

Brodhead Road

Corridor Planning Study

DECEMBER 2021



Southwestern Pennsylvania Commission 2022

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 Brian Allen
 Cheryl Moon-Sirianni
 William Kovach

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* Non-voting members

Brodhead Road Corridor Planning Study

Prepared for:

Southwestern Pennsylvania Commission

Two Chatham Center, Suite 500
112 Washington Place
Pittsburgh, PA 15219

In association with the Project Steering Committee:

The Pennsylvania Department of Transportation
Beaver County
City of Aliquippa
Center Township
Hopewell Township

Prepared by:

Whitman, Requardt and Associates, LLP

2009 Mackenzie Way, Suite 240
Cranberry Township, PA 16066

In association with:

Pashek+MTR

619 East Ohio Street
Pittsburgh, PA 15212

Special thanks to the members of the Steering Committee and stakeholders who guided the development of this planning study:

Southwestern Pennsylvania Commission

Domenic D'Andrea	Evan Schoss
Kristin Baum	Joshua Spano
Lillian Gabreski	Andy Waple
Ryan Gordon	

Pennsylvania Department of Transportation

Todd Kravits
Dean Schmitt
Doug Seeley

Beaver County Department of Planning and Redevelopment

Lance Grable	Joe West
Dan Distler	Frank J. Vescio

Beaver County Corporation for Economic Development

Lew Villotti

City of Aliquippa

Sam Gill

Center Township

Ned Mitrovich
Frank M. Vescio

Hopewell Township

Benjamin Gilberti
Jamie Yurcina

Additional Contributing Stakeholders

Airport Corridor Transportation Association
Beaver County Career and Technology Center
Beaver County Chamber of Commerce
Beaver County Commissioners
Beaver County Emergency Management
Beaver County Sheriff
Beaver County Transit Authority
Beaver Valley Mall
Central Valley School District
CJ Betters Real Estate/Bet-Tech International
Community College of Beaver County
Hopewell Area School District
Moon Township
Hopewell Township Police
Penn State Beaver Campus
Potter Township
Shell Polymers | Pennsylvania Chemicals Project
Stefanik's Next Generation Contracting



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








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Companion Documents:

Related study materials provide additional detail that was collected and analyzed in the course of understanding needs and evaluating potential alternatives. These documents include:

Existing Conditions and Issues and Appendices
Outreach Summary and Detailed Results

LOCATOR MAP LEGEND

	BRODHEAD RD
	EXISTING SIDEWALKS
	PROPOSED SIDEWALKS
	CYCLING IMPROVEMENTS
	PROPOSED CROSSWALK
	TRANSIT STOP UPGRADE
	COMMERCIAL AREA
	INSTITUTION
	PARK

How To Use This Plan

The Corridor Plan is set up to simply display proposed alternative designs in an easy-to-understand graphical format. Diagrams and conceptual renderings are accompanied by a table of attributes that describe each alternative. The example below describes how to use and navigate the document.

1. LOCATOR MAP

The locator map shows a basemap with streets, buildings, and commercial businesses, institutions, and parks as reference points. Existing appear in blue.

Proposed sidewalks are a dashed blue line. Proposed cycling infrastructure is shown as a dashed green line. The crosswalk symbol indicates a proposed crosswalk installation or improvement. The white circle with black outline indicates a transit stop improvement. The legend for these maps can be seen to the left.

2. CORRIDOR INFOGRAPHIC

This graphic orients the user to which area of the corridor they are viewing. Clicking this graphic will navigate the user back to the table of contents.

3. ID NUMBER

This yellow circle indicates the alternative's ID number, which corresponds with the implementation matrix that starts on page 35.

4. ALTERNATIVE CONCEPTUAL RENDERING The graphic below the intersection name shows the conceptual rendering for the alternative. Icons and call-outs show the reader which traffic rules would be established or clarify components of the drawing.

The image shows a composite of several elements from the Corridor Plan. On the left is a locator map (1) of the Aliquippa Commercial Area. In the center is a corridor infographic (2) for Chapel Road. To the right are two conceptual renderings: one for Chapel Road (3) and one for Admiral Street (5). Each rendering includes an attribute table (4 and 6 respectively) with rows for Goals Addressed, Safety Benefits, Operational Benefits, ROW Cost, ROW Impact, and Environmental Impact. A callout (7) points to a sidewalk on the locator map.

5. GOALS ICONS

The icons within the "Goals Addressed" row correspond with the corridor study's established goals listed on page nine.

6. ALTERNATIVE ATTRIBUTE TABLE

This table informs the user of performance metrics and project consequences such as safety benefits, rough order of magnitude (ROM) cost, right-of-way (ROW) impact, environmental impact, etc.

7. PROJECT TEXT

The project text describes each alternative in detail and discusses other considerations and intersections that were studied.

Executive Summary



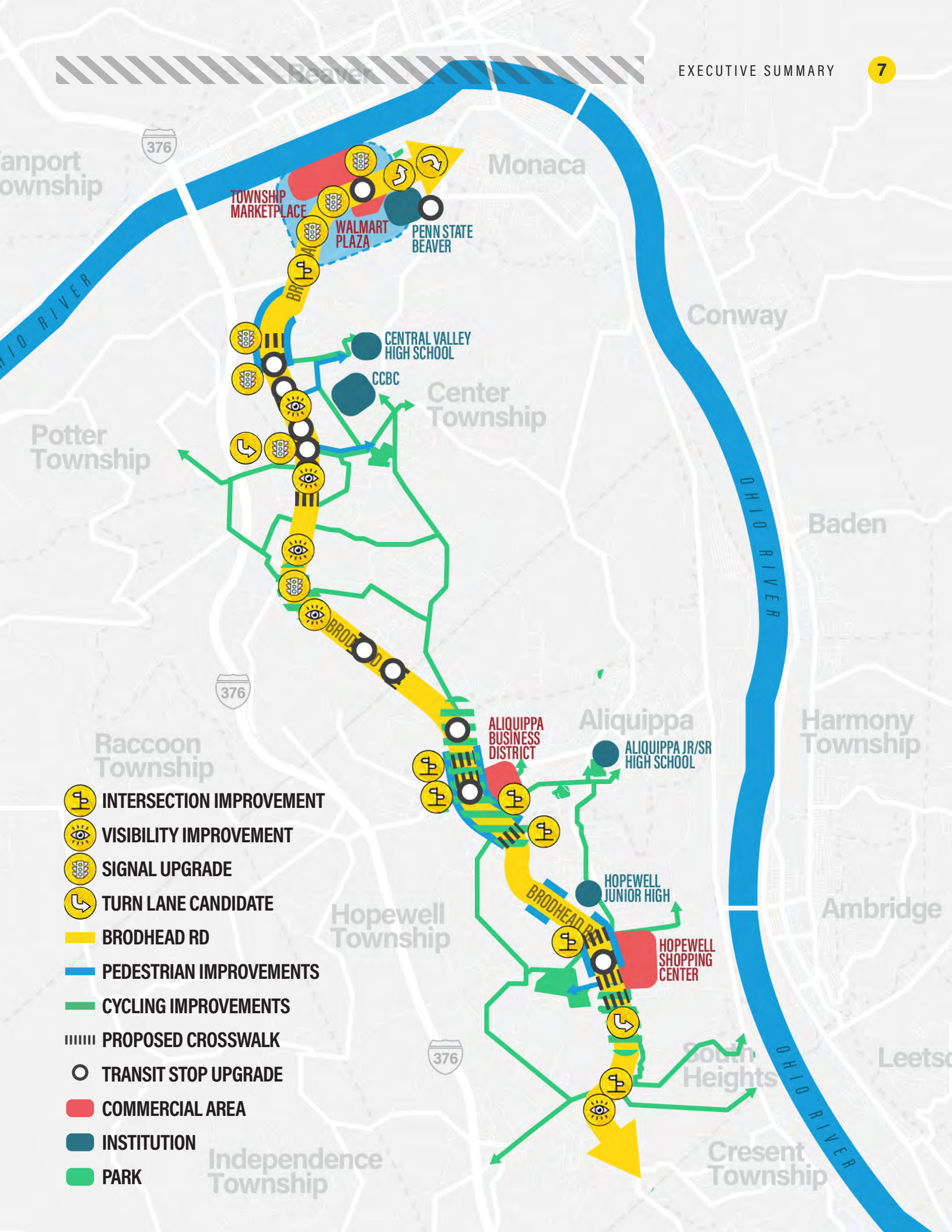
The Southwestern Pennsylvania Commission (SPC) initiated this planning study to analyze existing conditions on Brodhead Road (SR 3007/SR 18) in Beaver County and to provide short-, medium-, and long-term concepts for improving multimodal transportation and safety and accommodating future growth. This study is intended to serve as a plan that will guide planning and programming of transportation projects and policies.








SPC led the study in partnership with a broader Steering Committee comprised of key SPC staff, the Pennsylvania Department of Transportation (PennDOT District 11-0), Beaver County staff, the Beaver County Corporation for Economic Development and representatives of the three study area municipalities. The study area covers 22 intersections along approximately 11 miles, stretching from Monaca Borough to the Allegheny County line, including Center Township, the City of Aliquippa, and Hopewell Township.

The Brodhead Road corridor is both locally and regionally significant. It serves as a crucial element of daily life for residents in surrounding neighborhoods, serving as the primary route enabling people to reach daily destinations and access I-376. It also serves regional transportation needs by facilitating access to the Penn State Beaver campus, the Community College of Beaver County, the Beaver Valley Mall and the industrial and manufacturing uses that line the banks of the Ohio River, the newest among which is the Shell petrochemical complex. In the coming years, traffic load is expected to increase, including trips generated by hundreds of new residences and jobs currently under development, planned or anticipated in the area.

The Existing Conditions and Issues component of the project analyzed the transportation network as is, including current vehicular and non-vehicular travel patterns, and identified concerns in the context of previous studies and relevant projects. A Future Conditions analysis examined 2045 forecasts using the known development pipeline to anticipate the geography and volume of future traffic.

A robust public and stakeholder engagement effort collected insight on a wide range of topics that helped inform broad goals and priorities as well as site-specific challenges. With the needs defined, the Steering Committee evaluated alternatives for improvement at locations along the corridor, ultimately arriving at the list presented in this plan. These alternatives are designed to address identified needs while respecting realistic constraints. An overview of improvement types by location appears in the map on the following page.



-  INTERSECTION IMPROVEMENT
-  VISIBILITY IMPROVEMENT
-  SIGNAL UPGRADE
-  TURN LANE CANDIDATE
-  BRODHEAD RD
-  PEDESTRIAN IMPROVEMENTS
-  CYCLING IMPROVEMENTS
-  PROPOSED CROSSWALK
-  TRANSIT STOP UPGRADE
-  COMMERCIAL AREA
-  INSTITUTION
-  PARK

