

DATE: January 29, 2019

TO: Angie Dixon, Director of Planning, oTIS

FROM: Betsy Mastaglio, RLA, Manager, Office of Transit, Bicycle, and Pedestrian Planning

SUBJECT: Safe Routes to Transit: Erie Station of the Broad Street Line (BSL) Final Memo

## INTRODUCTION

This memo summarizes the work developed together through DVRPC's Safe Routes to Transit program (SRTT) for the Erie Station at the Broad | Germantown | Erie intersection in North Philadelphia. DVRPC's SRTT program emphasizes short-term strategies and projects that can immediately lead to the pursuit of funding through competitive grant programs or internal capital and operational funds.

The Erie Station of the Broad Street Line (BSL) at the intersection of Broad Street, Germantown Avenue and Erie Avenue was one of three stations selected for DVRPC's first round of Safe Routes to Transit (SRTT) projects. Among the top reasons for selecting the project was the importance of the intersection for access to jobs, schools, community resources, and neighborhoods. The vitality of the intersection is evidenced in the high volumes of people via all modes: the Erie Station has the **second highest weekday ridership on the BSL** (7,760 according to SEPTA's Open Data on FY17 turnstile counts), seven bus routes serve the area for an **estimated 11,052 bus boards & leaves per day** (SEPTA Service Planning 2017), **30-57 bicyclists counted at each in-street counter (60-114 total per street)**, **819-2,741 pedestrians counted at each sidewalk counter**, and **32,617 vehicles** counted on Broad Street just south of Erie Avenue. North Broad Street is also on the City of Philadelphia's High Injury Network. Safety at this particular intersection is a concern due to higher than citywide averages for killed and severely injured (KSI) crashes involving pedestrians.

## PLANNING PROCESS

DVRPC worked with a variety of stakeholders to evaluate access to and around Erie Station. DVRPC worked with representatives from the City of Philadelphia's Office of Transportation, Infrastructure and Sustainability (oTIS) and SEPTA to conduct field work and conceptual site planning. Agency representatives from OTIS, the Philadelphia City Planning Commission, Streets Department, Commerce Department, Parking Authority, SEPTA and the Pennsylvania Department of Transportation (PennDOT) weighed in on recommendations at an Agency coordination meeting in July of 2018. Finally, DVRPC shared project updates with the City of Philadelphia's Broad, Germantown, and Erie Task Force at the beginning and end of the SRTT process.

## ANALYSIS

Pages two and three summarize the crash history from 2012 to 2016 within the study area of the combined intersections. Recommendations to lower crash rates and improve the safety of the intersection have been made in a number of previous studies conducted by multiple agencies. A summary of these plans and their recommended interventions is shown on pages four and five.

---

### ABOUT DVRPC

DVRPC is the federally designated Metropolitan Planning Organization for the bi-state, nine-county Greater Philadelphia Region. DVRPC works with a variety of stakeholders, including municipal, county, and state representatives, to address issues of transportation, land use, environmental protection, and economic development. For more information, see [www.dvrpc.org](http://www.dvrpc.org) and [www.dvrpc.org/SafeRoutesToTransit](http://www.dvrpc.org/SafeRoutesToTransit).

### Project Manager

Name: Betsy Mastaglio, RLA  
Title: Manager, Office of Transit, Bicycle, and Pedestrian Planning  
Phone: 215.238.2812  
e-mail: [bmastaglio@dvrpc.org](mailto:bmastaglio@dvrpc.org)



## BROAD | GERMANTOWN | ERIE CRASH NOTES (PENNDOT, 2012-2016)

Between 2012 and 2016, 132 crashes occurred within the study area (see the map on the previous page). More than half of these crashes (58 percent) occurred on Broad Street; over a third of the crashes (37 percent) that occurred on Broad Street occurred at the intersection with Erie Avenue – the site of 21 percent of all crashes in the study area. The most common crash type in the study area is a vehicle hitting a pedestrian (32 percent), and one of five pedestrian crashes and two of three pedestrian fatalities occurred at the intersection of Erie and Broad. Lighting is not noted as a key factor, as two-thirds of pedestrian crashes and 59 percent of all crashes occurred in daylight. Only two of the 132 crashes between 2012 and 2016 involved a bicycle (one at Venango Street and Broad Street; one at Erie Avenue and 13<sup>th</sup> Street), with one severe and one minor or unknown injuries reported. Eight percent of crashes involved buses, but none of these crashes involved pedestrians.

