

TAMING TRAFFIC

Context-Sensitive Solutions



TAMING TRAFFIC
Parkside Avenue, Philadelphia

Site 3: Intersection of Parkside Avenue and 50th Street

0 37.5



DVRPC: Who We Are

- Designated MPO for nine-county, bi-state, greater Philadelphia region
- Taming Traffic — Annual study and report, funded through DVRPC's work program
- Two sites studied each year, proposing context-sensitive solutions and traffic calming strategies

HISTORY OF CSS

- National Environmental Policy Act - 1969
- Maryland DOT:
Thinking Beyond the Pavement - 1998
- Federal Highway Administration:
www.contextsensitivesolutions.org - 2004
- SAFETEA-LU - 2005

WHAT IS CSS?

A transportation planning strategy that:

- Looks "beyond the pavement"
- Enhances communities and natural environments
- Balances the competing needs of all modes of travel
- Links driving behavior with perception of the surrounding context
- Focuses on community values and qualities
- Objectively evaluates a full range of alternatives

CSS TOOLKIT: PLACEMAKING ELEMENTS

Elements Include:

- Decorative lighting, landscaping and public art
- Materials that reflect the style and fabric of the surrounding community
- Roadway features (e.g., bulb-outs, center medians)
- Consistent wayfinding signage along a corridor

Resulting in:

- Creation of a distinct sense of place
- Reduction of visual clutter



CSS TOOLKIT: PEDESTRIAN/ BIKE/ TRANSIT AMENITIES

- Wide sidewalks
- Bold and texturally distinct crosswalks
- Pedestrian refuge islands
- Pedestrian signal heads and push buttons
- Designated bike lanes, commonly within the cartway
- Transit shelters, including amenities (e.g., benches and lighting)



CSS TOOLKIT: SMART GROWTH DEVELOPMENT

- Much of a roadway's character, configuration, and driver behavior are determined by the pattern of development along the corridor
- Big-box stores, large parking lots, and suburban-style housing may convey the image of a sprawling, high-speed corridor



CSS TOOLKIT: SMART GROWTH DEVELOPMENT

- Focusing development around concentrated main streets and mixed-use communities may create a different type of roadway character
- Big-box stores can be adapted to portray more of a town-center type of character, thereby encouraging slower speeds



CSS TOOLKIT: TRAFFIC CALMING

“the combination of mainly physical measures that reduce the negative effects of motor vehicle use, alter driver behavior and improve conditions for non-motorized street users.” – ITE

- Strategies: engineering, education, enforcement and policy
- The most effective and long-term traffic calming techniques are engineering measures
- Complementary to other CSS strategies



TRAFFIC CALMING ENGINEERING TECHNIQUES

Volume Control

- Full Street Closures
- Half Street Closures
- Diagonal Diverters
- Forced Turn Islands
- Median Barriers

Vertical Speed Control

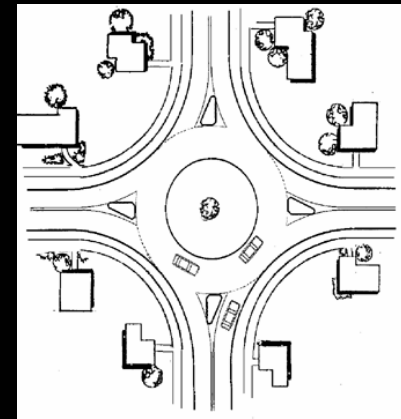
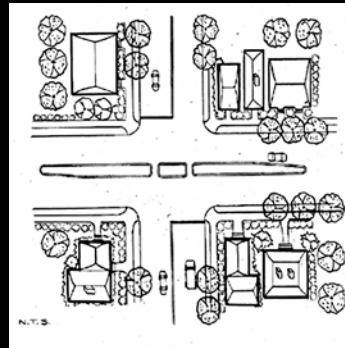
- Speed Humps
- Speed Tables
- Raised Intersections
- Textured Pavements

Horizontal Speed Control

- Roundabouts
- Chicanes
- Lateral Shifts
- Realigned Intersections

Narrowing Speed Control

- Neckdowns/ Bulbouts
- Center Islands
- Chokers



TRAFFIC CALMING ISSUES

- Compatibility with emergency / heavy-service vehicles
- Drainage and landscaping concerns
- ADA requirements
- Liability claims
- Funding

WHERE IS CSS APPROPRIATE?

A Cut-through roadway brings high-speed traffic through a county park in Eastampton Township, Burlington County, NJ. A high-level of pedestrian activity is not immediately apparent to drivers passing through.



WHERE IS CSS APPROPRIATE?

A suburban roadway in West Windsor Township, Mercer County, NJ has several new developments and a much greater number of pedestrians and children than drivers are accustomed to. The roadway does not convey this need for heightened driver awareness.



WHERE IS CSS APPROPRIATE?

A commuter roadway in Sharon Hill Borough, Delaware County, PA runs through an older suburb that is trying to redevelop. High-speed traffic does not match the historic context, and creates poor pedestrian accessibility.



WHERE IS CSS APPROPRIATE?

An urban roadway in Philadelphia is wide and undefined, encouraging high-speed traffic, while bordering dense communities, two schools, and a major park.

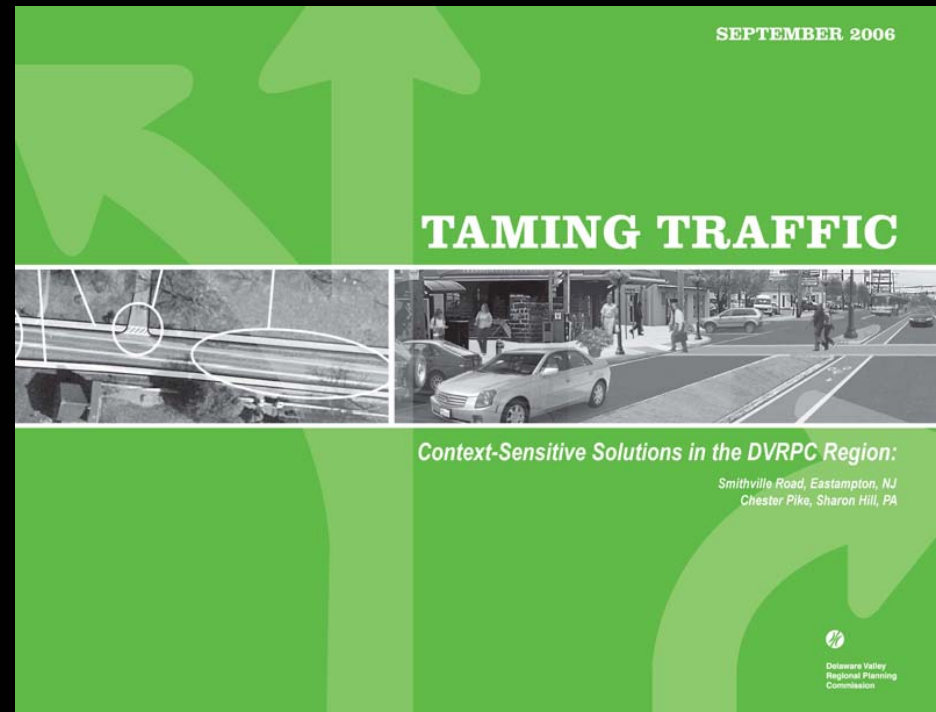


TAMING TRAFFIC METHODOLOGY

- Sites nominated by county governments as well as major city governments of Trenton, Camden, and Chester (Philadelphia is a county)

Sites assessed based on a series of criteria and data:

- area type
- posted speed limit
- AADT
- crashes
- roadway type
- community facilities
- concurrent projects, public input,
- previous studies
- public support



TAMING TRAFFIC METHODOLOGY

Priority Is Given to Areas Where:

- potentially hazardous conditions may be eased through CSS and traffic calming
- travel speeds are reported to be inappropriate for the surrounding context
- roadways are unnecessarily wide or confusing
- there is recent change in existing conditions, including an increase in pedestrian activity
- the infrastructure supports intermodality
- there is proximity to schools, recreation, residential, shopping, or transit-oriented destinations

CASE STUDY 1: CLARKSVILLE ROAD WEST WINDSOR TOWNSHIP, MERCER COUNTY, NJ

- 2 miles in length
- close to several major commuter roadways
- proximity to the New Jersey Turnpike
- near Princeton Junction train station



CASE STUDY 1: CLARKSVILLE ROAD WEST WINDSOR TOWNSHIP, MERCER COUNTY, NJ

Existing Conditions

- contains a housing development, shopping center, office park, an elementary school, high school, municipal complex, and firehouse
- a number of new developments and roadway improvements are planned in the corridor for the near future



CASE STUDY 1: CLARKSVILLE ROAD WEST WINDSOR TOWNSHIP, MERCER COUNTY, NJ

Existing Conditions

- roadway width, speed limit, and overall character change significantly
- major rail and bus transit access
- intermittent sidewalks
- no bike lanes or other bicycling amenities



CASE STUDY 1: CLARKSVILLE ROAD WEST WINDSOR TOWNSHIP, MERCER COUNTY, NJ

Problem Identification

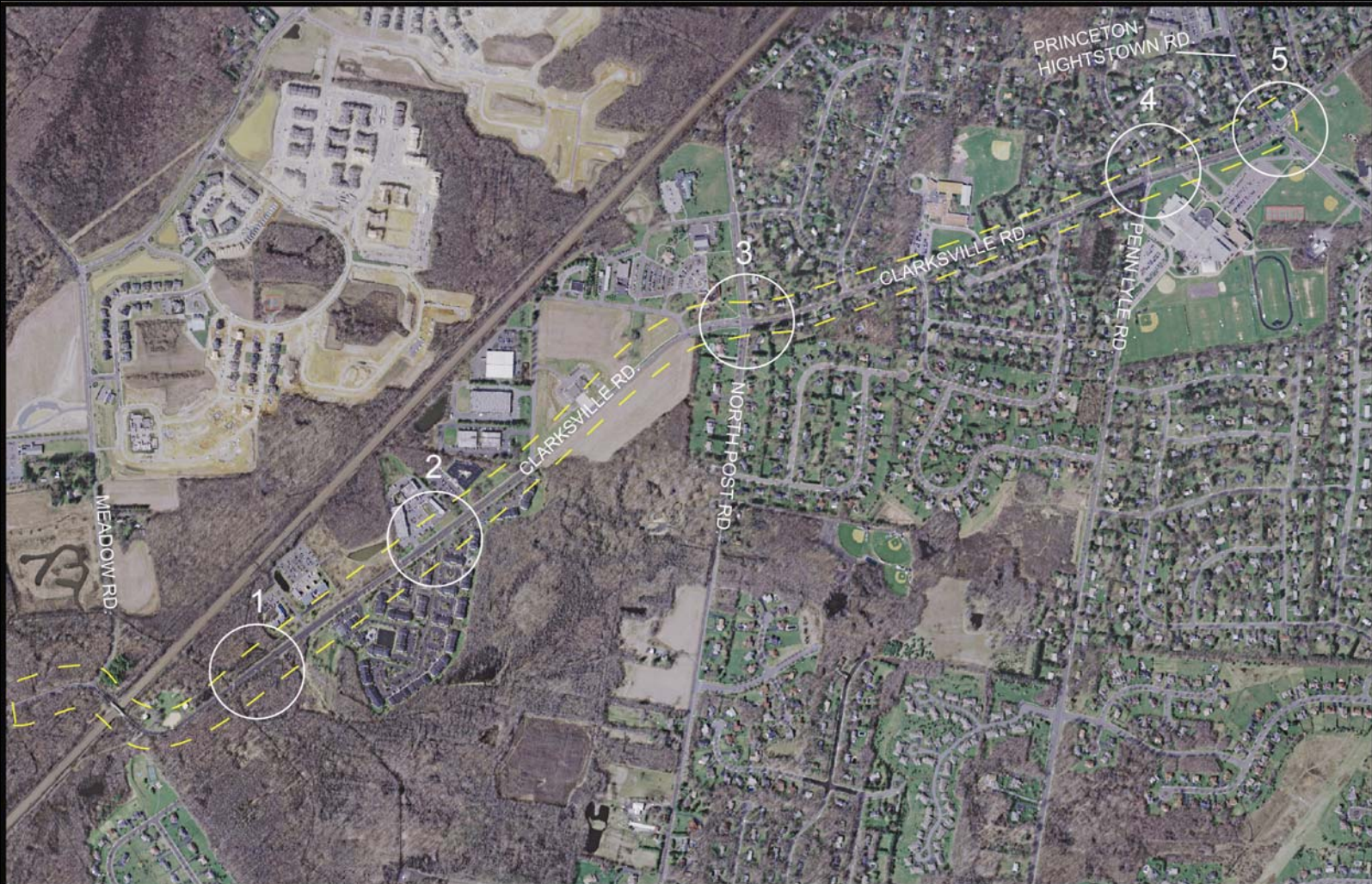
- 1) Posted and Observed Speeds Inappropriate for the Context
- 2) Inconsistent Roadway Width
- 3) Corridor Lacks a Sense of Place
- 4) Inadequate and Infrequent Pedestrian Crossings
- 5) Lane Configuration Is Confusing and Potentially Dangerous
- 6) Roadway Does Not Adequately Accommodate Bicyclists
- 7) Lacking Sidewalks/Pedestrian Amenities in Some Sections

CASE STUDY 1: CLARKSVILLE ROAD WEST WINDSOR TOWNSHIP, MERCER COUNTY, NJ

Corridor-Wide Improvements

- 1) Bike Lanes
- 2) Crosswalk Improvements
- 3) Streetscaping
- 4) Straighten Crosswalks at Intersections

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Clarksville Road, West Windsor Township

Full Corridor View, Showing Focus Areas



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Clarksville Road, West Windsor Township