TOWNSHIP MARKETPLACE

WALMART PLAZA

PENN STATE BEAVER

CENTRAL VALLEY HIGH SCHOOL

CCBC

ALIQUIPPA BUSINESS DISTRICT

ALIQUIPPA JR/SR HIGH SCHOOL

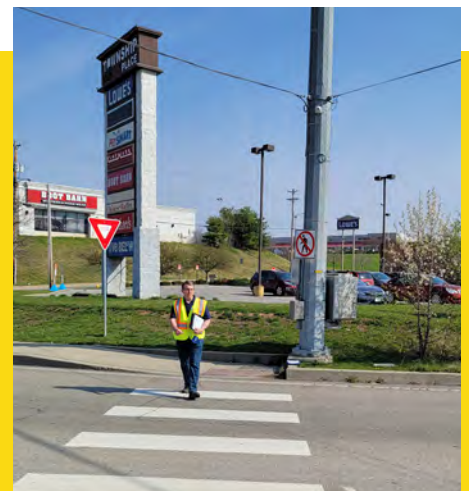
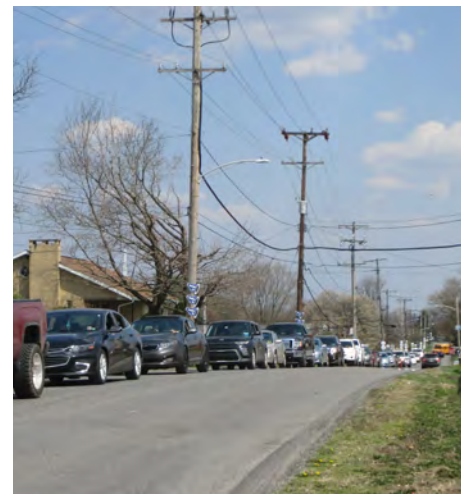
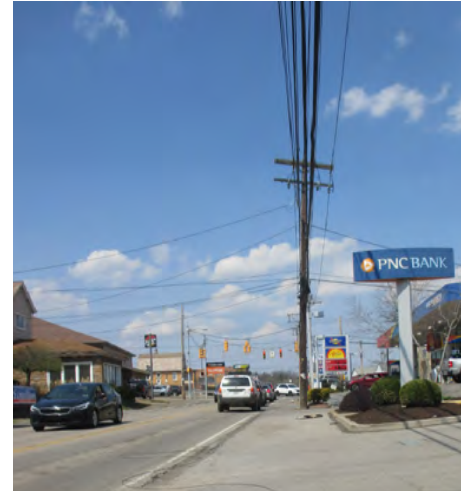
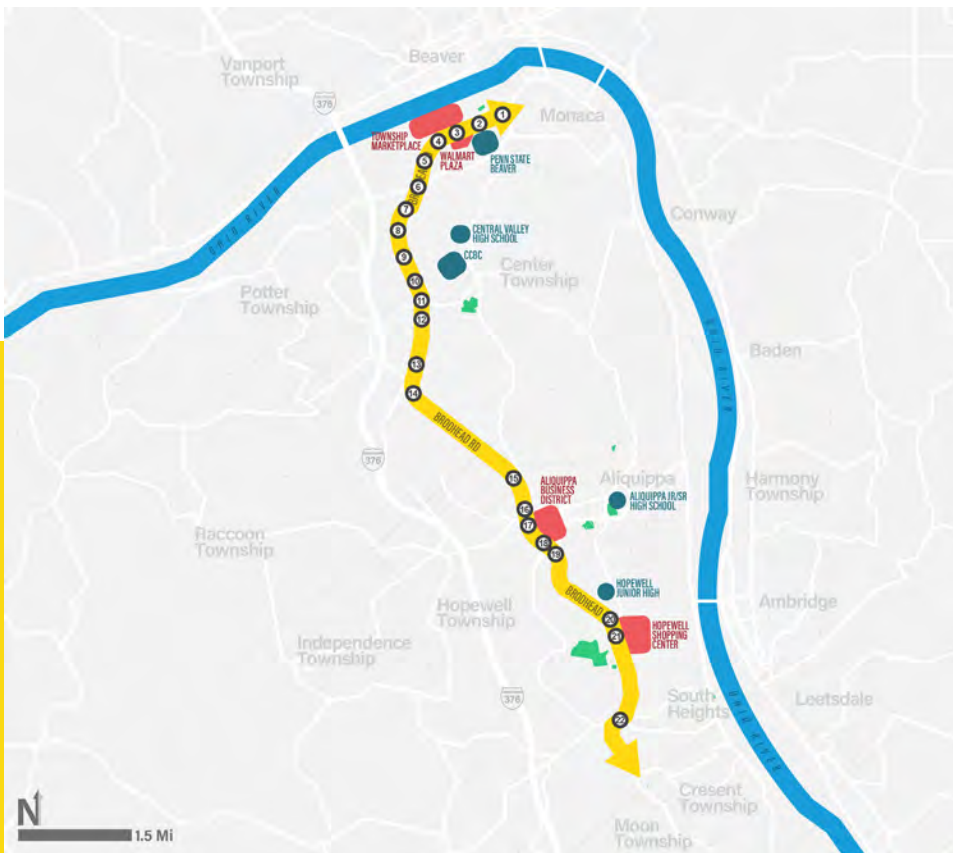
HOPEWELL JUNIOR HIGH

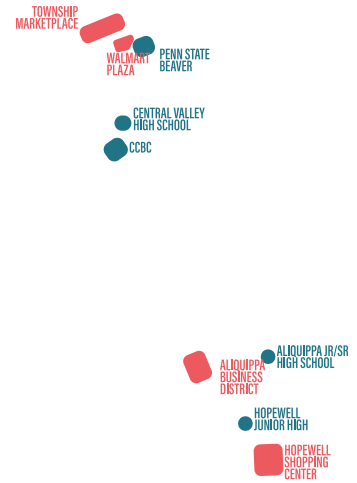
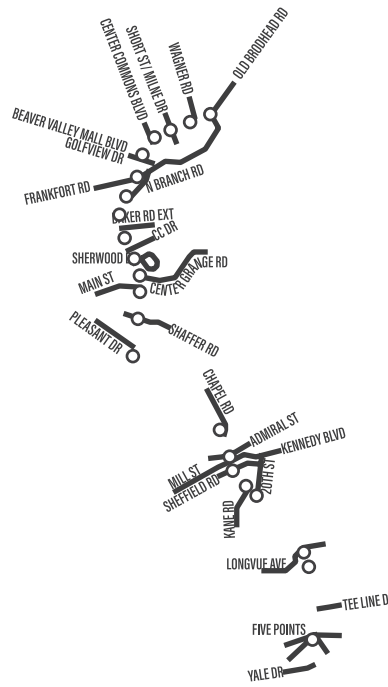
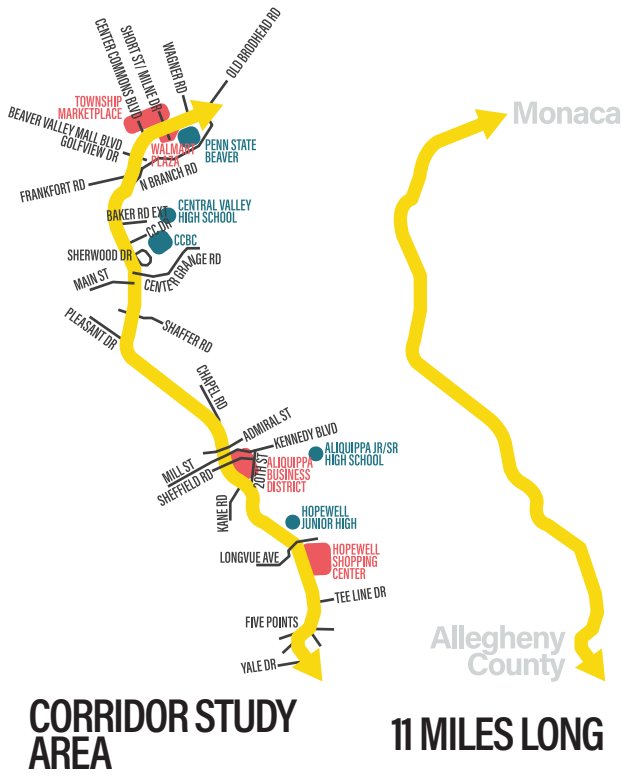
HOPEWELL SHOPPING CENTER

Background

The Brodhead Road corridor study area spans 11 miles and is located within three municipalities. The corridor starts in Center Township at the northern intersection of Old Brodhead Road and extends through Aliquippa and Hopewell Township to the Bocktown Road intersection. The Brodhead Road corridor has nine existing signalized intersections and 13 stop-controlled intersections. This study examines the existing conditions of these 22 intersections along the corridor. The corridor was grouped into five areas for planning purposes.

Through a series of public and stakeholder engagement activities, the communities' feedback informed the concepts in this plan. The planning team conducted stakeholder interviews, an online survey, a Wikimap, two public meetings, and four steering committee meetings. These plans are not locally preferred alternatives or final designs but represent possible direction for capital investment. Each alternative discussed will require additional study, funding, and engineering before implementation.





STUDY AREA – KEY FACTS



MOBILITY
Improvements in regional mobility and accessibility



OPERATIONS
Congestion reduction, system reliability, & safety



GROWTH
Economic & community development



PLAN
Land-use planning



DISTRIBUTION
Goods movement & freight



FACILITIES
Bicycle & pedestrian facilities



LIVABILITY
Quality of life, livability, & community health outcomes

STUDY GOALS

“The study should make recommendations that will improve regional mobility and accessibility for all, enhance the quality of life and livability of the community, and advance economic and community development goals.”

VISION STATEMENT

Determining Needs

OUTREACH

The planning team heard many concerns regarding blocked sightlines, unregulated driveway access, unsafe pedestrian environments, poorly functioning intersections, and other various issues. An extensive public outreach campaign was undertaken to understand the needs of the communities and the people who live, walk, commute, and ride along the Brodhead Road corridor. Using these valuable insights, the planning team created alternatives for improvements that would address identified concerns. Alternatives were presented to the public, stakeholders, and the steering committee for feedback. After public comment was received the planning team revised the alternatives.

The planning team relied on a variety of methods to understand existing conditions and gather input on potential alternatives. The planning team hosted and promoted a project website, invited 80 stakeholders to participate in interviews or focus groups, distributed two online surveys, published and collected input from a Wikimap, conducted two public meetings and led four steering committee meetings. Additionally, the project team met with Beaver County Commissioners at project milestones.

UNDERSTANDING EXISTING CONDITIONS

Initial research included data collection and analysis, such as:

- Field reconnaissance
- Retroreflectivity assessment during hours of darkness to observe and document visibility problems
- Average daily traffic counts
- Intersection turning movement counts
- Modeling Covid-19 traffic adjustments
- Safety/crash data
- Signal system operations
- Walkability and bikeability assessments
- Travel time data
- Sight distance evaluation
- Freight network analysis

By the numbers:

- 77** Responses to initial public survey
- 111** Registrants for first public meeting, of whom 61 attended
- 131** Site-specific Wikimap comments
- 92** Registrants for second public meeting, of whom 44 attended
- 92** Responses to public survey on alternatives

“Five Points intersection needs major work!”

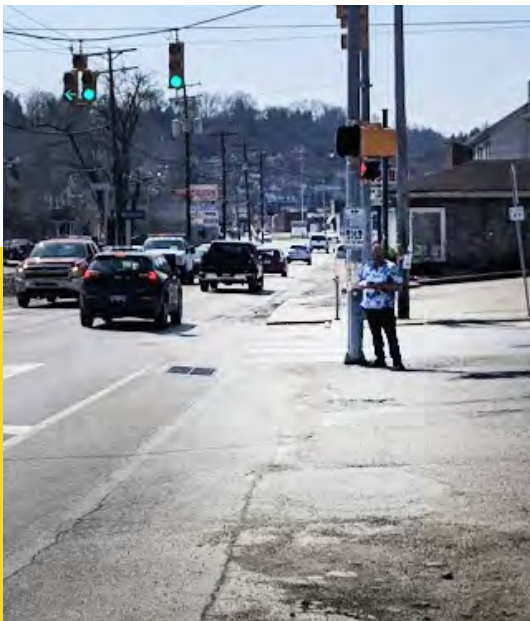
Submitted comment

PUBLICITY



The project team spread the word through multiple approaches, including a radio appearance.

EXISTING CONDITIONS DATA COLLECTION AND ANALYSIS

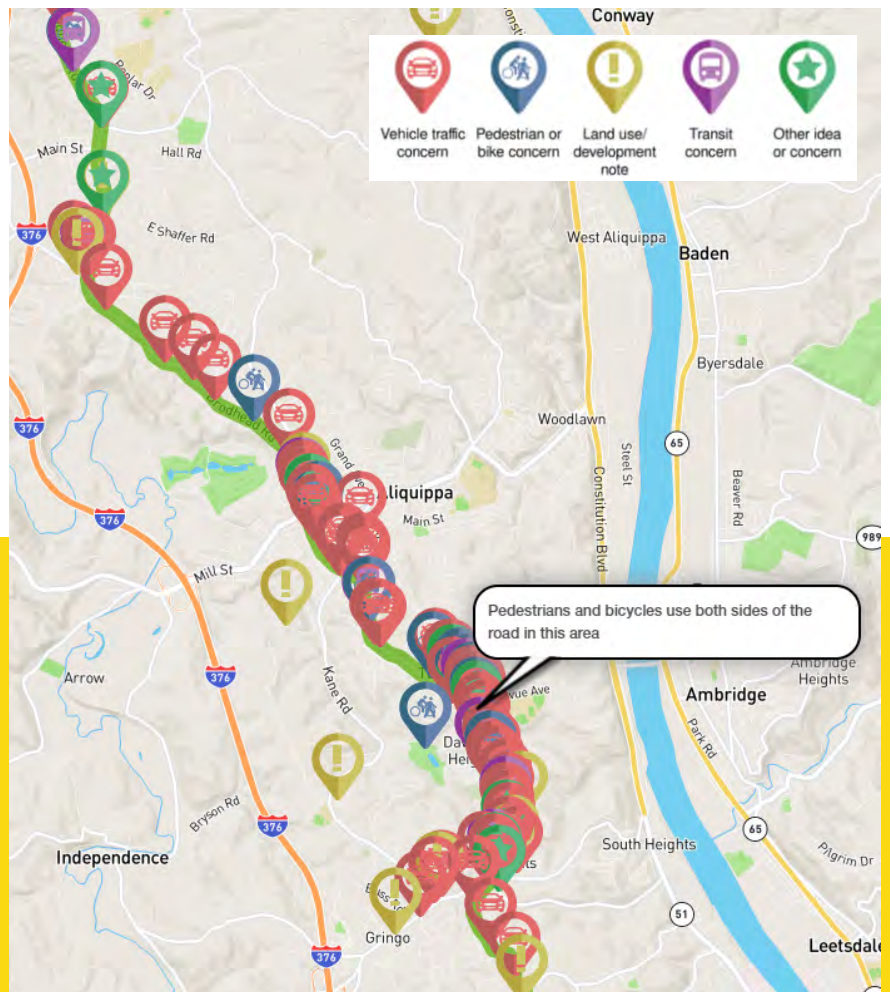


Field reconnaissance provided the team with contextual understanding of issues challenging all road users.



PROJECT WIKIMAP

See "Existing Conditions and Issues" for details.