### Study Area Crashes Compared to City of Philadelphia Crashes 2012-2016, by Crash Type

Crash Type	Broad + Erie	Philadelphia	Comparison
Hit pedestrian	32%	14%	+18%
Angle	30%	34%	-4%
Rear-end	21%	24%	-2%
Sideswipe	10%	12%	-2%
Head-on	0%	2%	-2%
Other	7%	14%	-7%

### Study Area Crashes Compared to City of Philadelphia Crashes 2012-2016, by Crash Victim Severity

Crash Victim Severity	Broad + Erie	Philadelphia	Comparison
Involved pedestrian	32%	15%	+17%
Pedestrian KSI	4%	1%	+3%
KSI (all modes)	7%	3%	+4%
Other Injury (moderate / minor)	44%	47%	-3%

### All Crashes

- 58 percent of all crashes and 51 percent of pedestrian crashes occurred on Broad
- 35 percent of all crashes and 33 percent of pedestrian crashes occurred on Erie
- 21 percent of all crashes and 21 percent of pedestrian crashes occurred at Broad and Erie
- 10 percent of all crashes and 12 percent of pedestrian crashes occurred by Broad and Germantown
- 59 percent of all crashes occurred in daylight
- 8 percent involved buses
- 3 percent were fatal
- 2 crashes involved bicycles
- Collision types
  - One-third (32 percent) were “hit pedestrian”
  - 21 percent were rear-end collisions (primarily on Broad Street)
  - 30 percent were “angle”
  - 10 percent were sideswipes (9 percent same direction, 1 percent opposite direction)
  - 3 percent “hit fixed object”

### Pedestrian Crashes

- 12 percent of pedestrian crashes occurred on 15th Street
- 23 percent of pedestrian crashes occurred on Germantown
- Two-thirds occurred in daylight
- One-third occurred mid-block
- 58 percent occurred at four-way intersections

## PREVIOUS BROAD STREET AND ERIE AVENUE STUDIES AND THEIR RECOMMENDED DESIGN INTERVENTIONS

	A North Broad Street Pedestrian Safety Audit	B Erie Avenue and Olney Avenue Road Safety Report	C Increasing Intermodal Access to Transit	D Broad and Erie Transportation and Community Development Plan	E Allegheny West Transportation Plan	F Tioga Goals and Strategies Report	G North District Plan	H Preliminary SRTT Recommendations	I Mayor handout
	DVRPC 2009	PennDOT/ DVRPC 2008	DVRPC 2007	PCPC 2010	Allegheny West Foundation 2005	PCPC 2016	PCPC 2017	DVRPC 2018	oTIS 2017
<b>PEDESTRIAN INFRASTRUCTURE</b>									
Barnes Dance / Pedestrian Scramble	X	X	X						
Install pedestrian countdown and/or man/hand signals	X	X	X			X			
Install pedestrian median island on Broad Street			X				X	X	X
Install pedestrian median island crossing Erie Ave	X	X					X	X	
Repair sidewalks	X	X				X			
Better lighting / amenities				X			X		
Pedestrian plaza				X		X	X	X	X (mural)
Install (pop-up) seating							X	X	X
Remove excess streetscape elements							X	X	X
Increase oversight of utility work disruptions							X	X	X
Install proper signage, curbs, and crosswalks at traffic islands	X	X							
Repair curbs	X	X				X			
Install pedestrian bumpouts and/or bus bulbs	X	X	X			X		X (some)	X (paint)
Remove escalator wells when elevators are installed								X	
Install crosswalk across Broad Street at Germantown Ave.								X	
<b>BICYCLE INFRASTRUCTURE</b>									
Dedicated bike lanes		X	X			X	X	X	
Bike parking / racks		X	X					X	
Assess installing bike lanes as part of removal of trolley tracks		X				X	X	X	
Stripe Erie Street bike lanes through Broad Street intersection								X	
<b>TRANSIT</b>									
Increase and organize bus layover facilities						X		X	
Increase space for (organize) X / XH bus stops / Expand bus passenger loading zones				X		X		X	
Stop relocation (from Erie/Germantown Ped Island, to all nearby curbside stops)						X			
ADA compliance with elevators "Bus Only" portion of Germantown Avenue				X			X	X	X
Install bus pads						X			X
Install bus shelters								X	
Eliminate H and XH stops at 15th								X	
Differentiate between passenger waiting areas and passageways								X	

