

DRAFT

Connecting with the Ardens

Connecting with the Ardens
A Transportation Plan

June 2023

wilmapco.org/ardens

Connecting with the Ardens

Connecting with the Ardens provides a long-term planning blueprint to enhance safety and mobility through the Ardens. Plan goals:

- Manage vehicular travel speeds and deploy safety countermeasures
- Provide enhanced pedestrian crossings
- Develop a bicycle/pedestrian network to traverse through the Ardens
- Enhance transit and school bus stops

This plan embraces the unique context of The Ardens and aims to provide a vision and improvement plan that will enhance the quality of life and safety of all users that are Connecting with the Ardens.

The preparation of this document was financed in part with funds provided by the Federal Government, including the Federal Transit Administration and the Federal Highway Administration of the United States Department of Transportation.

Steering Committee Members

Village of Arden

Village of Ardencroft

Village of Ardentown

Claymont Fire Company, Station 13

Delaware Department of Transportation (DelDOT)

Delaware Transit Corporation (operating as DART First State)

New Castle County Department of Land Use

Wilmington Area Planning Council (WILMAPCO)

Consultant

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INTRODUCING THE ARDENS

The Ardens are a series of villages located in northern New Castle County nestled north of I-95 and generally along Harvey Road. The Ardens, encompassing 0.58 square miles, includes the village of Arden, Ardencroft, Ardentown as well as a small unincorporated area of New Castle County. The Village of Arden was founded in 1900 as a single tax community. The idea of the single tax community was expanded with the purchase of Harvey Farm and Hanby Farm in 1922. Ardencroft Village was founded in 1950. As of the 2020 US Census, the population of the Ardens was 935 persons.



THE ARDENS TODAY

The rural and natural enclaves of Arden, Ardencroft, and Ardentown has been challenged by the communities' proximity to I-95 and growth in northern New Castle County along corridors like Naamans Road and US 202. Today, approximately 10,000 vehicles a day traverse along Marsh Road, 8,000 vehicles per day along Harvey Road, and 3,500 vehicles a day along Veale Road. The speed and sheer volume of this traffic has made it increasingly challenging to traverse through the Ardens via walking and bicycling.

FIGURE1: LOCATION OF THE ARDENS IN NEW CASTLE COUNTY, DE

Connecting with The Ardens



As the Metropolitan Planning Organization (MPO), WILMAPCO staff received a request from the villages of Arden, Ardencroft, and Ardentown to develop a transportation plan for the Ardens. Primarily, this Plan would revisit a previous plan that was prepared in 1999 for the Ardens and build from recent community planning momentum from the Ardentown Paths Plan (also done by WILMAPCO) in 2017.

The Plan was completed as part of WILMAPCO's FY2023 Work Program, with WILMAPCO staff completing a Walkable Workshop, as part of their Walkable Workshop program; WILMAPCO staff also completed a Task 1 - Existing Conditions memorandum. A Consultant Team was retained to lead the development of alternatives, public engagement, and preferred alternatives, with ongoing support by WILMAPCO staff.

PROJECT STEERING COMMITTEE

A project steering committee comprised of representatives from each of the villages, county and state agencies met five (5) times (virtually) to guide the development of the Plan. This group provided critical feedback to the Consultant Team and helped to frame and promote the public engagement portions of the plan.

Steering Committee Members

Village of Arden

Village of Ardencroft

Village of Ardentown

Claymont Fire Company, Station 13

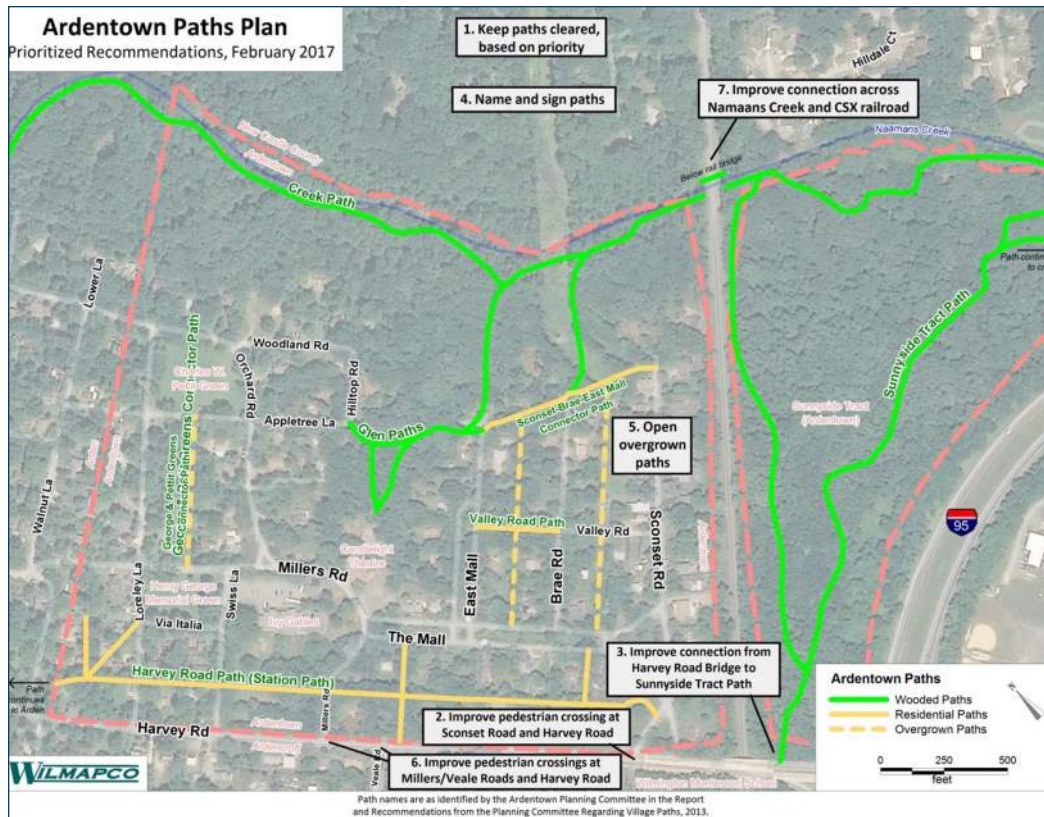
Delaware Department of Transportation (DelDOT)

Delaware Transit Corporation (operating as DART First State)

New Castle County Department of Land Use

Wilmington Area Planning Council (WILMAPCO)





Ardentown Paths Plan (2017)

This paths plan updates the existing Ardentown paths report. The plan recommendations are improved connectivity and signage. The network of paths, was developed in the early twentieth century, connected homes with community buildings and a former train station. Some paths have become overgrown and unusable.

This Plan recommended:

1. **Keeping the paths cleared of obstructions**, based on a prioritization of path segments developed through a public survey.
2. **Improve the pedestrian crossing at Sconset Road and Harvey Road**, which would allow a safer crossing for students of Wilmington Montessori School as well as better access to Ardencroft and its own path network.
3. **Improve the connection from the Harvey Road bridge to the Sunnyside tract**, which would serve as the primary entrance into the nature preserve.
4. **Name and sign the paths**, which would improve wayfinding and help to identify the paths and their locations.
5. **Open overgrown paths**, which have been disused and are no longer passable.
6. **Improve the pedestrian crossings at Millers/Veale roads and Harvey Road**, providing an additional safe crossing of Harvey Road as well as better access to Ardencroft and its own path network.
7. **Improve the connection across Naaman's Creek and the CSX railroad**, which is an indirect connection between the creek path and the Sunnyside tract underneath the railroad bridge.
8. **Additional recommendations written in by survey respondents**, including repairing existing small bridges and improving access to and through the woods.



FIGURE 2: IMPERVIOUS SURFACES IN THE VILLAGE OF ARDEN

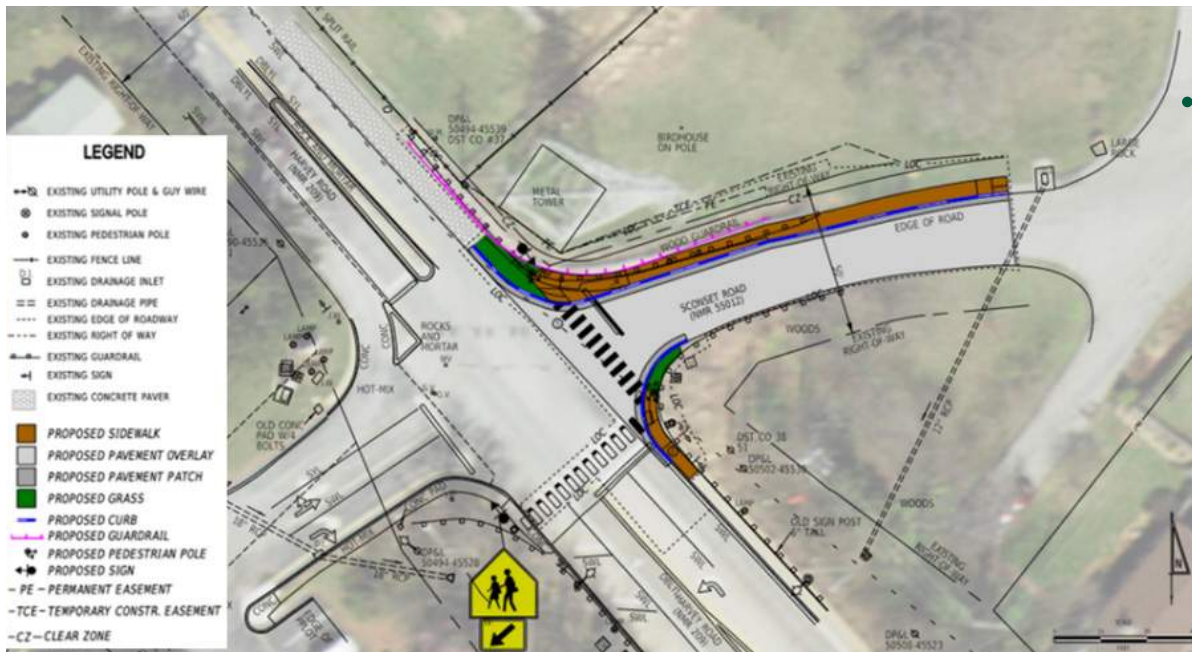


FIGURE 3: PATH IMPROVEMENTS IN ARDENTOWN

Water Quality Master Plan (2022)

The village of Arden was established before contemporary requirements and designs for stormwater management. With increased impervious surface from development, this means that the natural landscape of the Ardens has been negatively affected. The plan's purpose is to identify areas within the village of Arden to implement stormwater Best Management Practices.

- Identifies broad scale drainage patterns through Arden lands using publicly available data.
- Determines feasible areas for implementation of stormwater BMPs.
- Evaluates the potential of the proposed BMPs.
- Differentiates the BMPs by subjective criteria to aid in implementation hierarchy.

Safe Routes to School Program – Harvey Road at Sconset Road

The Safe Routes to School Program creates safe opportunities for children to walk or bicycle to and from school. In 2017, Wilmington Montessori School requested SRTS funding to improve pedestrian and bicycle infrastructure. The recommendations include traffic calming measures on Harvey Road, creating new paths that connect to Harvey Road adding sidewalks and improved signage and signaling.

Plan Goals



**MANAGE VEHICULAR TRAVEL
SPEEDS AND DEPLOY SAFETY
COUNTERMEASURES**



**PROVIDE ENHANCED
PEDESTRIAN CROSSINGS**



**DEVELOP A BICYCLE/
PEDESTRIAN NETWORK
TO TRAVERSE THROUGH
THE ARDENS**



**ENHANCE TRANSIT AND
SCHOOL BUS STOPS**

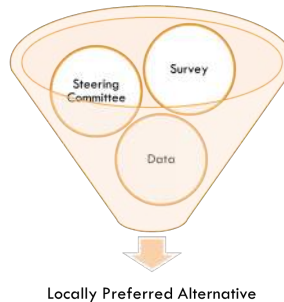
Engagement Timeline

| | AUG-22 | SEP-22 | OCT-22 | NOV-22 | DEC-22 | JAN-23 | FEB-23 | MAR-23 | APR-23 | MAY-23 | JUN-23 |
|--|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| WALKABLE WORKSHOP | × | | | | | | | | | | |
| PROJECT WEBSITE / SOCIAL MEDIA | × | × | × | × | × | × | × | × | × | × | × |
| PROJECT STEERING COMMITTEE MEETINGS | × | | | × | | | × | × | | × | × |
| PUBLIC MEETINGS | | | × | | | | × | | | | × |
| COMMUNITY SURVEYS | | | | × | | | | × | | | |

Summary of Recommendations

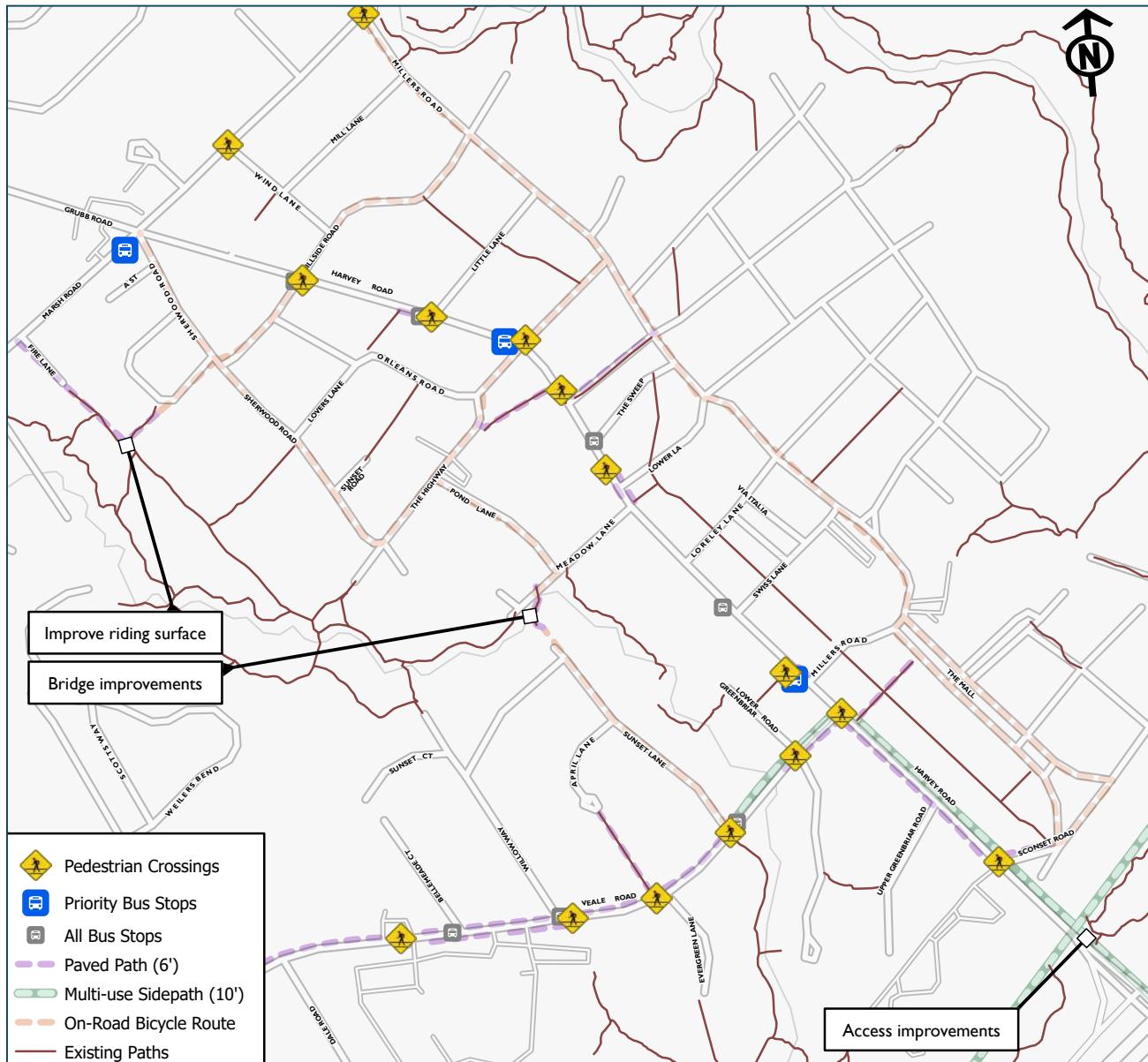
Locally Preferred Alternative

Based upon a robust public engagement process, Steering Committee refinement, and technical evaluation of multiple alternatives, a Locally Preferred Alternative was identified. Upon further engineering refinement, these improvements are recommended to be programmed within WILMAPCO's Long Range Plan and Transportation Improvement Program.



| LOCATION | LIMITS | ID | DESCRIPTION | FURTHER ACTIONS |
|-------------|-------------------------------------|----|---|--|
| Harvey Road | at Marsh Road | A | Gateway | Refine location/design specifics in preliminary engineering |
| | Mill Lane to Hillside Road | C | Bioswale | Refine location/design specifics in preliminary engineering |
| | Lovers Lane to Little Lane | E | Trail Crossing | Complete NCHRP 498 treatment assessment |
| | at Orleans Road | G | Maintain signal / improve geometry | Monitor crash history; define further geometric improvements |
| | at Clubhouse Path | H | Update pedestrian crossing | Complete NCHRP 498 treatment assessment |
| | Lower Lane to Meadow Lane | J | Crossing / Median | Complete NCHRP 498 treatment assessment |
| | north of Millers Road | M | Relocate crossing/install median | Determine preferred treatment in preliminary engineering |
| | north of Millers Road | N | Install bumpout | Determine preferred treatment in preliminary engineering |
| | north of Millers Road | O | Reestablish Trail | Advance in concert with Improvement M/N - when selected |
| | Millers Road to Veale Road | P | Curbside bioswale/bumpout | Refine location/design specifics in preliminary engineering |
| | Veale Road to Upper Greenbriar Road | Q | Curbside bioswale/bumpout | Refine location/design specifics in preliminary engineering |
| | at Sconset Road | R | Gateway | Refine location/design specifics in preliminary engineering |
| | Sconset Road to Glenrock Drive | U | Reduce NB Harvey Road to one lane | Capacity analysis of I-95/Harvey Road interchange required |
| | Sconset Road to Glenrock Drive | V | Enhance Speed Limit Signage | Coordinate with DelDOT to install signage |
| Veale Road | at W. Greenbriar Road | W | Median/pedestrian crossing | Complete NCHRP 498 treatment assessment |
| | at Sunset Lane; at Evergreen Lane | Y | Improve sight distance; improve crossings | Complete NCHRP 498 treatment assessment |
| | at Willow Way | Z | Median/pedestrian crossing | Complete NCHRP 498 treatment assessment |
| | E. Dale Road to Bellemeade Place | AA | Median/pedestrian crossing | Complete NCHRP 498 treatment assessment |
| | E. Dale Road to Harvey Road | AB | Reduce speed limit to 25 mph | Coordinate with DelDOT to install signage |
| | W. Dale Road to E. Dale Road | AD | Vegetated median (See map beginning on page 46) | Refine location/design specifics in preliminary engineering |
| | | | Signal preemption for emergency responders | Pursue funding for emergency vehicle preemption emitters |
| | | | Enhanced bus stops at priority bus stop locations | Coordinate improvements with DART First State |

Multimodal Network



TRANSIT IMPROVEMENTS BUS SHELTERS



EVALUATE SERVICE ENHANCEMENTS/ ALTERNATIVES



1



Connecting with the Ardens includes the villages of Ardens, Ardencroft, and Ardentown as outlined. The Study area extends from I-95 to Marsh Road, including Harvey Road and Veale Road.

This study is being completed as part of a streamlined project development process in accordance with the Federal Highway Administration's Planning and Environmental Linkages (PEL) guidelines. PEL is a collaborative and integrated approach to transportation decision-making that considers benefits and impacts of proposed transportation system improvements to the environment, community, and economy during the transportation planning process. This study will inform the environmental review phase of the recommended transportation projects in accordance with the National Environmental Policy Act (NEPA) as well as the preliminary engineering phase. This report serves as a response to the PEL Questionnaire, and a checklist is provided in this Appendix.

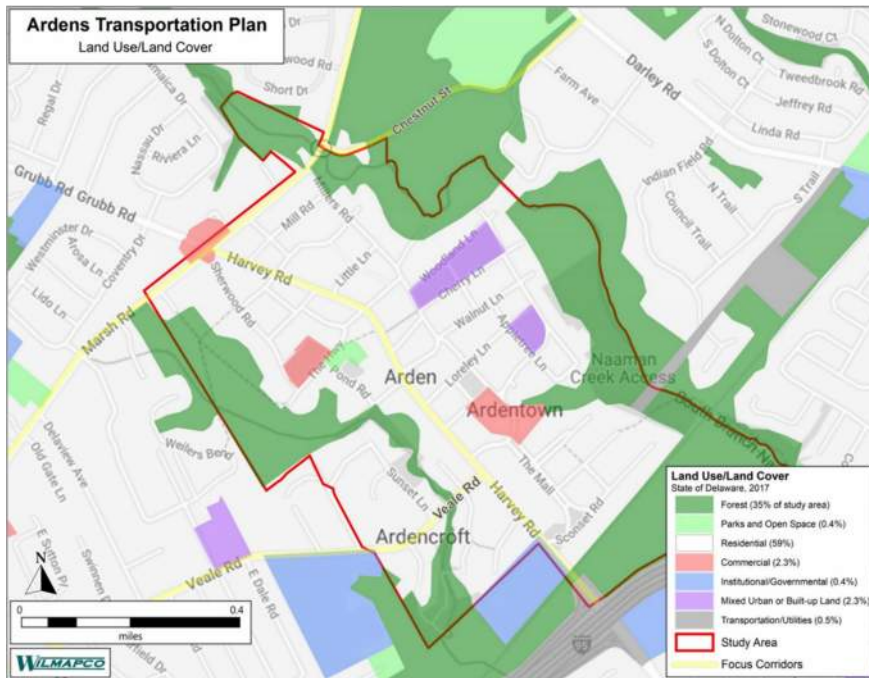


FIGURE 5: LAND USE IN THE ARDENS

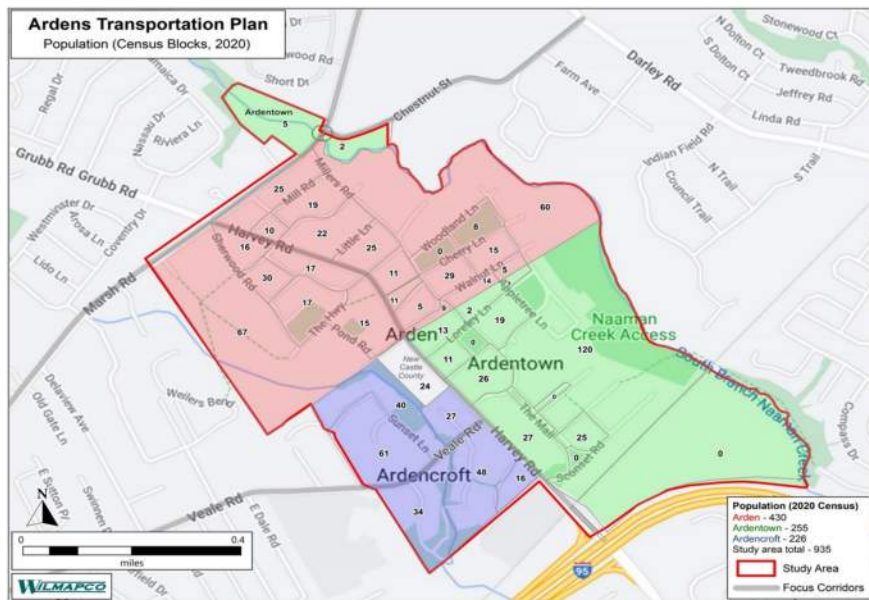


FIGURE 6: POPULATION DISTRIBUTION OF THE ARDENS

Land Use

Present day land use is depicted in Figure 5. The Ardens is primarily detached residential units (59%) surrounded by forested woods and community greens/open space (36%). Other notable uses within the Ardens include Ivy Gables Senior Living, the Candlelight Theatre, the Gild Hall, and the Buzz Ware Village Center. Two private schools, St. Edmonds' Academy and Wilmington Montessori School, border the community.

Demographics

As of the 2020 Census, the total population of the study area was 935 people. The Village of Arden has the highest population count at 430. Ardentown has a population of 255. Ardencroft has a population of 226. There are 24 people that live within the unincorporated section of New Castle County in the study area.

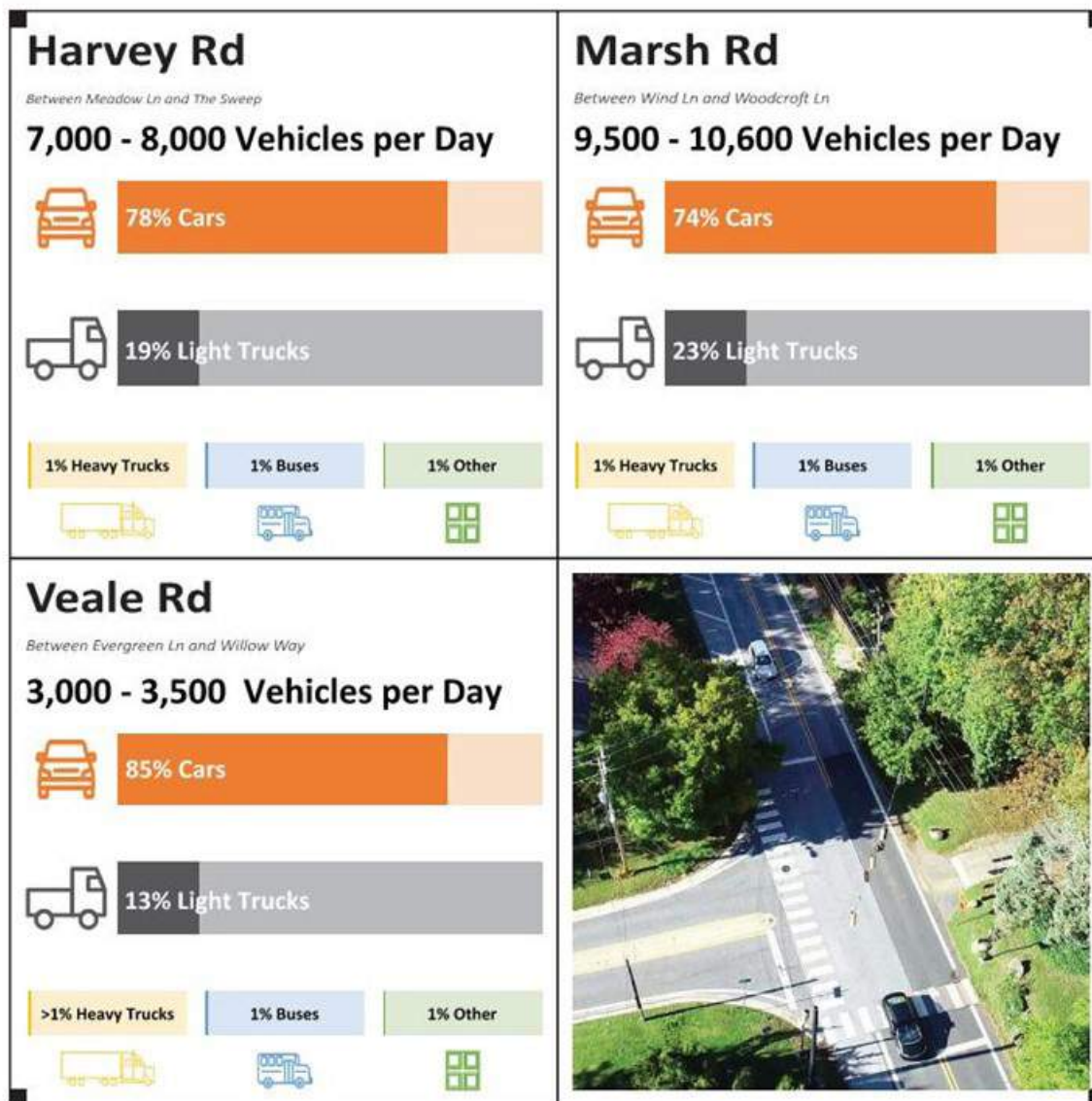


FIGURE 7: DISTRIBUTION OF VEHICLE TYPE ALONG SAMPLED ROADWAYS

Traffic Conditions

In October 2022, the Consultant Team collected traffic data along Harvey Road, Marsh Road, and Veale Road, capturing both traffic volumes of vehicles and pedestrians/bicyclists. The tube counters collected both vehicle classification and traveling speed as well.

Traffic Volumes

Marsh Road experienced the most usage with 9,500 to 10,600 vehicles per day. Harvey Road experienced 7,000 to 8,000 vehicles per day. Veale Road experienced the least volume with 3,000 to 3,500 vehicles per day.

For each of the three locations, cars represented the highest percentage of usage. Veale Road traffic had the highest percentage of cars at 85%. Light trucks included pickup trucks and two axle six tire trucks. Marsh Road had the highest percentage of light trucks at 23%. Heavy trucks were classified as three axle, four axle or six axle trucks. Heavy trucks accounted for 1% or less at each location. Buses accounted for 1% of vehicles at each location. Buses included school buses and DART transit.

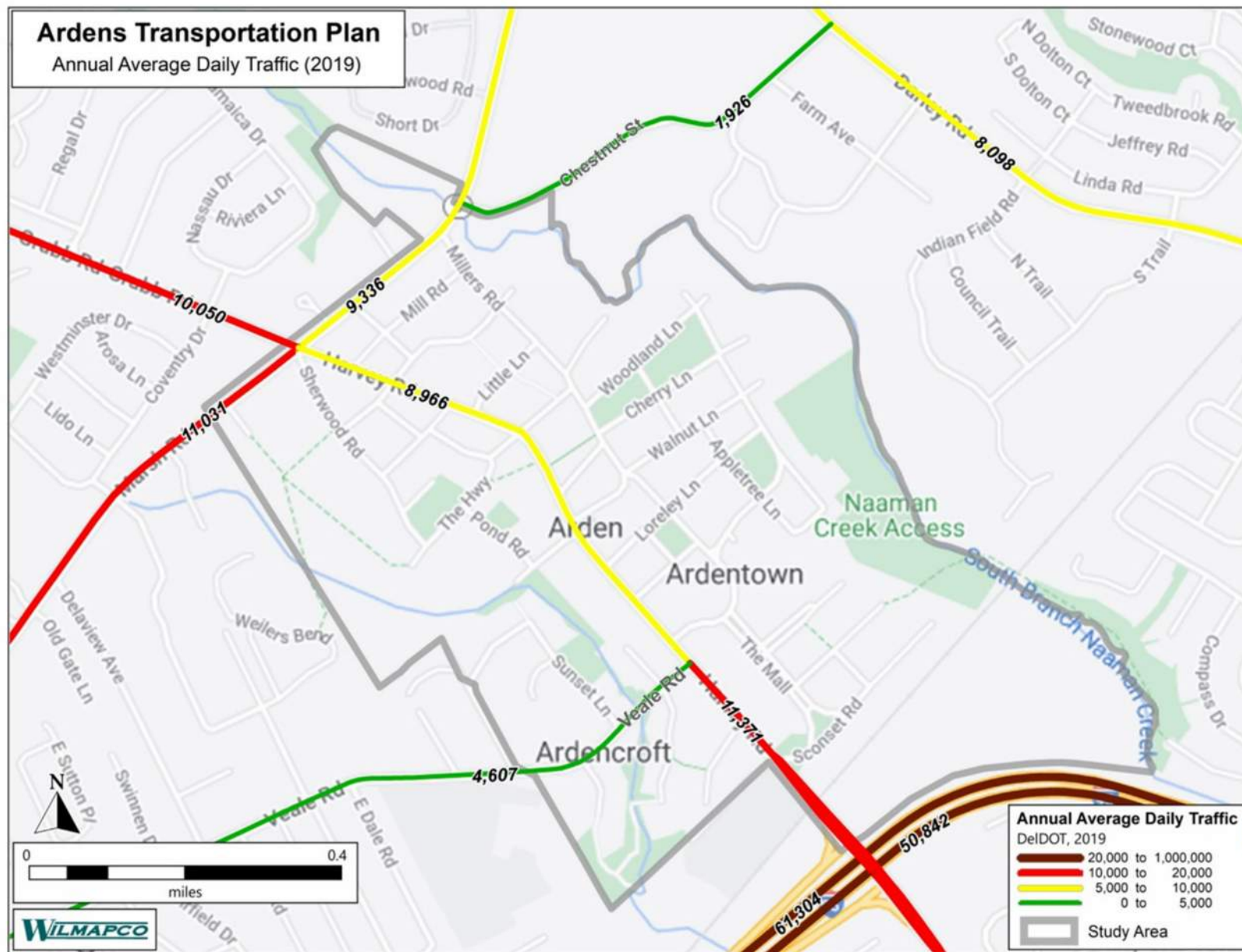


FIGURE 8: ANNUAL AVERAGE DAILY TRAFFIC VOLUMES IN THE ARDENS

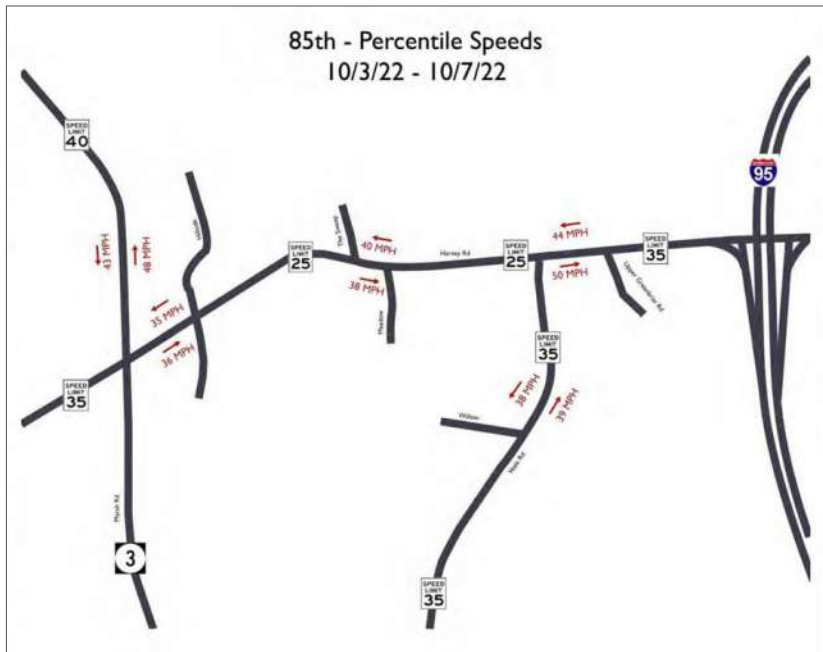


FIGURE 9: OBSERVED 85TH PERCENTILE SPEEDS

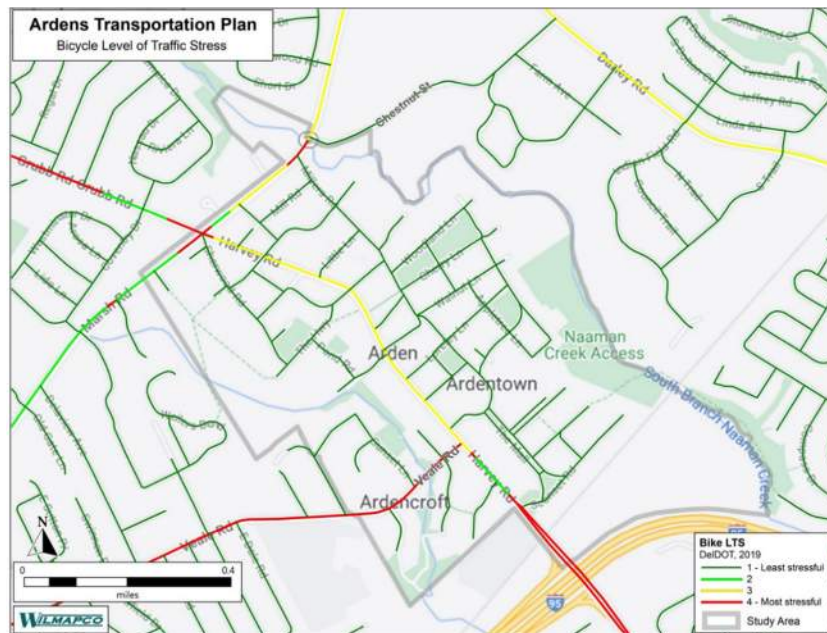


FIGURE 10: BICYCLE LEVEL OF TRAFFIC STRESS IN THE ARDENS

Travel Speeds

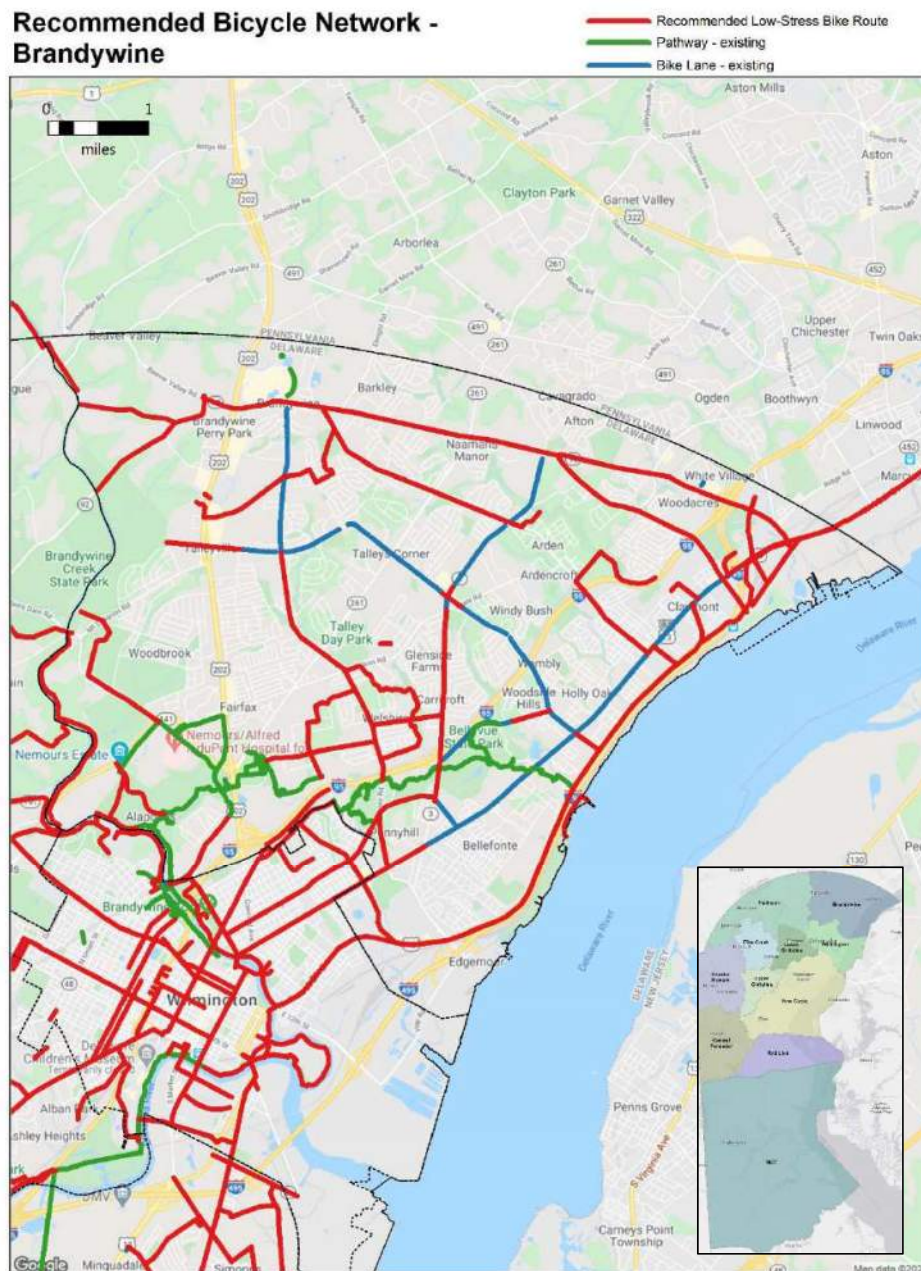
Given a prevailing concern about speeding throughout the Study Area, vehicle travel speeds were derived from the automatic traffic recorders. This data is summarized to the 85th percentile, which is customary to traffic engineering principles, in Figure 9. These speed results confirmed a speeding problem, especially along Harvey Road, where 85th percentile speeds were 15 to 25 mph above the posted speed limit of 25 miles per hour. Observed travel speeds along Marsh Road and Veale Road were closer aligned with the posted speed limits.

Bicycle Level of Stress

Bicycle Level of Stress (BLTS) is a measurement of how stressful roads are for bicycling, traffic speeds, traffic volumes and the number of lanes. In 2019, DeIDOT developed method for measuring bicycle level of stress. Each road segment is ranked based on a 1-4 range from 1 (being the least stressful) to 4 (being the most stressful) using factors like traffic volume, speed limit, and roadway/shoulder width. Figure 7 displays the bicycle level of stress for the Ardens.

The highest level of stress, shown in red can be found at the intersection of Marsh and Harvey, I-95 interchange, and along Veale Road. On Harvey Road, the level of stress varies between BLTS 4 and BLTS 3. Local roads within the Ardens are scored as BLTS 1 (least stressful) due to low traffic volumes.

Recommended Bicycle Network - Brandywine



New Castle County Bicycle Plan context:

Endorsed in 2020, the New Castle County Bicycle Plan provides a multimodal planning framework for regional bicycling connections. Specific to the Ardens, a bike lane currently exists on Marsh Road. The New Castle County Bicycle Plan recommends bicycle improvement along Harvey Road to connect Claymont up to Sconset Road as well as improvements from Hillside Road up to Naamans Road. The proposed network leaves a gap along Harvey Road within the immediate Ardens area. This gap is recommended to be filled-in through the development of low-stress bicycle routes running parallel to Harvey Road through the Ardens.

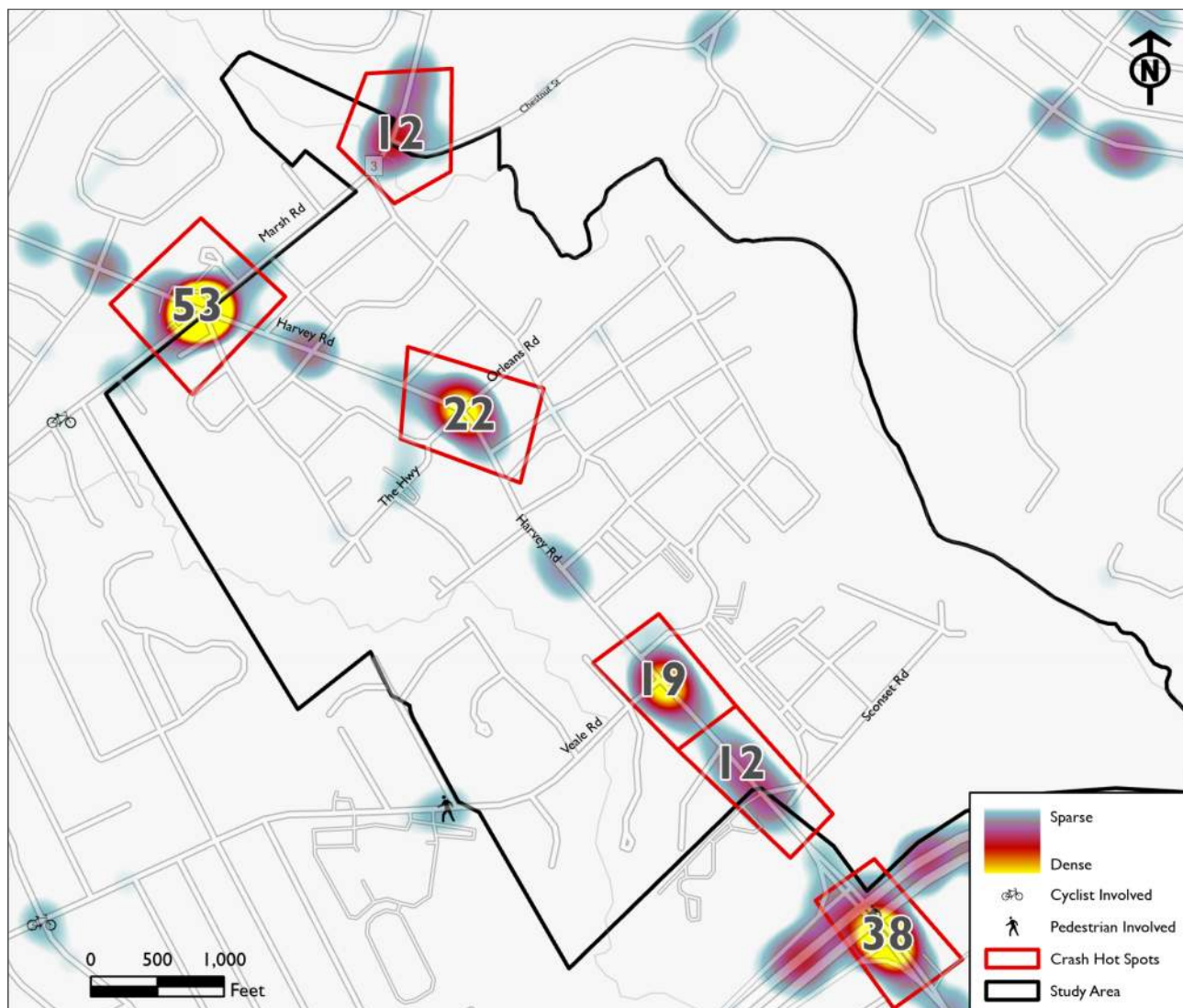
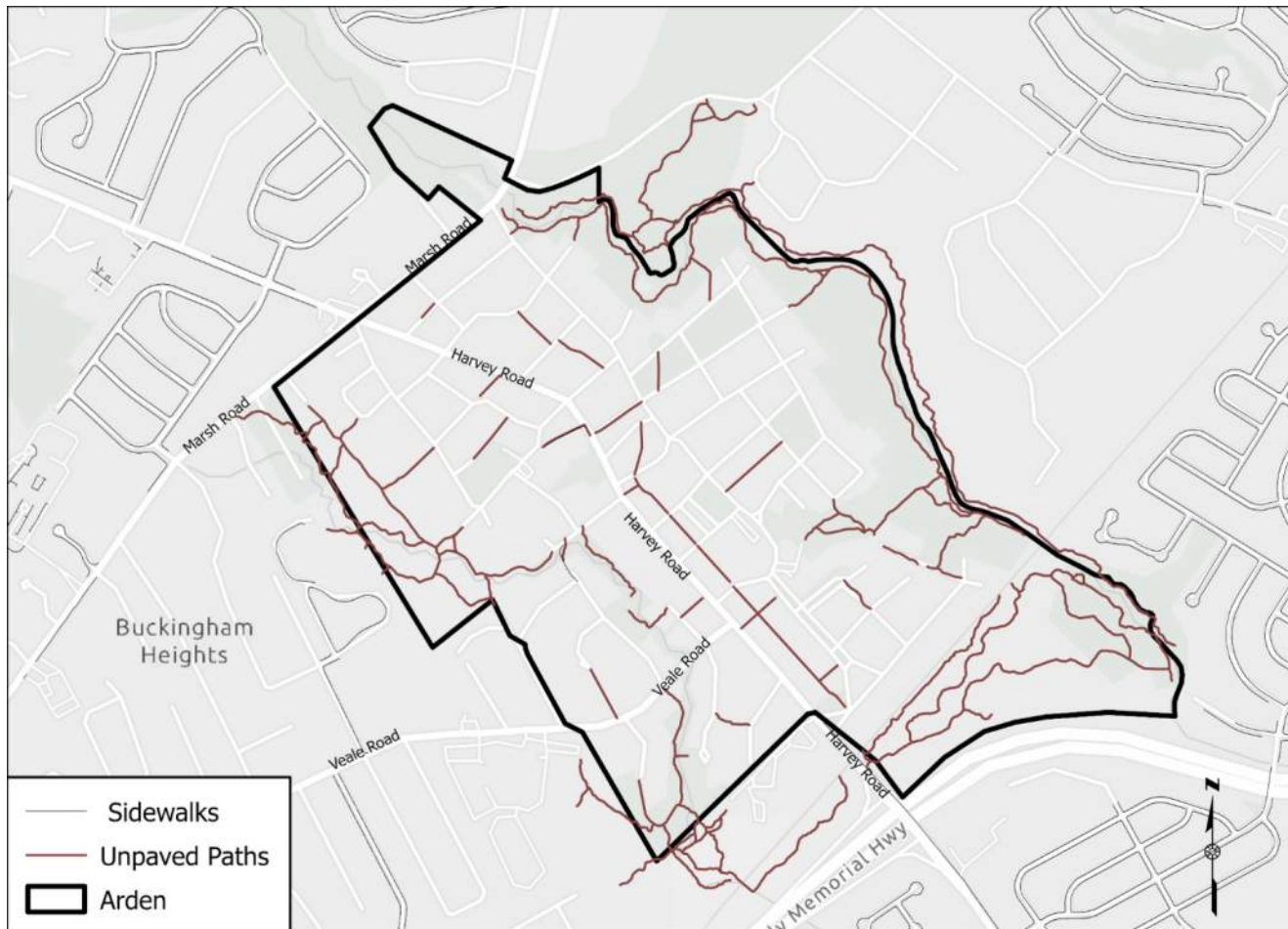


FIGURE 11: CRASH HOTSPOTS (2017 - 2022)

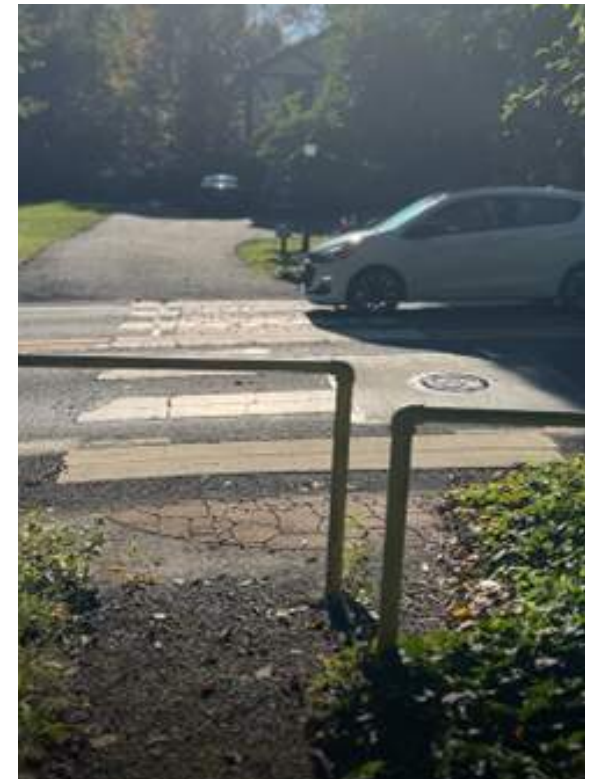
Crash Analysis

Reportable crashes (2017-2022) were mapped to identify crash hotspots, as displayed in Figure 11. The greatest concentration of crashes occurred around the Marsh Road/Harvey Road intersection. Notably, in 2022, DeIDOT completed an intersection improvement project at Marsh Road/Harvey Road, so this concentration of crashes is expected to dissipate significantly over time. Other clusters of crashes included the I-95/Harvey Road interchange (38 crashes), Harvey Road at Orleans Road (22 crashes), Harvey Road at Veale Road (19 crashes), Harvey Road from Sconset Road to Upper Greenbriar Road (12 crashes), and Marsh Road at Chestnut Street (12 crashes).



Sidewalks and Paths

The Ardens are well served by paths which traverse throughout the Ardens. This network of paths cross Harvey Road at nine locations along the one-mile stretch of Harvey Road, with three of these locations at signalized intersections and the balance (6) at unsignalized intersections. Pedestrian amenities along the main roadways (Harvey Road, Veale Road, and Marsh Road), however, are extremely limited.





Public Transportation

The Ardens is served directly by DART's Route 11, which runs from downtown Wilmington to the Ardens. The Route 11 operates in a loop using Marsh Road, Harvey Road, and Veale Road.

Additional transit service is provided along Foulk Road (Route 18) and Naamans Road (Route 61), however, these routes do not serve the Ardens directly.

Average daily ridership on the Route 11 in the Ardens was approximately 12 boardings per weekday in October 2019 (before the Pandemic). Ridership levels through the Pandemic and post-Pandemic have fallen to below five (5) boardings per weekday.

Given these levels of transit ridership, the Connecting with the Ardens plan considered alternative service delivery options such as microtransit and improved pedestrian connections.



The Public Pulse

Community feedback was a critical driver throughout the development of the Plan, which kicked off with the WILMAPCO-led Walkable Workshop in August 2022. The public engagement during the Connecting with the Ardens plan included two public surveys, three community meetings, and a kids-oriented workshop as part of the second community meeting.

Walkable Community Workshop

On August 8, 2022, WILMAPCO held a walkable community workshop to hear from residents about walkability and safety concerns. There were a total of 37 attendees. Part 1 consisted of a presentation on elements of a walkable community. In Part 2, participants surveyed the area and identified issues and opportunities. Part 3 involved participants mapping and sharing ideas on how to improve walkability. Participants identified their priority concerns, which included traffic speeds on Harvey Road and Veale Road, the transition from I-95 along Harvey Road into the Ardens, lack of lighting at night, lack of safe pedestrian crossings, lack of pedestrian push buttons at crossings, flooding, and drainage issues on paths as well as access to bus stops.





Public Survey #1

A first community survey was conducted in November 2022 with the primary purpose of collecting community feedback on key issues and the Plan's goals. The survey, which was posted on WILMAPCO's project website and shared through email and social media, received 145 responses.



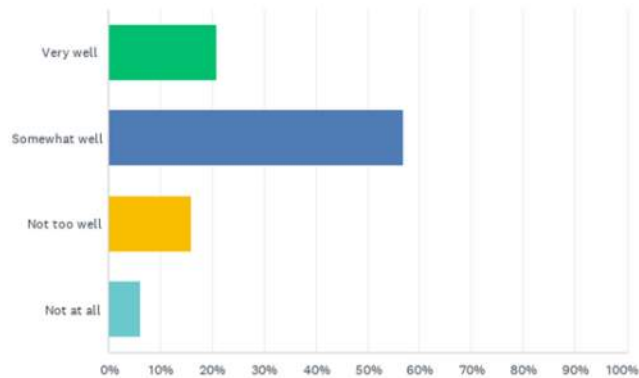
THE HIGHLIGHTS OF SURVEY #1 INCLUDED:

145 total responses

Respondent Profiles

- 38% were residents of Arden (55).
- 26% were residents of Ardencroft (37).
- 21% were residents of Ardentown (31).
- 3% were resident in between the Ardens (5).
- 12% were residents outside the Ardens (17).

Q3 How well do you feel the transportation system in the Ardens meets your travel needs?



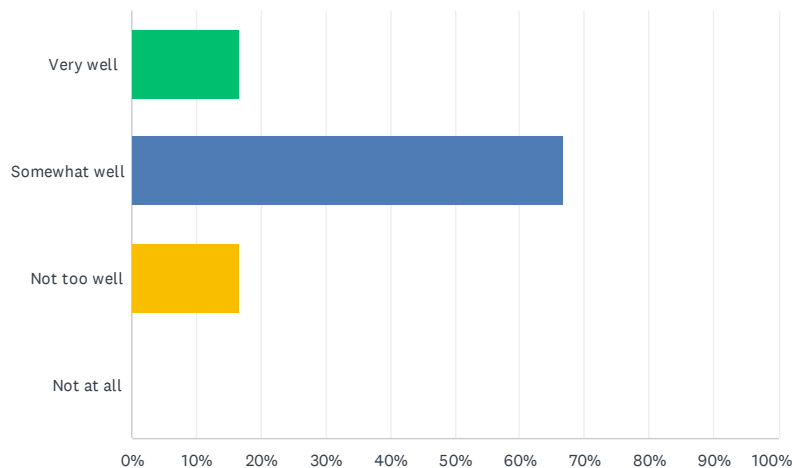
When asked about the current transportation system in the Ardens, 57% of respondents felt that their transportation needs were met “Somewhat well”. 21% of respondents felt that the existing conditions met their needs “Very Well.” 16% of the respondents felt that their travel needs were “Not too well” met. 6% did not believe that their travel needs are being met.

The kid’s survey (launched concurrent with Survey #2) revealed similar sentiment from the community youth. Two-thirds of respondents felt their transportation needs were being met “Somewhat well”.

KID’S SURVEY

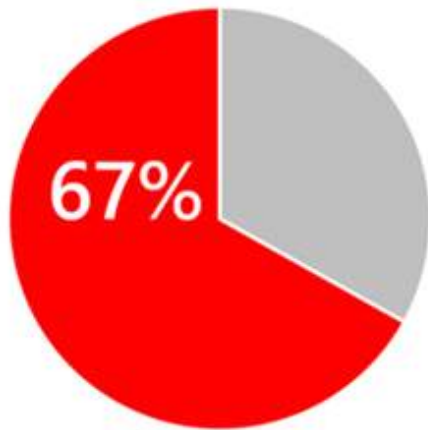
Q3 How well do you feel the transportation system in the Ardens meets your travel needs?

Answered: 18 Skipped: 0

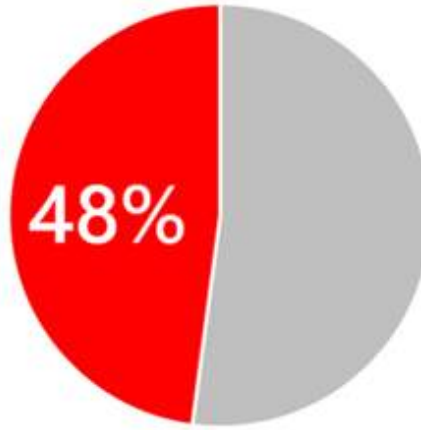


Very or Extremely Concerned with Speeding and Safety

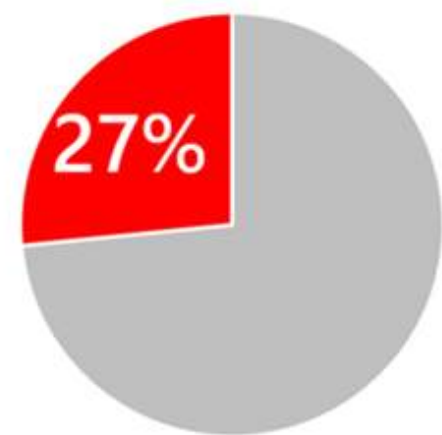
Harvey Road



Veale Road



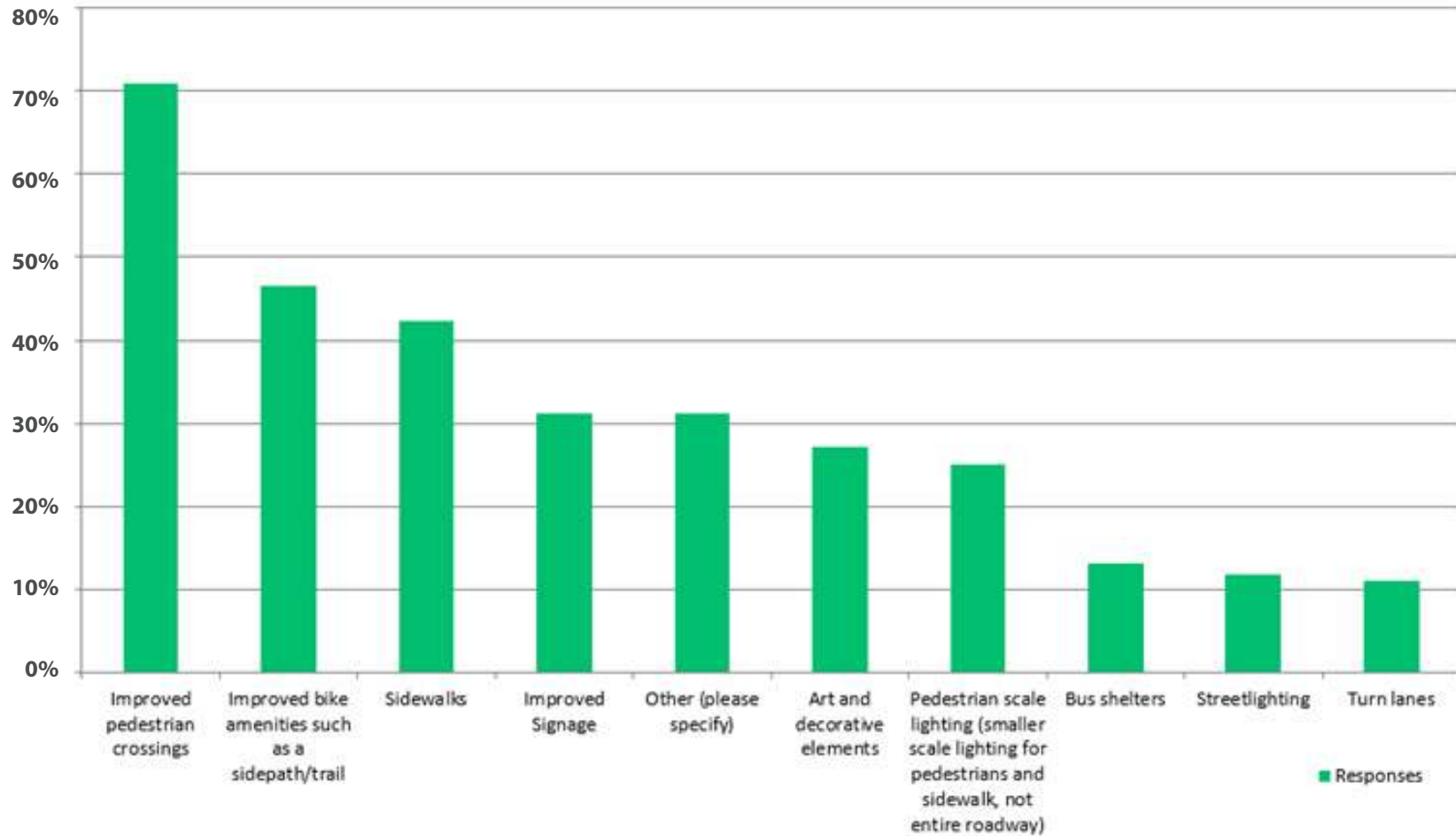
Marsh Road



Respondents were most concerned about the safety and speeding along Harvey Road. These responses generally align with the vehicle speed data that was collected, which showed the greatest speeding issue on Harvey Road.

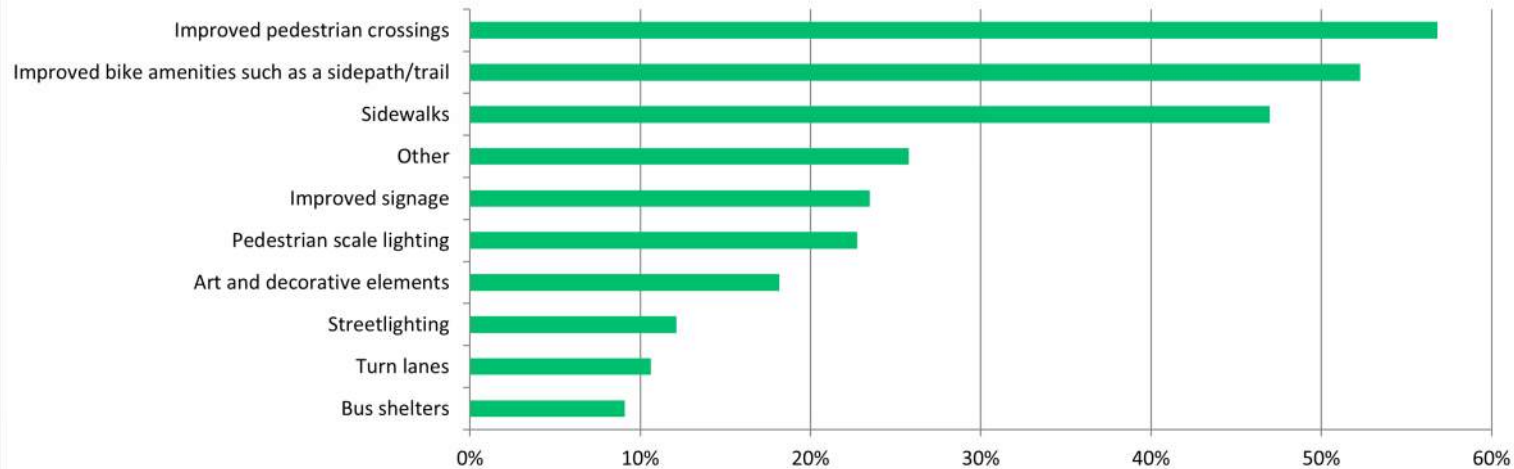
Approximately half of survey respondents reported being concerned about speeding and safety along Veale Road.

What types of amenities would you like to see added to Harvey Road?



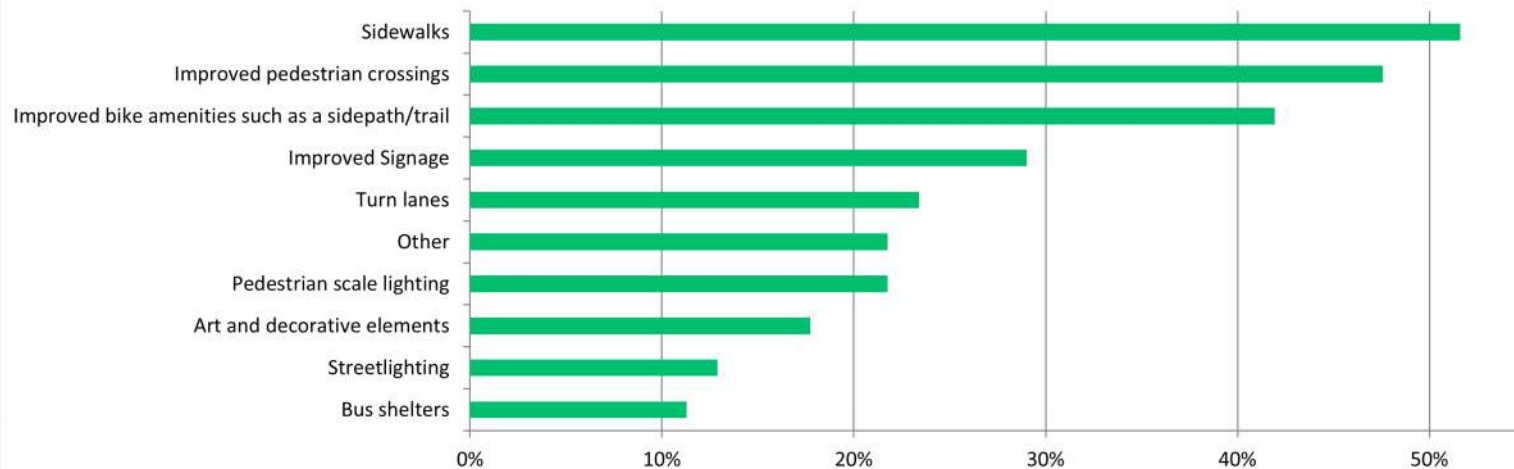
Respondents chose “Improved pedestrian crossings” as the top amenity that they would like to see on Harvey Road.

What types of amenities would you like to see added to Veale Road?



Respondents chose "Improved pedestrian crossings" as the top amenity they would like to see on Veale Road.

What types of amenities would you like to see added to Marsh Road?

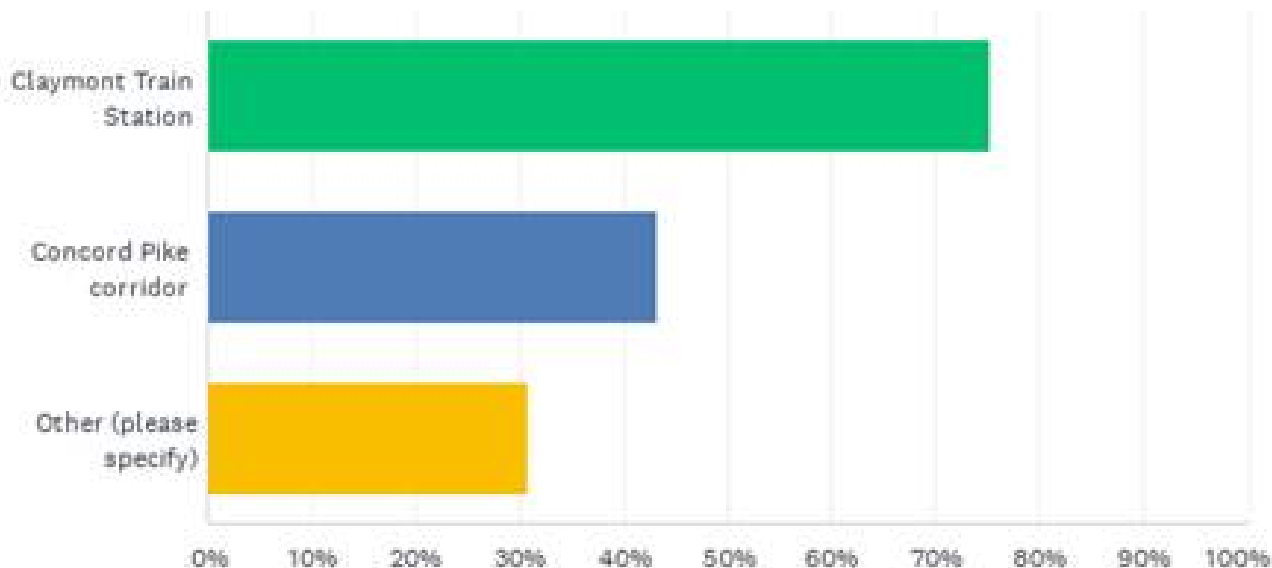


Sidewalks were the respondent's top choice for amenities on Marsh Road.





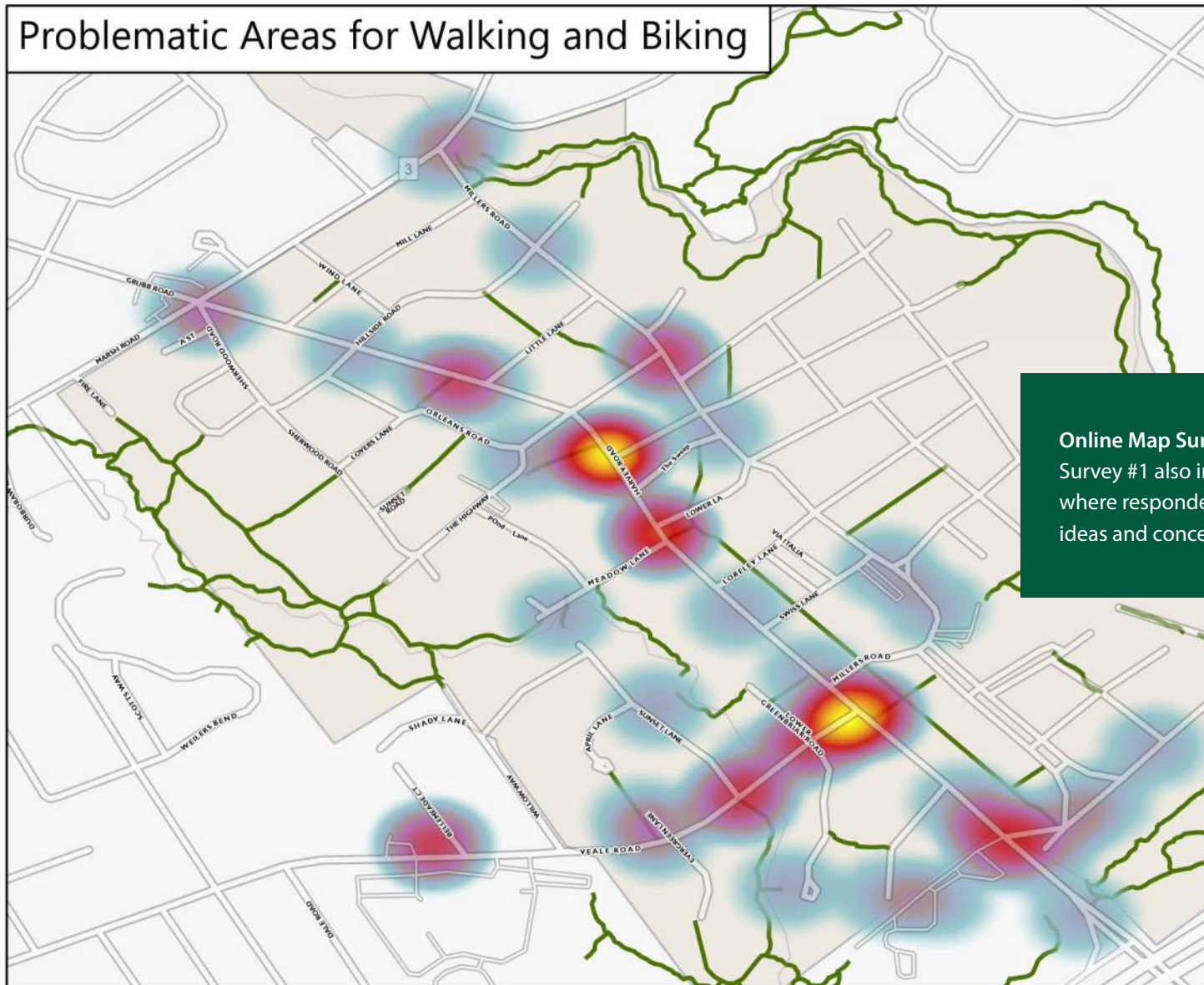
Q16 Where would you like to be able to go on the bus?



Respondents chose “Claymont Train Station” as the top destination to travel to by bus. Other responses included:

- Wilmington (downtown) / Riverfront
- Wilmington/Biden Train Station
- Marcus Hook Train Station
- Brandywine Hundred and Claymont libraries
- Branmar Plaza
- Bellevue State Park

Problematic Areas for Walking and Biking



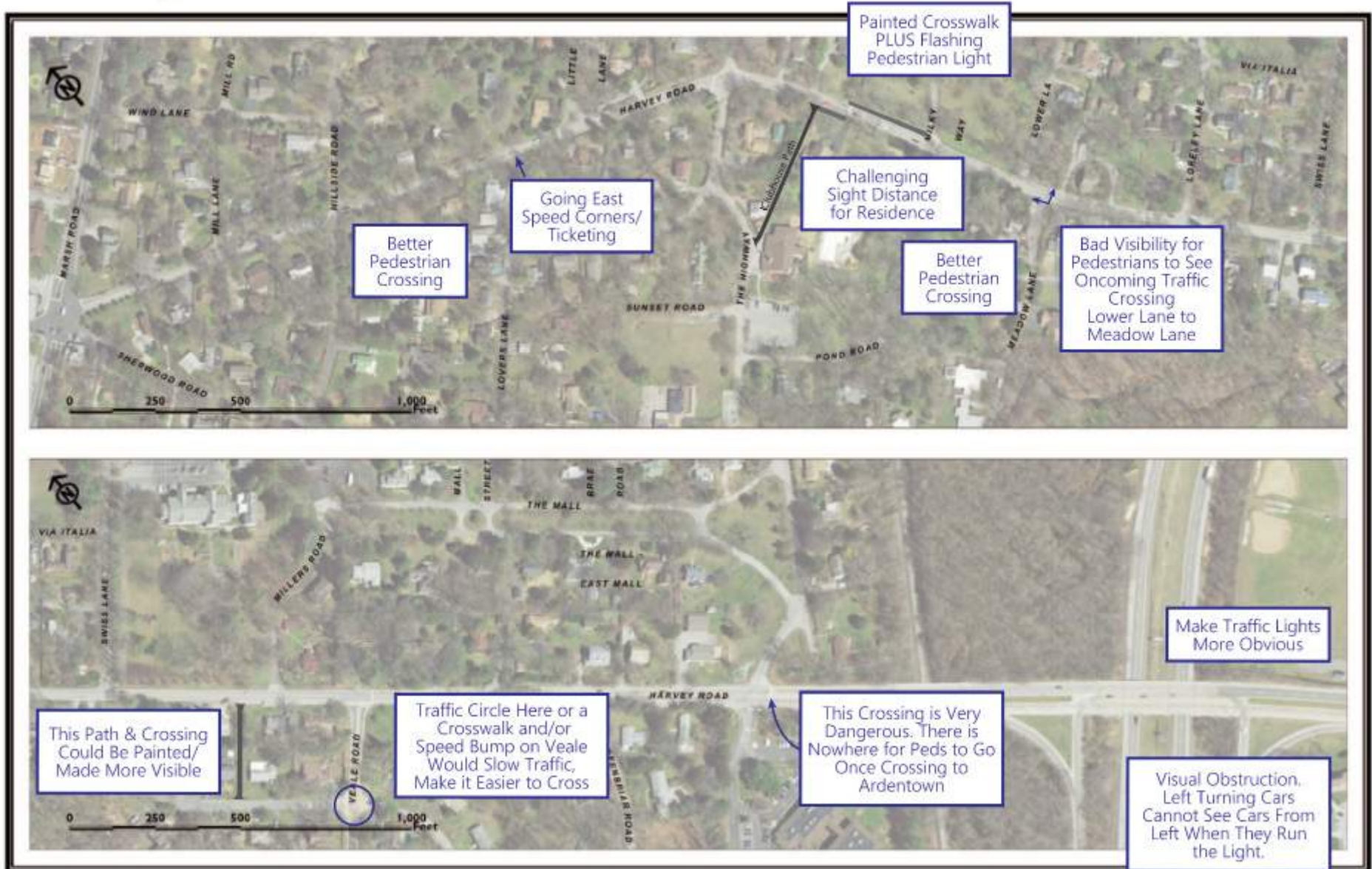
Online Map Survey – included in Public Survey #1
Survey #1 also included an interactive map survey, where respondents could report location specific ideas and concerns.

Public Meeting #1

A first public meeting was held on Tuesday, October 25, 2022 at the Buzz Ware Community Center. Similar to Survey #1, the primary focus of the first public meeting was to collect public concerns, ideas, and suggestions.



Harvey Road



Connecting with the Ardens | A Transportation Plan
October 25, 2022 Public Meeting



MARSH ROAD



VEALE ROAD

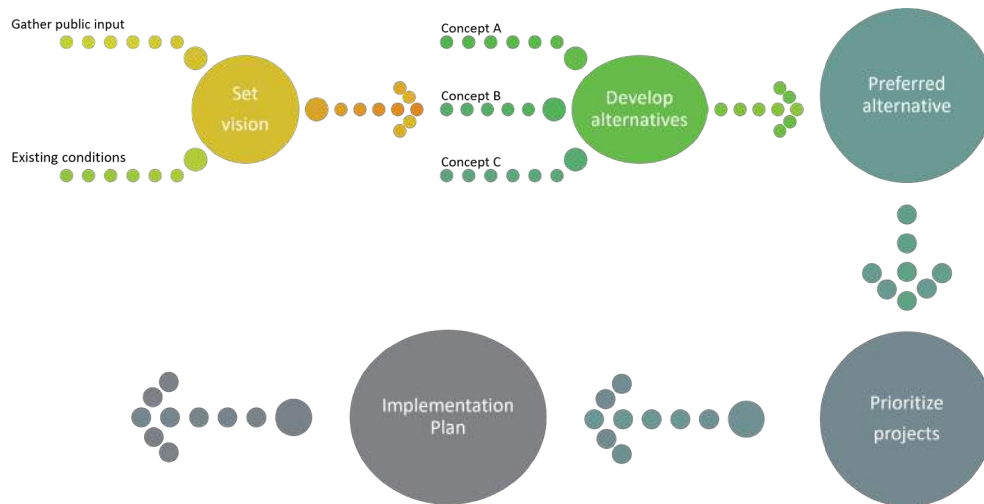




Public Meeting #2

On February 15, 2023, WILMAPCO held a public meeting to gather feedback from participants about improvement alternatives. The meeting started with a kid's workshop. The kid's portion gave children the opportunity to share their ideas about how to improve their community. After the kids' workshop, the main meeting began. Comment boards were placed throughout the room giving participants the option of providing their feedback in writing.

Alternatives



Working closely with the Steering Committee, the Consultant Team developed a suite of alternatives that could potentially fulfill the Plan's Goals:

- Manage vehicular travel speeds and deploy safety countermeasures
- Provide enhanced pedestrian crossings
- Develop a bicycle/pedestrian network to traverse through the Ardens
- Enhance transit and school bus stops

PUBLIC FEEDBACK

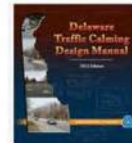
Public Survey #2

The Plan's second survey offered a video overview of the Plan's alternatives; respondents were then asked to provide their feedback on each of the Plan's Goals as well as the alternatives within each goal area.