Site 1: Gateway to West Windsor



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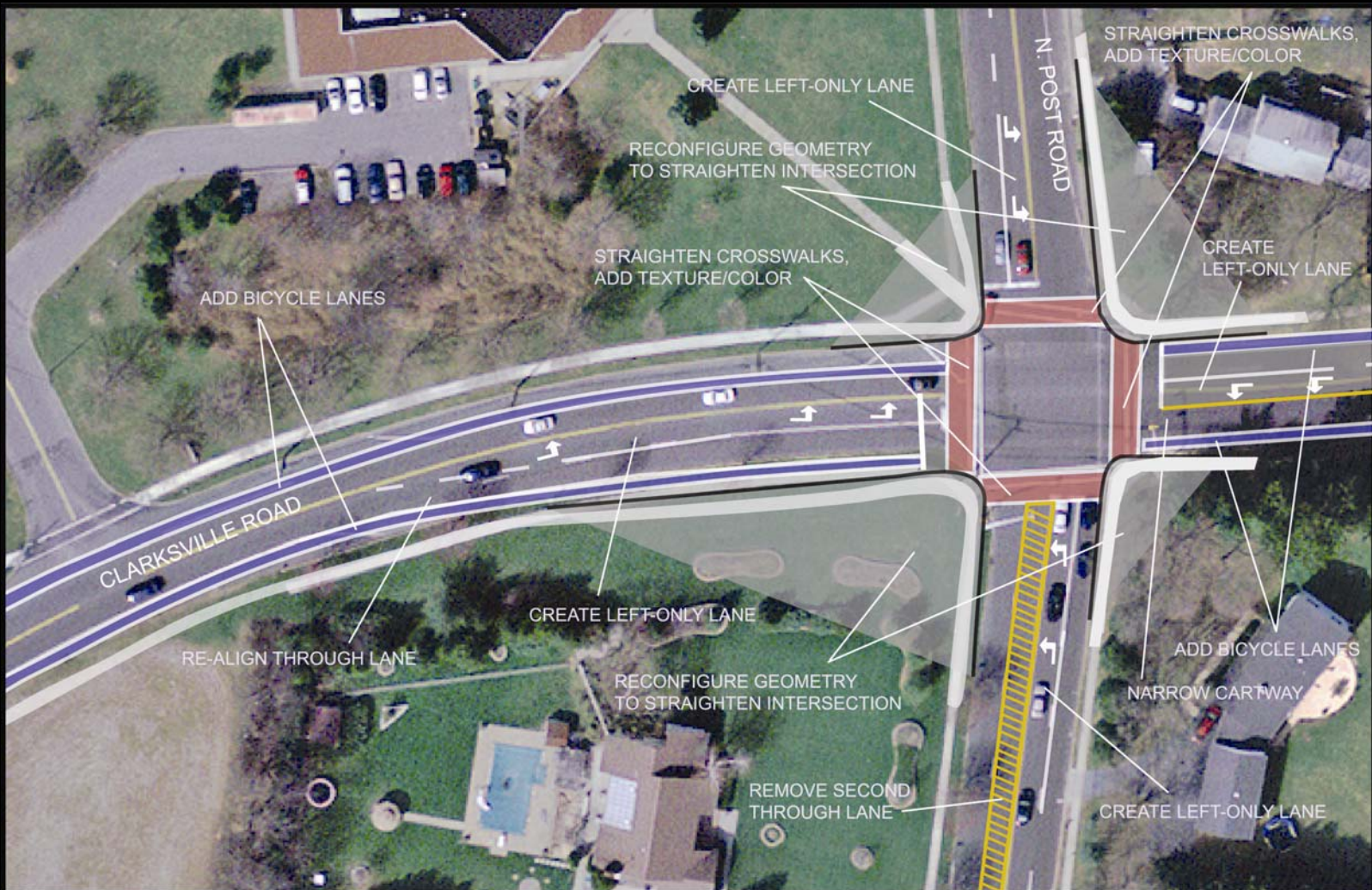
Clarksville Road, West Windsor Township

Site 2: Village Square Shopping Center



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July 2007

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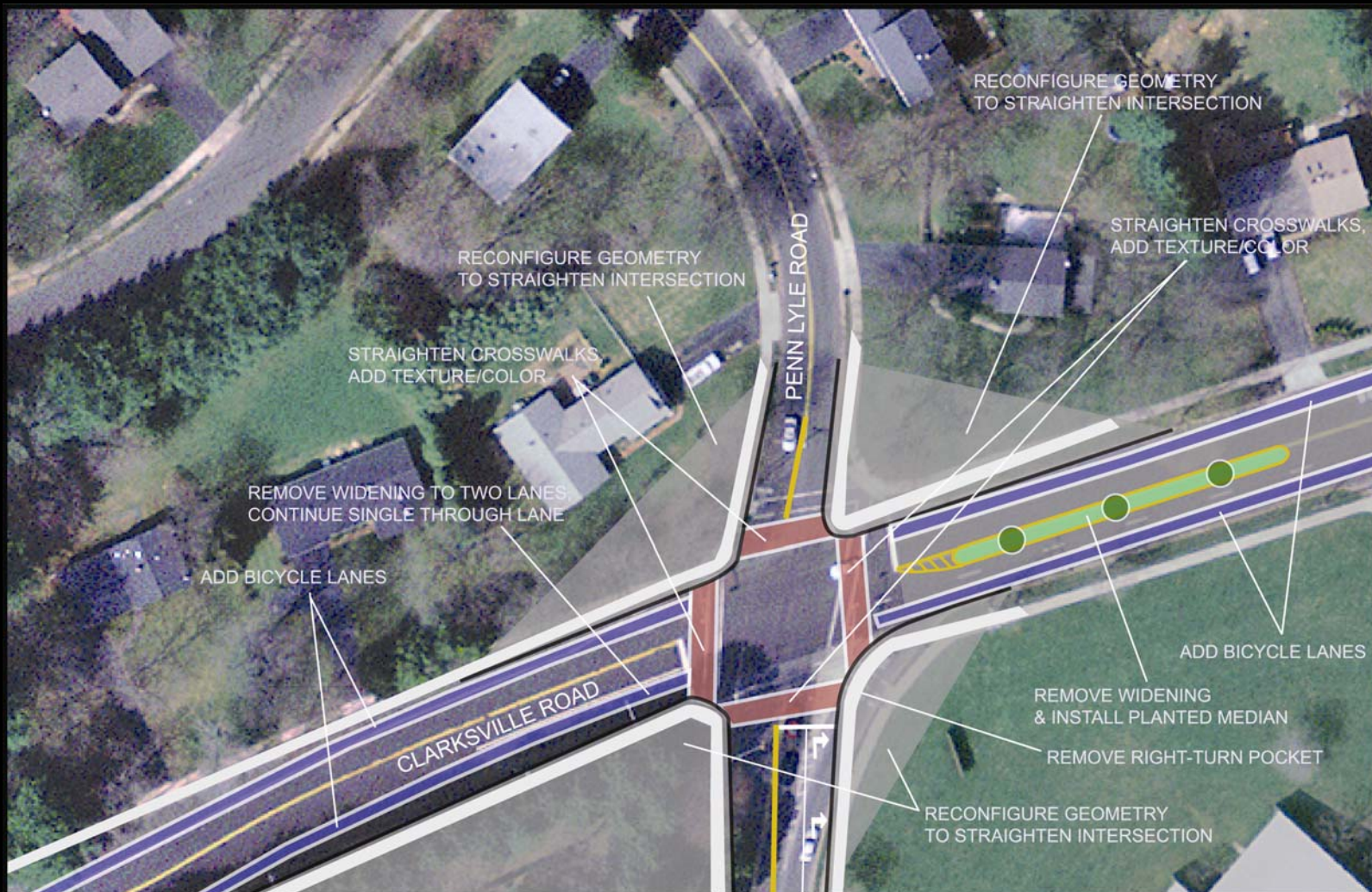
Clarksville Road, West Windsor Township

