

Putting Fat Roads on a Diet: Narrowing Roads and Bridges for Trails



2018 Eastern PA Greenways Summit

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What does Michael Baker International do?

- Create healthy, safe, connected, walkable, bike friendly communities
- Make developers and PennDOT build your bike/ped/trail network for free
- Transform our old streets into complete streets
- Help municipalities navigate the maze of DEP permitting, state and federal grants
- Put our “fat” roads on a “diet”

What is a Road Diet?

- A **road diet**, is a technique in transportation planning whereby the number of travel lanes and/or effective width of the road is reduced in order to achieve systemic improvements.
- Reallocate public space for best and highest use

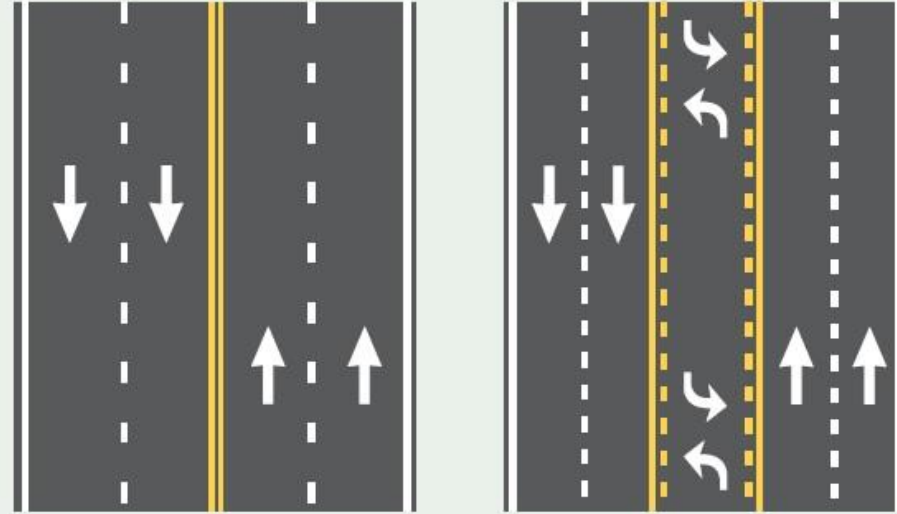


Figure 1. Road Diet
Photo Credit: Virginia Department of Transportation

What is a Road Diet?

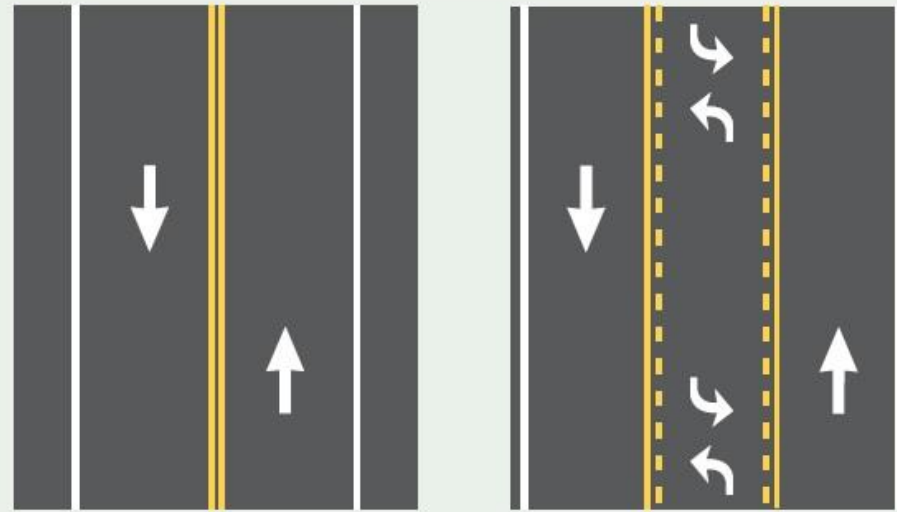
4-lane to 5-lane:

In some cases it is necessary to keep two lanes in each direction for capacity purposes. Narrowing lane width to provide a TWLTL introduces the benefits of separating turning vehicles and reducing operating speeds.