What is Traffic Calming?

"Traffic calming involves changes in street alignment, installation of barriers, and other physical measures to reduce traffic speeds and/or cut-through volumes, in the interest of street safety, livability, and other public purposes."

-Institute of Transportation Engineers (ITE), Traffic Calming State-of-the Practice



Rectangular Rapid Flashing Beacon



Gateway



Bumpout



Bioswale



Chicane



Mini-Roundabout



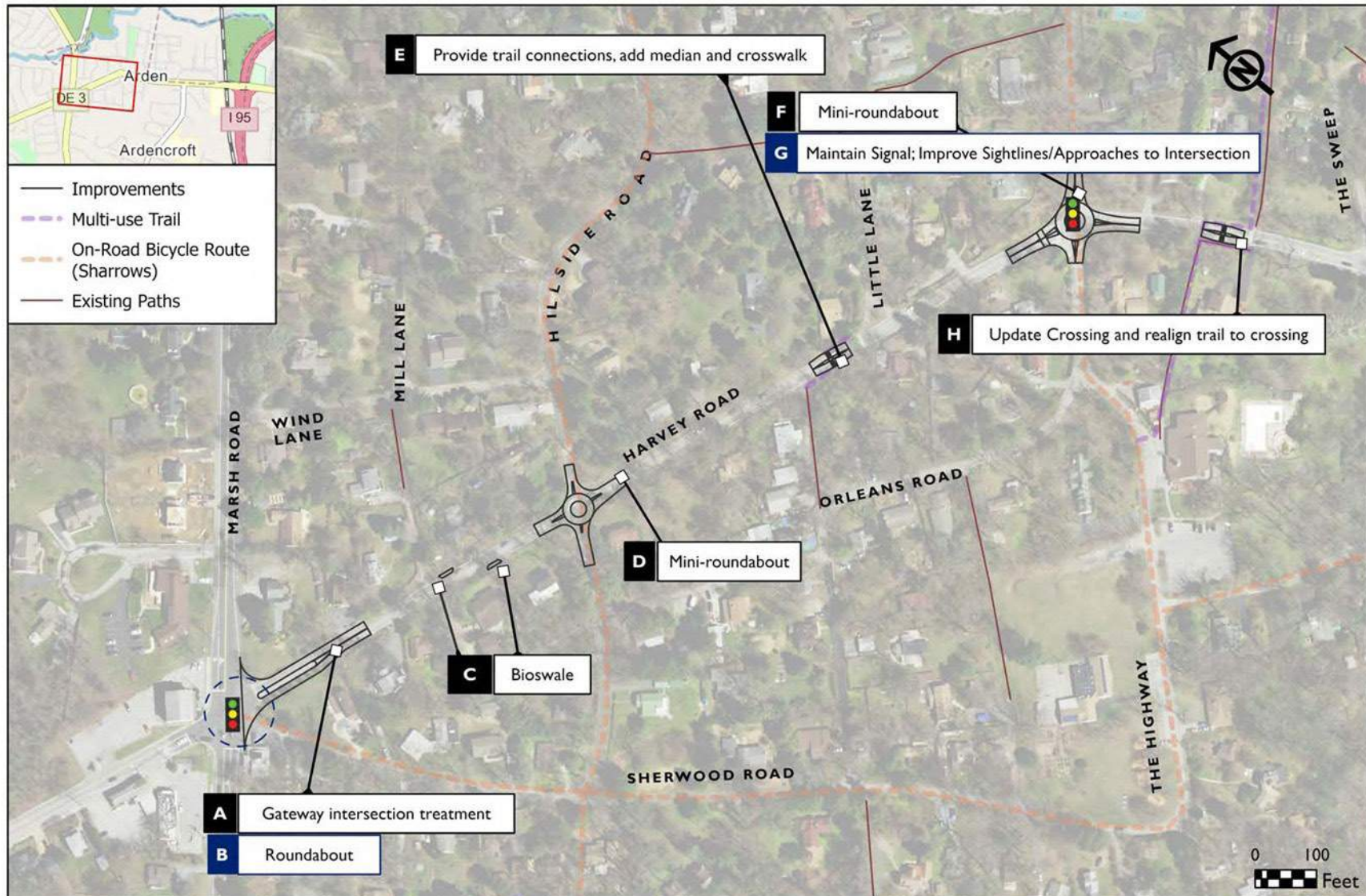
GOAL #1 - MANAGE VEHICULAR TRAVEL SPEEDS AND DEPLOY SAFETY COUNTERMEASURES

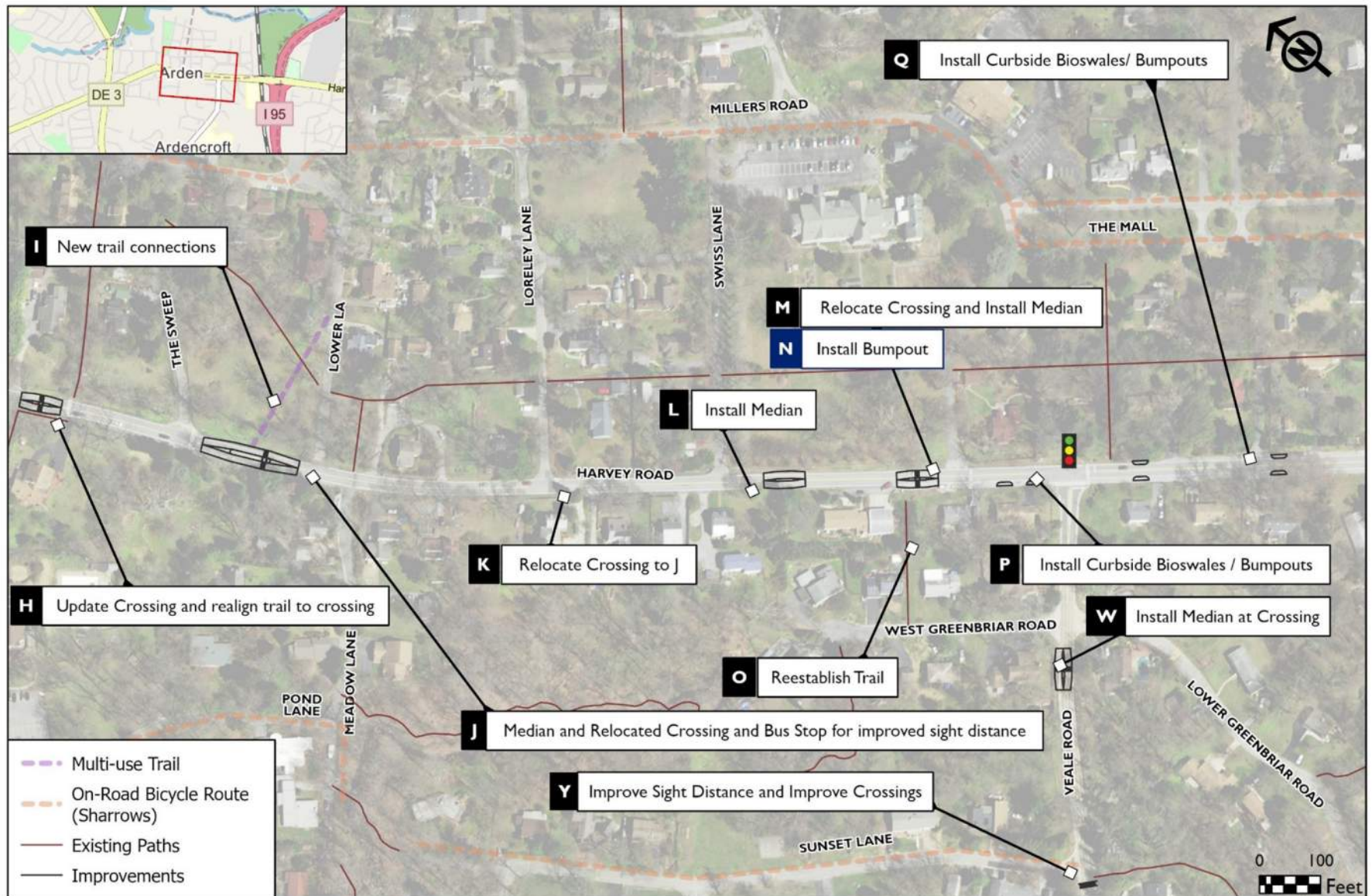
Specific to the Plan's Goal 1 (traffic calming and safety), the Consultant Team applied the consensus principles which were developed and agreed upon in the early 2000's as part of a prior traffic calming plan for Harvey Road. These principles included:

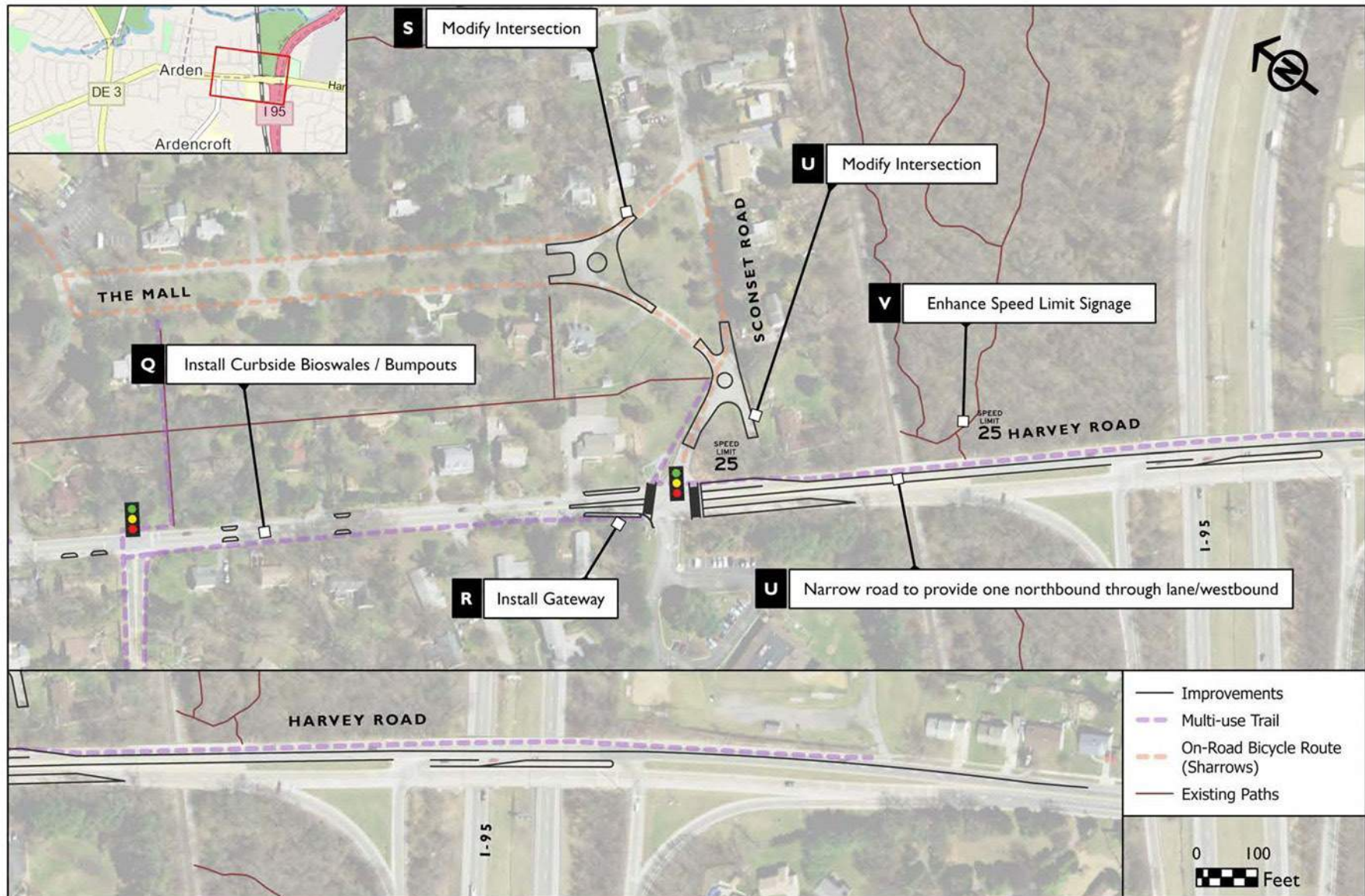
- No vertical calming features
- Use of horizontal calming features
- Features will comply with DelDOT standards (mountable curb, etc)
- Use of low-level landscaping
- Traffic calming features will be traversable for emergency vehicles, school and transit buses

In general, a well-performing traffic calming plan has a traffic calming device every 500 to 750 feet in order to keep vehicles at the desirable travel speed: 25 miles per hour. Therefore, the Consultant Team proposed an interchangeable array of traffic calming concepts, which could be adapted and adjusted based on Steering Committee and community feedback.

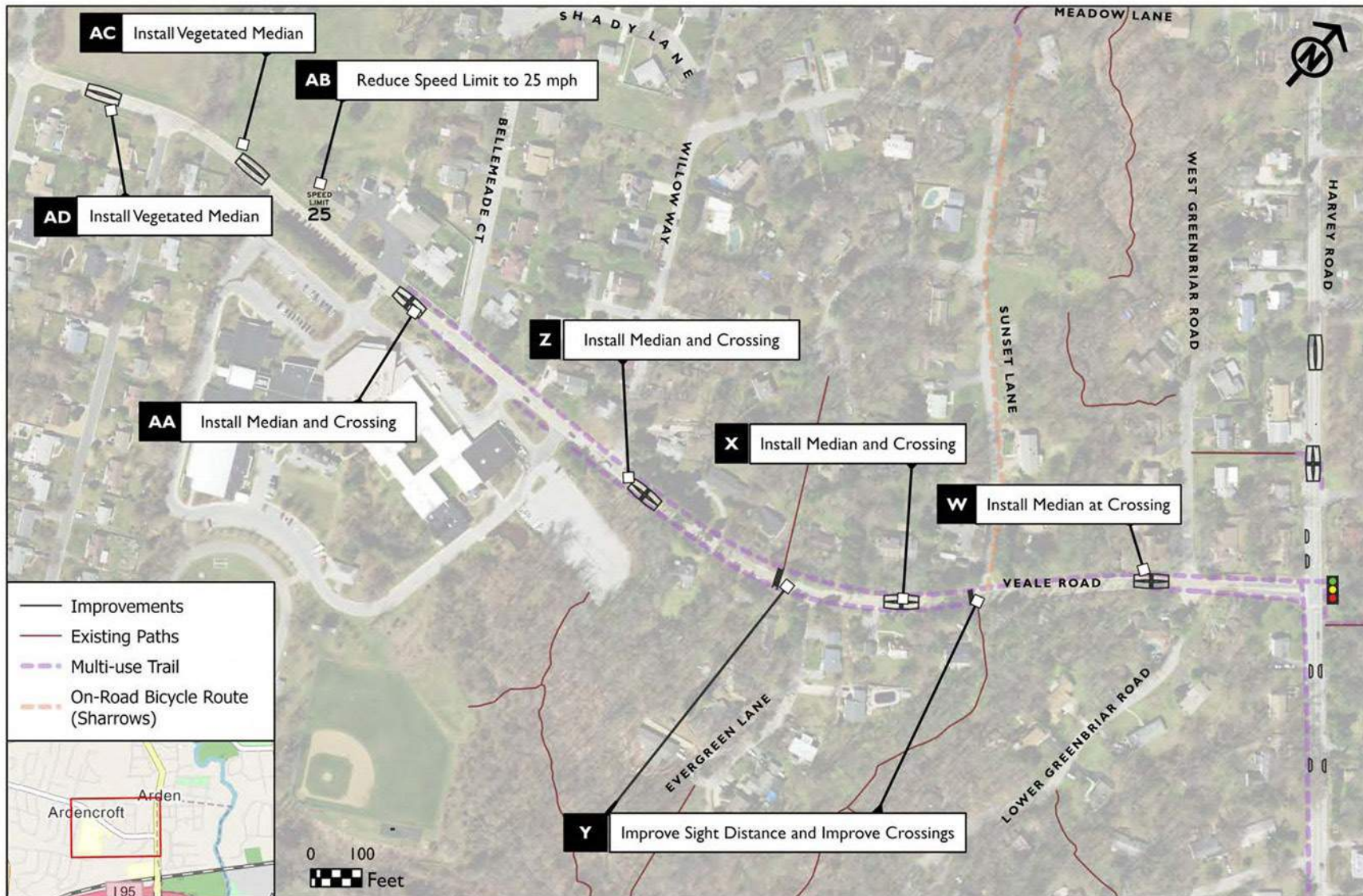
Goal 1: Manage vehicular speeds and deploy safety countermeasures







Goal 1: Manage vehicular speeds and deploy safety countermeasures



Public Feedback

A total of 87 responses provided feedback on the Plan's alternatives. This included 42 responses from Arden residents, 17 responses from Ardencroft, 16 responses from Ardentown, and 1 response from the unincorporated New Castle County portion of the Study Area. At the direction of the Steering Committee, feedback is only reported from residents where each improvement is physically located.

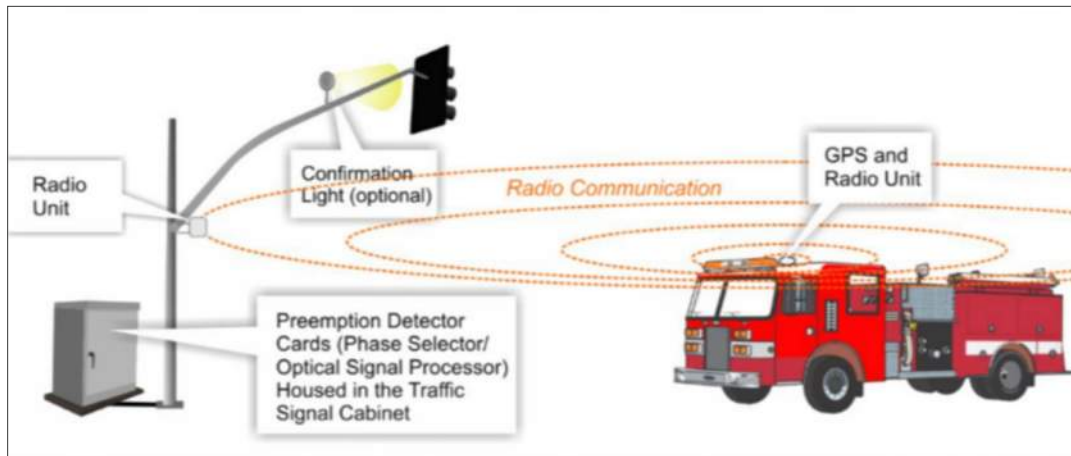
| LOCATION | LIMITS | ID | DESCRIPTION | ARDEN | NEW CASTLE | ARDENTOWN | ARDENCROFT | SUPPORT % | NEUTRAL % | OPPOSED % | NOT SURE % |
|--------------|-------------------------------------|----|---|-------|------------|-----------|------------|-----------|-----------|-----------|------------|
| Harvey Road | at Marsh Road | A | Gateway | × | | | | 55% | 17% | 24% | 5% |
| | at Marsh Road | B | Roundabout | × | | | | 19% | 17% | 60% | 5% |
| | Mill Lane to Hillside Road | C | Bioswale | × | | | | 53% | 23% | 20% | 5% |
| | at Hillside Road | D | Mini-roundabout | × | | | | 48% | 5% | 43% | 5% |
| | Lovers Lane to Little Lane | E | Trail Crossing | × | | | | 55% | 19% | 19% | 7% |
| | at Orleans Road | F | Mini-roundabout | × | | | | 38% | 8% | 53% | 3% |
| | at Orleans Road | G | Maintain signal / improve geometry | × | | | | 64% | 24% | 10% | 2% |
| | at Clubhouse Path | H | Update pedestrian crossing | × | | | | 77% | 13% | 8% | 3% |
| | The Sweep to Lower Lane | I | New trail connections | × | | | | 45% | 31% | 19% | 5% |
| | Lower Lane to Meadow Lane | J | Crossing / Median | × | | | | 60% | 14% | 19% | 7% |
| | at Lorely Lane | K | Relocate crossing | | × | × | | 47% | 34% | 13% | 6% |
| | south of Swiss Lane | L | Install median | | | × | × | 73% | 12% | 9% | 6% |
| | north of Millers Road | M | Relocate crossing/install median | | | × | × | 79% | 6% | 9% | 6% |
| | north of Millers Road | N | Install bumpout | | | × | × | 72% | 19% | 9% | 0% |
| | north of Millers Road | O | Reestablish Trail | | | × | × | 88% | 6% | 6% | 0% |
| | Millers Road to Veale Road | P | Curbside bioswale/bumpout | | | × | × | 82% | 3% | 12% | 3% |
| | Veale Road to Upper Greenbriar Road | Q | Curbside bioswale/bumpout | | | × | × | 79% | 6% | 12% | 3% |
| | at Sconset Road | R | Gateway | | | × | × | 88% | 6% | 0% | 6% |
| The Mall | southern end of The Mall | S | Modify intersection | | | × | | 48% | 21% | 21% | 9% |
| Sconset Road | at the Mall | T | Modify intersection | | | × | | 48% | 24% | 24% | 3% |
| Harvey Road | Sconset Road to Glenrock Drive | U | Reduce NB Harvey Road to one lane | | | × | × | 70% | 3% | 18% | 9% |
| | Sconset Road to Glenrock Drive | V | Enhance Speed Limit Signage | | | × | × | 85% | 6% | 6% | 3% |
| Veale Road | at W. Greenbriar Road | W | Median/pedestrian crossing | | | | × | 88% | 6% | 6% | 0% |
| | Sunset Lane to Evergreen Lane | X | Median/pedestrian crossing | | | | × | 82% | 6% | 6% | 6% |
| | at Sunset Lane; at Evergreen Lane | Y | Improve sight distance; improve crossings | | | | × | 88% | 0% | 6% | 6% |
| | at Willow Way | Z | Median/pedestrian crossing | | | | × | 76% | 12% | 6% | 6% |
| | E. Dale Road to Bellemeade Place | AA | Median/pedestrian crossing | | | | × | 59% | 35% | 6% | 0% |
| | E. Dale Road to Harvey Road | AB | Reduce speed limit to 25 mph | | | | × | 71% | 18% | 6% | 6% |
| | E. Dale Road to Bellemeade Place | AC | Vegetated median | | | | × | 59% | 29% | 12% | 0% |
| | W. Dale Road to E. Dale Road | AD | Vegetated median | | | | × | 59% | 29% | 12% | 0% |

SHADING = MULTIPLE ALTERNATIVES AT SAME LOCATION

Feasibility Assessment

The Project Steering Committee with support by the Consultant Team reviewed each improvement alternative with respect to the physical feasibility, environmental impact, and public feedback. The combination of this feedback assisted the Steering Committee in identifying the Locally Preferred Alternative.

| LOCATION | LIMITS | ID | FEASIBILITY CONDITIONS | LOCALLY PREFERRED | FURTHER ACTIONS |
|--------------|-------------------------------------|----|---|-------------------|--|
| Harvey Road | at Marsh Road | A | ROW impact to adjacent property-owners | Yes | |
| | at Marsh Road | B | ROW impact to adjacent businesses; concept previously studied/dismissed by DelDOT | No | |
| | Mill Lane to Hillside Road | C | | Yes | Refine location/design specifics in preliminary engineering |
| | at Hillside Road | D | Queuing from Harvey Rd/Marsh Rd undermines traffic and operational feasibility | No | |
| | Lovers Lane to Little Lane | E | Alternative modified to remove median in order to limit improvement footprint | Yes | Complete NCHRP 498 treatment assessment |
| | at Orleans Road | F | | No | |
| | at Orleans Road | G | ADA improvements scheduled for 2023 | Yes | Monitor crash history; define further geometric improvements |
| | at Clubhouse Path | H | | Yes | Complete NCHRP 498 treatment assessment |
| | The Sweep to Lower Lane | I | Locally preferred not to impact Arden Memorial Garden Overflow | No | |
| | Lower Lane to Meadow Lane | J | Sight distance improvements and RRFB required for Meadow Lane crossing to remain | Yes | Complete NCHRP 498 treatment assessment |
| | at Lorely Lane | K | Locally preferred to preserve existing crossing location | No | |
| | south of Swiss Lane | L | ROW impact to adjacent property-owners | No | |
| | north of Millers Road | M | ROW impact to adjacent property-owners | Yes | Determine preferred treatment in preliminary engineering |
| | north of Millers Road | N | Absence of median may limit traffic calming effectiveness | Yes | Determine preferred treatment in preliminary engineering |
| | north of Millers Road | O | | Yes | Advance in concert with Improvement M/N - when selected |
| | Millers Road to Veale Road | P | | Yes | Refine location/design specifics in preliminary engineering |
| | Veale Road to Upper Greenbriar Road | Q | | Yes | Refine location/design specifics in preliminary engineering |
| | at Sconset Road | R | | Yes | Refine location/design specifics in preliminary engineering |
| The Mall | southern end of The Mall | S | Locally preferred concern: impact to The Mall/disruption to existing trees/green | No | |
| Sconset Road | at the Mall | T | | No | |
| Harvey Road | Sconset Road to Glenrock Drive | U | Pending capacity analysis feasibility | Yes | Capacity analysis of I-95/Harvey Road interchange required |
| | Sconset Road to Glenrock Drive | V | | Yes | |
| Veale Road | at W. Greenbriar Road | W | | Yes | Complete NCHRP 498 treatment assessment |
| | Sunset Lane to Evergreen Lane | X | | No | |
| | at Sunset Lane; at Evergreen Lane | Y | Locally preferred - with sight distance improvements needed | Yes | Complete NCHRP 498 treatment assessment |
| | at Willow Way | Z | | Yes | Complete NCHRP 498 treatment assessment |
| | E. Dale Road to Bellemeade Place | AA | | Yes | Complete NCHRP 498 treatment assessment |
| | E. Dale Road to Harvey Road | AB | | Yes | |
| | E. Dale Road to Bellemeade Place | AC | | No | |
| | W. Dale Road to E. Dale Road | AD | | Yes | |



Emergency Responsiveness

While aiming to curtail vehicles speeds along Harvey and Veale roads, the Plan aspires to maintain – if not improve – emergency responsiveness. The Consultant Team and WILMAPCO staff met with Claymont Fire Company (Station 13) personnel in February 2023 to review the Plan’s alternatives. Within this discussion, Fire Company personnel noted that Harvey Road is a critical response corridor for the Fire Company – one of only three crossings of I-95. Additionally, the limited cartway width and lack of shoulders of Harvey Road is a challenge for emergency personnel as the motoring public has limited locations to pull over to allow apparatus to pass.

Traffic Signal Preemption

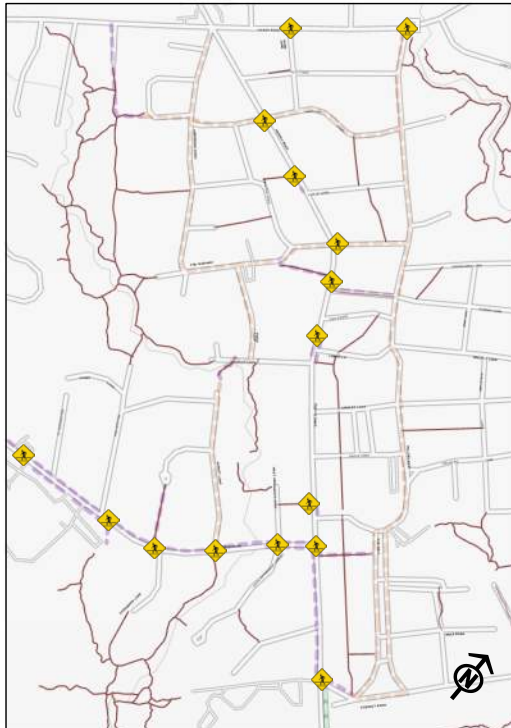
Given the unique, constrained nature of Harvey Road, equipping all emergency vehicles with signal preemption was identified as a key strategy for improving emergency responsiveness. Currently, only the Company’s ambulance fleet is equipped with signal preemption emitters. By outfitting the fire apparatus with signal preemption emitters, this technology would reduce vehicle queuing at the traffic signals along Harvey Road and improve emergency responsiveness. The estimated cost for outfitting the Department’s 14 vehicles (at \$3,000 per vehicle) is approximately \$50,000. In addition to the fire apparatus at Station 13, neighboring stations should also be outfitted to maximize the system, community, and response benefit.

Landscaping

Any landscaping added as part of this project can currently be paid for and installed by DelDOT, but that a local maintenance agreement will need to be executed prior to that installation that stipulates that ongoing maintenance work and costs will be borne locally.

Goal 2: Provide Enhanced Pedestrian Crossings

Key Crossing Locations



NCHRP
SYNTHESIS 498

NATIONAL
COOPERATIVE
HIGHWAY
RESEARCH
PROGRAM

**Application of Pedestrian
Crossing Treatments for
Streets and Highways**



A Synthesis of Highway Practice

TRANSPORTATION RESEARCH BOARD
The National Academies of
SCIENCES • ENGINEERING • MEDICINE

Apply guidance of NCHRP 498 and DeIDOT

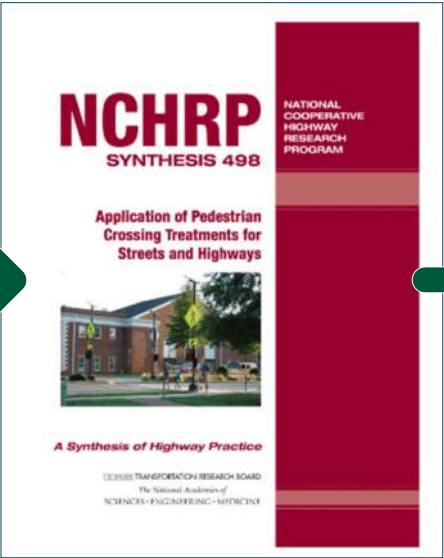
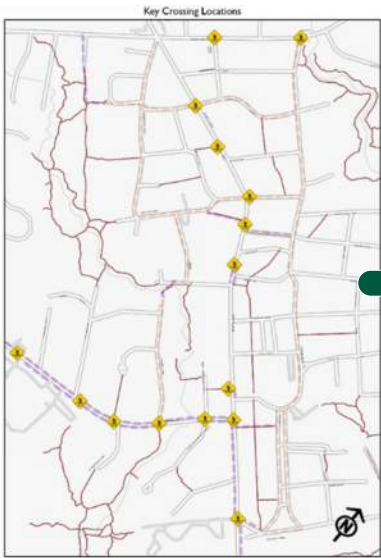
GOAL #2 - PROVIDE ENHANCED PEDESTRIAN CROSSINGS

There was great interest by the community for improving the safety of pedestrian crossings along throughfares through the Ardens, especially the crossing of Harvey Road, Veale Road, and Marsh Road. The key crossings are locations where the Plan's nonmotorized multimodal network traverses these main roads.

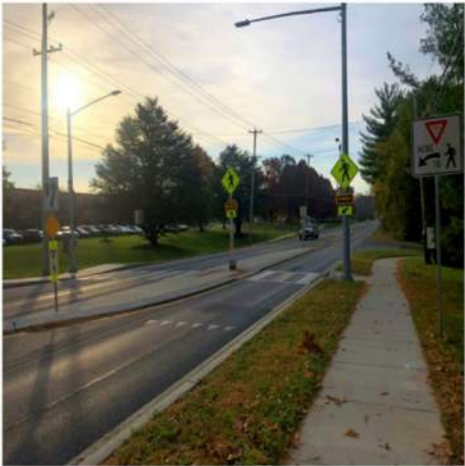


Determining intersection crossing protection

This plan does not specifically evaluate what level of crossing protection is recommended for each crossing location. This determination is a recommended next step prior to any project or phase advancing into preliminary engineering. This evaluation, following DelDOT guidelines and methods specified by the National Cooperative Highway Research Program (NCHRP) in Synthesis 498: Application of Pedestrian Crossing Treatments for Streets and Highways, will specify the degree of protection recommended for each crossing location.



Alternative 2-A Marked Crosswalk



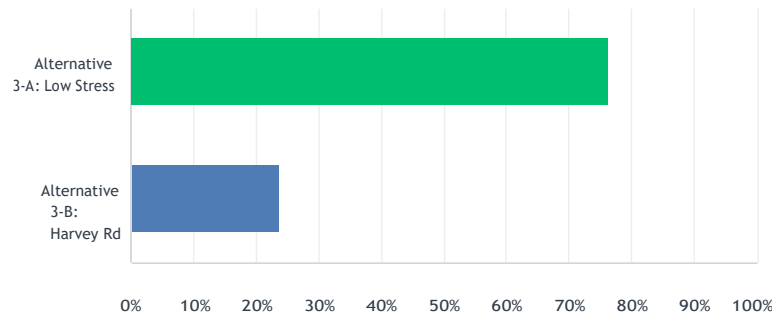
Alternative 2-B Rectangular Rapid Flash Beacon



Alternative 2-C HAWK Signal

Goal #3 What is your preferred alternative?

Answered: 72 Skipped: 37



GOAL #3 - DEVELOP A BICYCLE/PEDESTRIAN NETWORK TO TRAVERSE THROUGH THE ARDENS

Maintaining, enhancing, and improving non-motorized methods of traversing through the Ardens is a key goal of the Plan. Given that Harvey Road was identified as a critical barrier for walking and biking, two alternatives were developed to improve non-motorized mobility through the Ardens. The first alternative (Alternative 3-A) proposed primarily the avoidance of Harvey Road, whereby parallel routes for walking and bicycling would be established. This alternative is not a new concept to the Ardens, but rather a defining design principle of the Ardens' original design. This alternative would utilize the Ardens' robust network of existing trails with modest improvements proposed, such as ADA improvements at road crossings.

The second alternative (Alternative 3 B) proposed the establishment or creation of multimodal facilities along Harvey Road. This alternative would include widened shoulders for bicycling purposes as well as sidewalks along Harvey Road. Given the space requirements of this alternative, this alternative was estimated to have a significant environmental and right-of-way impact to Harvey Road.

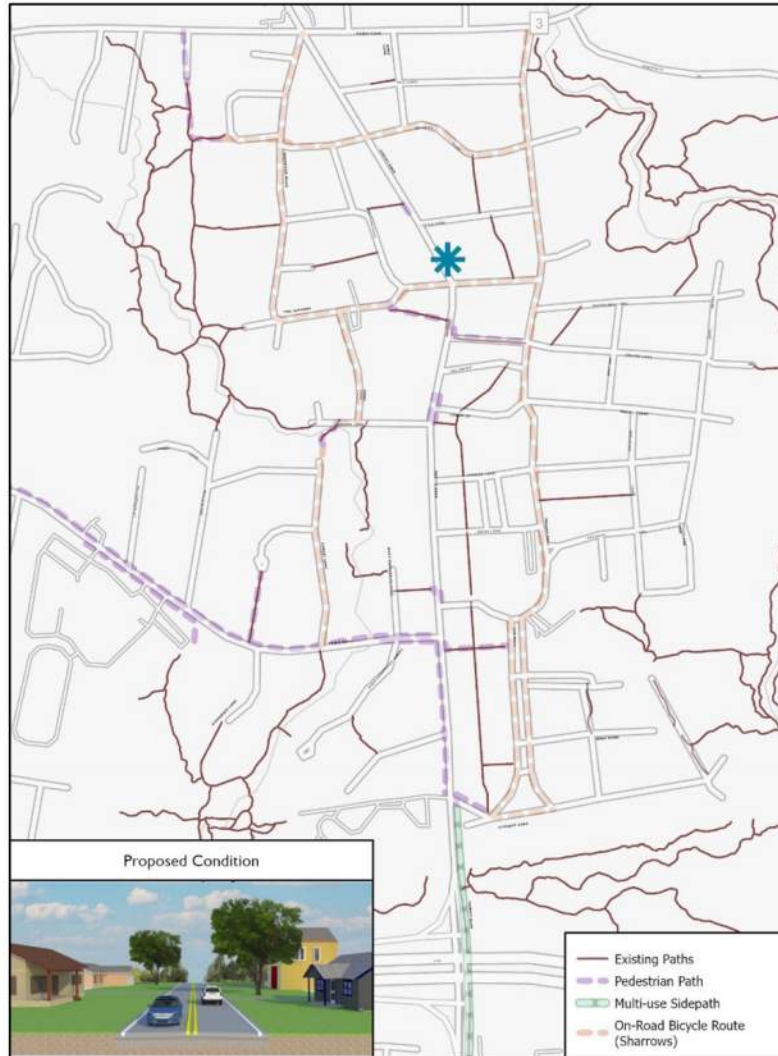
When posed in Survey #2, survey respondents supported Alternative 3-A (the low stress alternative) with 76% of votes versus Alternative 3-B (Harvey Road) at 24%.

Given the support of more than three quarters of survey respondents for Alternative 3-A, as well as the environmental impact of Alternative 3-B, Alternative 3-A (parallel, low-stress network) was recommended as the locally preferred alternative.

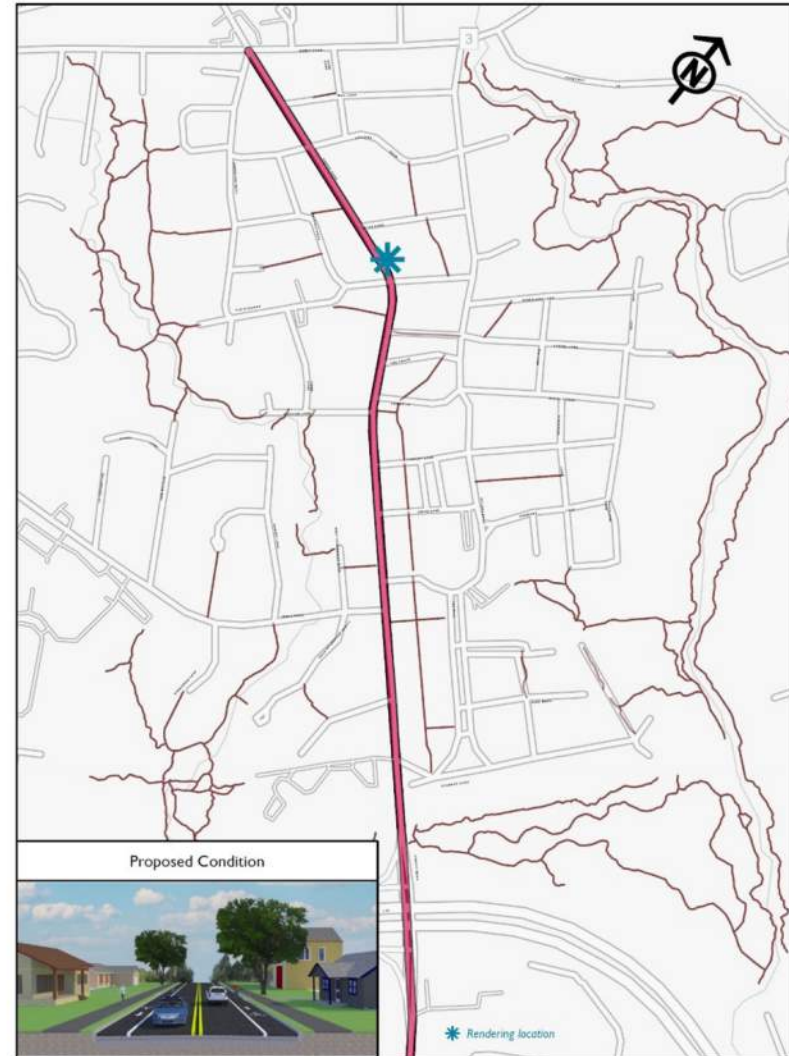
Though not the principal focus, some amenities could still be added along Harvey Road when deemed feasible upon further engineering and public engagement.

Goal 3: Develop a Bicycle/Pedestrian Network that traverses the Ardens

Alternative 3-A: Develop parallel low-stress network



Alternative 3-B: Add amenities to Harvey Road



Alternative 4-A: Modern/Sleek



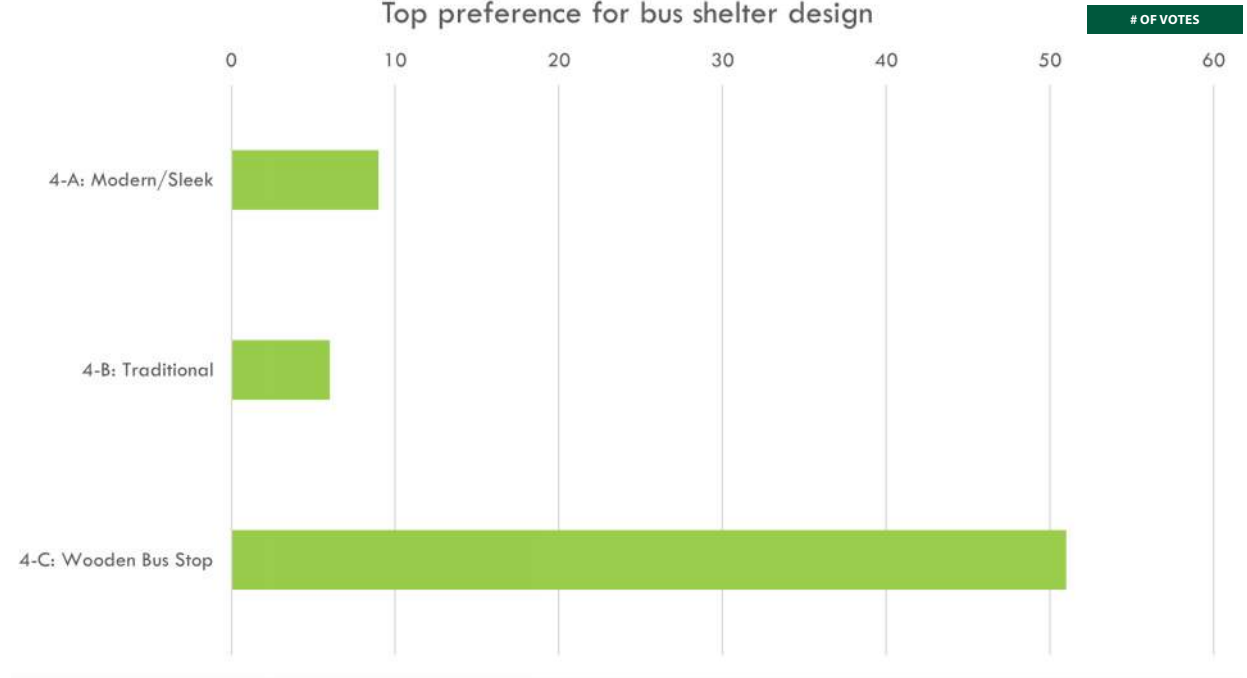
Alternative 4-B: Traditional



Alternative 4-C: Wooden Bus Stop



Top preference for bus shelter design



GOAL #4 - ENHANCE TRANSIT AND SCHOOL BUS STOPS

As an extension of the multimodal network, the fourth goal of the Connecting with the Ardens Plan is the enhancement of transit and school bus stops. Presently, the only transit shelter that exists within the Study Area is at the Orleans Road / Harvey Road intersection.

With the goal and intent of installing additional shelters, Survey #2 asked survey respondents to rank their visual preferences for three types of bus shelters, including a modern/sleek design, a traditional shelter design, and an all-wood design. The all-wood design received a vast majority of votes as the top design preference with 51 out of 68 votes (77%). Notably, this bus shelter design is unique and not compliant with DeIDOT/DART's bus shelters guidelines; therefore, any such installation of this all-wood shelter design would require local arrangements and maintenance responsibilities. Additionally, this shelter design would need to comply with DeIDOT breakaway standards for fixed objects in DeIDOT right-of-way.

Which bus stop do you feel should be the highest priority for improvement?



Priority Bus Stop Locations

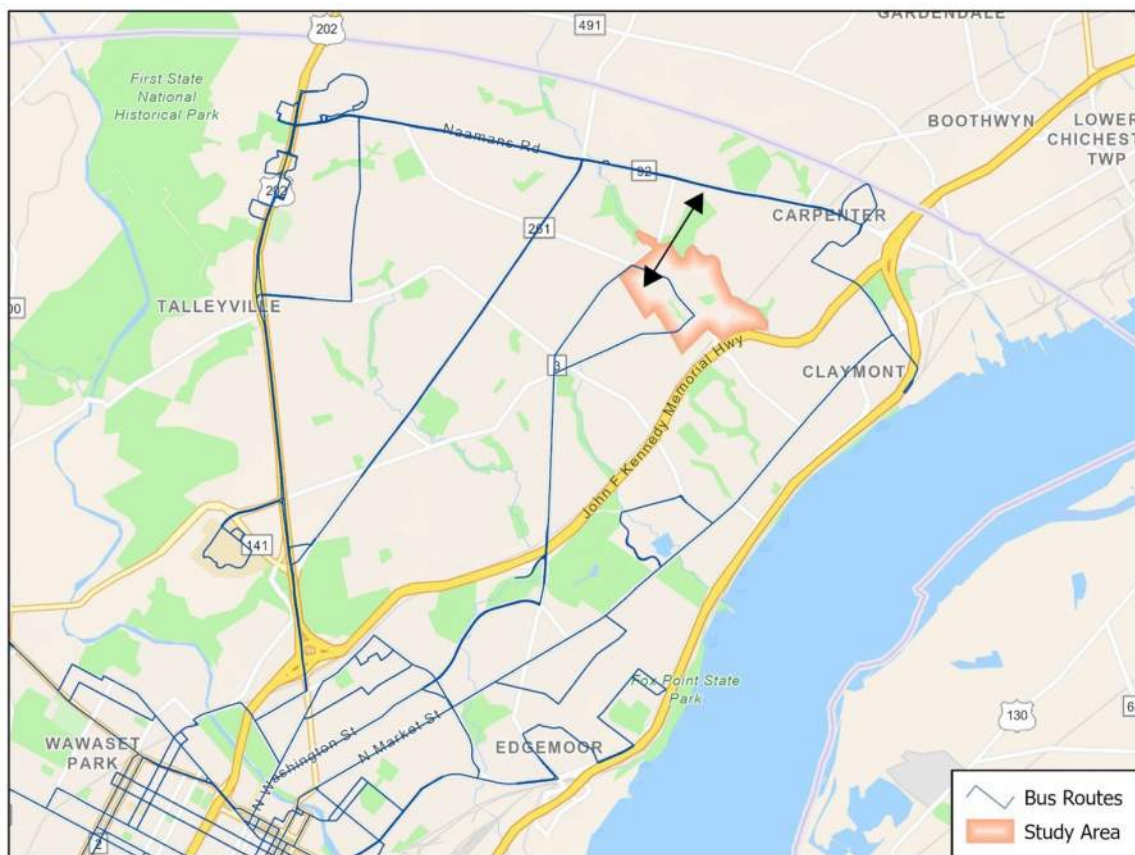
As part of Survey #2, the Ardens community was asked to identify which bus location would be the highest priority for improvement. The Harvey Road / Orleans Road bus stop received the most support with nine (9) votes as the top location. Notably, the second survey was released and completed by the public in March 2023; in April 2023, DelDOT constructed ADA improvements at the Harvey Road / Orleans Road intersection, including a sidewalk connection to the existing shelter.

Beyond the Harvey Road / Orleans Road intersection, six other locations received three to five votes.

Based on Steering Committee direction, the community survey results, and a distribution of stop locations, three locations were identified as priority bus stop locations:

- Marsh Road at Sherwood Road
- Harvey Road at Orleans Road
- Harvey Road at Millers Road





Service Alternatives

In addition to improved transit amenities/bus shelters, the Consultant Team coordinated with DART First State to review and discuss alternatives for improving transit service to the Study Area.

Accessibility to Route 61 / Naamans Road

In reviewing the community feedback from Survey #1 where respondents expressed a desire to take transit the Claymont Train Station as well as the Naamans Road/Route 202 corridor, one service improvement alternative is to improve walking and bicycling accessibility to the Route 61 bus, which operates along Naamans Road.

This alternative would require a trail bridge to be constructed over the South Branch of Naamans Creek, crossing of Chestnut Street, and the continuation of trail/path to Naamans Road.

A follow-up feasibility study would be required to further investigate the opportunities and constraints for this alternative.



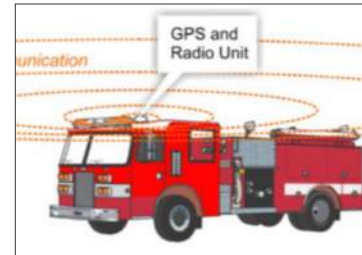
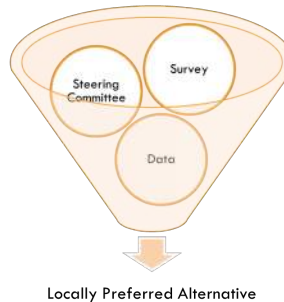
Microtransit / DART Connect

A second service alternative is the provision of on-demand microtransit to serve the Study Area. This alternative would provide similar service to DART's Connect service, which currently serves Georgetown and Millsboro in Sussex County and being introduced in Newark in 2023. An origin-destination study, which thoroughly quantifies the density of potential riders, trip purposes, and destinations, would be required to further investigate this alternative.

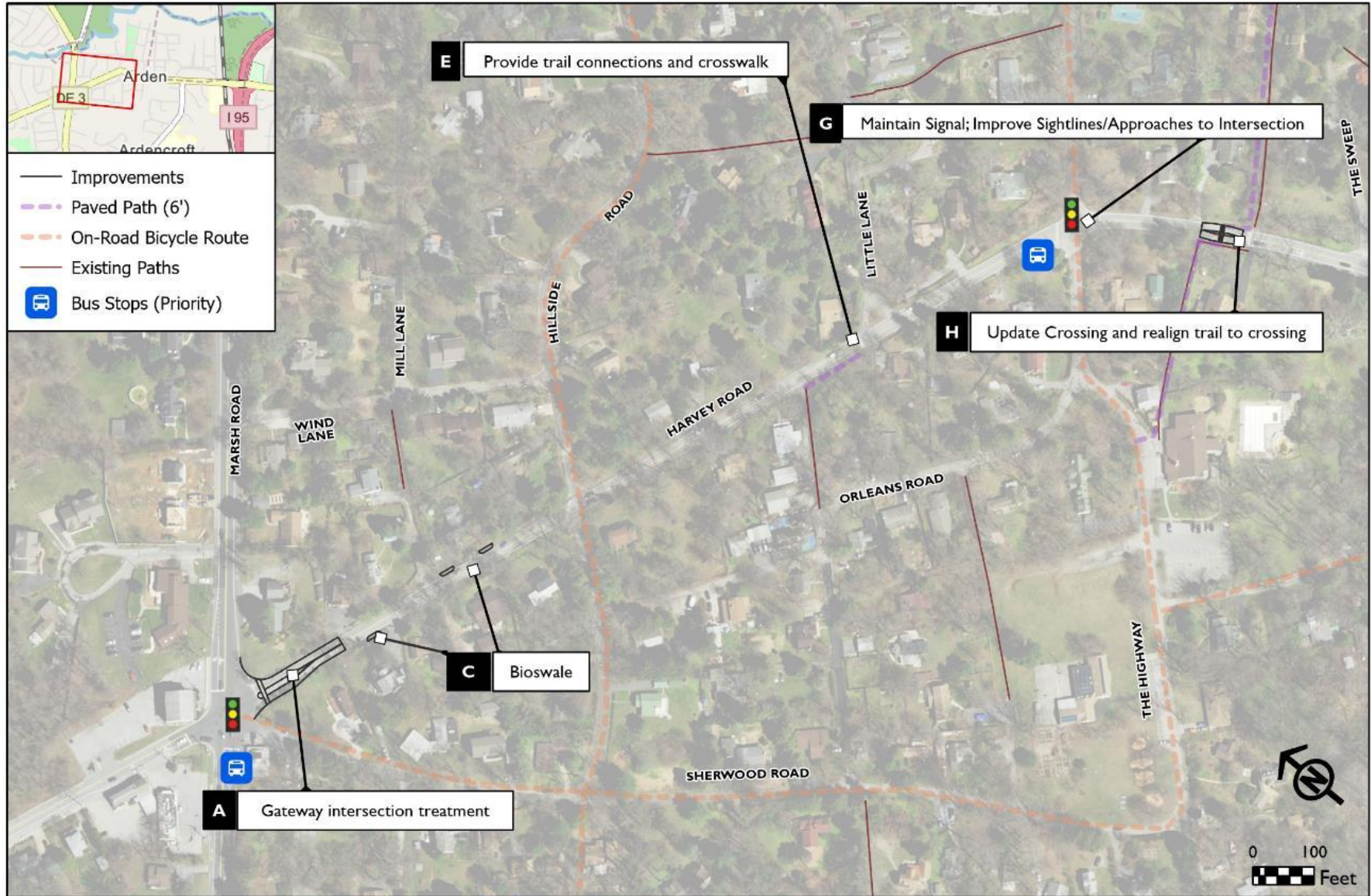
Locally Preferred Alternative

Locally Preferred Alternative

Based on feedback from Survey #2 and the second Public Meeting, the Steering Committee, with Consultant Team facilitation, selected a Locally Preferred Alternative from the array of improvement alternatives.

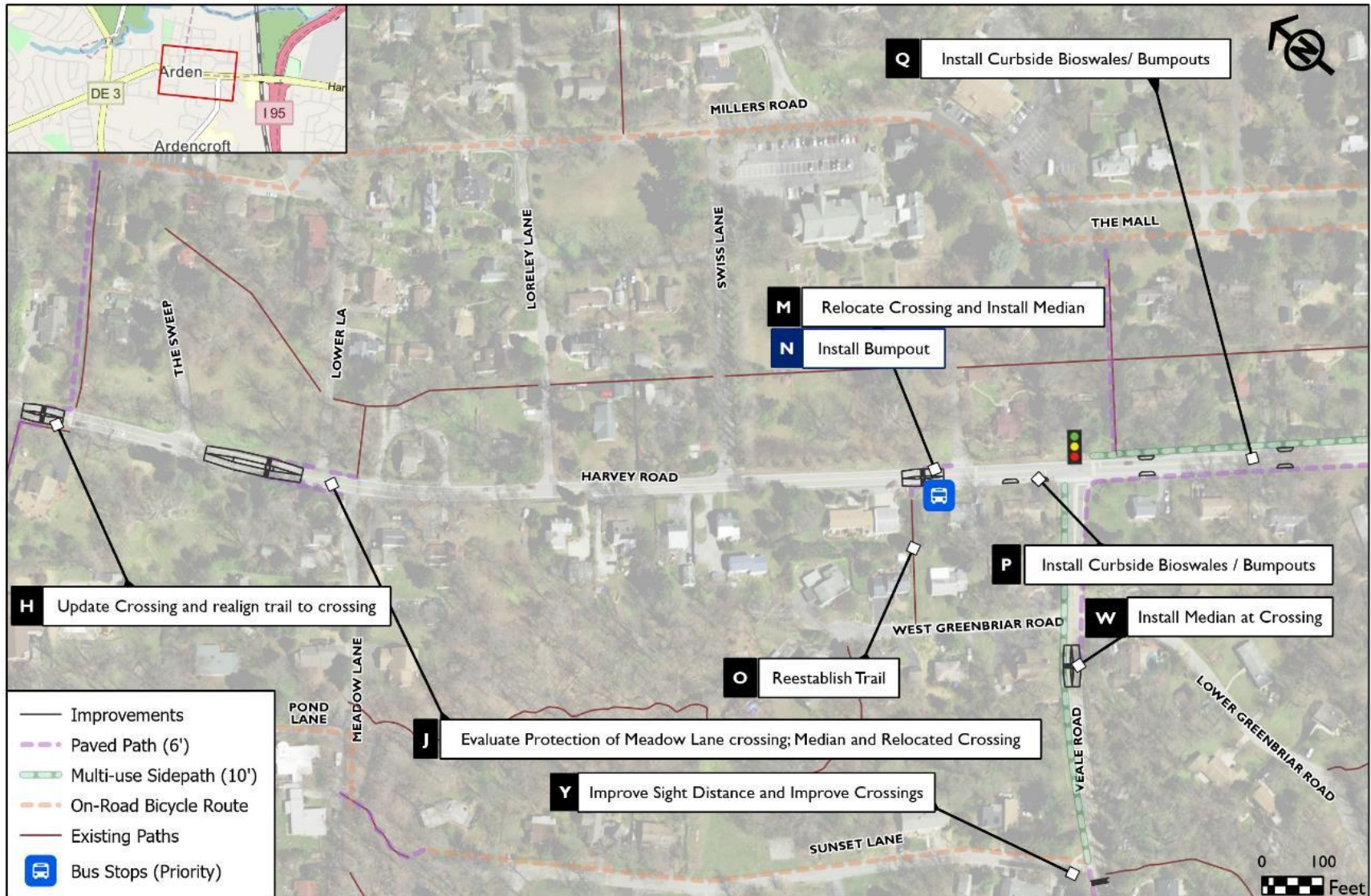


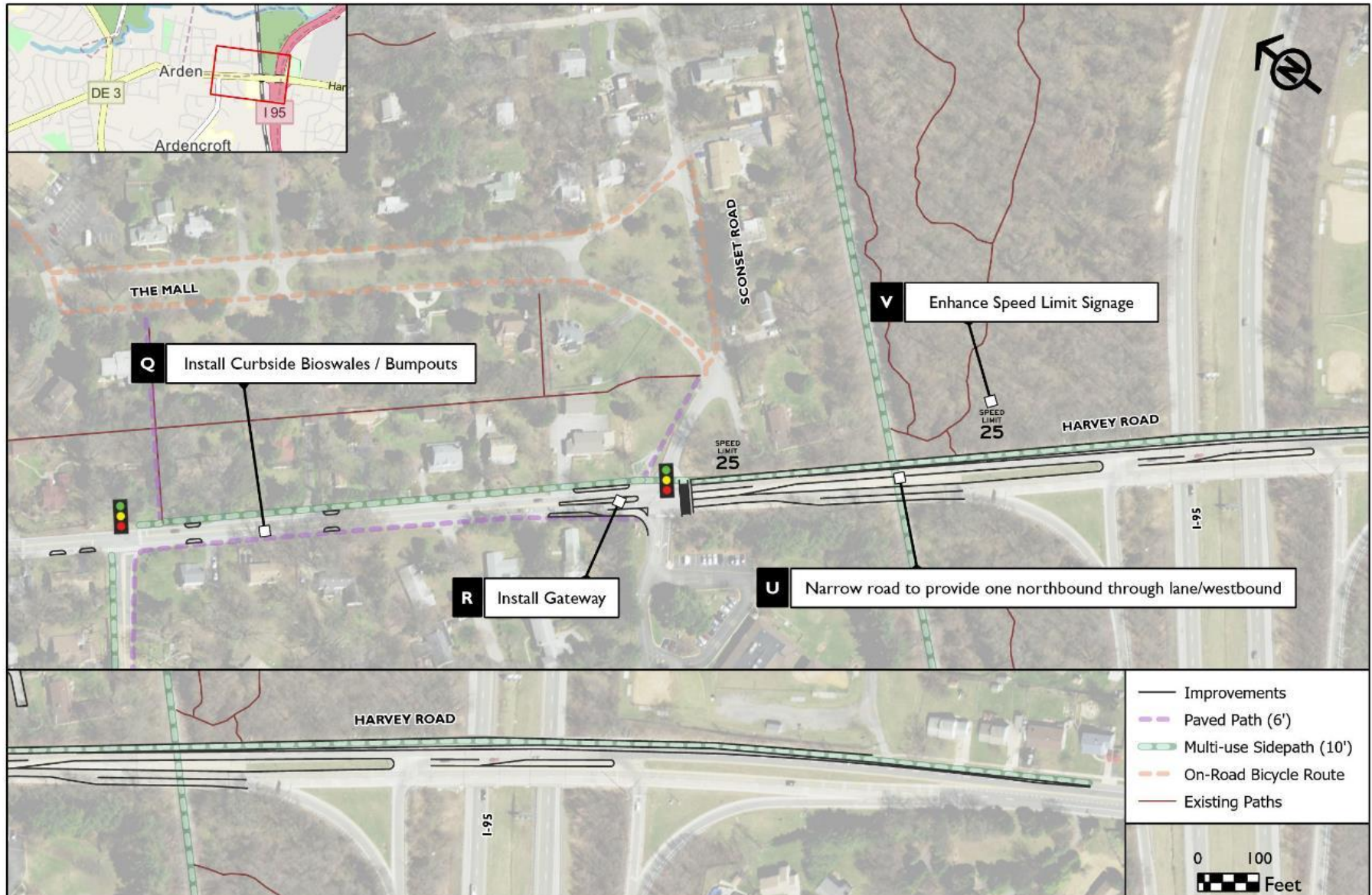
| LOCATION | LIMITS | ID | DESCRIPTION | FURTHER ACTIONS |
|-------------|-------------------------------------|----|---|--|
| Harvey Road | at Marsh Road | A | Gateway | Refine location/design specifics in preliminary engineering |
| | Mill Lane to Hillside Road | C | Bioswale | Refine location/design specifics in preliminary engineering |
| | Lovers Lane to Little Lane | E | Trail Crossing | Complete NCHRP 498 treatment assessment |
| | at Orleans Road | G | Maintain signal / improve geometry | Monitor crash history; define further geometric improvements |
| | at Clubhouse Path | H | Update pedestrian crossing | Complete NCHRP 498 treatment assessment |
| | Lower Lane to Meadow Lane | J | Crossing / Median | Complete NCHRP 498 treatment assessment |
| | north of Millers Road | M | Relocate crossing/install median | Determine preferred treatment in preliminary engineering |
| | north of Millers Road | N | Install bumpout | Determine preferred treatment in preliminary engineering |
| | north of Millers Road | O | Reestablish Trail | Advance in concert with Improvement M/N - when selected |
| | Millers Road to Veale Road | P | Curbside bioswale/bumpout | Refine location/design specifics in preliminary engineering |
| | Veale Road to Upper Greenbriar Road | Q | Curbside bioswale/bumpout | Refine location/design specifics in preliminary engineering |
| | at Sconset Road | R | Gateway | Refine location/design specifics in preliminary engineering |
| | Sconset Road to Glenrock Drive | U | Reduce NB Harvey Road to one lane | Capacity analysis of I-95/Harvey Road interchange required |
| | Sconset Road to Glenrock Drive | V | Enhance Speed Limit Signage | Coordinate with DelDOT to install signage |
| Veale Road | at W. Greenbriar Road | W | Median/pedestrian crossing | Complete NCHRP 498 treatment assessment |
| | at Sunset Lane; at Evergreen Lane | Y | Improve sight distance; improve crossings | Complete NCHRP 498 treatment assessment |
| | at Willow Way | Z | Median/pedestrian crossing | Complete NCHRP 498 treatment assessment |
| | E. Dale Road to Bellemeade Place | AA | Median/pedestrian crossing | Complete NCHRP 498 treatment assessment |
| | E. Dale Road to Harvey Road | AB | Reduce speed limit to 25 mph | Coordinate with DelDOT to install signage |
| | W. Dale Road to E. Dale Road | AD | Vegetated median (See map beginning on page 46) | Refine location/design specifics in preliminary engineering |
| | | | Signal preemption for emergency responders | Pursue funding for emergency vehicle preemption emitters |
| | | | Enhanced bus stops at priority bus stop locations | Coordinate improvements with DART First State |

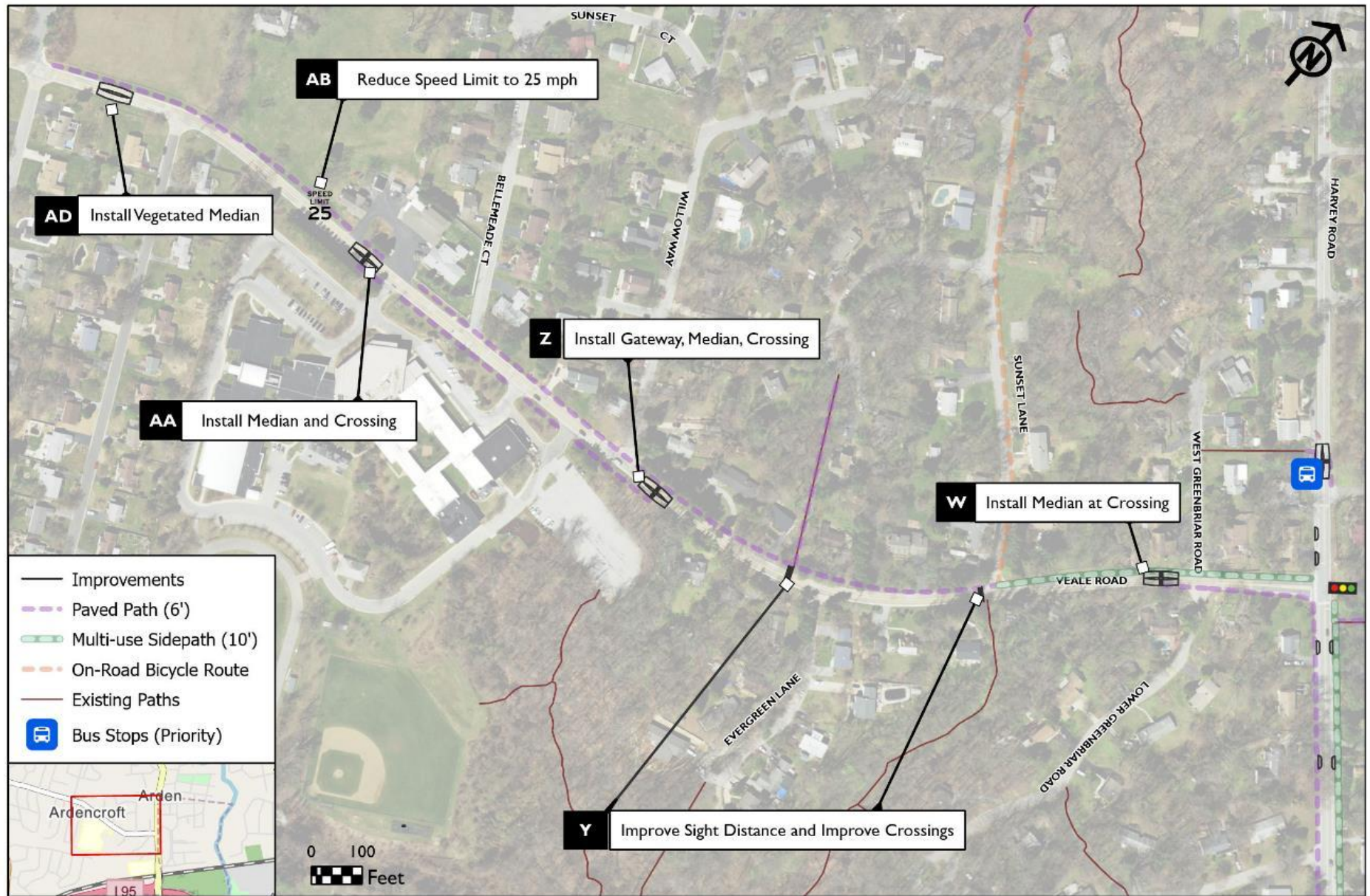


RENDERING OF CLUBHOUSE PATH / HARVEY ROAD CROSSING (IMPROVEMENT H)









Community Context



Context Sensitive Materials

As any of the proposed improvements proceed into design, special care and attention should be dedicated to selecting materials, pavements, colors, and textures that adhere to the community palette of the Ardens.

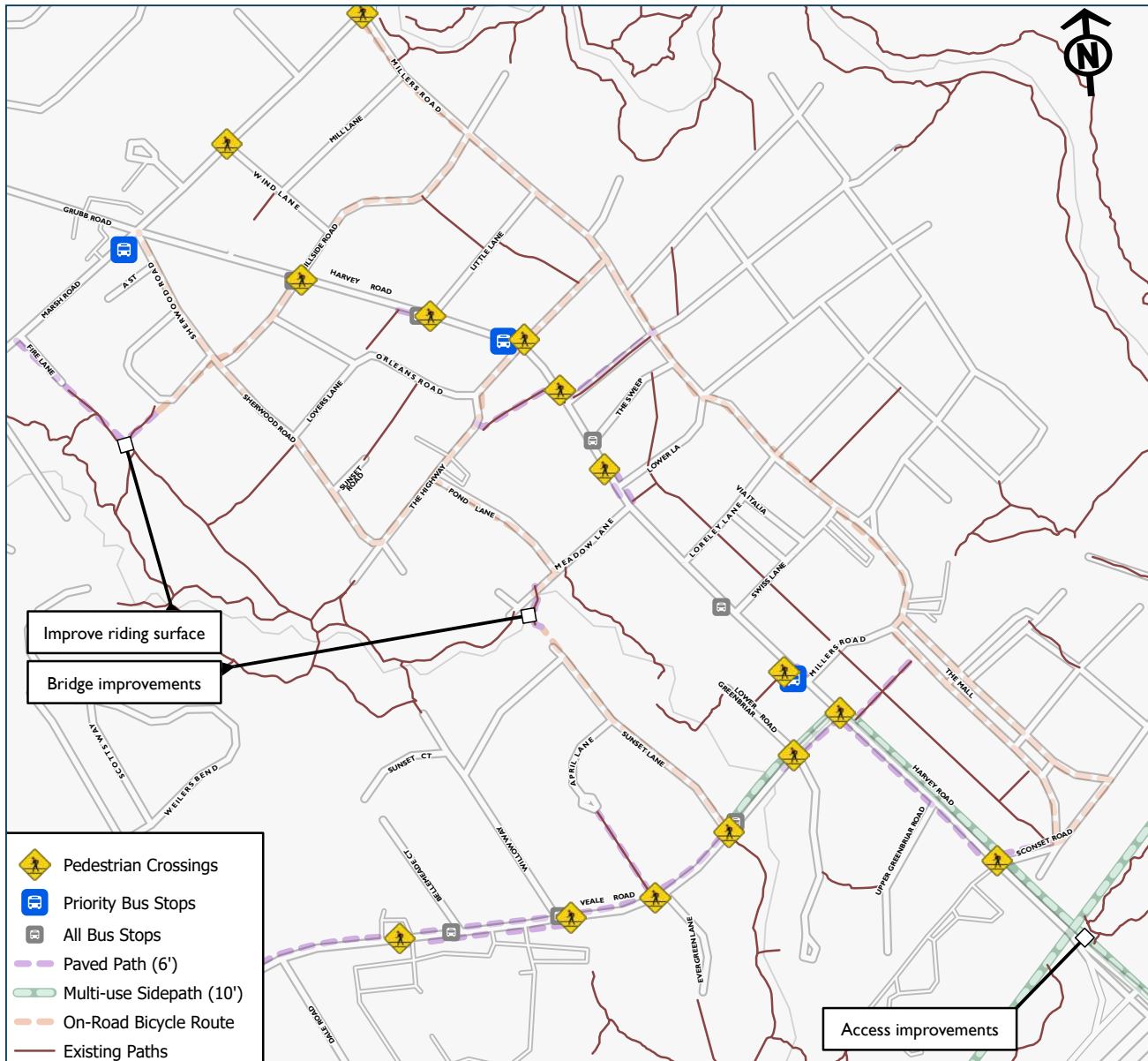
Community Art Opportunities

There may be opportunities for community art and/or street art to further embrace the character of the Ardens. Examples of community art may include the painting of signal or utility cabinets, intersection murals, or along any proposed retaining walls.

Stormwater Management

Stormwater best management practices would be implemented throughout the Ardens. The incorporation of these best management practices will provide a significant opportunity to advance the Ardens' Water Quality Master Plan.

Multimodal Network (Proposed)



Trail Maintenance / Conditions

Developing this low-stress multimodal network will require ongoing maintenance of the trails, paths, and roadways to ensure user safety.

Estimate of Probable Cost

Using the Locally Preferable Alternative, the Consultant Team prepared an estimate of probable cost for the proposed improvements. For cost estimating purposes, the proposed improvements were divided into five sub-projects or phases:

- Harvey Road – Marsh Road to Clubhouse Path
- Harvey Road – the Sweep to Veale Road
- Harvey Road – Veale Road to Sconset Road
- Harvey Road – Sconset Road to Glenrock Drive (including I-95 Interchange)
- Veale Road – Harvey Road to West Dale Road

These sub-projects or phases have independent utility where one or more of these phases could be advanced independently of the other phases.

Due to the preliminary nature of this Plan, rather than developing a precise estimate of engineering and cost construction costs, a range of project development and construction costs was prepared. Additionally, it should be noted that this estimate does not include right-of-way costs, utility work/relocation, and construction inspection. Within this context, the range of project development costs (survey, environmental clearance, design) for the full locally preferred alternative was estimated to be between \$1.5 million and \$3.1 million; the range of construction costs was estimated between \$7.8 million and \$13.3 million.

These costs are expected to be principally borne not locally, but by federal transportation dollars with a state funded match. Additionally, implementation of this project will likely take many years – about a decade. Local advocacy for the projects will be very beneficial given the backlog of transportation needs and projects across the region.

Estimate of Probable Cost (Preliminary)

Locally Preferred Alternative - Ardens Transportation Plan

| PHASE | PROJECT DEVELOPMENT (low to high range) | | CONSTRUCTION (low to high range) | | TOTAL (low to high range) | |
|---|--|--------------------|-------------------------------------|---------------------|------------------------------|---------------------|
| Harvey Road between Marsh Road and the Clubhouse Connection (A, C, E, G, H) | \$210,000 | \$500,000 | \$1,000,000 | \$2,000,000 | \$1,210,000 | \$2,500,000 |
| Harvey Road between The Sweep and Veale Road (J, M, N, O, P) | \$180,000 | \$400,000 | \$850,000 | \$1,600,000 | \$1,030,000 | \$2,000,000 |
| Harvey Road between Veale Road and Sconset Road (Q, R) | \$210,000 | \$420,000 | \$1,010,000 | \$1,950,000 | \$1,220,000 | \$2,370,000 |
| Harvey Road from Sconset Road over I-95 to Glenrock Drive (U) | \$500,000 | \$800,000 | \$2,600,000 | \$3,700,000 | \$3,100,000 | \$4,500,000 |
| Veale Road between Harvey Road and W. Dale Road (W, Y, Z, AA, AB, AD) | \$420,000 | \$970,000 | \$2,370,000 | \$4,090,000 | \$2,790,000 | \$5,060,000 |
| All SEGMENTS / PHASES | \$1,520,000 | \$3,090,000 | \$7,830,000 | \$13,340,000 | \$9,350,000 | \$16,430,000 |

Notes

Does not include right-of-way acquisition, utilities, and construction inspection
All prices are given in current dollars, as noted. No allowance for inflation is included.
Mobilization % also includes construction survey, scheduling, and related services.

Implementation Plan

The Implementation Plan provides a list of appropriate next steps to advance the goals and improvements proposed within the Connecting with the Ardens plan. A key concept within the Implementation Plan is the convening of a Monitoring Committee. This group is envisioned to include similar representation as the Project Steering Committee, with representatives of Arden, Ardencroft, Ardentown, WILMAPCO, and partnering agencies. The Monitoring Committee is expected to track and guide the implementation of this Plan.

Implementation Actions

| ACTION | RESPONSIBLE AGENCY | TIMING |
|--|---|--------------------|
| Adopt the Connecting to the Ardens plan | Ardens, Ardencroft, Ardentown, WILMAPCO Council | June / July 2023 |
| Convene Plan monitoring committee | WILMAPCO + Project Steering Committee | Summer / Fall 2023 |
| Pursue funding for emergency vehicle preemption emitters | Claymont Fire Company, Project Steering Committee, WILMAPCO | Summer / Fall 2023 |
| Complete operational analysis of I-95 / Harvey Road interchange | Connecting with the Ardens monitoring committee, DelDOT, WILMAPCO | Fall 2023 |
| Complete NCHRP 498 evaluation of pedestrian crossings | Connecting with the Ardens monitoring committee, DelDOT | Fall 2023 |
| Complete trail feasibility study from Ardens to Naamans Road / DART 61 bus route | Connecting with the Ardens monitoring committee | To be determined |
| Complete microtransit feasibility study / transit origin-destination study | DART First State, Connecting with the Ardens monitoring committee | To be determined |
| Coordinate bus stop / shelter improvements | Connecting with the Ardens monitoring committee, DART First State | To be determined |
| Submit project(s) for consideration in WILMAPCO's Transportation Improvement Program (TIP) | Connecting with the Ardens monitoring committee, DelDOT | To be determined |
| Consider / pursue grant opportunities for priority improvements | Connecting with the Ardens monitoring committee, DelDOT | Ongoing |
| CSX Rail with Trail - feasibility Study | Connecting with the Ardens monitoring committee | To be determined |
| Veale Road corridor (to Silverside / Allen Tract) | Connecting with the Ardens monitoring committee | To be determined |

Funding Opportunities

Transportation Alternatives Program

Transportation Alternatives Program (TAP) is a set-aside of the federal Surface Transportation Block Grant (STBG) Program. TAP provides funding for programs and projects defined as transportation alternatives, including on- and off-road pedestrian and bicycle facilities, infrastructure projects for improving non-driver access to public transportation and enhanced mobility, community improvement activities, and environmental mitigation; recreational trail program projects; safe routes to school projects; and projects for the planning, design or construction of boulevards and other roadways largely in the right-of-way of former Interstate System routes or other divided highways.

For more information click [HERE!](#)



Safe Streets for All – Implementation Grant

Safe Streets for All is a discretionary program established by the Bipartisan Infrastructure Law (BIL) aimed to prevent roadway deaths and serious injuries. The program has been appropriated \$5 billion in funding over a 5-year period. Per federal requirements, a community must first complete a Safety Action Plan before pursuing funding for safety improvements. WILMAPCO is currently completing a Safety Action Plan for New Castle County. Upon completion of the New Castle County Safety Action Plan, an implementation grant could be submitted for the full scope of the Locally Preferred Alternative.

For more information click [HERE!](#)

Community Transportation Funds

These are distributed by local elected officials and can fund small-scale projects, such as the equipment for the fire trucks.

Transportation Improvement Program (TIP) – WILMAPCO

The Transportation Improvement Program is a prioritized capital program of multimodal improvements, allocating state and federal transportation funds over a 4-year horizon. TIP project submissions are prioritized using WILMAPCO's Project Prioritization Process: <http://www.wilmapco.org/priority/>.

There are currently two projects in the WILMAPCO 2050 RTP (www.wilmapco.org/rtp) that would support implementation of this work. These are the Harvey Road Traffic Calming and Harvey Road and Sconset Road Pedestrian Improvements – both from the Ardentowns Paths Plan. After the endorsement of the plan, all the projects within it will go into the WILMAPCO RTP, superseding these placeholders.