Site 3: Intersection of Clarksville Road and Post Road



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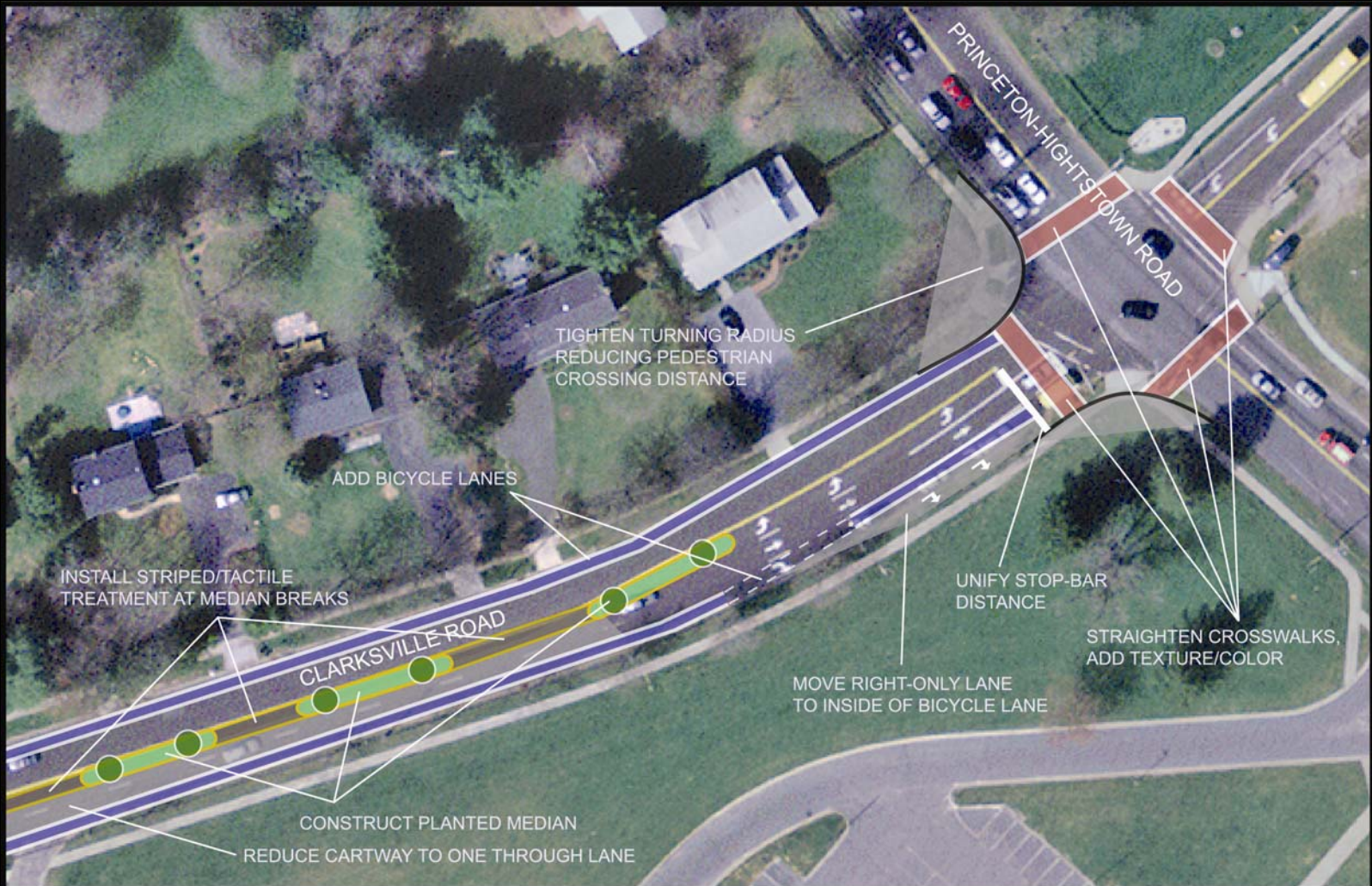
Clarksville Road, West Windsor Township

Site 4: Intersection of Clarksville Road and Penn Lyle Road



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Clarksville Road, West Windsor Township

Site 5: Intersection of Clarksville Road and Princeton-Hightstown Road



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BEFORE



AFTER



BEFORE



AFTER



CASE STUDY 2: CHESTER PIKE SHARON HILL BOROUGH, DELAWARE COUNTY, PA

Study Area

- about one mile in length
- older suburb, about two miles west of Philadelphia
- key location between major commuter destinations
- principal arterial road connecting Philadelphia and suburbs
- also serves as a local connector



CASE STUDY 2: CHESTER PIKE SHARON HILL BOROUGH, DELAWARE COUNTY, PA

Existing Conditions

- includes several residential areas, commercial and retail centers, and industrial parks
- diversity of uses results in a variety of vehicle classes and usage patterns
- several transit options, including bus and trolley



CASE STUDY 2: CHESTER PIKE SHARON HILL BOROUGH, DELAWARE COUNTY, PA

Existing Conditions

- varies significantly in width and configuration
- poorly defined lanes and no marked shoulder for much of the study area
- long pedestrian crossings
- on-street parking for much of the corridor



CASE STUDY 2: CHESTER PIKE SHARON HILL BOROUGH, DELAWARE COUNTY, PA

Problem Identification

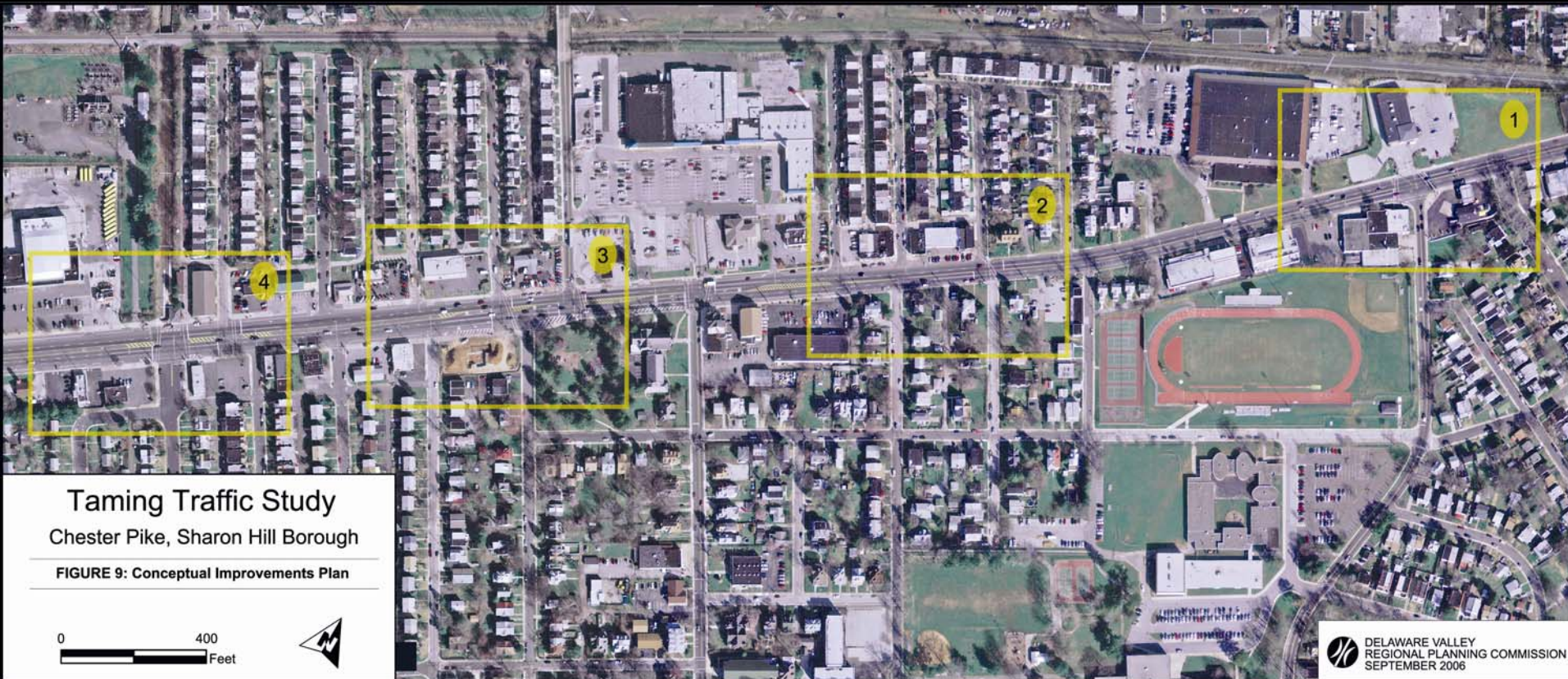
- 1) Underutilized Roadway Capacity
- 2) Variable and Unclear Lane Configurations
- 3) Excessively Wide, Numerous, and Undefined Business Access Points
- 4) Inadequate Pedestrian Crossings
- 5) Poorly Integrated Transit Facilities
- 6) Lacking Sense of Place

CASE STUDY 2: CHESTER PIKE SHARON HILL BOROUGH, DELAWARE COUNTY, PA

Improvement Strategies

- | | |
|-----------------------------------|---------------------------------------|
| 1) Simplify the Roadway | 6) Add a Bike Lane |
| 2) Improve the Sidewalks | 7) Improve the Crosswalks |
| 3) Simplify Vehicle Access Points | 8) Add Gateways |
| 4) Add Curb Extensions | 9) Modify Roadway Features |
| 5) Install Median Islands | 10) Improve the Trolley Terminal Area |