**PREVIOUS BROAD STREET AND ERIE AVENUE STUDIES AND THEIR RECOMMENDED DESIGN INTERVENTIONS (CONTINUED)**

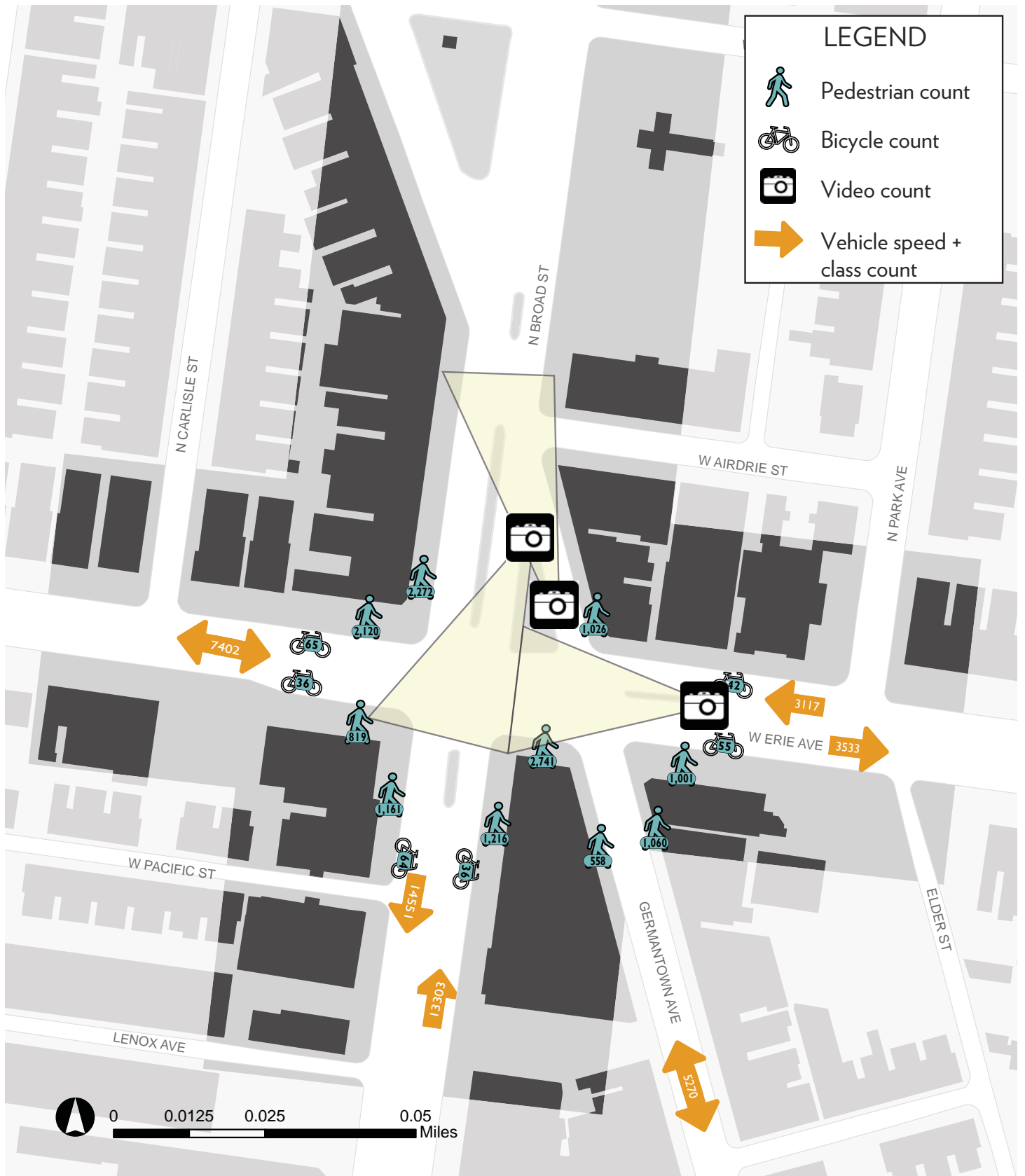
	A North Broad Street Pedestrian Safety Audit	B Erie Avenue and Olney Avenue Road Safety Report	C Increasing Intermodal Access to Transit	D Broad and Erie Transportation and Community Development Plan	E Allegheny West Transportation Plan	F Tioga Goals and Strategies Report	G North District Plan	H Preliminary SRTT Recommendations	I Mayor's Handout
	DVRPC 2009	PennDOT/ DVRPC 2008	DVRPC 2007	PCPC 2010	Allegheny West Foundation 2005	PCPC 2016	PCPC 2017	DVRPC 2018	oTIS 2017
<b>SIGNS / MARKINGS</b>									
Conduct sign inventory; install, replace, remove signs as necessary	X	X		X				X	X
Install no parking signs at bus stop locations		X		X					
Install clear signage indicating transfer paths between transit modes				X		X	X		
Create Truck Routing System / Route					X				
Restripe faded crosswalks, bike lanes, and shoulders	X	X							
Install Pedestrian Mural/Plaza							X	X	X
Install directional lenses on traffic signals									X
Install neighborhood wayfinding								X	
<b>TROLLEY TRACK REMOVAL</b>									
Assess removing trolley tracks (and possibly raised median)	X	X				X	X	X	X
Repave Erie Avenue									X
Relocate median island transit boarding to curbside on Erie	X	X				X		X	X
<b>PARKING</b>									
Enforce parking restrictions	X	X							
Two-hour limit on Germantown Ave				X					
Add an off-street employee parking area				X					
Designate loading areas								X	
<b>AUTO</b>									
Complete signal timing field study									X
Set Erie & Germantown signals to coordinate with Broad Street to prevent queuing								X	
Use ROW width and streetscape to distinguish between each corridor								X	