For more information click [HERE!](#)



Appendix One

Planning + Environmental Linkages

Connecting with the Ardens

| Federal Highway Administration - Planning and Environmental Linkages Questionnaire | | | |
|---|--|--|---|
| https://www.environment.fhwa.dot.gov/env_initiatives/pel/pel_quest.aspx | | | |
| | Topic | Comments | Reference Section |
| 1 | Background: | | |
| a. | Who is the sponsor of the PEL study? (state DOT, Local Agency, Other) | WILMAPCO, Ardens, Ardentown, Ardencroft, DelDOT | Acknowledgements / Crafting a Plan for the Ardens |
| b. | What is the name of the PEL study document and other identifying project information (e.g. sub-account or STIP numbers, long-range plan, | <i>Connecting with the Ardens</i> | |
| c. | Who was included on the study team (Name and title of agency representatives, consultants, etc.)? | Project Steering Committee | Acknowledgements / Crafting a Plan for the Ardens |
| d. | Provide a description of the existing transportation facility within the corridor, including project limits, modes, functional classification, number of lanes, shoulder width, access control and type of surrounding | Harvey Road, Veale Road, Marsh Road | The Ardens Today |
| e. | Provide a brief chronology of the planning activities (PEL study) including the year(s) the studies were completed. | | Crafting a Plan for the Ardens |
| f. | Are there recent, current, or near future planning studies or projects in the vicinity? What is the relationship of this project to those | | Crafting a Plan for the Ardens |
| 2 | Methodology used: | | |
| a. | What was the scope of the PEL study and the reason for completing it? | Project Goals / Alternatives Analysis / Preferred Alternative | <i>Connecting with the Ardens (Full report)</i> |
| b. | Did you use NEPA-like language? Why or why not? | Yes, to facilitate the continuation of project development consistent with federal standards | |
| c. | What were the actual terms used and how did you define them? | Project Goals, Alternatives, Locally Preferred Alternative | |
| d. | How do you see these terms being used in NEPA documents? | Purpose and Need statement, public engagement, alternatives, Locally Preferred Alternative | |
| e. | What were the key steps and coordination points in the PEL decision-making process? Who were the decision-makers and who else participated in those key steps? | Blend of Public Meetings, Community Surveys (2), and Project Steering Committee | The Public Pulse, Alternatives, Locally Preferred Alternative |

Connecting with the Ardens

| | | | |
|---|---|---|---|
| | f. How should the PEL information be presented in NEPA? | Purpose and Need statement, alternatives, Locally Preferred Alternative | The Public Pulse, Alternatives, Locally Preferred Alternative |
| 3 | Agency coordination: | | |
| | a. Provide a synopsis of coordination with Federal, tribal, state and local environmental, regulatory and resource agencies. Describe their level of participation and how you coordinated with them. | Project Steering Committee | Alternatives, Appendices |
| | b. What transportation agencies (e.g. for adjacent jurisdictions) did you coordinate with or were involved during the PEL study? | Project Steering Committee (DeIDOT, DART First State) | Acknowledgements / Crafting a Plan for the Ardens |
| | c. What steps will need to be taken with each agency during NEPA scoping? | See Next Steps | Implementation Plan |
| 4 | Public coordination: | | |
| | a. Provide a synopsis of your coordination efforts with the public and stakeholders. | Public Meetings, Community Surveys (2), Online videos, project website | Public Pulse |
| 5 | Purpose and Need for the PEL study: | | |
| | a. What was the scope of the PEL study and the reason for completing it? | | <i>Connecting with the Ardens (Full report)</i> |
| | b. Provide the purpose and need statement, or the corridor vision and transportation goals and objectives to realize that vision. | Plan Goals: -Manage vehicular travel speeds and deploy safety countermeasures -Provide enhanced pedestrian crossings -Develop a bicycle/pedestrian network to traverse through the Ardens -Enhance transit and school bus stops | Crafting a Plan for the Ardens |
| | c. What steps will need to be taken during the NEPA process to make this a project-level purpose and need statement? | See Next Steps | Implementation Plan |
| 6 | Range of alternatives: | | |
| | a. What types of alternatives were looked at? (Provide a one or two sentence summary and reference document.) | | Alternatives |
| | b. How did you select the screening criteria and screening process? | | Alternatives |

Connecting with the Ardens

| | | | |
|----|--|---|---|
| c. | For alternative(s) that were screened out, briefly summarize the reasons for eliminating the alternative(s). (During the initial screenings, this generally will focus on fatal flaws.) | | Alternatives |
| d. | Which alternatives should be brought forward into NEPA and why? | | Locally Preferred Alternative |
| e. | Did the public, stakeholders, and agencies have an opportunity to comment during this process? | Yes – Public Meetings and two Community Surveys | The Public Pulse, Alternatives |
| f. | Were there unresolved issues with the public, stakeholders, and/or agencies? | | |
| 7 | Planning assumptions and analytical methods: | | |
| a. | What is the forecast year used in the PEL study? | N/A – Traffic projections/forecasts were not done as part of this initial planning phase. A supplemental capacity analysis of the Harvey Road corridor is recommended as a next step in the Implementation Plan. The horizon year will be established through coordination with DeIDOT. | Implementation Plan |
| b. | What method was used for forecasting traffic volumes? | N/A | |
| c. | Are the planning assumptions and the corridor vision/purpose and need statement consistent with each other and with the long-range transportation plan? Are the assumptions still valid? | Yes. | Crafting a Plan for the Ardens |
| d. | What were the future year policy and/or data assumptions used in the transportation planning process related to land use, economic development, transportation costs, and network expansion? | N/A | |
| 8 | Environmental resources (wetlands, cultural, etc.) reviewed. For each resource or group of resources reviewed, provide the following: | | |
| a. | In the PEL study, at what level of detail was the resource reviewed and what was the method of review? | Preliminary – using field views and available GIS datasets | Task 1 Report – Issues, Opportunities, and Constraints. Alternatives. |
| b. | Is this resource present in the area and what is the existing environmental condition for this resource? | Further environmental screening is required to identify and specify impacted resources. | |
| c. | What are the issues that need to be considered during NEPA, including potential resource impacts and potential mitigation requirements (if known)? | Further environmental screening is required to identify and specify impacted resources. | |

Connecting with the Ardens

| | | | |
|----|--|--|---------------------|
| d. | How will the planning data provided need to be supplemented during NEPA? | Further environmental screening is required to identify and specify impacted resources. | |
| 9 | List environmental resources you are aware of that were not reviewed in the PEL study and why. Indicate whether or not they will need to be reviewed in NEPA and explain why. | Further environmental screening is required to identify and specify impacted resources. | |
| 10 | Were cumulative impacts considered in the PEL study? If yes, provide the information or reference where the analysis can be found. | N/A | |
| 11 | Describe any mitigation strategies discussed at the planning level that should be analyzed during NEPA. | All improvements should be sensitive to the Ardens Historic District under Section 106. | |
| 12 | What needs to be done during NEPA to make information from the PEL study available to the agencies and the public? Are there PEL study products which can be used or provided to agencies or the public during the NEPA scoping process? | The <i>Connecting with the Ardens</i> plan will be posted to the Project website (hosted by WILMAPCO) as well as supplement activities via the project monitoring committee. | Implementation Plan |
| 13 | Are there any other issues a future project team should be aware of? | Subsequent planning/engineering efforts should continue to include robust and extensive engagement activities with the residents and leaseholders of the Ardens. | The Public Pulse |

An aerial photograph of a suburban street intersection. A two-lane road runs vertically, intersecting with a two-lane road running horizontally. The area is heavily wooded with trees showing autumn foliage in shades of green, yellow, and orange. A brick house with a dark roof is visible on the left side of the vertical road. Several cars are visible on the roads. A large, semi-transparent graphic of the number '02' is overlaid on the bottom right corner of the image.

02

Appendix Two
Estimate of Probable Costs

ESTIMATE OF PROBABLE COST (PRELIMINARY)

Date: 5/12/2023

Locally Preferred Alternative - Ardens Transportation Plan

| <u>Phase:</u> | <u>PROJECT DEVELOPMENT</u> | | <u>CONSTRUCTION</u> | | <u>TOTAL</u> | |
|---|----------------------------|---------------------------------|---------------------|----------------------------------|--------------|----------------------------------|
| Harvey Road between Marsh Road and the Clubhouse Connection (A, C, E, G, H) | \$ | 210,000 - \$ 500,000 | \$ | 1,000,000 - \$ 2,000,000 | \$ | 1,210,000 - \$ 2,500,000 |
| Harvey Road between The Sweep and Veale Road (J, M, N, O, P) | \$ | 180,000 - \$ 400,000 | \$ | 850,000 - \$ 1,600,000 | \$ | 1,030,000 - \$ 2,000,000 |
| Harvey Road between Veale Road and Sconset Road (Q, R) | \$ | 210,000 - \$ 420,000 | \$ | 1,010,000 - \$ 1,950,000 | \$ | 1,220,000 - \$ 2,370,000 |
| Harvey Road from Sconset Road over I-95 to Glenrock Drive (U) | \$ | 500,000 - \$ 800,000 | \$ | 2,600,000 - \$ 3,700,000 | \$ | 3,100,000 - \$ 4,500,000 |
| Veale Road between Harvey Road and W. Dale Road (W, Y, Z, AA, AB, AD) | \$ | 420,000 - \$ 970,000 | \$ | 2,370,000 - \$ 4,090,000 | \$ | 2,790,000 - \$ 5,060,000 |
| All SEGMENTS / PHASES | \$ | 1,520,000 - \$ 3,090,000 | \$ | 7,830,000 - \$ 13,340,000 | \$ | 9,350,000 - \$ 16,430,000 |

NotesDoes not include right-of-way acquisition, utilities, and construction inspection

All prices are given in current dollars, as noted. No allowance for inflation is included.

Mobilization % also includes construction survey, scheduling, and related services.

Harvey Road between Marsh Road and the Clubhouse Connection (A, C, E, G, H)

| Key Elements | Unit | Quantity | Unit Cost | Cost |
|--|------|----------|------------------|---------------------|
| Clearing and Grubbing | LS | 1 | \$ 85,000 | \$ 85,000 |
| Excavation | CY | 530 | \$ 90 | \$ 47,700 |
| Pedestrian Path (6' asphalt) | SY | 150 | \$ 125 | \$ 18,750 |
| Sidewalk (5' Concrete) | SY | 30 | \$ 330 | \$ 9,900 |
| Barrier Curb | LF | 70 | \$ 120 | \$ 8,400 |
| Mountable Curb | LF | 460 | \$ 75 | \$ 34,500 |
| Full Depth Pavement | SY | 300 | \$ 200 | \$ 60,000 |
| Pavement Mill and Overlay | SY | 700 | \$ 50 | \$ 35,000 |
| Driveway Adjustment - Residential | EA | 4 | \$ 7,500 | \$ 30,000 |
| Drainage | LS | 1 | \$ 135,000 | \$ 135,000 |
| Final Grading and Restoration | SY | 750 | \$ 15 | \$ 11,250 |
| Landscape Replacement | LS | 1 | \$ 34,500 | \$ 34,500 |
| Linear Pavement Markings | LF | 1700 | \$ 2 | \$ 3,400 |
| High Visibility Crosswalk | LF | 80 | \$ 60 | \$ 4,800 |
| ADA Curb Ramp | EA | 9 | \$ 12,000 | \$ 108,000 |
| Signage (OH Lane Use Control) | LS | 1 | \$ 55,500 | \$ 55,500 |
| RRFB | LS | 1 | \$ 50,000 | \$ 50,000 |
| Traffic Signal Adjustment | LS | 1 | \$ 20,000 | \$ 20,000 |
| Stone Median Texturing | SY | 20 | \$ 1,500 | \$ 30,000 |
| Curbed Roadside Bioswale (50 LF x 10 LF) | EA | 2 | \$ 40,000 | \$ 80,000 |
| | | | \$ - | \$ - |
| | | | Sub-total | \$ 861,700 |
| LS = Lump Sum | % | 8 | Mobilization | \$ 69,000 |
| EA = Each | % | 5 | ESC | \$ 44,000 |
| LF = Linear Feet | % | 12 | MPT | \$ 104,000 |
| SY = Square Yards | % | 25 | Contingency | \$ 270,000 |
| CY = Cubic Yards | | | Total | \$ 1,348,700 |

Summary (2023 Dollars)

| | | | |
|---------------------|----------------|----|----------------|
| Project Development | \$210,000.00 | TO | \$500,000.00 |
| Construction | \$1,000,000.00 | TO | \$2,000,000.00 |

Notes

Does not include construction inspection, utility coordination, right-of-way acquisition
All prices are given in current dollars, as noted. No allowance for inflation is included.
Mobilization % also includes construction survey, scheduling, and related services.

Harvey Road between The Sweep and Veale Road (J, M, N, O, P)

| Key Elements | Unit | Quantity | Unit Cost | Cost |
|--|------|----------|------------------|---------------------|
| Clearing and Grubbing | LS | 1 | \$ 35,000 | \$ 35,000 |
| Excavation | CY | 320 | \$ 100 | \$ 32,000 |
| Pedestrian Path (6' asphalt) | SY | 160 | \$ 125 | \$ 20,000 |
| Sidewalk (5' Concrete) | SY | 110 | \$ 210 | \$ 23,100 |
| Barrier Curb | LF | 170 | \$ 80 | \$ 13,600 |
| Mountable Curb | LF | 360 | \$ 70 | \$ 25,200 |
| Full Depth Pavement | SY | 310 | \$ 200 | \$ 62,000 |
| Pavement Mill and Overlay | SY | 810 | \$ 50 | \$ 40,500 |
| Driveway Adjustment - Residential | EA | 2 | \$ 7,500 | \$ 15,000 |
| Driveway Adjustment - Commercial | EA | 0 | \$ 25,000 | \$ - |
| Drainage | LS | 1 | \$ 165,000 | \$ 165,000 |
| Final Grading and Restoration | SY | 300 | \$ 15 | \$ 4,500 |
| Landscape Replacement | LS | 1 | \$ 37,000 | \$ 37,000 |
| Linear Pavement Markings | LF | 1500 | \$ 2 | \$ 3,000 |
| High Visibility Crosswalk | LF | 60 | \$ 60 | \$ 3,600 |
| ADA Curb Ramp | EA | 9 | \$ 12,000 | \$ 108,000 |
| Signage (OH Lane Use Control) | LS | 1 | \$ 17,500 | \$ 17,500 |
| RRFB | LS | 1 | \$ - | \$ - |
| Traffic Signal Adjustment | LS | 1 | \$ 10,000 | \$ 10,000 |
| Stone Median Texturing | SY | 15 | \$ 1,500 | \$ 22,500 |
| Curbed Roadside Bioswale (50 LF x 10 LF) | EA | 2 | \$ 40,000 | \$ 80,000 |
| | | | \$ - | \$ - |
| | | | Sub-total | \$ 717,500 |
| LS = Lump Sum | | | Mobilization | \$ 72,000 |
| EA = Each | | | ESC | \$ 36,000 |
| LF = Linear Feet | | | MPT | \$ 108,000 |
| SY = Square Yards | | | Contingency | \$ 234,000 |
| CY = Cubic Yards | | | Total | \$ 1,167,500 |

Summary (2023 Dollars)

| | | | |
|---------------------|--------------|----|----------------|
| Project Development | \$180,000.00 | TO | \$400,000.00 |
| Construction | \$850,000.00 | TO | \$1,600,000.00 |

Notes

Does not include construction inspection, utility coordination, right-of-way acquisition
All prices are given in current dollars, as noted. No allowance for inflation is included.
Mobilization % also includes construction survey, scheduling, and related services.

Harvey Road between Veale Road and Sconset Road (Q, R)

| Key Elements | Unit | Quantity | Unit Cost | Cost |
|--|------|----------|------------------|---------------------|
| Clearing and Grubbing | LS | 1 | \$ 60,000 | \$ 60,000 |
| Excavation | CY | 280 | \$ 100 | \$ 28,000 |
| Pedestrian Path (6' asphalt) | SY | 540 | \$ 125 | \$ 67,500 |
| Barrier Curb | LF | 50 | \$ 175 | \$ 8,750 |
| Mountable Curb | LF | 40 | \$ 100 | \$ 4,000 |
| Full Depth Pavement | SY | 30 | \$ 200 | \$ 6,000 |
| Driveway Adjustment - Residential | EA | 10 | \$ 7,500 | \$ 75,000 |
| Drainage | LS | 1 | \$ 125,000 | \$ 125,000 |
| Final Grading and Restoration | SY | 1120 | \$ 15 | \$ 16,800 |
| Landscape Replacement | LS | 1 | \$ 25,000 | \$ 25,000 |
| Linear Pavement Markings | LF | 700 | \$ 2 | \$ 1,400 |
| High Visibility Crosswalk | LF | 50 | \$ 60 | \$ 3,000 |
| ADA Curb Ramp | EA | 8 | \$ 12,000 | \$ 96,000 |
| Signage (OH Lane Use Control) | LS | 1 | \$ 2,500 | \$ 2,500 |
| RRFB | LS | 1 | \$ - | \$ - |
| Traffic Signal Adjustment | LS | 1 | \$ 70,000 | \$ 70,000 |
| Stone Median Texturing | SY | 10 | \$ 1,500 | \$ 15,000 |
| Curbed Roadside Bioswale (50 LF x 10 LF) | EA | 6 | \$ 40,000 | \$ 240,000 |
| | | | \$ - | \$ - |
| | | | Sub-total | \$ 843,950 |
| LS = Lump Sum | | | Mobilization | \$ 85,000 |
| EA = Each | | | ESC | \$ 43,000 |
| LF = Linear Feet | | | MPT | \$ 127,000 |
| SY = Square Yards | | | Contingency | \$ 275,000 |
| CY = Cubic Yards | | | Total | \$ 1,373,950 |

Summary (2023 Dollars)

| | | | |
|---------------------|----------------|----|----------------|
| Project Development | \$210,000.00 | TO | \$420,000.00 |
| Construction | \$1,010,000.00 | TO | \$1,950,000.00 |

Notes

Does not include construction inspection, utility coordination, right-of-way acquisition
All prices are given in current dollars, as noted. No allowance for inflation is included.
Mobilization % also includes construction survey, scheduling, and related services.

Harvey Road from Sconset Road over I-95 to Glenrock Drive (U)

| Key Elements | Unit | Quantity | Unit Cost | Cost |
|--|------|----------|------------------|---------------------|
| Clearing and Grubbing | LS | 1 | \$ 25,000 | \$ 25,000 |
| Excavation | CY | 620 | \$ 90 | \$ 55,800 |
| Pedestrian Path (6' asphalt) | SY | 0 | \$ 150 | \$ - |
| Sidewalk (10' Concrete) | SY | 1620 | \$ 140 | \$ 226,800 |
| Barrier Curb | LF | 1710 | \$ 85 | \$ 145,350 |
| Full Depth Pavement | SY | 380 | \$ 200 | \$ 76,000 |
| Driveway Adjustment - Residential | EA | 4 | \$ 12,500 | \$ 50,000 |
| Drainage | LS | 1 | \$ 250,000 | \$ 250,000 |
| Final Grading and Restoration | SY | 1900 | \$ 15 | \$ 28,500 |
| Linear Pavement Markings | LF | 6900 | \$ 2 | \$ 13,800 |
| High Visibility Crosswalk | LF | 48 | \$ 60 | \$ 2,880 |
| ADA Curb Ramp | EA | 4 | \$ 12,000 | \$ 48,000 |
| Signage | LS | 1 | \$ 25,000 | \$ 25,000 |
| Traffic Signal Adjustment | LS | 1 | \$ 100,000 | \$ 100,000 |
| Stone Median Texturing | SY | 140 | \$ 750 | \$ 105,000 |
| Curbed Roadside Bioswale (50 LF x 10 LF) | EA | 2 | \$ 40,000 | \$ 80,000 |
| Barrier Protected Path on Bridge | LF | 450 | \$ 1,620 | \$ 729,000 |
| | | | \$ - | \$ - |
| | | | Sub-total | \$ 1,961,130 |
| LS = Lump Sum | % | 10 | Mobilization | \$ 197,000 |
| EA = Each | % | 5 | ESC | \$ 99,000 |
| LF = Linear Feet | % | 10 | MPT | \$ 197,000 |
| SY = Square Yards | % | 25 | Contingency | \$ 614,000 |
| CY = Cubic Yards | | | Total | \$ 3,068,130 |

Summary (2023 Dollars)

| | | | |
|---------------------|----------------|----|----------------|
| Project Development | \$500,000.00 | TO | \$800,000.00 |
| Construction | \$2,600,000.00 | TO | \$3,700,000.00 |

Assumes no right-of-way acquisition is needed.

Does not include construction inspection, utility coordination, right-of-way acquisition

All prices are given in current dollars, as noted. No allowance for inflation is included.

Mobilization % also includes construction survey, scheduling, and related services.

Veale Road between Harvey Road and W. Dale Road (W, Y, Z, AA, AB, AD)

| Key Elements | Unit | Quantity | Unit Cost | Cost |
|-----------------------------------|------|----------|------------------|---------------------|
| Clearing and Grubbing | LS | 1 | \$ 235,000 | \$ 235,000 |
| Excavation | CY | 900 | \$ 75 | \$ 67,500 |
| Pedestrian Path (6' asphalt) | SY | 300 | \$ 110 | \$ 33,000 |
| Sidewalk (5' Concrete) | SY | 1980 | \$ 135 | \$ 267,300 |
| Mountable Curb | LF | 1230 | \$ 50 | \$ 61,500 |
| Full Depth Pavement | SY | 460 | \$ 160 | \$ 73,600 |
| Driveway Adjustment - Residential | EA | 18 | \$ 7,500 | \$ 135,000 |
| Drainage | LS | 1 | \$ 265,000 | \$ 265,000 |
| Final Grading and Restoration | SY | 2500 | \$ 15 | \$ 37,500 |
| Landscape Replacement | LS | 1 | \$ 147,500 | \$ 147,500 |
| Linear Pavement Markings | LF | 600 | \$ 2 | \$ 1,200 |
| High Visibility Crosswalk | LF | 370 | \$ 60 | \$ 22,200 |
| ADA Curb Ramp | EA | 31 | \$ 12,000 | \$ 372,000 |
| Signage | LS | 1 | \$ 50,000 | \$ 50,000 |
| RRFB | LS | 1 | \$ - | \$ - |
| Traffic Signal Adjustment | LS | 1 | \$ - | \$ - |
| | | | \$ - | \$ - |
| | | | Sub-total | \$ 1,768,300 |
| LS = Lump Sum | % | 8 | Mobilization | \$ 142,000 |
| EA = Each | % | 5 | ESC | \$ 89,000 |
| LF = Linear Feet | % | 12 | MPT | \$ 213,000 |
| SY = Square Yards | % | 25 | Contingency | \$ 554,000 |
| CY = Cubic Yards | | | Total | \$ 2,766,300 |

Summary (2023 Dollars)

| | | | |
|---------------------|----------------|----|----------------|
| Project Development | \$420,000.00 | TO | \$970,000.00 |
| Construction | \$2,370,000.00 | TO | \$4,090,000.00 |

Notes

Does not include construction inspection, utility coordination, right-of-way acquisition
All prices are given in current dollars, as noted. No allowance for inflation is included.
Mobilization % also includes construction survey, scheduling, and related services.

A - Harvey Road Gateway Intersection Treatment (North)

| Key Elements | Unit | Quantity | Unit Cost | Cost |
|--|------|----------|------------------|-------------------|
| Clearing and Grubbing | LS | 1 | \$ 30,000 | \$ 30,000 |
| Excavation | CY | 290 | \$ 125 | \$ 36,250 |
| Pedestrian Path (6' asphalt) | SY | 0 | \$ 150 | \$ - |
| Sidewalk (5' Concrete) | SY | 30 | \$ 225 | \$ 6,750 |
| Barrier Curb | LF | 70 | \$ 80 | \$ 5,600 |
| Mountable Curb | LF | 160 | \$ 100 | \$ 16,000 |
| Full Depth Pavement | SY | 100 | \$ 200 | \$ 20,000 |
| Pavement Mill and Overlay | SY | 370 | \$ 50 | \$ 18,500 |
| Driveway Adjustment - Residential | EA | 0 | \$ 7,500 | \$ - |
| Driveway Adjustment - Commercial | EA | 0 | \$ 25,000 | \$ - |
| Drainage | LS | 1 | \$ 25,000 | \$ 25,000 |
| Final Grading and Restoration | SY | 250 | \$ 15 | \$ 3,750 |
| Landscape Replacement | LS | 1 | \$ 12,000 | \$ 12,000 |
| Linear Pavement Markings | LF | 600 | \$ 2 | \$ 1,200 |
| High Visibility Crosswalk | LF | 20 | \$ 60 | \$ 1,200 |
| ADA Curb Ramp | EA | 2 | \$ 12,000 | \$ 24,000 |
| Signage (OH Lane Use Control) | LS | 1 | \$ 40,000 | \$ 40,000 |
| School Flasher Relocation | LS | 0 | \$ - | \$ - |
| Traffic Signal Adjustment | LS | 1 | \$ 10,000 | \$ 10,000 |
| Stone Median Texturing | SY | 10 | \$ 1,500 | \$ 15,000 |
| Curbed Roadside Bioswale (50 LF x 10 LF) | EA | 0 | \$ 40,000 | \$ - |
| | | | \$ - | \$ - |
| | | | Sub-total | \$ 265,250 |
| LS = Lump Sum | | | Mobilization | \$ 27,000 |
| EA = Each | | | ESC | \$ 14,000 |
| LF = Linear Feet | | | MPT | \$ 54,000 |
| SY = Square Yards | | | Contingency | \$ 91,000 |
| CY = Cubic Yards | | | Total | \$ 451,250 |

Summary (2023 Dollars)

| | | | |
|---------------------|--------------|----|--------------|
| Project Development | \$70,000.00 | TO | \$140,000.00 |
| Construction | \$330,000.00 | TO | \$590,000.00 |

Notes

Does not include construction inspection, utility coordination, right-of-way acquisition
All prices are given in current dollars, as noted. No allowance for inflation is included.
Mobilization % also includes construction survey, scheduling, and related services.

C - Harvey Road Bioswales

| Key Elements | Unit | Quantity | Unit Cost | Cost |
|--|------|----------|------------------|-------------------|
| Clearing and Grubbing | LS | 1 | \$ 25,000 | \$ 25,000 |
| Excavation | CY | 0 | \$ 125 | \$ - |
| Pedestrian Path (6' asphalt) | SY | 0 | \$ 150 | \$ - |
| Sidewalk (5' Concrete) | SY | 0 | \$ 225 | \$ - |
| Barrier Curb | LF | 0 | \$ 80 | \$ - |
| Mountable Curb | LF | 0 | \$ 100 | \$ - |
| Full Depth Pavement | SY | 0 | \$ 200 | \$ - |
| Pavement Mill and Overlay | SY | 0 | \$ 50 | \$ - |
| Driveway Adjustment - Residential | EA | 0 | \$ 7,500 | \$ - |
| Driveway Adjustment - Commercial | EA | 0 | \$ 25,000 | \$ - |
| Drainage | LS | 1 | \$ 50,000 | \$ 50,000 |
| Final Grading and Restoration | SY | 0 | \$ 15 | \$ - |
| Landscape Replacement | LS | 0 | \$ - | \$ - |
| Linear Pavement Markings | LF | 300 | \$ 2 | \$ 600 |
| High Visibility Crosswalk | LF | 0 | \$ 60 | \$ - |
| ADA Curb Ramp | EA | 0 | \$ 12,000 | \$ - |
| Signage | LS | 1 | \$ 2,500 | \$ 2,500 |
| School Flasher Relocation | LS | 0 | \$ - | \$ - |
| Traffic Signal Adjustment | LS | 0 | \$ - | \$ - |
| Stone Median Texturing | SY | 0 | \$ 1,500 | \$ - |
| Curbed Roadside Bioswale (50 LF x 10 LF) | EA | 2 | \$ 40,000 | \$ 80,000 |
| | | | \$ - | \$ - |
| | | | Sub-total | \$ 158,100 |
| LS = Lump Sum | | | Mobilization | \$ 16,000 |
| EA = Each | | | ESC | \$ 8,000 |
| LF = Linear Feet | | | MPT | \$ 32,000 |
| SY = Square Yards | | | Contingency | \$ 54,000 |
| CY = Cubic Yards | | | Total | \$ 268,100 |

Summary (2023 Dollars)

| | | | |
|---------------------|--------------|----|--------------|
| Project Development | \$50,000.00 | TO | \$90,000.00 |
| Construction | \$190,000.00 | TO | \$350,000.00 |

Notes

Does not include construction inspection, utility coordination, right-of-way acquisition
All prices are given in current dollars, as noted. No allowance for inflation is included.
Mobilization % also includes construction survey, scheduling, and related services.

E - Harvey Road and Little Lane Crossing Connection Upgrades

| Key Elements | Unit | Quantity | Unit Cost | Cost |
|--|------|----------|------------------|-------------------|
| Clearing and Grubbing | LS | 1 | \$ 15,000 | \$ 15,000 |
| Excavation | CY | 70 | \$ 125 | \$ 8,750 |
| Pedestrian Path (4' asphalt) | SY | 70 | \$ 150 | \$ 10,500 |
| Sidewalk (5' Concrete) | SY | 0 | \$ 225 | \$ - |
| Barrier Curb | LF | 0 | \$ 80 | \$ - |
| Mountable Curb | LF | 0 | \$ 100 | \$ - |
| Full Depth Pavement | SY | 0 | \$ 200 | \$ - |
| Pavement Mill and Overlay | SY | 10 | \$ 50 | \$ 500 |
| Driveway Adjustment - Residential | EA | 2 | \$ 7,500 | \$ 15,000 |
| Driveway Adjustment - Commercial | EA | 0 | \$ 25,000 | \$ - |
| Drainage | LS | 1 | \$ 10,000 | \$ 10,000 |
| Final Grading and Restoration | SY | 200 | \$ 15 | \$ 3,000 |
| Landscape Replacement | LS | 1 | \$ 2,500 | \$ 2,500 |
| Linear Pavement Markings | LF | 100 | \$ 2 | \$ 200 |
| High Visibility Crosswalk | LF | 30 | \$ 60 | \$ 1,800 |
| ADA Curb Ramp | EA | 2 | \$ 12,000 | \$ 24,000 |
| Signage | LS | 1 | \$ 5,000 | \$ 5,000 |
| RRFB | LS | 0 | \$ - | \$ - |
| Traffic Signal Adjustment | LS | 0 | \$ - | \$ - |
| Stone Median Texturing | SY | 0 | \$ 1,500 | \$ - |
| Curbed Roadside Bioswale (50 LF x 10 LF) | EA | 0 | \$ 40,000 | \$ - |
| | | | \$ - | \$ - |
| | | | Sub-total | \$ 96,250 |
| LS = Lump Sum | | | Mobilization | \$ 10,000 |
| EA = Each | | | ESC | \$ 5,000 |
| LF = Linear Feet | | | MPT | \$ 20,000 |
| SY = Square Yards | | | Contingency | \$ 33,000 |
| CY = Cubic Yards | | | Total | \$ 164,250 |

Summary (2023 Dollars)

| | | | |
|---------------------|--------------|----|--------------|
| Project Development | \$30,000.00 | TO | \$50,000.00 |
| Construction | \$120,000.00 | TO | \$220,000.00 |

Notes

Does not include construction inspection, utility coordination, right-of-way acquisition
All prices are given in current dollars, as noted. No allowance for inflation is included.
Mobilization % also includes construction survey, scheduling, and related services.

G - Harvey Road and Orleans Road Intersection Upgrades

| Key Elements | Unit | Quantity | Unit Cost | Cost |
|--|------|----------|------------------|-------------------|
| Clearing and Grubbing | LS | 1 | \$ 5,000 | \$ 5,000 |
| Excavation | CY | 20 | \$ 125 | \$ 2,500 |
| Pedestrian Path (4' asphalt) | SY | 0 | \$ 150 | \$ - |
| Sidewalk (5' Concrete) | SY | 0 | \$ 225 | \$ - |
| Barrier Curb | LF | 0 | \$ 80 | \$ - |
| Mountable Curb | LF | 90 | \$ 100 | \$ 9,000 |
| Full Depth Pavement | SY | 20 | \$ 200 | \$ 4,000 |
| Pavement Mill and Overlay | SY | 0 | \$ 50 | \$ - |
| Driveway Adjustment - Residential | EA | 0 | \$ 7,500 | \$ - |
| Driveway Adjustment - Commercial | EA | 0 | \$ 25,000 | \$ - |
| Drainage | LS | 1 | \$ 10,000 | \$ 10,000 |
| Final Grading and Restoration | SY | 100 | \$ 15 | \$ 1,500 |
| Landscape Replacement | LS | 0 | \$ - | \$ - |
| Linear Pavement Markings | LF | 100 | \$ 2 | \$ 200 |
| High Visibility Crosswalk | LF | 0 | \$ 60 | \$ - |
| ADA Curb Ramp | EA | 2 | \$ 12,000 | \$ 24,000 |
| Signage | LS | 1 | \$ 3,000 | \$ 3,000 |
| RRFB | LS | 0 | \$ - | \$ - |
| Traffic Signal Adjustment | LS | 1 | \$ 10,000 | \$ 10,000 |
| Stone Median Texturing | SY | 0 | \$ 1,500 | \$ - |
| Curbed Roadside Bioswale (50 LF x 10 LF) | EA | 0 | \$ 40,000 | \$ - |
| | | | \$ - | \$ - |
| | | | Sub-total | \$ 69,200 |
| LS = Lump Sum | | | Mobilization | \$ 7,000 |
| EA = Each | | | ESC | \$ 4,000 |
| LF = Linear Feet | | | MPT | \$ 14,000 |
| SY = Square Yards | | | Contingency | \$ 24,000 |
| CY = Cubic Yards | | | Total | \$ 118,200 |

Summary (2023 Dollars)

| | | | |
|---------------------|-------------|----|--------------|
| Project Development | \$20,000.00 | TO | \$40,000.00 |
| Construction | \$80,000.00 | TO | \$160,000.00 |

Notes

Does not include construction inspection, utility coordination, right-of-way acquisition
All prices are given in current dollars, as noted. No allowance for inflation is included.
Mobilization % also includes construction survey, scheduling, and related services.

H - Harvey Road Midblock Crossing at the Clubhouse Driveway

| Key Elements | Unit | Quantity | Unit Cost | Cost |
|--|------|----------|------------------|-------------------|
| Clearing and Grubbing | LS | 1 | \$ 10,000 | \$ 10,000 |
| Excavation | CY | 150 | \$ 125 | \$ 18,750 |
| Pedestrian Path (6' asphalt) | SY | 80 | \$ 150 | \$ 12,000 |
| Sidewalk (5' Concrete) | SY | 0 | \$ 225 | \$ - |
| Barrier Curb | LF | 0 | \$ 80 | \$ - |
| Mountable Curb | LF | 210 | \$ 100 | \$ 21,000 |
| Full Depth Pavement | SY | 180 | \$ 200 | \$ 36,000 |
| Pavement Mill and Overlay | SY | 320 | \$ 50 | \$ 16,000 |
| Driveway Adjustment - Residential | EA | 2 | \$ 7,500 | \$ 15,000 |
| Driveway Adjustment - Commercial | EA | 0 | \$ 25,000 | \$ - |
| Drainage and Stormwater Control Measures | LS | 1 | \$ 40,000 | \$ 40,000 |
| Final Grading and Restoration | SY | 200 | \$ 15 | \$ 3,000 |
| Landscape & Fence Replacement | LS | 1 | \$ 20,000 | \$ 20,000 |
| Linear Pavement Markings | LF | 600 | \$ 2 | \$ 1,200 |
| High Visibility Crosswalk | LF | 30 | \$ 60 | \$ 1,800 |
| ADA Curb Ramp | EA | 3 | \$ 12,000 | \$ 36,000 |
| Signage | LS | 1 | \$ 5,000 | \$ 5,000 |
| RRFB | LS | 1 | \$ 50,000 | \$ 50,000 |
| Traffic Signal Adjustment | LS | 0 | \$ - | \$ - |
| Stone Median Texturing | SY | 10 | \$ 1,500 | \$ 15,000 |
| Curbed Roadside Bioswale (50 LF x 10 LF) | EA | 0 | \$ 40,000 | \$ - |
| | | | \$ - | \$ - |
| | | | Sub-total | \$ 300,750 |
| LS = Lump Sum | | | Mobilization | \$ 31,000 |
| EA = Each | | | ESC | \$ 16,000 |
| LF = Linear Feet | | | MPT | \$ 46,000 |
| SY = Square Yards | | | Contingency | \$ 99,000 |
| CY = Cubic Yards | | | Total | \$ 492,750 |

Summary (2023 Dollars)

| | | | |
|---------------------|--------------|----|--------------|
| Project Development | \$80,000.00 | TO | \$150,000.00 |
| Construction | \$360,000.00 | TO | \$640,000.00 |

Notes

Does not include construction inspection, utility coordination, right-of-way acquisition
All prices are given in current dollars, as noted. No allowance for inflation is included.
Mobilization % also includes construction survey, scheduling, and related services.

J - Harvey Road Midblock Crossing between The Sweep and Meadow Lane

| Key Elements | Unit | Quantity | Unit Cost | Cost |
|--|------|----------|------------------|-------------------|
| Clearing and Grubbing | LS | 1 | \$ 10,000 | \$ 10,000 |
| Excavation | CY | 180 | \$ 125 | \$ 22,500 |
| Pedestrian Path (6' asphalt) | SY | 80 | \$ 150 | \$ 12,000 |
| Sidewalk (5' Concrete) | SY | 80 | \$ 225 | \$ 18,000 |
| Barrier Curb | LF | 140 | \$ 80 | \$ 11,200 |
| Mountable Curb | LF | 210 | \$ 100 | \$ 21,000 |
| Full Depth Pavement | SY | 180 | \$ 200 | \$ 36,000 |
| Pavement Mill and Overlay | SY | 490 | \$ 50 | \$ 24,500 |
| Driveway Adjustment - Residential | EA | 0 | \$ 7,500 | \$ - |
| Driveway Adjustment - Commercial | EA | 0 | \$ 25,000 | \$ - |
| Drainage and Stormwater Control Measures | LS | 1 | \$ 100,000 | \$ 100,000 |
| Final Grading and Restoration | SY | 200 | \$ 15 | \$ 3,000 |
| Landscape & Fence Replacement | LS | 1 | \$ 20,000 | \$ 20,000 |
| Linear Pavement Markings | LF | 600 | \$ 2 | \$ 1,200 |
| High Visibility Crosswalk | LF | 30 | \$ 60 | \$ 1,800 |
| ADA Curb Ramp | EA | 6 | \$ 12,000 | \$ 72,000 |
| Signage | LS | 1 | \$ 10,000 | \$ 10,000 |
| RRFB | LS | 0 | \$ - | \$ - |
| Traffic Signal Adjustment | LS | 0 | \$ - | \$ - |
| Stone Median Texturing | SY | 10 | \$ 1,500 | \$ 15,000 |
| Curbed Roadside Bioswale (50 LF x 10 LF) | EA | 0 | \$ 40,000 | \$ - |
| | | | \$ - | \$ - |
| | | | Sub-total | \$ 378,200 |
| LS = Lump Sum | | | Mobilization | \$ 38,000 |
| EA = Each | | | ESC | \$ 19,000 |
| LF = Linear Feet | | | MPT | \$ 57,000 |
| SY = Square Yards | | | Contingency | \$ 124,000 |
| CY = Cubic Yards | | | Total | \$ 616,200 |

Summary (2023 Dollars)

| | | | |
|---------------------|--------------|----|--------------|
| Project Development | \$100,000.00 | TO | \$190,000.00 |
| Construction | \$450,000.00 | TO | \$800,000.00 |

Notes

Does not include construction inspection, utility coordination, right-of-way acquisition
All prices are given in current dollars, as noted. No allowance for inflation is included.
Mobilization % also includes construction survey, scheduling, and related services.

M - Harvey Road Midblock Crossing north of Veale Road

| Key Elements | Unit | Quantity | Unit Cost | Cost |
|--|------|----------|------------------|-------------------|
| Clearing and Grubbing | LS | 1 | \$ 20,000 | \$ 20,000 |
| Excavation | CY | 140 | \$ 125 | \$ 17,500 |
| Pedestrian Path (6' asphalt) | SY | 80 | \$ 150 | \$ 12,000 |
| Sidewalk (5' Concrete) | SY | 30 | \$ 225 | \$ 6,750 |
| Barrier Curb | LF | 30 | \$ 80 | \$ 2,400 |
| Mountable Curb | LF | 150 | \$ 100 | \$ 15,000 |
| Full Depth Pavement | SY | 130 | \$ 200 | \$ 26,000 |
| Pavement Mill and Overlay | SY | 320 | \$ 50 | \$ 16,000 |
| Driveway Adjustment - Residential | EA | 2 | \$ 7,500 | \$ 15,000 |
| Driveway Adjustment - Commercial | EA | 0 | \$ 25,000 | \$ - |
| Drainage and Stormwater Control Measures | LS | 1 | \$ 40,000 | \$ 40,000 |
| Final Grading and Restoration | SY | 100 | \$ 15 | \$ 1,500 |
| Landscape & Fence Replacement | LS | 1 | \$ 5,000 | \$ 5,000 |
| Linear Pavement Markings | LF | 600 | \$ 2 | \$ 1,200 |
| High Visibility Crosswalk | LF | 30 | \$ 60 | \$ 1,800 |
| ADA Curb Ramp | EA | 3 | \$ 12,000 | \$ 36,000 |
| Signage | LS | 1 | \$ 5,000 | \$ 5,000 |
| RRFB | LS | 0 | \$ - | \$ - |
| Traffic Signal Adjustment | LS | 0 | \$ - | \$ - |
| Stone Median Texturing | SY | 5 | \$ 1,500 | \$ 7,500 |
| Curbed Roadside Bioswale (50 LF x 10 LF) | EA | 0 | \$ 40,000 | \$ - |
| | | | \$ - | \$ - |
| | | | Sub-total | \$ 228,650 |
| LS = Lump Sum | | | Mobilization | \$ 23,000 |
| EA = Each | | | ESC | \$ 12,000 |
| LF = Linear Feet | | | MPT | \$ 35,000 |
| SY = Square Yards | | | Contingency | \$ 75,000 |
| CY = Cubic Yards | | | Total | \$ 373,650 |

Summary (2023 Dollars)

| | | | |
|---------------------|--------------|----|--------------|
| Project Development | \$60,000.00 | TO | \$120,000.00 |
| Construction | \$270,000.00 | TO | \$490,000.00 |

Notes

Does not include construction inspection, utility coordination, right-of-way acquisition
All prices are given in current dollars, as noted. No allowance for inflation is included.
Mobilization % also includes construction survey, scheduling, and related services.

P - Harvey Road Bioswales north of Veale

| Key Elements | Unit | Quantity | Unit Cost | Cost |
|--|------|----------|------------------|-------------------|
| Clearing and Grubbing | LS | 1 | \$ 5,000 | \$ 5,000 |
| Excavation | CY | 0 | \$ 125 | \$ - |
| Pedestrian Path (6' asphalt) | SY | 0 | \$ 150 | \$ - |
| Sidewalk (5' Concrete) | SY | 0 | \$ 225 | \$ - |
| Barrier Curb | LF | 0 | \$ 80 | \$ - |
| Mountable Curb | LF | 0 | \$ 100 | \$ - |
| Full Depth Pavement | SY | 0 | \$ 200 | \$ - |
| Pavement Mill and Overlay | SY | 0 | \$ 50 | \$ - |
| Driveway Adjustment - Residential | EA | 0 | \$ 7,500 | \$ - |
| Driveway Adjustment - Commercial | EA | 0 | \$ 25,000 | \$ - |
| Drainage | LS | 1 | \$ 25,000 | \$ 25,000 |
| Final Grading and Restoration | SY | 0 | \$ 15 | \$ - |
| Landscape Replacement | LS | 0 | \$ 12,000 | \$ - |
| Linear Pavement Markings | LF | 300 | \$ 2 | \$ 600 |
| High Visibility Crosswalk | LF | 0 | \$ 60 | \$ - |
| ADA Curb Ramp | EA | 0 | \$ 12,000 | \$ - |
| Signage | LS | 1 | \$ 2,500 | \$ 2,500 |
| School Flasher Relocation | LS | 0 | \$ - | \$ - |
| Traffic Signal Adjustment | LS | 1 | \$ 10,000 | \$ 10,000 |
| Stone Median Texturing | SY | 0 | \$ 1,500 | \$ - |
| Curbed Roadside Bioswale (50 LF x 10 LF) | EA | 2 | \$ 40,000 | \$ 80,000 |
| | | | \$ - | \$ - |
| | | | Sub-total | \$ 123,100 |
| LS = Lump Sum | | | Mobilization | \$ 13,000 |
| EA = Each | | | ESC | \$ 7,000 |
| LF = Linear Feet | | | MPT | \$ 25,000 |
| SY = Square Yards | | | Contingency | \$ 43,000 |
| CY = Cubic Yards | | | Total | \$ 211,100 |

Summary (2023 Dollars)

| | | | |
|---------------------|--------------|----|--------------|
| Project Development | \$40,000.00 | TO | \$70,000.00 |
| Construction | \$150,000.00 | TO | \$280,000.00 |

Notes

Does not include construction inspection, utility coordination, right-of-way acquisition
All prices are given in current dollars, as noted. No allowance for inflation is included.
Mobilization % also includes construction survey, scheduling, and related services.

Q - Harvey Road Bioswales south of Veale

| Key Elements | Unit | Quantity | Unit Cost | Cost |
|--|------|----------|------------------|---------------------|
| Clearing and Grubbing | LS | 1 | \$ 50,000 | \$ 50,000 |
| Excavation | CY | 240 | \$ 125 | \$ 30,000 |
| Pedestrian Path (6' asphalt) | SY | 540 | \$ 150 | \$ 81,000 |
| Sidewalk (5' Concrete) | SY | 0 | \$ 225 | \$ - |
| Barrier Curb | LF | 0 | \$ 175 | \$ - |
| Mountable Curb | LF | 0 | \$ 100 | \$ - |
| Full Depth Pavement | SY | 0 | \$ 200 | \$ - |
| Pavement Mill and Overlay | SY | 0 | \$ 50 | \$ - |
| Driveway Adjustment - Residential | EA | 10 | \$ 7,500 | \$ 75,000 |
| Driveway Adjustment - Commercial | EA | 0 | \$ 25,000 | \$ - |
| Drainage | LS | 1 | \$ 100,000 | \$ 100,000 |
| Final Grading and Restoration | SY | 890 | \$ 15 | \$ 13,350 |
| Landscape Replacement | LS | 1 | \$ 25,000 | \$ 25,000 |
| Linear Pavement Markings | LF | 500 | \$ 2 | \$ 1,000 |
| High Visibility Crosswalk | LF | 0 | \$ 60 | \$ - |
| ADA Curb Ramp | EA | 4 | \$ 12,000 | \$ 48,000 |
| Signage | LS | 1 | \$ 2,500 | \$ 2,500 |
| School Flasher Relocation | LS | 0 | \$ - | \$ - |
| Traffic Signal Adjustment | LS | 1 | \$ 30,000 | \$ 30,000 |
| Stone Median Texturing | SY | 0 | \$ 1,500 | \$ - |
| Curbed Roadside Bioswale (50 LF x 10 LF) | EA | 4 | \$ 40,000 | \$ 160,000 |
| | | | \$ - | \$ - |
| | | | Sub-total | \$ 615,850 |
| LS = Lump Sum | | | Mobilization | \$ 62,000 |
| EA = Each | | | ESC | \$ 31,000 |
| LF = Linear Feet | | | MPT | \$ 154,000 |
| SY = Square Yards | | | Contingency | \$ 216,000 |
| CY = Cubic Yards | | | Total | \$ 1,078,850 |

Summary (2023 Dollars)

| | | | |
|---------------------|--------------|----|----------------|
| Project Development | \$170,000.00 | TO | \$330,000.00 |
| Construction | \$800,000.00 | TO | \$1,400,000.00 |

Notes

Does not include construction inspection, utility coordination, right-of-way acquisition
All prices are given in current dollars, as noted. No allowance for inflation is included.
Mobilization % also includes construction survey, scheduling, and related services.

R - Harvey Road Gateway Intersection Treatment (South)

| Key Elements | Unit | Quantity | Unit Cost | Cost |
|--|------|----------|------------------|-------------------|
| Clearing and Grubbing | LS | 1 | \$ 10,000 | \$ 10,000 |
| Excavation | CY | 40 | \$ 225 | \$ 9,000 |
| Pedestrian Path (6' asphalt) | SY | 0 | \$ 150 | \$ - |
| Sidewalk (5' Concrete) | SY | 0 | \$ 225 | \$ - |
| Barrier Curb | LF | 50 | \$ 175 | \$ 8,750 |
| Mountable Curb | LF | 40 | \$ 100 | \$ 4,000 |
| Full Depth Pavement | SY | 30 | \$ 200 | \$ 6,000 |
| Pavement Mill and Overlay | SY | 0 | \$ 50 | \$ - |
| Driveway Adjustment - Residential | EA | 0 | \$ 7,500 | \$ - |
| Driveway Adjustment - Commercial | EA | 0 | \$ 25,000 | \$ - |
| Drainage | LS | 1 | \$ 25,000 | \$ 25,000 |
| Final Grading and Restoration | SY | 230 | \$ 15 | \$ 3,450 |
| Landscape Replacement | LS | 0 | \$ - | \$ - |
| Linear Pavement Markings | LF | 200 | \$ 2 | \$ 400 |
| High Visibility Crosswalk | LF | 50 | \$ 60 | \$ 3,000 |
| ADA Curb Ramp | EA | 4 | \$ 12,000 | \$ 48,000 |
| Signage (OH Lane Use Control) | LS | 0 | \$ - | \$ - |
| School Flasher Relocation | LS | 0 | \$ - | \$ - |
| Traffic Signal Adjustment | LS | 1 | \$ 40,000 | \$ 40,000 |
| Stone Median Texturing | SY | 10 | \$ 1,500 | \$ 15,000 |
| Curbed Roadside Bioswale (50 LF x 10 LF) | EA | 2 | \$ 40,000 | \$ 80,000 |
| | | | \$ - | \$ - |
| | | | Sub-total | \$ 252,600 |
| LS = Lump Sum | | | Mobilization | \$ 26,000 |
| EA = Each | | | ESC | \$ 13,000 |
| LF = Linear Feet | | | MPT | \$ 51,000 |
| SY = Square Yards | | | Contingency | \$ 86,000 |
| CY = Cubic Yards | | | Total | \$ 428,600 |

Summary (2023 Dollars)

| | | | |
|---------------------|--------------|----|--------------|
| Project Development | \$70,000.00 | TO | \$130,000.00 |
| Construction | \$310,000.00 | TO | \$560,000.00 |

Notes

Does not include construction inspection, utility coordination, right-of-way acquisition
All prices are given in current dollars, as noted. No allowance for inflation is included.
Mobilization % also includes construction survey, scheduling, and related services.

W - Veale Midblock Crossing at West Greanbriar

| Key Elements | Unit | Quantity | Unit Cost | Cost |
|--|------|----------|------------------|------------------|
| Clearing and Grubbing | LS | 1 | \$ 5,000 | \$ 5,000 |
| Excavation | CY | 0 | \$ 125 | \$ - |
| Pedestrian Path (4' asphalt) | SY | 0 | \$ 150 | \$ - |
| Sidewalk (5' Concrete) | SY | 0 | \$ 225 | \$ - |
| Barrier Curb | LF | 0 | \$ 80 | \$ - |
| Mountable Curb | LF | 0 | \$ 100 | \$ - |
| Full Depth Pavement | SY | 0 | \$ 200 | \$ - |
| Pavement Mill and Overlay | SY | 0 | \$ 50 | \$ - |
| Driveway Adjustment - Residential | EA | 0 | \$ 7,500 | \$ - |
| Driveway Adjustment - Commercial | EA | 0 | \$ 25,000 | \$ - |
| Drainage | LS | 1 | \$ - | \$ - |
| Final Grading and Restoration | SY | 0 | \$ 15 | \$ - |
| Landscape Replacement | LS | 1 | \$ 2,500 | \$ 2,500 |
| Linear Pavement Markings | LF | 0 | \$ 2 | \$ - |
| High Visibility Crosswalk | LF | 30 | \$ 60 | \$ 1,800 |
| ADA Curb Ramp | EA | 2 | \$ 12,000 | \$ 24,000 |
| Signage | LS | 1 | \$ 5,000 | \$ 5,000 |
| RRFB | LS | 0 | \$ - | \$ - |
| Traffic Signal Adjustment | LS | 0 | \$ - | \$ - |
| Stone Median Texturing | SY | 0 | \$ 1,500 | \$ - |
| Curbed Roadside Bioswale (50 LF x 10 LF) | EA | 0 | \$ 40,000 | \$ - |
| | | | \$ - | \$ - |
| | | | Sub-total | \$ 38,300 |
| LS = Lump Sum | | | Mobilization | \$ 4,000 |
| EA = Each | | | ESC | \$ 2,000 |
| LF = Linear Feet | | | MPT | \$ 8,000 |
| SY = Square Yards | | | Contingency | \$ 8,000 |
| CY = Cubic Yards | | | Total | \$ 60,300 |

Summary (2023 Dollars)

| | | | |
|---------------------|-------------|----|-------------|
| Project Development | \$10,000.00 | TO | \$20,000.00 |
| Construction | \$40,000.00 | TO | \$80,000.00 |

Notes

Does not include construction inspection, utility coordination, right-of-way acquisition
All prices are given in current dollars, as noted. No allowance for inflation is included.
Mobilization % also includes construction survey, scheduling, and related services.

Y - Veale Midblock Crossing near Evergreen Lane

| Key Elements | Unit | Quantity | Unit Cost | Cost |
|--|------|----------|------------------|-------------------|
| Clearing and Grubbing | LS | 1 | \$ 30,000 | \$ 30,000 |
| Excavation | CY | 100 | \$ 125 | \$ 12,500 |
| Pedestrian Path (6' asphalt) | SY | 300 | \$ 150 | \$ 45,000 |
| Sidewalk (5' Concrete) | SY | 0 | \$ 225 | \$ - |
| Barrier Curb | LF | 0 | \$ 80 | \$ - |
| Mountable Curb | LF | 0 | \$ 100 | \$ - |
| Full Depth Pavement | SY | 0 | \$ 200 | \$ - |
| Pavement Mill and Overlay | SY | 0 | \$ 50 | \$ - |
| Driveway Adjustment - Residential | EA | 0 | \$ 7,500 | \$ - |
| Driveway Adjustment - Commercial | EA | 0 | \$ 25,000 | \$ - |
| Drainage | LS | 1 | \$ - | \$ - |
| Final Grading and Restoration | SY | 0 | \$ 15 | \$ - |
| Landscape Replacement | LS | 1 | \$ 20,000 | \$ 20,000 |
| Linear Pavement Markings | LF | 0 | \$ 2 | \$ - |
| High Visibility Crosswalk | LF | 30 | \$ 60 | \$ 1,800 |
| ADA Curb Ramp | EA | 3 | \$ 12,000 | \$ 36,000 |
| Signage | LS | 1 | \$ 10,000 | \$ 10,000 |
| RRFB | LS | 0 | \$ - | \$ - |
| Traffic Signal Adjustment | LS | 0 | \$ - | \$ - |
| Stone Median Texturing | SY | 0 | \$ 1,500 | \$ - |
| Curbed Roadside Bioswale (50 LF x 10 LF) | EA | 0 | \$ 40,000 | \$ - |
| | | | \$ - | \$ - |
| | | | Sub-total | \$ 155,300 |
| LS = Lump Sum | | | Mobilization | \$ 16,000 |
| EA = Each | | | ESC | \$ 8,000 |
| LF = Linear Feet | | | MPT | \$ 32,000 |
| SY = Square Yards | | | Contingency | \$ 53,000 |
| CY = Cubic Yards | | | Total | \$ 264,300 |

Summary (2023 Dollars)

| | | | |
|---------------------|--------------|----|--------------|
| Project Development | \$40,000.00 | TO | \$80,000.00 |
| Construction | \$210,000.00 | TO | \$350,000.00 |

Notes

Does not include construction inspection, utility coordination, right-of-way acquisition
All prices are given in current dollars, as noted. No allowance for inflation is included.
Mobilization % also includes construction survey, scheduling, and related services.

Z - Veale Midblock Crossing near Willow Way

| Key Elements | Unit | Quantity | Unit Cost | Cost |
|--|------|----------|------------------|-------------------|
| Clearing and Grubbing | LS | 1 | \$ 50,000 | \$ 50,000 |
| Excavation | CY | 140 | \$ 160 | \$ 22,400 |
| Pedestrian Path (6' asphalt) | SY | 0 | \$ 150 | \$ - |
| Sidewalk (5' Concrete) | SY | 0 | \$ 225 | \$ - |
| Barrier Curb | LF | 0 | \$ 80 | \$ - |
| Mountable Curb | LF | 510 | \$ 100 | \$ 51,000 |
| Full Depth Pavement | SY | 140 | \$ 200 | \$ 28,000 |
| Pavement Mill and Overlay | SY | 0 | \$ 50 | \$ - |
| Driveway Adjustment - Residential | EA | 2 | \$ 7,500 | \$ 15,000 |
| Driveway Adjustment - Commercial | EA | 0 | \$ 25,000 | \$ - |
| Drainage | LS | 1 | \$ - | \$ - |
| Final Grading and Restoration | SY | 0 | \$ 15 | \$ - |
| Landscape Replacement | LS | 1 | \$ 30,000 | \$ 30,000 |
| Linear Pavement Markings | LF | 0 | \$ 2 | \$ - |
| High Visibility Crosswalk | LF | 30 | \$ 60 | \$ 1,800 |
| ADA Curb Ramp | EA | 3 | \$ 12,000 | \$ 36,000 |
| Signage | LS | 1 | \$ 5,000 | \$ 5,000 |
| RRFB | LS | 0 | \$ - | \$ - |
| Traffic Signal Adjustment | LS | 0 | \$ - | \$ - |
| Stone Median Texturing | SY | 0 | \$ 1,500 | \$ - |
| Curbed Roadside Bioswale (50 LF x 10 LF) | EA | 0 | \$ 40,000 | \$ - |
| | | | \$ - | \$ - |
| | | | Sub-total | \$ 239,200 |
| LS = Lump Sum | | | Mobilization | \$ 24,000 |
| EA = Each | | | ESC | \$ 12,000 |
| LF = Linear Feet | | | MPT | \$ 48,000 |
| SY = Square Yards | | | Contingency | \$ 81,000 |
| CY = Cubic Yards | | | Total | \$ 404,200 |

Summary (2023 Dollars)

| | | | |
|---------------------|--------------|----|--------------|
| Project Development | \$70,000.00 | TO | \$130,000.00 |
| Construction | \$320,000.00 | TO | \$530,000.00 |

Notes

Does not include construction inspection, utility coordination, right-of-way acquisition
All prices are given in current dollars, as noted. No allowance for inflation is included.
Mobilization % also includes construction survey, scheduling, and related services.

AA - Veale Midblock Crossing near Willow Way

| Key Elements | Unit | Quantity | Unit Cost | Cost |
|--|------|----------|------------------|-------------------|
| Clearing and Grubbing | LS | 1 | \$ 10,000 | \$ 10,000 |
| Excavation | CY | 140 | \$ 160 | \$ 22,400 |
| Pedestrian Path (6' asphalt) | SY | 0 | \$ 150 | \$ - |
| Sidewalk (5' Concrete) | SY | 0 | \$ 225 | \$ - |
| Barrier Curb | LF | 0 | \$ 80 | \$ - |
| Mountable Curb | LF | 510 | \$ 100 | \$ 51,000 |
| Full Depth Pavement | SY | 140 | \$ 200 | \$ 28,000 |
| Pavement Mill and Overlay | SY | 0 | \$ 50 | \$ - |
| Driveway Adjustment - Residential | EA | 1 | \$ 7,500 | \$ 7,500 |
| Driveway Adjustment - Commercial | EA | 0 | \$ 25,000 | \$ - |
| Drainage | LS | 1 | \$ - | \$ - |
| Final Grading and Restoration | SY | 0 | \$ 15 | \$ - |
| Landscape Replacement | LS | 1 | \$ - | \$ - |
| Linear Pavement Markings | LF | 0 | \$ 2 | \$ - |
| High Visibility Crosswalk | LF | 30 | \$ 60 | \$ 1,800 |
| ADA Curb Ramp | EA | 3 | \$ 12,000 | \$ 36,000 |
| Signage | LS | 1 | \$ 5,000 | \$ 5,000 |
| RRFB | LS | 0 | \$ - | \$ - |
| Traffic Signal Adjustment | LS | 0 | \$ - | \$ - |
| Stone Median Texturing | SY | 0 | \$ 1,500 | \$ - |
| Curbed Roadside Bioswale (50 LF x 10 LF) | EA | 0 | \$ 40,000 | \$ - |
| | | | \$ - | \$ - |
| | | | Sub-total | \$ 161,700 |
| LS = Lump Sum | | | Mobilization | \$ 17,000 |
| EA = Each | | | ESC | \$ 9,000 |
| LF = Linear Feet | | | MPT | \$ 33,000 |
| SY = Square Yards | | | Contingency | \$ 56,000 |
| CY = Cubic Yards | | | Total | \$ 276,700 |

Summary (2023 Dollars)

| | | | |
|---------------------|--------------|----|--------------|
| Project Development | \$50,000.00 | TO | \$90,000.00 |
| Construction | \$220,000.00 | TO | \$360,000.00 |

Notes

Does not include construction inspection, utility coordination, right-of-way acquisition
All prices are given in current dollars, as noted. No allowance for inflation is included.
Mobilization % also includes construction survey, scheduling, and related services.

AD - Veale Road Gateway Traffic Calming

| Key Elements | Unit | Quantity | Unit Cost | Cost |
|--|------|----------|------------------|-------------------|
| Clearing and Grubbing | LS | 1 | \$ 5,000 | \$ 5,000 |
| Excavation | CY | 150 | \$ 125 | \$ 18,750 |
| Pedestrian Path (6' asphalt) | SY | 0 | \$ 150 | \$ - |
| Sidewalk (5' Concrete) | SY | 0 | \$ 225 | \$ - |
| Barrier Curb | LF | 0 | \$ 80 | \$ - |
| Mountable Curb | LF | 210 | \$ 100 | \$ 21,000 |
| Full Depth Pavement | SY | 180 | \$ 200 | \$ 36,000 |
| Pavement Mill and Overlay | SY | 0 | \$ 50 | \$ - |
| Driveway Adjustment - Residential | EA | 0 | \$ 7,500 | \$ - |
| Driveway Adjustment - Commercial | EA | 0 | \$ 25,000 | \$ - |
| Drainage and Stormwater Control Measures | LS | 1 | \$ 40,000 | \$ 40,000 |
| Final Grading and Restoration | SY | 200 | \$ 15 | \$ 3,000 |
| Landscape & Fence Replacement | LS | 0 | \$ 20,000 | \$ - |
| Linear Pavement Markings | LF | 600 | \$ 2 | \$ 1,200 |
| High Visibility Crosswalk | LF | 0 | \$ 60 | \$ - |
| ADA Curb Ramp | EA | 0 | \$ 12,000 | \$ - |
| Signage | LS | 1 | \$ 5,000 | \$ 5,000 |
| RRFB | LS | 0 | \$ - | \$ - |
| Traffic Signal Adjustment | LS | 0 | \$ - | \$ - |
| Stone Median Texturing | SY | 0 | \$ 1,500 | \$ - |
| Curbed Roadside Bioswale (50 LF x 10 LF) | EA | 0 | \$ 40,000 | \$ - |
| | | | \$ - | \$ - |
| | | | Sub-total | \$ 129,950 |
| LS = Lump Sum | | | Mobilization | \$ 13,000 |
| EA = Each | | | ESC | \$ 7,000 |
| LF = Linear Feet | | | MPT | \$ 20,000 |
| SY = Square Yards | | | Contingency | \$ 43,000 |
| CY = Cubic Yards | | | Total | \$ 212,950 |

Summary (2023 Dollars)

| | | | |
|---------------------|--------------|----|--------------|
| Project Development | \$40,000.00 | TO | \$70,000.00 |
| Construction | \$170,000.00 | TO | \$280,000.00 |

Notes

Does not include construction inspection, utility coordination, right-of-way acquisition
All prices are given in current dollars, as noted. No allowance for inflation is included.
Mobilization % also includes construction survey, scheduling, and related services.

AE - Veale Sidewalk North Side

| Key Elements | Unit | Quantity | Unit Cost | Cost |
|--|------|----------|------------------|---------------------|
| Clearing and Grubbing | LS | 1 | \$ 75,000 | \$ 75,000 |
| Excavation | CY | 280 | \$ 100 | \$ 28,000 |
| Pedestrian Path (6' asphalt) | SY | 0 | \$ 150 | \$ - |
| Sidewalk (5' Concrete) | SY | 1500 | \$ 150 | \$ 225,000 |
| Barrier Curb | LF | 0 | \$ 80 | \$ - |
| Mountable Curb | LF | 0 | \$ 100 | \$ - |
| Full Depth Pavement | SY | 0 | \$ 200 | \$ - |
| Pavement Mill and Overlay | SY | 0 | \$ 50 | \$ - |
| Driveway Adjustment - Residential | EA | 10 | \$ 7,500 | \$ 75,000 |
| Driveway Adjustment - Commercial | EA | 0 | \$ 25,000 | \$ - |
| Drainage | LS | 1 | \$ 125,000 | \$ 125,000 |
| Final Grading and Restoration | SY | 1700 | \$ 15 | \$ 25,500 |
| Landscape Replacement | LS | 1 | \$ 50,000 | \$ 50,000 |
| Linear Pavement Markings | LF | 0 | \$ 2 | \$ - |
| High Visibility Crosswalk | LF | 100 | \$ 60 | \$ 6,000 |
| ADA Curb Ramp | EA | 8 | \$ 12,000 | \$ 96,000 |
| Signage | LS | 1 | \$ 10,000 | \$ 10,000 |
| RRFB | LS | 0 | \$ - | \$ - |
| Traffic Signal Adjustment | LS | 0 | \$ - | \$ - |
| Stone Median Texturing | SY | 0 | \$ 1,500 | \$ - |
| Curbed Roadside Bioswale (50 LF x 10 LF) | EA | 0 | \$ 40,000 | \$ - |
| | | | \$ - | \$ - |
| | | | Sub-total | \$ 715,500 |
| LS = Lump Sum | | | Mobilization | \$ 72,000 |
| EA = Each | | | ESC | \$ 36,000 |
| LF = Linear Feet | | | MPT | \$ 72,000 |
| SY = Square Yards | | | Contingency | \$ 224,000 |
| CY = Cubic Yards | | | Total | \$ 1,119,500 |

Summary (2023 Dollars)

| | | | |
|---------------------|--------------|----|----------------|
| Project Development | \$170,000.00 | TO | \$340,000.00 |
| Construction | \$890,000.00 | TO | \$1,450,000.00 |

Notes

Does not include construction inspection, utility coordination, right-of-way acquisition
All prices are given in current dollars, as noted. No allowance for inflation is included.
Mobilization % also includes construction survey, scheduling, and related services.

AF - Veale Sidewalk South Side

| Key Elements | Unit | Quantity | Unit Cost | Cost |
|--|------|----------|------------------|-------------------|
| Clearing and Grubbing | LS | 1 | \$ 60,000 | \$ 60,000 |
| Excavation | CY | 90 | \$ 100 | \$ 9,000 |
| Pedestrian Path (6' asphalt) | SY | 0 | \$ 150 | \$ - |
| Sidewalk (5' Concrete) | SY | 480 | \$ 150 | \$ 72,000 |
| Barrier Curb | LF | 0 | \$ 80 | \$ - |
| Mountable Curb | LF | 0 | \$ 100 | \$ - |
| Full Depth Pavement | SY | 0 | \$ 200 | \$ - |
| Pavement Mill and Overlay | SY | 0 | \$ 50 | \$ - |
| Driveway Adjustment - Residential | EA | 5 | \$ 7,500 | \$ 37,500 |
| Driveway Adjustment - Commercial | EA | 0 | \$ 25,000 | \$ - |
| Drainage | LS | 1 | \$ 100,000 | \$ 100,000 |
| Final Grading and Restoration | SY | 600 | \$ 15 | \$ 9,000 |
| Landscape Replacement | LS | 1 | \$ 25,000 | \$ 25,000 |
| Linear Pavement Markings | LF | 0 | \$ 2 | \$ - |
| High Visibility Crosswalk | LF | 150 | \$ 60 | \$ 9,000 |
| ADA Curb Ramp | EA | 12 | \$ 12,000 | \$ 144,000 |
| Signage | LS | 1 | \$ 10,000 | \$ 10,000 |
| RRFB | LS | 0 | \$ - | \$ - |
| Traffic Signal Adjustment | LS | 0 | \$ - | \$ - |
| Stone Median Texturing | SY | 0 | \$ 1,500 | \$ - |
| Curbed Roadside Bioswale (50 LF x 10 LF) | EA | 0 | \$ 40,000 | \$ - |
| | | | \$ - | \$ - |
| | | | Sub-total | \$ 475,500 |
| LS = Lump Sum | | | Mobilization | \$ 48,000 |
| EA = Each | | | ESC | \$ 24,000 |
| LF = Linear Feet | | | MPT | \$ 48,000 |
| SY = Square Yards | | | Contingency | \$ 149,000 |
| CY = Cubic Yards | | | Total | \$ 744,500 |

Summary (2023 Dollars)

| | | | |
|---------------------|--------------|----|--------------|
| Project Development | \$120,000.00 | TO | \$230,000.00 |
| Construction | \$590,000.00 | TO | \$970,000.00 |

Notes

Does not include construction inspection, utility coordination, right-of-way acquisition
All prices are given in current dollars, as noted. No allowance for inflation is included.
Mobilization % also includes construction survey, scheduling, and related services.



03

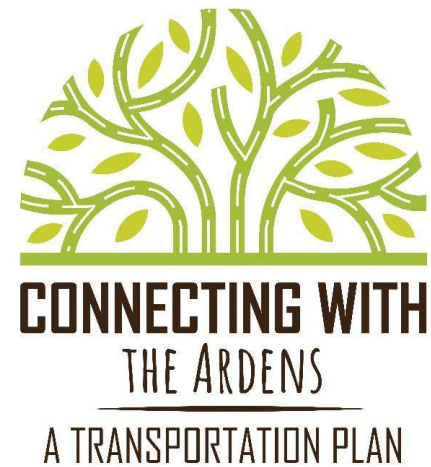
Appendix Three
Public Meeting #1 - Slides

Connecting with the Ardens Public Meeting #1

October 25, 2022



REMLINE













CONNECTING WITH
THE ARDENS

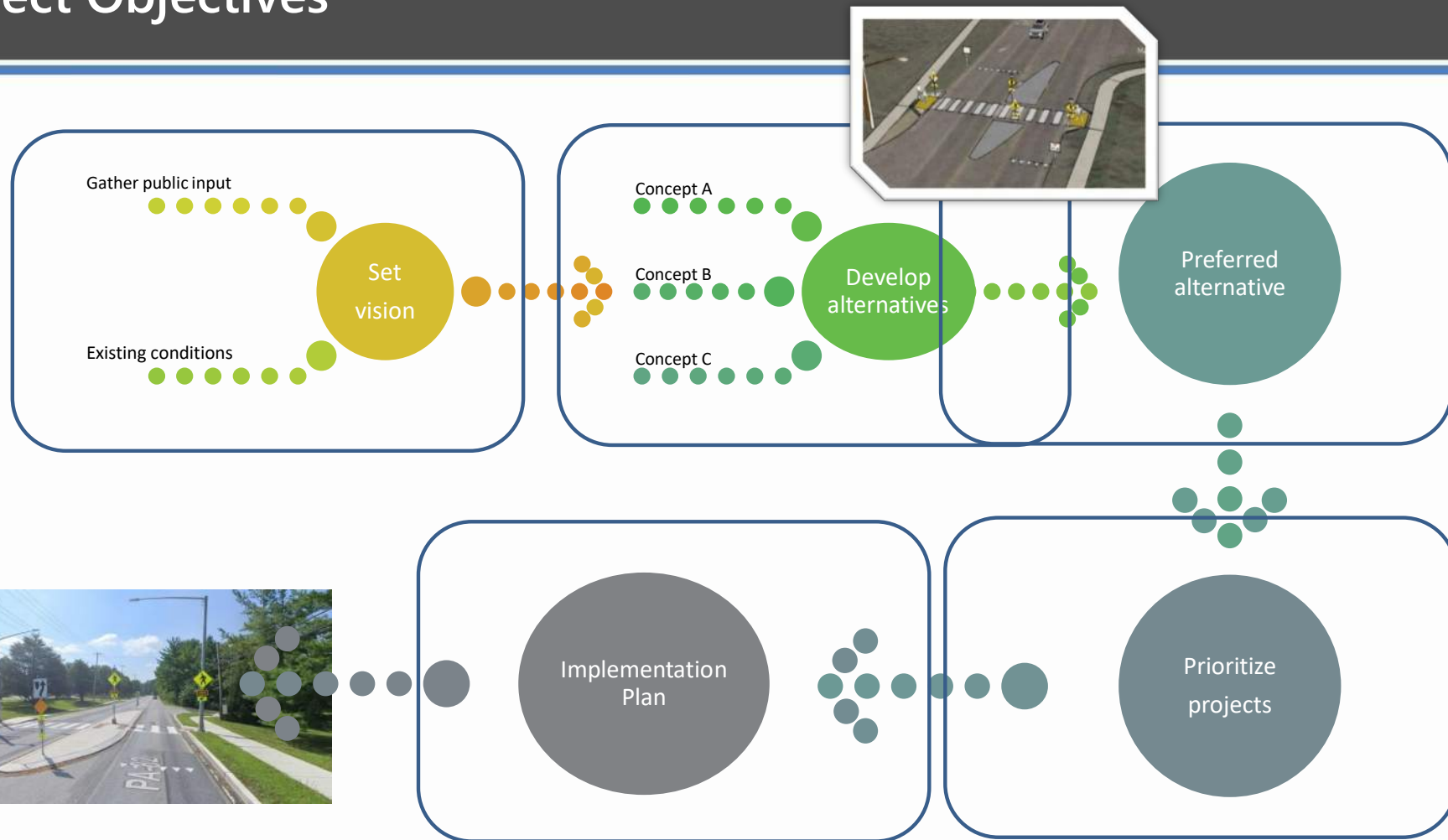
A TRANSPORTATION PLAN

Meeting Agenda



Project Overview

Project Objectives

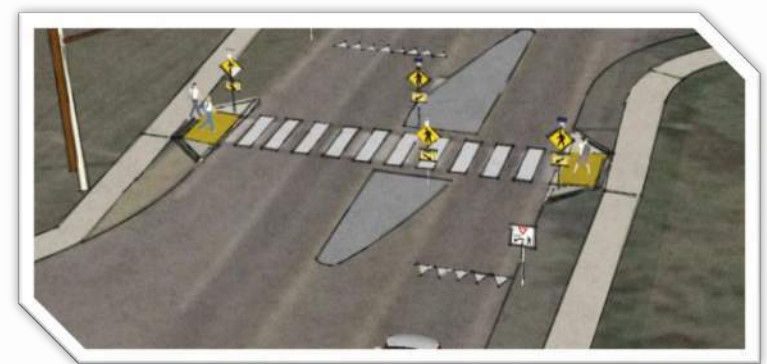
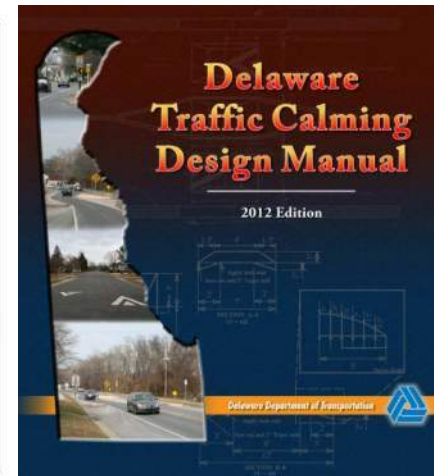


Points of Consensus – Harvey Road

- “ No vertical calming features
- “ Use of horizontal calming features
- “ Features will comply with DelDOT standards (mountable curb, etc)
- “ Use of low-level landscaping
- “ Traffic calming features will be traversable for emergency vehicles, school and transit buses



MINI-ROUNDABOUT (Mifflin Road)



What We've Heard

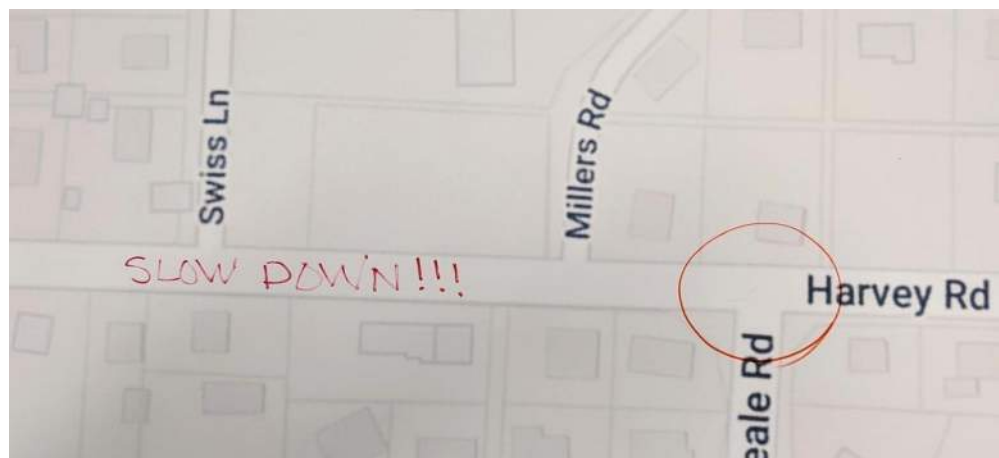
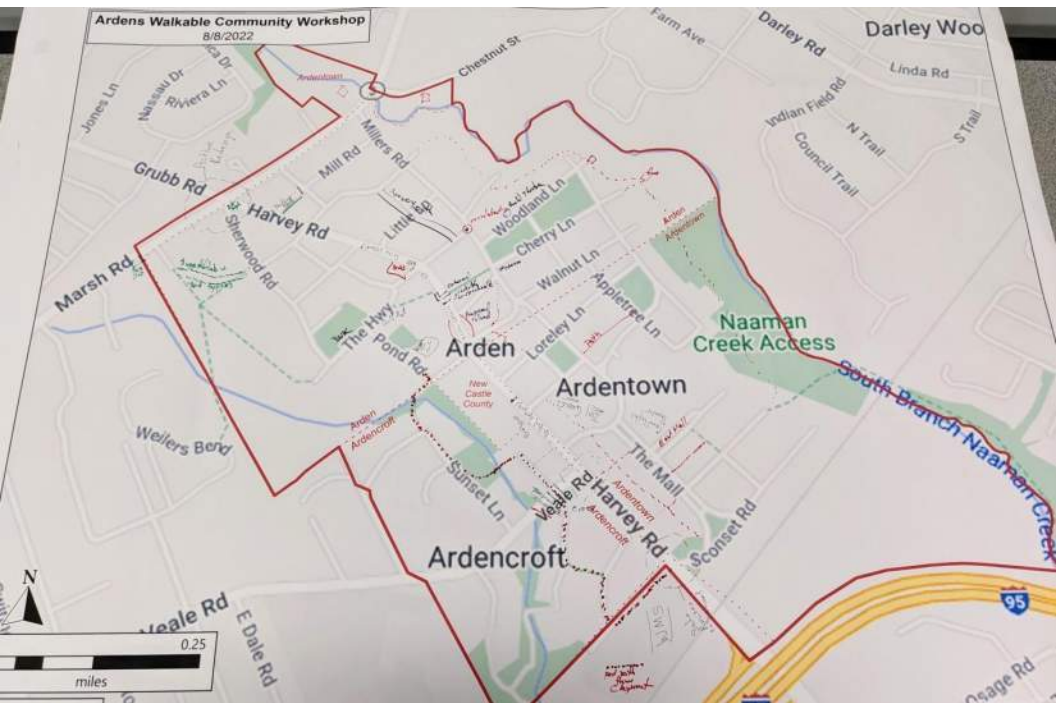
Ardens Walkable Community Workshop

- Monday, September 8 at the Candlelight Theatre
- About 37 attendees
- **Part 1: Presentation**
 - Elements of a walkable community
- **Part 2: Walking Audit**
 - Participants survey the area
 - Identify issues and opportunities
- **Part 3: Mapping Exercise**
 - Group shares ideas for improving walkability





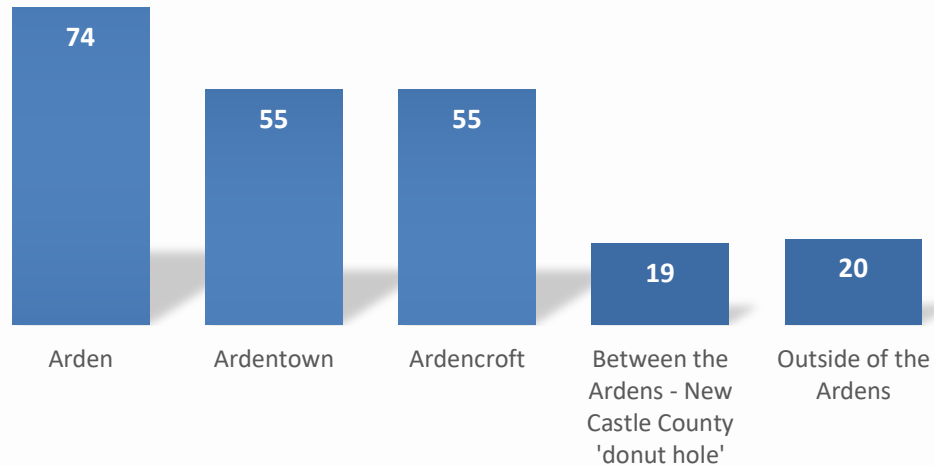




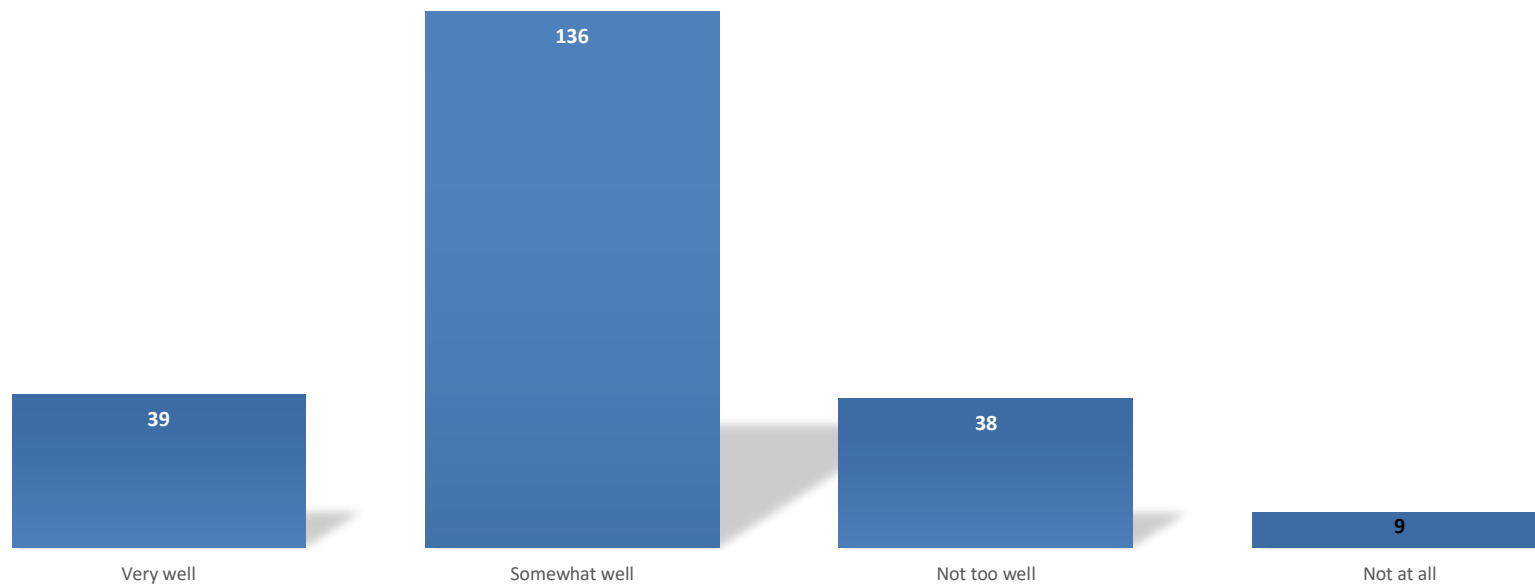
Public Online Survey Results

- “ Survey Open: 8/19 to 10/8/2022
- “ 20 Total Questions
- “ 223 Total Responses

Are you a resident of...