2-lane to 3-lane:

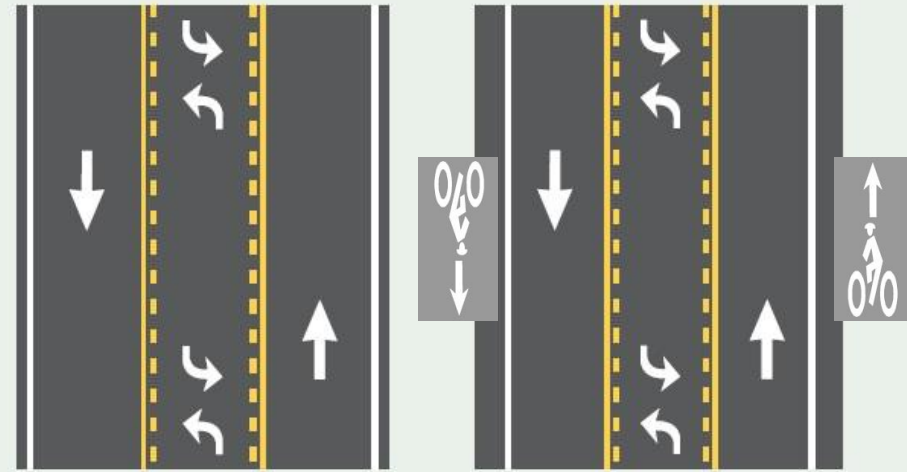
If a capacity expansion of an existing two-lane road is desired, in some cases a three-lane cross section can provide similar operational benefits to a four-lane cross section while maintaining the safety benefits of the three-lane configuration.



What is a Road Diet?

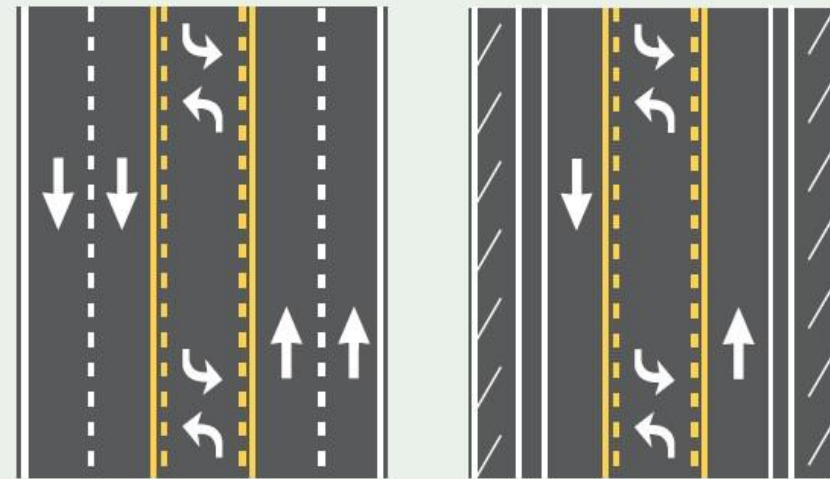
3-lane to 3-lane:

In some cases practitioners could reduce the width of each lane instead of reducing the number of lanes. Converting an existing three-lane roadway to a three-lane cross section with narrowed lanes can accommodate bicycle lanes or parking, and provide some traffic calming benefit.



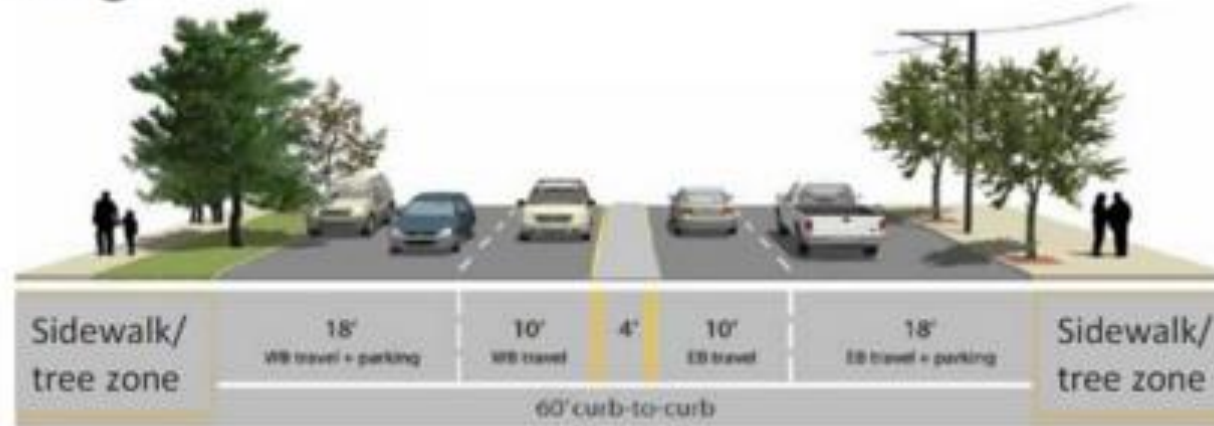
5-lane to 3-lane

In some cases jurisdictions have reconfigured five-lane sections to three lanes, adding features such as diagonal parking and protected bicycle lanes with the extra cross section width.