## TRAFFIC COUNTS

In August 2017, DVRPC's travel monitoring staff took counts and videos at multiple locations to capture the activity at the intersections. The counts show approximately double the vehicular traffic on Broad Street than on Erie and Germantown Avenue. In street bicycle counters show bicyclists riding on both Broad Street and Erie Avenue despite traffic volumes and no in-street bicycle facilities (Erie Avenue bicycle lanes exist west of Broad Street only). Pedestrian counts are highest on the northwest corner of Broad Street and Erie Avenue where there are stops for SEPTA Routes H, XH, 16, and the Broad Street Owl, as well as on Erie Avenue between Broad Street and Germantown Avenue. A map showing count locations and volumes can be seen on the next page.

Through understanding the intersections' crash history, previous plan recommendations, and the volumes of pedestrians, bicyclists and vehicles, as well as conversations with stakeholders and multiple site visits, we note multimodal safety as the chief transportation priority. Of particular concern are:

- High crash rates (132 between 2012 and 2016), with two pedestrian fatalities;
- Bus stops that board from non-ADA compliant, in-street medians;
- Difficult and nonintuitive links to transit stops;
- Visibility and confusing traffic patterns for all modes; and,
- Non-accessible stair access to Erie Station.



## RECOMMENDATIONS

SRTT short-term recommendations for the intersection should work toward addressing a safer and more comfortable environment for all modes. Short-term recommendations for Broad | Germantown | Erie can be seen on the BSL Erie Station Top Short-Term Strategies map shown on page nine. These strategies were ranked by priority by stakeholders and include:

- **Install bumpouts using paint and flexible bollards. Minimize access to excess cartway areas outside of travel lanes (SW & NW corners of Broad Street and Erie Avenue).** Ranked 1

Stakeholders agreed that bumpouts using paint and flexible bollards could be accomplished in the near-term, but landscaped planters would add considerable cost and maintenance issues that might not be possible in the next year.

More information is needed to ensure that it is possible to design bumpouts that maintain the necessary truck turning radii for trucks on Erie and Germantown Avenues turning onto Broad Street. Because turns from Broad Street are prohibited, bumpouts are probably more likely on Erie Avenue. Volumes could be looked at to see if it's possible to take a travel lane on Broad Street to create bumpouts.

- **Extend Broad Street medians through the crosswalk to create a pedestrian refuge.** Ranked 2

Stakeholders agreed that the crossing distance of Broad Street is wide and crossing pedestrians are not well protected from turning vehicles.

The median is estimated to be about 7 1/2 feet wide. NACTO guidance suggests 6' (min.) to 10' (recommended) is an acceptable width for use as a pedestrian refuge. Agreement is needed between PennDOT and Streets staff on whether the median is sufficiently wide for a pedestrian refuge.

Additional information on what level of protection at the median nose of a pedestrian refuge (flexible bollard or vertical curb) is needed, as well as who would be responsible for plowing and cleaning of the refuge space is needed. It was suggested that it should not be a community-led responsibility and would probably need to be taken on by Streets.