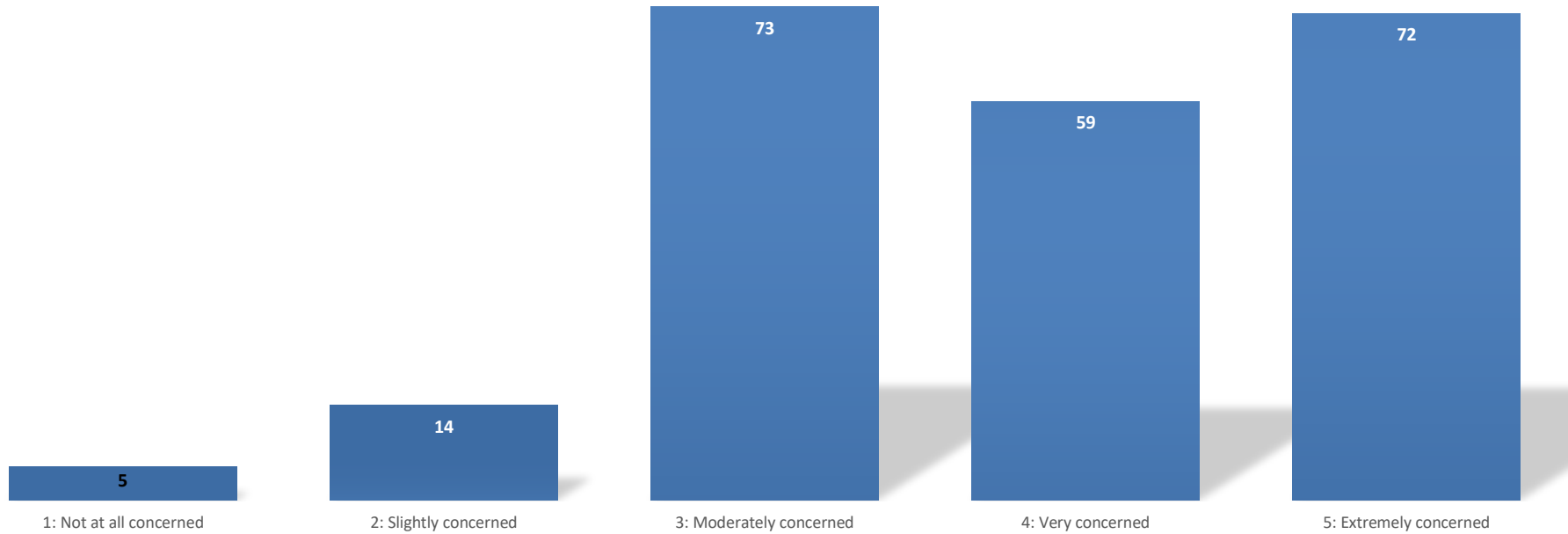


How well do you feel the transportation system in the Ardens meets your travel needs?



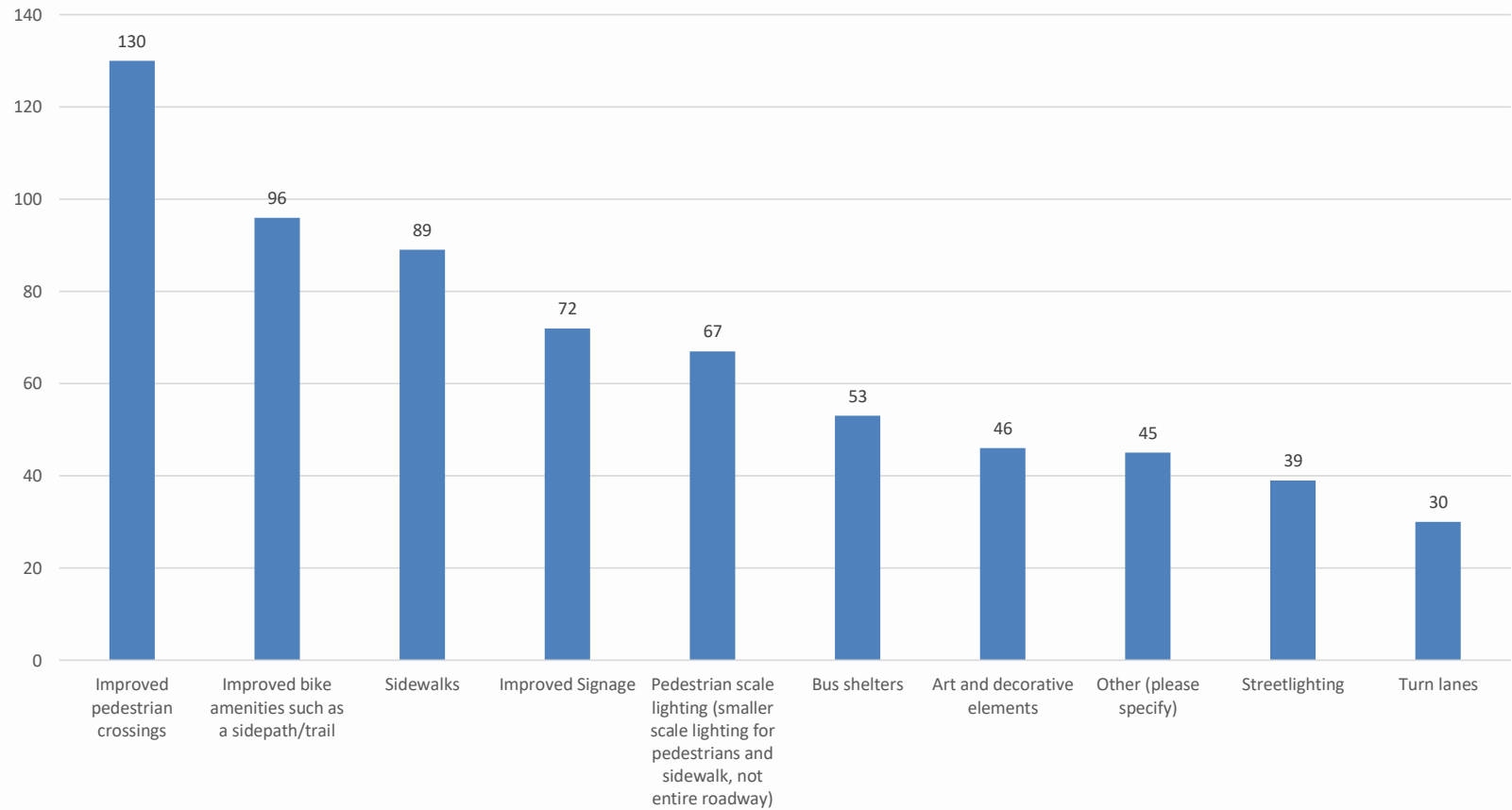
Harvey Road

On a 1-5 scale, how concerned are you about speeding and safety on Harvey Road?



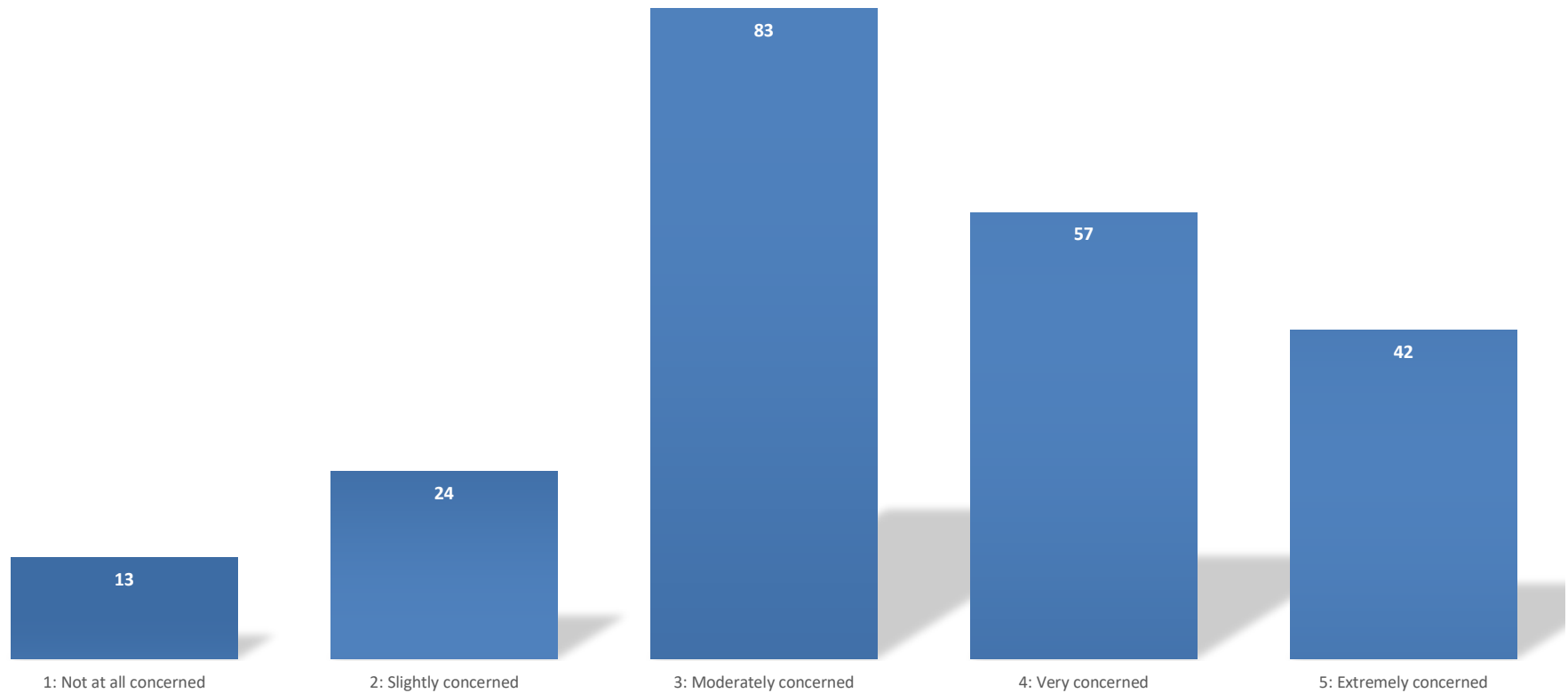
Harvey Road

What types of amenities would you like to see added to Harvey Road?



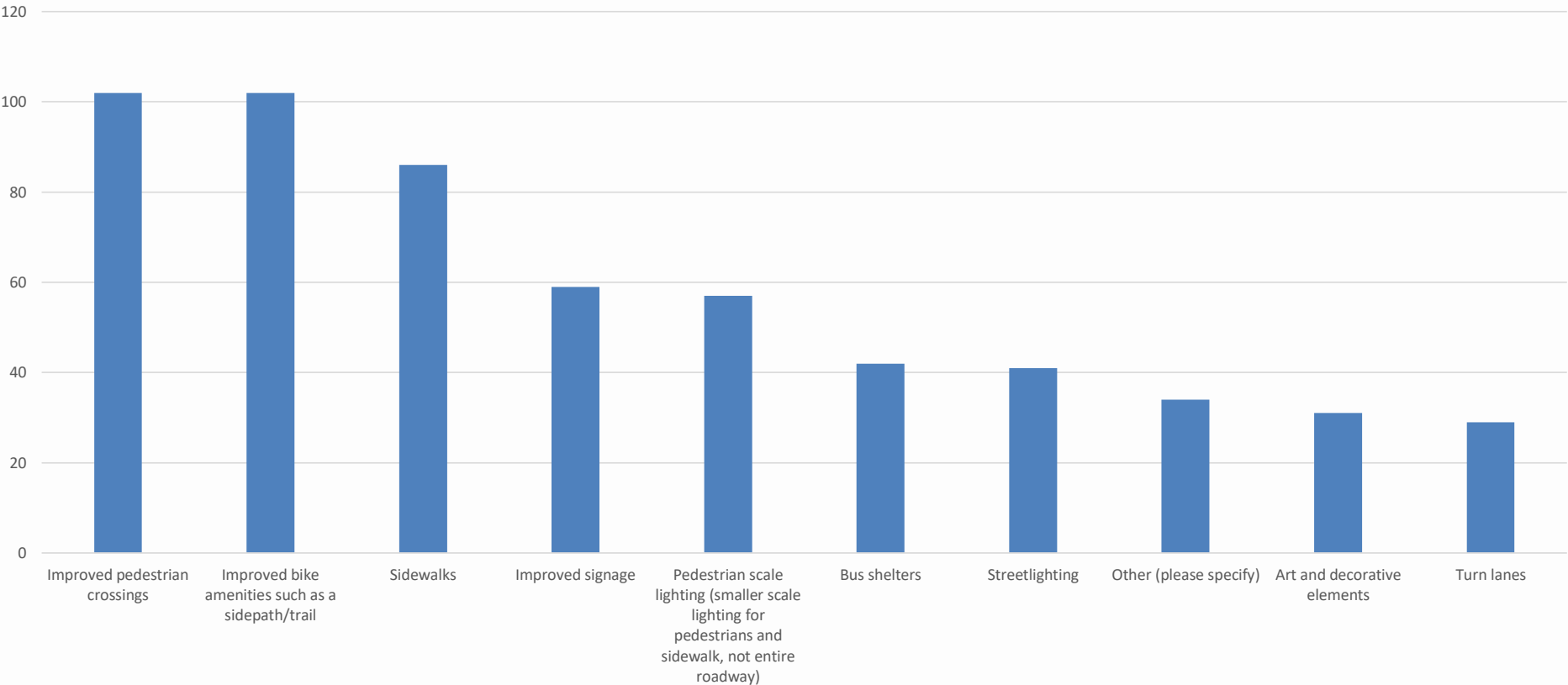
Veale Road

On a 1-5 scale, how concerned are you about speeding and safety on Veale Road?



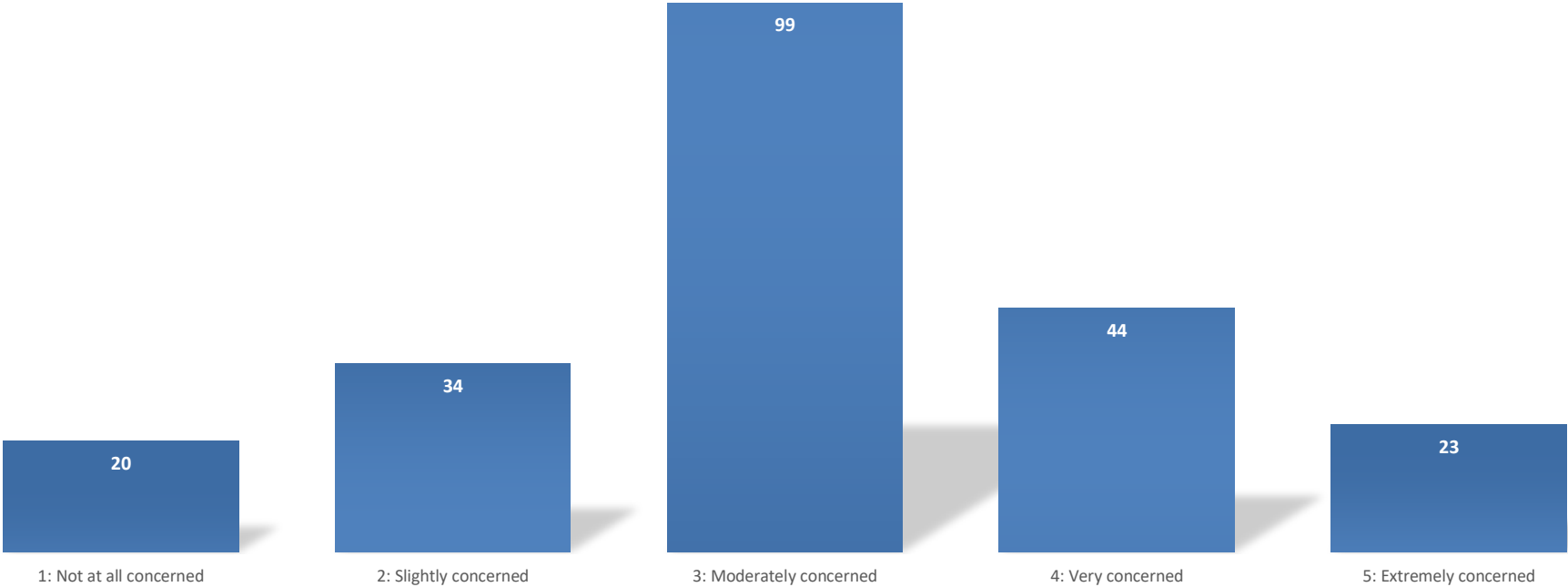
Veale Road

What types of amenities would you like to see added to Veale Road?



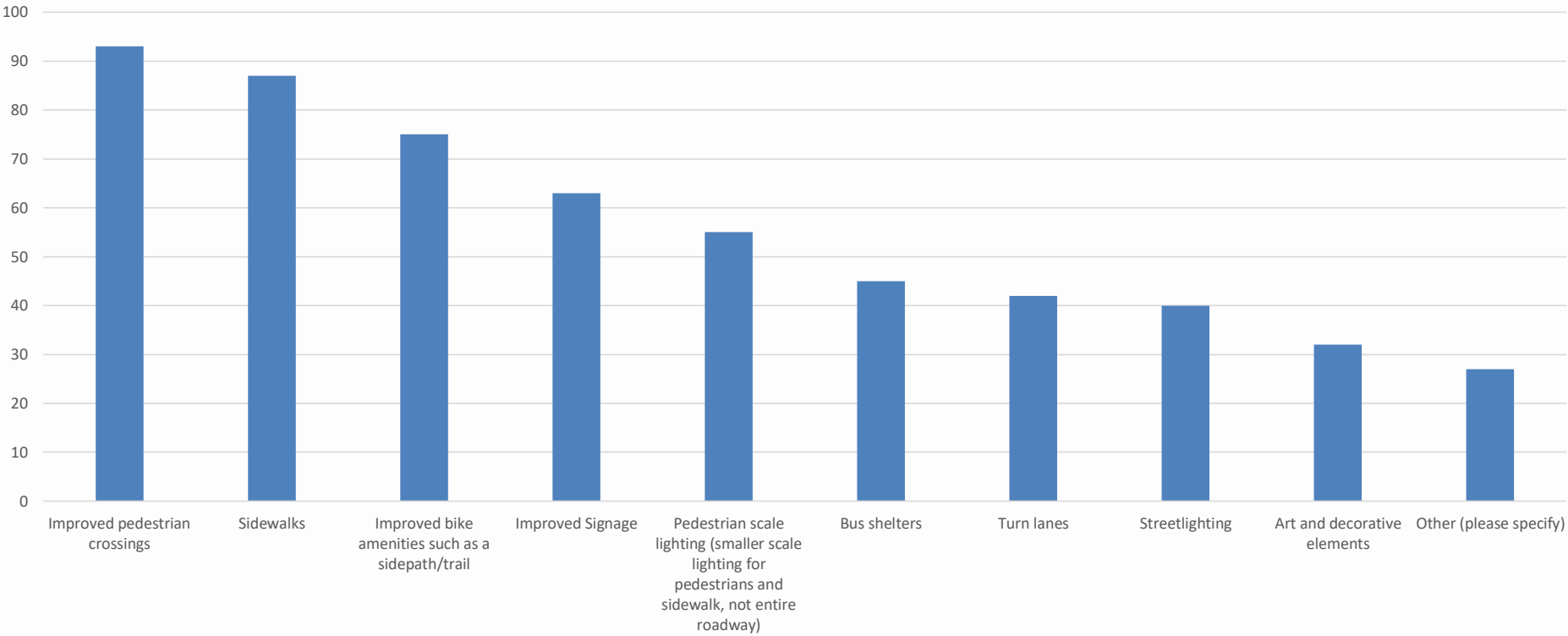
Marsh Road

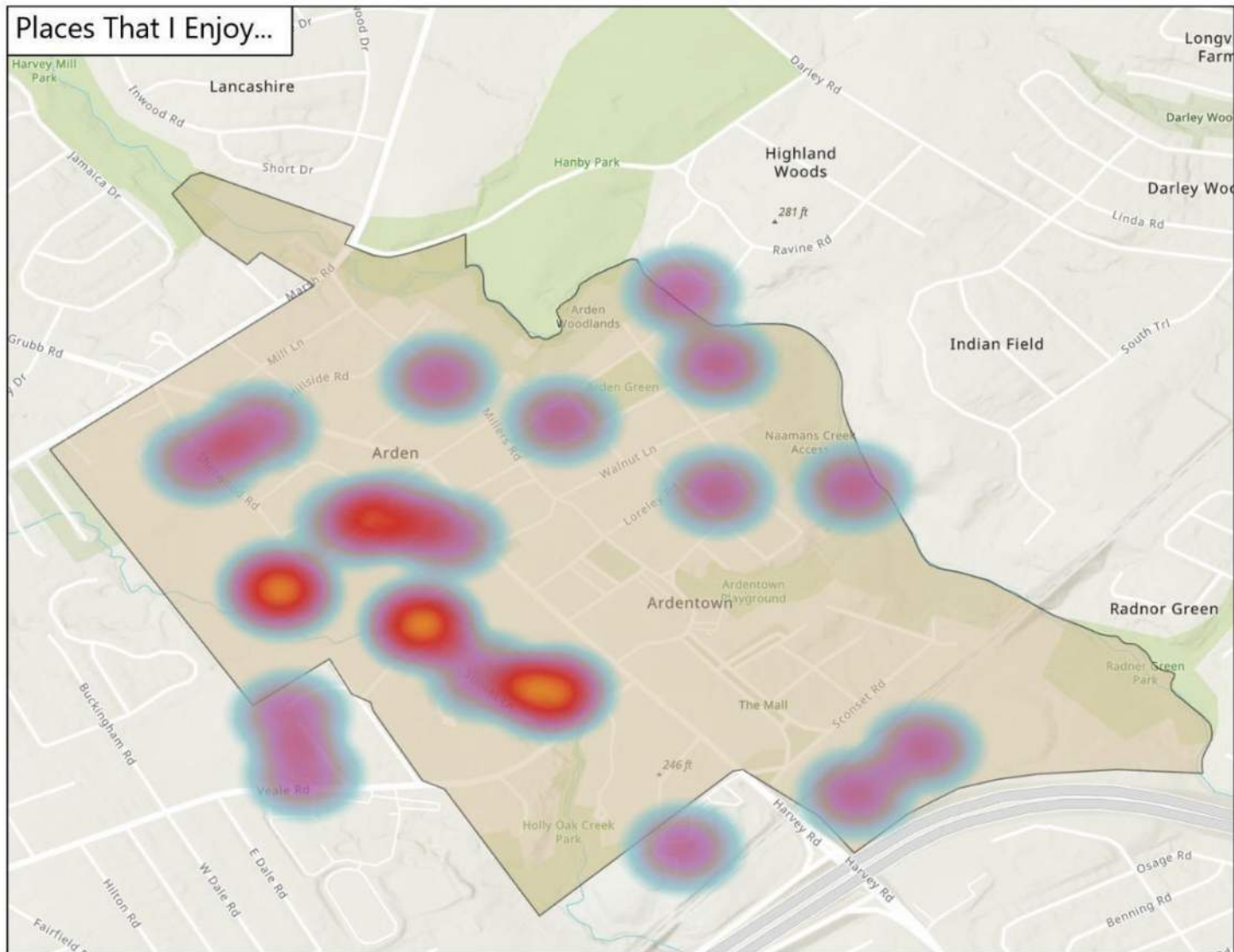
On a 1-5 scale, how concerned are you about speeding and safety on Marsh Road?



Marsh Road

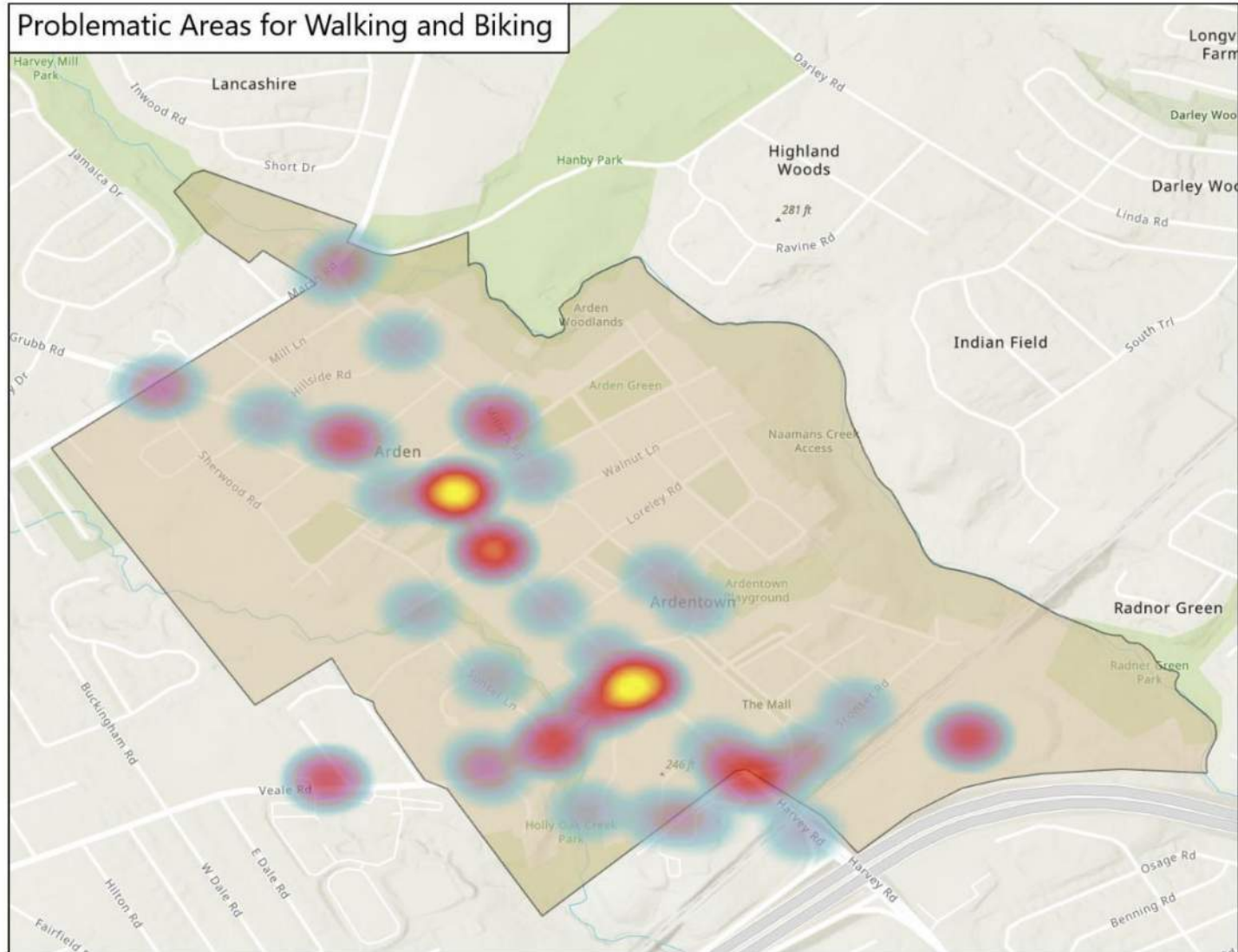
What types of amenities would you like to see added to Marsh Road?





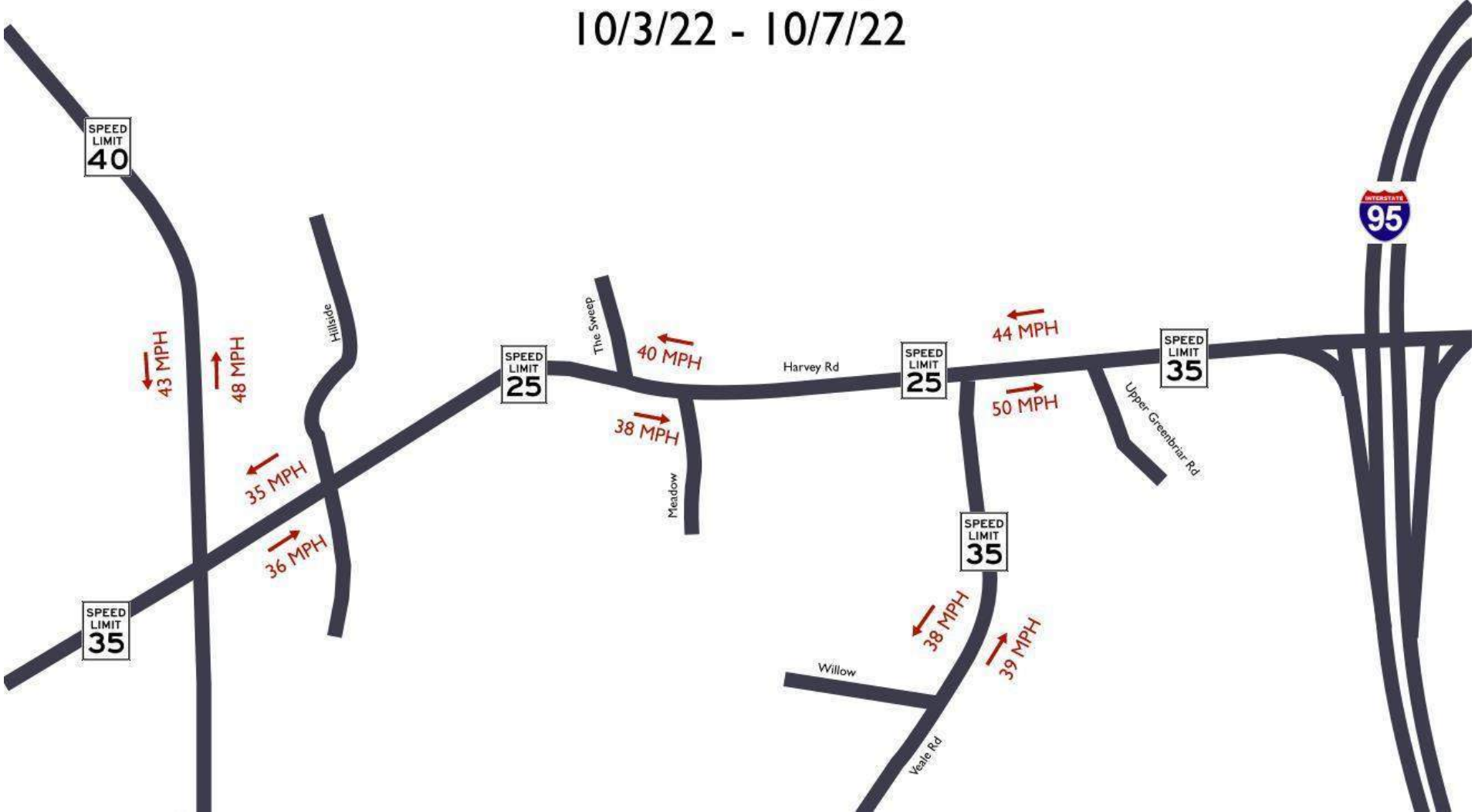


Problematic Areas for Walking and Biking



What Does the Data Say?

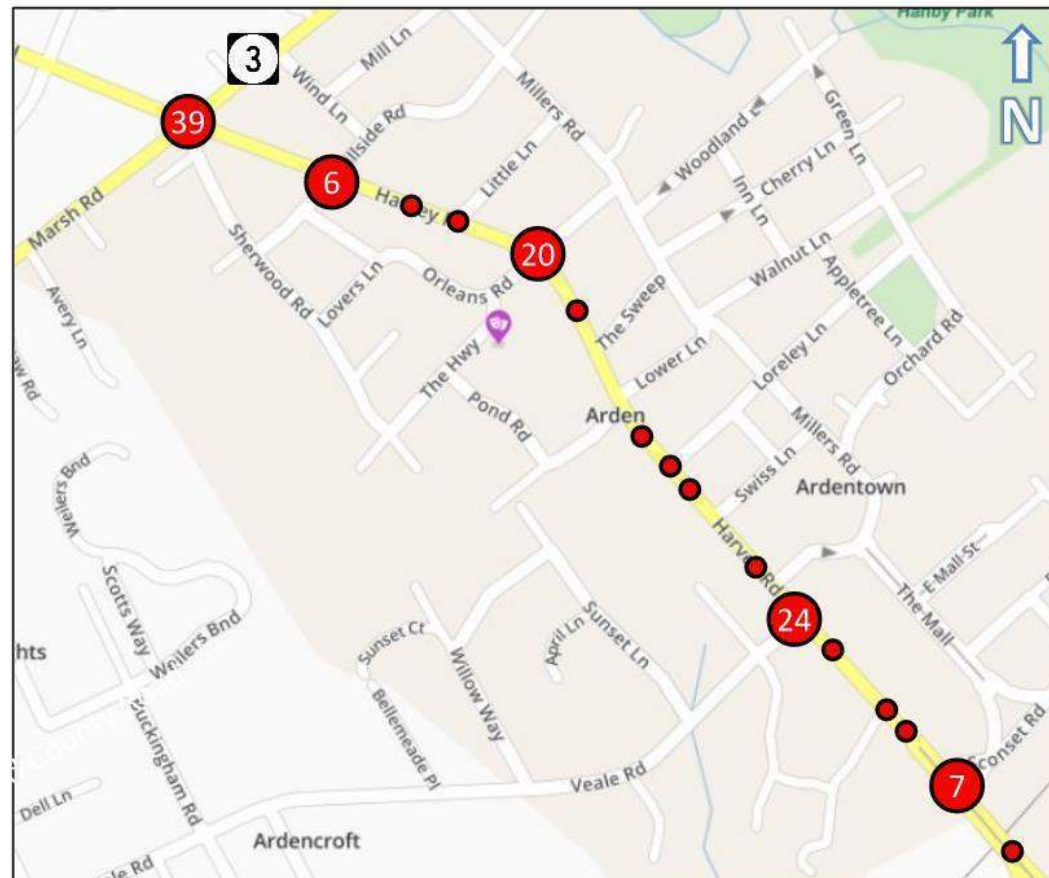
85th - Percentile Speeds
10/3/22 - 10/7/22



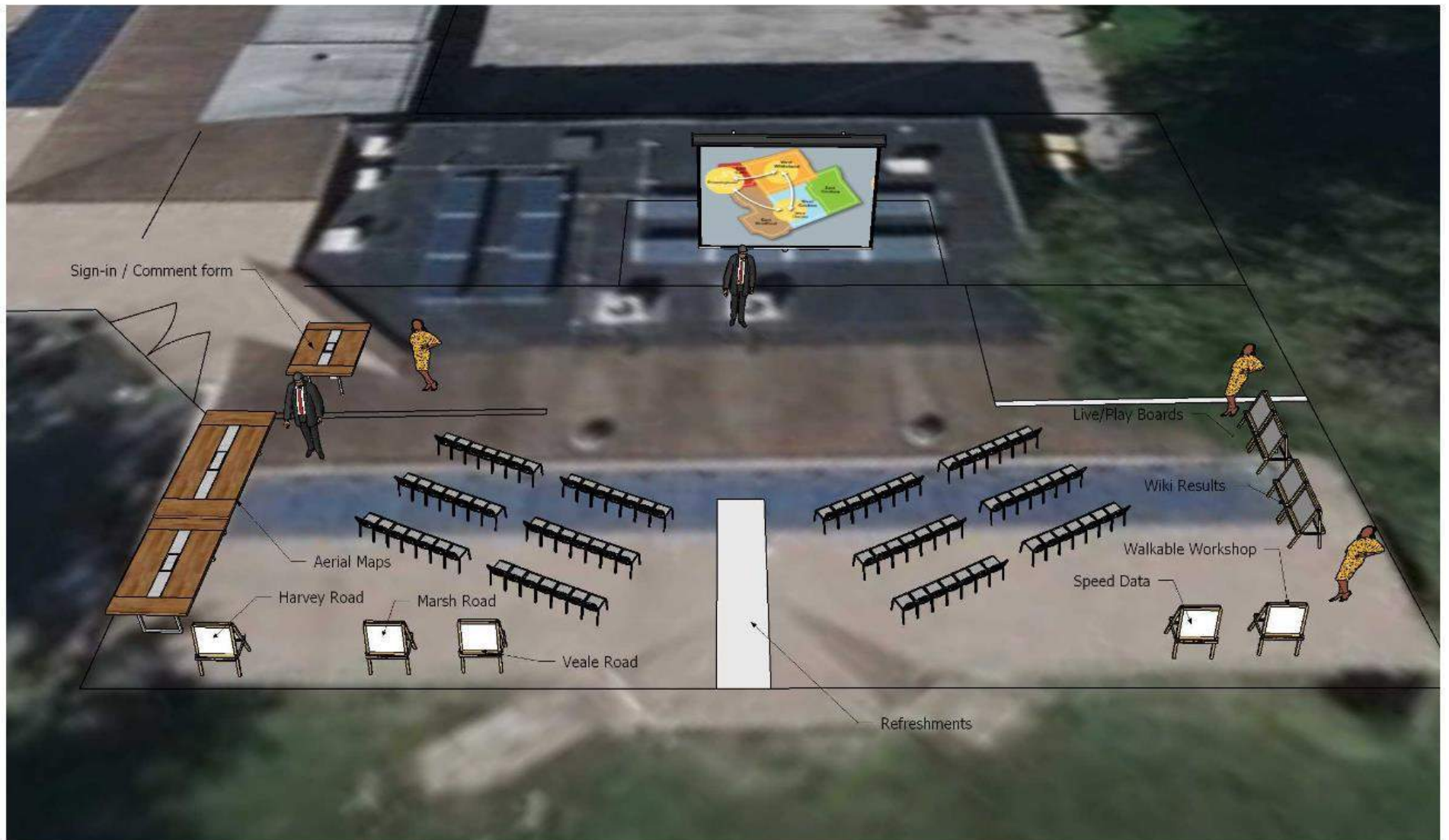
Harvey Road Corridor, Ardens

Crash Summary

01/01/15 – 10/31/21: 107 crashes



Giving Your Feedback





10/25/2022

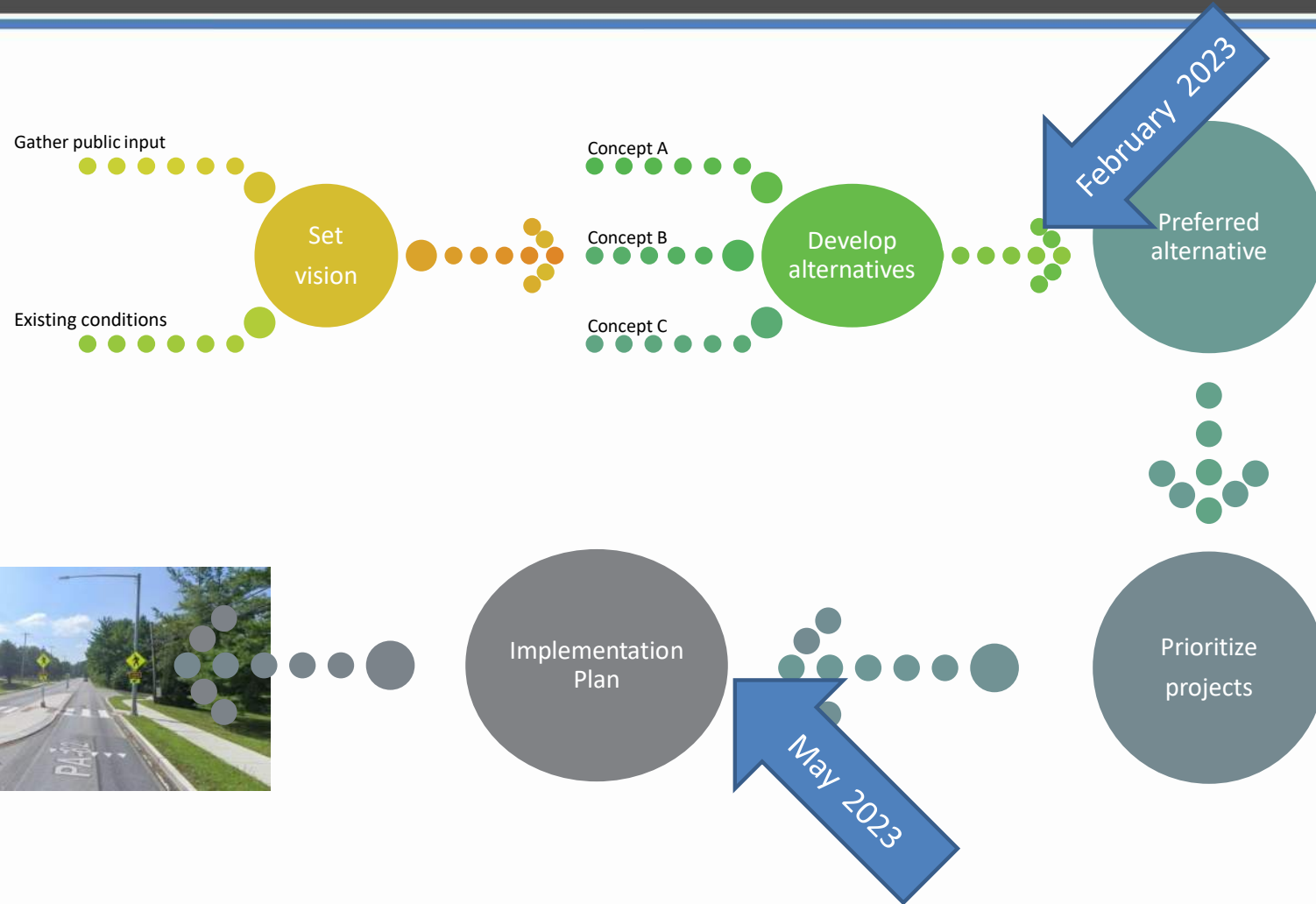
Connecting with the Ardens Comment Form

| |
|----------|
| Name: |
| Address: |
| Phone: |
| Email: |

Comments:

Next Steps / Timeline

Project Objectives



Project Website



www.wilmapco.org/ardens/

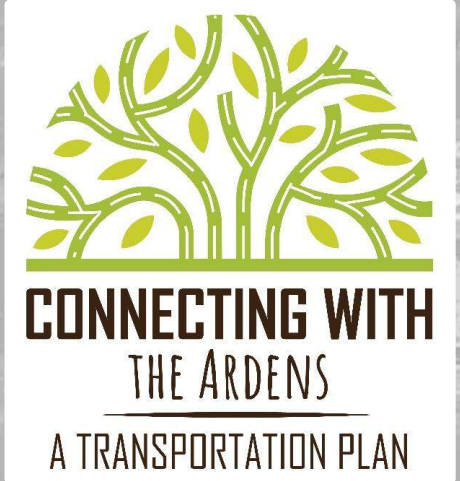
Project Contact Information



Randy Waltermeyer, AICP
Project Manager
rwaltermeyer@trafficpd.com
484-325-6506 (direct)

Bill Swiatek, AICP
Project Manager
bswiatek@wilmapco.org
302-737-6205 x113

Questions?



An aerial photograph of a residential street intersection. A two-lane road runs vertically, intersecting with a two-lane road running horizontally. The area is heavily wooded with trees showing autumn foliage in shades of green, yellow, and orange. A brick house with a dark roof is visible on the left side of the vertical road. Several cars are visible on the roads. A large, semi-transparent number '4' is overlaid on the bottom right corner of the image.

4

Appendix Four
Public Meeting #1 - Public Feedback

Ardens-Wide



Connecting with the Ardens | A Transportation Plan

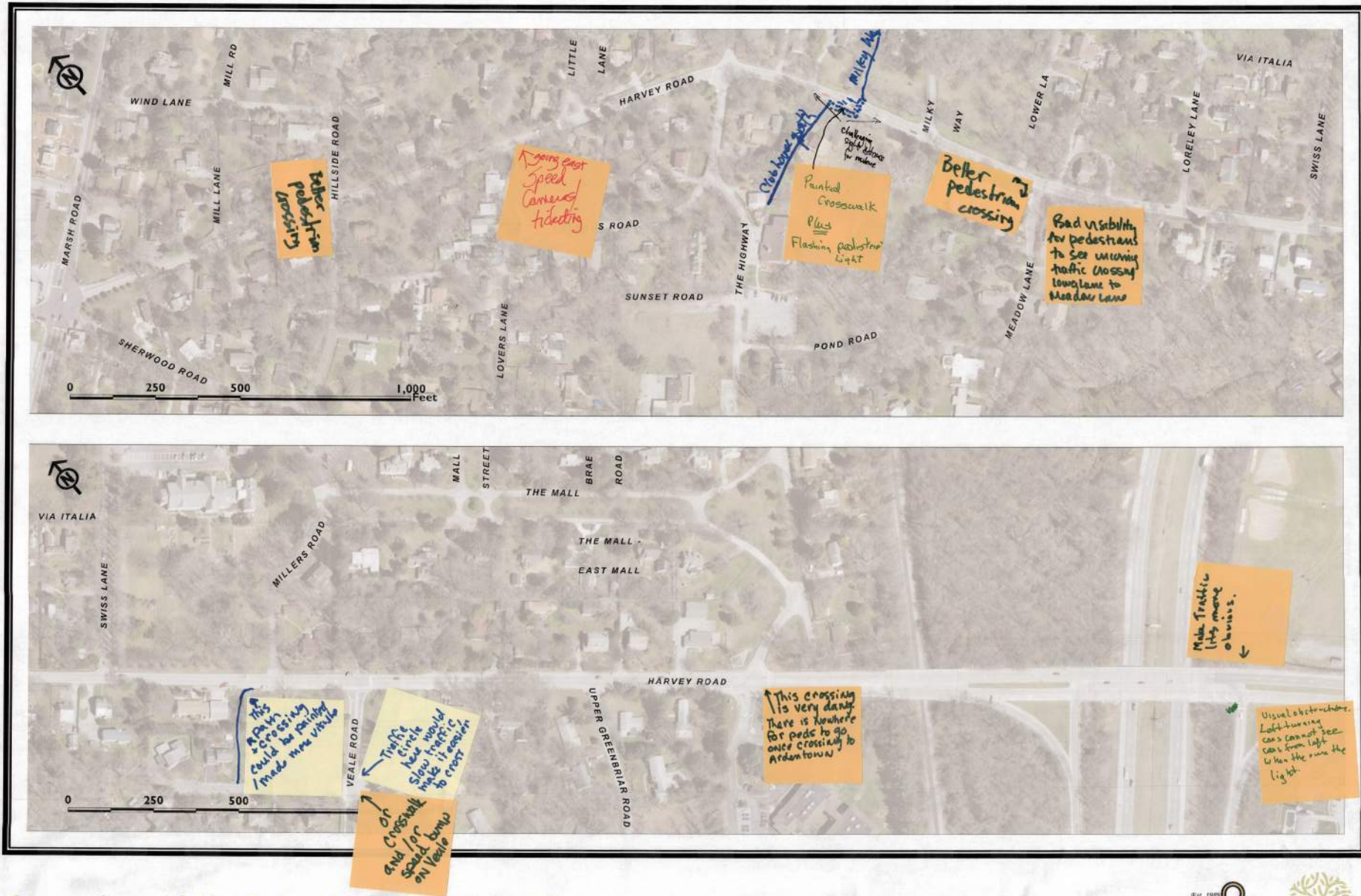
October 25, 2022 Public Meeting

WILMAPCO

TRD

CONNECTING WITH
THE ARDENS
A TRANSPORTATION PLAN

Harvey Road



Connecting with the Ardens | A Transportation Plan

October 25, 2022 Public Meeting

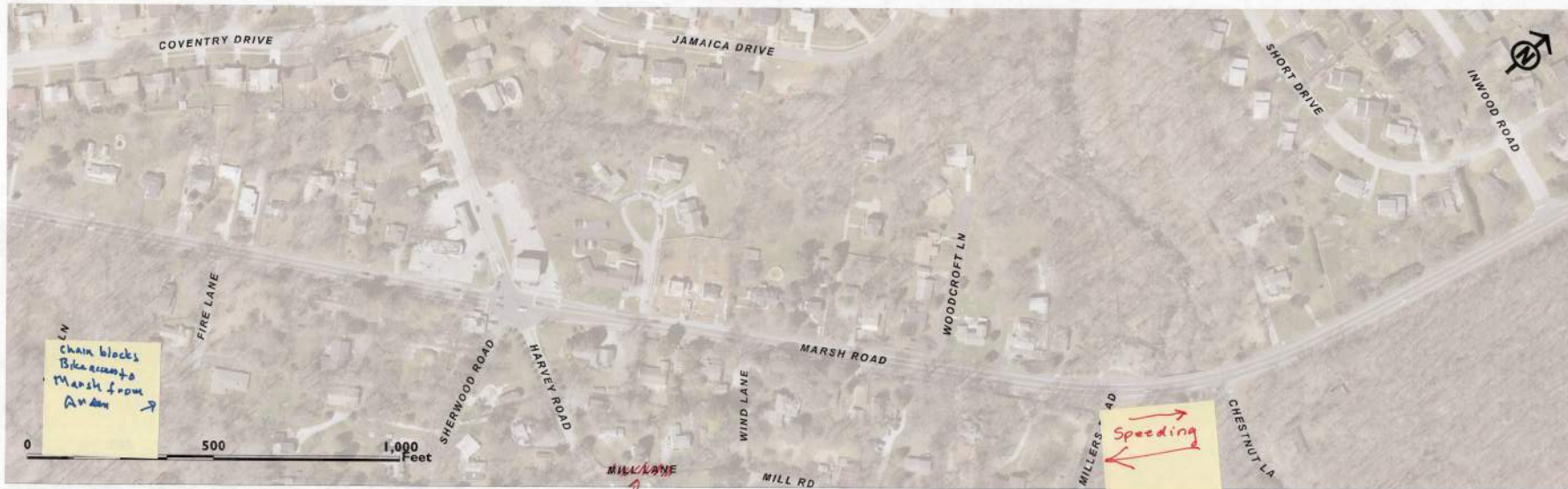
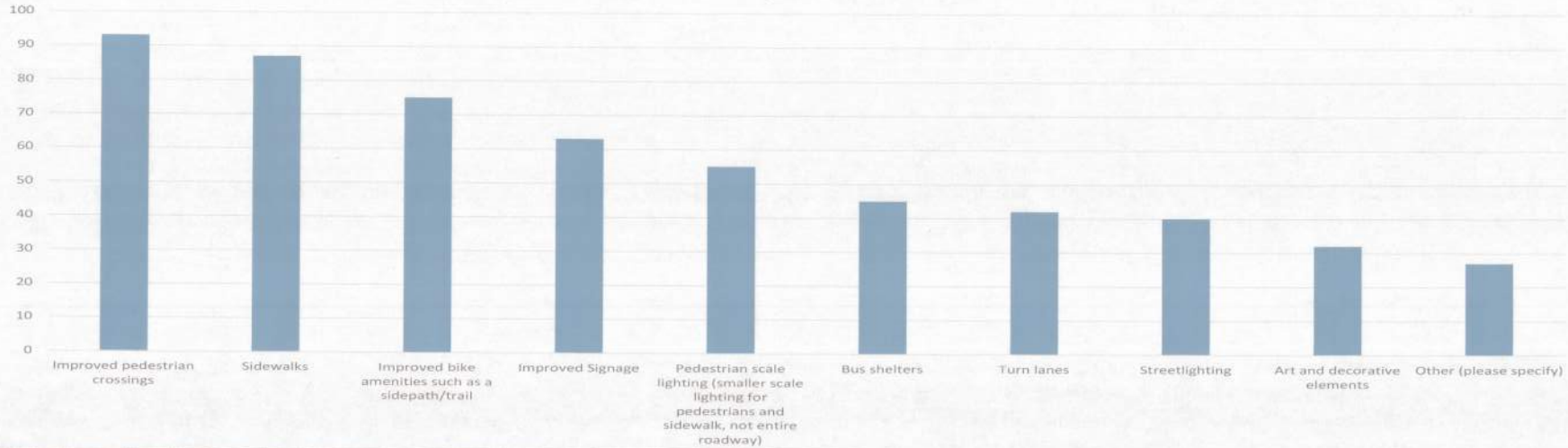
WILMAPCO

TRD

CONNECTING WITH
THE ARDENS
A TRANSPORTATION PLAN

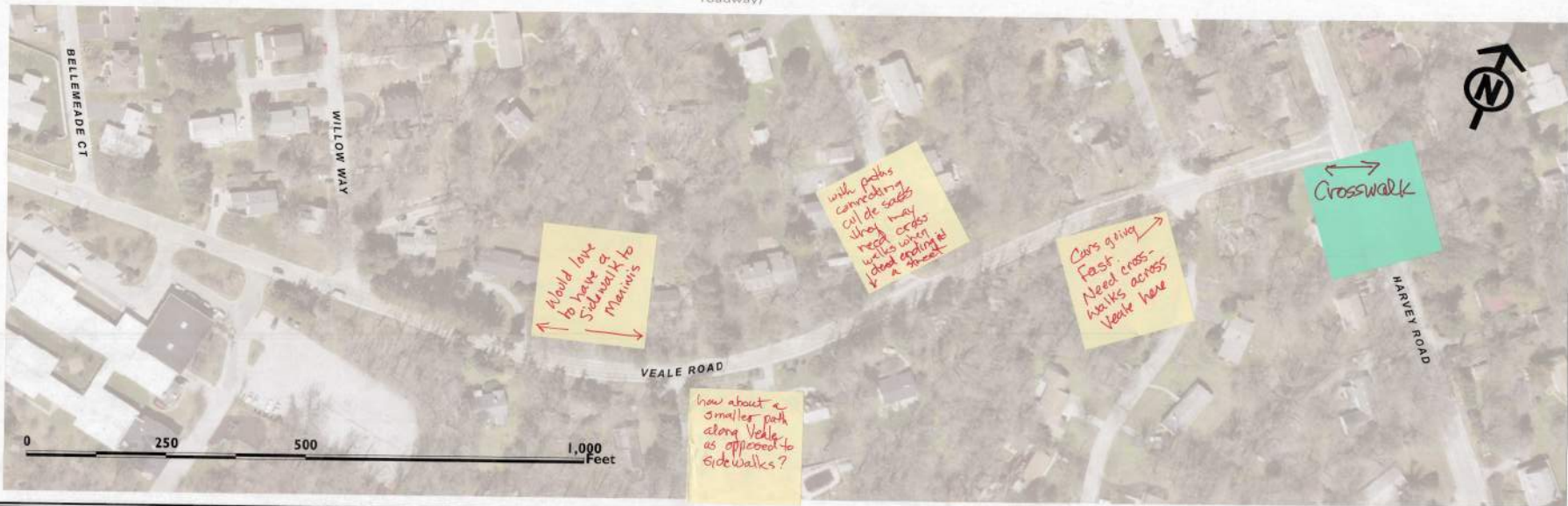
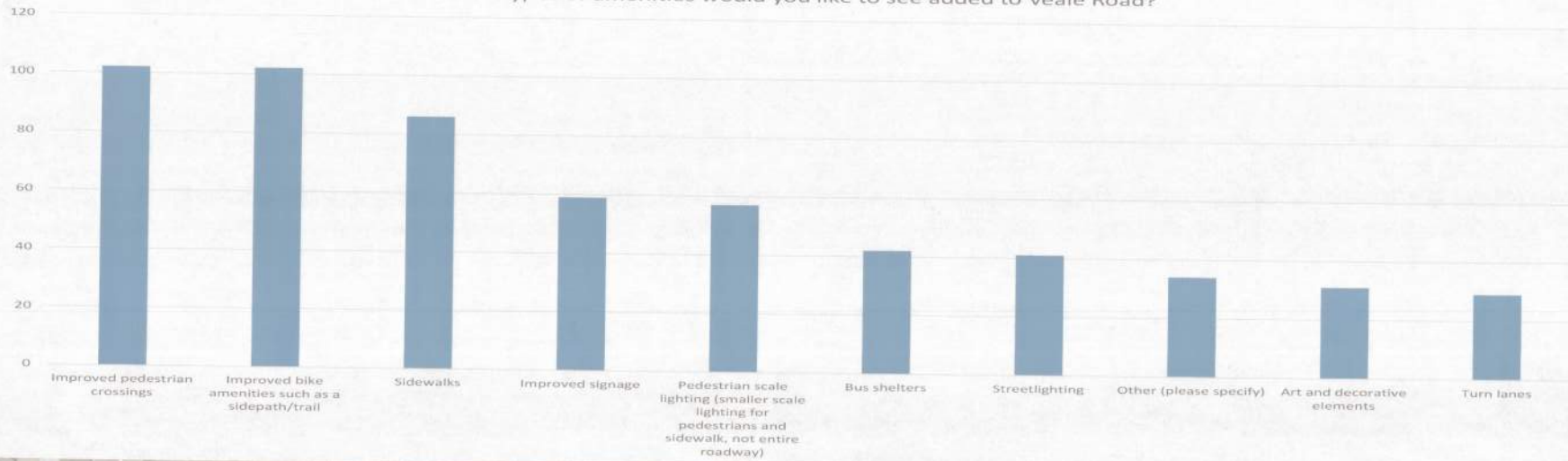
Marsh Road

What types of amenities would you like to see added to Marsh Road?



Veale Road

What types of amenities would you like to see added to Veale Road?



Where Do you Live?



Where Do you Play?



Wikimap Results

Places That I Enjoy Walking and Biking

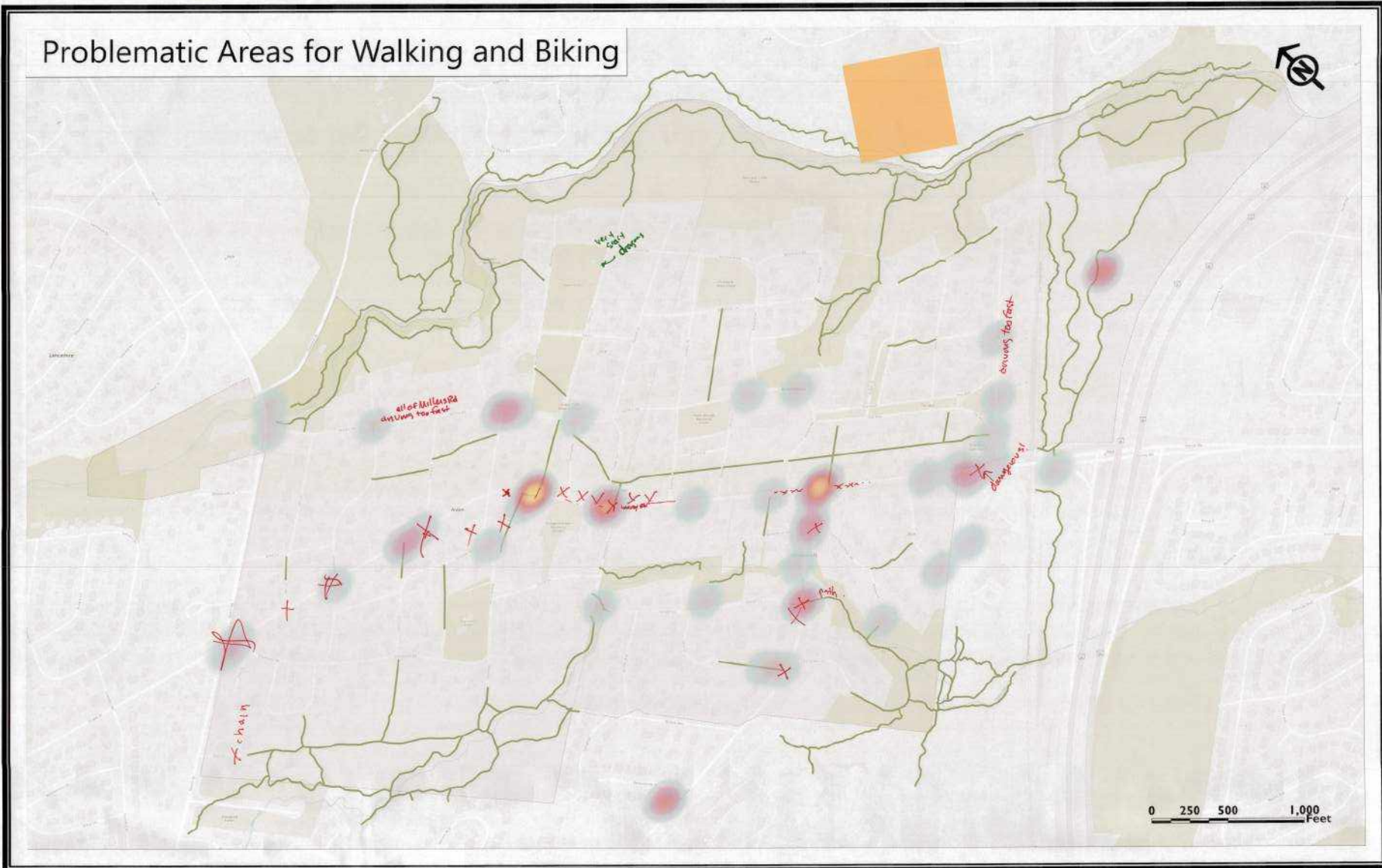
Are we
missing
any locations?

INDIAN
CREEK

Shawwood
Forest
(is this it?)


0 250 500 1,000
Feet

Wikimap Results



Connecting with the Ardens | A Transportation Plan
October 25, 2022 Public Meeting



An aerial photograph of a residential street intersection. A two-lane road runs vertically, intersecting with a two-lane road running horizontally. The area is surrounded by dense trees with autumn foliage in shades of green, yellow, and orange. A brick house with a dark roof is visible on the left side of the vertical road. Several cars are visible on the roads. A large, semi-transparent number '5' is overlaid on the bottom right corner of the image.

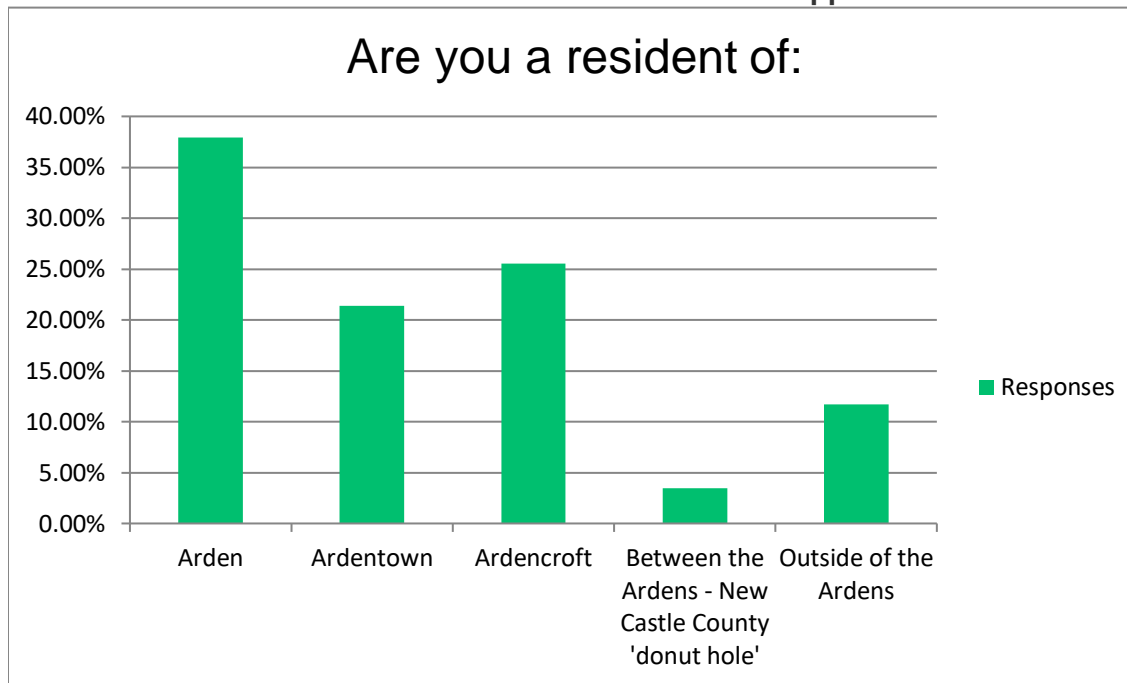
5

Appendix Five
Survey #1 - Summary

Connecting with the Ardens: A Transportation Plan Community Survey

Are you a resident of:

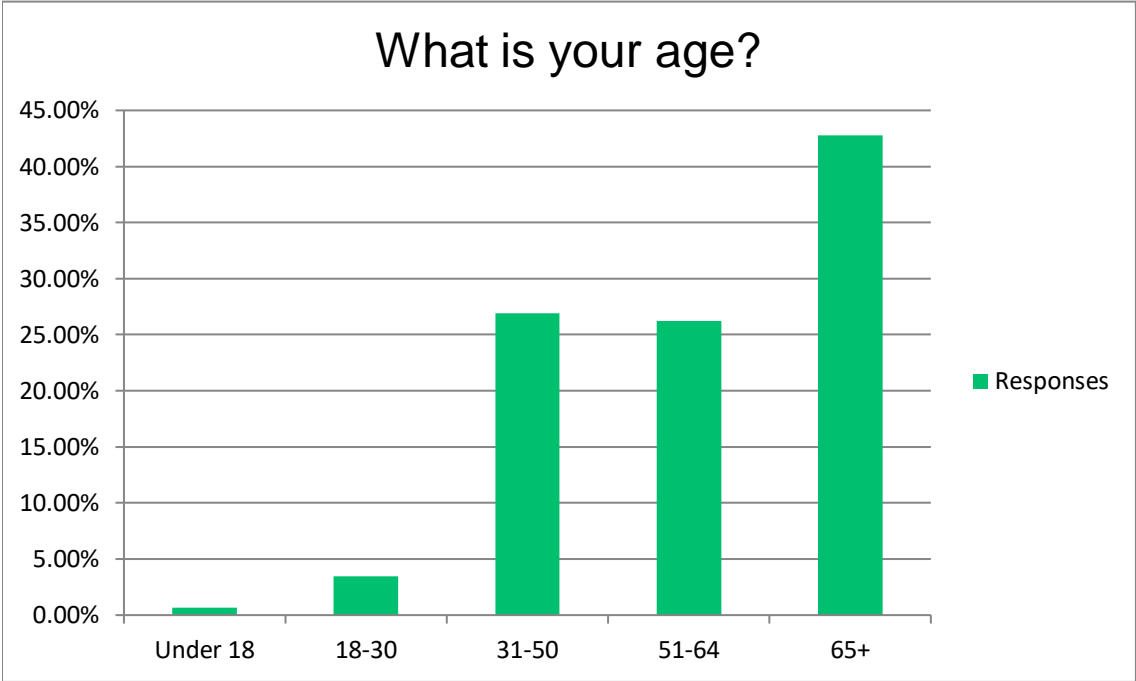
| Answer Choices | Responses | |
|---|-----------|------------|
| Arden | 37.93% | 55 |
| Ardentown | 21.38% | 31 |
| Ardencroft | 25.52% | 37 |
| Between the Ardens - New Castle County 'donut hole' | 3.45% | 5 |
| Outside of the Ardens | 11.72% | 17 |
| Answered | | 145 |
| Skipped | | 0 |



Connecting with the Ardens: A Transportation Plan Community Survey

What is your age?

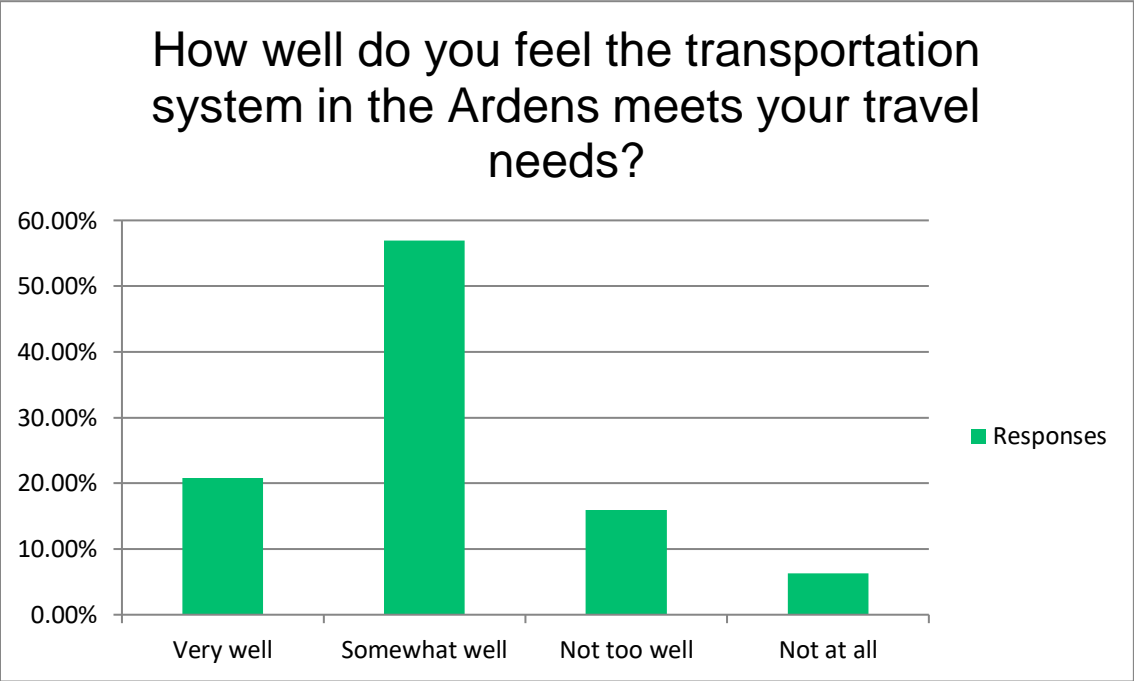
| Answer Choices | Responses | |
|----------------|-----------|-----|
| Under 18 | 0.69% | 1 |
| 18-30 | 3.45% | 5 |
| 31-50 | 26.90% | 39 |
| 51-64 | 26.21% | 38 |
| 65+ | 42.76% | 62 |
| Answered | | 145 |
| Skipped | | 0 |



Connecting with the Ardens: A Transportation Plan Community Survey

How well do you feel the transportation system in the Ardens meets your travel n

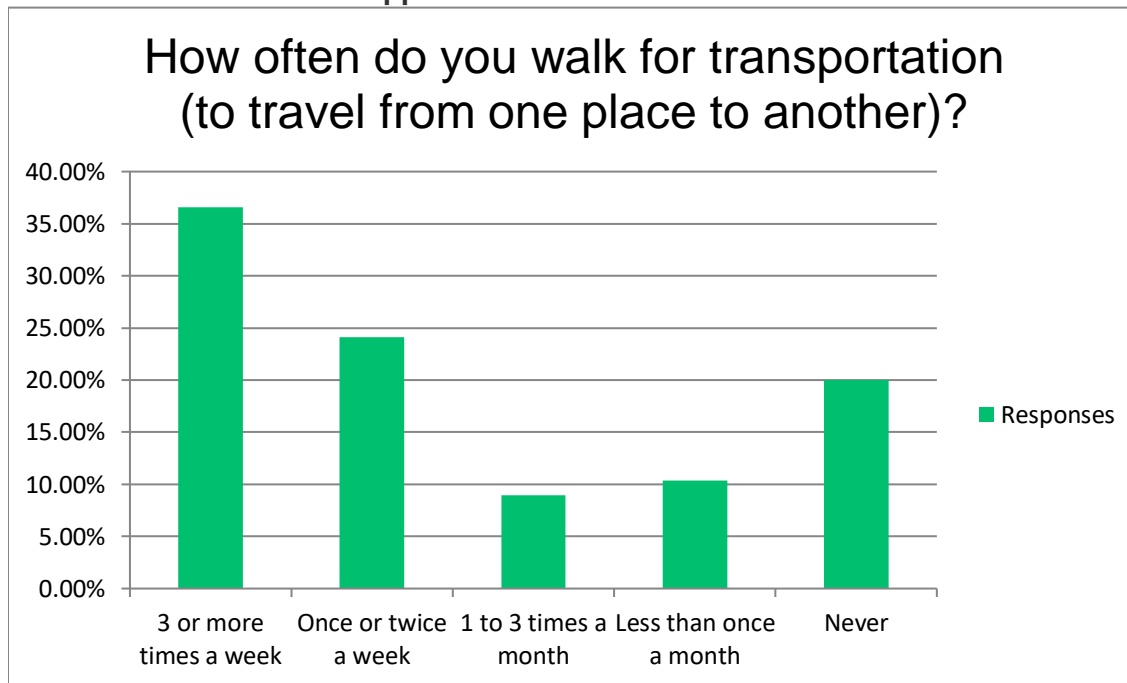
| Answer Choices | Responses | |
|----------------|-----------|-----|
| Very well | 20.83% | 30 |
| Somewhat well | 56.94% | 82 |
| Not too well | 15.97% | 23 |
| Not at all | 6.25% | 9 |
| Answered | | 144 |
| Skipped | | 1 |



Connecting with the Ardens: A Transportation Plan Community Survey

How often do you walk for transportation (to travel from one place to another)?