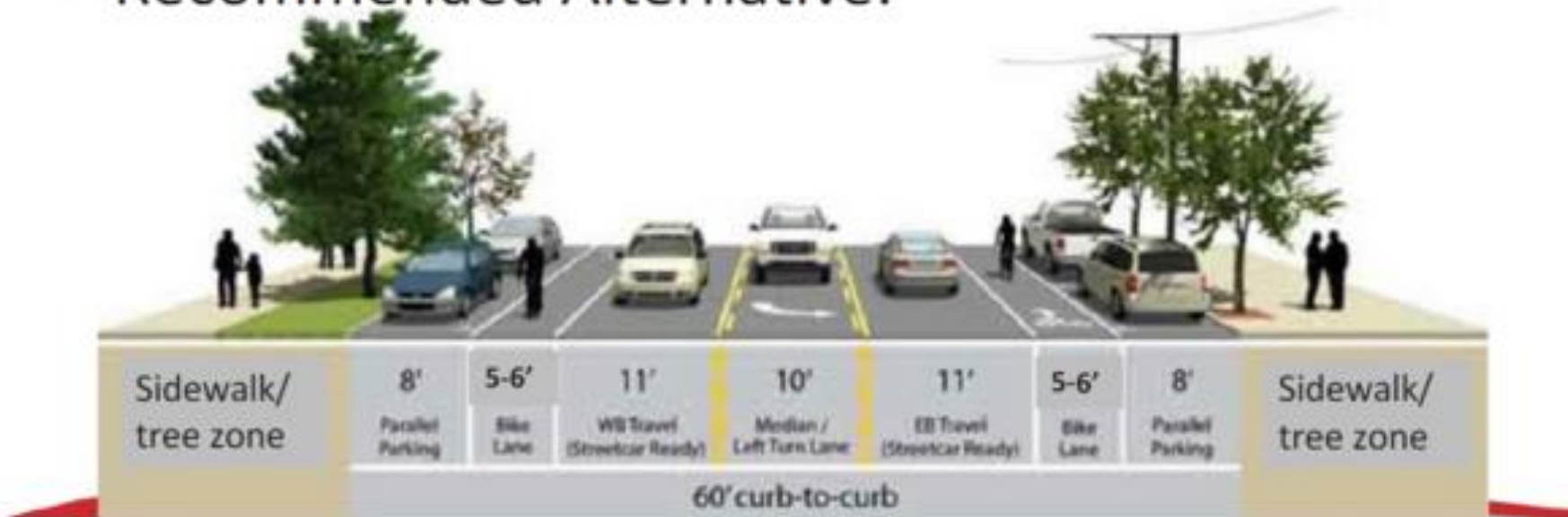


What is a Road Diet?

- Existing:

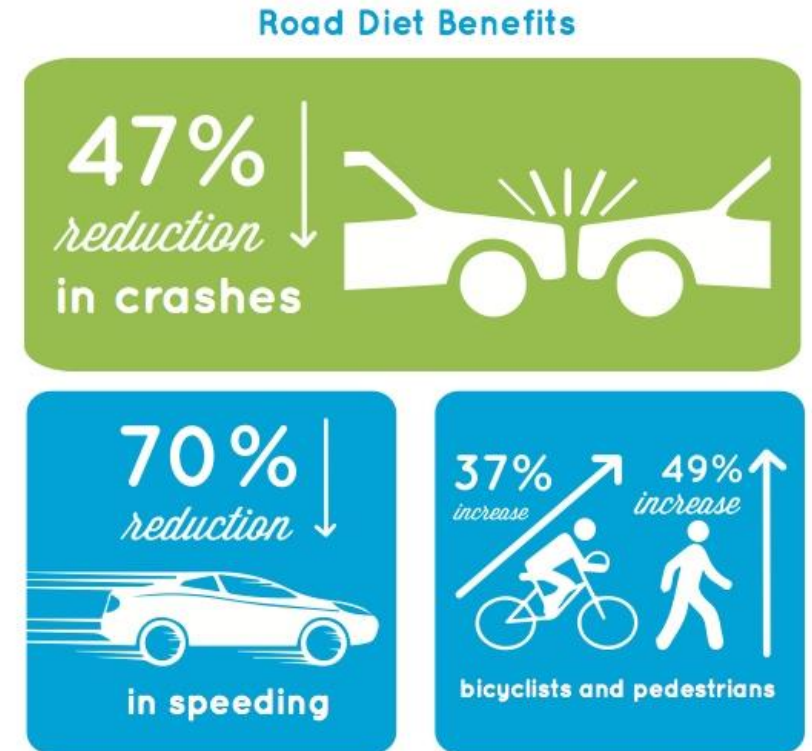


- Recommended Alternative:



What is a Road Diet?