- **Adjust signal timing to reduce queuing in intersections.** Ranked 3

Stakeholders agreed that it's worth looking at signal timing to see if it can be adjusted to decrease queuing along Erie Avenue between Broad Street and Germantown Avenue and on Germantown Avenue between Broad Street and Erie Avenue. Modeling may be needed to gauge any additional delays caused by signal timing changes.

- **Add crosswalk on Broad Street at Germantown Avenue and stripe Erie Avenue (between Broad Street and Germantown Avenue) as a wide crosswalk.** Ranked 4

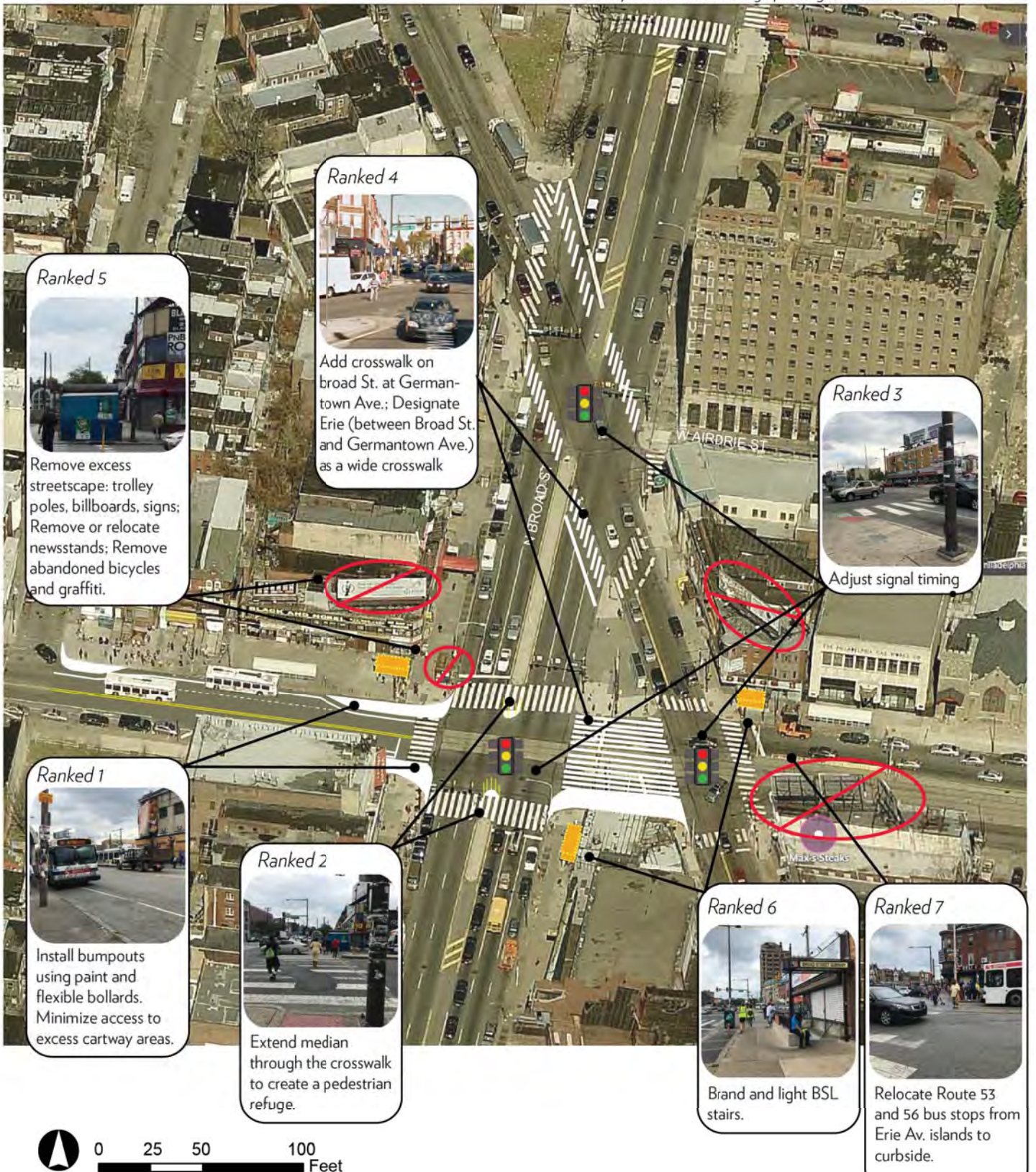
Stakeholders discussed the presence of unsignalized crossings of Broad Street at Germantown Avenue. It was suggested that an additional signal here could be an option but it would cause significant delay for motorists along Broad Street. FHWA's recently published [Field Guide for Selecting Countermeasures at Uncontrolled Pedestrian Crossing Locations](#) could be a tool for Streets and PennDOT to provide a suitable alternative to a new signal.