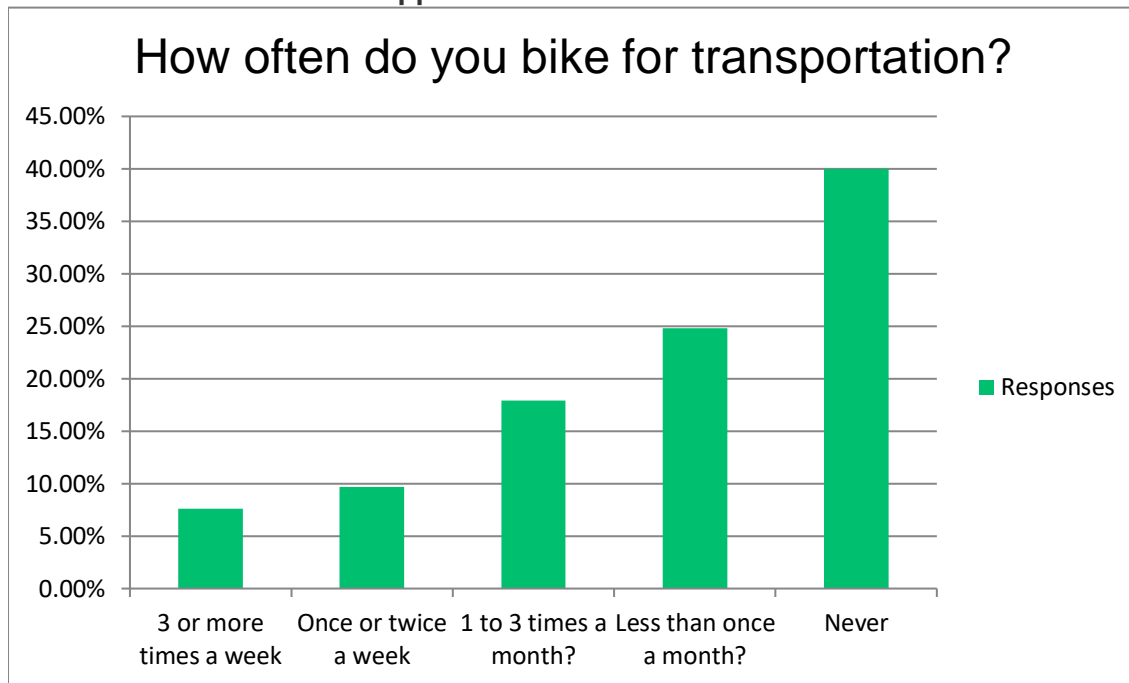
| Answer Choices | Responses | |
|------------------------|-----------|------------|
| 3 or more times a week | 36.55% | 53 |
| Once or twice a week | 24.14% | 35 |
| 1 to 3 times a month | 8.97% | 13 |
| Less than once a month | 10.34% | 15 |
| Never | 20.00% | 29 |
| Answered | | 145 |
| Skipped | | 0 |



Connecting with the Ardens: A Transportation Plan Community Survey

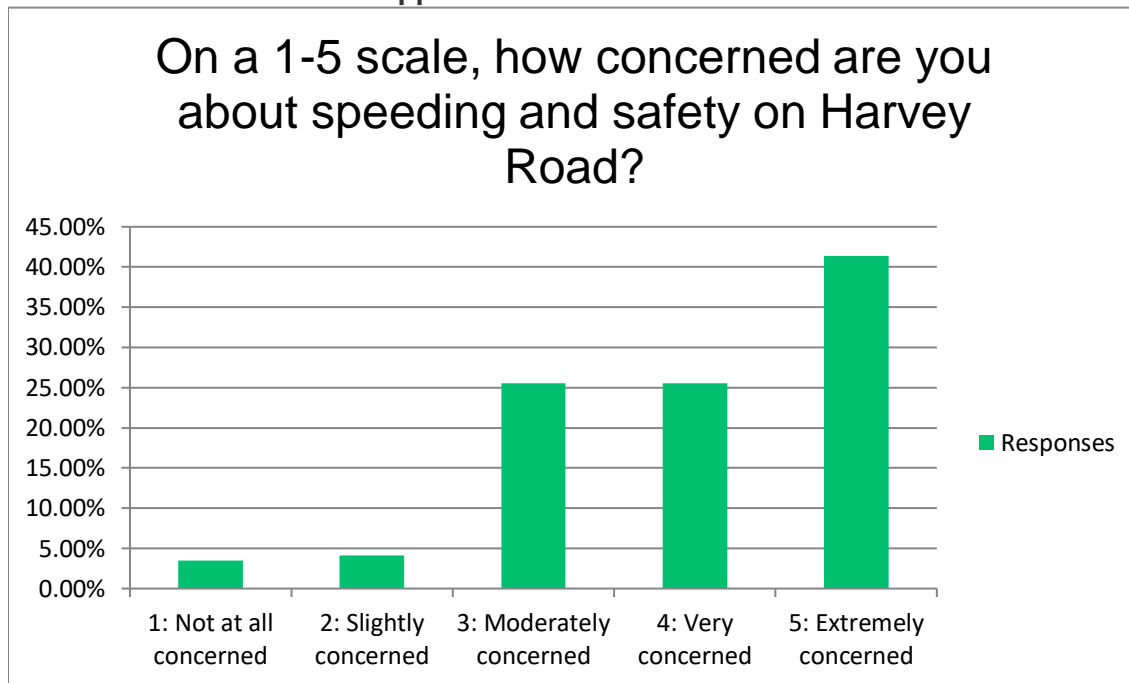
How often do you bike for transportation?

| Answer Choices | Responses | |
|-------------------------|-----------|------------|
| 3 or more times a week | 7.59% | 11 |
| Once or twice a week | 9.66% | 14 |
| 1 to 3 times a month? | 17.93% | 26 |
| Less than once a month? | 24.83% | 36 |
| Never | 40.00% | 58 |
| Answered | | 145 |
| Skipped | | 0 |



Connecting with the Ardens: A Transportation Plan Community Survey
On a 1-5 scale, how concerned are you about speeding and safety on Harvey Road?

| Answer Choices | Responses | |
|-------------------------|-----------|------------|
| 1: Not at all concerned | 3.45% | 5 |
| 2: Slightly concerned | 4.14% | 6 |
| 3: Moderately concerned | 25.52% | 37 |
| 4: Very concerned | 25.52% | 37 |
| 5: Extremely concerned | 41.38% | 60 |
| Answered | | 145 |
| Skipped | | 0 |

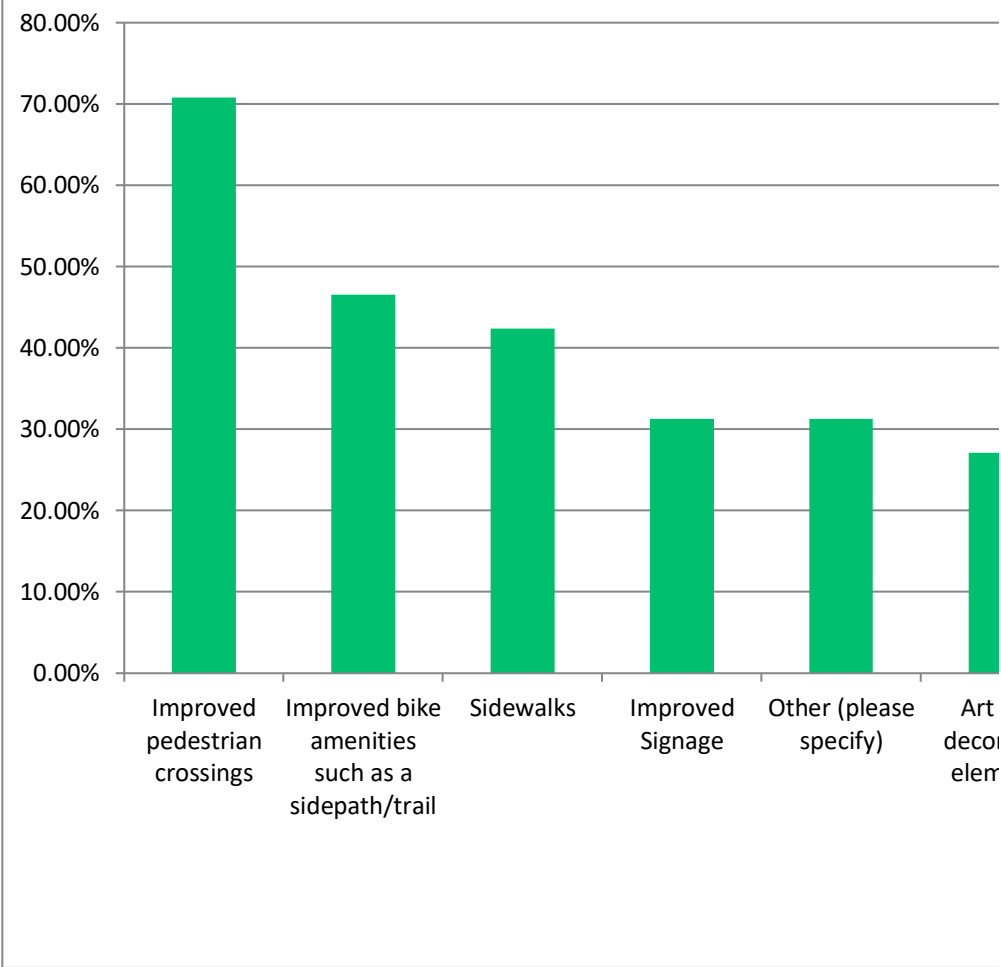


Connecting with the Ardens: A Transportation Plan Community Survey

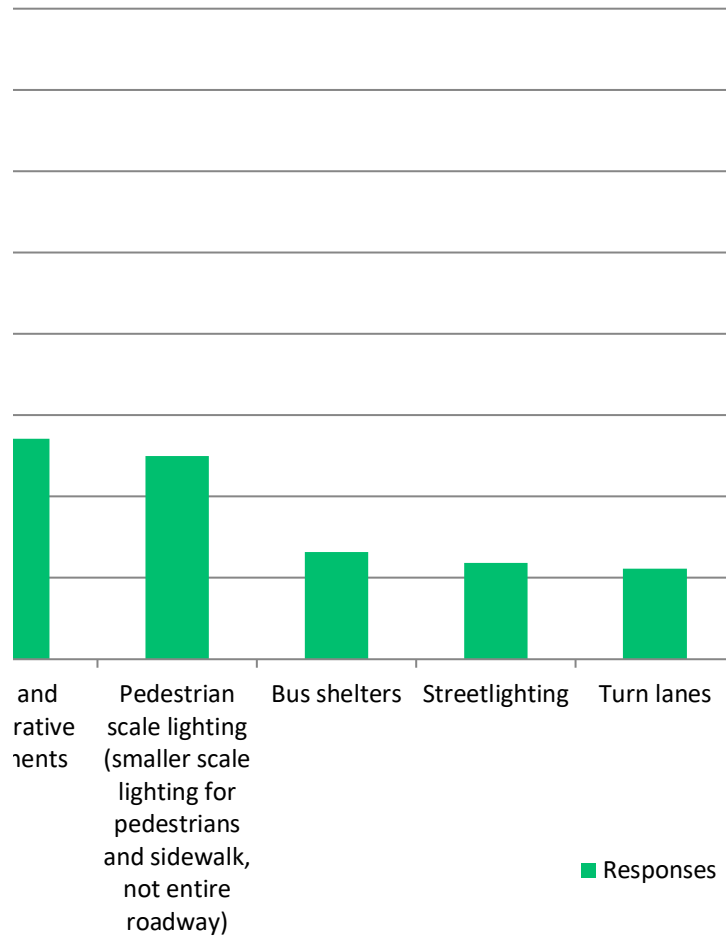
What types of amenities would you like to see added to Harvey Road?

| Answer Choices | Responses | |
|---|-----------------|------------|
| Improved pedestrian crossings | 70.83% | 102 |
| Improved bike amenities such as a sidepath/trail | 46.53% | 67 |
| Sidewalks | 42.36% | 61 |
| Improved Signage | 31.25% | 45 |
| Other (please specify) | 31.25% | 45 |
| Art and decorative elements | 27.08% | 39 |
| Pedestrian scale lighting (smaller scale lighting for pedestrians and | 25.00% | 36 |
| Bus shelters | 13.19% | 19 |
| Streetlighting | 11.81% | 17 |
| Turn lanes | 11.11% | 16 |
| | Answered | 144 |
| | Skipped | 1 |

What types of amenities would you like



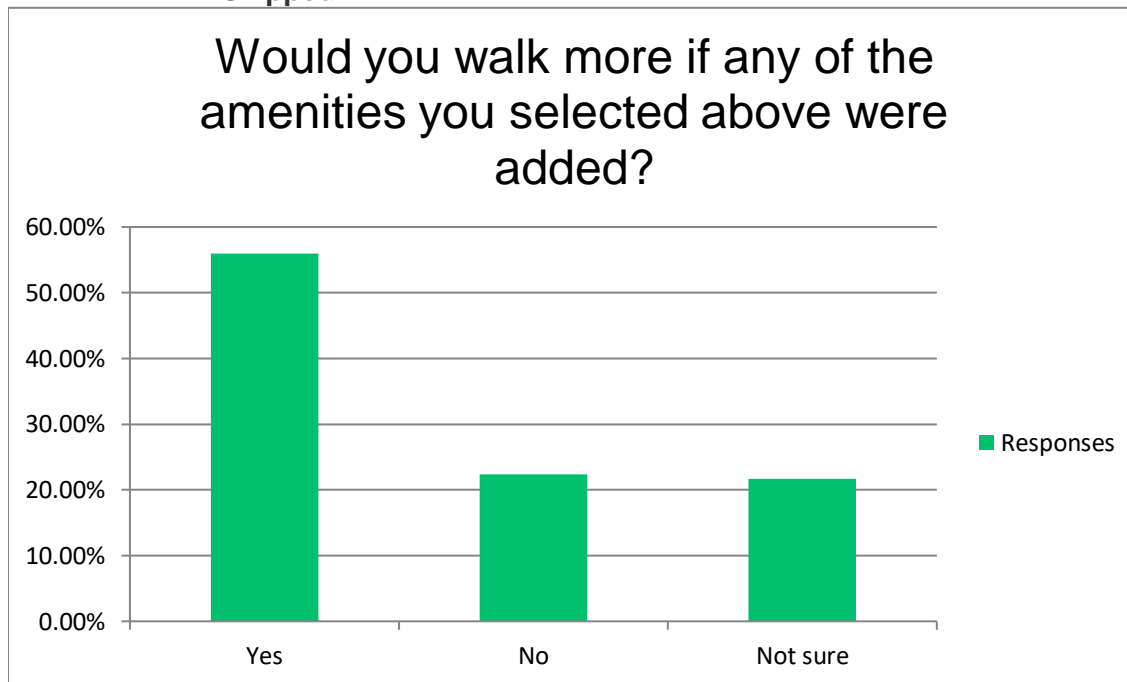
What do you think should be added to Harvey Road?



Connecting with the Ardens: A Transportation Plan Community Survey

Would you walk more if any of the amenities you selected above were added?

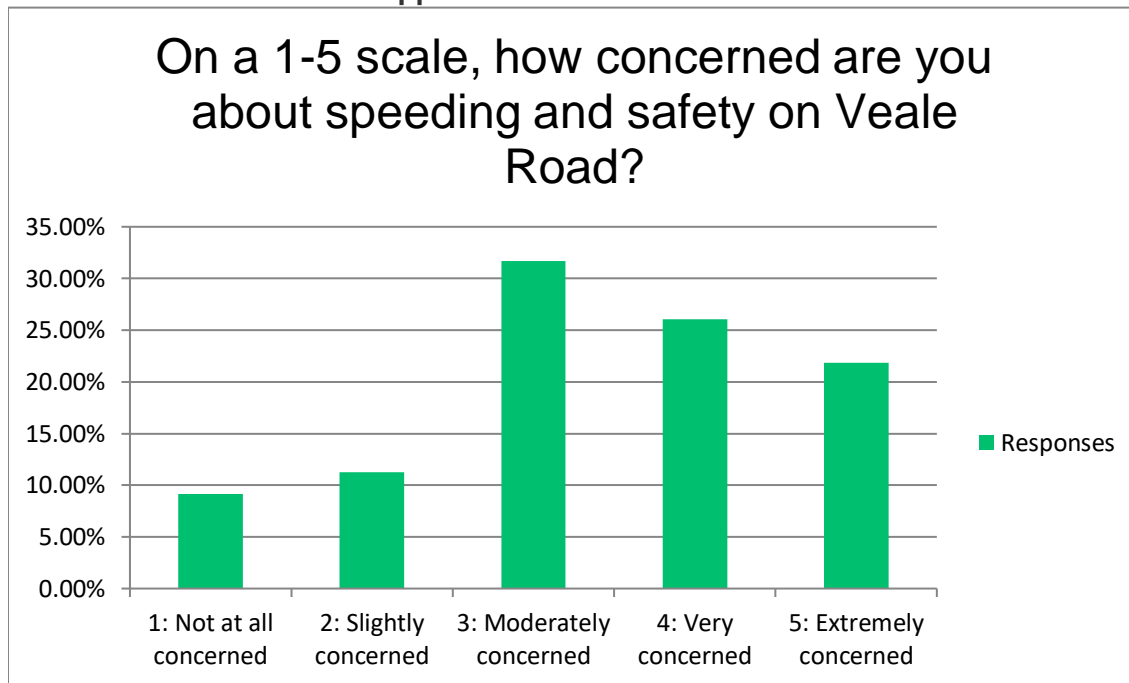
| Answer Choices | Responses | |
|-----------------|-----------|------------|
| Yes | 55.94% | 80 |
| No | 22.38% | 32 |
| Not sure | 21.68% | 31 |
| Answered | | 143 |
| Skipped | | 2 |



Connecting with the Ardens: A Transportation Plan Community Survey

On a 1-5 scale, how concerned are you about speeding and safety on Veale Road?

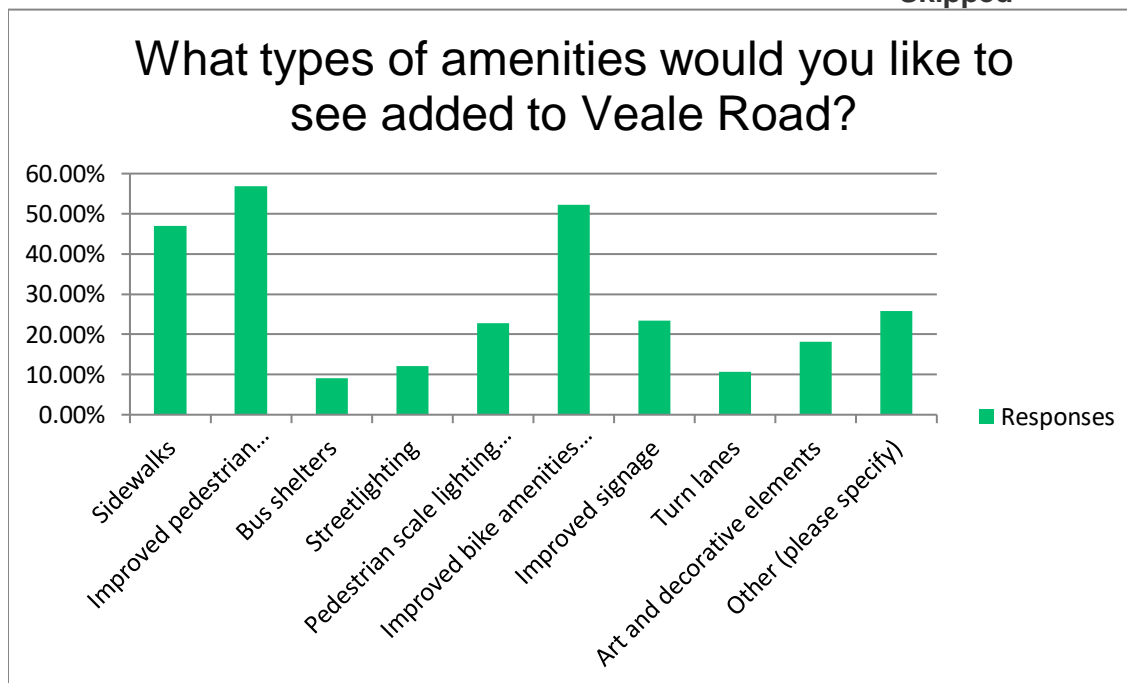
| Answer Choices | Responses | |
|-------------------------|-----------|------------|
| 1: Not at all concerned | 9.15% | 13 |
| 2: Slightly concerned | 11.27% | 16 |
| 3: Moderately concerned | 31.69% | 45 |
| 4: Very concerned | 26.06% | 37 |
| 5: Extremely concerned | 21.83% | 31 |
| Answered | | 142 |
| Skipped | | 3 |



Connecting with the Ardens: A Transportation Plan Community Survey

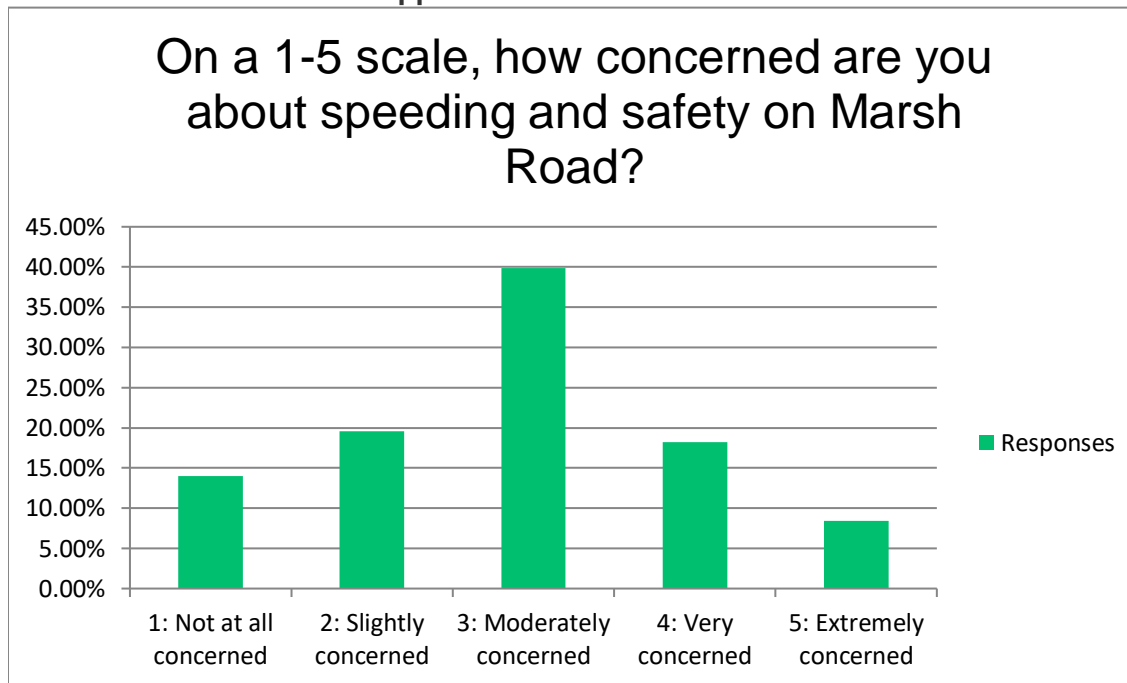
What types of amenities would you like to see added to Veale Road?

| Answer Choices | Responses | |
|---|-----------------|------------|
| Sidewalks | 46.97% | 62 |
| Improved pedestrian crossings | 56.82% | 75 |
| Bus shelters | 9.09% | 12 |
| Streetlighting | 12.12% | 16 |
| Pedestrian scale lighting (smaller scale lighting for pedestrians and | 22.73% | 30 |
| Improved bike amenities such as a sidepath/trail | 52.27% | 69 |
| Improved signage | 23.48% | 31 |
| Turn lanes | 10.61% | 14 |
| Art and decorative elements | 18.18% | 24 |
| Other (please specify) | 25.76% | 34 |
| | Answered | 132 |
| | Skipped | 13 |



Connecting with the Ardens: A Transportation Plan Community Survey
On a 1-5 scale, how concerned are you about speeding and safety on Marsh Road?

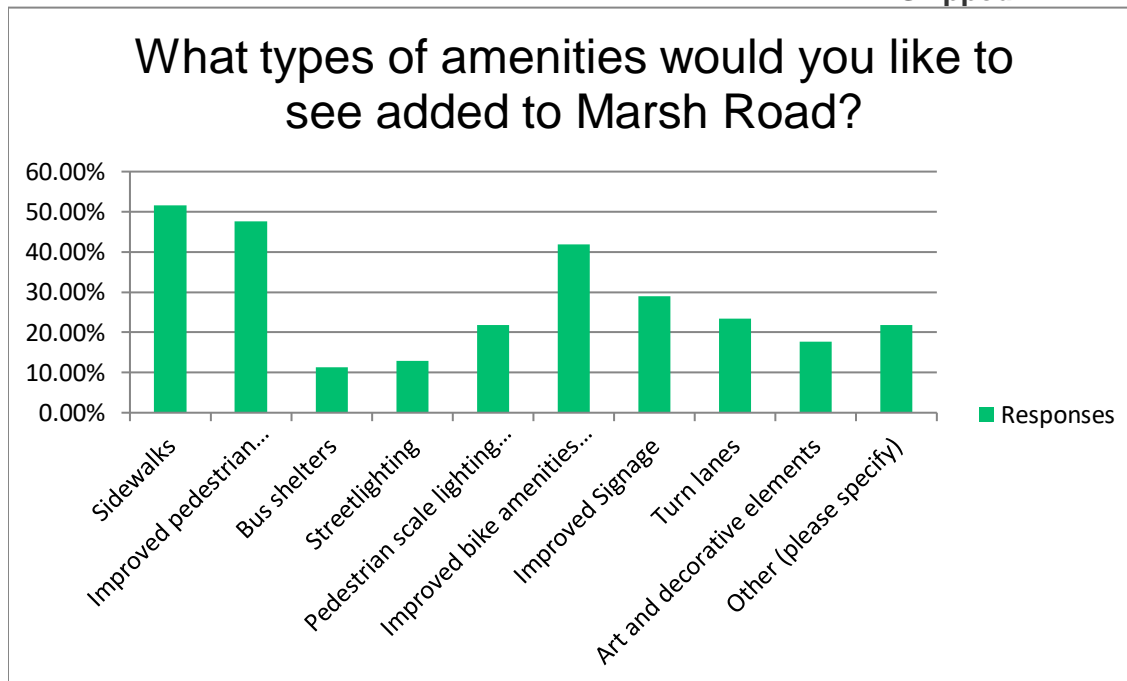
| Answer Choices | Responses | |
|-------------------------|-----------|------------|
| 1: Not at all concerned | 13.99% | 20 |
| 2: Slightly concerned | 19.58% | 28 |
| 3: Moderately concerned | 39.86% | 57 |
| 4: Very concerned | 18.18% | 26 |
| 5: Extremely concerned | 8.39% | 12 |
| Answered | | 143 |
| Skipped | | 2 |



Connecting with the Ardens: A Transportation Plan Community Survey

What types of amenities would you like to see added to Marsh Road?

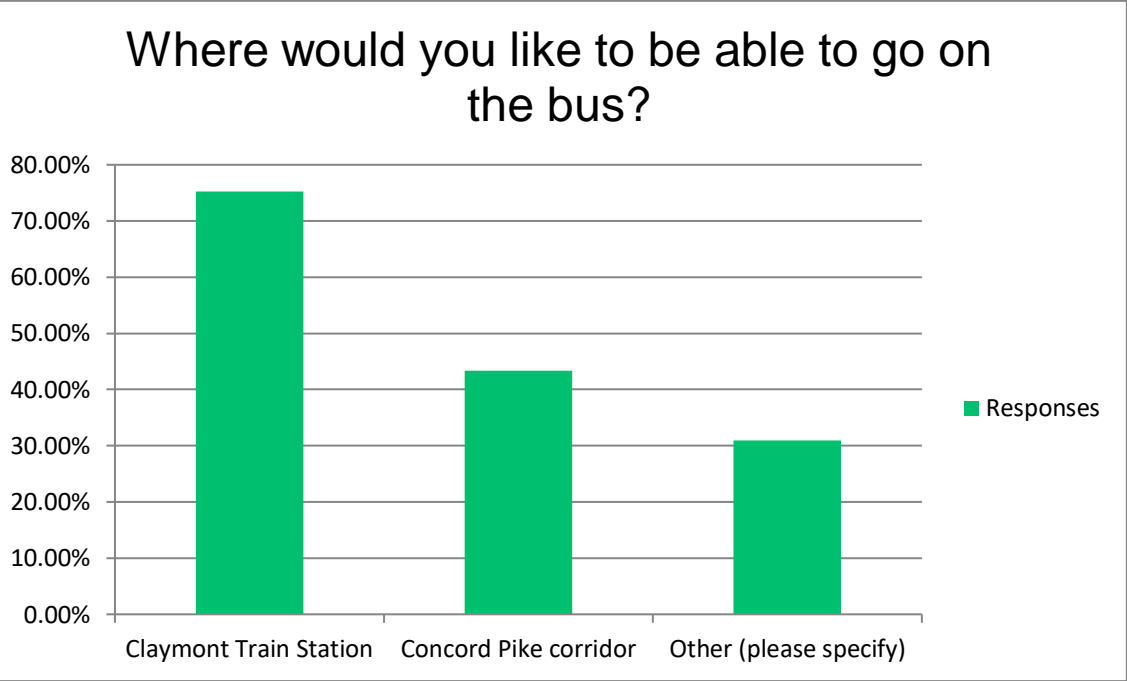
| Answer Choices | Responses | |
|---|-----------|------------|
| Sidewalks | 51.61% | 64 |
| Improved pedestrian crossings | 47.58% | 59 |
| Bus shelters | 11.29% | 14 |
| Streetlighting | 12.90% | 16 |
| Pedestrian scale lighting (smaller scale lighting for pedestrians and | 21.77% | 27 |
| Improved bike amenities such as a sidepath/trail | 41.94% | 52 |
| Improved Signage | 29.03% | 36 |
| Turn lanes | 23.39% | 29 |
| Art and decorative elements | 17.74% | 22 |
| Other (please specify) | 21.77% | 27 |
| Answered | | 124 |
| Skipped | | 21 |



Connecting with the Ardens: A Transportation Plan Community Survey

Where would you like to be able to go on the bus?

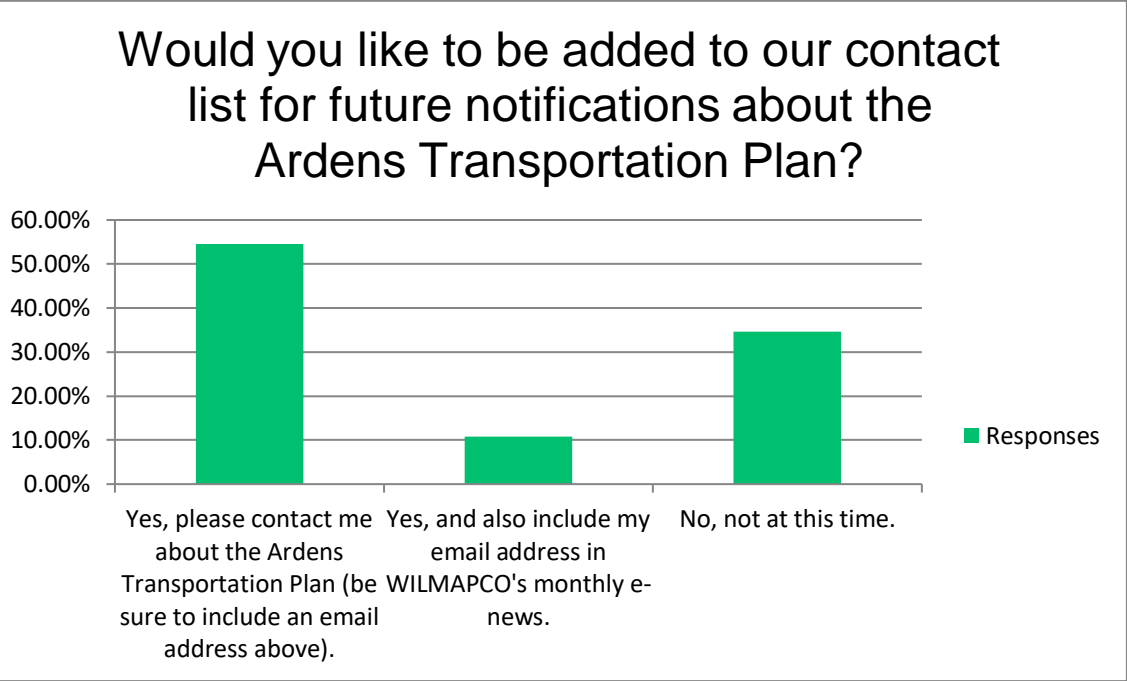
| Answer Choices | Responses | |
|------------------------|-----------|-----|
| Claymont Train Station | 75.22% | 85 |
| Concord Pike corridor | 43.36% | 49 |
| Other (please specify) | 30.97% | 35 |
| Answered | | 113 |
| Skipped | | 32 |



Connecting with the Ardens: A Transportation Plan Community Survey

Would you like to be added to our contact list for future notifications about the Ardens Transportation Plan?

| Answer Choices | Responses | |
|--|-----------------|------------|
| Yes, please contact me about the Ardens Transportation Plan (be sure to include an email address above). | 54.62% | 71 |
| Yes, and also include my email address in WILMAPCO's monthly e-news. | 10.77% | 14 |
| No, not at this time. | 34.62% | 45 |
| | Answered | 130 |
| | Skipped | 15 |



An aerial photograph of a residential street intersection. A two-lane road runs vertically, intersecting with a two-lane road running horizontally. The area is surrounded by dense trees with green and some autumn-colored foliage. A house with a dark roof is visible on the left side of the vertical road. Several cars are visible on the roads. A large, semi-transparent number '6' is overlaid on the bottom right corner of the image.

6

Appendix Six
Public Meeting #2 - Slides

Connecting with the Ardens Improvement Alternatives

February 15, 2023



REMLINE

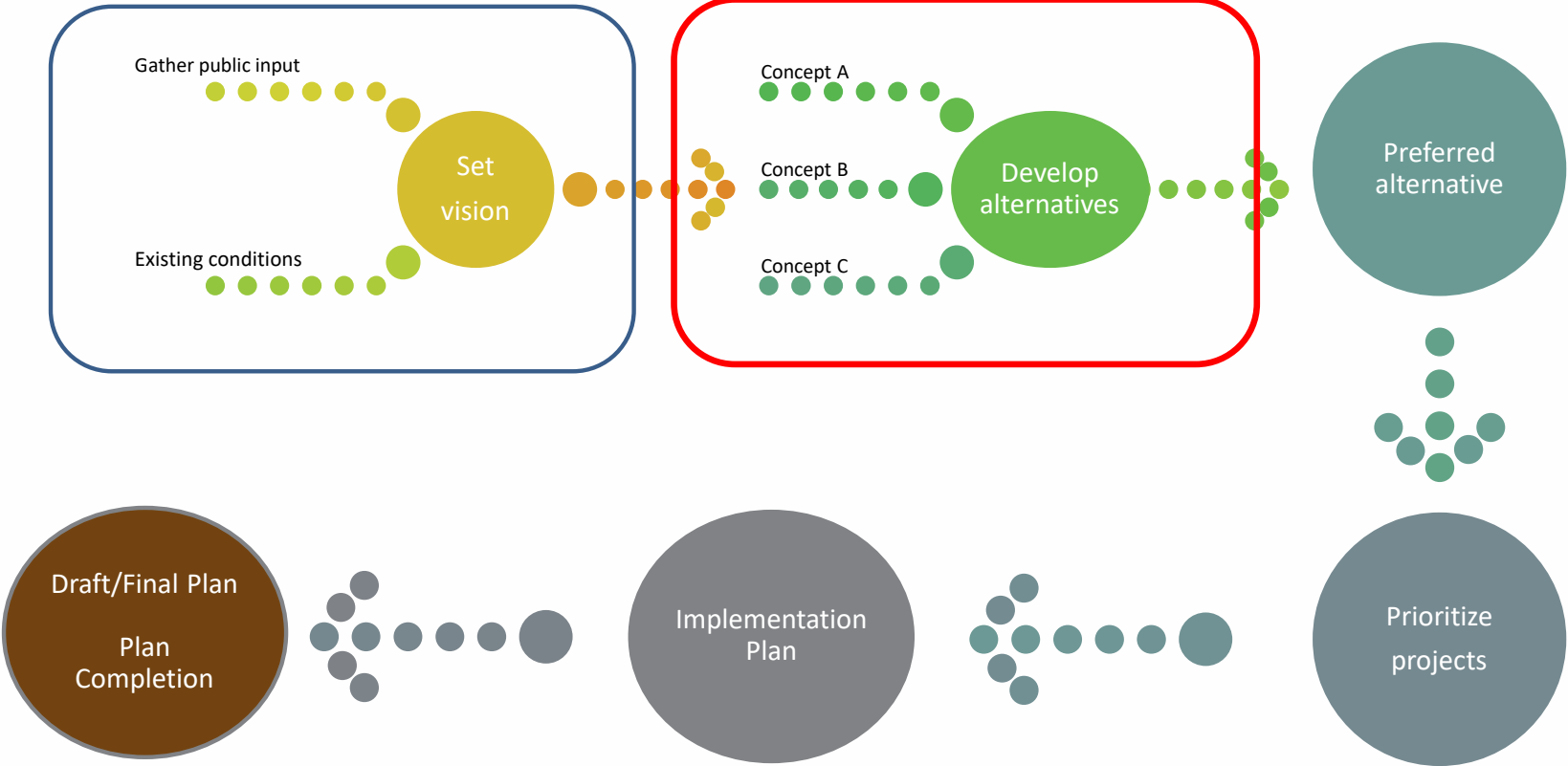


CONNECTING WITH
THE ARDENS

A TRANSPORTATION PLAN



Plan Process

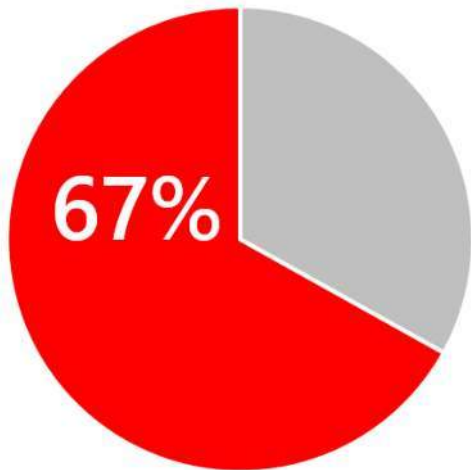


Recapping What We've Heard

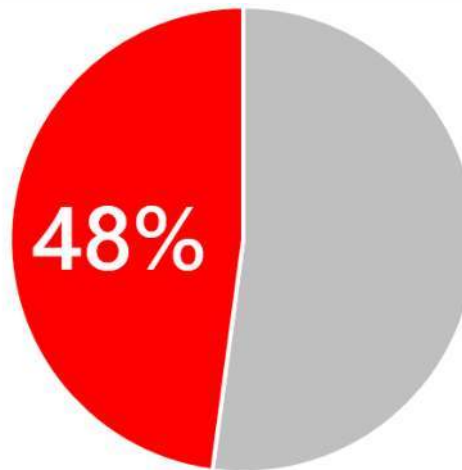
Survey #1 – Key Finding

Very or Extremely Concerned with Speeding and Safety

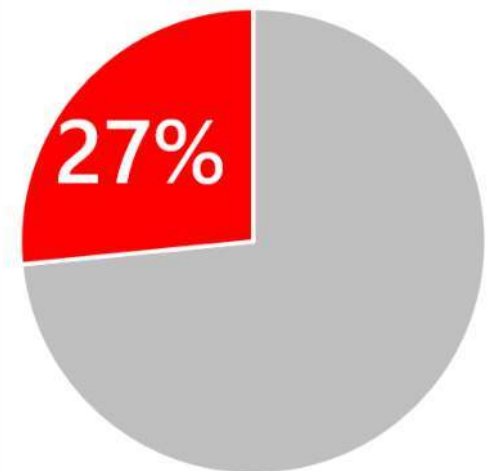
Harvey Road



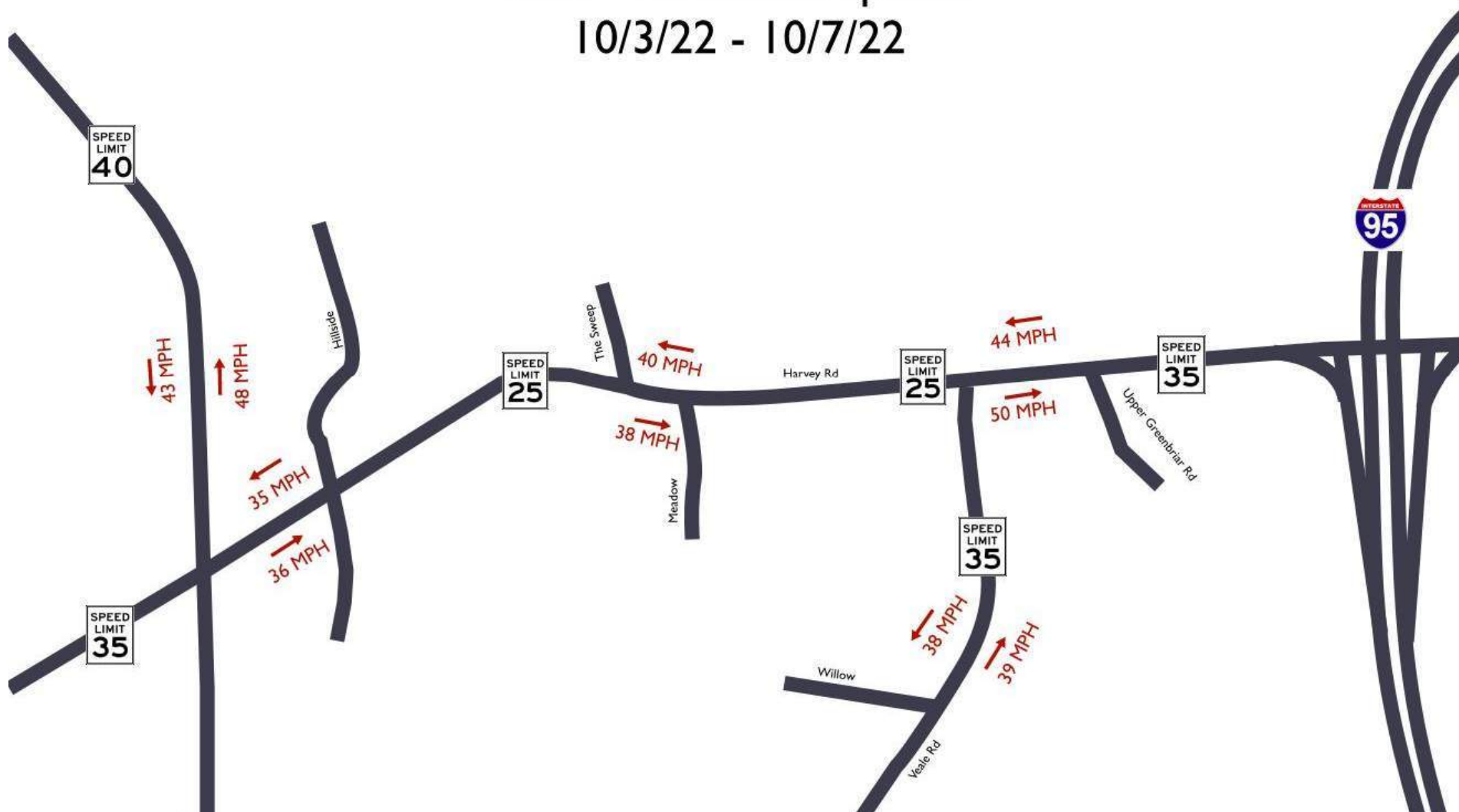
Veale Road



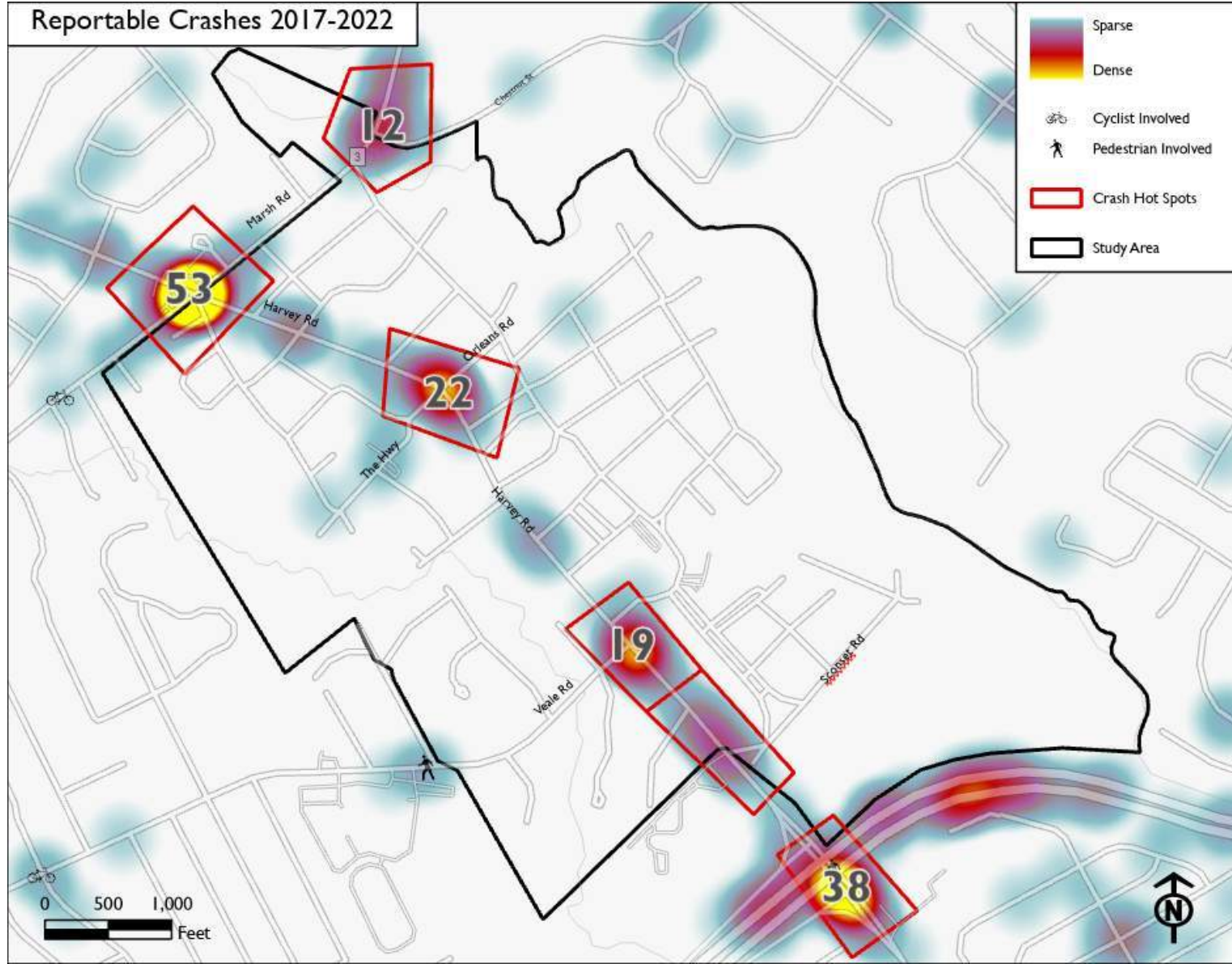
Marsh Road



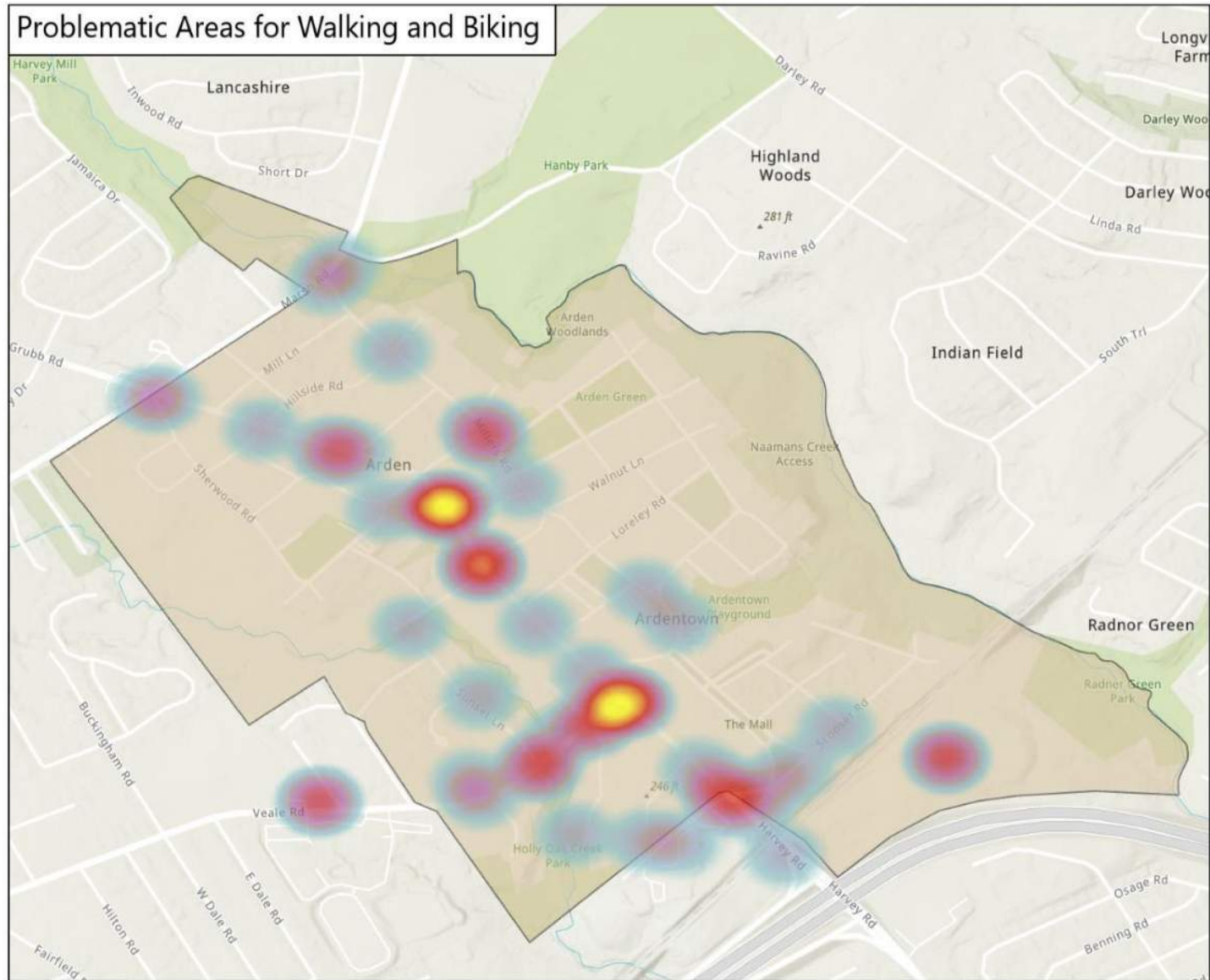
85th - Percentile Speeds 10/3/22 - 10/7/22



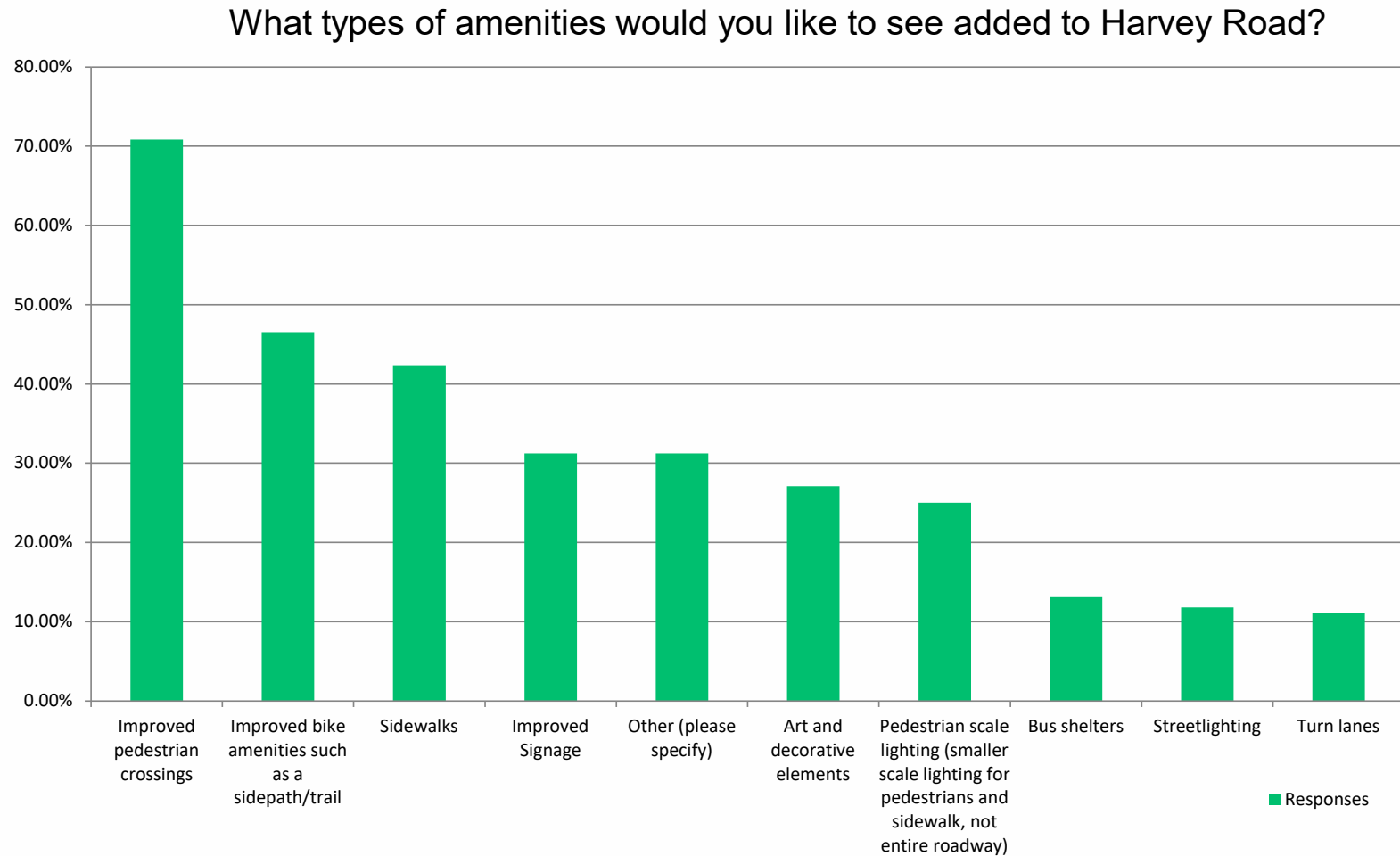
Reportable Crashes 2017-2022



Problematic Areas for Walking and Biking



What types of amenities would you like to see?



Plan Goals

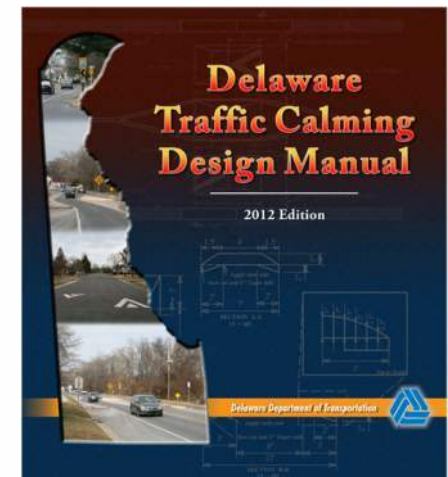
- 1) Manage vehicular travel speeds and deploy safety countermeasures
- 2) Develop a bicycle/pedestrian network to traverse through the Ardens
- 3) Provide enhanced pedestrian crossings
- 4) Enhance transit and school bus stops

Goal #1:

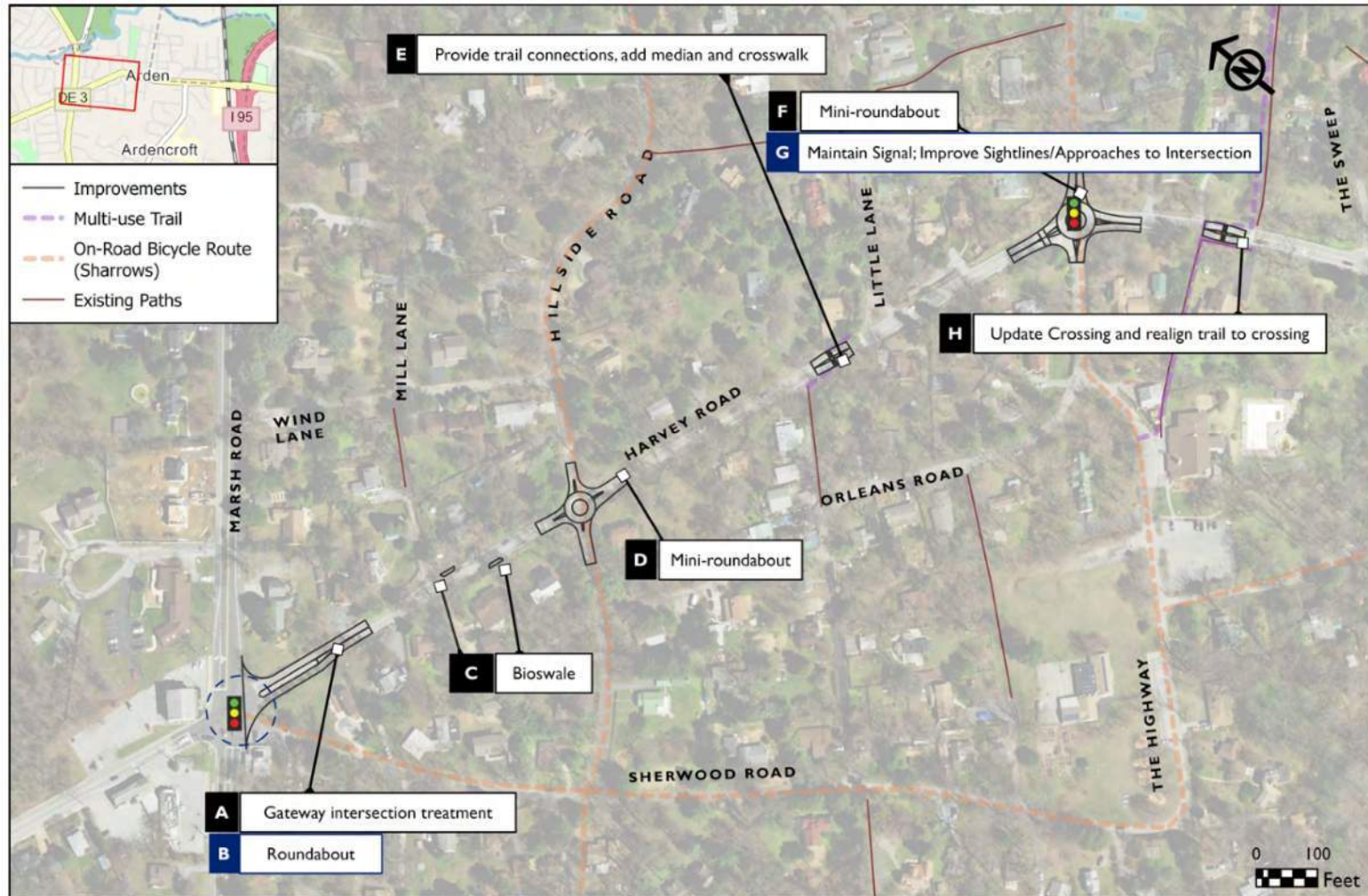
Manage vehicular travel speeds and
deploy safety countermeasures

Points of Consensus – Harvey Road

- » No vertical calming features
- » Use of horizontal calming features
- » Features will comply with DelDOT standards (mountable curb, etc)
- » Use of low-level landscaping
- » Traffic calming features will be traversable for emergency vehicles, school and transit buses



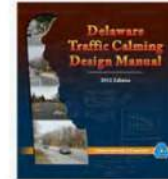
Goal 1: Manage vehicular speeds and deploy safety countermeasures



What is Traffic Calming?

"Traffic calming involves changes in street alignment, installation of barriers, and other physical measures to reduce traffic speeds and/or cut-through volumes, in the interest of street safety, livability, and other public purposes."

-Institute of Transportation Engineers (ITE), Traffic Calming State-of-the Practice



Rectangular Rapid Flashing Beacon



Gateway



Bumpout



Bioswale



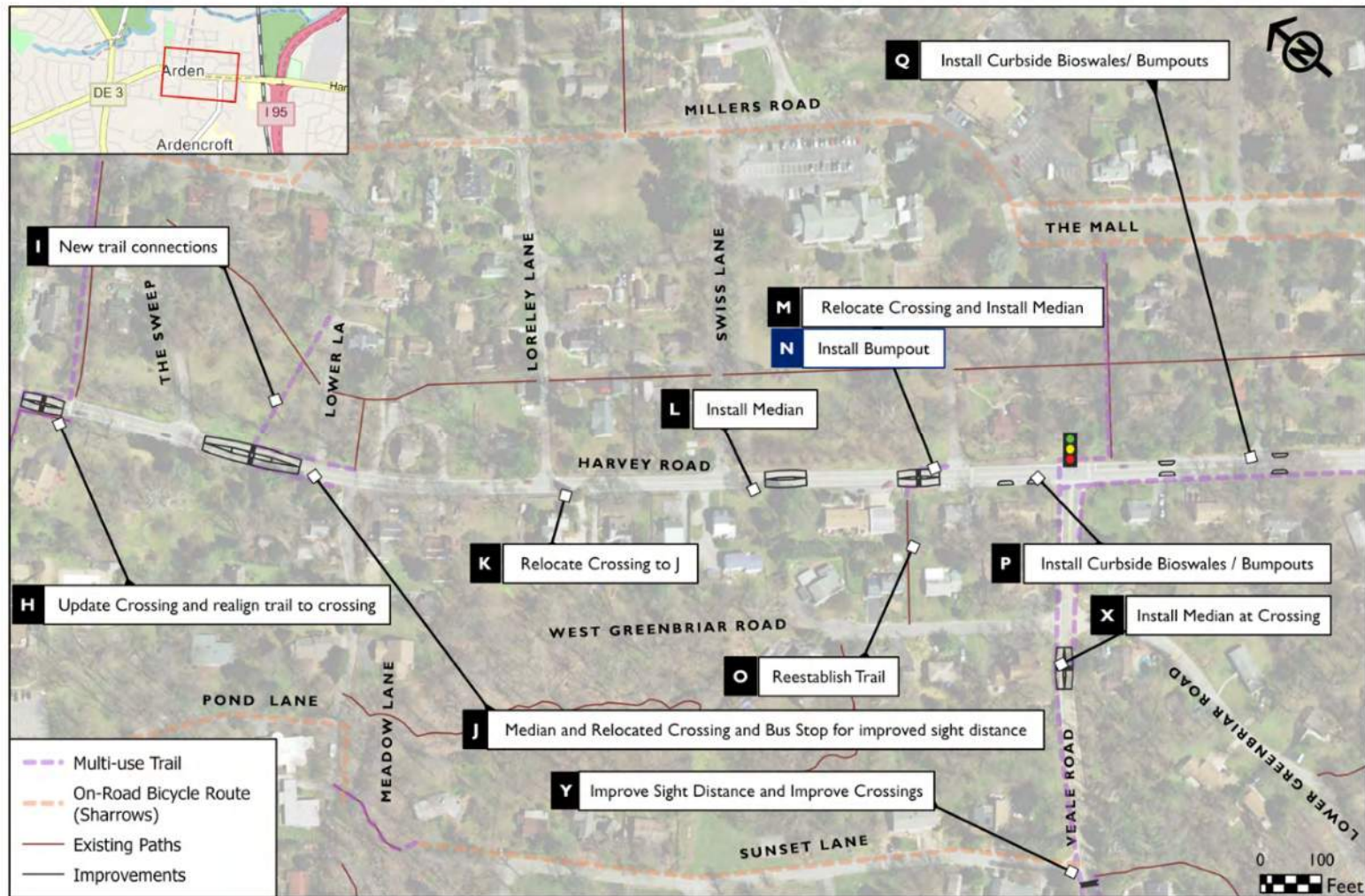
Chicane



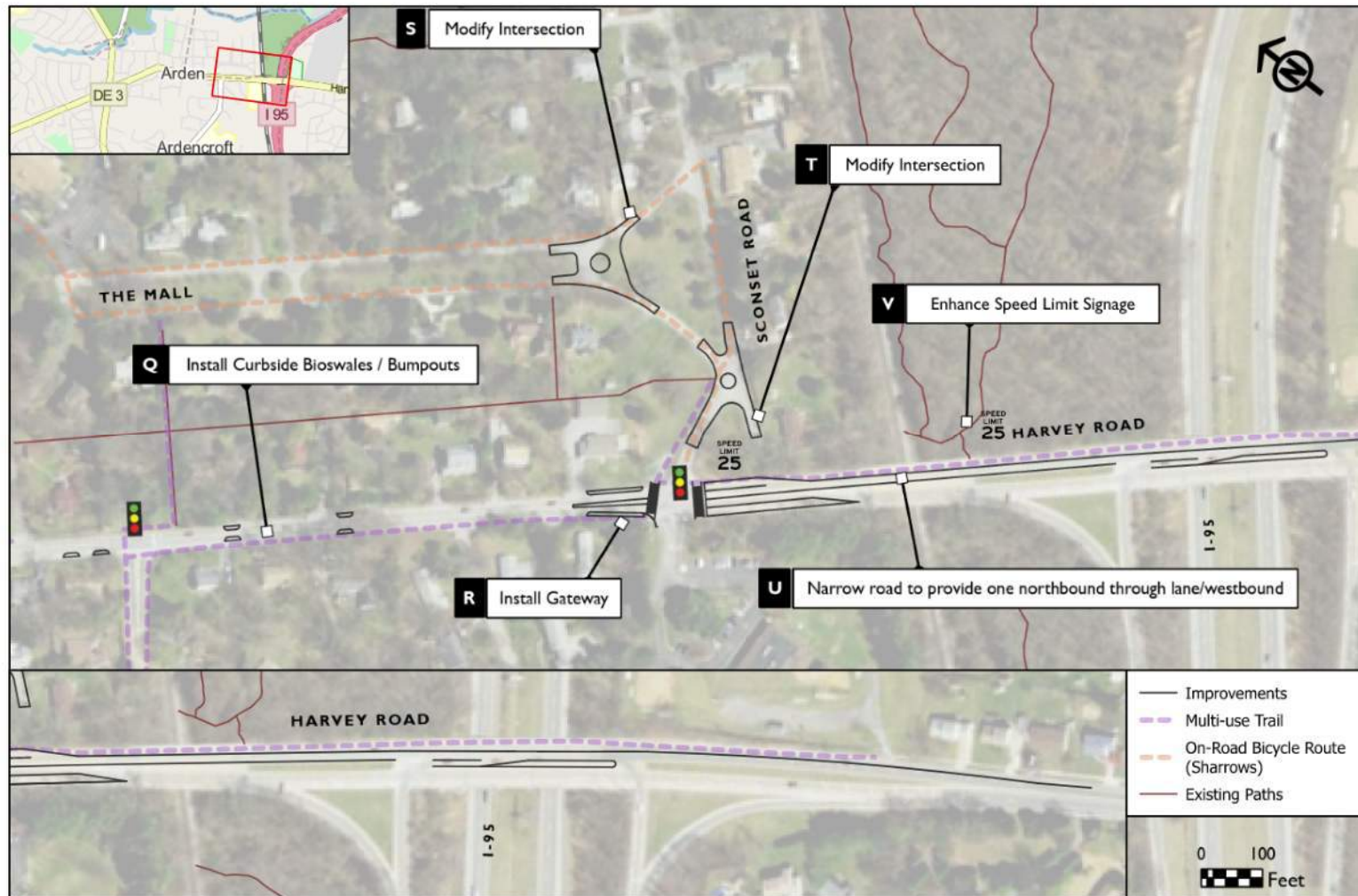
Mini-Roundabout



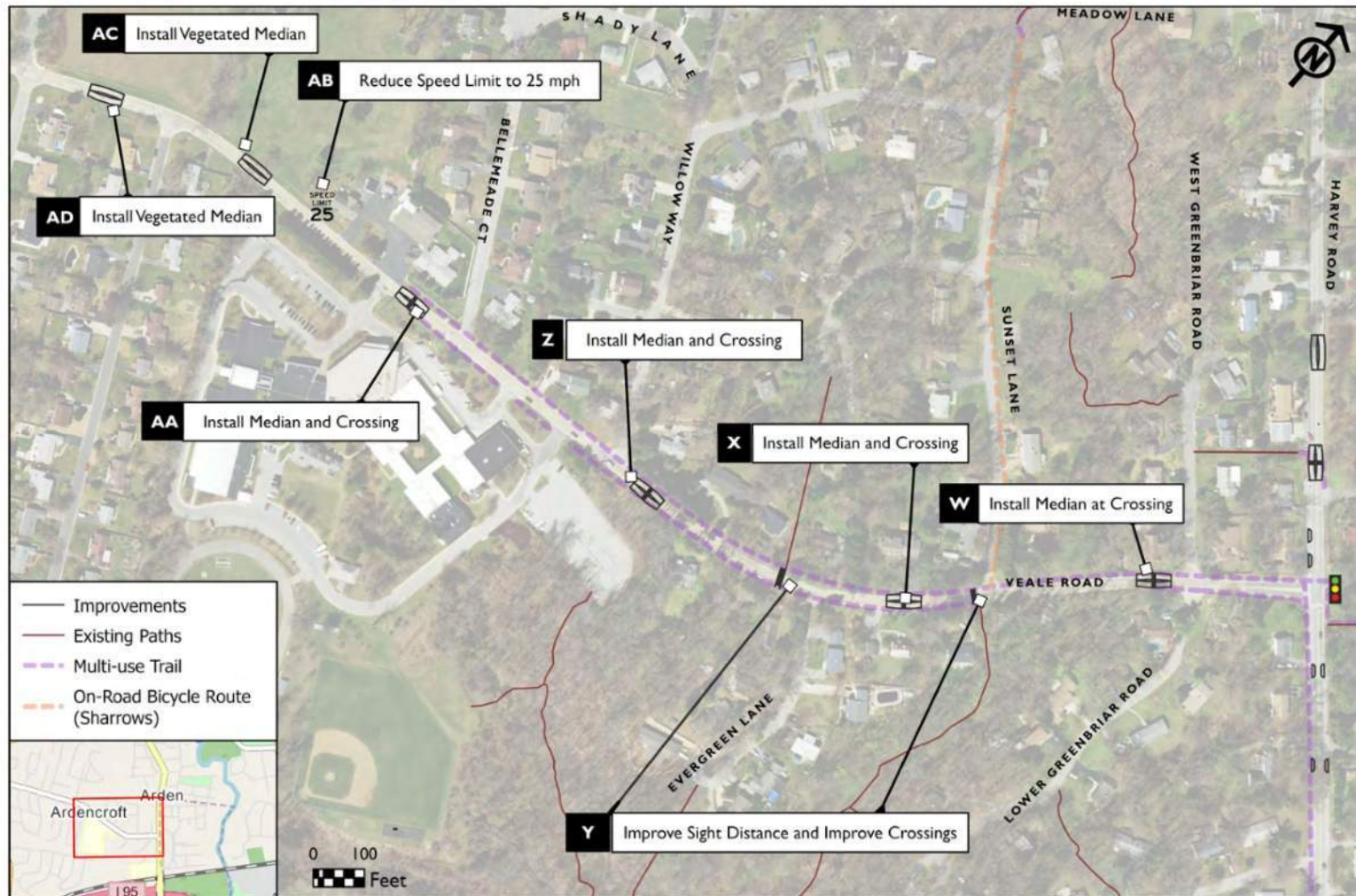
Goal 1: Manage vehicular speeds and deploy safety countermeasures



Goal 1: Manage vehicular speeds and deploy safety countermeasures



Goal 1: Manage vehicular speeds and deploy safety countermeasures



Goal #2:

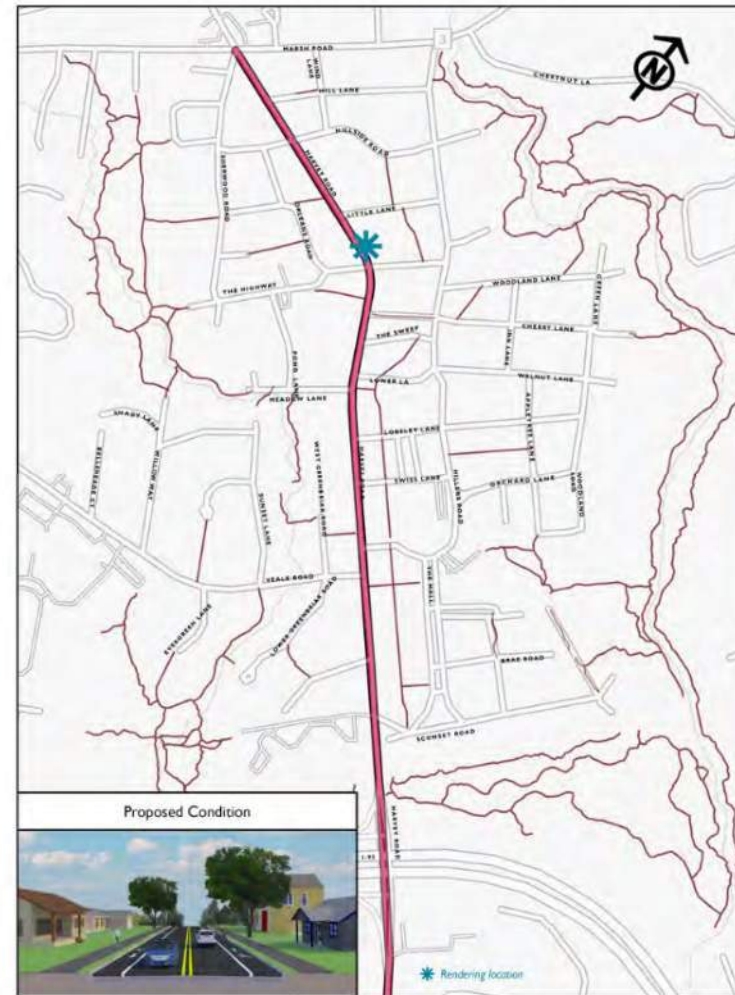
Develop a bicycle/pedestrian network to traverse through the Ardens

Goal 2: Develop a Bicycle/Pedestrian Network that traverses the Ardens

Alternative 2-A: Develop parallel low-stress network



Alternative 2-B: Add amenities to Harvey Road



Goal #3:

Provide enhanced pedestrian crossings

Goal 3: Provide Enhanced Pedestrian Crossings

Key Crossing Locations



NCHRP

SYNTHESIS 498

NATIONAL
COOPERATIVE
HIGHWAY
RESEARCH
PROGRAM

Application of Pedestrian Crossing Treatments for Streets and Highways



A Synthesis of Highway Practice

TRANSPORTATION RESEARCH BOARD
The National Academies of
SCIENCES • ENGINEERING • MEDICINE

Apply guidance of NCHRP 498 and DelDOT

Goal #4: Enhance transit and school bus stops

Goal 4: Enhance Transit / School bus stops

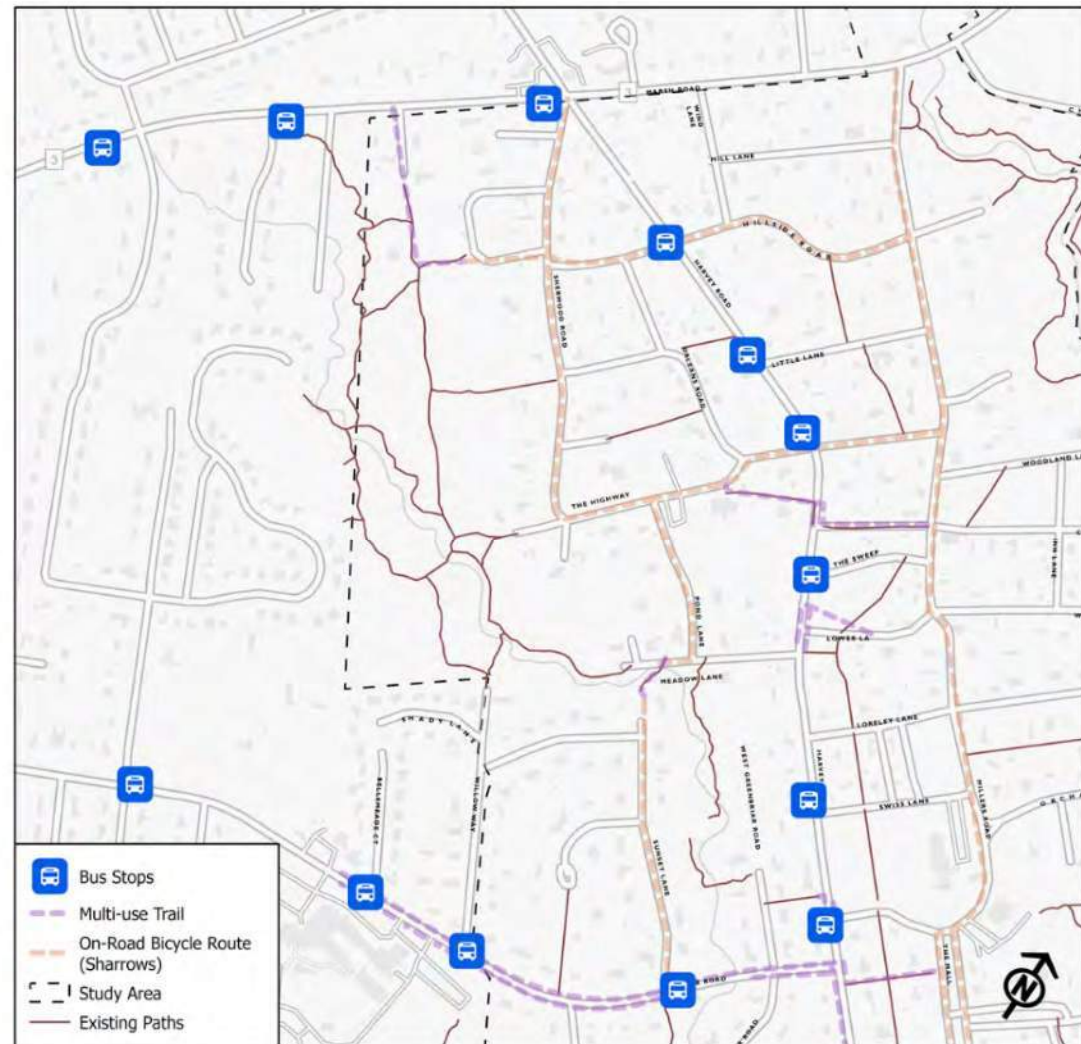
Alternative 4-A: Modern/Sleek



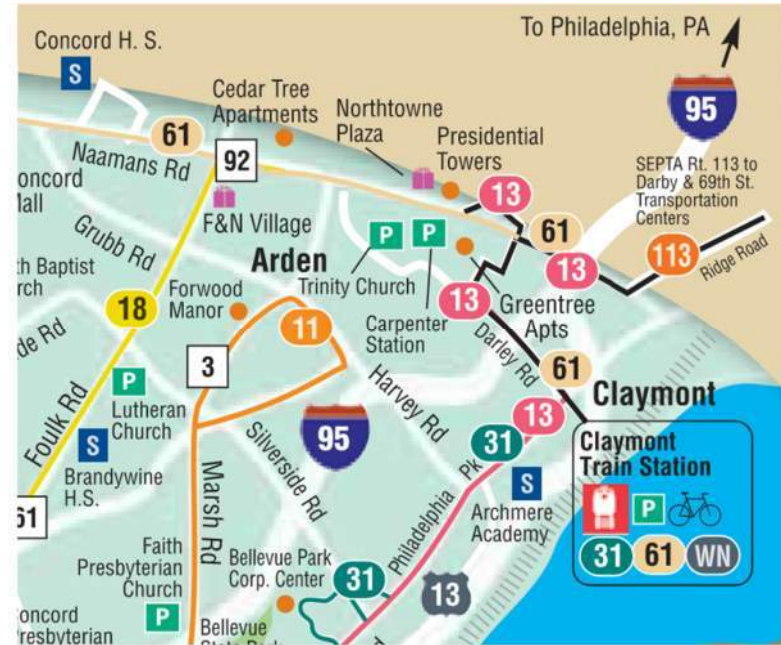
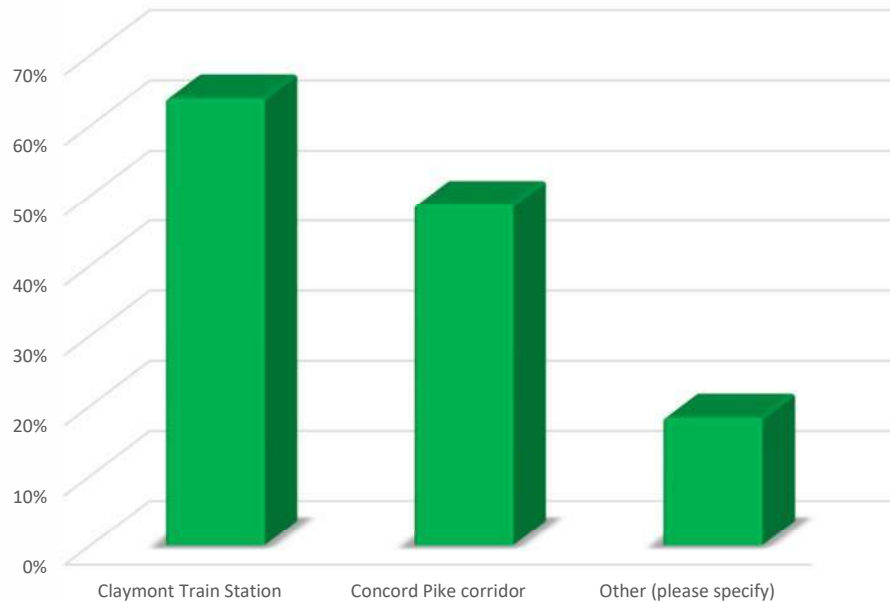
Alternative 4-B: Traditional



Alternative 4-C: Wooden Bus Stop



Where would you like to be able to go on the bus?



Delaware Transit Corporation Launches DART Connect Micro Transit Service

Delaware Transit Corporation | Department of Transportation | News | Sussex County | Date Posted: Tuesday, April 13, 2021



This Evening's Objectives

Meeting Objectives

- 1) Review the Alternatives
- 2) Ask Questions
- 3) Complete the Alternatives Survey
 - wilmapco.org/ardens > > Alternatives Survey
 - Direct URL > > tinyurl.com/ArdensSurvey2
 - Paper copies available this evening
- 4) Complete the Comment Form



Survey will be open until March 12th.

Questions

An aerial photograph of a residential street intersection. A two-lane road runs vertically, intersecting with a two-lane road running horizontally. The area is surrounded by dense trees with green and some autumn-colored foliage. A house with a dark roof is visible on the left side of the vertical road. Several cars are visible on the roads. A large, semi-transparent number '7' is overlaid on the bottom right corner of the image.