Developing Options

ANTICIPATING FUTURE CONDITIONS

The study takes future growth into account, considering local and regional plans and land use regulations as well as developments approved or underway. The most significant of these is the Shell Appalachia Petrochemical Plant. The project team created corridor-specific growth and analysis zones to break down SPC household and employment forecasts for 2045, adjusting for site-specific development anticipated in Beaver County.

Additionally, the project team evaluated broader system-level connections to major bridge crossings, I-376 access points and potentially developable tracts of industrial property that could yield significant influence on the Brodhead Road corridor.

VETTING ALTERNATIVES

The steering committee led interpretation of the existing and future conditions and issues findings. This involved inputs ranging from minor anecdotal observations to comprehensive "big data" insights, to direct development of an array of alternatives for improving study intersections and segments. The alternatives presented in this report were selected and refined following presentation to the public, stakeholders, County Commissioners and multiple rounds of steering committee deliberation. They address queuing, lane and intersection geometry, capacity and level-of-service needs; pedestrian, bicycle and transit facilities and connectivity; truck operations and routing; traffic controls and signal systems; and incident management strategies. Also included are suggestions for local regulatory changes that could improve conditions along the corridor.



Shell Appalachia's major petrochemicals complex in Potter Township is expected to add 600 permanent jobs to the area's economy.

Image: Project rendering, Shell Chemicals

What does the future look like?

Without improvements, by 2045:

- 22% to 38% increase in Brodhead Road traffic
- Traffic queuing and delays worsen at essentially all sites
- An additional 12 of the 22 study intersections fall to E or F operation rating (level of service)
- 19 of 22 study intersections exhibit some degree of failure

TRAFFIC GROWTH PER YEAR

<i>ALIQUIPPA CITY</i>	0.5%	<i>MONACA BOROUGH</i>	0.5%
<i>BEAVER BOROUGH</i>	0.5%	<i>MOON TOWNSHIP</i>	0.72%
<i>BRIDGEWATER BOROUGH</i>	0.5%	<i>POTTER TOWNSHIP</i>	0.77%
<i>CENTER TOWNSHIP</i>	0.5%	<i>ROCHESTER BOROUGH</i>	0.5%
<i>CRESCENT TOWNSHIP</i>	0.89%	<i>SOUTH HEIGHTS BOROUGH</i>	0.5%
<i>FINDLAY TOWNSHIP</i>	1.1%	<i>VANPORT TOWNSHIP</i>	0.5%
<i>HOPEWELL TOWNSHIP</i>	0.5%		

ADJUSTED STUDY AREA GROWTH BY 2045:

+2,139
jobs (7%)

+2,361
households (10%)

Corridor Plan

Following analysis and discussion of alternatives, the Steering Committee selected the concepts on the following pages to address identified problems at specific locations along the corridor extent, such as safety concerns, congestion or barriers to multimodal access. Each was reviewed from a planning-level feasibility standpoint. At some locations, a single alternative is presented as the Steering Committee's consensus approach to improvements based on the information available. At others, multiple alternatives are presented for further consideration.

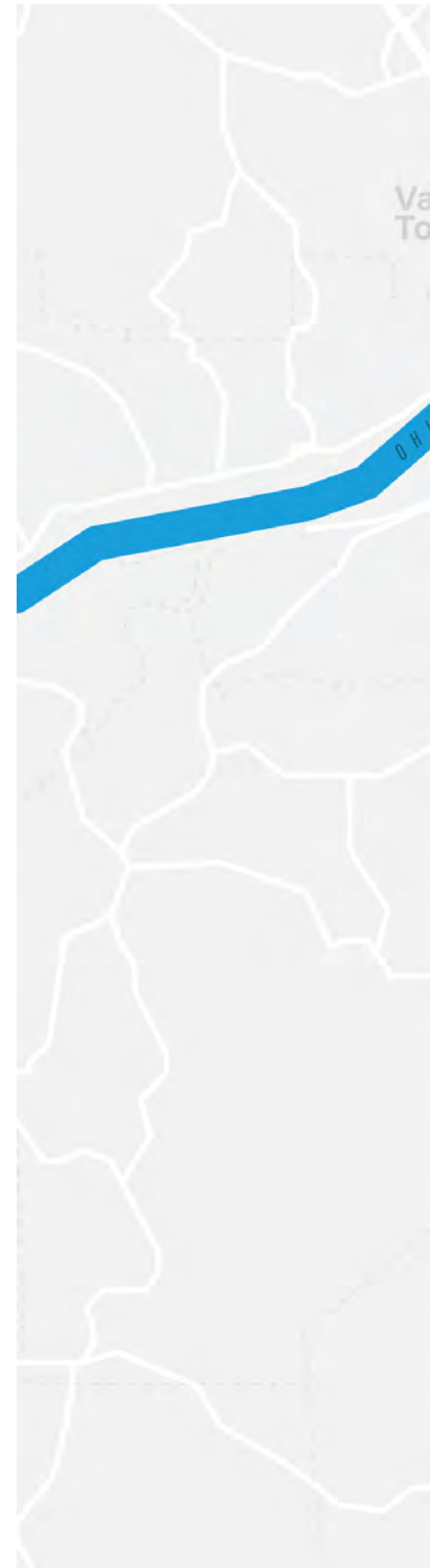
The concepts are presented in the five segments depicted on the following page, moving from north to south along Brodhead Road. Each segment begins with an overview map that illustrates the area's multimodal network and identifies the specific locations for which alternatives are proposed, then lays out the context for each concept.

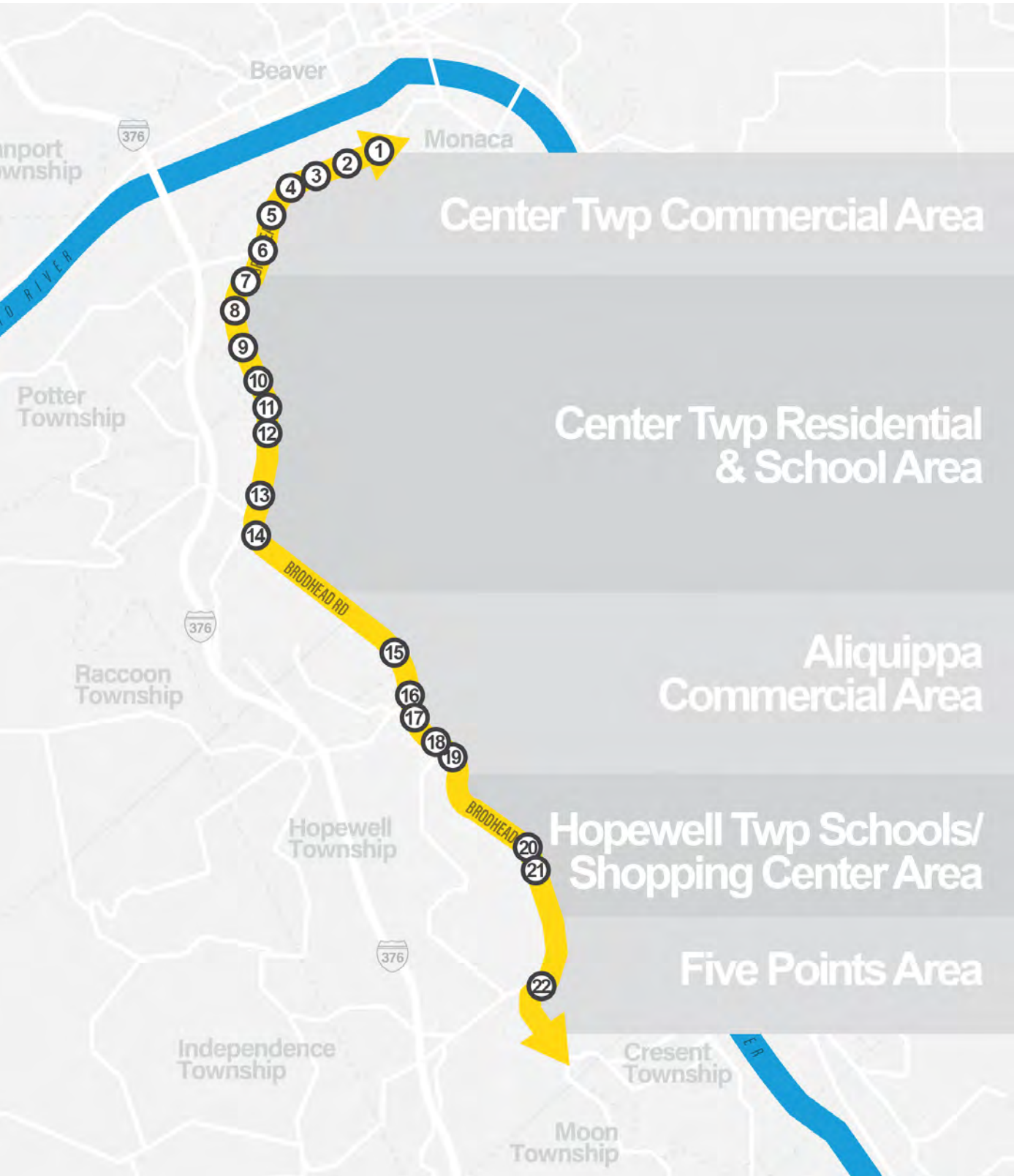
Relative measures of cost and effectiveness are suggested for each. Environmental and right-of-way impacts range from low to high. Low-impact projects can be streamlined with nominal impacts to private property. High-impact projects will require a longer process and have more potential for significant impacts to adjacent private property.

The implementation section of this report provides considerations on priority, cost and timing for each alternative.

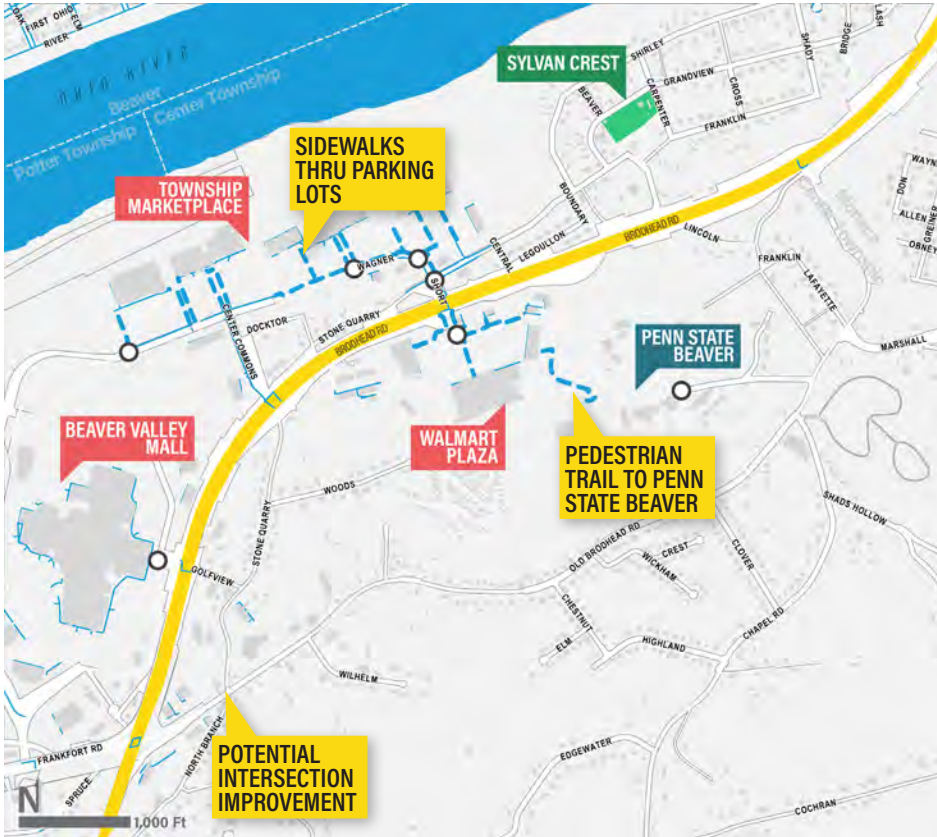
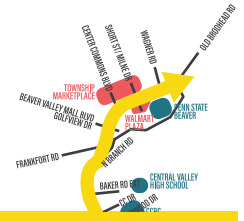
The map to the right shows the areas and intersections studied in the corridor. Clicking on the name of the intersection or area will navigate the user to that page or section in the document.

A legend and how-to guide for interpreting the maps and tables that follow appear on pages 4 and 5.





Center Township Commercial Area



OVERVIEW

The Center Township Commercial Area is a busy commercial section of the Brodhead Road corridor. It is home to Walmart, Lowes, Kohl's, and the Beaver Valley Mall. Located south of Brodhead Road behind Walmart Plaza is the Penn State Beaver Extension. The suburban four-lane highway with turn lanes in the big-box built environment is synonymous with large parking lots and an undesirable pedestrian/cyclist environment. The heavily congested Frankfort Road intersection is the highest-volume junction in the study corridor, with traffic exceeding 20,000 to 25,000 vehicles per day on both Brodhead Road and Frankfort Road.