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Traffic Calming Study

Chester Pike, Sharon Hill Borough

FIGURE 10: Conceptual Improvements Plan

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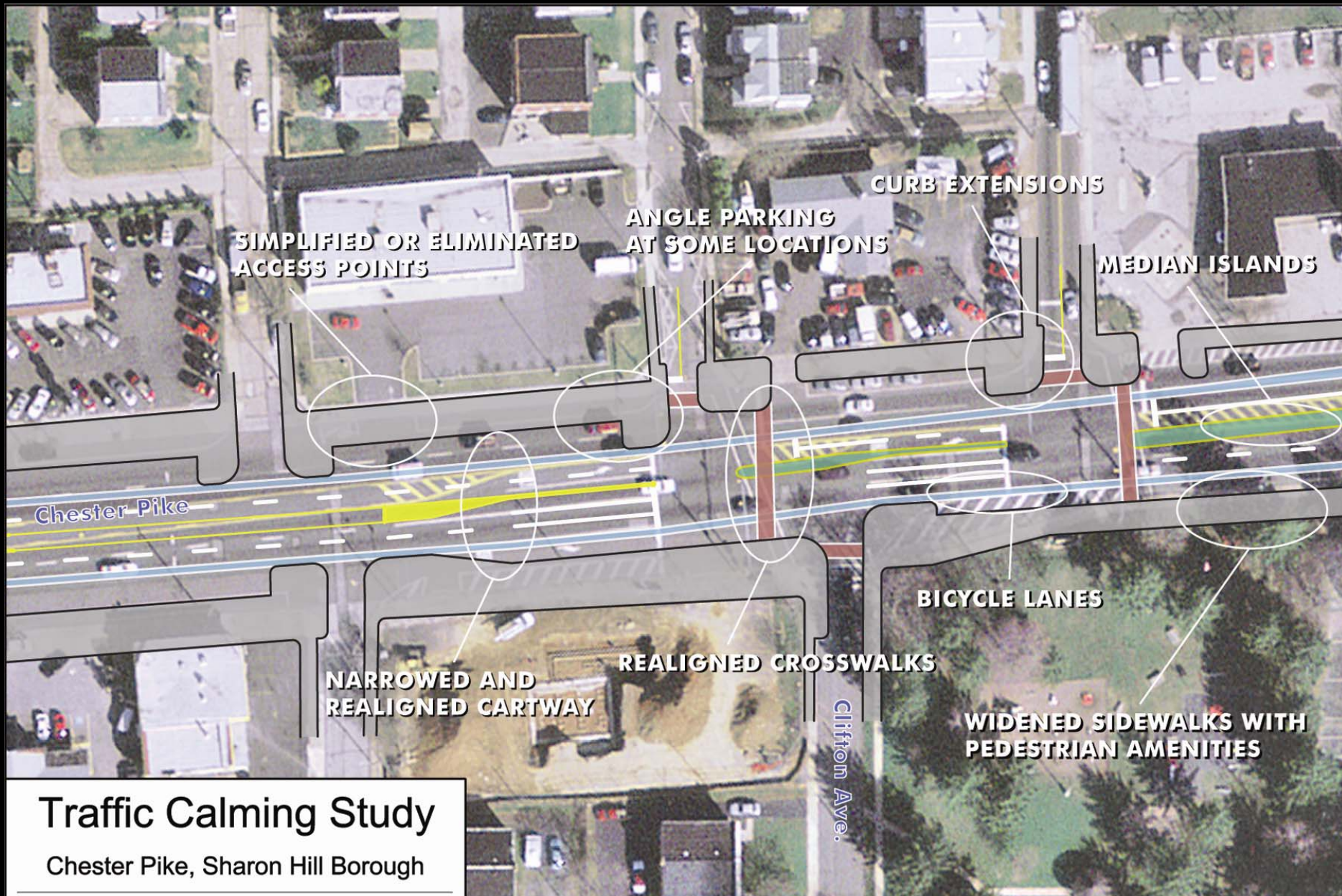


Traffic Calming Study

Chester Pike, Sharon Hill Borough

FIGURE 11: Conceptual Improvements Plan

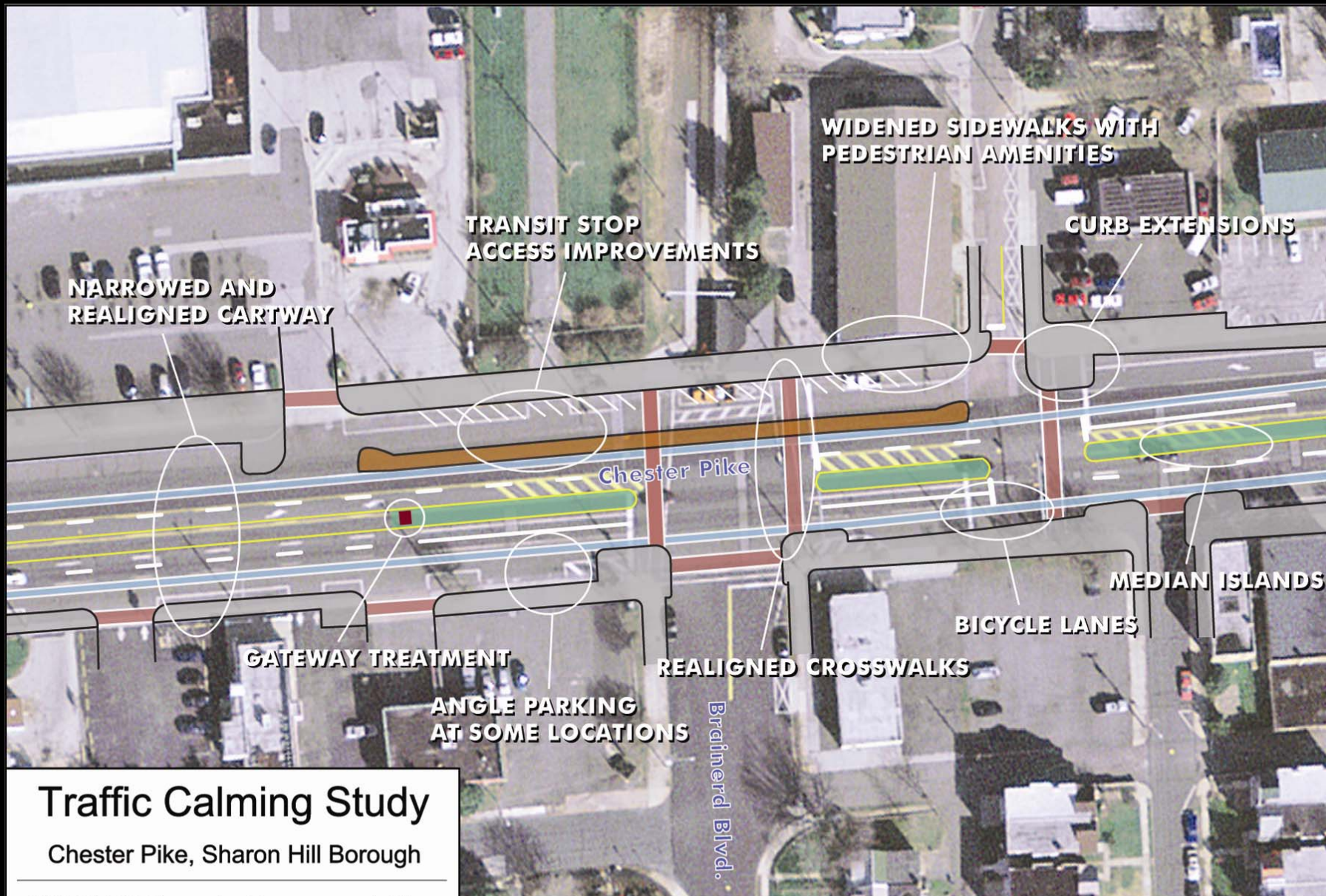
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Traffic Calming Study