- Benefits:
 - Improve safety / reduce crashes & crash severity
 - Fit in more modes (bike lanes, sidewalks, trails, transit space)
 - Traffic calming
 - No ROW impacts
 - Cost Effective - done with resurfacing /restriping only
- Concerns
 - Traffic capacity
 - Truck traffic



Source: Healthcare Foundation of Greater Kansas City

Lindbergh Blvd. – existing conditions



Project Info & Goals:

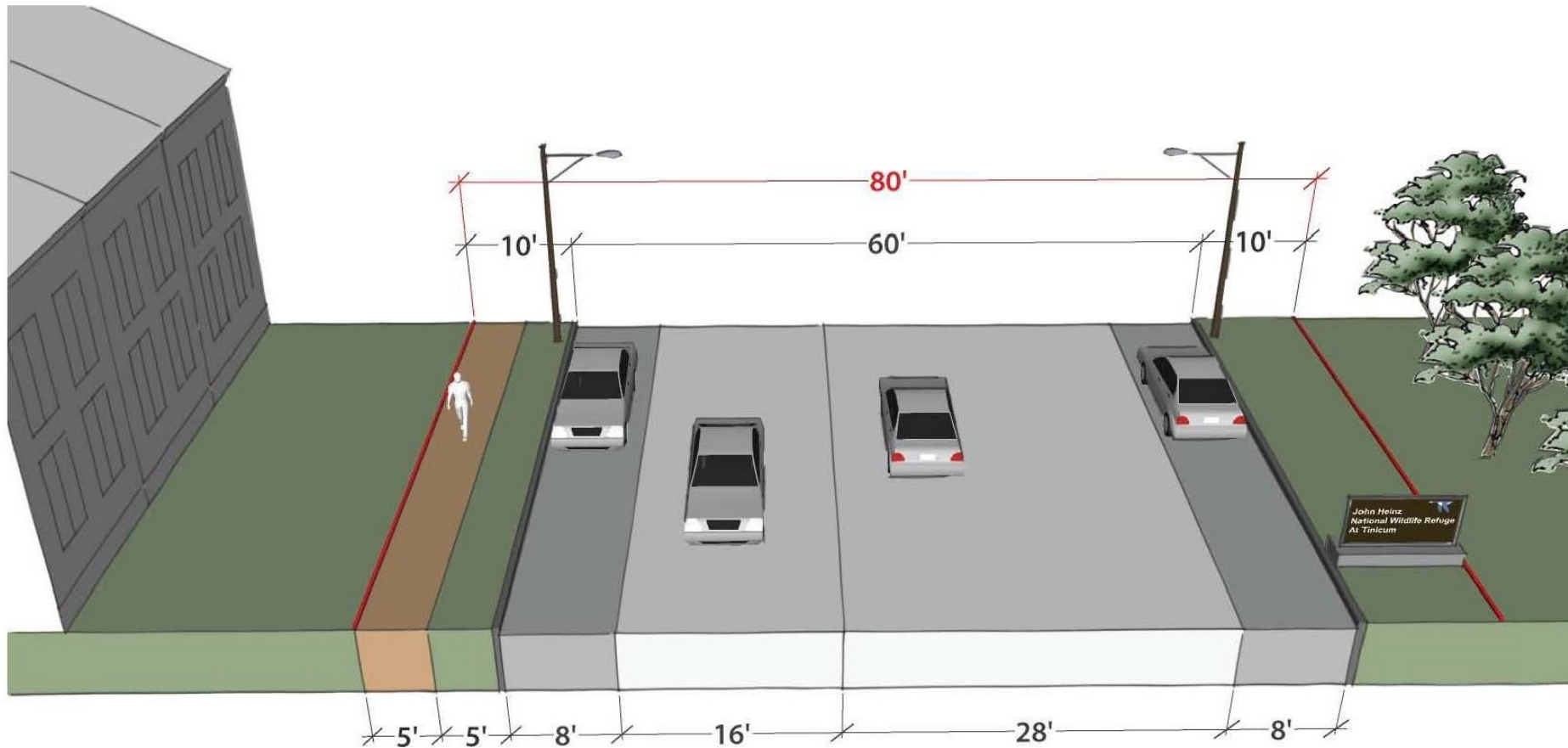
Existing Conditions:

- Traffic=2412 cars/day
- 2% Trucks

Project Goals:

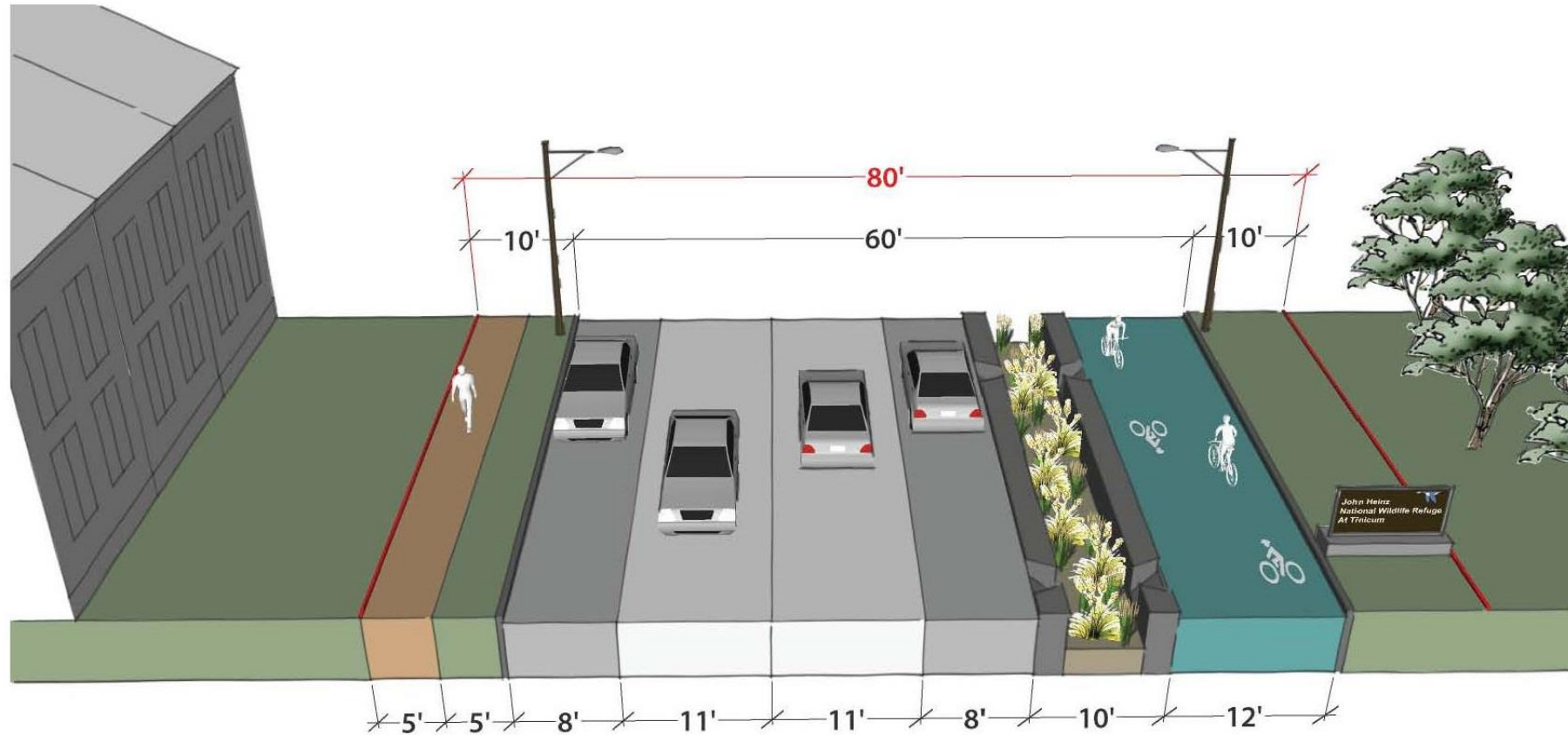
- Provide 2 traffic lanes
- Provide 2 parking lanes
- Provide walking & bicycling facility for regional long distance trail

Lindbergh Blvd. – existing conditions



Existing

Lindbergh Blvd.