MULTIMODAL IMPROVEMENTS

The pedestrian network is fragmented by busy roads and large swaths of parking. Clear pedestrian sidewalks/paths through parking lots and along Wagner Road and other roads will help transit riders and pedestrians walk to each commercial service. Establishing a transit stop at Penn State Beaver will provide mobility to students. A pedestrian path is proposed from the back of the Penn State Beaver campus to the Walmart Plaza area.

FRANKFORT ALT 1

This alternative addresses congestion at the Frankfort Road-Old Brodhead Road intersection by removing the split phasing and adding an eastbound turn lane and one through lane. Existing southbound-westbound and northbound-eastbound slip ramps are removed to calm traffic flows onto smaller arterial roads.

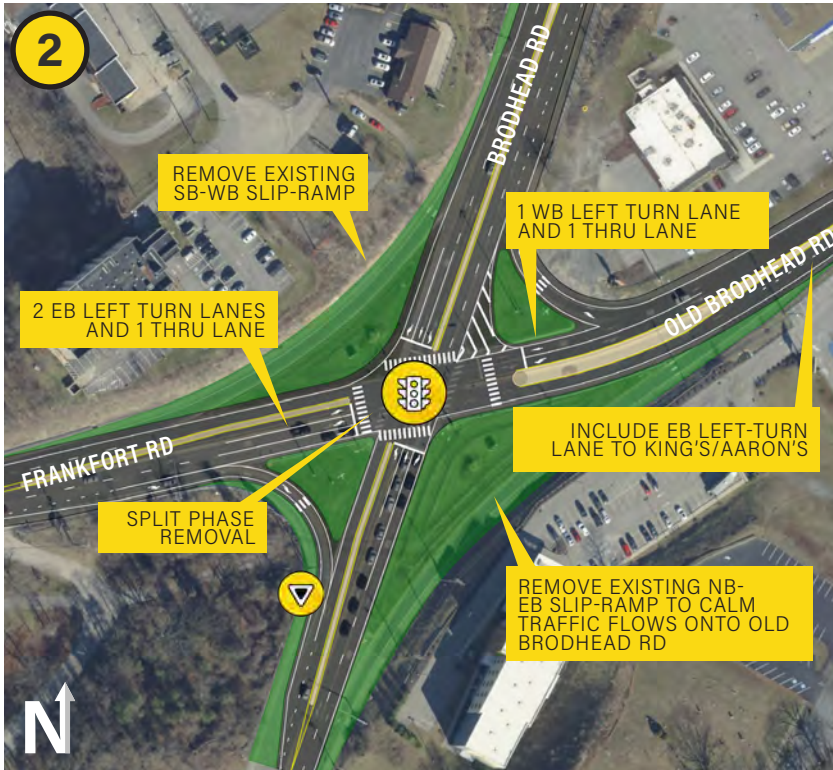
FRANKFORT ALT 2

The proposed two-lane hybrid roundabout significantly reduces congestion at this intersection. The proposed alternative fits within the existing right-of-way (ROW) and may facilitate access controls at other locations.

**Rough Order of Magnitude (ROM) Cost is defined by the following table.*

\$	≤\$500K
\$\$	>\$500K - \$2.5M
\$\$\$	>\$2.5M - \$5.5M
\$\$\$\$	>\$5.5M

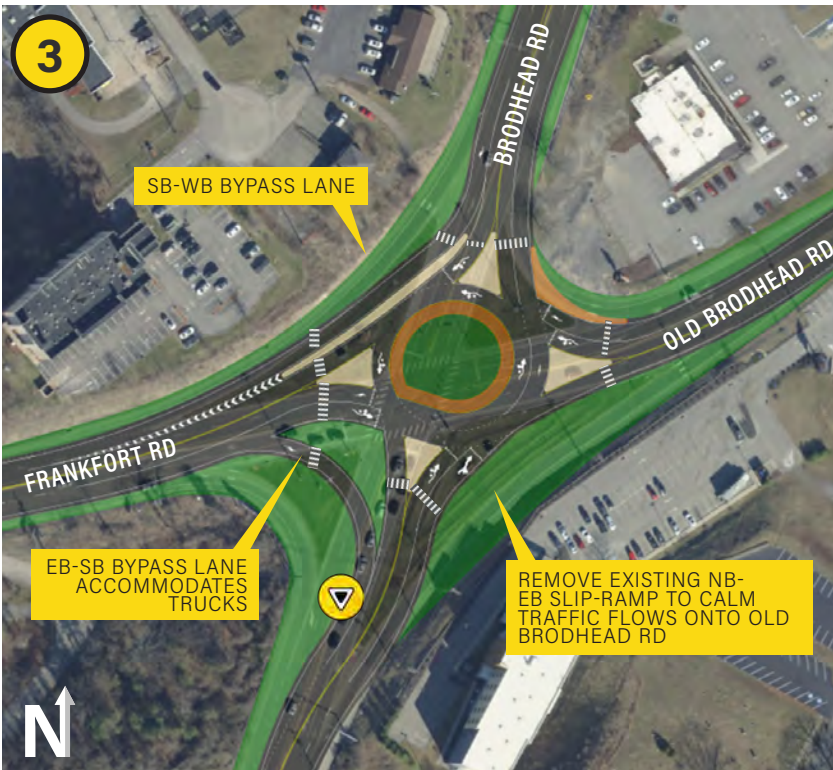
Frankfort Rd Alt 1



Split Phase Removal

GOALS ADDRESSED	
SAFETY BENEFITS	Moderate
OPERATIONAL BENEFITS	Moderate
ROUGH ORDER OF MAGNITUDE (ROM) COST*	\$\$\$
RIGHT OF WAY (ROW) IMPACT	None
ENVIRONMENT IMPACT	Nominal

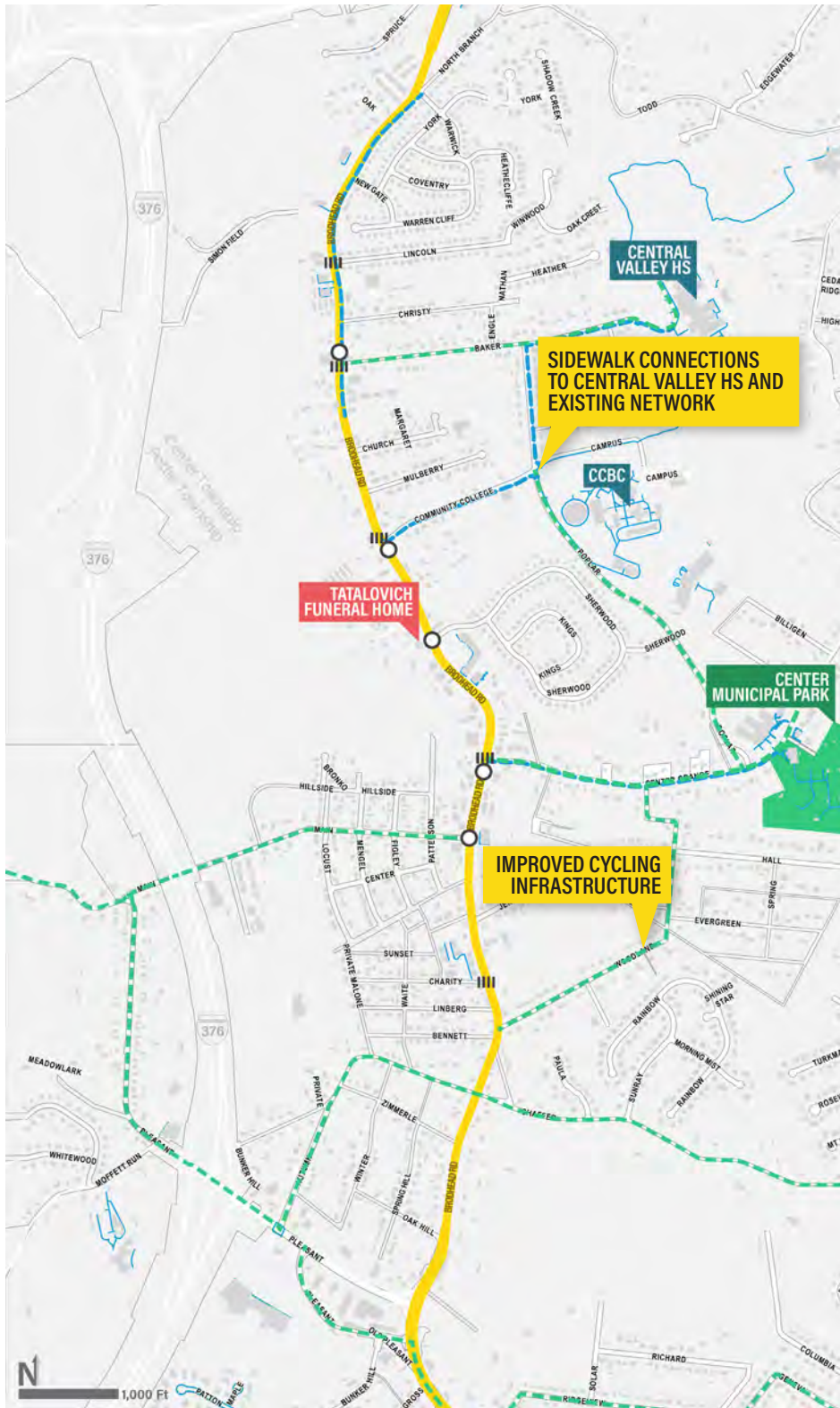
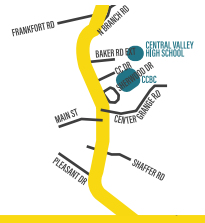
Frankfort Rd Alt 2



Roundabout

GOALS ADDRESSED	
SAFETY BENEFITS	Significant
OPERATIONAL BENEFITS	Significant
ROM COST	\$\$\$
ROW IMPACT	None
ENVIRONMENT IMPACT	Nominal

Center Township Residential and School Area



OVERVIEW

The Center Township Residential and School Area consists of Central Valley High School, Community College of Beaver County (CCBC) and Center Municipal Park. The area is primarily residential with houses clustered in forested suburban neighborhoods. The goal in this section of the corridor is to alleviate congestion and provide multimodal connections from Brodhead Road to the institutions in the area.

MULTIMODAL IMPROVEMENTS

Connecting the sidewalk network from Brodhead Road to CCBC Central Valley School complex would provide safe access to transit stops along Brodhead Road and provide alternate mobility options. Adding cycling infrastructure such as bike lanes, signage, shared lane markings, etc. to ancillary roads such as Baker Road, Center Grange Road, Main Street, Pleasant Drive and Shaffer Road will increase safety for road cyclists and enhance the East-West cycling network.

NORTH BRANCH ROAD

North Branch Road intersects Brodhead Road at a sharp angle and creates a difficult southbound left-turn scenario for motorists. The suggested alternative would require additional outreach and a detailed study prior to implementation.

BAKER ROAD

Improvements at this intersection, depending on the results of further study, could include a traffic signal at Baker Road to make entering and exiting the adjacent businesses and neighborhoods safer and more organized and turn lanes. Crosswalks would increase pedestrian safety.

CENTER GRANGE ROAD

A traffic signal and turn lanes at Center Grange Road would alleviate unsafe turns onto and from Brodhead Road.

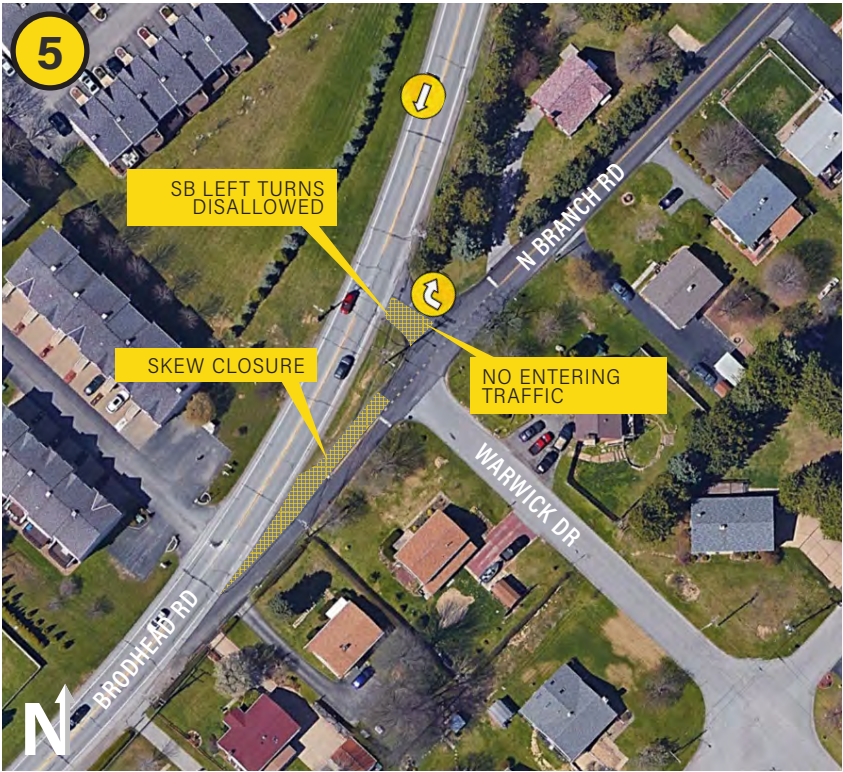
PLEASANT DRIVE ALT 1

Pleasant Drive is a major arterial road that intersects Brodhead Road at almost 90 degrees. Truck traffic and heavy volumes of traffic use this intersection to get to and from the nearby I-376 interchange. Alternative 1 suggests a lane reconfiguration and a signal installation. This alternative would increase the delay on Brodhead Road but would operate more efficiently overall. The concept for this alternative fits inside the existing right-of-way. Pedestrian crosswalks, signage, and walk signals are included in this concept.