7

Appendix Seven
Public Meeting #2 - Public Feedback

Q1 Rank the Goals

| | 1 | 2 | 3 | 4 | TOTAL | SCORE |
|--|--------------|--------------|--------------|--------------|-------|-------|
| Goal A - Manage speeds and address safety | 67.65% 69 | 13.73% 14 | 14.71% 15 | 3.92% 4 | 102 | 3.45 |
| Goal B - Develop a bike/pedestrian network | 15.69% 16 | 21.57% 22 | 44.12% 45 | 18.63% 19 | 102 | 2.34 |
| Goal C - Provide enhanced pedestrian crossings | 14.71% 15 | 59.80% 61 | 16.67% 17 | 8.82% 9 | 102 | 2.80 |
| Goal D - Enhance transit/school bus stops | 1.96% 2 | 4.90% 5 | 24.51% 25 | 68.63% 70 | 102 | 1.40 |

Connecting with the Ardens - Improvement Alternatives

| | STRONGLY OPPOSED | OPPOSED | NEUTRAL | SUPPORT | STRONGLY SUPPORT | NOT ENOUGH INFORMATION / UNSURE | TOTAL | WEIGHTED AVERAGE |
|---|---------------------|--------------|--------------|--------------|---------------------|---------------------------------------|-------|---------------------|
| A - Gateway (Harvey @ Marsh) | 11.49% 10 | 3.45% 3 | 14.94% 13 | 25.29% 22 | 36.78% 32 | 8.05% 7 | 87 | 3.79 |
| B - Roundabout (Harvey @ Marsh) | 25.29% 22 | 18.39% 16 | 14.94% 13 | 13.79% 12 | 24.14% 21 | 3.45% 3 | 87 | 2.93 |
| C - Bioswale (btwn Mill Ln and Hillside) | 7.14% 6 | 7.14% 6 | 17.86% 15 | 27.38% 23 | 35.71% 30 | 4.76% 4 | 84 | 3.81 |
| D - Mini- roundabout (Harvey @ Hillside) | 22.09% 19 | 9.30% 8 | 8.14% 7 | 26.74% 23 | 30.23% 26 | 3.49% 3 | 86 | 3.35 |
| E - Median/Trail Connection (btwn Lovers Ln and Little Ln) | 5.81% 5 | 4.65% 4 | 19.77% 17 | 25.58% 22 | 39.53% 34 | 4.65% 4 | 86 | 3.93 |
| F - Mini- roundabout (Harvey @ Orleans Rd) | 23.53% 20 | 12.94% 11 | 11.76% 10 | 16.47% 14 | 34.12% 29 | 1.18% 1 | 85 | 3.25 |
| G - Maintain signal / improve sight distances (Harvey @ Orleans Rd) | 3.53% 3 | 5.88% 5 | 16.47% 14 | 30.59% 26 | 40.00% 34 | 3.53% 3 | 85 | 4.01 |
| H - Update pedestrian crossing (Clubhouse Path) | 3.57% 3 | 1.19% 1 | 14.29% 12 | 30.95% 26 | 46.43% 39 | 3.57% 3 | 84 | 4.20 |

Connecting with the Ardens - Improvement Alternatives

| | STRONGLY OPPOSED | OPPOSED | NEUTRAL | SUPPORT | STRONGLY SUPPORT | NOT ENOUGH INFORMATION / UNSURE | TOTAL | WEIGHTED AVERAGE |
|--|---------------------|-------------|--------------|--------------|---------------------|---------------------------------------|-------|---------------------|
| I - New trail connections (btwn The Sweep and Lower Ln) | 6.17% 5 | 7.41% 6 | 27.16% 22 | 25.93% 21 | 29.63% 24 | 3.70% 3 | 81 | 3.68 |
| J - Median / Relocated crossing and bus stop (btwn Lower Ln & Meadow Ln) | 9.88% 8 | 3.70% 3 | 19.75% 16 | 32.10% 26 | 29.63% 24 | 4.94% 4 | 81 | 3.71 |
| K - Relocate Lorely Lane crossing to Alternative J | 8.97% 7 | 5.13% 4 | 35.90% 28 | 19.23% 15 | 20.51% 16 | 10.26% 8 | 78 | 3.41 |
| L - Install median (Harvey Road near Swiss Ln) | 16.46% 13 | 10.13% 8 | 7.59% 6 | 30.38% 24 | 31.65% 25 | 3.80% 3 | 79 | 3.53 |
| M - Relocate crossing/install median (Harvey Rd near Millers Rd) | 12.50% 10 | 6.25% 5 | 11.25% 9 | 31.25% 25 | 35.00% 28 | 3.75% 3 | 80 | 3.73 |
| N - Install bumpout (Harvey Rd near Millers Rd) | 10.26% 8 | 6.41% 5 | 21.79% 17 | 23.08% 18 | 37.18% 29 | 1.28% 1 | 78 | 3.71 |
| O - Reestablish Trail (Harvey Rd near Millers Rd) | 6.33% 5 | 3.80% 3 | 18.99% 15 | 29.11% 23 | 41.77% 33 | 0.00% 0 | 79 | 3.96 |
| P - Install curbside bioswale/bumpout (btwn Millers Rd & Veale Rd) | 12.66% 10 | 3.80% 3 | 16.46% 13 | 29.11% 23 | 36.71% 29 | 1.27% 1 | 79 | 3.74 |
| Q - Install curbside bioswale/bumpout (btwn Veale Rd & U. Greenbriar) | 12.50% 10 | 5.00% 4 | 16.25% 13 | 28.75% 23 | 32.50% 26 | 5.00% 4 | 80 | 3.67 |

Connecting with the Ardens - Improvement Alternatives

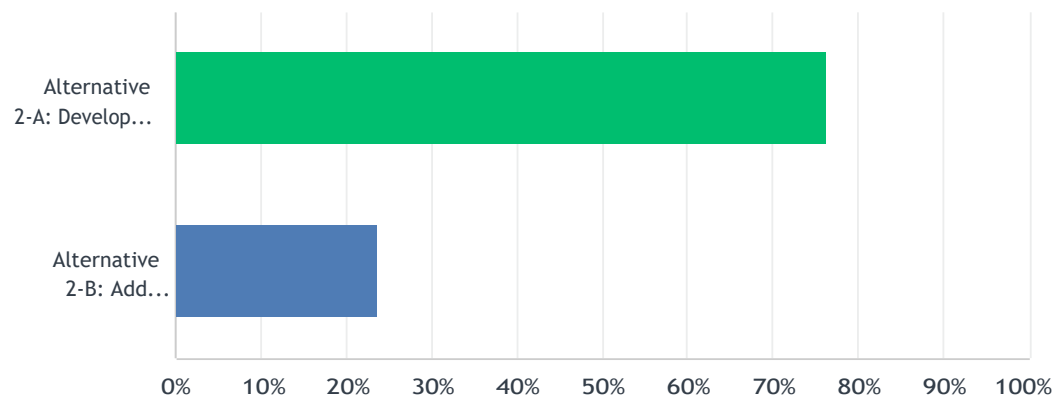
| | STRONGLY OPPOSED | OPPOSED | NEUTRAL | SUPPORT | STRONGLY SUPPORT | NOT ENOUGH INFORMATION / UNSURE | TOTAL | WEIGHTED AVERAGE |
|---|---------------------|-------------|--------------|--------------|---------------------|---------------------------------------|-------|---------------------|
| R - Install Gateway (Harvey Rd @ Sconset Rd) | 5.00% 4 | 5.00% 4 | 13.75% 11 | 26.25% 21 | 45.00% 36 | 5.00% 4 | 80 | 4.07 |
| S - Modify intersection (southern end of The Mall) | 14.29% 11 | 9.09% 7 | 27.27% 21 | 14.29% 11 | 20.78% 16 | 14.29% 11 | 77 | 3.21 |
| T - Modify intersection (Sconset Rd @ The Mall) | 15.58% 12 | 7.79% 6 | 33.77% 26 | 11.69% 9 | 22.08% 17 | 9.09% 7 | 77 | 3.19 |
| U - Reduce Harvey Road to one-lane through the I-95 / Harvey Road interchange | 12.66% 10 | 10.13% 8 | 7.59% 6 | 13.92% 11 | 40.51% 32 | 15.19% 12 | 79 | 3.70 |
| V - Enhance Speed Limit Signage (Harvey Road approaching Sconset Rd) | 3.80% 3 | 1.27% 1 | 12.66% 10 | 31.65% 25 | 45.57% 36 | 5.06% 4 | 79 | 4.20 |

Connecting with the Ardens - Improvement Alternatives

| | STRONGLY OPPOSED | OPPOSED | NEUTRAL | SUPPORT | STRONGLY SUPPORT | NOT ENOUGH INFORMATION / UNSURE | TOTAL | WEIGHTED AVERAGE |
|---|---------------------|------------|--------------|--------------|---------------------|---------------------------------------|-------|---------------------|
| W - Install median/pedestrian crossing (Veale Rd @ W/L. Greenbriar) | 10.67% 8 | 6.67% 5 | 5.33% 4 | 28.00% 21 | 46.67% 35 | 2.67% 2 | 75 | 3.96 |
| X - Install median/pedestrian crossing (Veale Rd btwn Sunset/Evergreen) | 9.33% 7 | 8.00% 6 | 6.67% 5 | 28.00% 21 | 42.67% 32 | 5.33% 4 | 75 | 3.92 |
| Y - Improve sight distance; improving crossings (Veale Rd @ Sunset & Evergreen) | 8.11% 6 | 4.05% 3 | 13.51% 10 | 25.68% 19 | 44.59% 33 | 4.05% 3 | 74 | 3.99 |
| Z - Install median/pedestrian crossing (Veale Rd @ Willow Way) | 10.81% 8 | 4.05% 3 | 13.51% 10 | 32.43% 24 | 35.14% 26 | 4.05% 3 | 74 | 3.80 |
| AA - Install median/pedestrian crossing (Veale Rd @ Bellemeade) | 12.16% 9 | 2.70% 2 | 25.68% 19 | 24.32% 18 | 29.73% 22 | 5.41% 4 | 74 | 3.60 |
| AB - Reduce speed limit to 25 mph on Veale Rd | 4.00% 3 | 2.67% 2 | 16.00% 12 | 25.33% 19 | 49.33% 37 | 2.67% 2 | 75 | 4.16 |
| AC - Install vegetated median (Veale Rd east of E. Dale) | 5.33% 4 | 5.33% 4 | 30.67% 23 | 22.67% 17 | 30.67% 23 | 5.33% 4 | 75 | 3.72 |
| AD - Install vegetated median (Veale Rd btwn W. Dale & E. Dale) | 5.48% 4 | 4.11% 3 | 32.88% 24 | 19.18% 14 | 32.88% 24 | 5.48% 4 | 73 | 3.74 |

Q11 What is your preferred alternative?

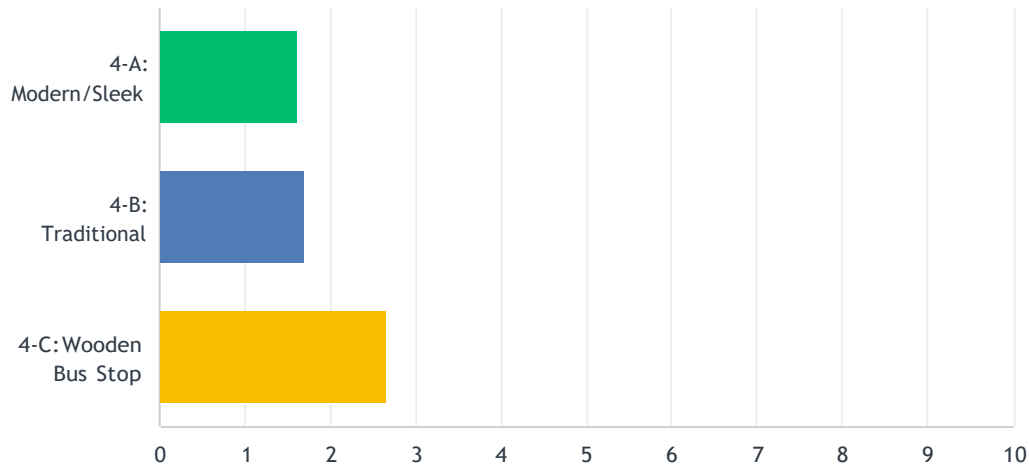
Answered: 72 Skipped: 37



| ANSWER CHOICES | RESPONSES | |
|---|-----------|----|
| Alternative 2-A: Develop parallel low-stress road network | 76.39% | 55 |
| Alternative 2-B: Add amenities to Harvey Road | 23.61% | 17 |
| TOTAL | | 72 |

Q14 Please rank the bus shelter types by your preference.

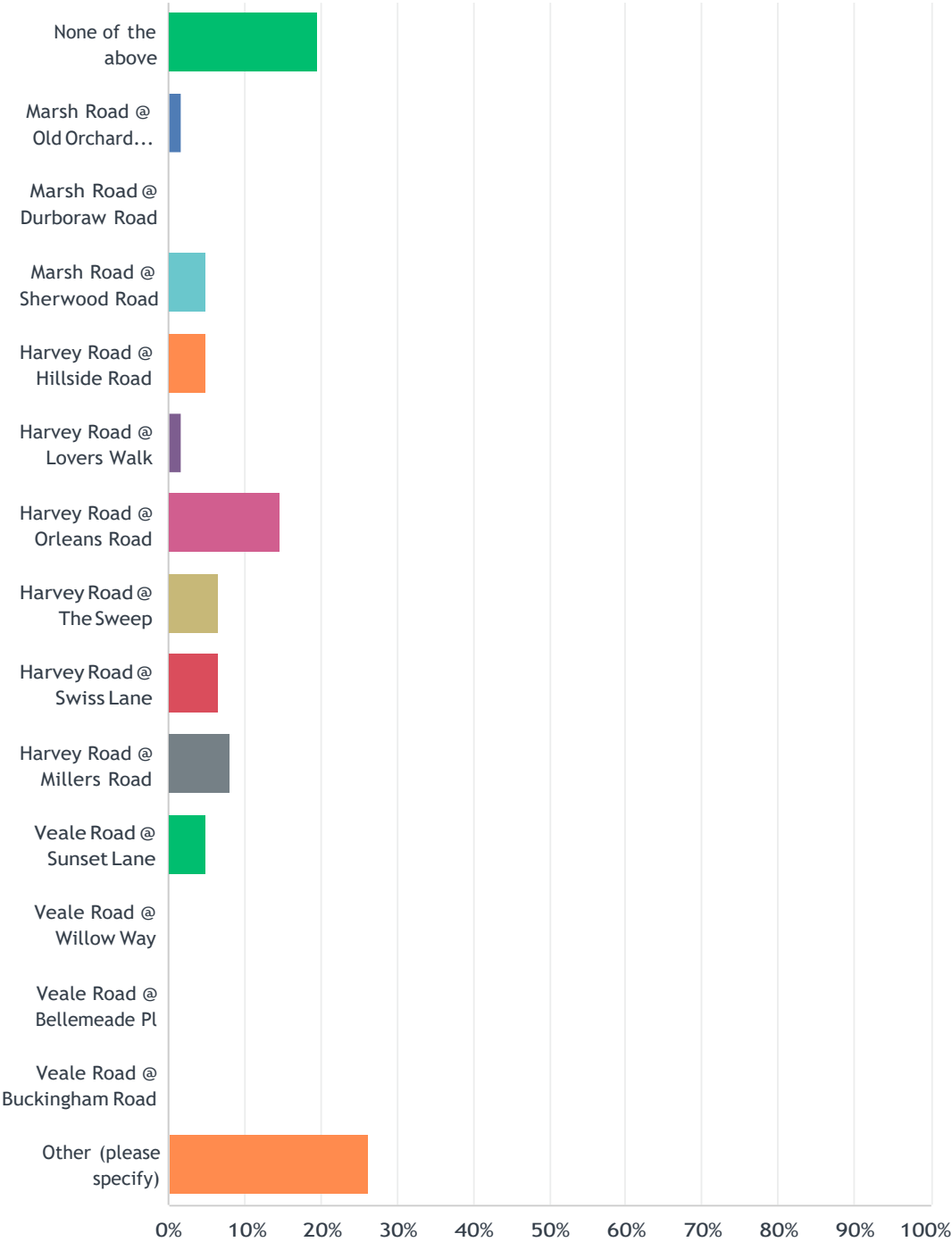
Answered: 66 Skipped: 43



| | 1 | 2 | 3 | TOTAL | SCORE |
|----------------------|--------------|--------------|--------------|-------|-------|
| 4-A: Modern/Sleek | 13.85% 9 | 35.38% 23 | 50.77% 33 | 65 | 1.63 |
| 4-B: Traditional | 9.23% 6 | 52.31% 34 | 38.46% 25 | 65 | 1.71 |
| 4-C: Wooden Bus Stop | 77.27% 51 | 12.12% 8 | 10.61% 7 | 66 | 2.67 |

Q15 Which bus stop do you feel should be the highest priority for improvement?

Answered: 61 Skipped: 48

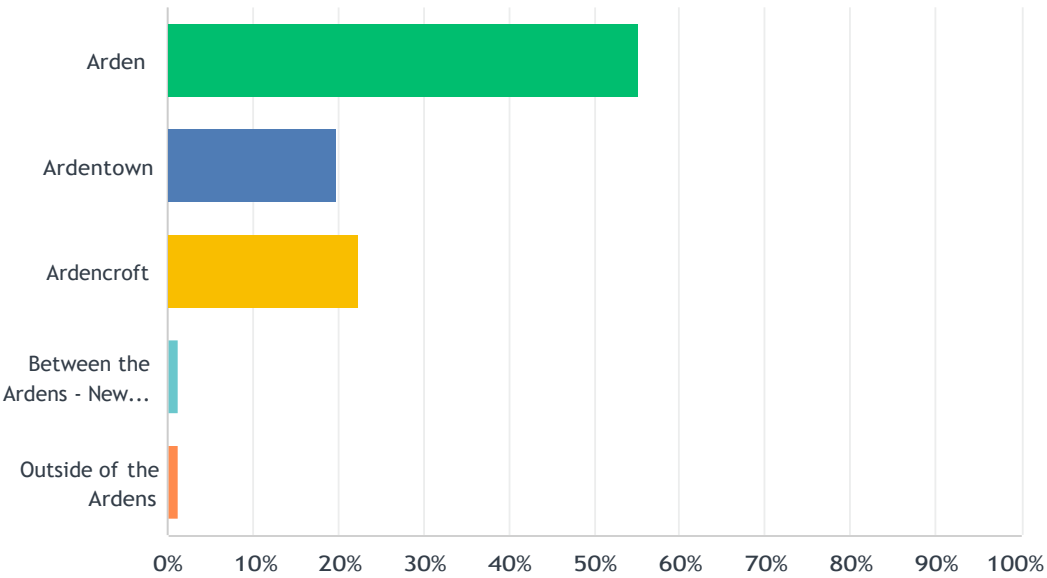


Connecting with the Ardens - Improvement Alternatives

| ANSWER CHOICES | RESPONSES | |
|-------------------------------|-----------|----|
| None of the above | 19.67% | 12 |
| Marsh Road @ Old Orchard Road | 1.64% | 1 |
| Marsh Road @ Durboraw Road | 0.00% | 0 |
| Marsh Road @ Sherwood Road | 4.92% | 3 |
| Harvey Road @ Hillside Road | 4.92% | 3 |
| Harvey Road @ Lovers Walk | 1.64% | 1 |
| Harvey Road @ Orleans Road | 14.75% | 9 |
| Harvey Road @ The Sweep | 6.56% | 4 |
| Harvey Road @ Swiss Lane | 6.56% | 4 |
| Harvey Road @ Millers Road | 8.20% | 5 |
| Veale Road @ Sunset Lane | 4.92% | 3 |
| Veale Road @ Willow Way | 0.00% | 0 |
| Veale Road @ Bellemeade Pl | 0.00% | 0 |
| Veale Road @ Buckingham Road | 0.00% | 0 |
| Other (please specify) | 26.23% | 16 |
| TOTAL | | 61 |

Q16 Are you a resident of:

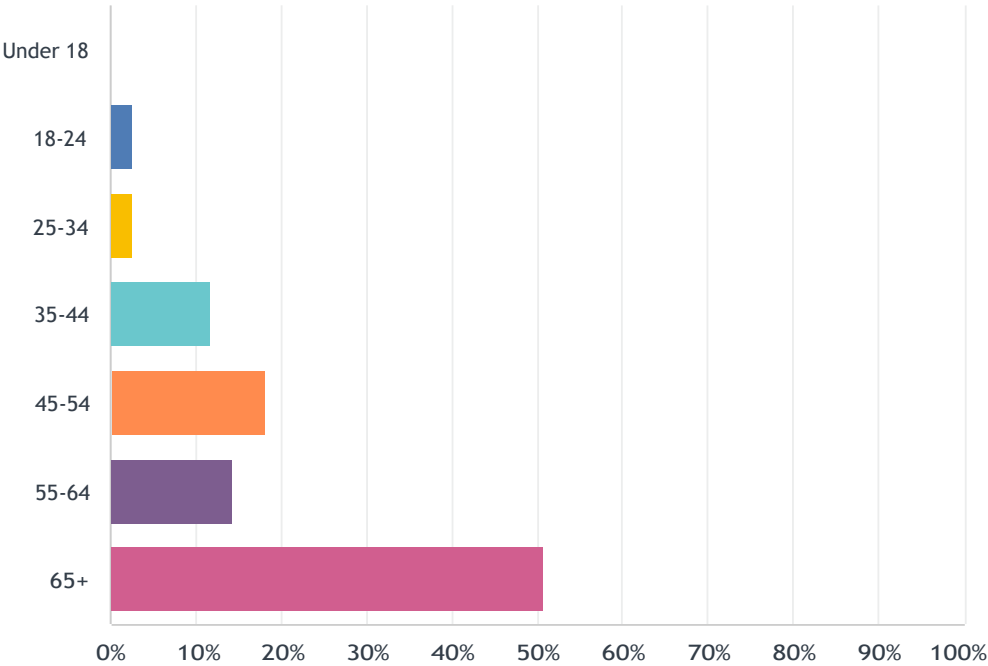
Answered: 76 Skipped: 33



| ANSWER CHOICES | | RESPONSES | |
|---|--|-----------|----|
| Arden | | 55.26% | 42 |
| Ardentown | | 19.74% | 15 |
| Ardencroft | | 22.37% | 17 |
| Between the Ardens - New Castle County 'donut hole' | | 1.32% | 1 |
| Outside of the Ardens | | 1.32% | 1 |
| TOTAL | | | 76 |

Q17 What is your age group?

Answered: 77 Skipped: 32



| ANSWER CHOICES | RESPONSES | |
|----------------|-----------|----|
| Under 18 | 0.00% | 0 |
| 18-24 | 2.60% | 2 |
| 25-34 | 2.60% | 2 |
| 35-44 | 11.69% | 9 |
| 45-54 | 18.18% | 14 |
| 55-64 | 14.29% | 11 |
| 65+ | 50.65% | 39 |
| TOTAL | | 77 |

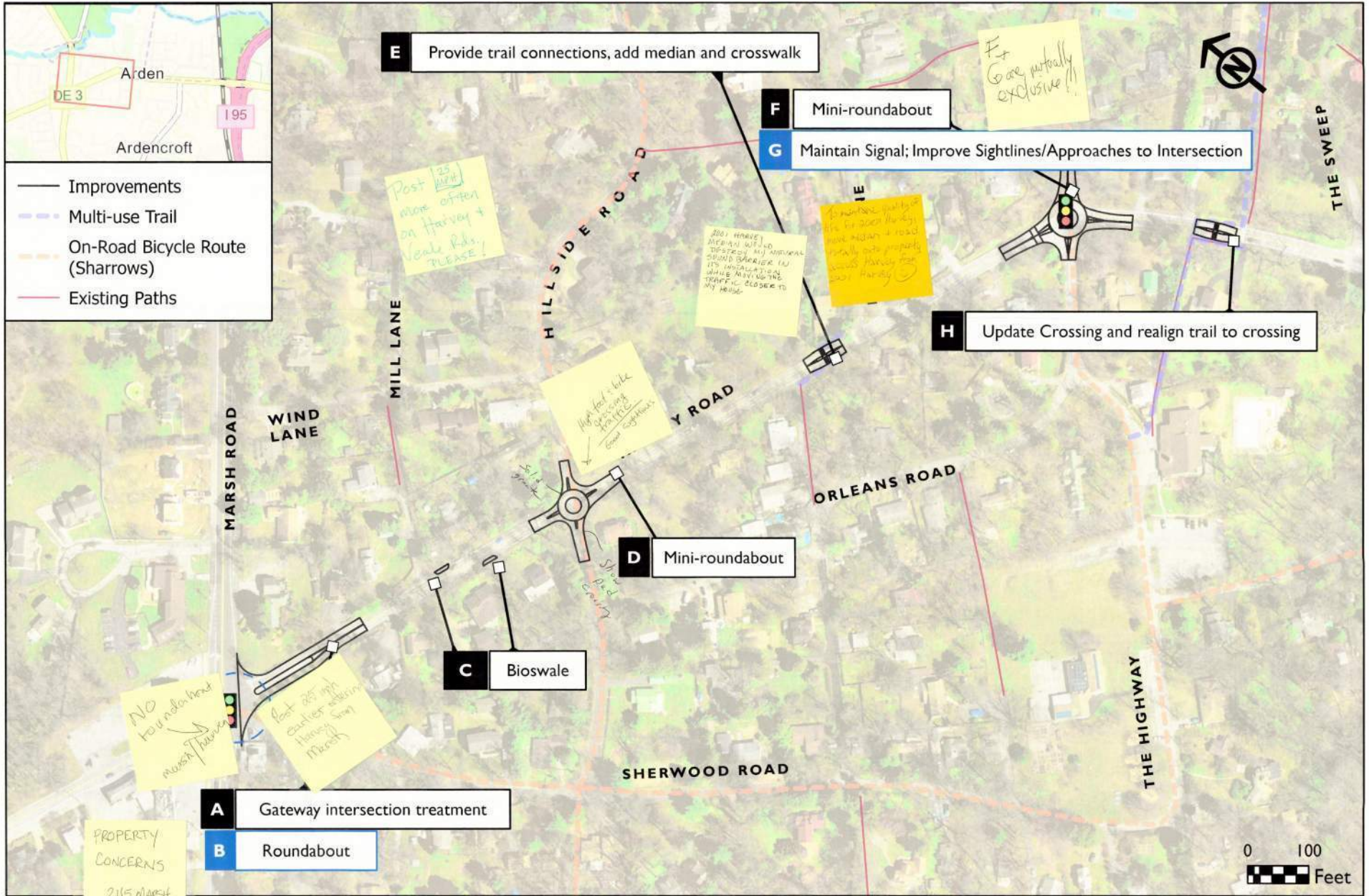
An aerial photograph of a residential street intersection. A two-lane road runs vertically, intersecting with a two-lane road running horizontally. The area is heavily wooded with trees showing autumn foliage in shades of green, yellow, and orange. A brick house with a dark roof is visible on the left side of the vertical road. Several cars are visible on the roads. A large, semi-transparent number '08' is overlaid on the bottom right corner of the image.

08

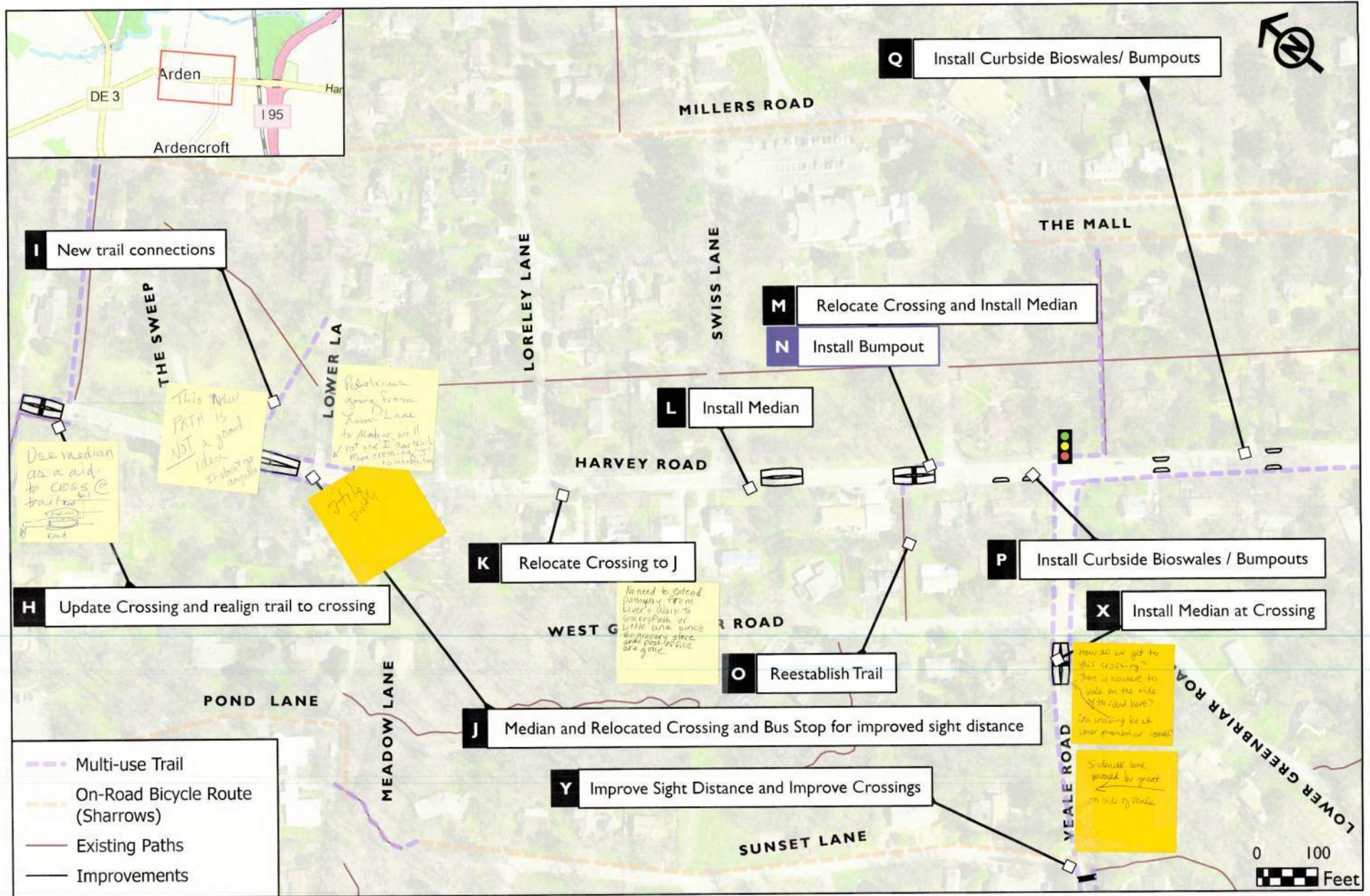
Appendix Eight

Survey #2 - Summary

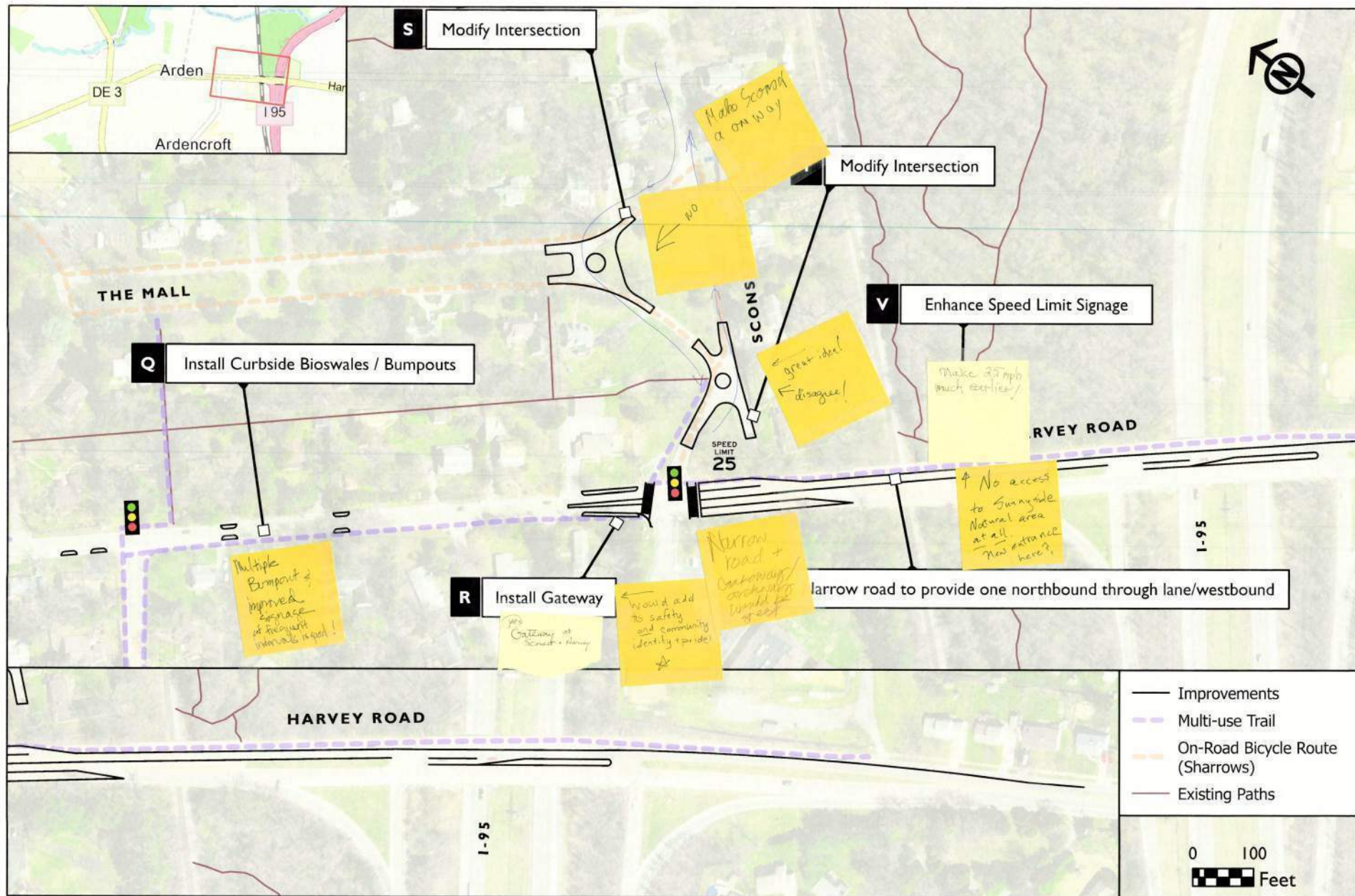
Goal 1: Manage vehicular speeds and deploy safety countermeasures



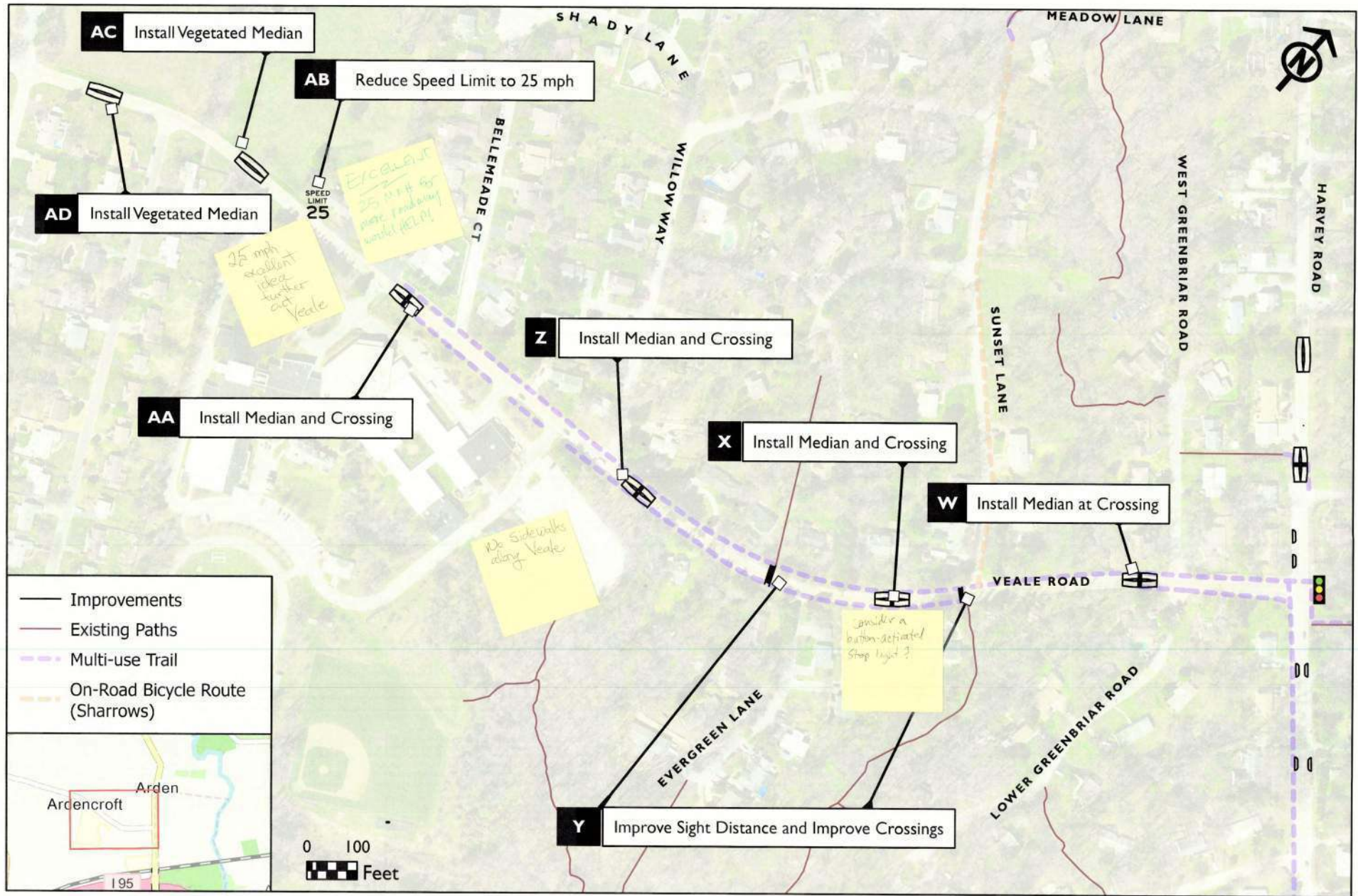
Goal 1: Manage vehicular speeds and deploy safety countermeasures



Goal 1: Manage vehicular speeds and deploy safety countermeasures

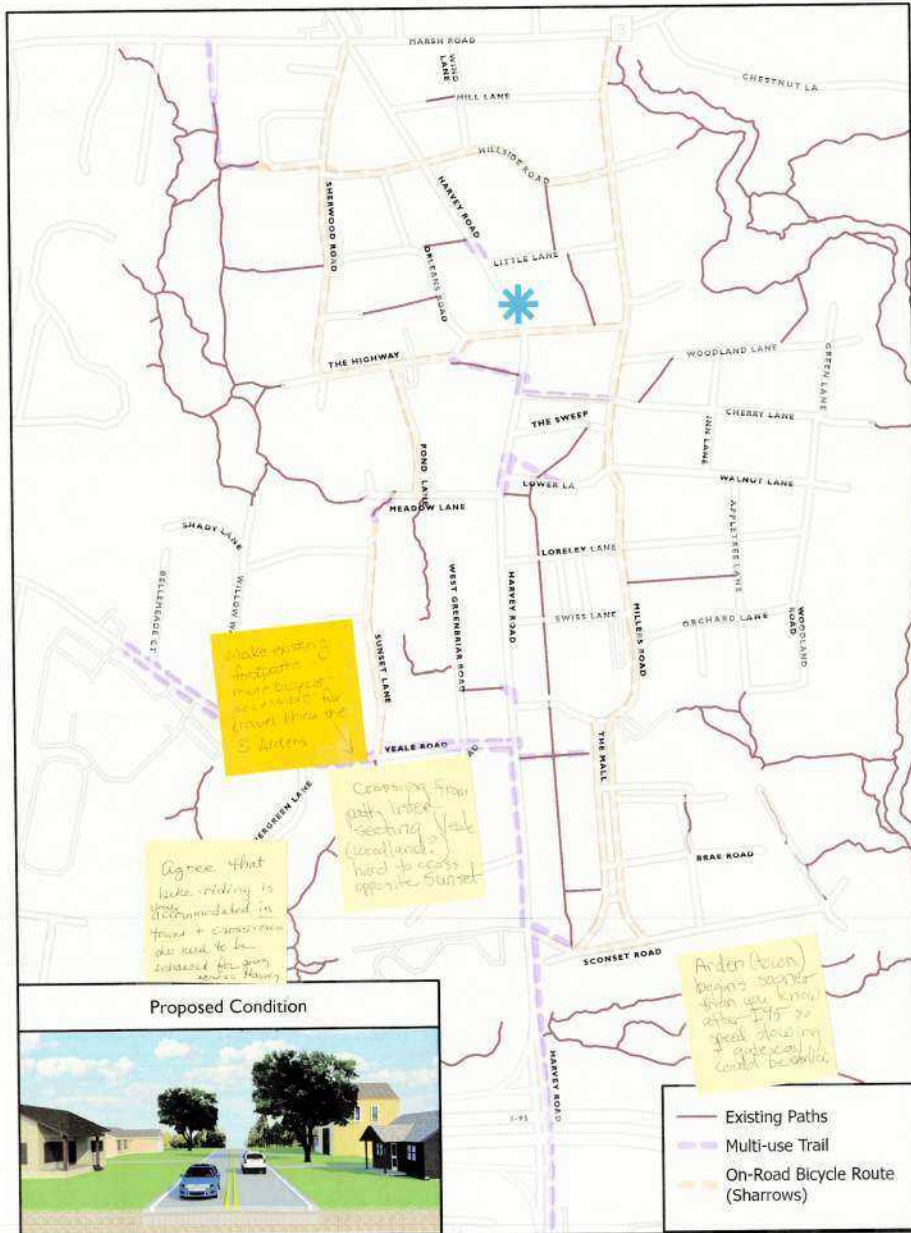


Goal 1: Manage vehicular speeds and deploy safety countermeasures

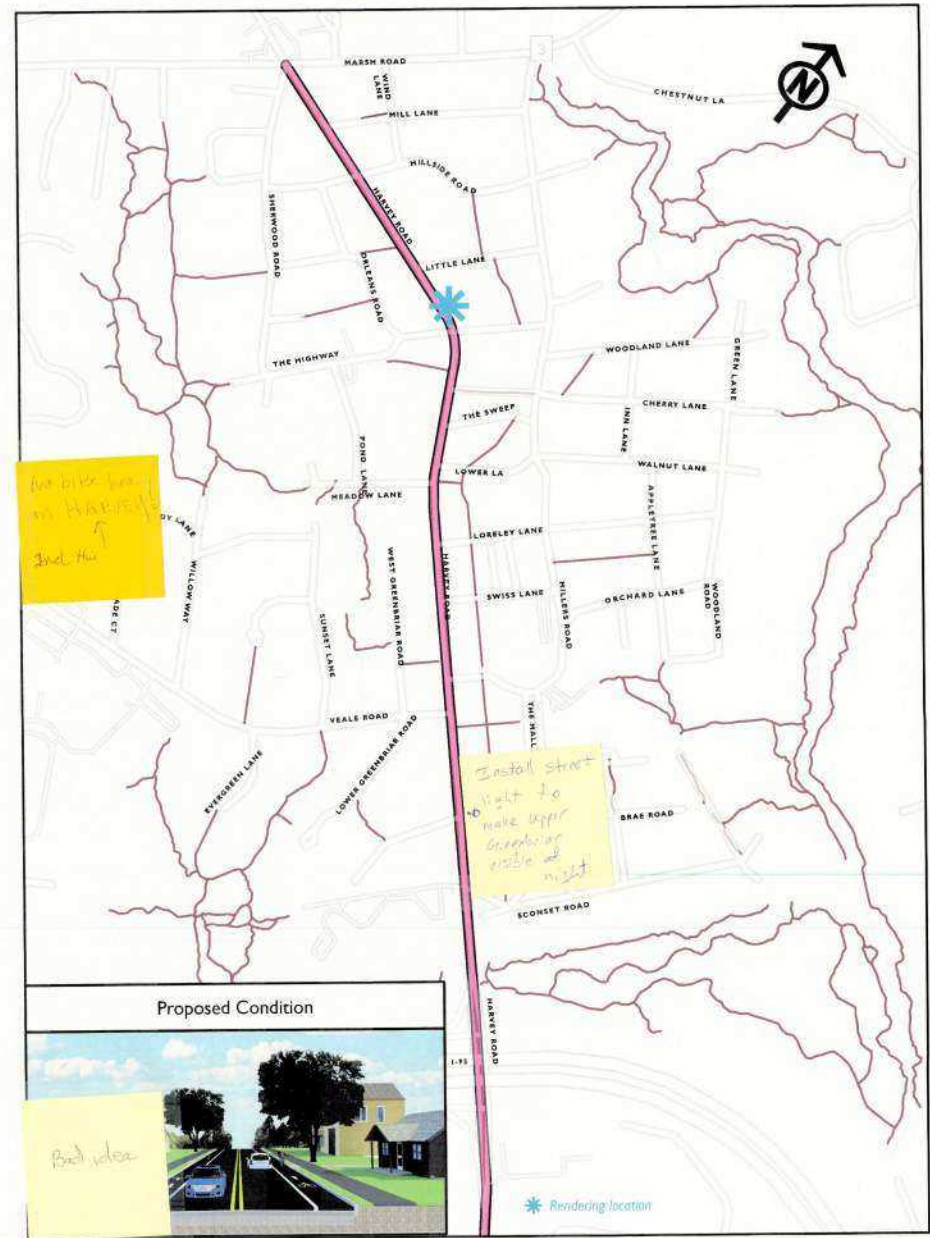


Goal 2: Develop a Bicycle/Pedestrian Network that traverses the Ardens

Alternative 2-A: Develop parallel low-stress network

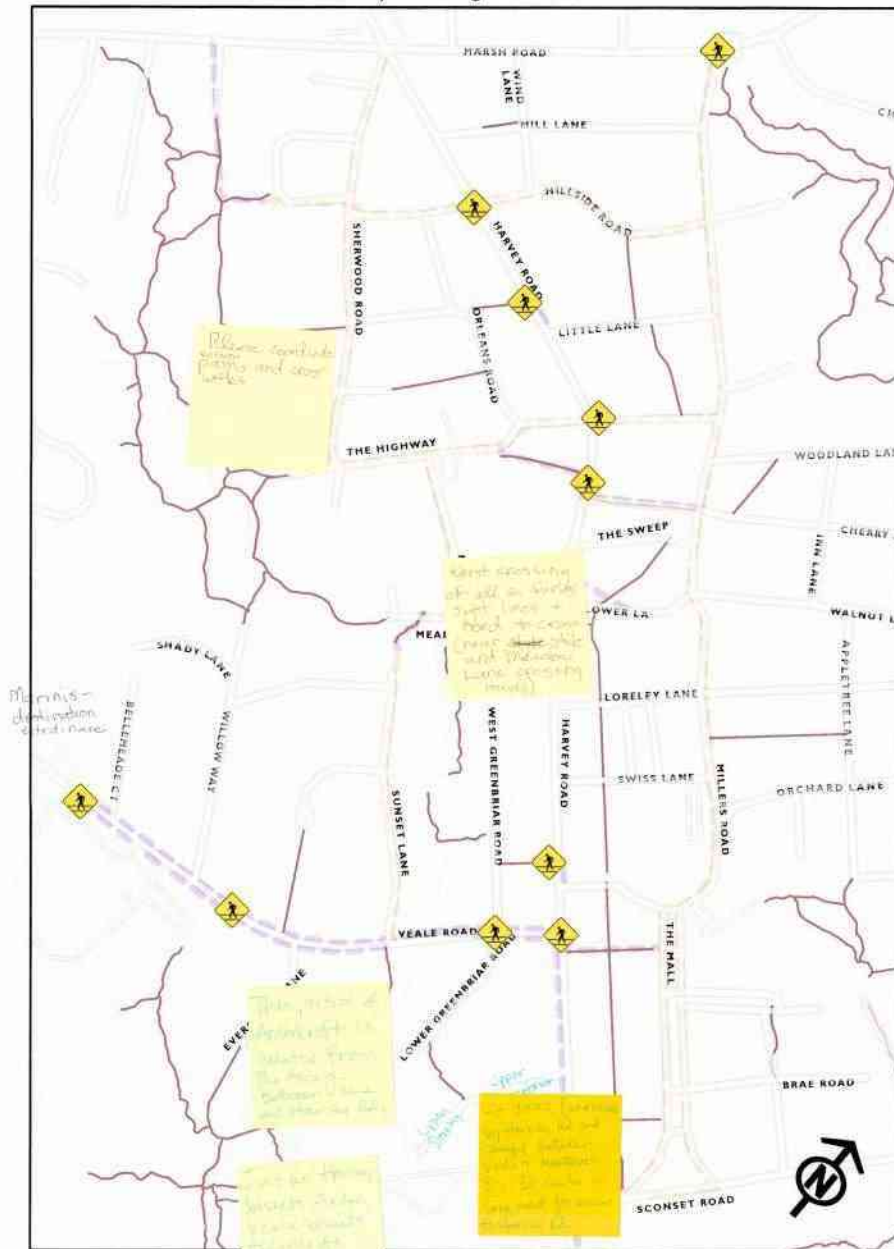


Alternative 2-B: Add amenities to Harvey Road



Goal 3: Provide Enhanced Pedestrian Crossings

Key Crossing Locations



NCHRP

SYNTHESIS 498

NATIONAL
COOPERATIVE
HIGHWAY
RESEARCH
PROGRAM

Application of Pedestrian Crossing Treatments for Streets and Highways



A Synthesis of Highway Practice

TRANSPORTATION RESEARCH BOARD
The National Academies of
SCIENCES • ENGINEERING • MEDICINE

Apply guidance of NCHRP 498 and DeIDOT

Goal 4: Enhance Transit / School bus stops

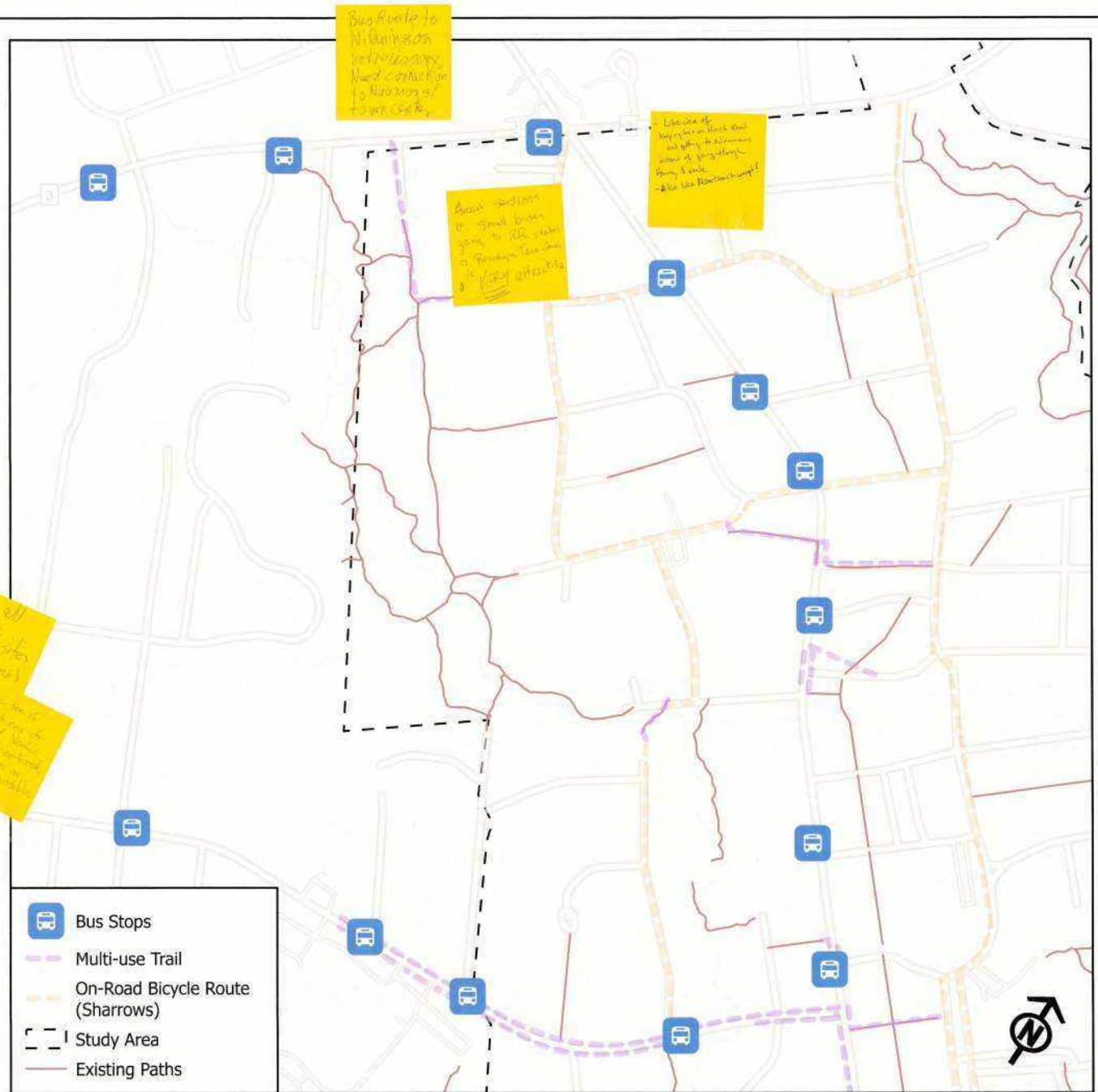
Alternative 4-A: Modern/Sleek



Alternative 4-B: Traditional



Alternative 4-C: Wooden Bus Stop



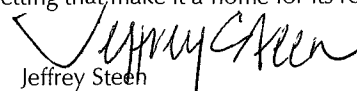


HARVEY ROAD INTEGRAL TO ARDEN'S IDENTITY

February 15, 2023

Comments given to WILMAPCO at a DelDOT/Arden meeting held at the Buzz Ware Village Center, Arden, to consider traffic and pedestrian usage of Harvey Road, Arden, Delaware.

1. Arden is an intentional community. Maintaining its physical footprint and the ideas underlying its design and development are critical to maintaining its identity.
2. Arden is over one hundred years old. In large part, its physical attributes, including road lay-out, open spaces, and leasehold lay-out have remained unchanged. Its residents share its open spaces, woodlands, and village amenities. Community organizations, concert and play venues, gilds, and ACRA summer programs are provided for the enjoyment and edification of its residents as well as for parties living outside its boundaries.
3. Arden provides a close-to-nature, unadorned, early twentieth century setting for its residents and visitors. Arden's road amenities are few and typically low-tech. Arden does not have sidewalks adjacent to its roads. It does not have street lamps. Initially, road margins were lined with Brandywine blue granite. Over time, some of these margins have been removed and replaced with concrete gutters. The presence of woodlands on two sides, open spaces, and a non-conforming collection of small to large dwellings adds to a sense of pause, if not relief, from more homogenous, car-centered, and fast-paced suburban settings.
4. Arden's cart-ways (roads), excepting Harvey Road, were designed to provide passage for pedestrians, bicyclists, and vehicular traffic. Its roads, due to being narrow and multi-use, are traffic-calming. In addition, they facilitate interaction among its residents.
5. Arden has remained one place, one unit, since its inception. The main artery bisecting Arden, Harvey Road, has largely remained a narrow two lane road that does not cut the village in half.
6. Credit should be given to those who, with insight, protected Harvey Road and the Village by eliminating north-bound access to I-95 from Harvey Road and south-bound access to Harvey Road from I-95. An I-95-Harvey Road clover leaf would have been intrusive in itself. More important, it would have set up Harvey Road to be widened to a circumstance similar to Silverside Road or worse. Critically, protecting Arden's physical integrity by protecting Harvey Road was an important element in Arden being accepted for registration on the National Register of Historic Places.
7. Eroding Arden's design features could unsettle, if not eliminate, its protections under Section 106 of the National Historic Preservation Act.
8. Much has been done by DelDOT and the Village to sign and to notice drivers on Harvey Road. At present, Harvey Road has four lights between Marsh Road and its entrance to I-95. There are stop signs at roads intersecting Harvey Road in Arden. There is a painted median. There are painted side margins. The speed limit is appropriate to a residential community. How many measures must DelDOT introduce to dampen aberrant driving behavior, including speeding? At what point does a community have to un-do itself to dampen irresponsible behavior?
9. Six miles from Arden, Smiths Bridge Road accesses and egresses a one lane, wooden, covered bridge over the Brandywine River. This bridge, located in New Castle County, should serve as a hallmark for the level of tolerance given to maintaining an historic and unique circumstance, a circumstance not unlike protecting the integrity of one of the country's few remaining utopian communities. Based on the Smith Bridge example, and on other examples, maintaining, and protecting, a narrow Harvey Road is within acceptable range.
10. Maintaining a narrow Harvey Road that is easily crossed by residents allows Arden to remain one unit. This is important. In my view, it should be controlling when considering any "improvements" to it. If anything, Harvey Road should be narrowed. Its attributes should be well maintained. Proposals, such as constructing sidewalks or bike paths along Harvey Road, are proposals that belong to another location.
11. Implementing certain of the proposed modifications of Harvey Road may achieve particular individuals hoped-for out-comes. It will, however, undermine, if not destroy, elements of the Arden setting that make it a home for its residents and a destination for visitors.


Jeffrey Steen
Arden Resident

An aerial photograph of a suburban street intersection. A two-lane road runs vertically, intersecting with a wider road that runs horizontally from the bottom left towards the center. The area is heavily wooded with trees showing autumn foliage in shades of green, yellow, and orange. A brick house with a dark roof is visible on the left side of the vertical road. Several cars are visible on the roads. In the bottom right corner, there is a large, semi-transparent graphic of the number '09' in a light green color. Overlaid on the bottom right of the image is the text 'Appendix Nine' in a bold, white, sans-serif font, and below it, 'Steering Committee Meeting Summaries' in a regular, white, sans-serif font.

Appendix Nine

Steering Committee Meeting Summaries

Connecting with the Ardens

Steering Committee Meeting Summary

August 16, 2022

Location: Virtual Meeting via Microsoft Teams
Date | Time: August 16, 2022 | 12:00 pm – 1:30 pm
Topic: Kick-off Meeting

Attendees:

Steering Committee:

Carol Larson
Steve Benigni
Brooke Bovard
Ben Gruswitz
Matthew Rogers
Pam Politis
Janna Scheflen
Stephen Ottinger (DelDOT)
Cathy Smith (DART)
Cooper Bowers (DelDOT)
Steve Ottinger (DTC)

WILMAPCO:

Tigist Zegeye
Bill Swiatek
Jake Thompson
Randi Novakoff

Consultant Team:

Randy Waltermeyer (TPD)
Abigail Meyer (TPD)
Michelle Puszcz (Remline)

Meeting Presentation

Discussion:

- Introductions
- Study Schedule
 - R. Waltermeyer reviewed the [project schedule](#).
 - The Steering Committee discussed the scheduling of the first public meeting, which is being targeted for mid-October. R. Waltermeyer and B. Gruswitz would investigate dates and facility availability.
 - The Steering Committee agreed to move the scheduled meeting for December to November. R. Waltermeyer will circulate a Doodle poll to establish a preferred date for November.
- Recap of 8/8 Walkable Workshop
 - J. Thompson provided a recap of the 8/8 Walkable Workshop. See [slides](#) for further details.

- Project Branding / Logo
 - R. Waltermyer and M. Puszcz reviewed draft logos and names for the project. The Steering Committee completed a live poll to solicit preferences and opinions. M. Puszcz was tasked to refine the top two logos/names and circulate to the Steering Committee to finalize/confirm.
- Community Survey and Engagement
 - R. Waltermyer reviewed the draft community survey. He asked for Steering Committee review and comment by 8/12/22.
 - The Steering Committee suggested that an article or ad be drafted to run in the Ardens Newsletter. The Consultant Team agreed to draft an article explaining the project and the community survey.
 - The Steering Committee noted that the Ardens Fair was scheduled for September 3rd and encouraged the community survey to be promoted at the Fair. The Consultant Team agreed to develop a poster or board to promote the community survey.
- Purpose and Need
 - Specific to Harvey Road, R. Waltermyer reviewed and recommended the continued usage of the principles of consensus that were agreed upon in 1999:
 - No vertical calming features
 - Use of horizontal calming features
 - Features will comply with DelDOT standards (mountable curb, etc)
 - Use of low-level landscaping
 - Traffic calming features will be traversable for emergency vehicles, school and transit buses
 - The Steering Committee endorsed these principles but stressed that the purview of this Plan is broader than Harvey Road.
- Data Needs
 - R. Waltermyer reviewed proposed data collection locations along Harvey Road. The Steering Committee encouraged data to also be collected along Veale Road and Marsh Road. R. Waltermyer agreed to discuss possibilities for additional data collection with WILMAPCO staff.
- Steering Committee
 - The Steering Committee discussed if additional agencies, stakeholders, or individuals should be invited to the Steering Committee. No other steering committee members were identified at this time.

- Action Items / Next Steps

- ☐ TPD to circulate community survey; Steering Committee to provide edits/suggestions
 - ☐ TPD to draft promotion of community survey for Ardens newsletter
 - ☐ TPD to confirm date for Public Meeting #1
 - ☐ Remline to revise and distribute final logo alternatives
 - ☐ TPD to convene Doodle poll to identify best date for Steering Committee meeting #2 for mid-November
-

Next Meeting:

To be determined based on pending Doodle poll. Tentatively targeting mid-November.

Connecting with the Ardens

Steering Committee Meeting Summary

November 15, 2022

Location: Virtual Meeting
Date | Time: November 15, 2022 | 12:00 pm – 2:00 pm
Topic: Steering Committee Meeting #2

Attendees:

Steering Committee:

Carol Larson
Steve Benigni
Brooke Bovard
Ben Gruswitz
Matthew Rogers
Cindy Cohen
Lisa Wilson Riblet
Pam Politis
Cathy Smith (DART)
Cooper Bowers (DelDOT)

WILMAPCO:

Tigist Zegeye
Bill Swiatek
Jake Thompson
Randi Novakoff

Consultant Team:

Randy Waltermeyer (TPD)
Louis Hufnagle (TPD)
Jerry Baker (TPD)
Wes Hicks (TPD)
Michelle Puszcz (Remline)

Introduction:

Randy Waltermeyer (RW) began the meeting by reviewing the meeting agenda and providing an overview of the topics that will be discussed during the steering committee meeting.

Recap/reactions from Public Meeting #1

RW reviewed the results of the public meeting and time was spent reviewing each of the maps and comment boards. It was noted that much of the feedback gathered further reinforced the thoughts that have been discussed by the steering committee during the entire project.

Youth Engagement

Ben Gruswitz (BG) noted that it is important to improve the attendance of younger people to participate in the planning process.

Later in the meeting, the group revisited this discussion, discussing ideas in conjunction with the second Public Meeting. BG and Pam Politis suggested reaching out to the Ardens Theater's Young Actors Workshop. The group agreed to convene a separate call or ad hoc committee to brainstorm and discuss engagement strategies. PP, BG, Brooke Bovard, and Carol Larson voiced interest in participating in this discussion.

Additional Data Sources – Crash, speed, and pedestrian data

Crash Data: RW reviewed the crash data and explained the methodology used to review the previous five years' worth of data available. A "heat map" was created that shows the locations that stand out the most which contain the highest concentrations of crashes. There were several key hot spots that immediately stood out, mostly all occurring along Harvey Road. Harvey Road at Marsh Road was the top hot spot followed by the I-95 interchange with Harvey Road.

Speed Data and Intersection counts: A combination of tube counts as well as Mio vision (pedestrian) counts were conducted. RW discussed the locations that the counts were deployed, and time was spent discussing the methodology used to analyze the data gathered as well as the results of the findings.

Confirming Plan Goals/Objectives

RW reviewed the plan objectives and discussed if this accurately reflects the objectives of the steering committee. The objectives are:

- » Develop a bicycle/pedestrian network to traverse through the Ardens – and potentially one that avoids crossing major roads like Harvey
- » Provide enhanced pedestrian crossings – Identifying critical locations in need of crossing and pedestrian improvements
- » Manage vehicular travel speeds to comply with speed limits
- » Identify strategies/countermeasures to safety concerns
- » Enhance transit and school bus stops

Group discussion:

- » It is also important to provide facilities at key locations to indicate to drivers to be expecting to encounter pedestrians. Currently, there are minimal facilities present that would indicate to a driver that there may be a pedestrian at several major intersections.
- » It is also important to provide context sensitive improvements that enhance the character of the villages as opposed to lining each roadway with sidewalks and looking like any other typical suburban corridor.
- » It was asked if it is possible to separate bus speed data from the rest of the data; the project team will look into this.

Preliminary Alternatives

- » Provide enhanced pedestrian crossings- Key locations for pedestrian improvements based on the data collected through counts and crash data will be identified and improvements
- » Identify strategies/countermeasures to safety concerns – Context sensitive solutions are key for providing appropriate recommendations to enhance the Ardens Villages
- » Enhance transit and school bus stops – Reduce vehicular trips and encourage public transit while creating a safer environment for students

The group annotated several maps with location-specific ideas and recommendations.

Project Schedule/Next Steps

The group looked at the proposed meeting schedule and discussed the timing of future meetings and events and launch dates for future surveys.

The next steering committee meeting will be on January 24th, 2023.

The second public meeting will be targeted for February 9, 2023, with a follow-up/companion survey to run through the balance of February.

Committee meetings would then be held on 3/21/23 and 4/25/23 – and a draft plan would be prepared and circulated by 5/8/2023.

The draft plan would be circulated through each of the villages' committees in May/June, with a planned acceptance in June.

Ardens Transportation Plan

Wilmington Area Planning Council (WILMAPCO)

As of 11/15/2022

| SCOPE TASKS | | | | | | | | | | | | | | |
|--|--------|--------|--------|-------------|--------|--------|--------|--------|------------|--------|--------|--------------|--------|--|
| | Jun-22 | Jul-22 | Aug-22 | Sep-22 | Oct-22 | Nov-22 | Dec-22 | Jan-23 | Feb-23 | Mar-23 | Apr-23 | May-23 | Jun-22 | |
| Task 1 <i>Project Coordination</i> | | * | * | | | 11/15 | | 1/24 | | 3/21 | 4/25 | | | |
| Task 2 <i>Project Branding</i> | | | | | | | | | | | | | | |
| Task 3 <i>Identify Issues, Opportunities & Constraints</i> | | | | | | | | | | | | | | |
| Task 4 <i>Host Walkable Community Workshop</i> | | | 8/8 | | | | | | | | | | | |
| Task 5 <i>Community Visioning</i> | | | | | | | | | | | | | | |
| <i>Community Survey</i> | | | | 9/1 to 9/30 | | | | | | | | | | |
| <i>Public Meeting #1</i> | | | | | 10/25 | | | | | | | | | |
| Task 6 <i>Define Assumptions and Alternative Projects</i> | | | | | | | | | 2/9 | | | | | |
| <i>Community Survey #2</i> | | | | | | | | | 2/9 - 2/28 | | | | | |
| Task 7 <i>Select Preferred Alternatives / Cost Estimate</i> | | | | | | | | | | | | | | |
| Task 8 <i>Draft / Final Report</i> | | | | | | | | | | | | Draft by 5/8 | | |
| <i>Plan Acceptance</i> | | | | | | | | | | | | | | |

Meetings:

- * Coordination Meeting
- Public Meeting

Moving Forward Together®

Connecting with the Ardens

Steering Committee Meeting Summary

January 24, 2023

Location: Virtual Meeting
Date | Time: January 24, 2023 | 12:00 pm – 1:30 pm
Topic: Steering Committee Meeting #3

Attendees:

Steering Committee:

Carol Larson
Steve Benigni
Brooke Bovard
Ben Gruswitz
Pam Politis
Will Ryan
Matthew Rogers (NCC)
Cooper Bowers (DeIDOT)

WILMAPCO:

Tigist Zegeye
Bill Swiatek
Jake Thompson
Randi Novakoff

Consultant Team:

Randy Waltermeyer (TPD)
Louis Hufnagle (TPD)
Jerry Baker (TPD)
Wes Hicks (TPD)

Introduction:

Randy Waltermeyer (RW) began the meeting by reviewing the meeting agenda and providing an overview of the topics that will be discussed during the steering committee meeting.

Overview of Alternatives:

Randy Waltermeyer (RW) walked the group (goal by goal) through the Consultant Team's initial alternatives. The full Steering Committee provided comments and suggestions.

See the slides mark-up for comments received.

Project Schedule:

Randy Waltermeyer (RW) and the Steering Committee reviewed the project schedule, including the postcard, public survey, and public meeting on 2/15/2023.

Attachments:

- Slides (with meeting mark-up)

Connecting with the Ardens

Steering Committee #3

January 24, 2023



REMLINE



**CONNECTING WITH
THE ARDENS**
A TRANSPORTATION PLAN

Meeting Agenda

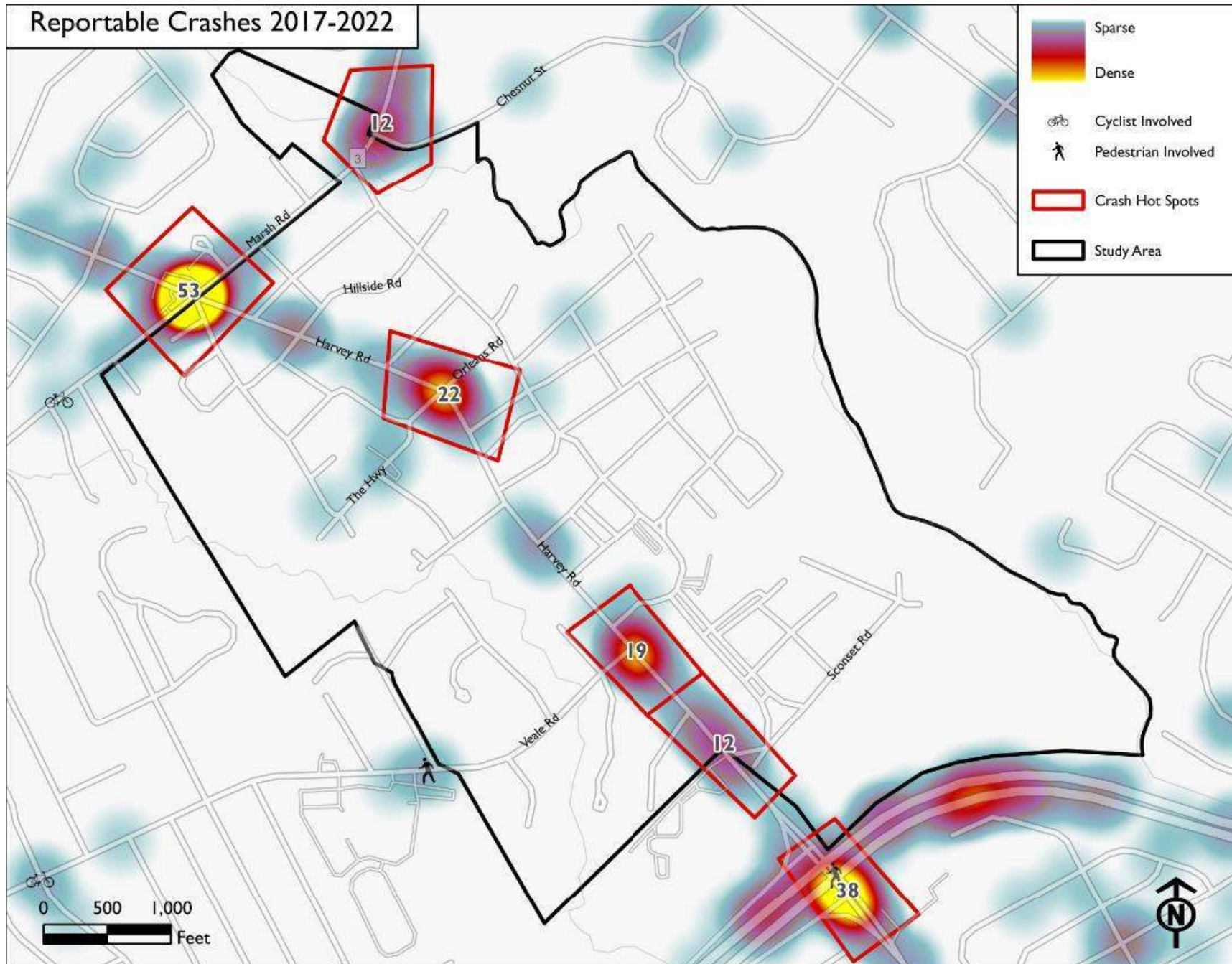
- Overview of Alternatives 12 pm – 12:20 pm
- Initial Reactions to Alternatives 12:20 pm – 12:30 pm
- ~~Breakout Rooms (3) 12:30 pm – 12:45 pm~~
- Breakout groups were skipped due to limited Steering Committee size.

~~Breakout Rooms – Report Back 12:45 pm – 1 pm~~
- Project Schedule/Next Steps 1:00 pm – 1:15 pm
- Final Thoughts / Discussion 1:15 pm – 1:30 pm

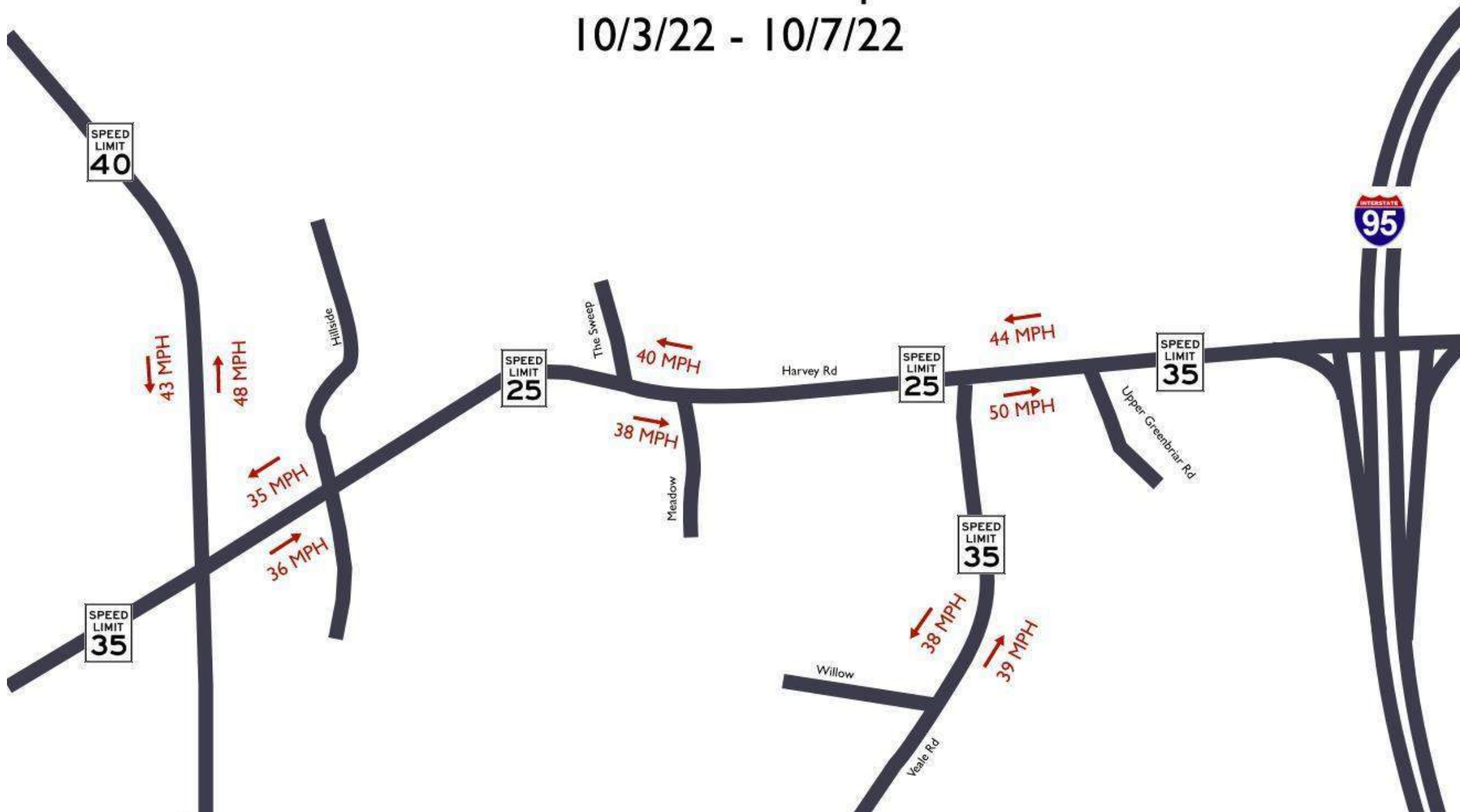
Plan Goals

- “ Develop a bicycle/pedestrian network to traverse through the Ardens
- “ Provide enhanced pedestrian crossings
- “ Manage vehicular travel speeds to comply with speed limits
- “ Identify strategies/counter-measures to safety concerns
- “ Enhance transit and school bus stops

Reportable Crashes 2017-2022



85th - Percentile Speeds 10/3/22 - 10/7/22



What is traffic calming?

Traffic calming toolbox...

