currently, the Roosevelt Boulevard Subway alignment does not serve the area west of Broad Street towards the WTC. At this phase of the Project, the Subway would connect to either the Direct Bus Route B service, or local bus service with a connection and transfer point at 9th and Roosevelt Boulevard.

Table 5. Summary of Stations by Mode

STATION	SUBWAY	LRT	BRT
Wissahickon Transportation Center (WTC)	Direct Bus	1	1
Ridge Ave / Midvale Ave	Direct Bus	2	2
W Allegheny Ave / Ridge Ave	Direct Bus	3	3
W Hunting Park Ave / W Allegheny Av	Direct Bus	4	4
W Hunting Park Ave / Wissahickon Av	Direct Bus	5	5
W Hunting Park Ave / Germantown Ave	Direct Bus	6	6
Broad / Roosevelt	Direct Bus	7	7
Broad / Erie	1		
9th / Roosevelt	2	8	8
5th / Roosevelt		9	9
Rising Sun / Roosevelt	3	10	10
Tower Center (Adams) / Roosevelt	4	11	11
Pratt / Roosevelt	5	12	12
Bustleton / Roosevelt	6		
Frankford Transportation Center (FTC)		13	13
Harbison / Roosevelt		14	14
Cottman / Roosevelt	7	15	15
Rhawn / Roosevelt	8	16	16
Welsh / Roosevelt		17	17
Welsh – Grant / Roosevelt (midpoint between Welsh and Grant)	9		
Grant / Roosevelt		18	18
Red Lion / Roosevelt	10	19	19
Southampton / Roosevelt	11	20	20
Old Lincoln Hwy / Roosevelt	12	21	21
Rockhill Drive / Neshaminy Mall / Roosevelt	13	22	22
<i>AT-GRADE</i>	<i>ELEVATED</i>	<i>UNDERGROUND</i>	

Summary of Adjustments from Previous Studies

The subway alignment is based on the preferred concept developed in the 2003 Study. In that study, the alignment extended from a point north of the Erie Station to Southampton Road. A maintenance and storage facility to support operations was proposed on the site of the former Byberry State Hospital. The PEL Study examines a subway extension from SEPTA’s Broad Street Line Erie Station to a location on the property of the existing Neshaminy Mall in Bensalem. The current alignment was developed to mimic the terminus of the BRT and LRT concept alternatives and enable a comparable analysis of similar travel origins and destinations between the transit concepts.

Table 6 highlights changes to the proposed station locations between the 2003 Study and the 2024 PEL Study.

Table 6. Subway Station Comparison Between 2003 and 2024 Studies

SUBWAY STATION	2024	2003	ADJUSTMENT
Broad / Erie	1	1	
9 th / Roosevelt	2	2	
5 th / Roosevelt		3	Removed due to spacing with 9 th Street. Approximately 2,000 feet between stations.
Rising Sun / Roosevelt	3	4	
Tower Center (Adams) / Roosevelt	4	5	
Pratt / Roosevelt	5		Oxford Circle Station was shifted to Pratt Street to create connection to FTC.
Oxford Circle / Roosevelt		6	
Bustleton / Roosevelt	6	7	
Cottman / Roosevelt	7	8	
Rhawn / Roosevelt	8	9	Formerly Pennypack Circle Station.
Welsh – Grant / Roosevelt	9	10	
Red Lion / Roosevelt	10	11	
Comly / Roosevelt		12	Removed due to spacing with Red Lion Road and Southampton Road.
Southampton / Roosevelt	11	13	
Old Lincoln Hwy / Roosevelt	12		Added due to expanded scope in 2023 to match BRT termini from Route for Change Study.
Rockhill Drive / Neshaminy Mall	13		
<i>UNDERGROUND</i>		<i>ELEVATED</i>	