PLEASANT DRIVE ALT 2

Alternative 2 proposes constructing a roundabout to handle heavy volumes of traffic. Like Alternative 1, this alternative would increase the delay on Brodhead Road but would operate more efficiently overall. The roundabout would fit within the existing ROW and would include an optional southbound/ westbound bypass. Both options would require a detailed study and benefit-cost analyses.

North Branch Road





Right In; Right Out	
GOALS ADDRESSED	
SAFETY BENEFITS	Moderate
OPERATIONAL BENEFITS	Moderate
ROM COST	\$
ROW IMPACT	Nominal
ENVIRONMENT IMPACT	Nominal





Baker Road



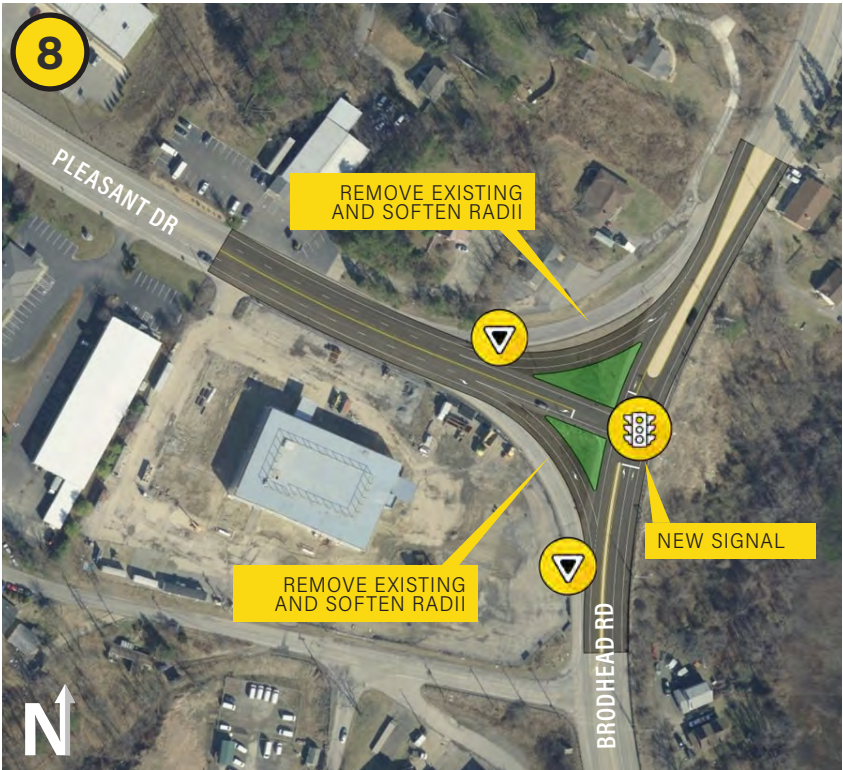
Turn Lanes and Signal Study	
GOALS ADDRESSED	 
SAFETY BENEFITS	Moderate
OPERATIONAL BENEFITS	Moderate
ROM COST	\$\$
ROW IMPACT	Moderate
ENVIRONMENT IMPACT	Nominal

Center Grange Road



Signal and Turn Lane	
GOALS ADDRESSED	 
SAFETY BENEFITS	Moderate
OPERATIONAL BENEFITS	Moderate
ROM COST	\$\$
ROW IMPACT	Moderate
ENVIRONMENT IMPACT	Nominal

Pleasant Drive Alt 1



Lane Reconfiguration w/Signal

GOALS ADDRESSED	
SAFETY BENEFITS	Moderate
OPERATIONAL BENEFITS	Significant
ROM COST	\$\$
ROW IMPACT	None
ENVIRONMENT IMPACT	Nominal

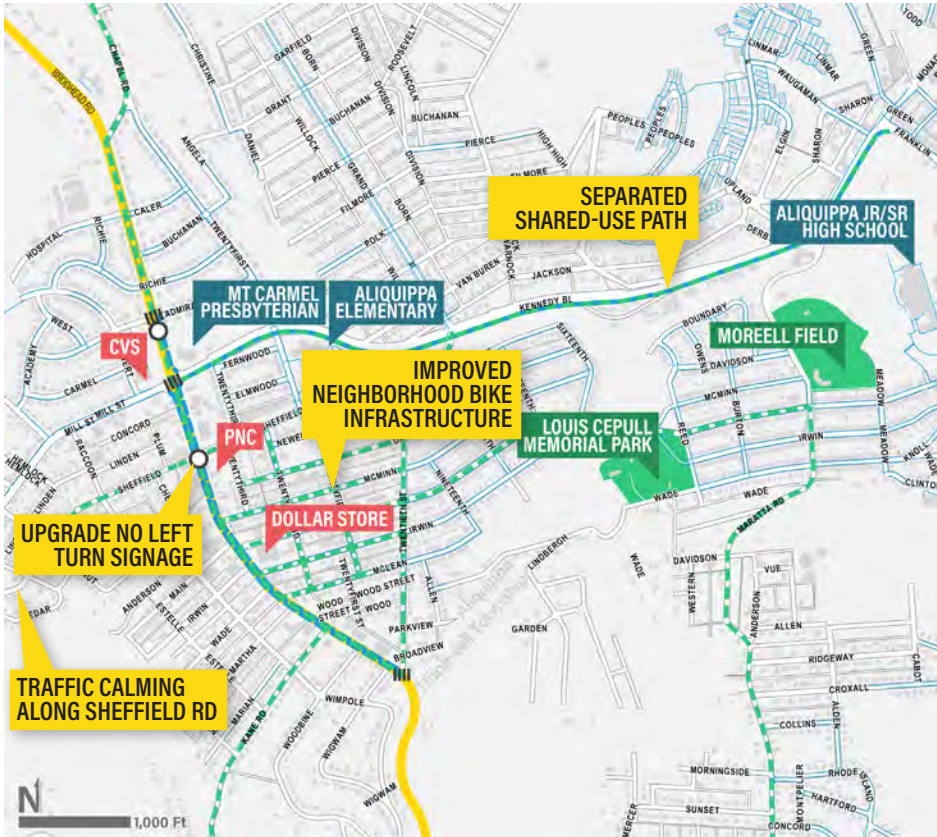
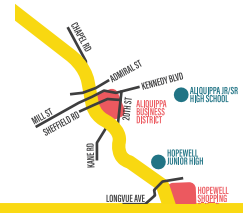
Pleasant Drive Alt 2



Roundabout w/Bypass Lanes

GOALS ADDRESSED	
SAFETY BENEFITS	Moderate
OPERATIONAL BENEFITS	Significant
ROM COST	\$\$
ROW IMPACT	None
ENVIRONMENT IMPACT	Nominal

Aliquippa Commercial Area



OVERVIEW

The Aliquippa Commercial area is a neighborhood business district with a grid street network. Its dense urban fabric and commercial services make the area a candidate for pedestrian/multimodal improvements. The turn-of-the-century residential area surrounding the business district has narrow side-yard setbacks and few driveways. A sidewalk network exists throughout the residential area, but the limited shoulder and sidewalks along Brodhead Road preclude safe pedestrian travel in the area. Unregulated driveway access causes frequent backups onto Brodhead Road. A potential turn lane at Sheffield Road was evaluated and not carried forward due to concern regarding land use issues that could impact adjacent businesses' parking.

MULTIMODAL IMPROVEMENTS

Improving sidewalks along Brodhead Road from Admiral Street to 20th Street would address hazards pedestrians now encounter traveling between stores. High-visibility crosswalks and signage would calm traffic and improve pedestrian travel. Transit improvements such as bus pull-outs would help encourage transit ridership and increase safety for riders. Shared lane markings and signage through the neighborhood streets could improve cyclist access off of Brodhead Road. A shared path along Kennedy Blvd would connect Mill St to Aliquippa Jr/Sr High School on Franklin Avenue.

CHAPEL ROAD

Chapel Road intersects Brodhead Road at a difficult angle. North of Chapel Road, Brodhead Road curves to the west, which creates sight-line issues and makes turning left southbound onto Brodhead Road difficult. By eliminating the skew and realigning Chapel Road, sight-line issues are mitigated and turning traffic becomes safer. A southbound left turn lane on Brodhead Road would allow traffic to continue while vehicles turn onto Chapel Road. Sidewalks on at least one side of Chapel Road would be beneficial to residents in this area.

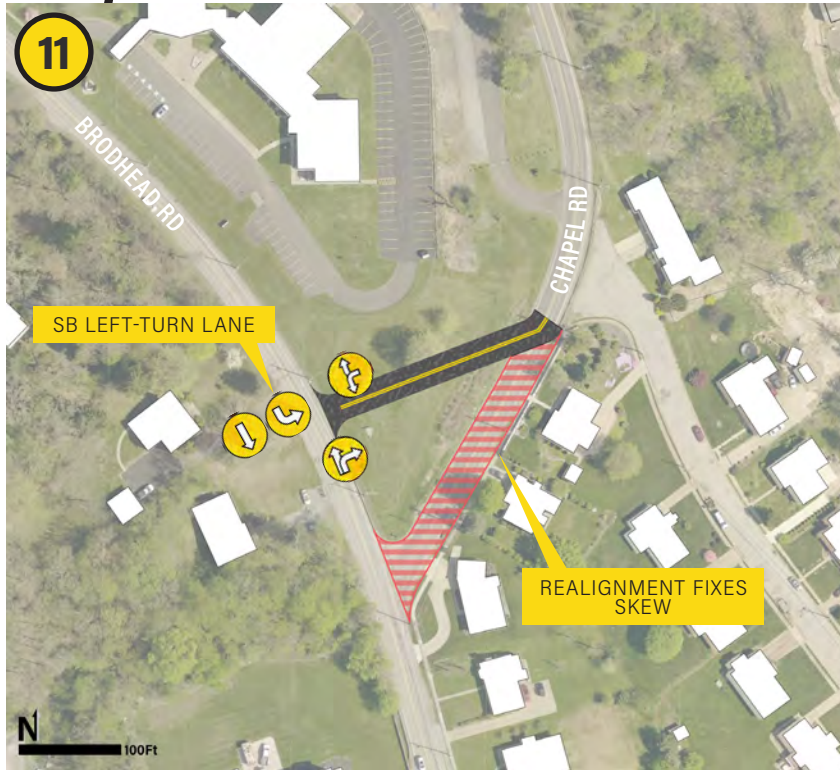
ADMIRAL STREET

A bus pull-out with bus stop amenities at Admiral Street would provide transit riders safe access to the adjacent commercial properties and allow traffic to continue while the bus is picking up passengers. This alternative requires some ROW from Wendy's.

20TH STREET

A blind curve, steep grade, and vegetation on the west side of Brodhead Road limit sight distance. Proposed improvements consist of lighted chevrons, wider longitudinal markings, and guide rail delineation. Clearing vegetation would also improve sight lines.