The trapezoidal space between Broad Street and Germantown Avenue crosswalks on Erie Avenue is about thirty-five feet at the center line. This space, sometimes called "Pedi Island," has significant pedestrian crossings between the two crosswalks. Also, because of its short length, cars frequently queue over the crosswalk. Striping the whole space as a crosswalk might allow pedestrians to cross along the whole length and further discourage cars from stopping or parking in this road segment.



# BSL ERIE STATION TOP SHORT-TERM STRATEGIES

*Drawing is a conceptual representation of the strategies only; actual layout and dimensioning of strategies to be determined.*



Ranked 5



Remove excess streetscape: trolley poles, billboards, signs; Remove or relocate newsstands; Remove abandoned bicycles and graffiti.

Ranked 4



Add crosswalk on Broad St. at Germantown Ave.; Designate Erie (between Broad St. and Germantown Ave.) as a wide crosswalk

Ranked 3



Adjust signal timing

Ranked 1



Install bumpouts using paint and flexible bollards. Minimize access to excess cartway areas.

Ranked 2



Extend median through the crosswalk to create a pedestrian refuge.

Ranked 6



Brand and light BSL stairs.

Ranked 7



Relocate Route 53 and 56 bus stops from Erie Av. islands to curbside.



- **Remove unused streetscape elements (trolley poles, billboards, signs), remove or relocate newsstands, remove abandoned bicycles and graffiti.** Ranked 5

Stakeholders agreed that there is a lot of visual, and physical, clutter within the study area. Removing out of date or nonworking items would help make all users more visible and create more space.

- **Brand and light BSL stairs** Ranked 6

Stakeholders agreed that branding and lighting the stairs to the BSL's Erie Station would help people navigate to them from the street level. Some "proof" is needed to identify if the lighting would be just aesthetic or if it is needed to meet a particular foot candle value to be sufficiently bright. Determining the light level, and possible maintenance arrangements would make necessary some partnership between SEPTA and the City of Philadelphia, as opposed to just SEPTA pursuing this strategy.

- **Consider relocating SEPTA Routes 53 and 56 from the current boarding islands to curbside boarding on Erie Avenue** Ranked 7

Participants suggested that the boarding island location for Routes 53 and 56 move curbside to eliminate the need for passengers to board and alight between moving vehicular traffic. A bumpout at the corner would allow for more space for waiting bus passengers, passengers accessing the BSL stairs, and pedestrians using the sidewalk.

## NEXT STEPS

1. Move forward with short-term recommendations that can advance without significant additional analysis or design:
  - Temporary bumpouts on Erie Avenue at Broad Street.
  - Branding and lighting of the BSL stairs.
  - Wayfinding to bus stops and subway entrances.
2. Include in the upcoming engineering analysis:
  - Determine the minimum turning radii at all corners and design low-cost implementation strategies to create bumpouts at each corner that accommodates those radii.
  - Determine the minimum width, maintenance provider, and vertical design elements needed for pedestrian refuge islands on Broad Street.
  - Locate queuing locations and which legs have significant delays; adjust signal timing to minimize both.
  - Advise Streets and PennDOT on safety countermeasures for the uncontrolled pedestrian crossing of Broad Street at Germantown Avenue.
3. Report back to, and seek input from, Broad | Germantown | Erie Task Force members on short-term priorities.
4. Further plan and design for long term, more extensive changes to the study area. The City of Philadelphia has already engaged a consultant (McMahon Associates) to conduct an engineering analysis of the intersection to identify long-term strategies. During the SRTT project, long-term priorities for the intersection were frequently identified and should be an ongoing consideration:
  - Establishing ADA access to the Erie Station with new elevators.
  - Removing the track from the roadway bed which currently creates a trip and fall hazard for bicyclists and pedestrians.
  - Installing safety countermeasures that slow vehicular traffic and provide a safer, more comfortable setting for pedestrians and bicyclists.