Chester Pike, Sharon Hill Borough

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Traffic Calming Study

Chester Pike, Sharon Hill Borough

FIGURE 13: Conceptual Improvements Plan
Subsection 4



DELAWARE VALLEY

0

100



BEFORE



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AFTER



BEFORE



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AFTER



CASE STUDY 3: PARKSIDE AVENUE CITY OF PHILADELPHIA, PA

Study Area

- just over 1 mile in length
- convenient access to Route 76
- National Register historic district
- near major institutions and destinations (Philadelphia Zoo, Mann Center, Fairmount Park, Please Touch Museum, High School of the Future)



CASE STUDY 3: PARKSIDE AVENUE CITY OF PHILADELPHIA, PA

Existing Conditions

- Striped for bike lanes in both directions
- on-street parking along entire span
- historic character



CASE STUDY 3: PARKSIDE AVENUE CITY OF PHILADELPHIA, PA

Existing Conditions

- significant pedestrian activity
- high level of transit accessibility
- neighborhood in transition



CASE STUDY 3: PARKSIDE AVENUE CITY OF PHILADELPHIA, PA

Problem ID

- 1) Roadway Design Encourages Speeding and Motorcycle Racing
- 2) Insufficient Number of Crosswalks, Poor Pedestrian Connectivity
- 3) Corridor Lacks a Sense of Place, and Connection with the Park
- 4) Transit Stops are Unwelcoming
- 5) Corridor Lacks Sufficient Planning to Mediate Issues with Adjacent Institutions
- 6) Girard Avenue Intersection is Confusing and Potentially Dangerous

CASE STUDY 3: PARKSIDE AVENUE CITY OF PHILADELPHIA, PA

Corridor-Wide Improvements

- planted median island in place of center striping
- Replace existing crosswalks with textured and colored crosswalks
- Install a unified and consistent set of pedestrian and roadway improvements that create a sense of place
- Install highly-visible, attractive, and informative transit shelters and signage

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Parkside Avenue, Philadelphia

Full Corridor View, Showing Focus Areas

0 435 870 1,740
Feet



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Parkside Avenue, Philadelphia

Site 1: Intersection of Parkside Avenue and 52nd Street

0 37.5 75 150
Feet



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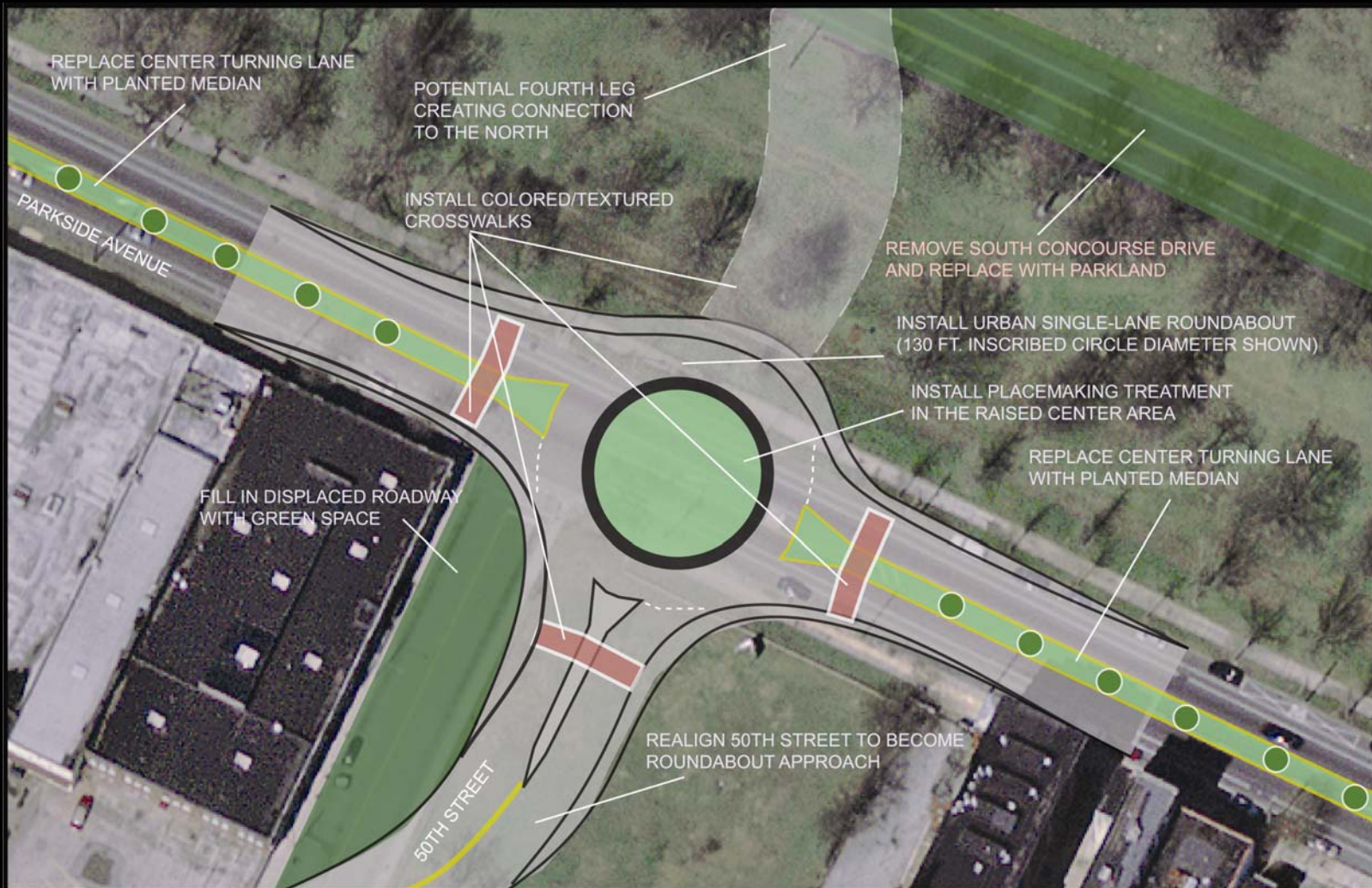
Parkside Avenue, Philadelphia

Site 2: Intersection of Parkside Avenue and 51st Street



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Parkside Avenue, Philadelphia