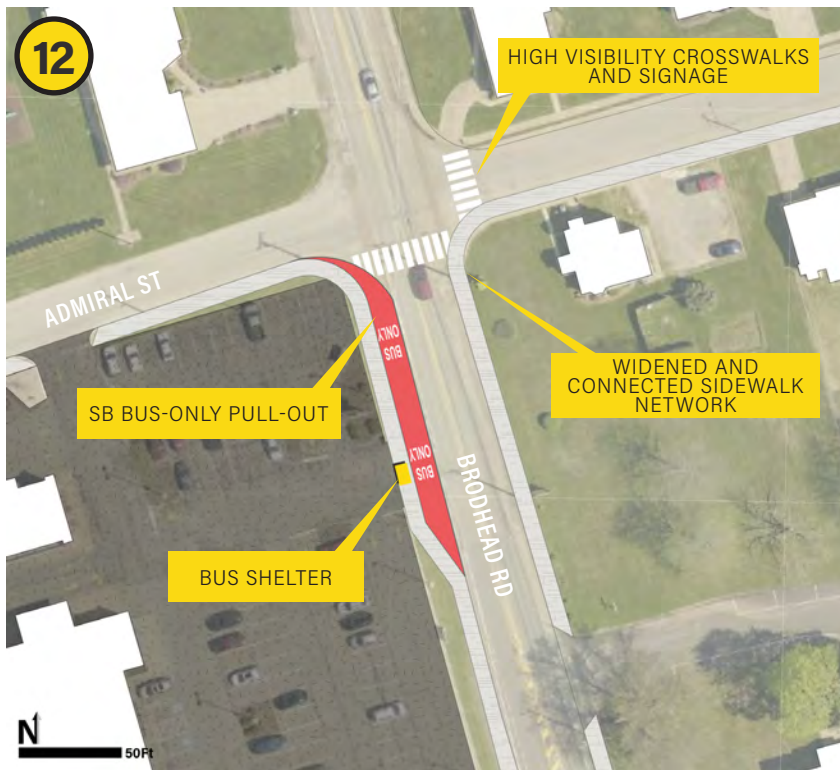
Chapel Road



SB Left Turn Lane and Realignment

GOALS ADDRESSED	
SAFETY BENEFITS	Nominal
OPERATIONAL BENEFITS	Nominal
ROM COST	\$\$
ROW IMPACT	Moderate
ENVIRONMENT IMPACT	Nominal

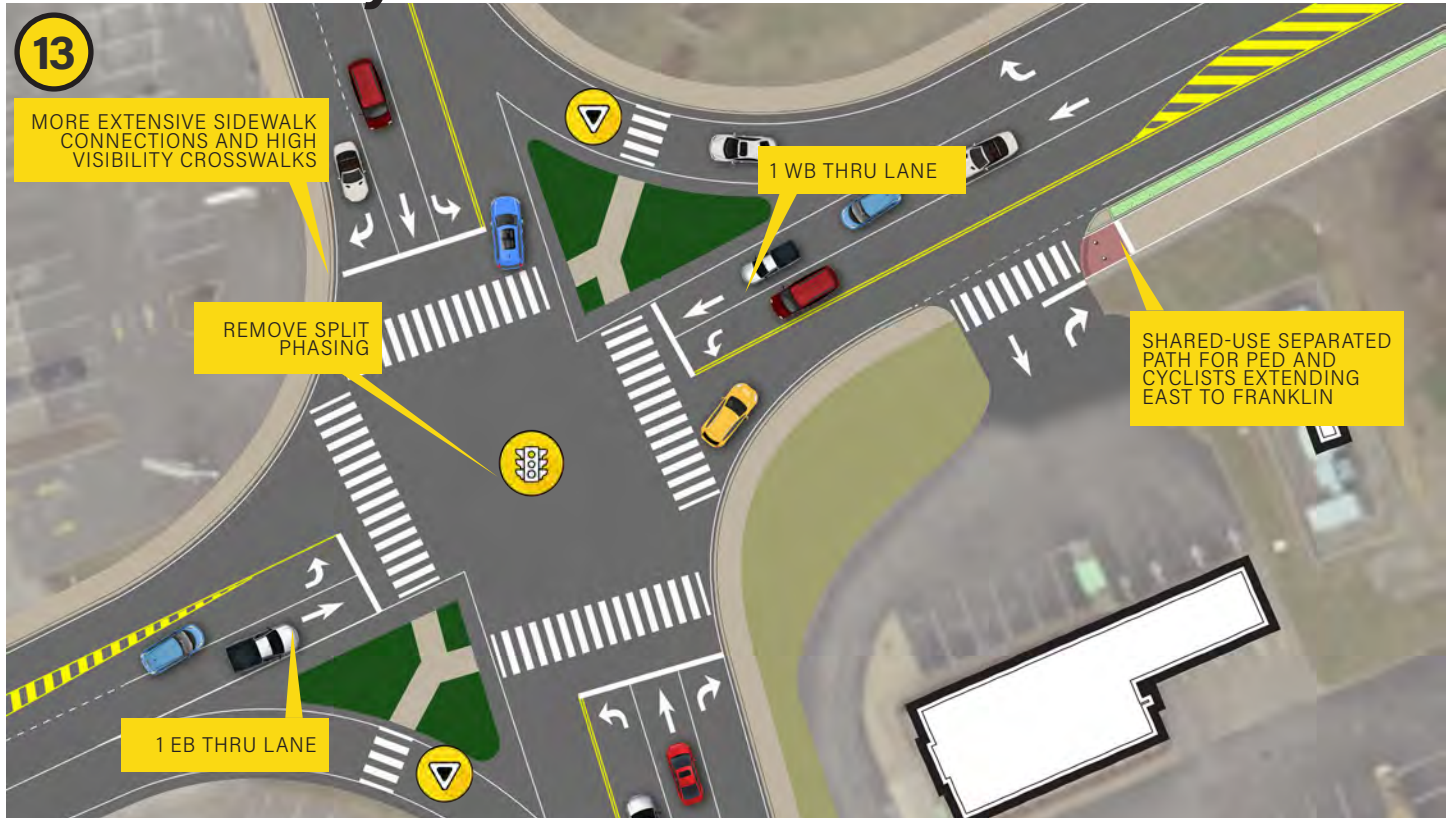
Admiral Street



Multimodal Improvements

GOALS ADDRESSED	
SAFETY BENEFITS	Moderate
OPERATIONAL BENEFITS	Nominal
ROM COST	\$
ROW IMPACT	Moderate
ENVIRONMENT IMPACT	Nominal

Mill St/Kennedy Blvd Alt 1



MILL STREET/ KENNEDY BOULEVARD ALT 1

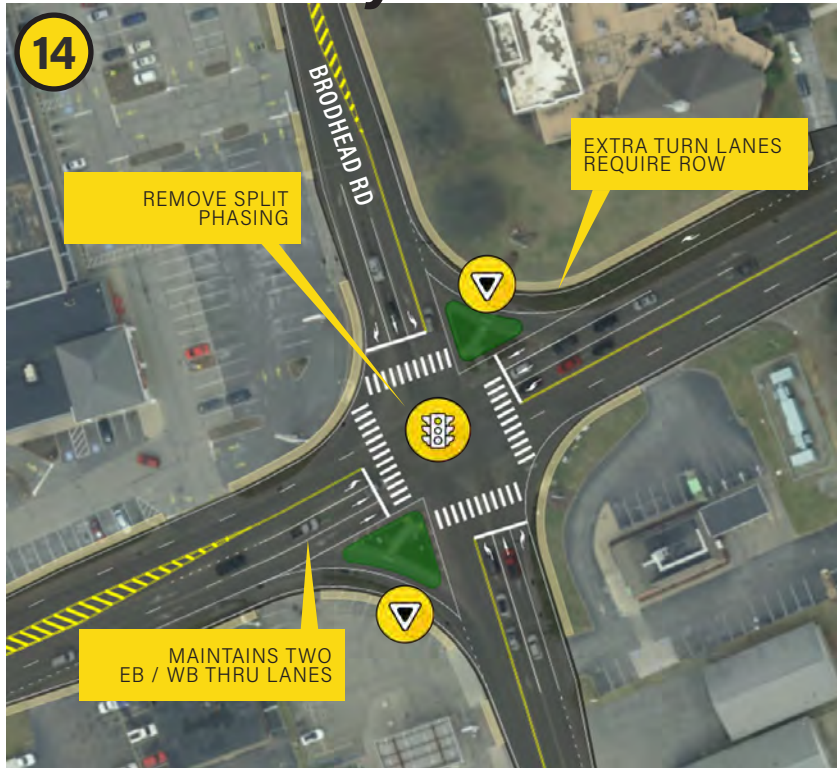
The Kennedy Boulevard and Mill Street intersection is a busy intersection in the heart of the Aliquippa commercial area. With businesses such as CVS, Huntington Bank, gas stations, and institutions such as Mt. Carmel Evangelical Presbyterian Church, the intersection sees high vehicle and pedestrian traffic. This alternative proposes a road diet that would calm traffic and enhance pedestrian safety. One eastbound and one westbound through lane coupled with one left turn lane on each side would improve operations and calm speeds. A ten-foot shared-use path on the southeast side of Kennedy Boulevard would provide safe, separated pedestrian and cyclist access all the way to Franklin Avenue near the Aliquippa Junior/Senior High School complex. Phase 1A of this alternative would focus at the intersection. Phase 1B would encompass all other improvements to Franklin Avenue.

MILL STREET/ KENNEDY BOULEVARD ALT 2

This concept would also remove split phasing, but would keep through-lanes and add turn lanes as illustrated on the following page. This alternative, like alternative 1, calls for improving sidewalks in all directions.

Road Diet	
GOALS ADDRESSED	
SAFETY BENEFITS	Moderate
OPERATIONAL BENEFITS	Moderate
ROM COST	\$\$\$
ROW IMPACT	Nominal
ENVIRONMENT IMPACT	Nominal

Mill St/Kennedy Blvd Alt 2



Additional Turn Lanes

GOALS ADDRESSED	
SAFETY BENEFITS	Moderate
OPERATIONAL BENEFITS	Significant
ROM COST	\$\$
ROW IMPACT	Moderate
ENVIRONMENT IMPACT	Nominal

20th Street



Clear Vegetation & Install Chevrons

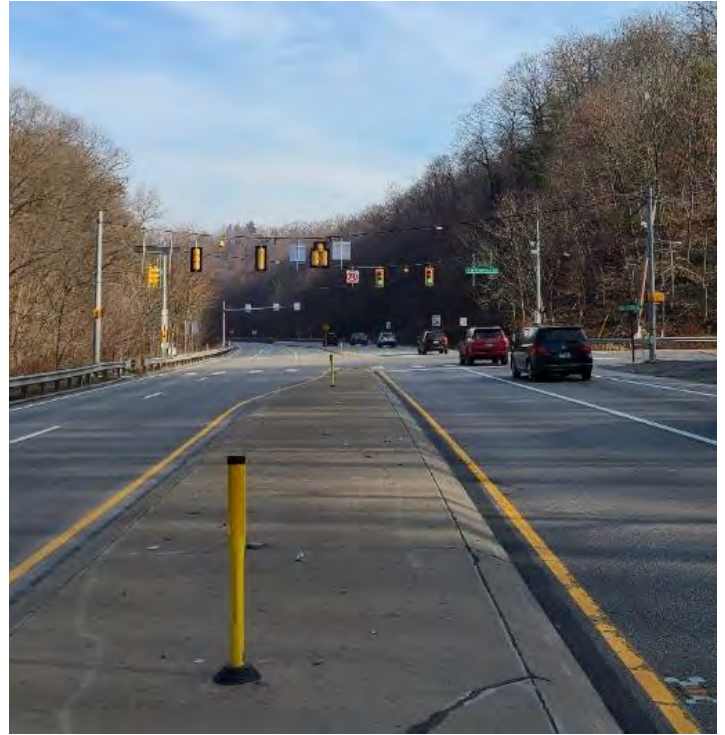
GOALS ADDRESSED	
SAFETY BENEFITS	Moderate
OPERATIONAL BENEFITS	Nominal
ROM COST	\$
ROW IMPACT	Nominal
ENVIRONMENT IMPACT	Nominal

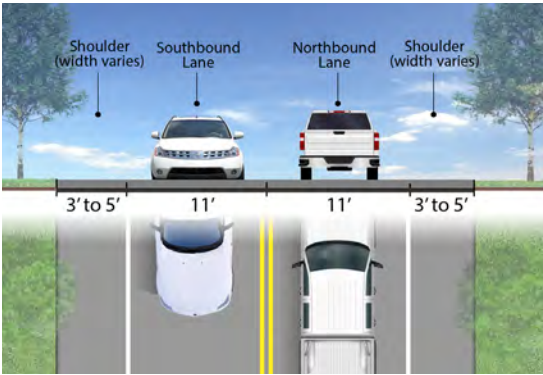
Potential Street Sections

The images to the right show existing typical street sections along the Brodhead Road corridor. Narrow shoulders inhibit safe pull-off and preclude pedestrian travel. Clearly delineated shoulders and sidewalks are lacking along many stretches of Brodhead Road. An existing cross section along Brodhead Road typically has unmaintained shoulders from two to five feet in width. Drive lanes and turn lanes are ten to 12 feet wide. Sidewalks along Brodhead are sparse, unconnected, and are roughly four feet wide.

The graphics on the following page depict typical street sections given a range of rights-of-way. During alternatives development, the public, stakeholders and Steering Committee discussed where various options would be preferred, given the challenges of carving out a wider right-of-way into a built-up space given the constraints of existing utility poles, structures, topography and/or other challenges. Widening through such areas could require significant cost and impact.

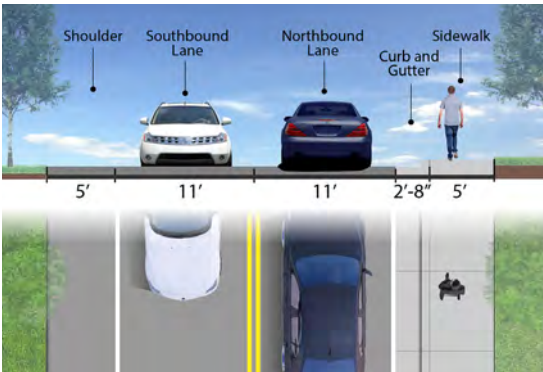
In Aliquippa, the goal became finding enough space to install shoulders and sidewalk along at least one side of Brodhead Road, which would require 37 feet of right-of-way.