Chicane



Gateway

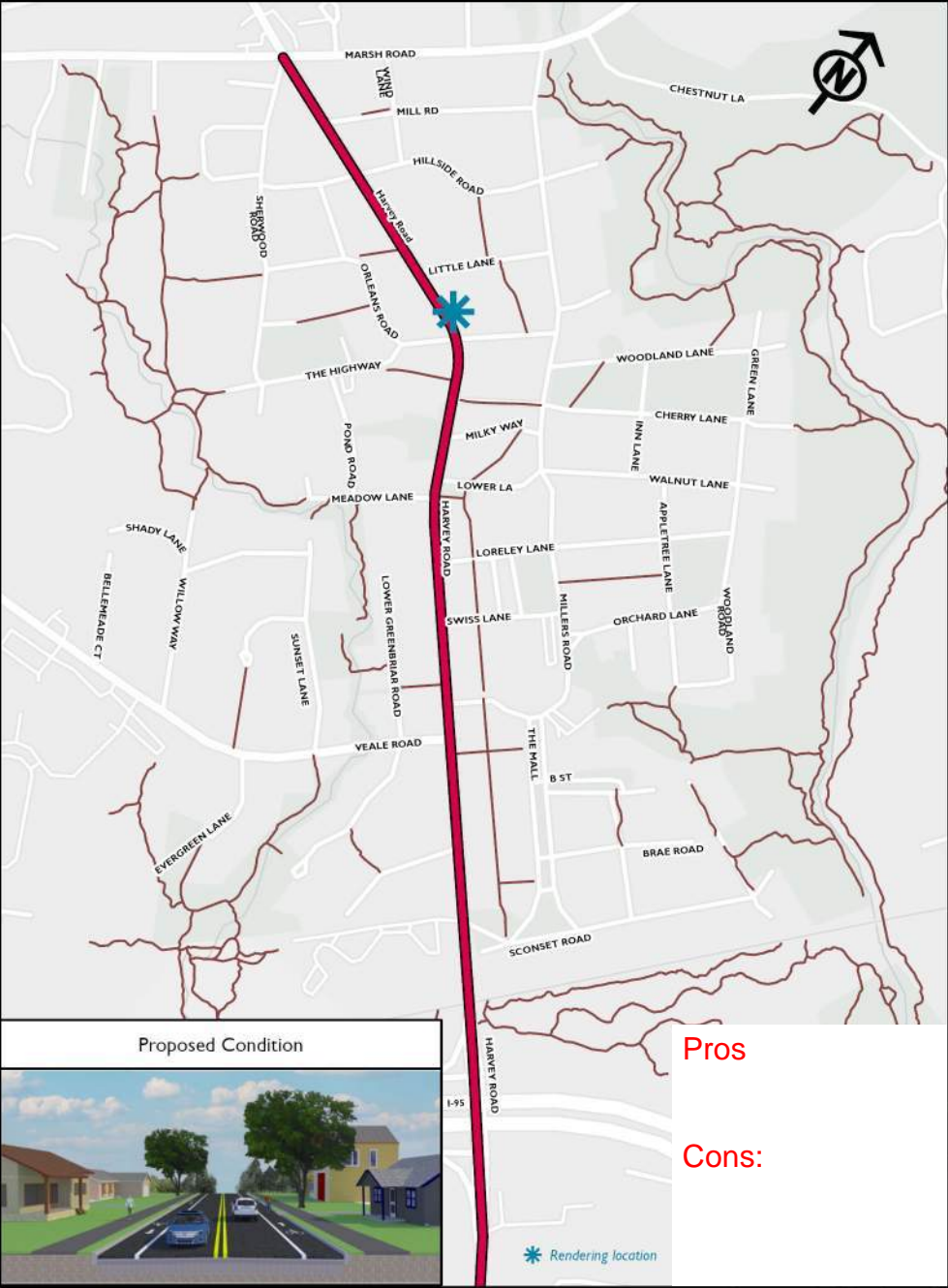


Bumpout/Neckdown

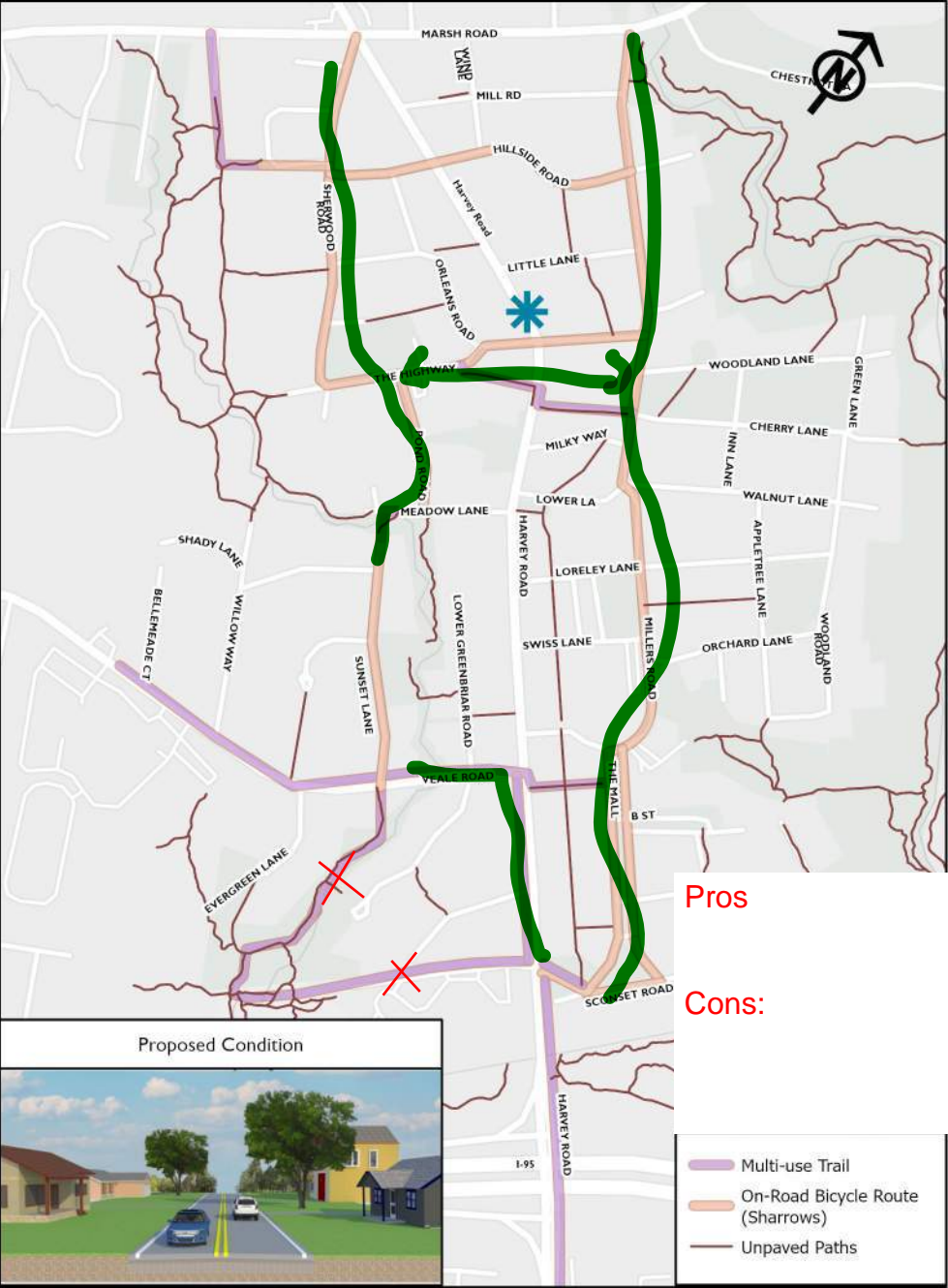


Goal I: Develop a Bicycle/Pedestrian Network that traverses the Ardens

Alternative I-A: Add amenities to Harvey Road



Alternative I-B: Develop parallel low-stress network



Goal 2: Provide Enhanced Pedestrian Crossings

Alternative 2-A: Marked Crosswalk



Alternative 2-B: Crosswalks and Signage



NCHRP SYNTHESIS 498

NATIONAL
COOPERATIVE
HIGHWAY
RESEARCH
PROGRAM

Application of Pedestrian
Crossing Treatments for
Streets and Highways

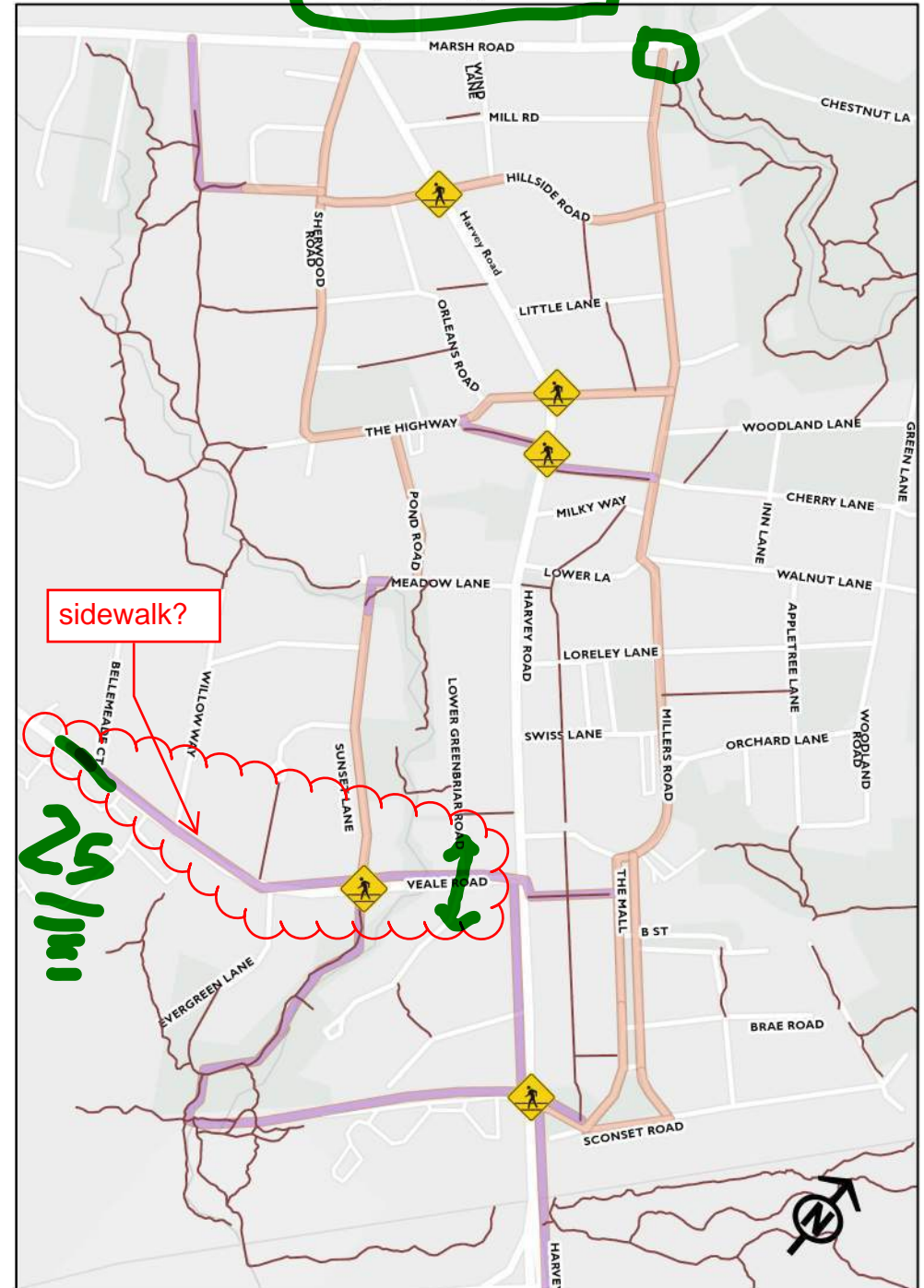


A Synthesis of Highway Practice

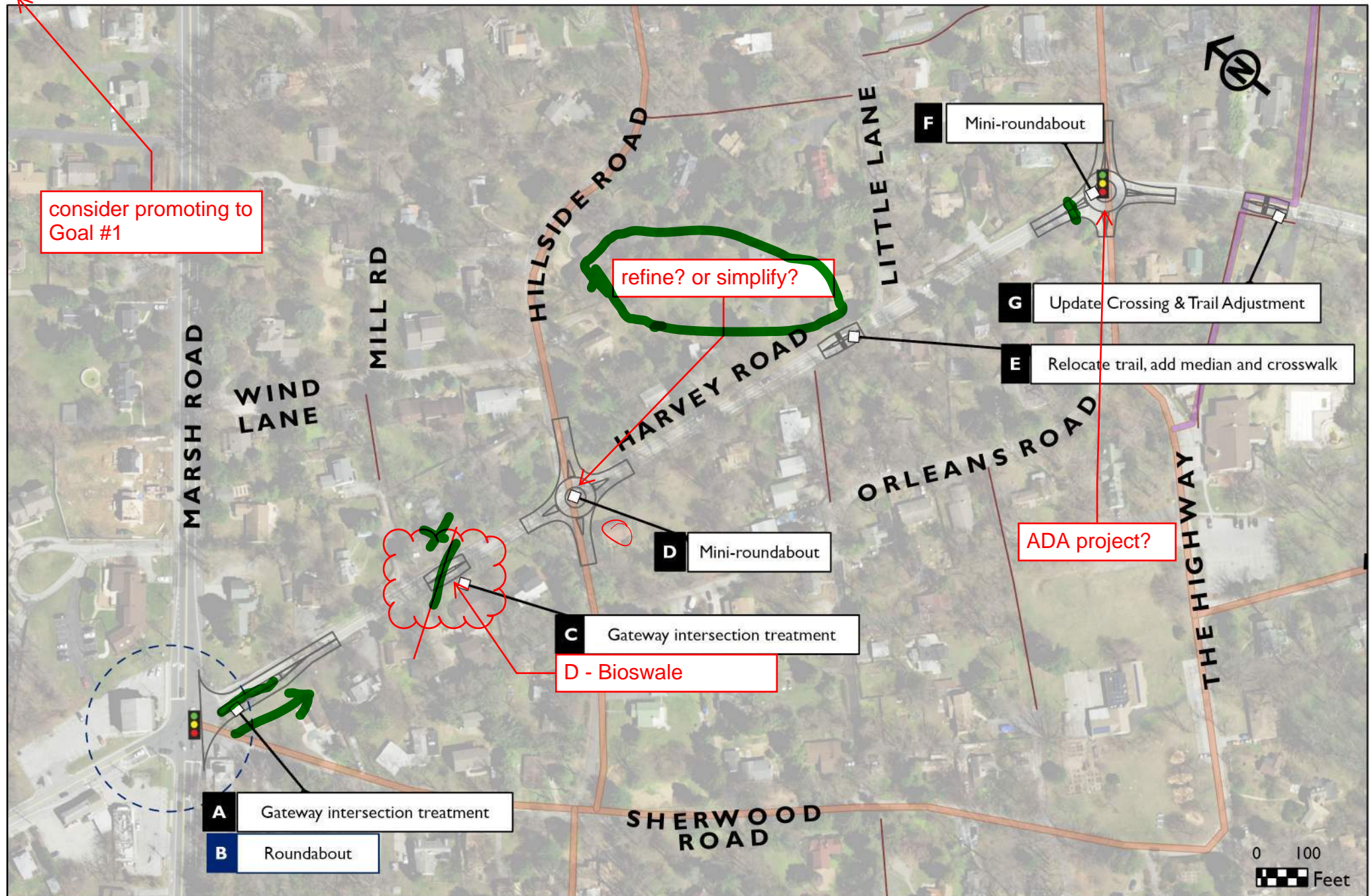
TRANSPORTATION RESEARCH BOARD
The National Academies of
SCIENCES • ENGINEERING • MEDICINE

Apply guidance of NCHRP 498 and DeIDOT

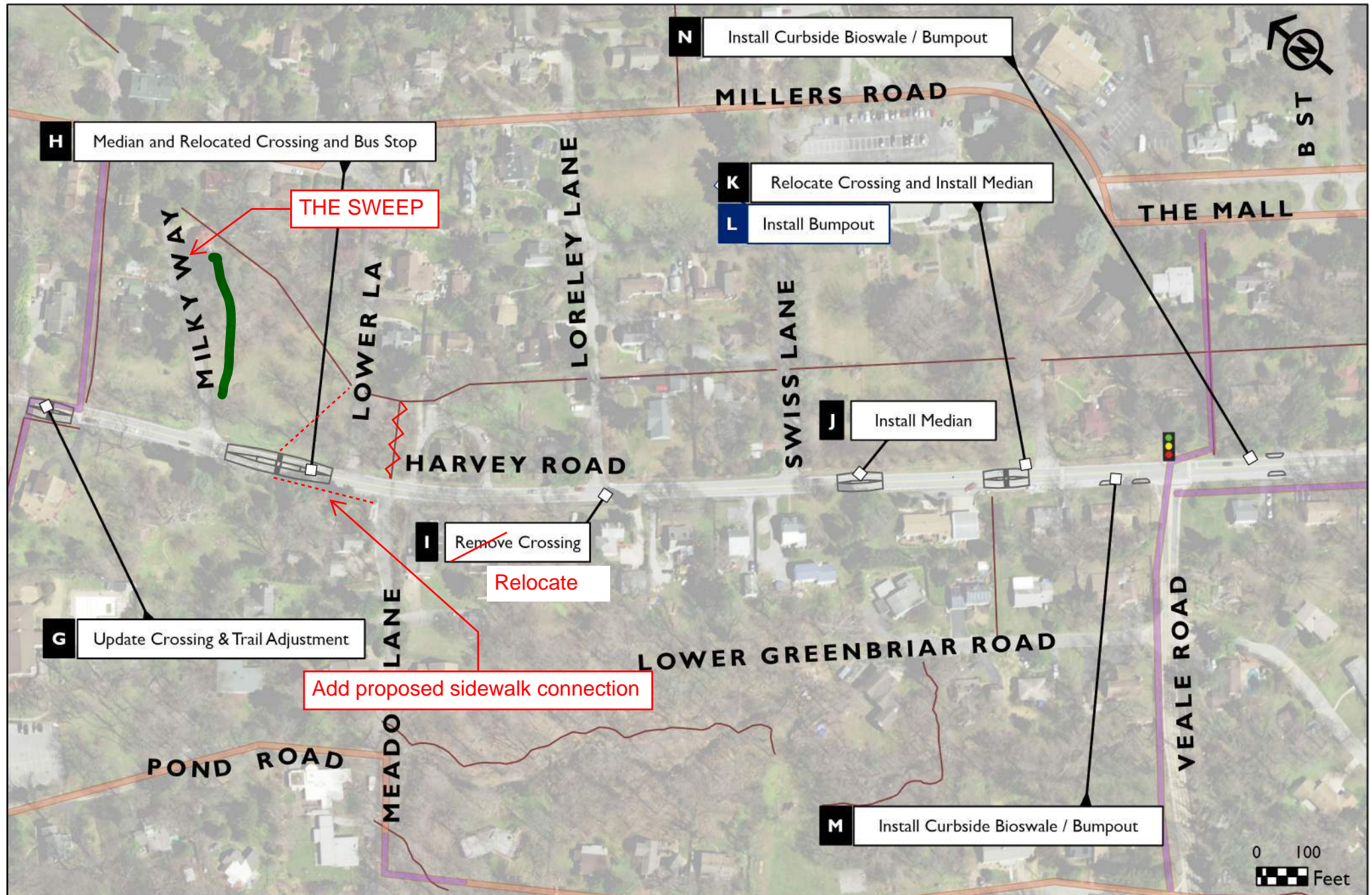
Key Crossing Locations



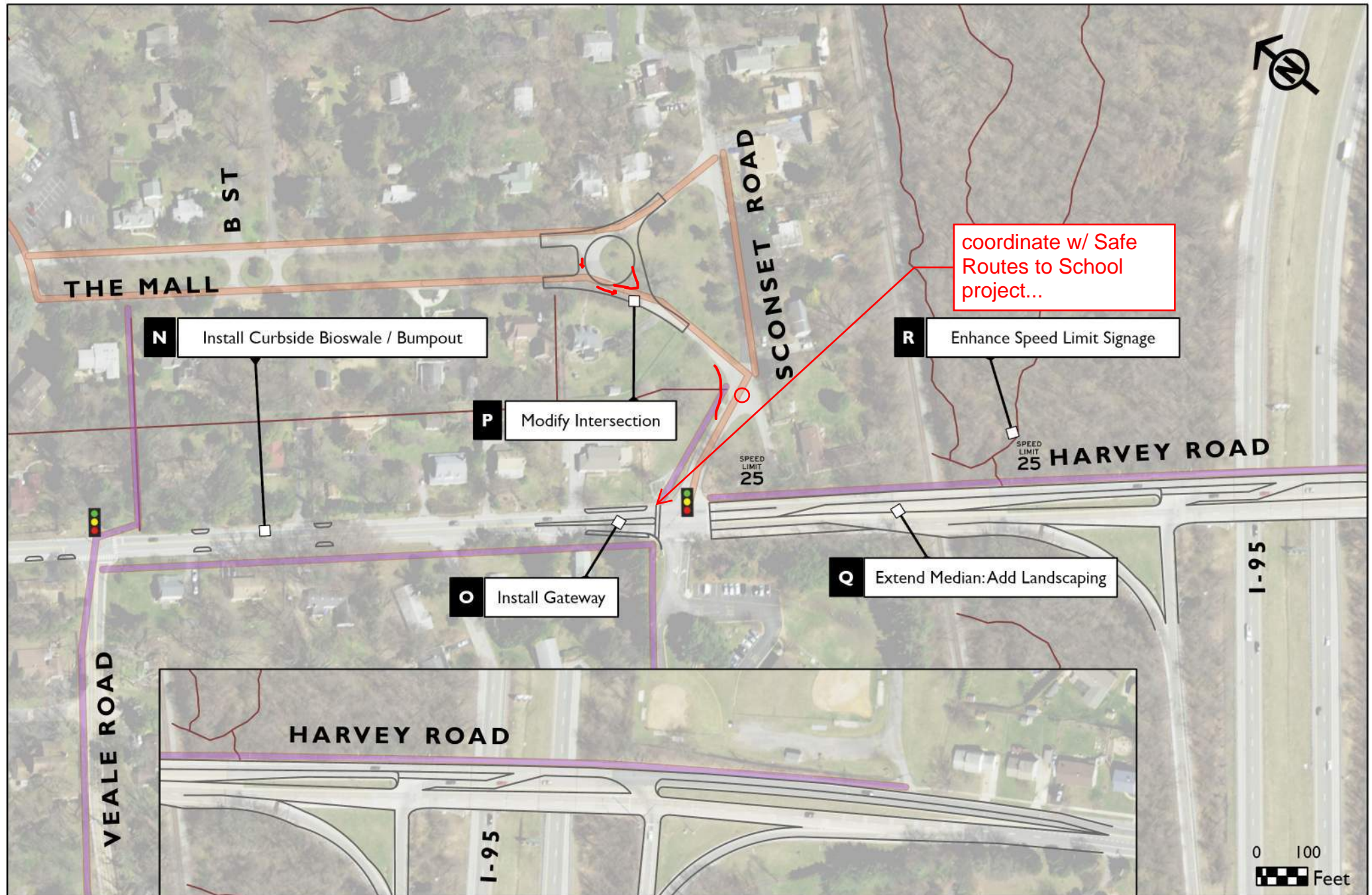
Goal 3: Create Countermeasures to Safety Concerns and to Manage Vehicular Speeds to Comply With Speed Limits or Desired Speed



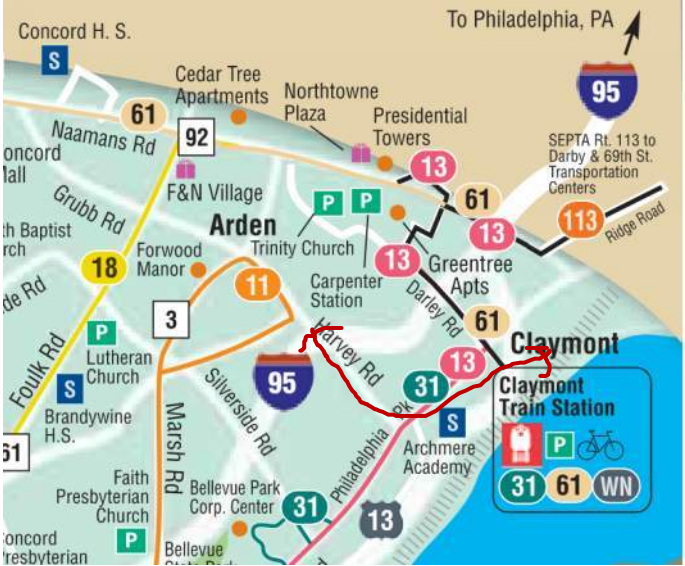
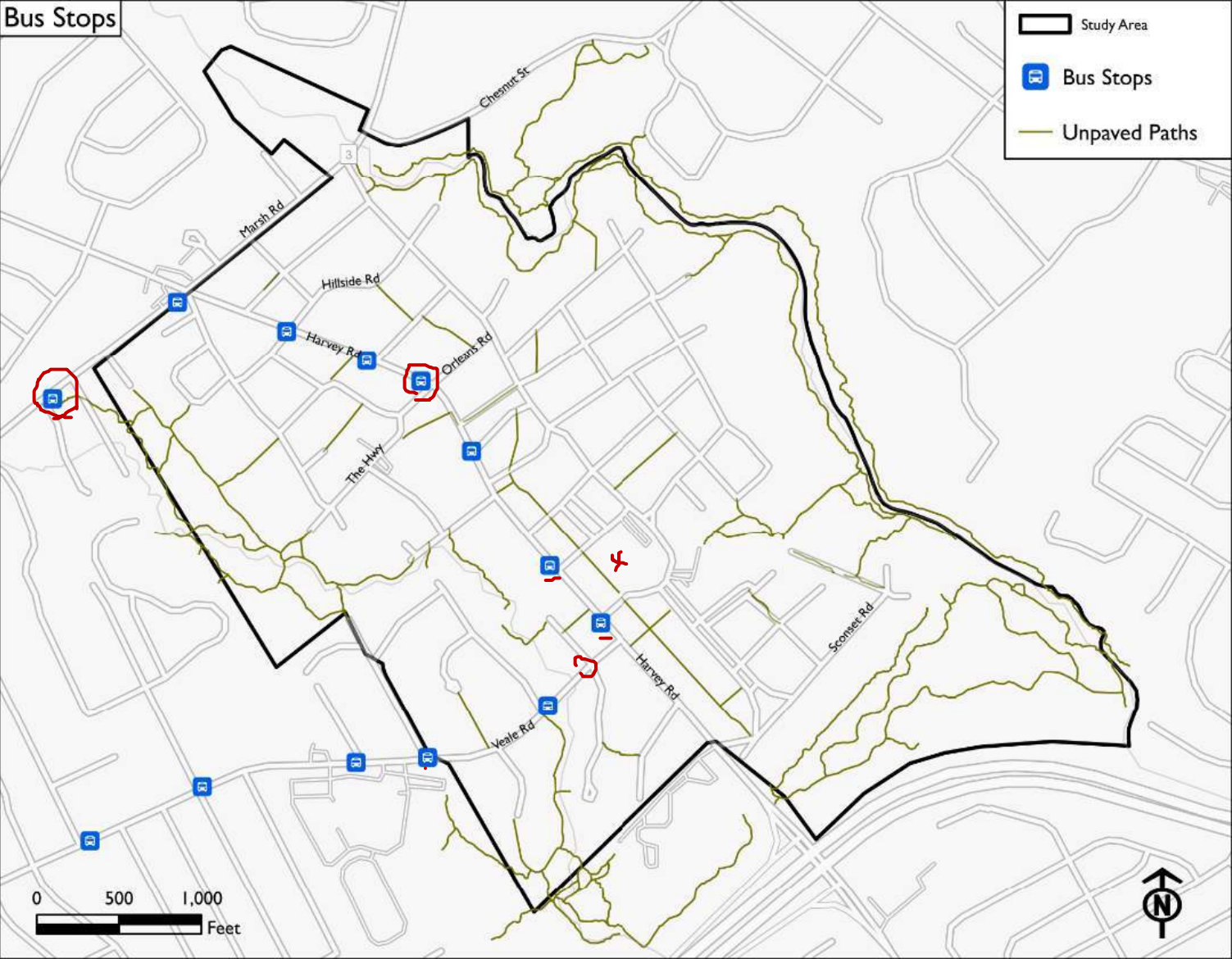
Goal 3: Create Countermeasures to Safety Concerns and to Manage Vehicular Speeds to Comply With Speed Limits or Desired Speed



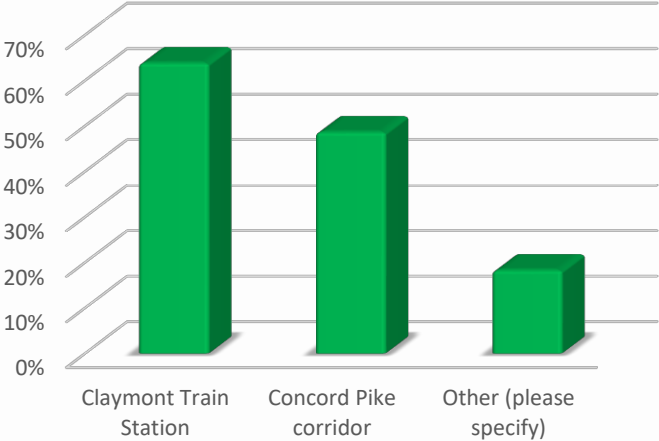
Goal 3: Create Countermeasures to Safety Concerns and to Manage Vehicular Speeds to Comply With Speed Limits or Desired Speed



Enhance transit and school bus stops



Where would you like to be able to go on the bus?



Project Schedule + Next Steps

Project Schedule + Next Steps



JOIN US FOR

**Connecting with the Ardens:
A Transportation Plan**

2nd Public Meeting February 15th
5:00 pm - 5:30 pm (Youth Focus Group)

Prior to the public meeting, there will be a youth focus group. Kids are encouraged to attend and share their thoughts and ideas on the transportation issues facing the Arden Villages.

6:00 pm - 8:00 pm (Public Meeting)
Located in Buzz Ware Village Center
Rooms 1 and 2

Childcare will be available during the full presentation at Gild Hall.

- ☐ Postcard (arriving 2/1)
- ☐ Alternatives to Website (2/6)
- ☐ Public Survey (2/6 to 3/12)
- ☐ Public Meeting (2/15)
- ☐ Steering Committee (3/21)
- ☐ Steering Committee (4/25)
- ☐ Draft Plan by 5/8

Connecting with the Ardens

Steering Committee Meeting Summary

March 21, 2023

Location: Virtual Meeting
Date | Time: March 21, 2023 | 12:00 pm – 1:30 pm
Topic: Steering Committee Meeting #4

Attendees:

Steering Committee:

Steve Benigni
Brooke Bovard
Ben Gruswitz
Matthew Rogers (NCC)
Cooper Bowers (DelDOT)
Steve Ottinger (DART)
Jared Kauffman (DART)

WILMAPCO:

Tigist Zegeye
Bill Swiatek
Jake Thompson
Randi Novakoff
Dawn Voss

Consultant Team:

Randy Waltermeyer (TPD)
Joe Platt (TPD)
Lou Hufnagle (TPD)
Wes Hicks (TPD)
Michelle Puszcz (Remline)

Recap of Public Meeting #2 / Survey #2:

Randy Waltermeyer (RW) and the Steering Committee reviewed the second public meeting, held on 2/15/2023.

Mr. Waltermeyer then provided a overview of the feedback from Survey #2. A total of 109 responses were received.

Review of Survey / Locally Preferred Alternative:

Randy Waltermeyer (RW) walked the group through each of the alternatives and the survey results. The Steering Committee provided revisions and feedback.

See the slides mark-up for comments received.

Transit Recommendations:

Randy, Bill, Steve, and Jared shared transit recommendations with the Steering Committee, relaying key points from a 3/20/2023 call. All parties noted that further feasibility studies would be needed to advance these concepts.

Project Schedule:

Randy Waltermeyer (RW) and the Steering Committee reviewed the project schedule. A draft plan is anticipated by 5/8/2023 and a Steering Committee meeting will be scheduled for 5/23/23.

Attachments:

- Slides (with meeting mark-up)

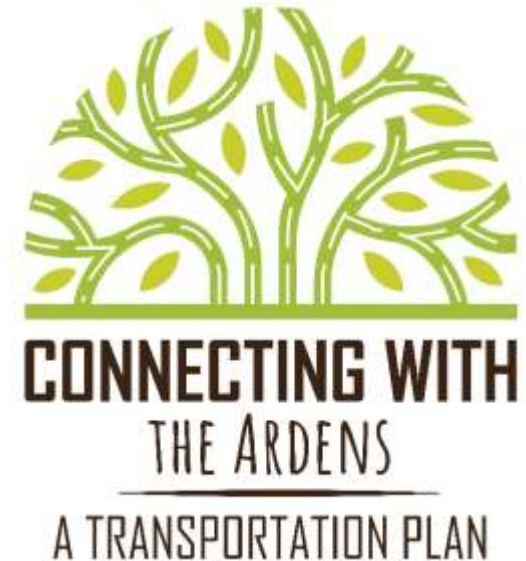
Connecting with the Ardens

Steering Committee Meeting #4

March 21, 2023



REMLINE



Meeting Agenda

- » Public Meeting #2 / Survey #2 12:00 pm – 12:10 pm
- » Synthesis to Locally Preferred Alternative 12:10 pm – 1:00 pm
- » Transit Recommendations 1:00 pm – 1:15 pm
- » Project Schedule/Final Steps 1:15 pm – 1:30 pm

Public Meeting #2

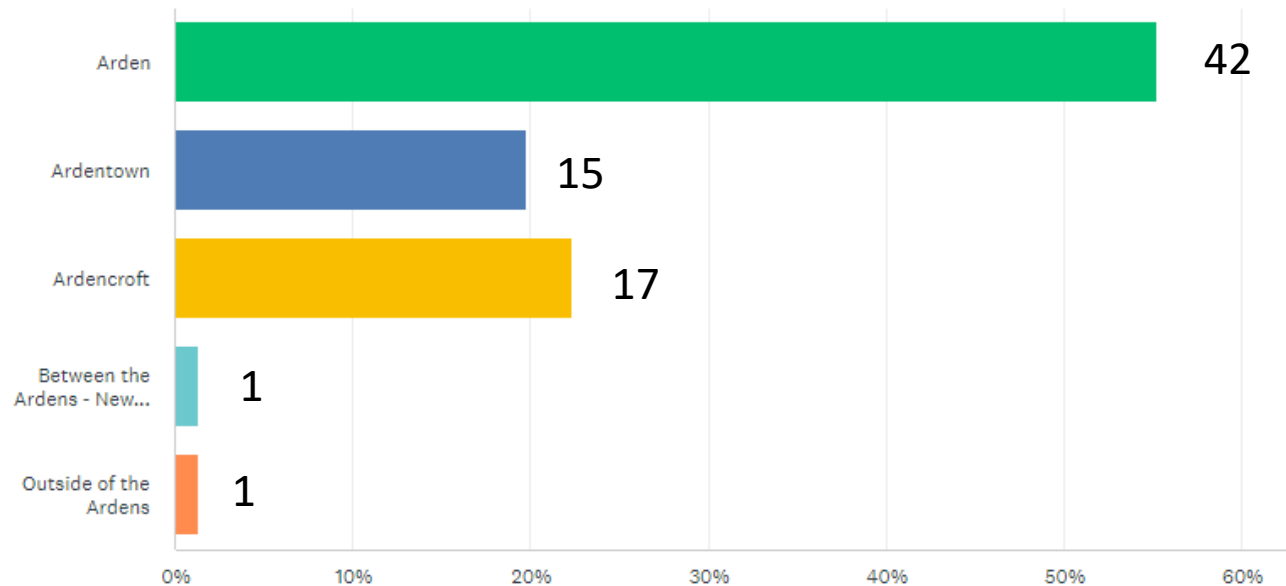
Public Survey #2



Public Survey #2

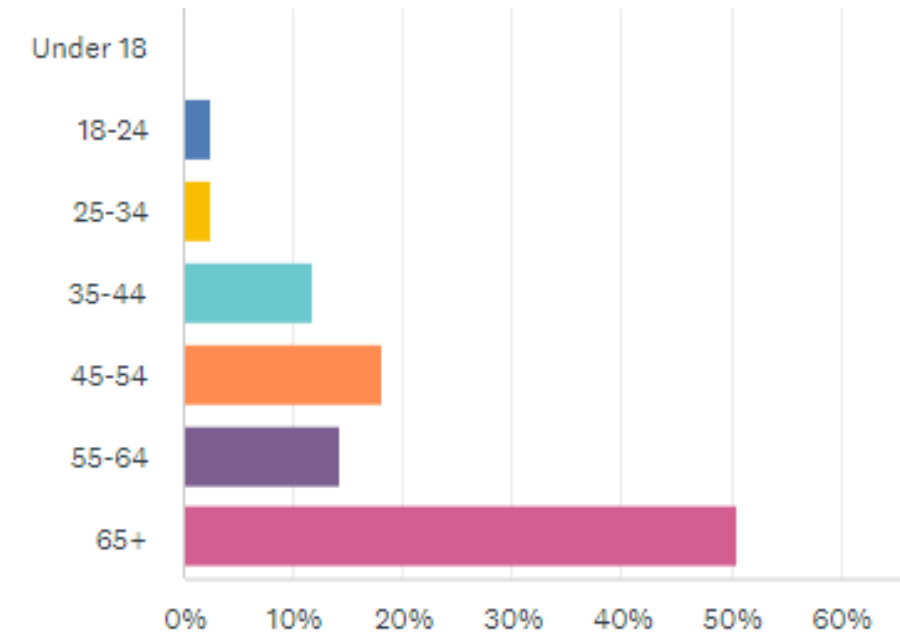
Are you a resident of:

Answered: 76 Skipped: 33



What is your age group?

Answered: 77 Skipped: 32



Project Goals

Rank the Goals

| | 1 | 2 | 3 | 4 | TOTAL | SCORE |
|--|--------------|--------------|--------------|--------------|-------|-------|
| ▼ Goal A - Manage speeds and address safety | 67.65% 69 | 13.73% 14 | 14.71% 15 | 3.92% 4 | 102 | 3.45 |
| ▼ Goal B - Develop a bike/pedestrian network | 15.69% 16 | 21.57% 22 | 44.12% 45 | 18.63% 19 | 102 | 2.34 |
| ▼ Goal C - Provide enhanced pedestrian crossings | 14.71% 15 | 59.80% 61 | 16.67% 17 | 8.82% 9 | 102 | 2.80 |
| ▼ Goal D - Enhance transit/school bus stops | 1.96% 2 | 4.90% 5 | 24.51% 25 | 68.63% 70 | 102 | 1.40 |

Project Goals

Original order:

- 1) Manage vehicular travel speeds and deploy safety countermeasures
- 2) Develop a bicycle/pedestrian network to traverse through the Ardens
- 3) Provide enhanced pedestrian crossings
- 4) Enhance transit and school bus stops

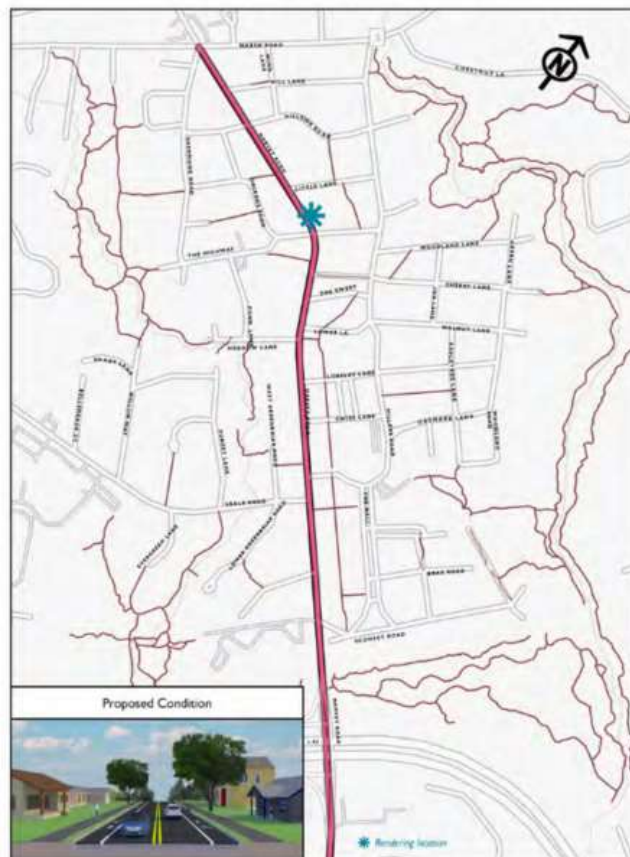
Proposed Reorder:

- 1) Manage vehicular travel speeds and deploy safety countermeasures
- 2) Provide enhanced pedestrian crossings
- 3) Develop a bicycle/pedestrian network to traverse through the Ardens
- 4) Enhance transit and school bus stops

Develop a bicycle/pedestrian network to traverse through the Ardens

Alternative 2-A: Develop parallel low-stress network

Alternative 2-B: Add amenities to Harvey Road

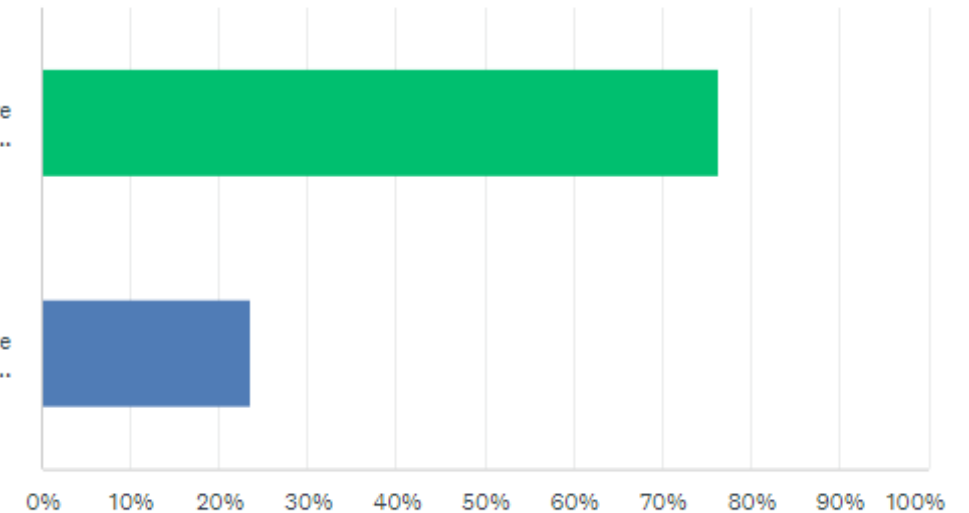


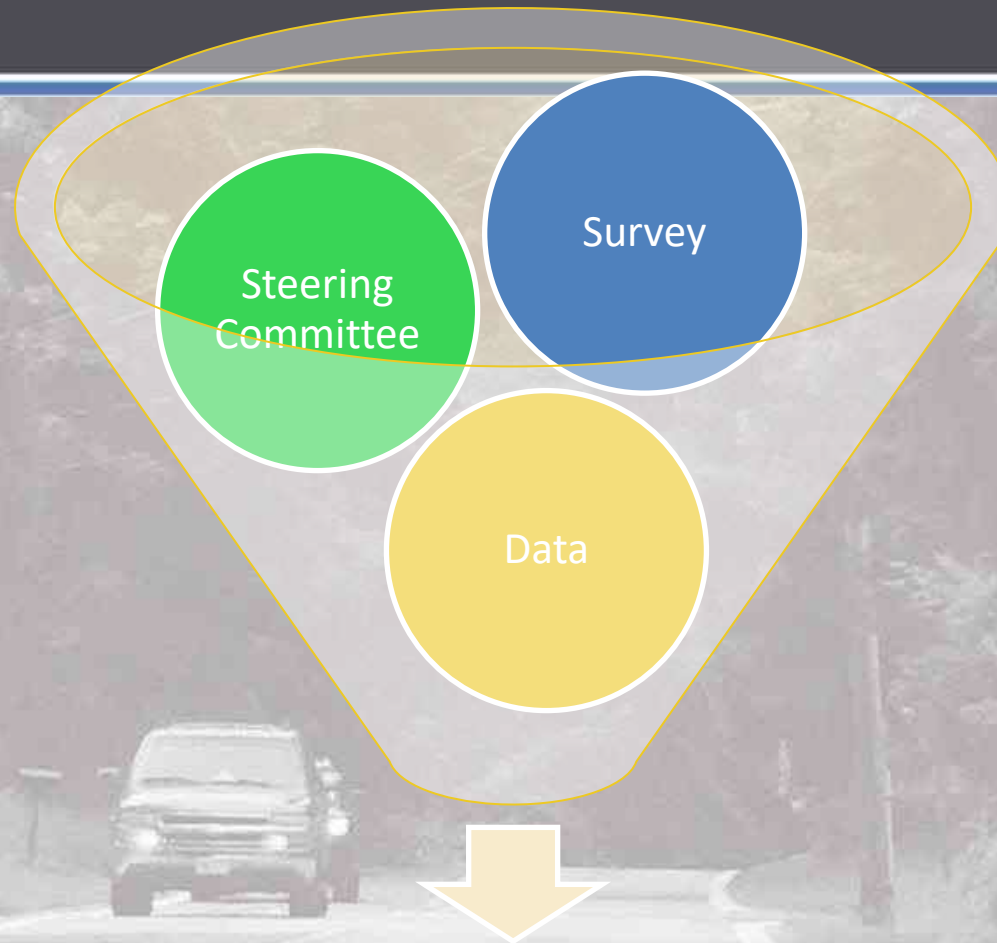
What is your preferred alternative?

Answered: 72 Skipped: 37

Alternative 2-A: Develop...

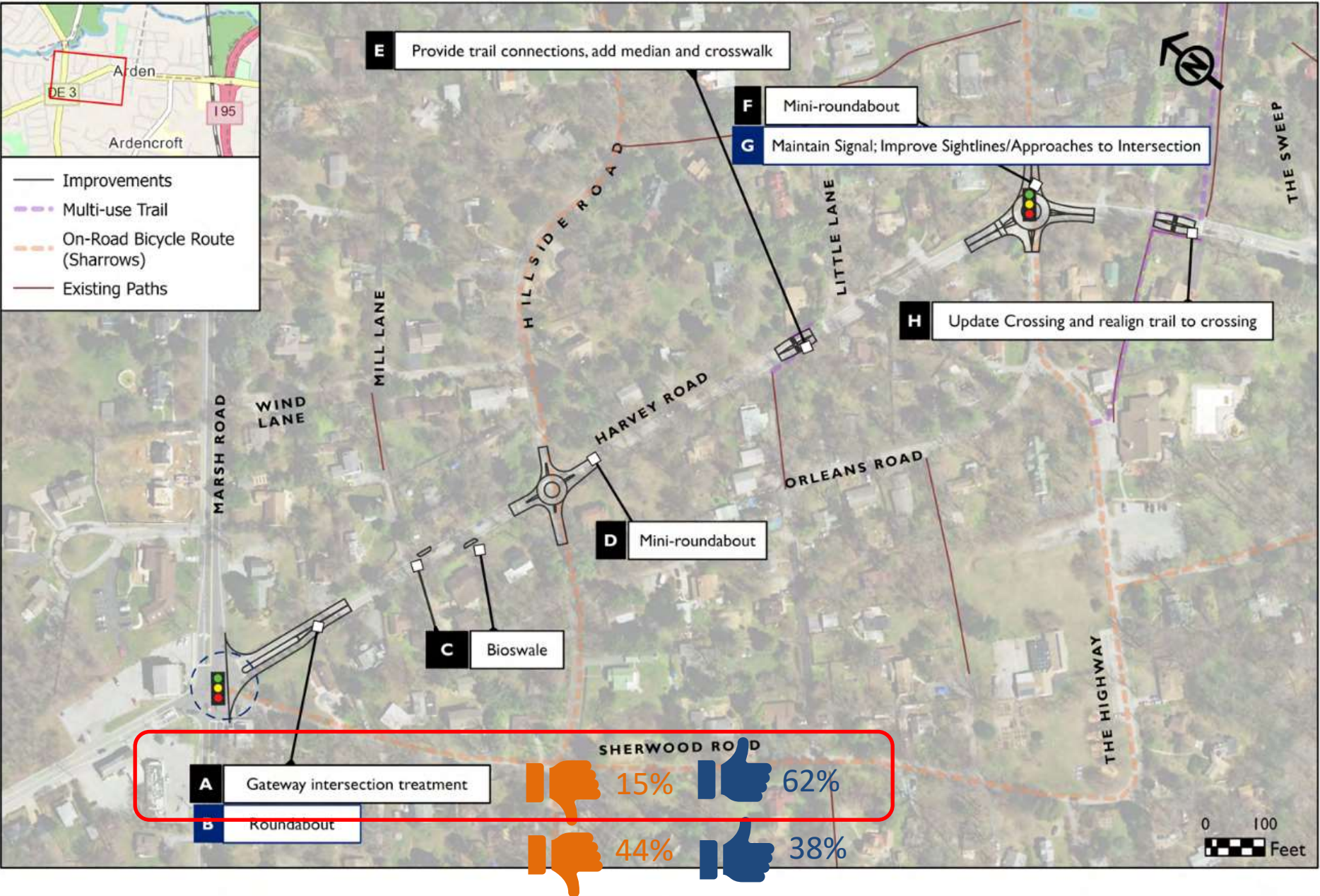
Alternative 2-B: Add...



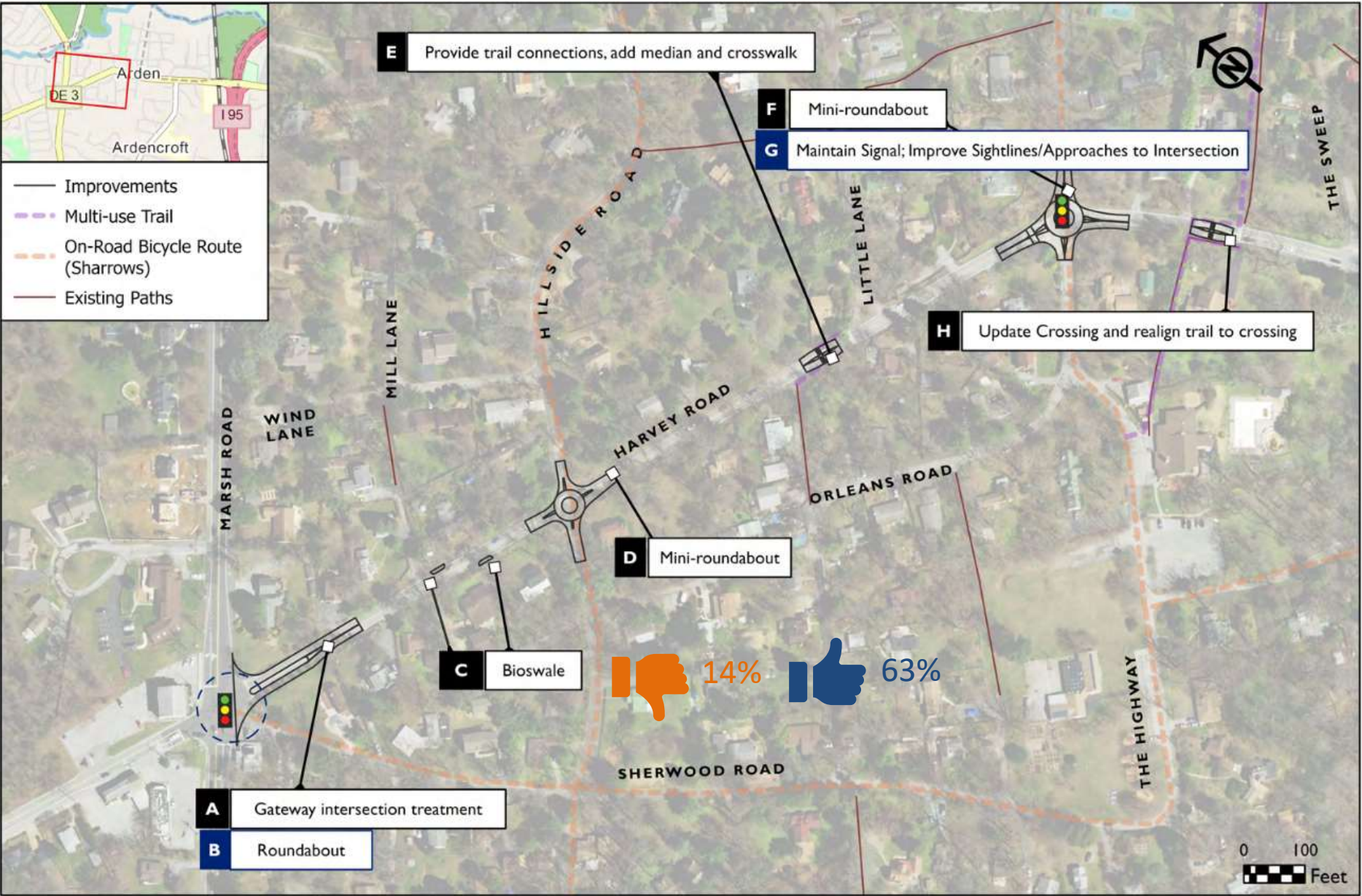


Locally Preferred Alternative

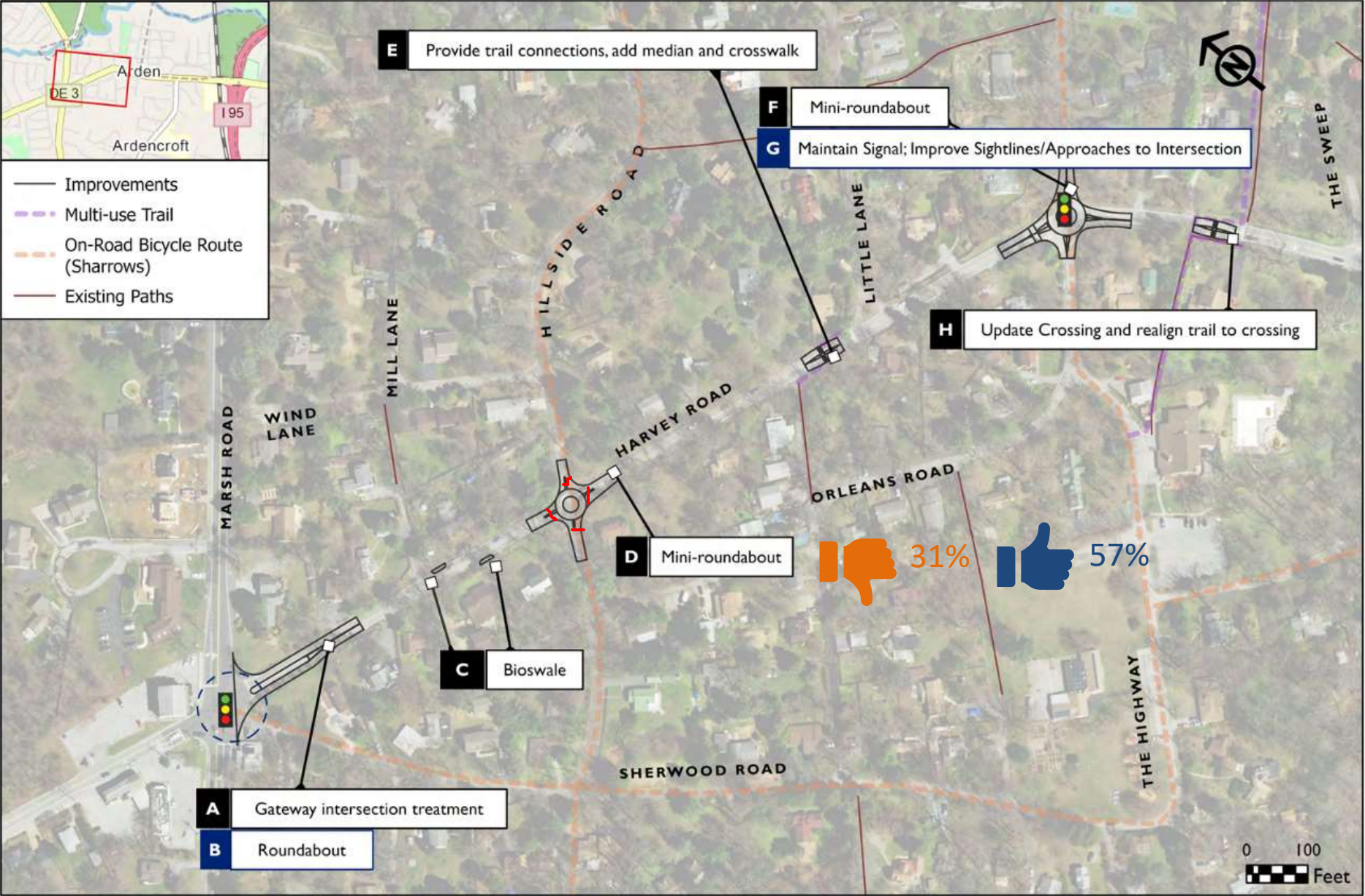
Goal 1: Manage vehicular speeds and deploy safety countermeasures



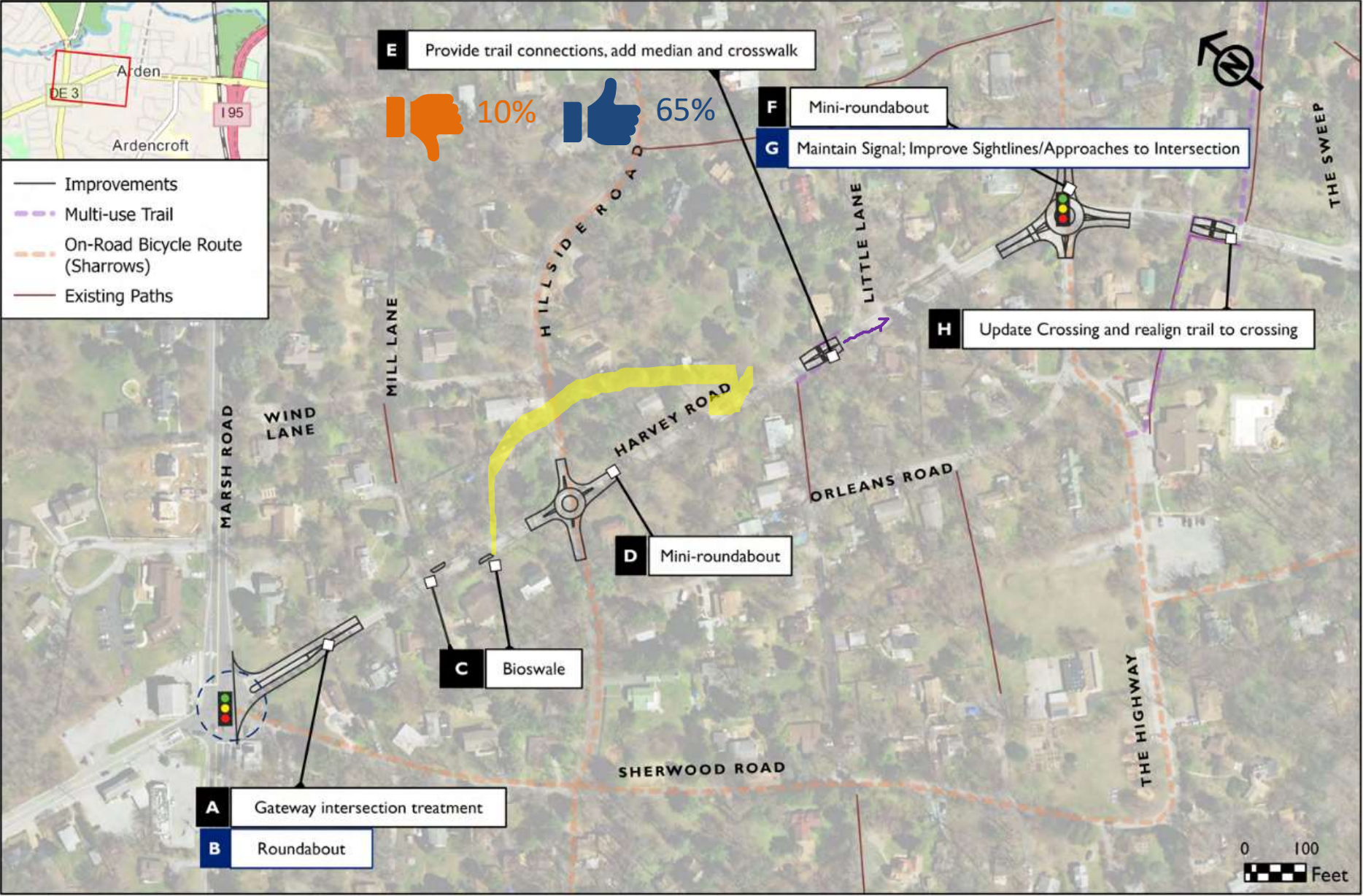
Goal 1: Manage vehicular speeds and deploy safety countermeasures



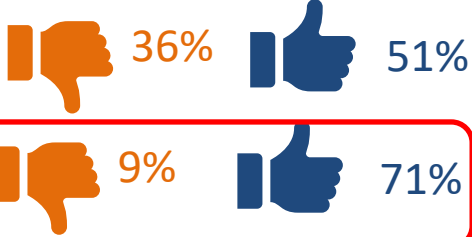
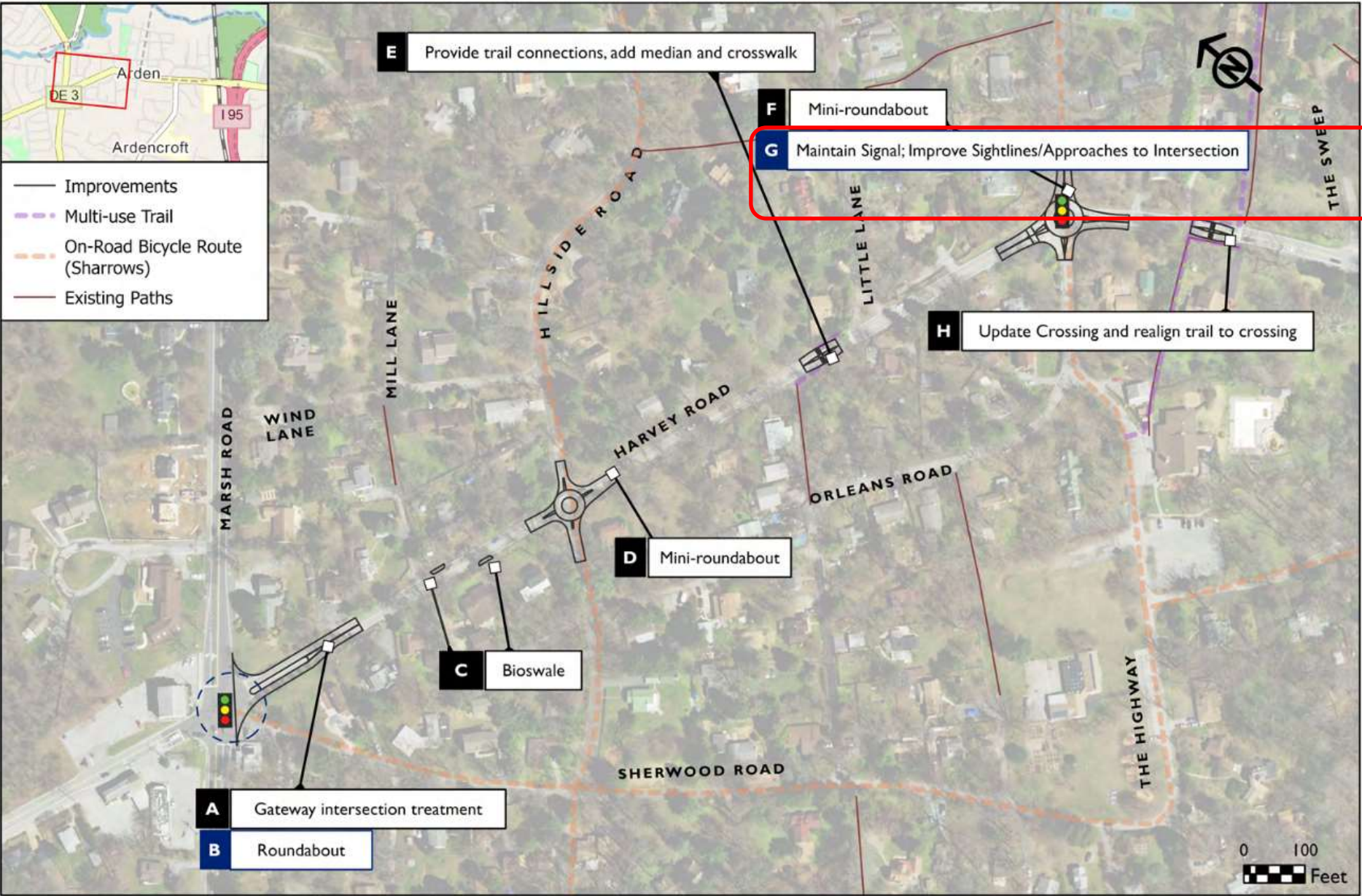
Goal 1: Manage vehicular speeds and deploy safety countermeasures



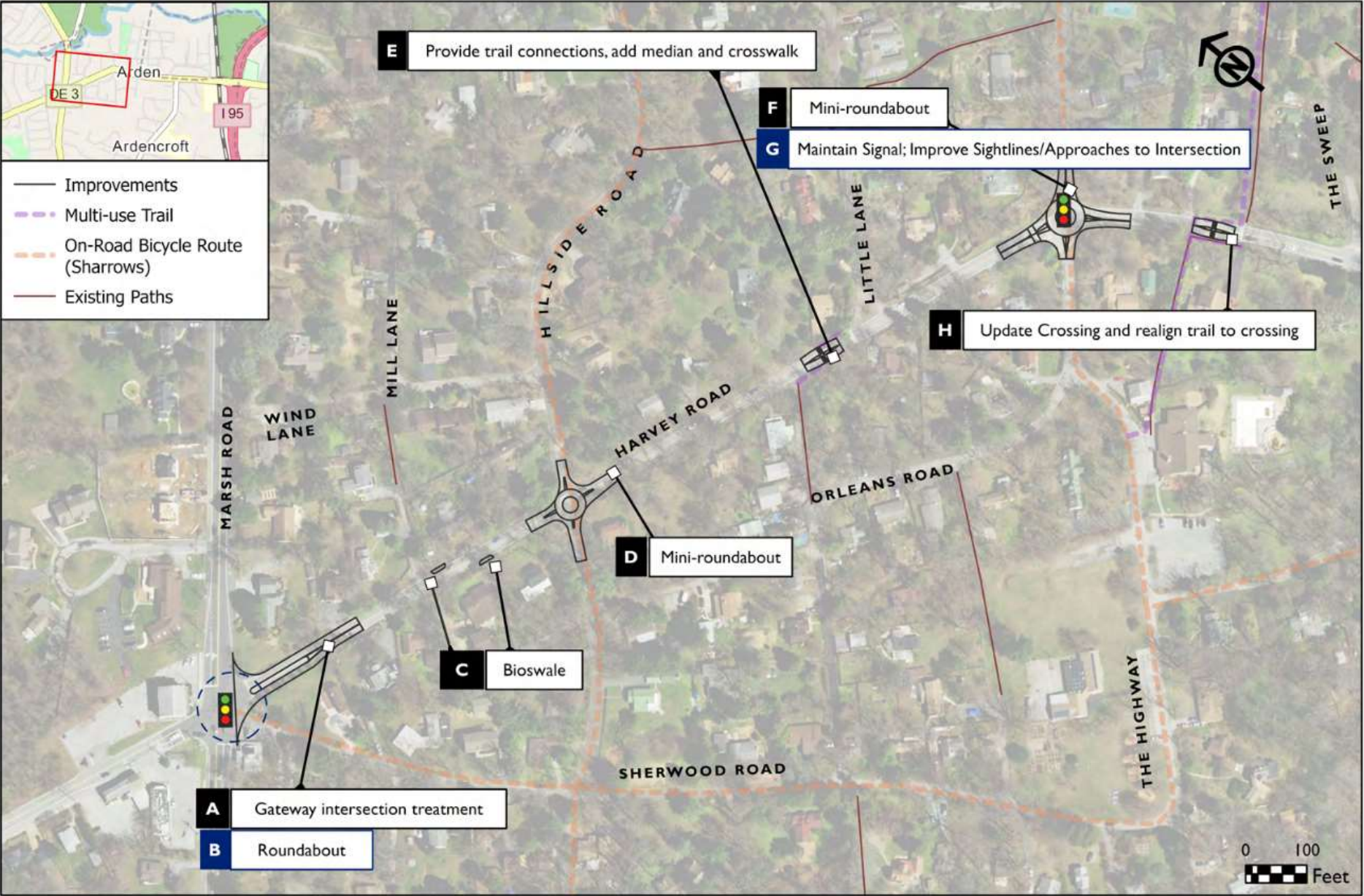
Goal 1: Manage vehicular speeds and deploy safety countermeasures



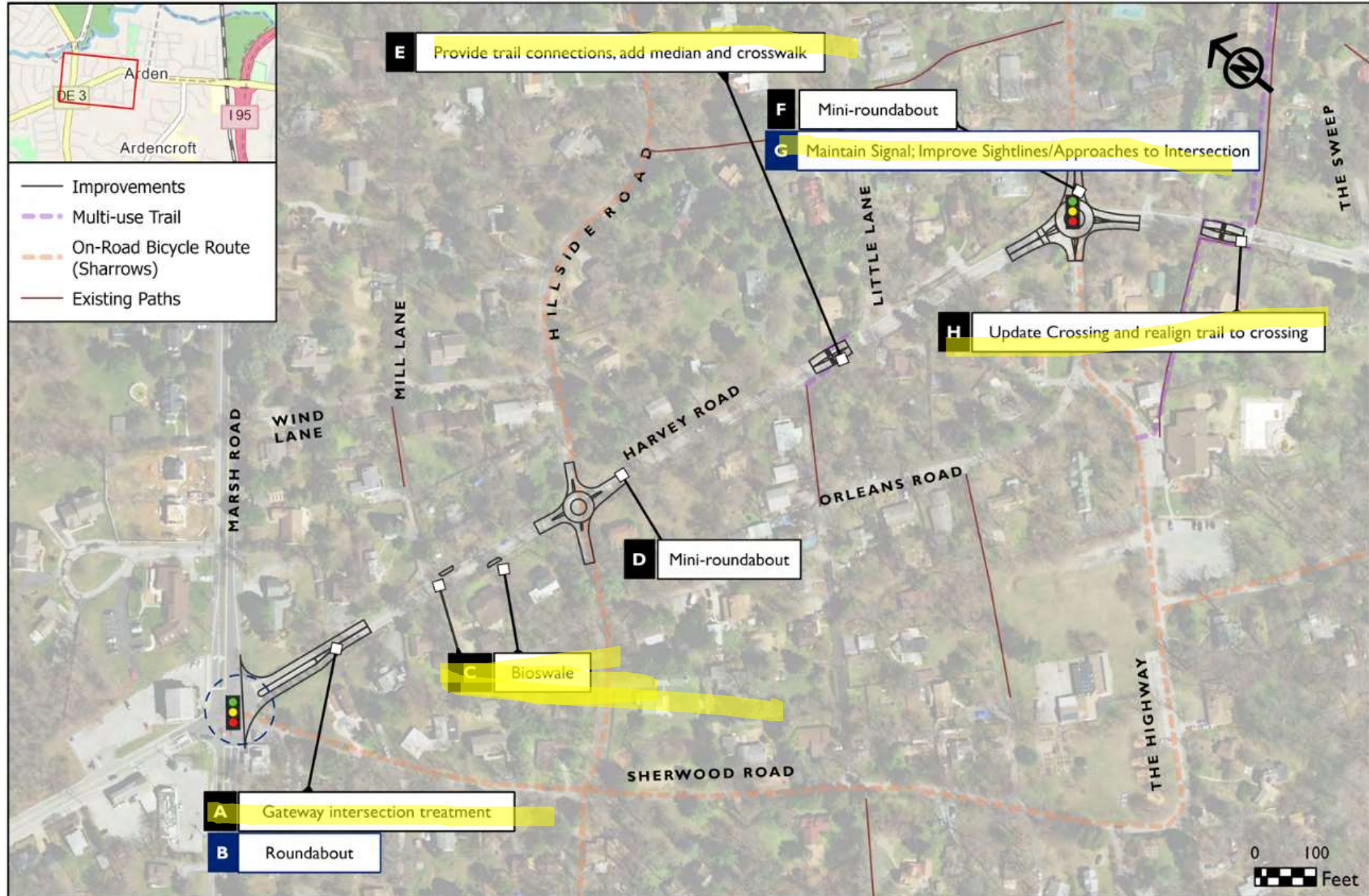
Goal 1: Manage vehicular speeds and deploy safety countermeasures



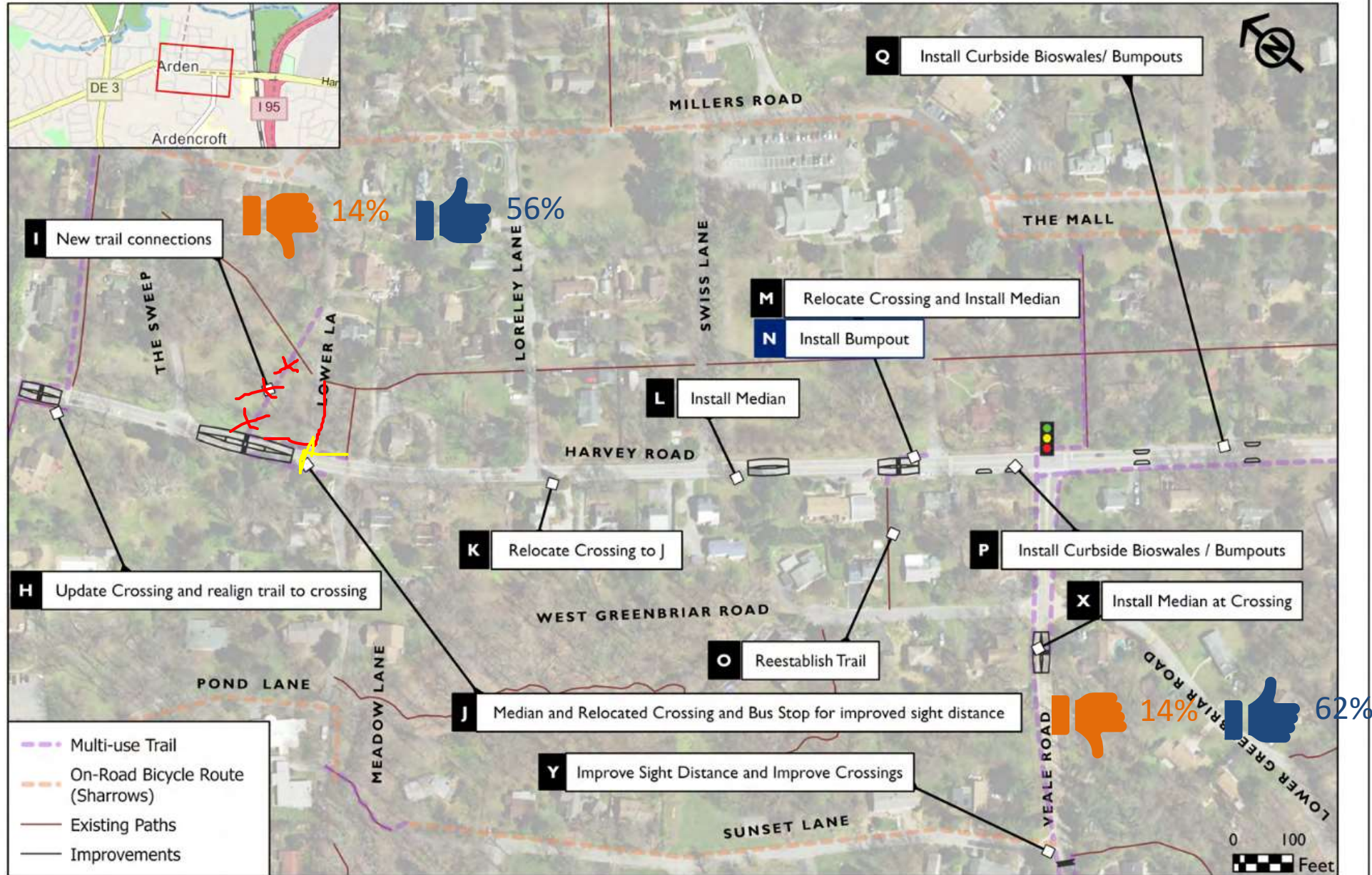
Goal 1: Manage vehicular speeds and deploy safety countermeasures



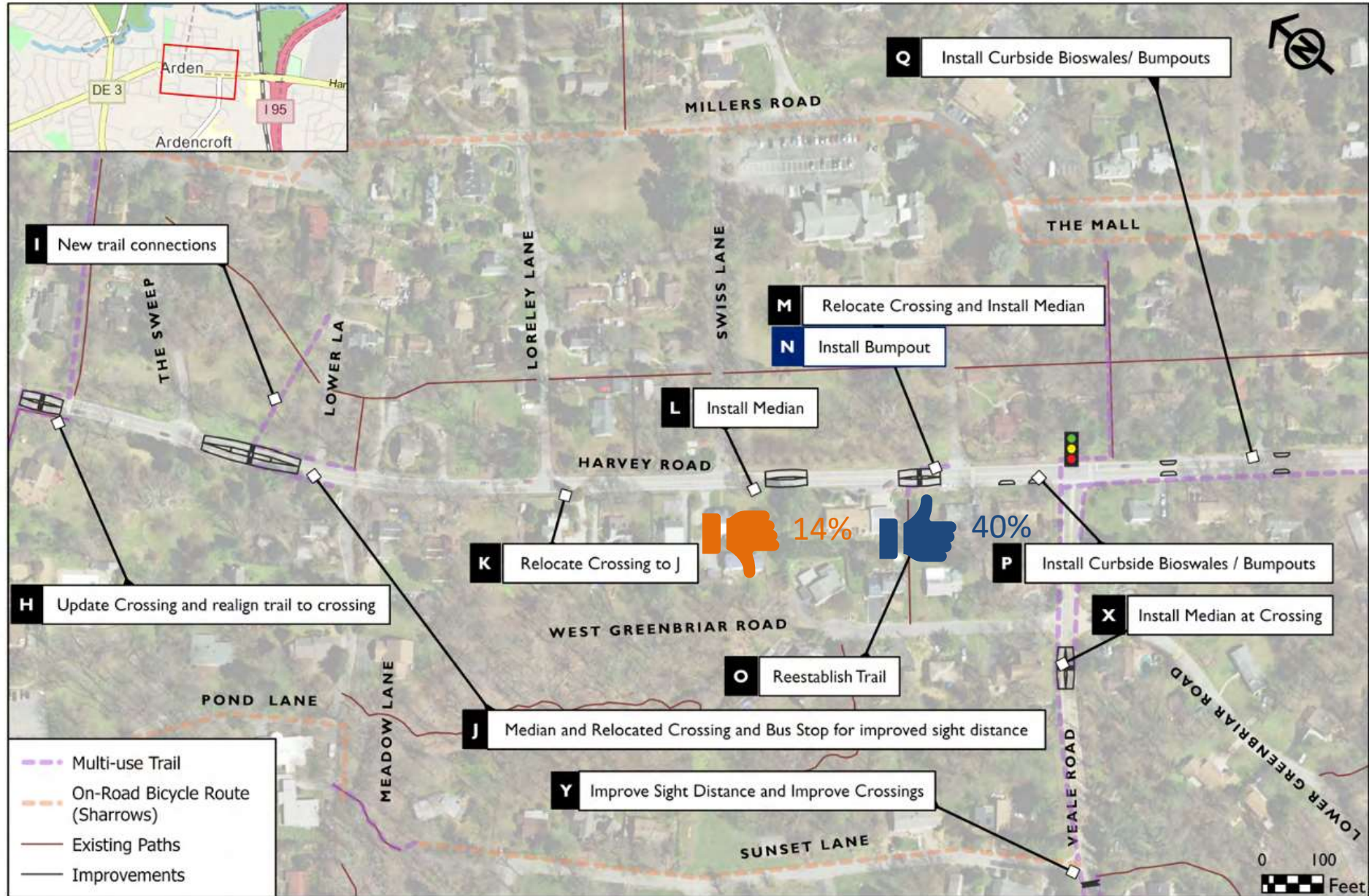
Goal 1: Manage vehicular speeds and deploy safety countermeasures



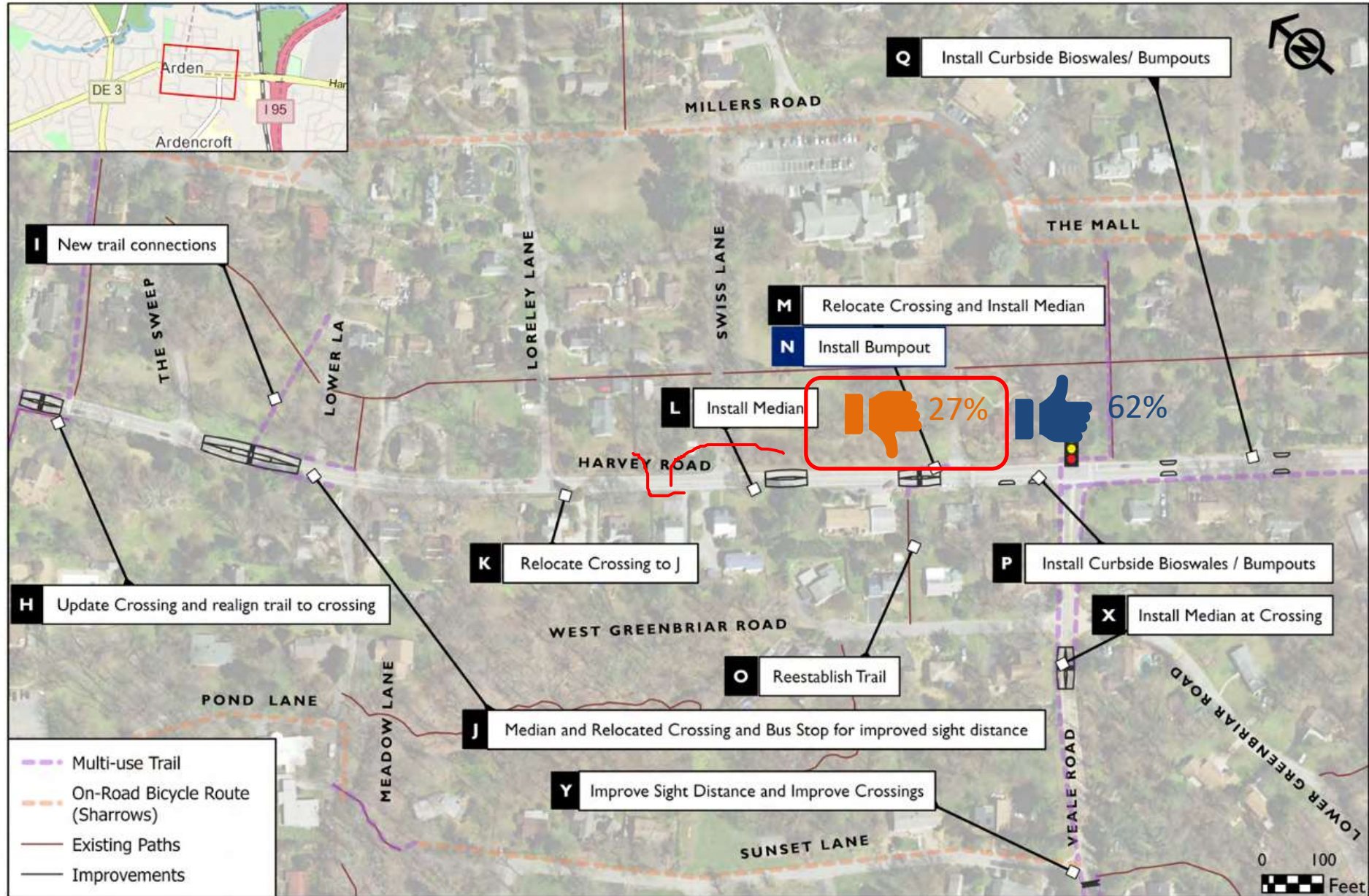
Goal 1: Manage vehicular speeds and deploy safety countermeasures



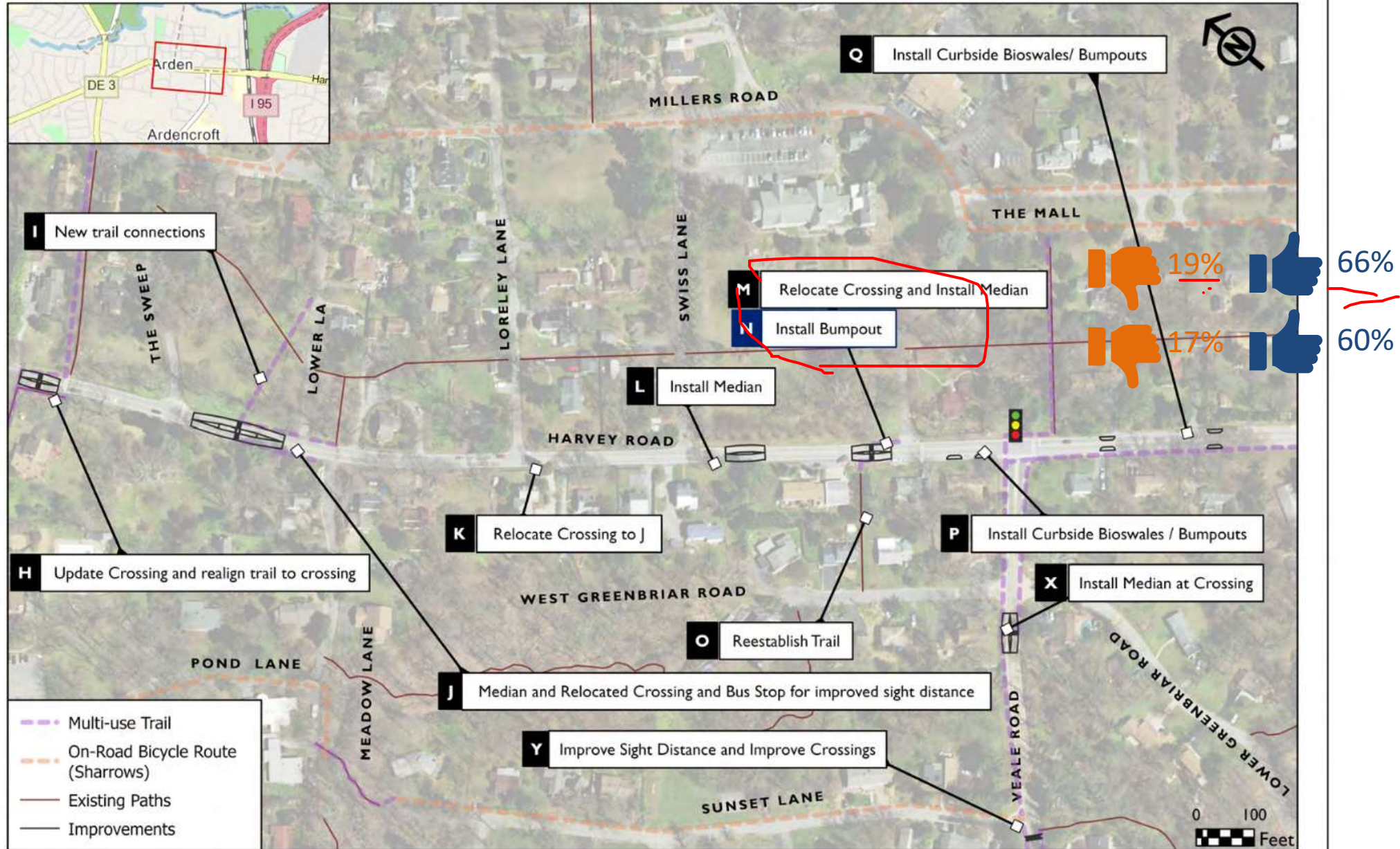
Goal 1: Manage vehicular speeds and deploy safety countermeasures