Proposed

Lindbergh Blvd. - Cobbs Creek Greenway



Washington Crossing Gateway Project



- Historic district/
landmark/museum
for Washington
crossing the Delaware
- D&L Canal Towpath
and several parks
- Bridge to NJ, mitigate
speeding
- Improve historic feel

Washington Crossing Gateway Project



- Accel/Decel lane conversion
- Lane narrowing
- Created bike friendly shoulders, landscape buffer and sidewalk
- Created Historic Streetscape
- Traffic calming benefits

Washington Crossing Gateway Project



Washington Crossing Gateway Project



Lessons Learned:

- Removal of the accel/decel lanes did not affect operations
- Move curbs = drainage improvements=cost increases
- Pavement overlay creates “cleaner” final product
- Road diet was effective in providing walking/bicycling facilities
- Road diet can be combined with other elements to enhance traffic calming and create a complete street



SCHUYLKILL RIVER TRAIL



LEGEND:

- PROPOSED TRAIL CONNECTOR
- - - - - EXISTING TRAIL PATH



Schuylkill River Trail Phoenixville/Mont Clare Trail Connector

CHESTER & MONTGOMERY COUNTY, PENNSYLVANIA
PROJECT LOCATION



PREPARED BY:
Michael Baker

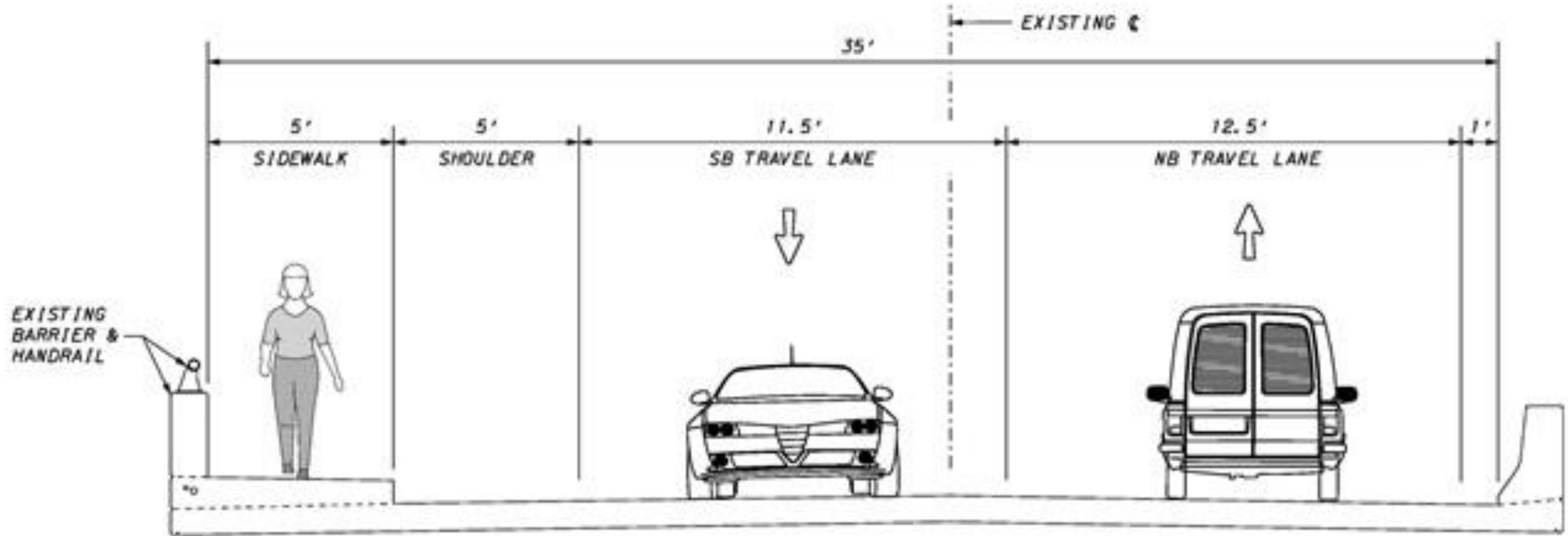
INTERNATIONAL
500 OFFICE CENTER DRIVE, SUITE 210,
FORT WASHINGTON, PA 19034-3234
Phone: (215) 444-0888 - MBAKERINTL.COM



SR 29

- 23,000 ADT
- Town/Village
Regional Arterial
- 4.5% trucks
- 35 mph speed limit

Bridge Cross Section:



EXISTING BRIDGE CROSS SECTION

NOT TO SCALE

Know your Design Criteria:

Chapter 1 - General Design

Publication 13M (DM-2)
2015 Edition - Change #2

**TABLE 1.3 (ENGLISH)
MATRIX OF DESIGN VALUES – REGIONAL ARTERIAL**

Regional Arterial	Rural	Suburban Neighborhood	Suburban Corridor	Suburban Center	Town/Village Neighborhood	Town/Village Center	Urban Core
Lane Width ¹	11' to 12'	11' to 12'	11' to 12'	11' to 12'	10' to 12'	10' to 12'	10' to 12'
Shoulder Width ^{2,3}	8' to 10'	8' to 10'	8' to 12'	4' to 6' (if No Parking or Bike Lane)	4' to 6' (if No Parking or Bike Lane)	4' to 6' (if No Parking or Bike Lane)	4' to 6' (if No Parking or Bike Lane)
Parking Lane	NA	NA	NA	8' Parallel	8' Parallel	8' Parallel	8' Parallel
Bike Lane ⁴	NA	5' to 6' (if No Shoulder)	6' (if No Shoulder)	5' to 6'	5' to 6'	5' to 6'	5' to 6'

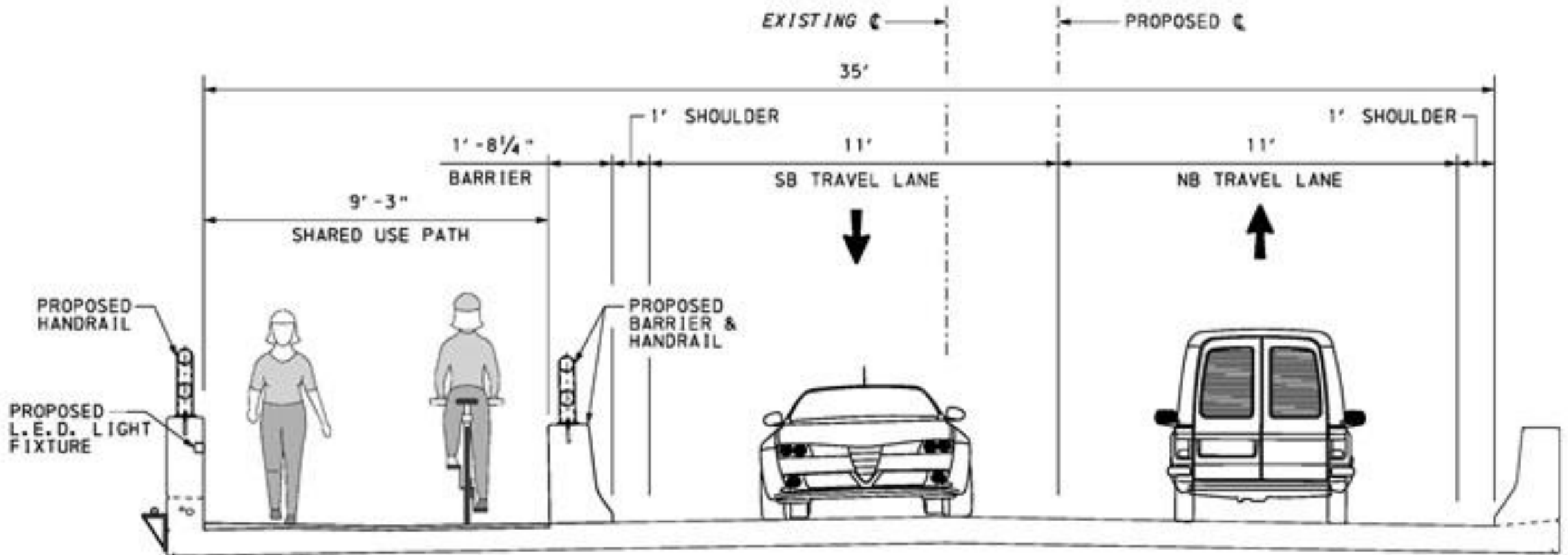
Chapter 1 - General Design

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**TABLE 1.3 (ENGLISH) (CONTINUED)
MATRIX OF DESIGN VALUES – REGIONAL ARTERIAL**

¹ 12' preferred for regular transit routes, and heavy truck volumes > 5%, particularly for design speeds of 35 mph or greater. A 1' to 2' offset to the curb is desirable. 14' for an outside lane with no shoulder or bike lane, if optimal accommodation for bicyclists is desired.