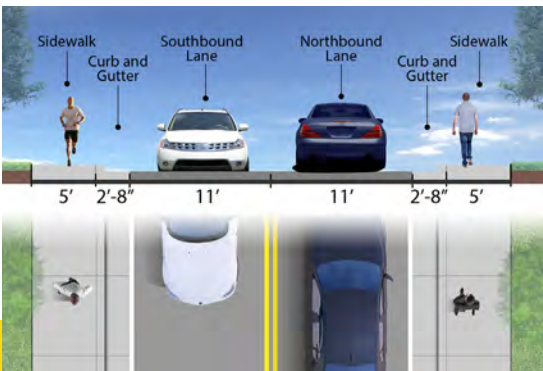
Consistent Shoulders

- Approx. 32' of ROW
- 3' - 5' Shoulder Width
- 11' Drive Lanes



Shoulders + 1 Sidewalk

- Approx. 37' of ROW
- At least 5' Sidewalk
- 5' Shoulder Width
- 2' 8" Gutter Width
- 11' Drive Lanes



2 Sidewalks

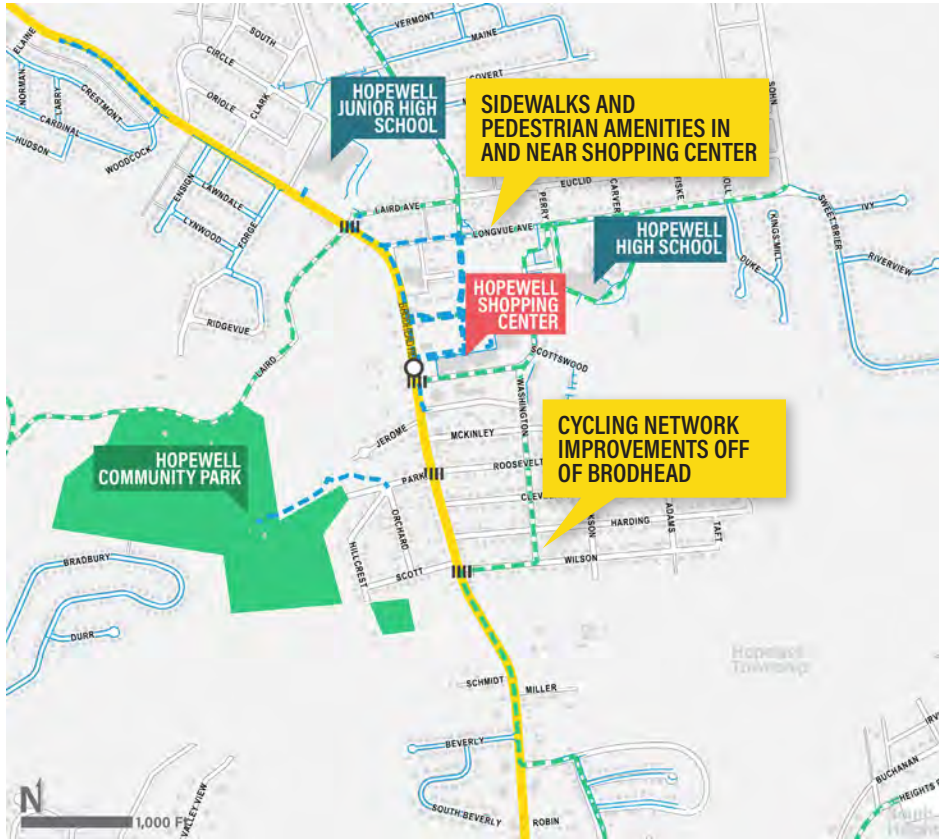
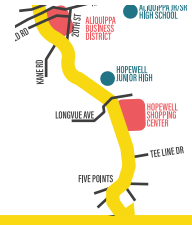
- Approx. 44' of ROW
- Two 5' Sidewalks
- 2' 8" Gutter Width
- 11' Drive Lanes



Turn Lane + 1 Sidewalk

- Approx. 54' of ROW
- Optional 5' Sidewalk
- 2' 8" Gutter Width
- 11' Drive Lanes
- 10' Turning Lane

Hopewell Township School and Shopping Center Area



OVERVIEW

This area is a small neighborhood business district. The shopping center consists of a few businesses with ample amounts of parking. Other nearby businesses have unrestricted driveway access to Brodhead Road. Cars backing up from parking spaces back into the busy corridor, slowing traffic and creating unexpected vehicle conflicts.



MULTIMODAL IMPROVEMENTS

This area of Hopewell would benefit from bike infrastructure such as shared lane markings and signage through residential side streets. This addition would connect the Hopewell Community Park, and Junior and Senior High Schools to the surrounding neighborhoods and shopping center without having to bike on Brodhead Road. Proposed sidewalks and bike lanes in the Hopewell Shopping Center could facilitate multimodal travel to those businesses. Crosswalks at Laird, Roosevelt, and Wilson Avenues would connect neighborhoods and pedestrians across Brodhead Road.

HOPEWELL SHOPPING CENTER

This alternative establishes defined entrances for the shopping center at Cherry Way on Brodhead Road and Washington Street on Longvue Avenue. Bike lanes and separated sidewalks line the two-lane roads that flow through a traffic circle. Sidewalks weave their way through existing parking lots and landscaped medians separate rows of parking stalls. Trees and greenery abate stormwater and reduce impervious surfaces on site. A traffic signal at Cherry Way would regulate the flow of traffic into and out of the shopping center. Driveway access along Brodhead Road is controlled and

funneled through roads via Longvue Avenue or Washington Street. Cherry Way would become a public street, thus a public-private partnership with the Township and property owners will need to be explored. Further study is needed to determine traffic impacts, and implementation of this plan would require specific outreach to property owners and residents along Brodhead Road and Longvue Avenue.

Hopewell Shopping Center

17

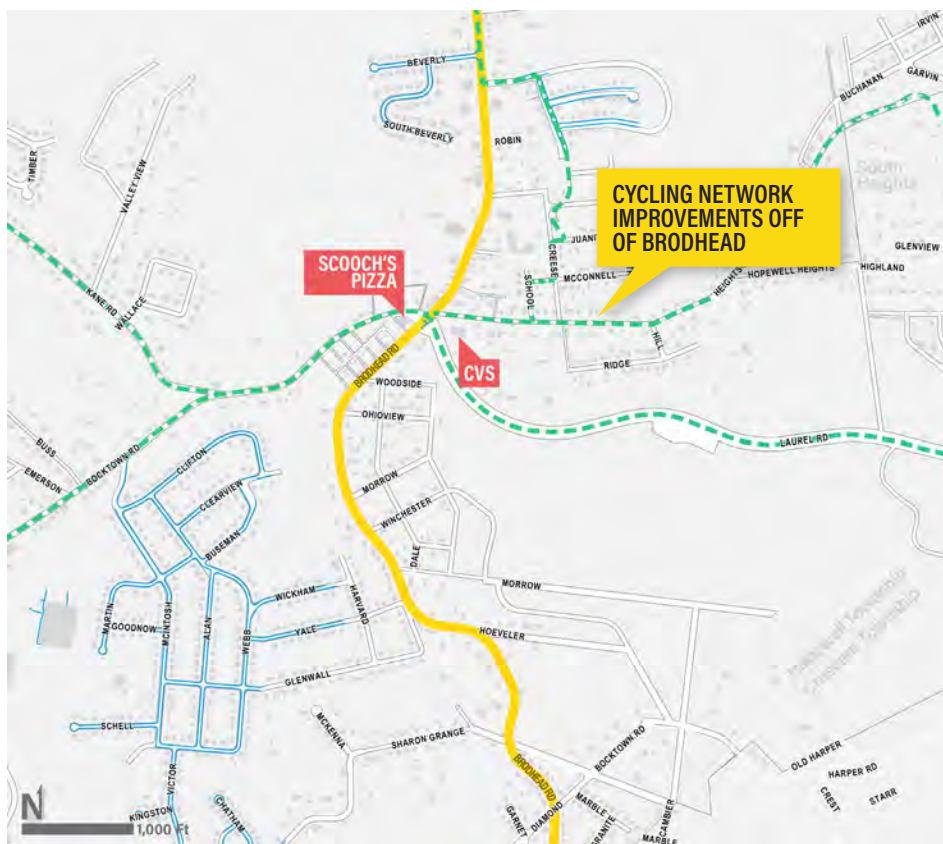


Hopewell Shopping Center

GOALS ADDRESSED	
SAFETY BENEFITS	Moderate
OPERATIONAL BENEFITS	Significant
ROM COST	\$\$\$
ROW IMPACT	N/A
ENVIRONMENT IMPACT	N/A



Five Points Area



OVERVIEW

Five Points is the intersection of Brodhead Road, Gringo Road, Laurel Road, and Heights Road. The five-leg intersection imposes traffic challenges for the area, and it was the most frequent subject of public input. Comments cited congestion and frequent accidents as major issues for the area. The study also evaluated a southbound left turn lane onto Tee Line Drive from Brodhead Road. Advanced intersection warning signs/pavement markings as well as nighttime retro-reflectivity improvements for Yale Drive, Ohioview Avenue, and Morrow Avenue would improve safety.

MULTIMODAL IMPROVEMENTS

The Five Points intersection is part of one of the most heavily biked areas along the corridor. Road cyclists frequently use Laurel Road and Gringo Road as a popular route. This study proposes improving cycling infrastructure on Gringo Road, Laurel Road, Heights Road, Kane Road, and Casey Drive. Nearby neighborhoods can be connected to the cycling network by off-Brodhead Road linkages on School Street and Casey Drive. Improvements could include signage, wayfinding, shared lane markings, and improved shoulders.

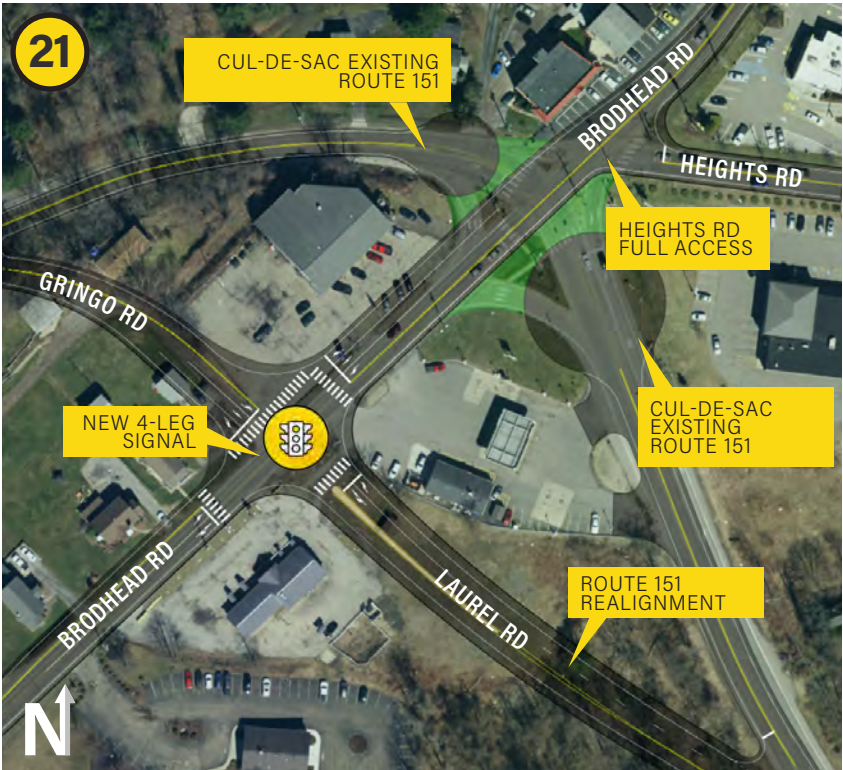
FIVE POINTS ALT 1

Alternative 1 for the Five Points intersection realigns Route 151 and closes off the existing Gringo Road and Laurel Road termini. This would create a four-way intersection while providing full access to Heights Road. The general impacts and rough order of magnitude cost of this alternative are less than those posed by alternative 2.

FIVE POINTS ALT 2

Alternative 2 proposes a quadrant roadway design with a Route 151 underpass under Brodhead Road. While this alternative would be expensive to construct and operates with slightly less efficiency compared to Alternative 1, it offers benefit for through traffic on Route 151. The cycling routes in the area would need to be rerouted from Gringo Road to Yale Drive or another viable option. Both alternatives require further study to fully understand the costs, land-use issues, ROW impacts, and other consequences of a major capital investment project.