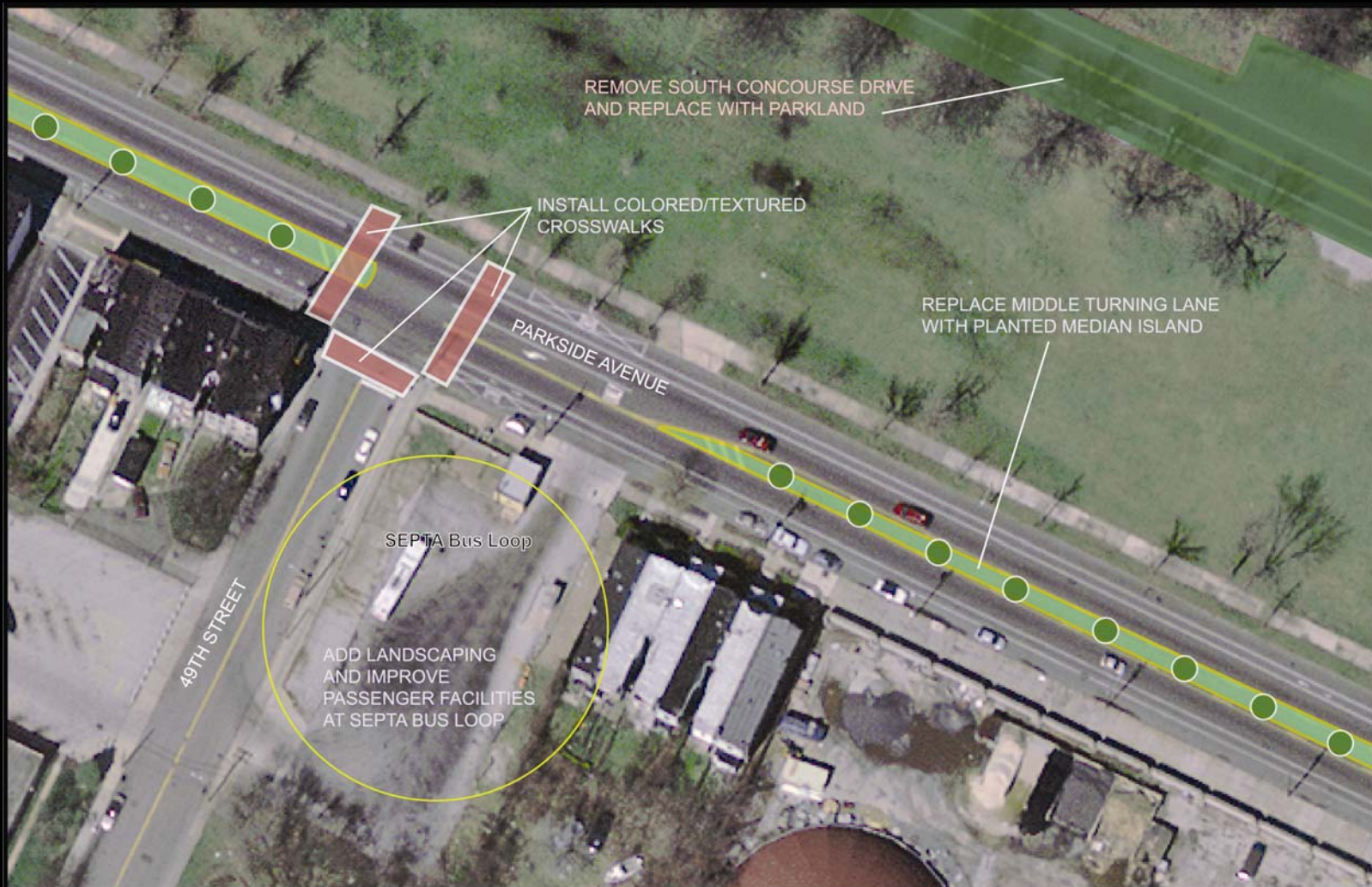
Site 3: Intersection of Parkside Avenue and 50th Street

0 37.5 75 150
Feet



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Parkside Avenue, Philadelphia

Site 4: Intersection of Parkside Avenue and 49th Street



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Parkside Avenue, Philadelphia

Site 5: Intersection of Parkside Avenue and East/West Memorial Hall Drives



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Parkside Avenue, Philadelphia

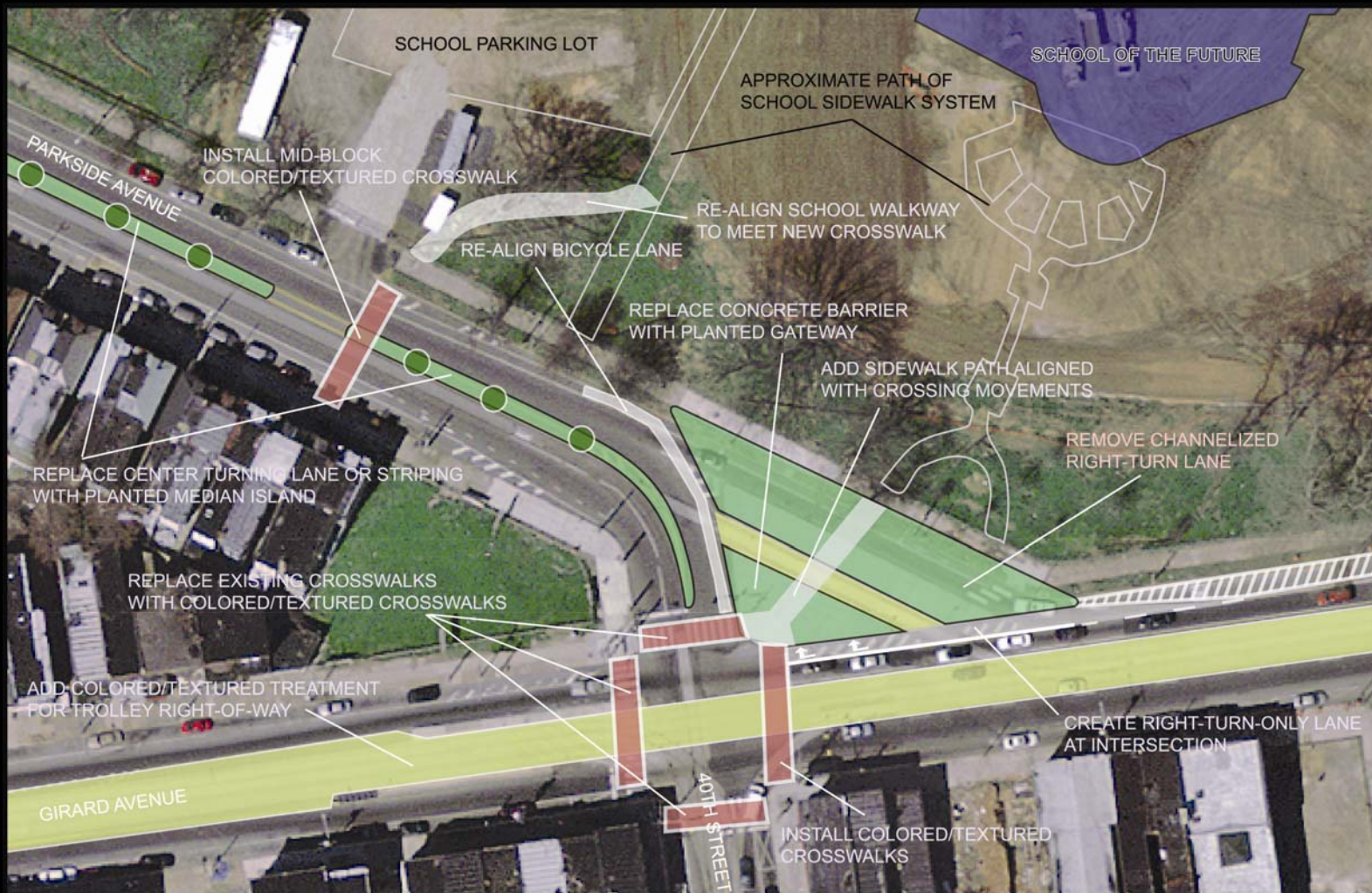
Site 6: Intersection of Parkside Avenue and 41st Street

0 37.5 75 150
Feet



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Parkside Avenue, Philadelphia