Bridge Cross Section:





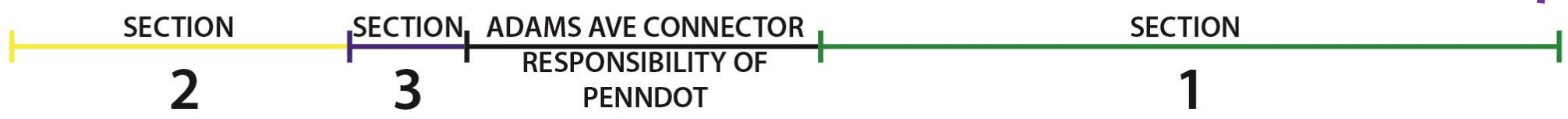
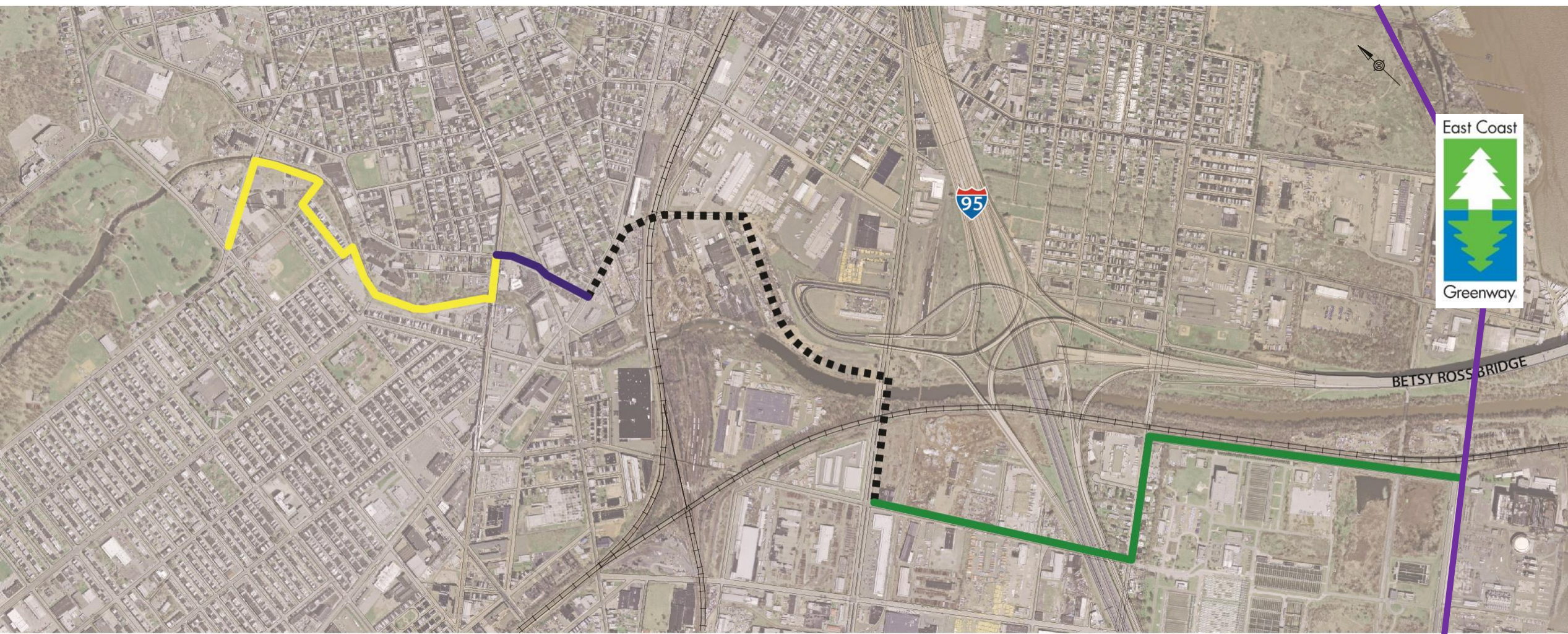




Lessons Learned:

- Think about drainage with new barrier – slots or new scuppers
- 54” height requirement for bicycles on bridges
- Crashworthy barrier?
- End treatments / guiderail connections at end of barrier
- Barrier may affect sight distance of driveways/sideroads

Frankford Creek Greenway



Section 1 - Lewis Street Road Diet

- Add protected bike/ped facility
- Traffic calming
- No ROW acquisition



Section 1 - Wheatsheaf Lane Sidewalk Conversion

- Add protected bike/ped facility
- Add green space
- No ROW acquisition



Convert Accel./Decel. to Shared Use Path

- Shared use path along arterial road
- Impacts to adjacent property



Convert Accel./Decel. to Shared Use Path

- Multi-modal use of ROW
- Minimize impacts/ROW takes
- Traffic Calming



Summary:

- Road diets are effective to retrofit existing roads to create complete streets
- Are accel/decel lanes really needed?
- Barrier – may affect sight distance, drainage, safety, end treatments
- Reallocate public space for best and highest use

Questions?

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