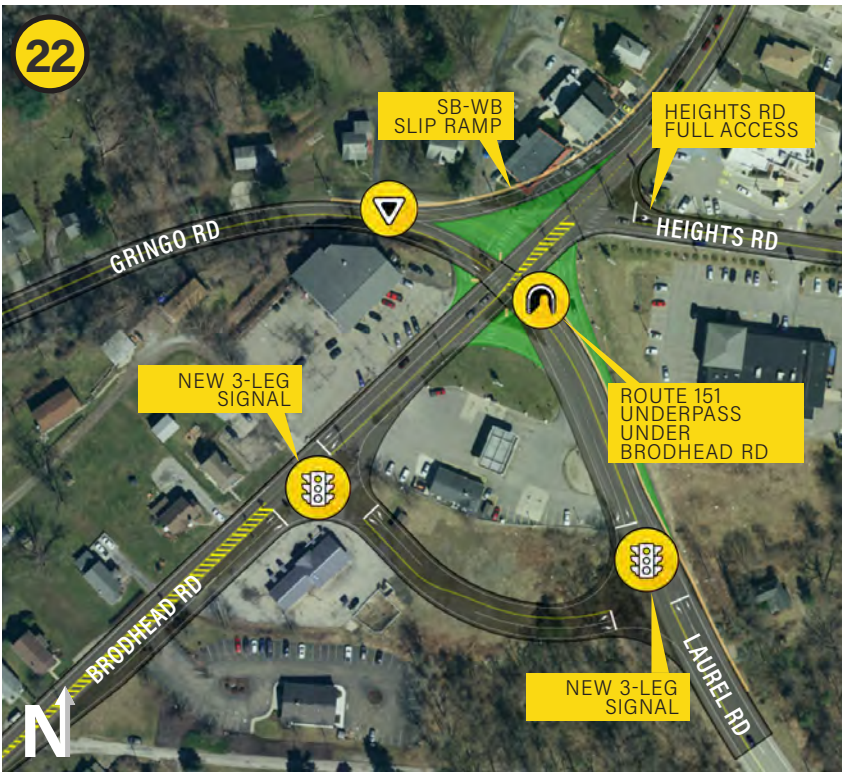
Five Points Alt 1



Route 151 Realignment

GOALS ADDRESSED	
SAFETY BENEFITS	Moderate
OPERATIONAL BENEFITS	Moderate
ROM COST	\$\$\$\$
ROW IMPACT	Significant
ENVIRONMENT IMPACT	Moderate

Five Points Alt 2



Quadrant Roadway w/Overpass

GOALS ADDRESSED	
SAFETY BENEFITS	Significant
OPERATIONAL BENEFITS	Significant
ROM COST	\$\$\$\$
ROW IMPACT	Significant
ENVIRONMENT IMPACT	Moderate

Policy Recommendations

LAND USE AND THE BUILT ENVIRONMENT

Municipalities within the study area wield authority over most land use and development decisions. Accordingly, local regulations and decisions will profoundly shape the future development and redevelopment of the buildings and spaces along the Brodhead Road corridor. These controls influence where traffic is generated, where it flows and how the public realm serves pedestrians and cyclists. This report recommends that leaders and staff in Aliquippa City, Center Township, and Hopewell Township consider building the following provisions into their land use and development ordinances and policies:

BUILD AND REQUIRE SIDEWALKS

Sidewalks should exist in all urban contexts. Areas with a moderate density of commercial activity generate pedestrian activity, and this is especially the case where dense neighborhoods are nearby. Sidewalk installation, improvement and connection is a priority in segments where it appears to be most needed today to increase the safety and comfort of walking among destinations. This includes higher-density residential neighborhoods, commercial areas and last-mile connections to high-traffic transit stops.

Capital funds or grants can jump-start sidewalk connections in priority areas, especially where the problem isn't as simple as pouring concrete. In areas of Aliquippa, for instance, sidewalk projects may require acquiring right-of-way, relocating utility poles, adding or improving ADA-compliant curb ramps and pedestrian-activated signals, and painting high-visibility crosswalks.

Existing private parking lots could be reconfigured to more safely and comfortably accommodate pedestrian routes. This is something municipalities can negotiate as properties are redeveloped as well as build into parking lot design standards in the zoning ordinance.

Sidewalks *per se* do not need to be required for every land development, but local land development regulations should establish conditions that require sidewalk installation and standards that guarantee safe, accessible pedestrian connections.

REFINE ACCESS MANAGEMENT

A common complaint about the study-area extent of Brodhead Road is confusion and safety problems caused by the large number of driveways and ill-defined, curbless stretches that represent potential conflict points. Communities can address this problem by adding zoning standards to limit curb cuts for specified road types per expanse of linear frontage. They can also encourage or require adjacent commercial properties to provide cross-access. Increasing the connection routes between adjacent parcels through access driveways, stub-outs and cross-access easements will translate to fewer vehicles pulling onto and off of Brodhead Road.

RECALIBRATE PARKING STANDARDS

Communities across the country are beginning to re-evaluate zoning ordinance parking minimums, which are often arbitrary figures based on decades-old traffic generation estimates absent context. Requiring too much parking not only drives up the cost of development or redevelopment; it creates large, paved expanses that unnecessarily exacerbate stormwater issues and detract from the walkability and curb appeal of a place. Municipalities should consider abandoning parking minimums to let the market dictate what is provided, or at least reviewing and adjusting the minimums in response to real-life supply and demand conditions.

APPLY A COMPLETE STREETS APPROACH

Municipalities should consider creating and adopting a local Complete Streets policy to provide high-level direction that prioritizes access and safety for all users over high speeds for motor vehicles. Such policies are designed to balance safety and convenience for everyone on the road. They respond to unique community conditions, meaning that an urban Complete Street will look very different from one in a rural area. Fully implementing the policy will require carrying Complete Streets concepts consistently into local plans and processes.

CO-LOCATE JOBS, HOUSEHOLDS AND TRANSIT

Public and stakeholder outreach revealed a common desire for safer and more comfortable pedestrian connections between jobs and neighborhoods — better walkability. Improving routes is only one side of achieving this end. Local land use policies should support integrated mixed-use places in built-up areas with established transit service, broadening options for those who lack vehicle access or would make use of active transportation modes.

Implementation

WHERE THE RUBBER HITS THE ROAD

The following matrix summarizes the improvement alternatives presented in the report, suggesting parameters for each that can inform how projects can take shape. Some relatively simple “low-hanging fruit” projects can get underway to improve the Brodhead Road corridor with minimal further review and relatively little funding. However, some projects, such as the high-priority reconfiguration of the Five Points intersection, will require significant time and investment.

Actual project timeframes, priorities and funding decisions will depend on factors beyond the scope of this study, such as agency priorities, funding availability, local/regional developments and associated infrastructure needs, future feasibility or conceptual design considerations and overarching competition among local, regional and statewide transportation goals.

POTENTIAL FUNDING SOURCES

The matrix refers to the following funding mechanisms that could apply to various alternatives:

SPC Transportation Improvement Program (TIP) Base Funds:

- Federal Surface Transportation Program (STP)
- Federal Highway Safety Improvement Program (HSIP)
- Federal Transportation Alternatives Set-Aside (TA)
- Federal Congestion Air Quality and Mitigation (CMAQ)
- Federal Bridge Off System (BOF)
- SPC Regional Traffic Signal Program (RTSP)
- Livability through Smart Transportation (SMART)
- State Highways (SH)
- State Bridge Funds (SB)

Other Federal

- USDOT Discretionary Programs (FEDDIS)
- Special Federal Earmark (SXF)

Other State

- Automated Red-Light Enforcement Program (ARLE)
- PennDOT Green-Light-Go (GLG)
- Pennsylvania Infrastructure Bank (PIB)
- DCED Multimodal Transportation Fund (DMTF)
- PennDOT Multimodal Transportation Fund (PMTF)
- DCNR Community Conservation Partnership Program (C2P2)

Other

- PennDOT District A-409 Maintenance Funds (A-409)
- County Act 13
- Municipal Liquid Fuels Funds (MLF)
- Local funding (LF)
- Private funding (PVF)

CENTER TOWNSHIP COMMERCIAL AREA						
ID	IMPROVEMENT CONCEPT	LEAD AGENCY / COORDINATION REQUIRED	POTENTIAL FUNDING SOURCES	TIMEFRAME	PRIORITY	ESTIMATED COST
1	Multimodal improvements	Township / PennDOT, business owners	TA, DMTF, PMTF, SMART, LF	Short-term	High	\$1,550,000
2	Frankfort Road Alt 1 (Split phase removal)	Township / PennDOT, business owners	STP, SH, PIB, DMTF, RTSP, GLG, ARLE, LF	Long-term	Medium	\$2,850,000
3	Frankfort Road Alt 2 (Roundabout)	Township / PennDOT, business owners	STP, HSIP, CMAQ, SH, PIB, DMTF, PMTF, LF	Long-term	Medium	\$5,100,000

CENTER TOWNSHIP RESIDENTIAL AND SCHOOL AREA						
ID	IMPROVEMENT CONCEPT	LEAD AGENCY / COORDINATION REQUIRED	POTENTIAL FUNDING SOURCES	TIMEFRAME	PRIORITY	ESTIMATED COST
4	Multimodal improvements	Township / PennDOT	TA, SMART, DMTF, PMTF, LF	Short-term	High	\$2,200,000
5	North Branch Road (Right in/right out)	Township / PennDOT	STP, SH, PIB, LF	Short-term	Medium	\$30,000
6	Baker Road (Signal and turn lane)	Township / PennDOT	STP, SH, PIB, DMTF, PMTF, LF	Mid-term	Medium	\$1,150,000

Timeframes were estimated as short term = less than six years, mid-term = 6-12 years, long-term = greater than 12 years

CENTER TOWNSHIP RESIDENTIAL AND SCHOOL AREA (CONTINUED)

<i>ID</i>	<i>IMPROVEMENT CONCEPT</i>	<i>LEAD AGENCY / COORDINATION REQUIRED</i>	<i>POTENTIAL FUNDING SOURCES</i>	<i>TIMEFRAME</i>	<i>PRIORITY</i>	<i>ESTIMATED COST</i>
7	Center Grange Road (Signal and turn lane)	Township / PennDOT	STP, SH, PIB, DMTF, PMTF, LF	Short-term	High	\$1,050,000
8	Pleasant Drive Alt 1 (Lane reconfiguration with signal)	Township / PennDOT	STP, SH, PIB, DMTF, PMTF, LF	Long-term	Medium	\$1,950,000
9	Pleasant Drive Alt 2 (Roundabout with bypass lanes)	Township / PennDOT	STP, HSIP, CMAQ, SH, PIB, DMTF, PMTF, LF	Long-term	Medium	\$2,350,000

ALIQUIPPA COMMERCIAL AREA

<i>ID</i>	<i>IMPROVEMENT CONCEPT</i>	<i>LEAD AGENCY / COORDINATION REQUIRED</i>	<i>POTENTIAL FUNDING SOURCES</i>	<i>TIMEFRAME</i>	<i>PRIORITY</i>	<i>ESTIMATED COST</i>
10	Multimodal improvements	BCTA, City / PennDOT	TA, SMART, DMTF, PMTF, LF	Short-term	High	\$2,800,000
11	Chapel Road (Southbound left turn lane and realignment)	City / PennDOT	STP, SH, PIB, DMTF, PMTF, LF	Mid-term	Low	\$650,000
12	Admiral Street (Multimodal improvements)	City of Aliquippa, BCTA / PennDOT	TA, SMART, DMTF, PMTF, LF	Short-term	High	\$350,000
13 (1A)	Mill Street/Kennedy Blvd Alt 1A (Brodhead Rd Intersection)	PennDOT / BCTA, City	STP, HSIP, CMAQ, SH, PIB, DMTF, PMTF, LF	Long-term	High	\$1,800,000
13 (1B)	Mill Street/Kennedy Blvd Alt 1B (Road Diet/Multiuse Path)	PennDOT / BCTA, City	STP, HSIP, CMAQ, SH, PIB, DMTF, PMTF, LF	Long-term	High	\$4,850,000
14	Mill Street/Kennedy Blvd Alt 2 (Additional turn lanes)	City, County / PennDOT	STP, SH, PIB, LF	Long-term	High	\$2,050,000
15	20th Street (Clear vegetation, install chevrons)	PennDOT / City	A-409	Short-term	High	\$250,000

HOPEWELL TOWNSHIP SCHOOL AND SHOPPING AREA

<i>ID</i>	<i>IMPROVEMENT CONCEPT</i>	<i>LEAD AGENCY / COORDINATION REQUIRED</i>	<i>POTENTIAL FUNDING SOURCES</i>	<i>TIMEFRAME</i>	<i>PRIORITY</i>	<i>ESTIMATED COST</i>
16	Multimodal improvements	Township / PennDOT	TA, DMTF, PMTF, SMART, LF	Mid-term	Medium	\$1,950,000
17	Hopewell Shopping Center (Signal at Cherry, internal improvements and streetscape)	Township / Property owner, HASD, neighbors, businesses	DMTF, LF, PVF	Mid-term	Medium	\$5,350,000

FIVE POINTS AREA

<i>ID</i>	<i>IMPROVEMENT CONCEPT</i>	<i>LEAD AGENCY / COORDINATION REQUIRED</i>	<i>POTENTIAL FUNDING SOURCES</i>	<i>TIMEFRAME</i>	<i>PRIORITY</i>	<i>ESTIMATED COST</i>
18	Tee Line Drive (turn lane)	Township / PennDOT	STP, SH, PIB, DMTF, PMTF, LF	Short-term	Low	\$250,000
19	Advance warning improvements	Township	HSIP, MLF, LF	Short-term	Medium	\$250,000
20	Bocktown Road (sight distance)	Township	MLF, LF	Short-term	Medium	\$100,000
21	Five Points Alt 1 (Route 151 realignment)	County, Township / PennDOT	STP, SH, CMAQ, STP, SH, PIB	Long-term	High	\$10,100,000
22	Five Points Alt 2 (Quadrant roadway with overpass)	County, Township / PennDOT	STP, SH, CMAQ, SXF, FEDDIS, STP, SH, PIB, LF	Long-term	High	\$15,350,000