Site 7: Intersection of Parkside Avenue, Girard Avenue and 40th Street



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BEFORE

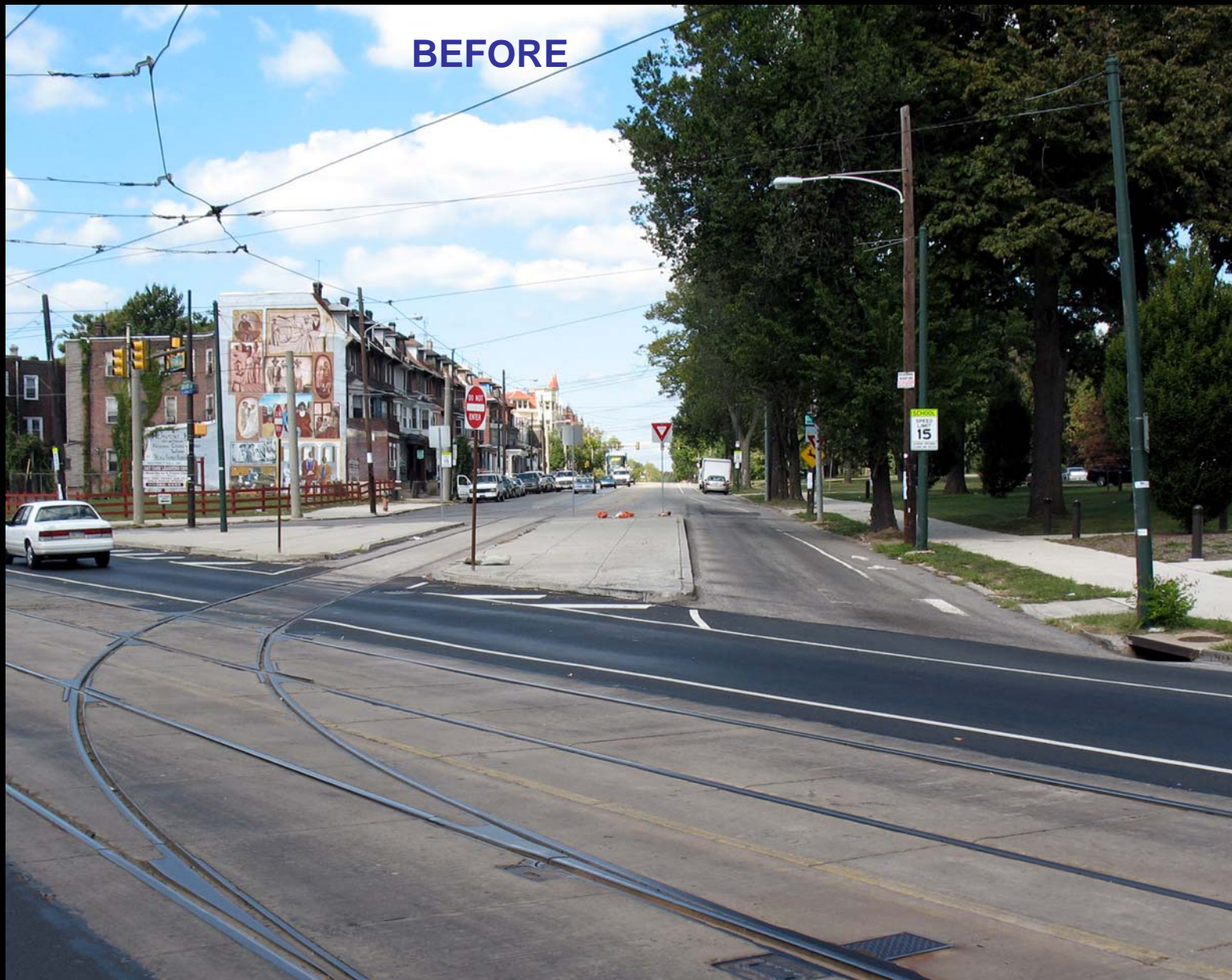


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AFTER



BEFORE



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AFTER



The following are sample costs for various traffic calming techniques, arranged from least to most expensive. These were culled from various sources, including the ITE Traffic Calming State of the Practice, which gathered data in the late 1990s from such locations as Sarasota, Florida, Portland, Oregon, and Seattle, Washington. Another primary source for the cost estimates below was the Traffic Calming Handbook, produced by the Pennsylvania Department of Transportation in 2001. Prices will differ based on numerous variables regarding materials, project extent, and local economies. The costs suggested do not include necessary expenses for the planning and engineering of these techniques.

| TECHNIQUE | ESTIMATED COST | ADDITIONAL COMMENTS |
|---------------------|-------------------------------|---|
| Bike Lane | \$5,000 - \$10,000 per mile | |
| Center Island | \$5,000 - \$15,000 | Cost depends on size, curbing, and landscape features. |
| Chicane | \$6,000 - \$14,000 | Chicanes are less expensive when existing curb is kept and the new curb is pre-cast instead of removing the existing curb and pouring in place the new curb. |
| Choker | \$7,000 - \$13,000 | Asphalt streets are less expensive than concrete streets. |
| Curb Bulb | \$7,000 - \$10,000 per pair | Mid-block measures may cost less (\$4,000) if they are smaller. |
| Curb Ramp | \$1,500 | Bike Lane |
| Diagonal Diverter | \$7,500 - \$20,000 | Cost can be greater depending on intersection width, drainage requirements, and landscaping. |
| Gateway Treatment | \$5,000 - \$20,000 | Cost depends on the design and extent of physical elements used. |
| Marked Crosswalk | \$100 - \$3,000 | As expected, costs are lower for painted crosswalks compared to textured crosswalks, such as brick, patterned concrete, etc. |
| Median Barrier | \$50 - \$150 sq yd (textured) | |
| Raised Crosswalk | \$10,000 - \$20,000 | |
| Raised Intersection | \$2,000 - \$10,000 | Cost depends on the width of intersecting roadways and drainage requirements. |
| Speed Hump or Table | \$15,000 - \$60,000 | Cost depends on roadway width. |
| Street Closure | \$1,500 - \$3,500 | More costly street closures involve poured-in-place curbs, landscaping, and sidewalks. Full-street closures can be much more expensive than partial street closures. |
| Traffic Circle | \$1,500 - \$25,000+ | Traffic circles that fit within existing curbs, gutters, and drains, and have no irrigation for landscaping, are least expensive. Costs increase if right-of-way needs to be acquired or utilities need to be relocated. More complicated installations may cost \$20,000+. |
| Traffic Sign | \$3,000 - \$20,000+ | |
| Traffic Signal | \$15,000 - \$60,000 | |

Sources: See introductory paragraph above

Implementation: Funding Sources

Federal Sources

Surface Transportation Program (STP)

Purpose: Provides funding that can be used on any federal-aid highway, bridge projects, public roads, transit capital projects and intra-intercity bus terminals.

Website: n/a

Community Development Block Grant (CDBG)

Purpose: Grants and technical assistance for federal designated municipalities for any type of community development.

Website: www.newpa.com

Implementation: Funding Sources

State Sources

Community Conservation Partnership Program

Purpose: To fund improvements to important public spaces in urban settings.

Website: www.dcnr.state.pa.us

Economic Adjustment Program (Title IX)

Purpose: To assist local interests in design and implementation strategies to bring change to the local economy.

Website: www.doc.gov

Growing Greener II

Purpose: Provides redevelopment grants to municipalities and nonprofits to help a community's downtown redevelopment effort, focusing on the improvement of downtown sites and buildings.

Website: www.newpa.com

Implementation: Funding Sources

State Sources

Home Town Streets /Safe Routes to School (HTS/SRS)

Purpose: To encourage the reinvestment in and redevelopment of downtowns.

Website: www.dot.state.pa.us/penndot/Bureaus/CPDM/Prod/Saferoute.nsf

Liquid Fuels Tax Program

Purpose: Liquid Fuels funds may be used for traffic calming measures if a “Traffic Calming Study and Approval Process” has been completed

Website: www.dot.state.pa.us

Local Municipal Resources and Development Program (LMRDP)

Purpose: Provides grants to municipalities for improving the quality of life within the community

Website: www.newpa.com

Municipal Challenge Grant

Purpose: For the purchase and delivery of up to 50 trees

Website: <http://www.dcnr.state.pa.us/forestry/pucfc/grants.html>

Implementation: Funding Sources

State Sources

Transit Research and Demonstration Program

Purpose: To fund innovative projects that improves the attractiveness of public transit

Website: www.dot.state.pa.us

Transportation Enhancements Program (TE)

Purpose: For the funding of non-traditional projects designed to enhance the transportation experience, to mitigate the impacts of transportation facilities on communities and the environment, and to enhance community character through transportation-related improvements.

Website: www.enhancements.org/ or

<http://www.dot.state.pa.us/pennndot/Bureaus/CPDM/Prod/Saferoute.nsf>

Tree Improvement Grant

Purpose: To stimulate communities to initiative systematic programs for public trees which are not receiving regular care and to develop local resources for continuing tree care

Website: www.dcnr.state.pa.us

Implementation: Funding Sources

Other Sources

Bikes Belong Coalition

Purpose: To fund bicycle facilities and paths which encourage facility, education, and capacity building

Website: www.bikesbelong.org

Lowe's Home Improvement

Eligibility: Nonprofits

Purpose: The Lowe's Charitable & Educational Foundation is dedicated to improving the communities we serve through support of public education, community improvement projects and home safety initiatives.

Website: www.lowes.com

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