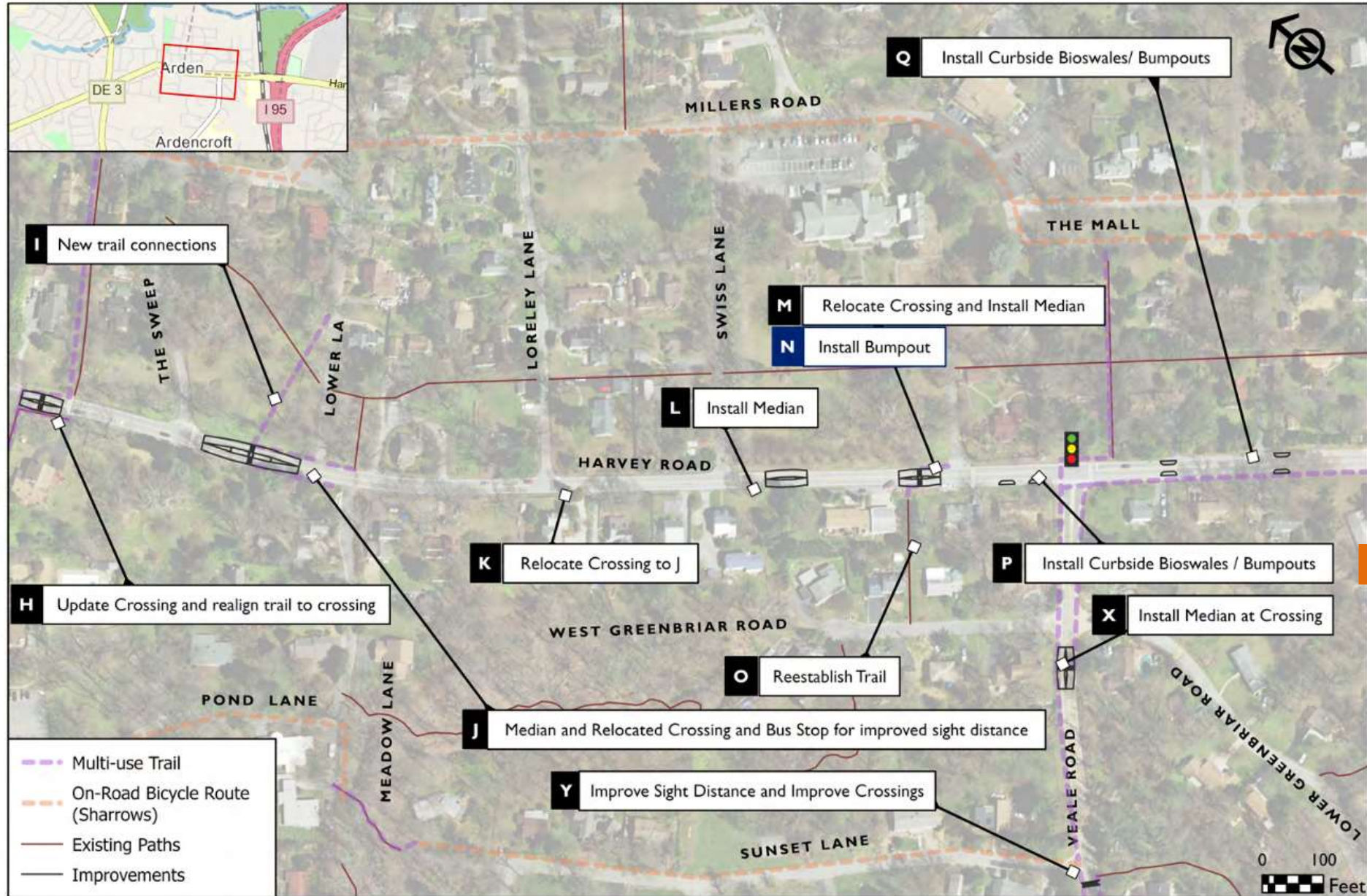
Goal 1: Manage vehicular speeds and deploy safety countermeasures



Goal 1: Manage vehicular speeds and deploy safety countermeasures

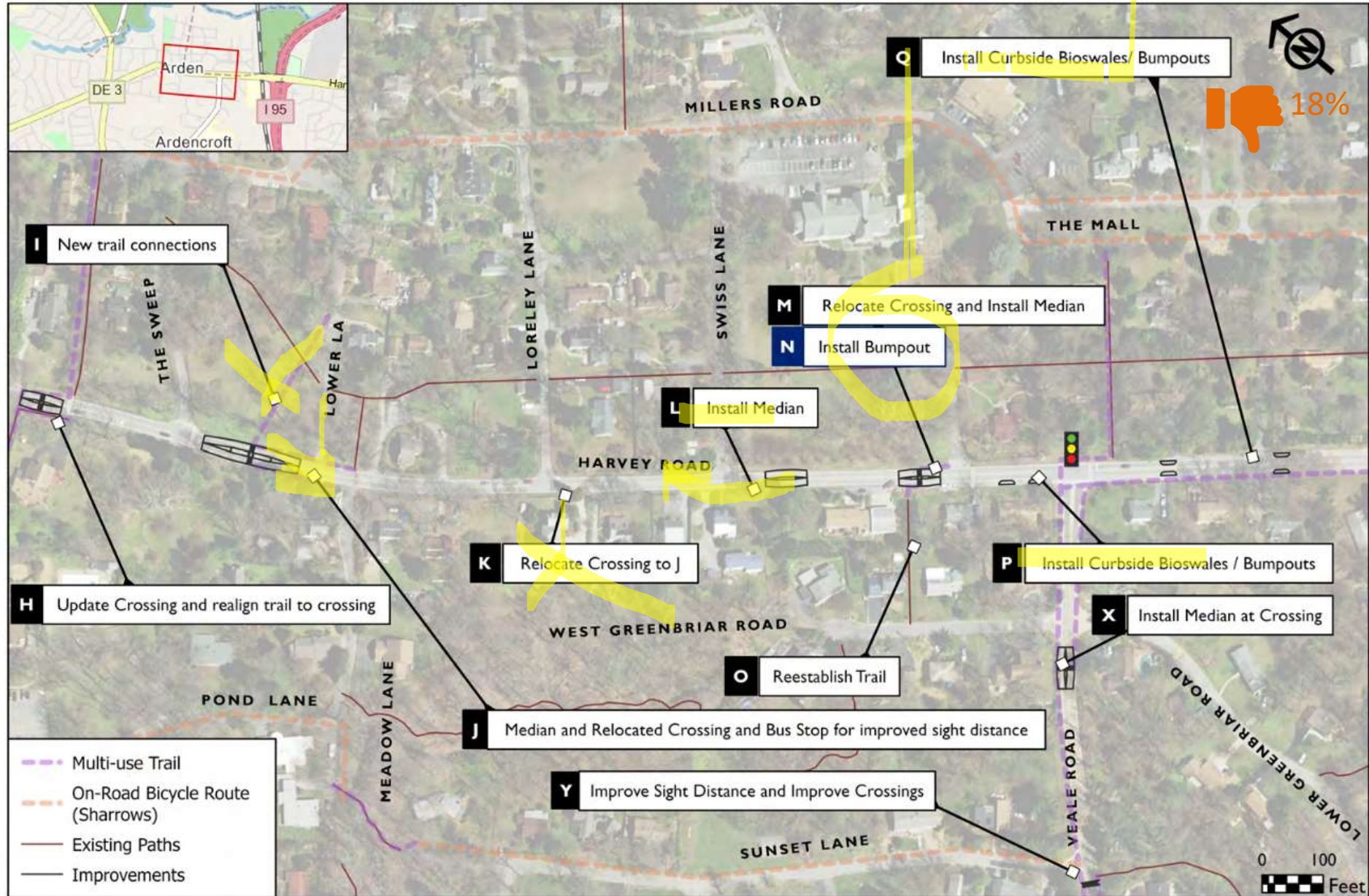


Goal 1: Manage vehicular speeds and deploy safety countermeasures



👎 16% 👍 66%

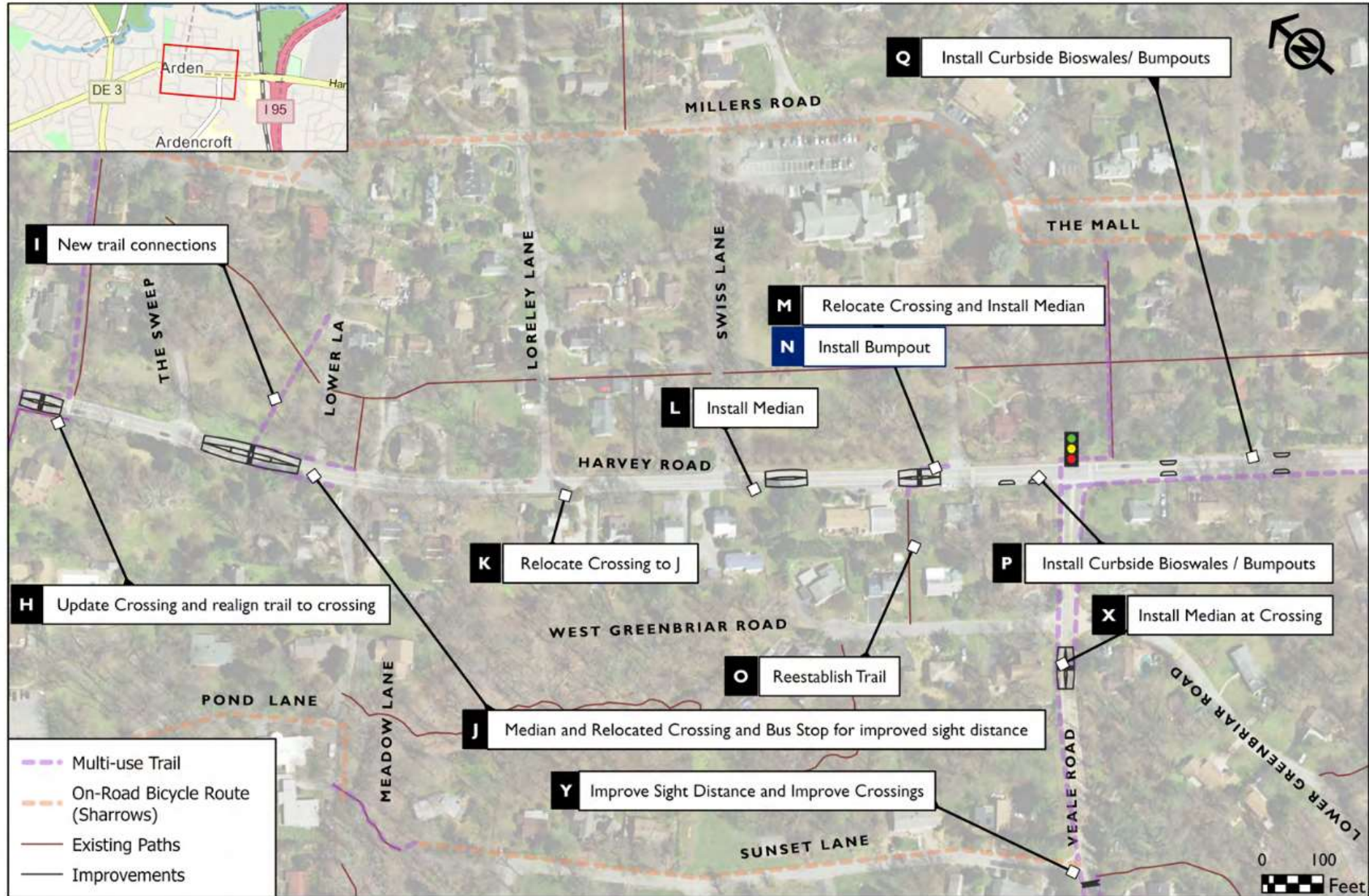
Goal 1: Manage vehicular speeds and deploy safety countermeasures



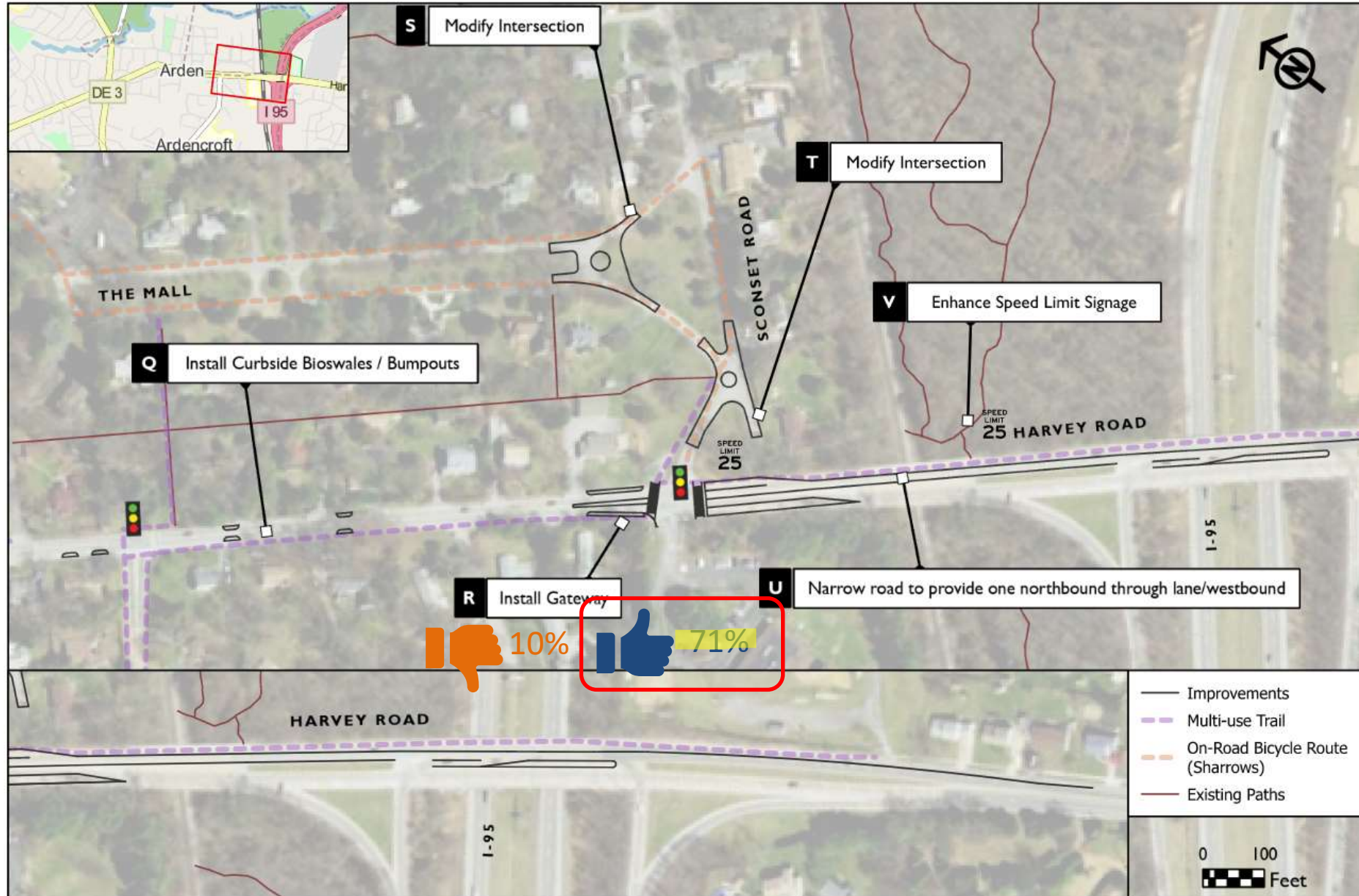
18%

61%

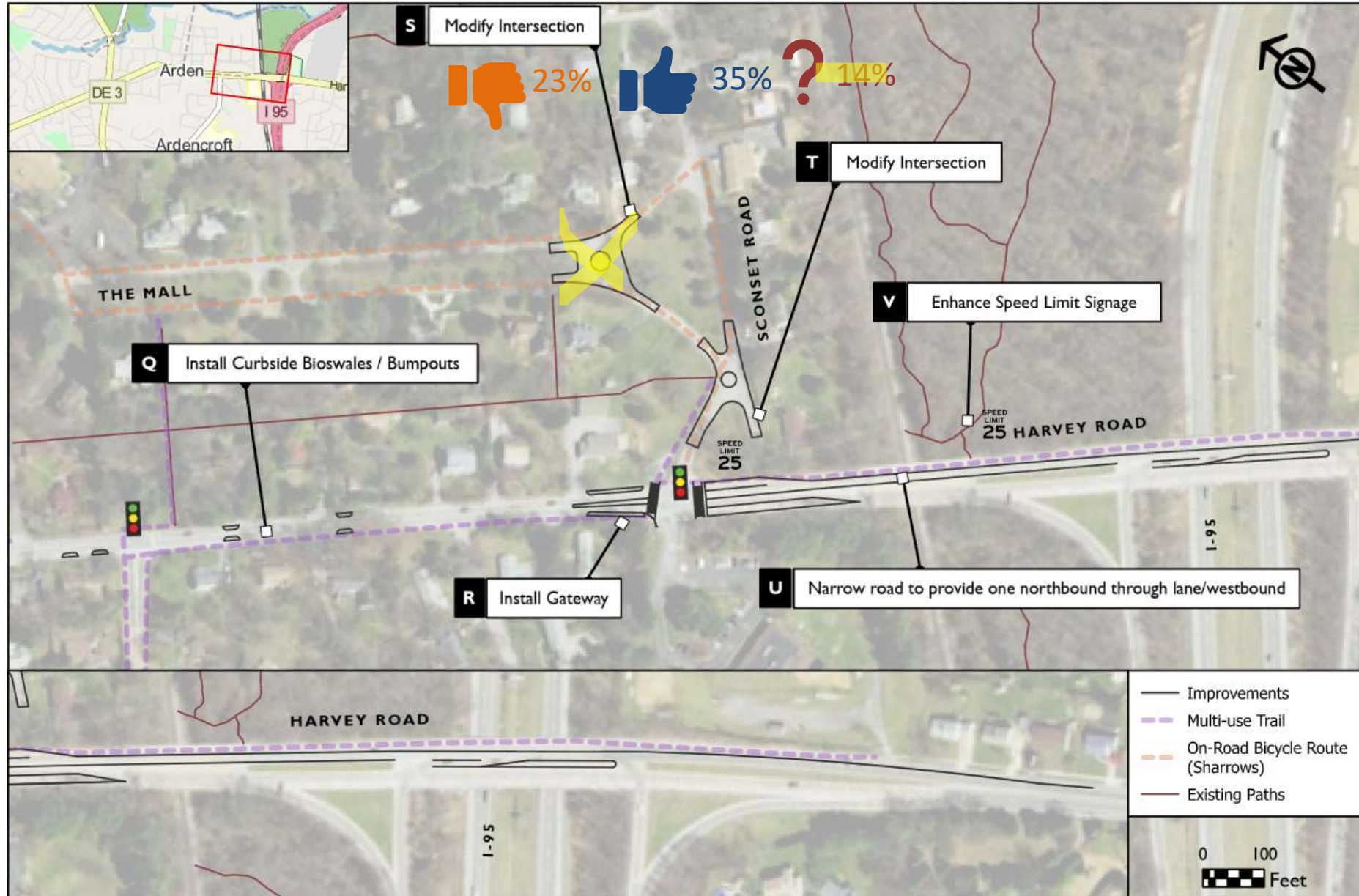
Goal 1: Manage vehicular speeds and deploy safety countermeasures



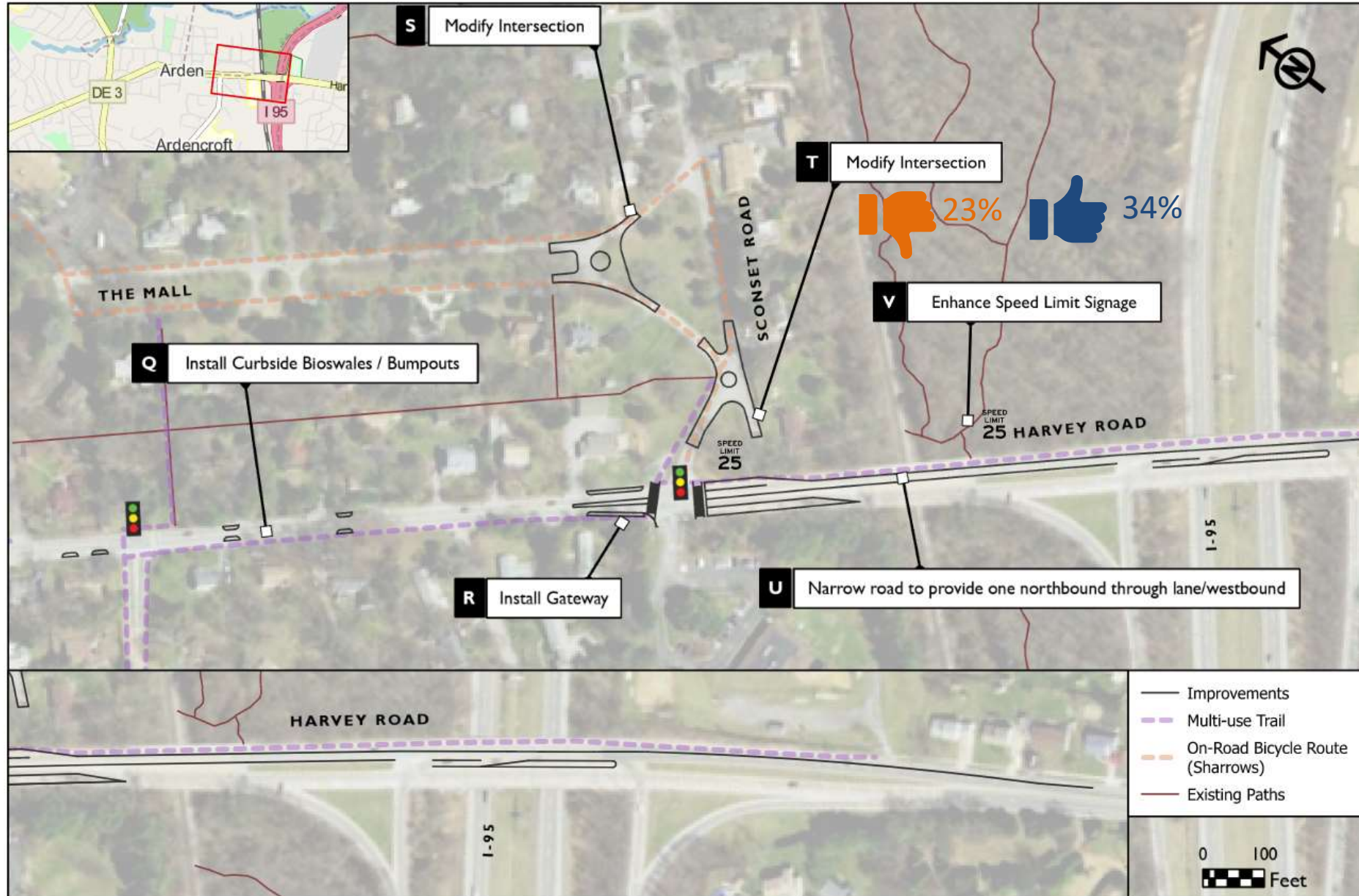
Goal 1: Manage vehicular speeds and deploy safety countermeasures



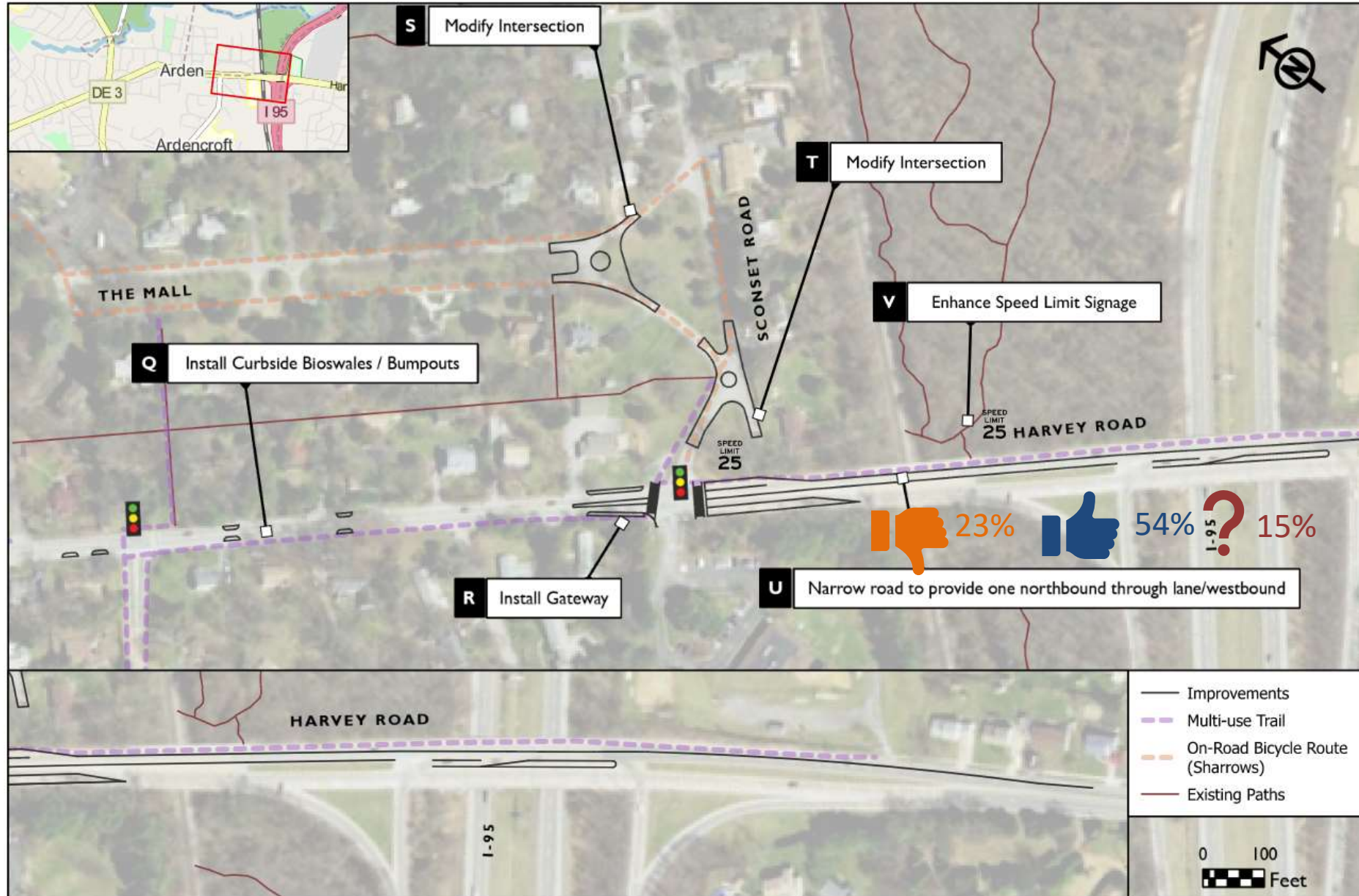
Goal I: Manage vehicular speeds and deploy safety countermeasures



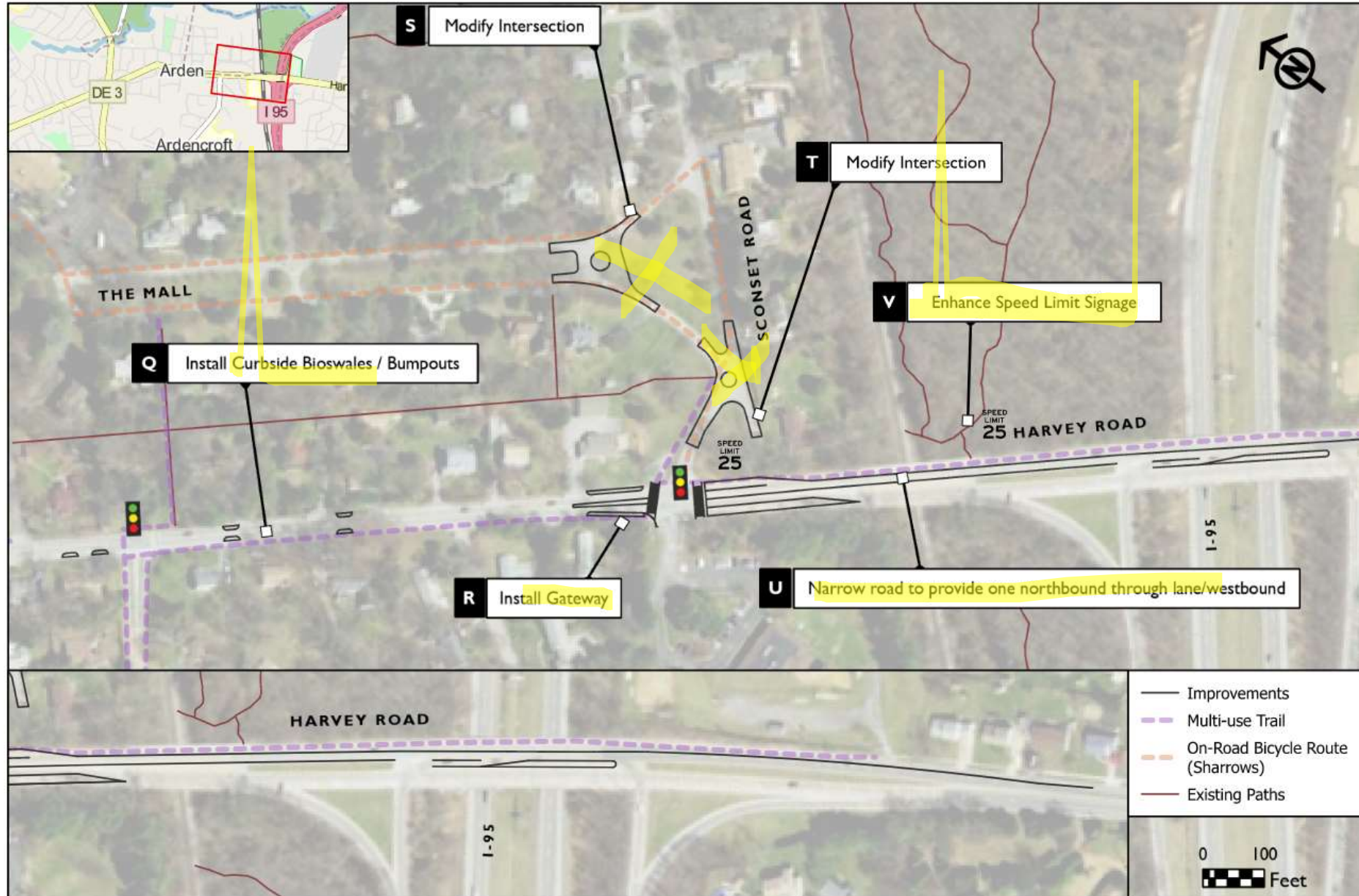
Goal 1: Manage vehicular speeds and deploy safety countermeasures



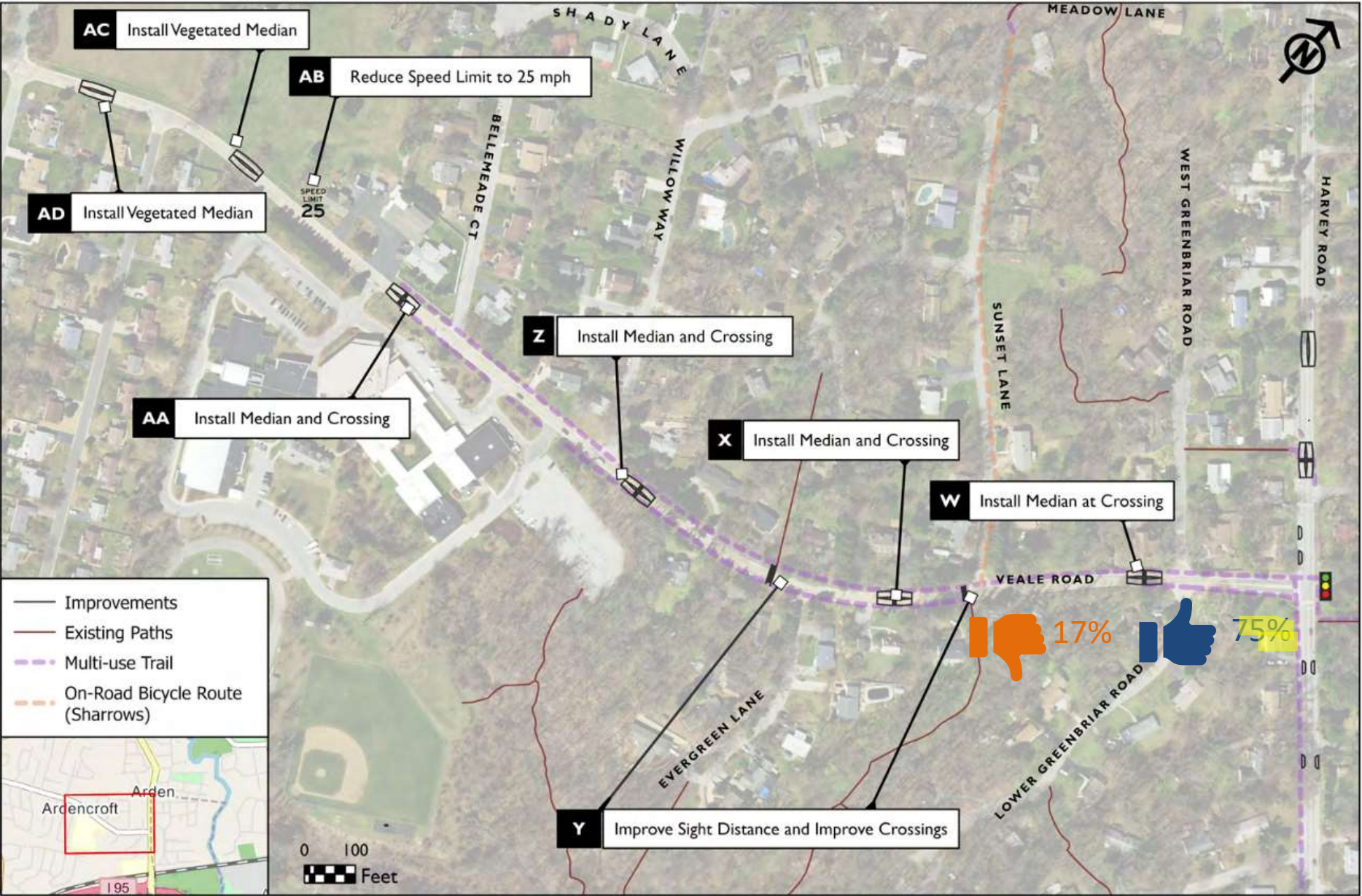
Goal I: Manage vehicular speeds and deploy safety countermeasures



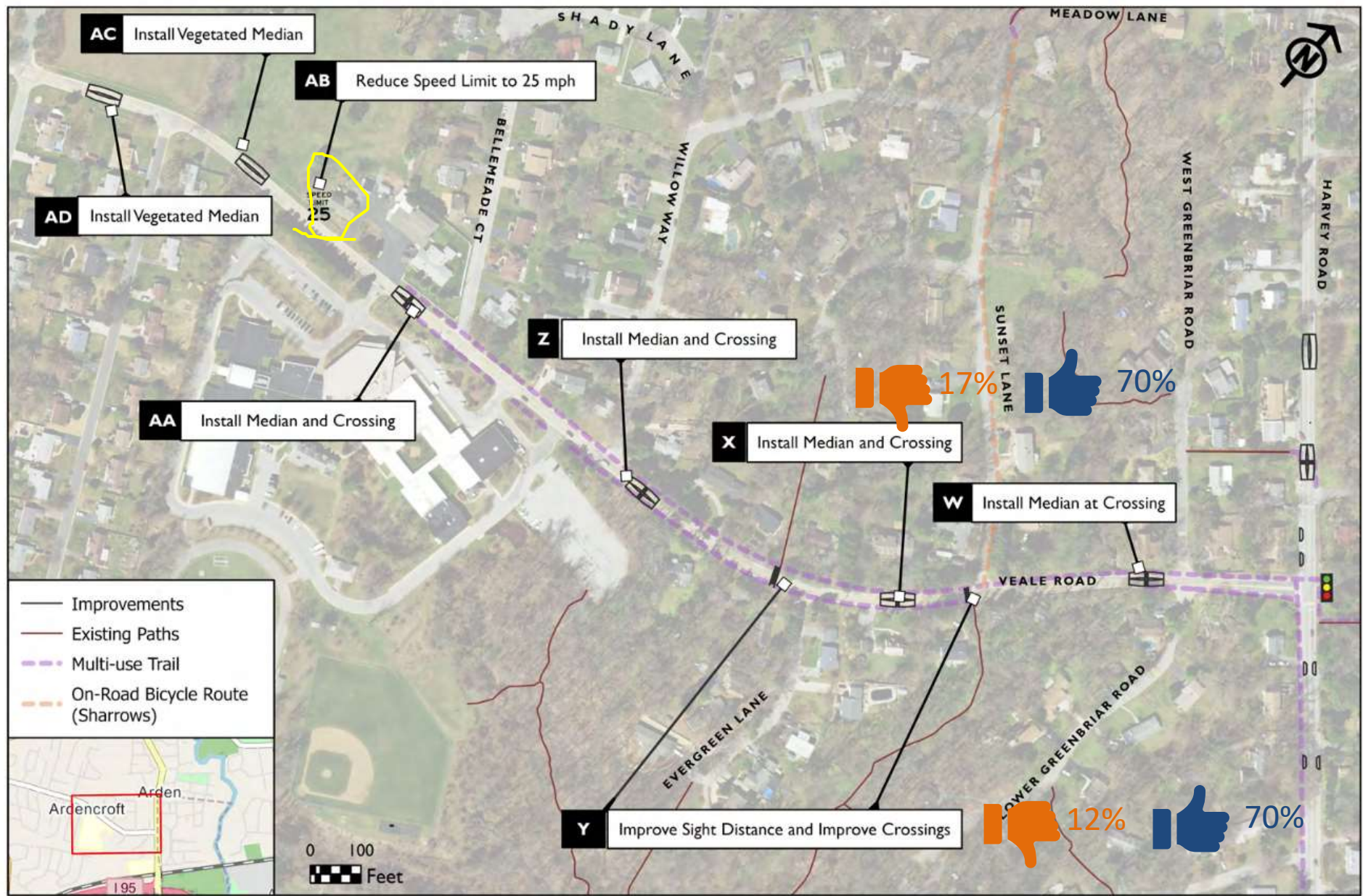
Goal 1: Manage vehicular speeds and deploy safety countermeasures



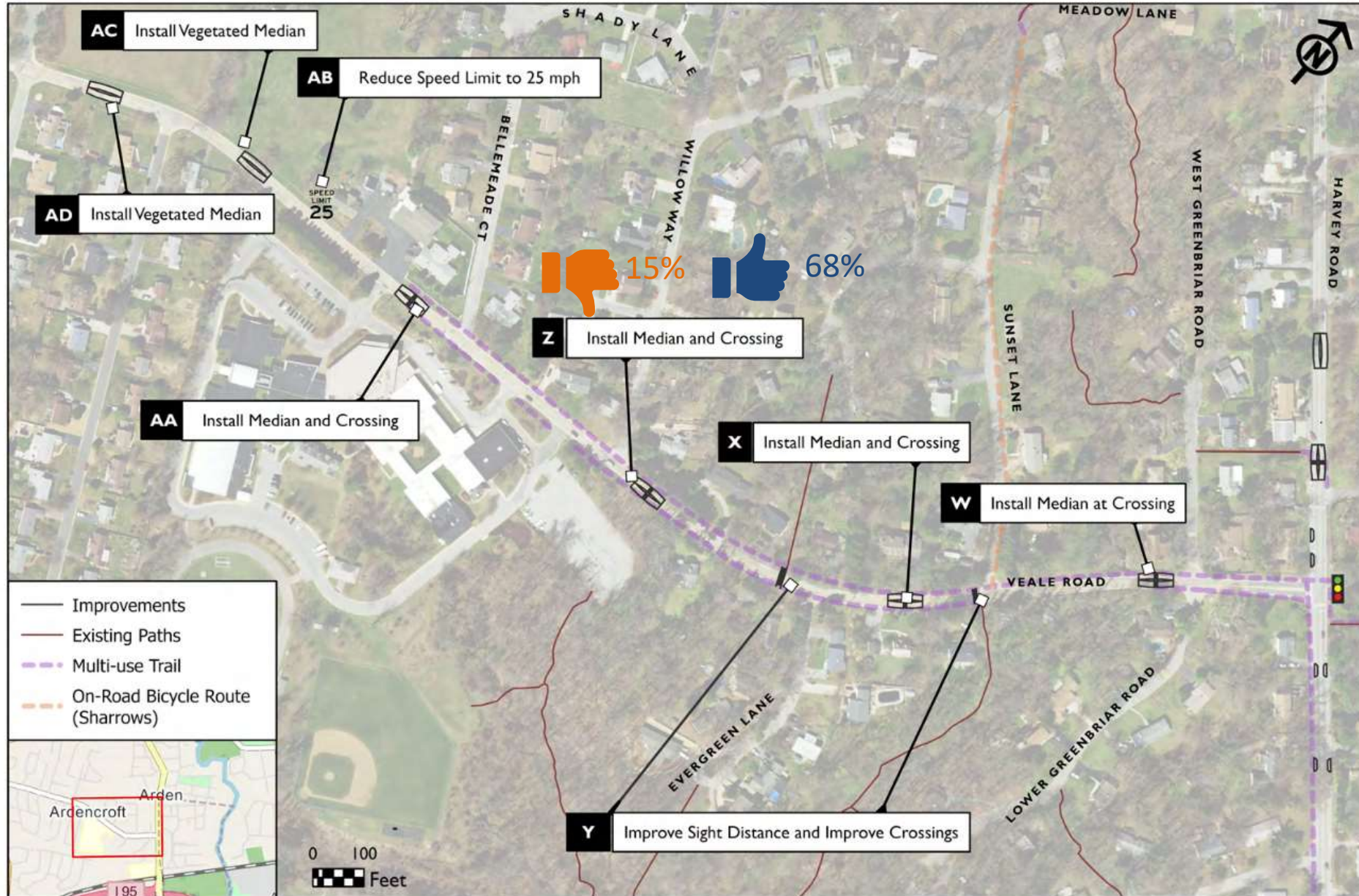
Goal 1: Manage vehicular speeds and deploy safety countermeasures



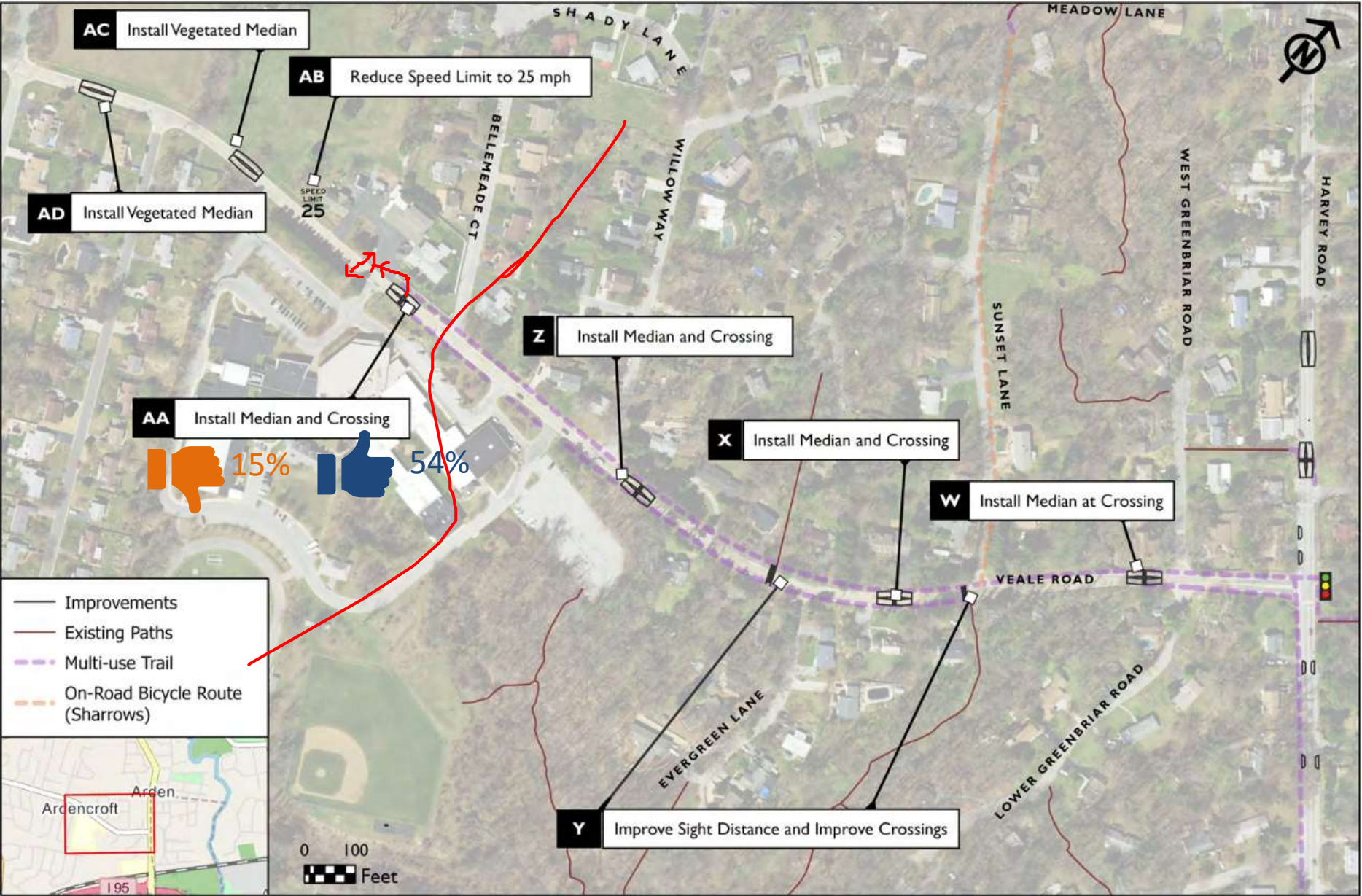
Goal 1: Manage vehicular speeds and deploy safety countermeasures



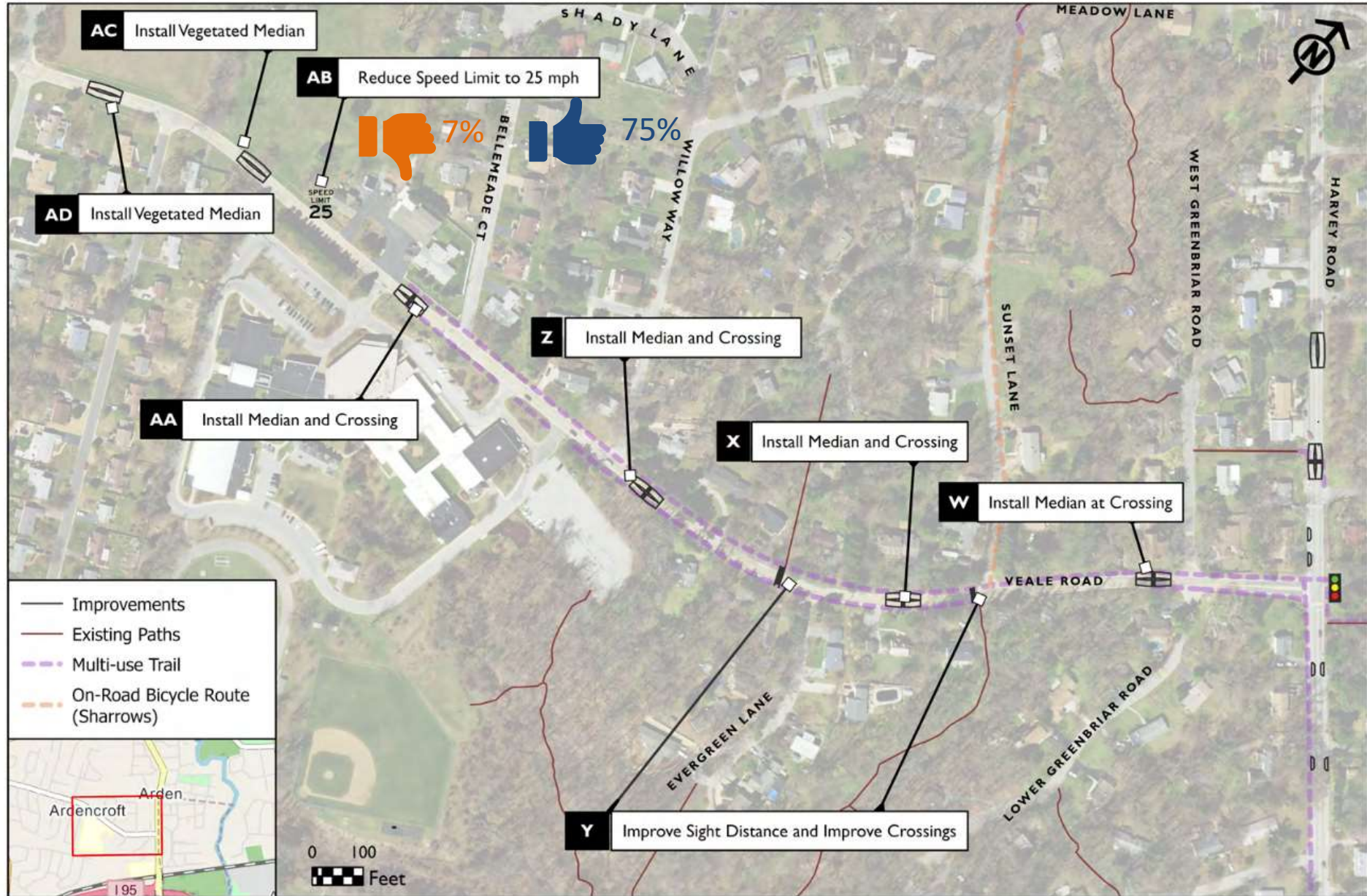
Goal 1: Manage vehicular speeds and deploy safety countermeasures



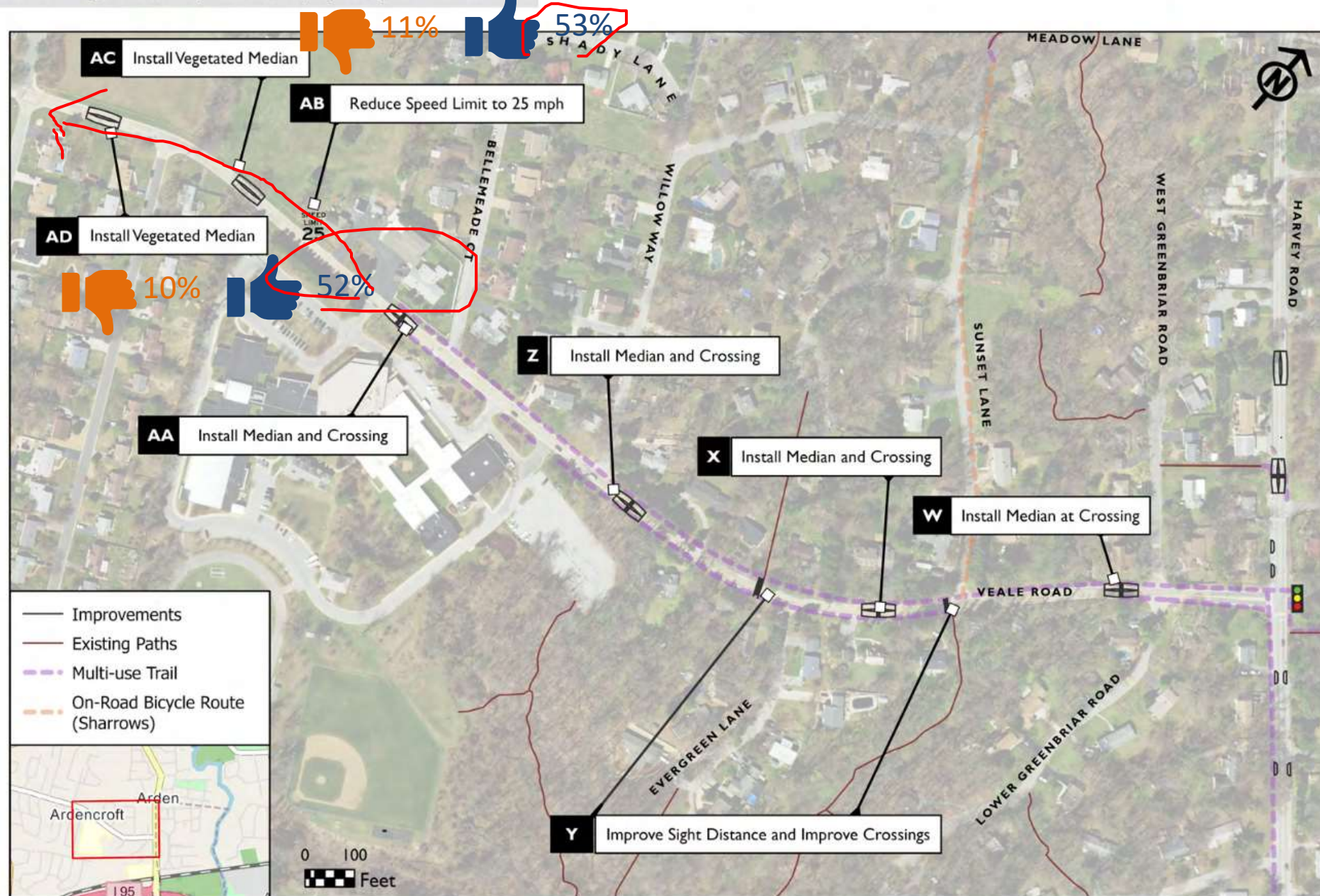
Goal 1: Manage vehicular speeds and deploy safety countermeasures



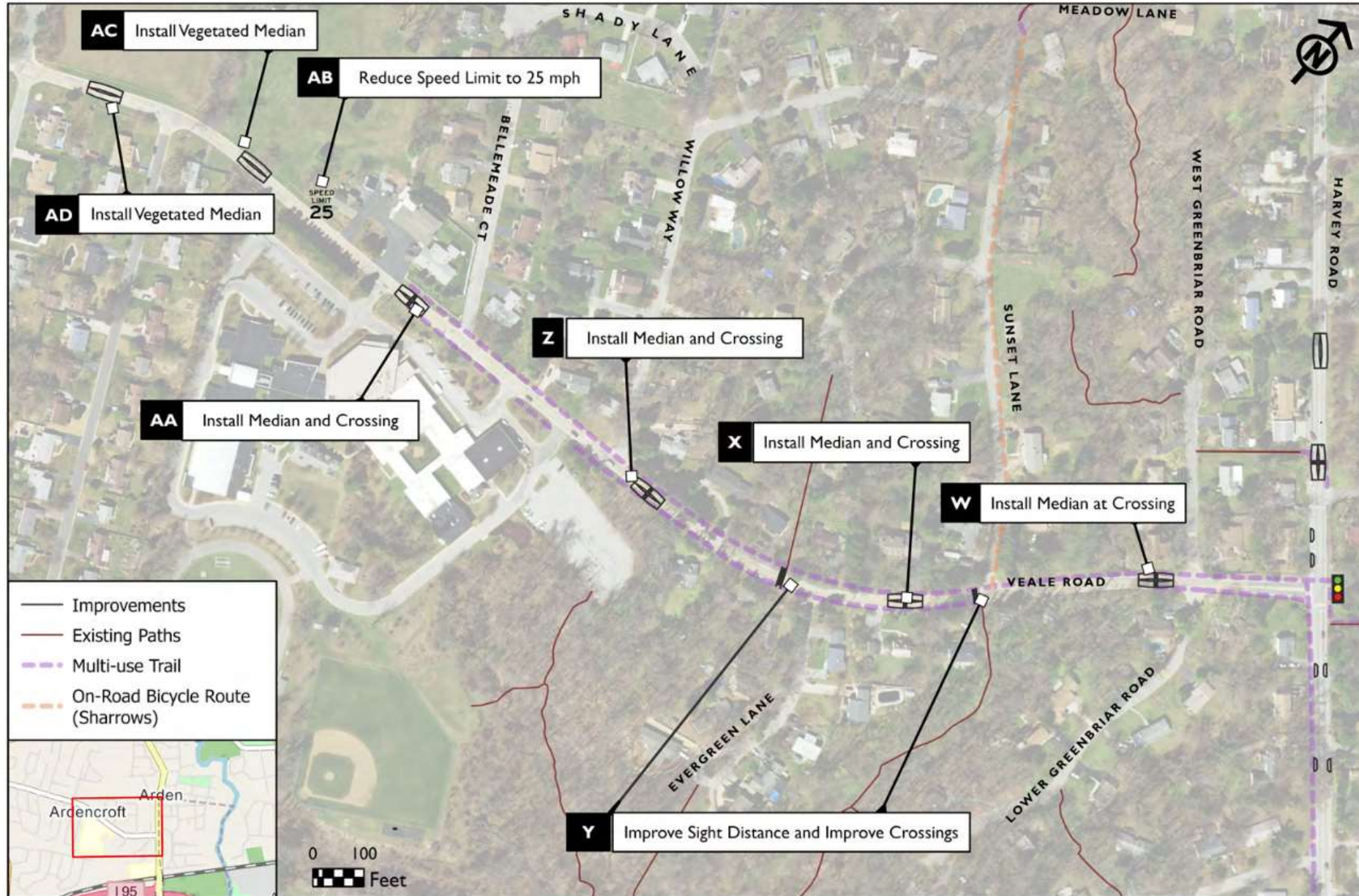
Goal 1: Manage vehicular speeds and deploy safety countermeasures

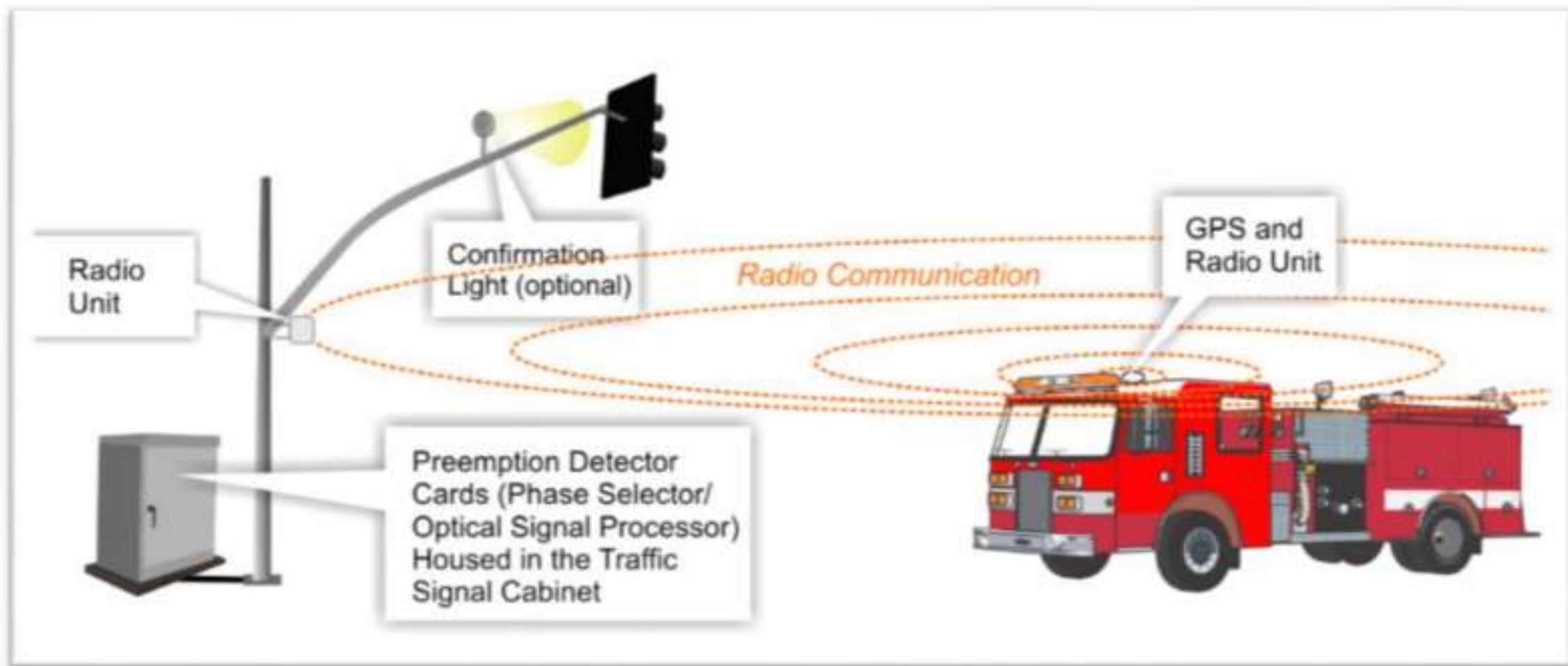


Goal 1: Manage vehicular speeds and deploy safety countermeasures



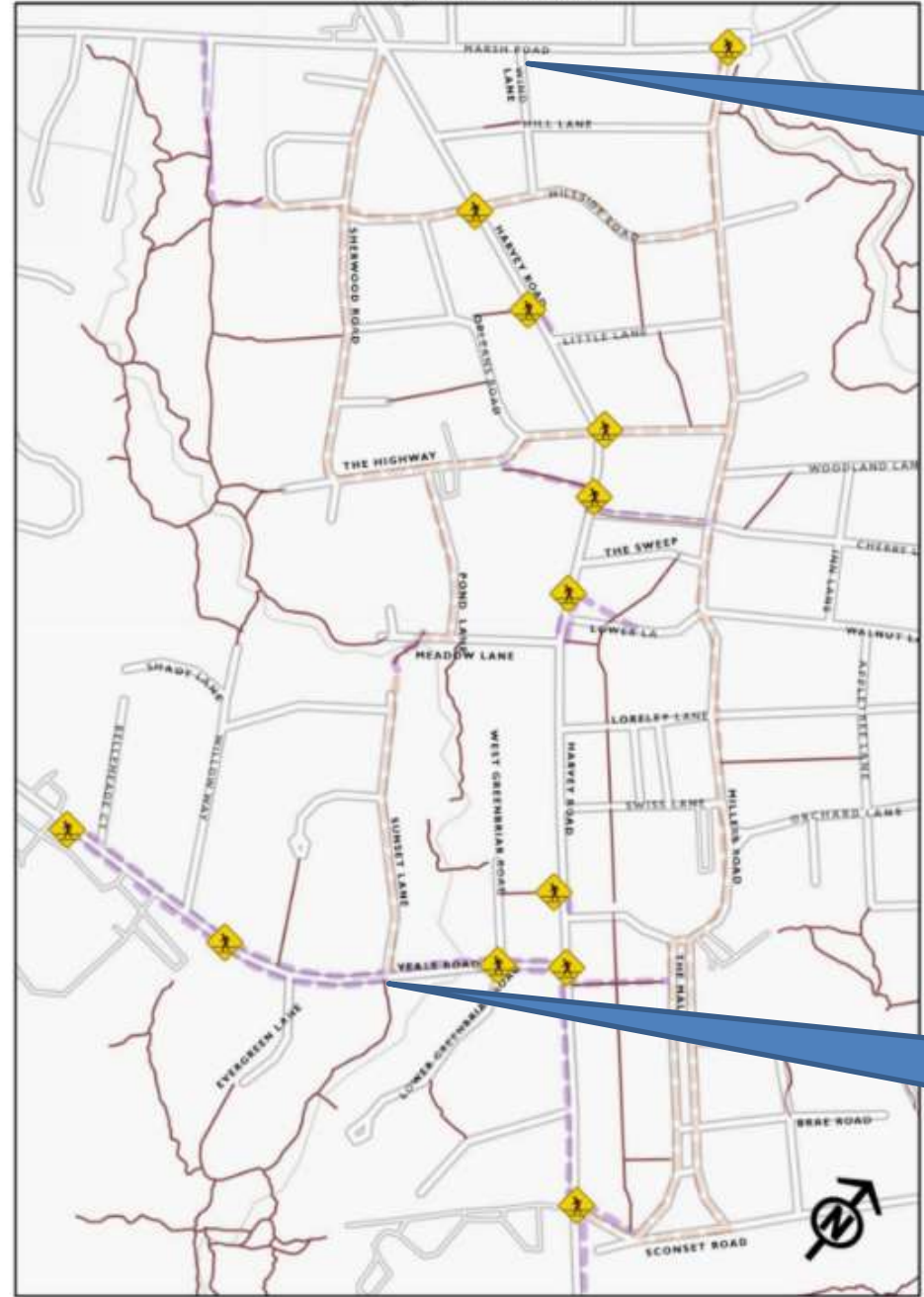
Goal 1: Manage vehicular speeds and deploy safety countermeasures





Goal 3: Provide Enhanced Pedestrian Crossings

Key Crossing Locations



Wind Lane and
Marsh Road

Sunset Ln and
Veale

Goal 4: Enhance Transit / School bus stops

Alternative 4-A: Modern/Sleek



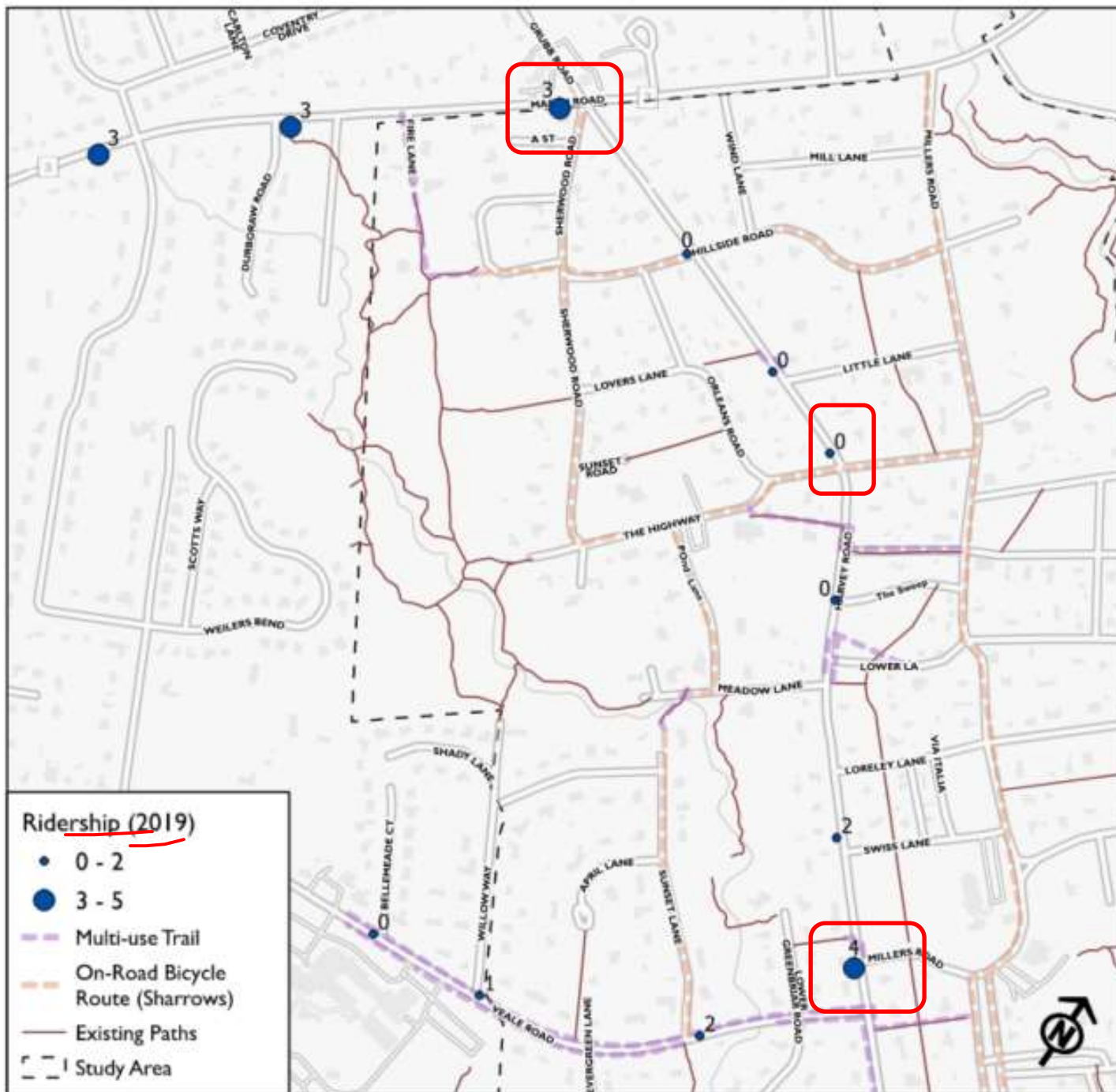
Alternative 4-B: Traditional



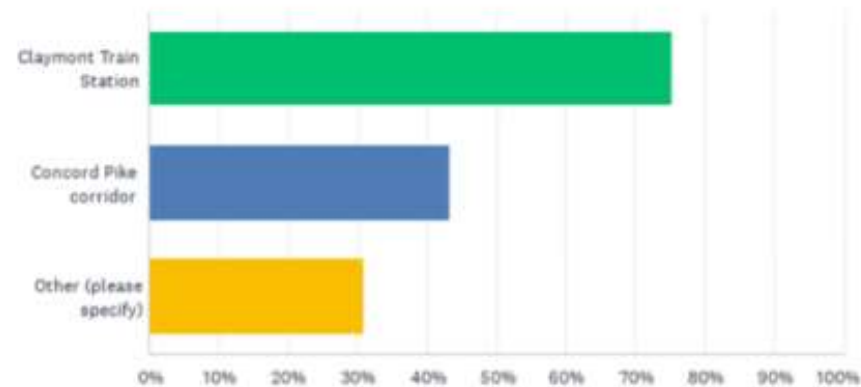
Alternative 4-C: Wooden Bus Stop



| | 1 | 2 | 3 | TOTAL |
|----------------------|--------------|--------------|--------------|-------|
| 4-A: Modern/Sleek | 13.85% 9 | 35.38% 23 | 50.77% 33 | 65 |
| 4-B: Traditional | 9.23% 6 | 52.31% 34 | 38.46% 25 | 65 |
| 4-C: Wooden Bus Stop | 77.27% 51 | 12.12% 8 | 10.61% 7 | 66 |



Q16 Where would you like to be able to go on the bus?



Respondents chose "Claymont Train Station" as the top destination to travel to by bus.

OTHER RESPONSES:

Wilmington is still a good destination but the options above make bus more attractive.

Library, airport,

Downtown Wilmington, DAMuseum, Wilm train station

Marcus Hook Train Station, Bus connection area near HomeDepot, To/From Wilmington after 7:00pm

Brandywine Hundred and Claymont libraries; Downtown Wilmington

Claymont Library

Preferably the new station

Branmar Plaza

Riverfront Wilmington

Phila Airport

Bellevue State Park

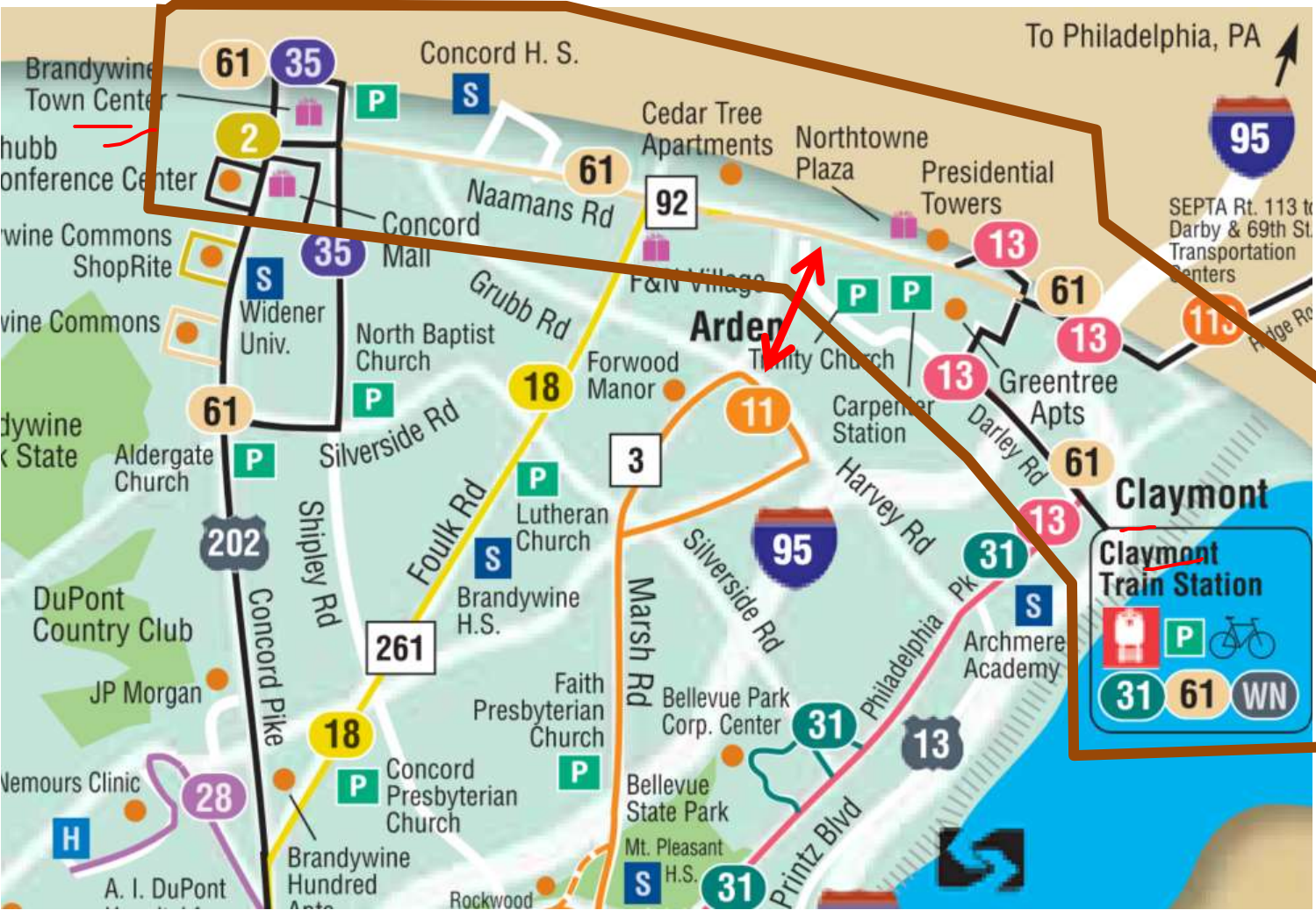
Wilmington

Biden train station

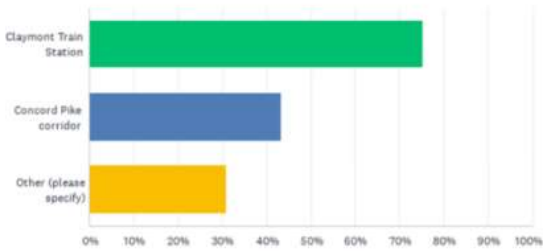
Trolley Square

Wilmington Train station

Marcus Hook train station



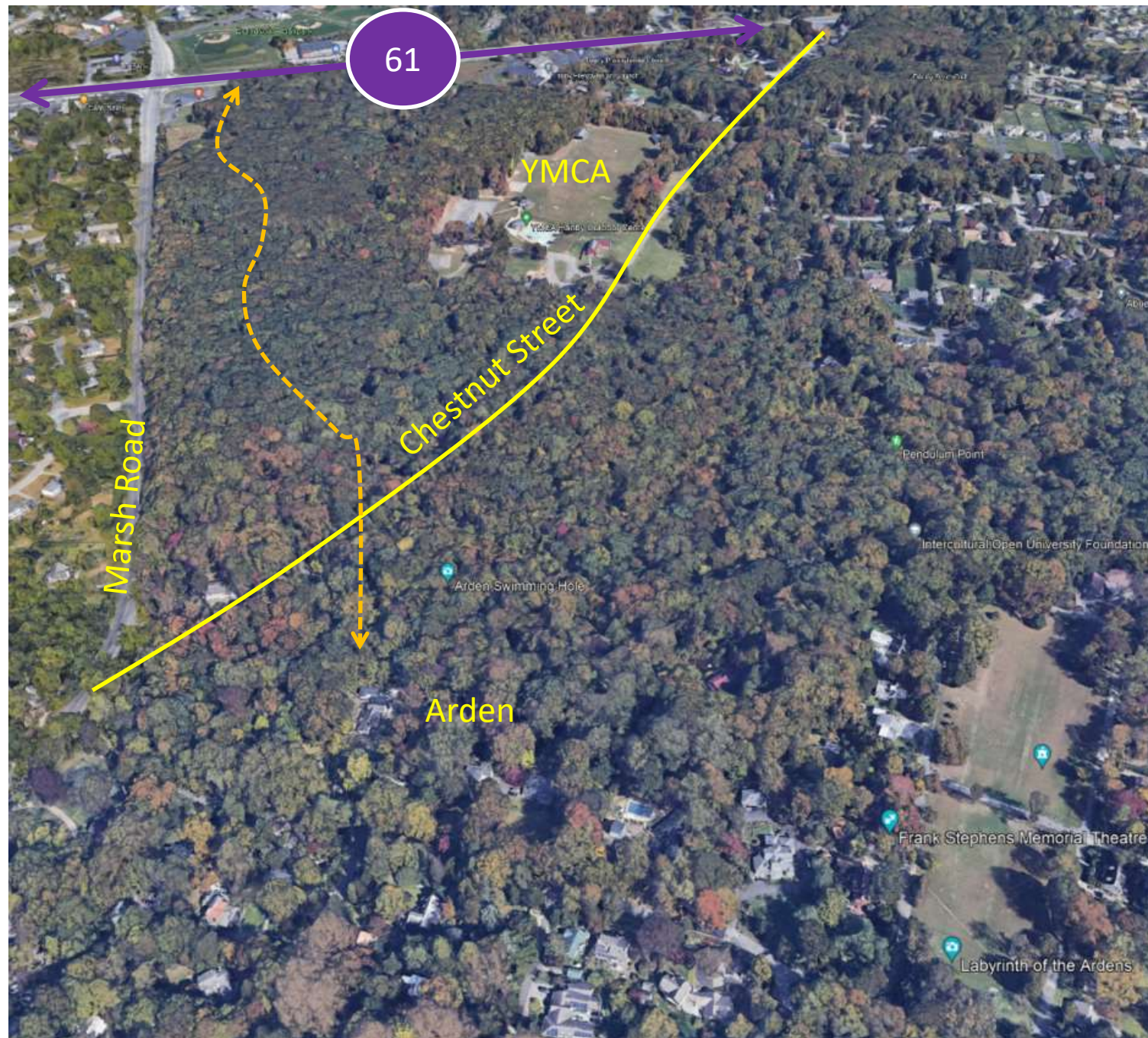
Q16 Where would you like to be able to go on the bus?



Respondents chose "Claymont Train Station" as the top destination to travel to by bus.

OTHER RESPONSES:

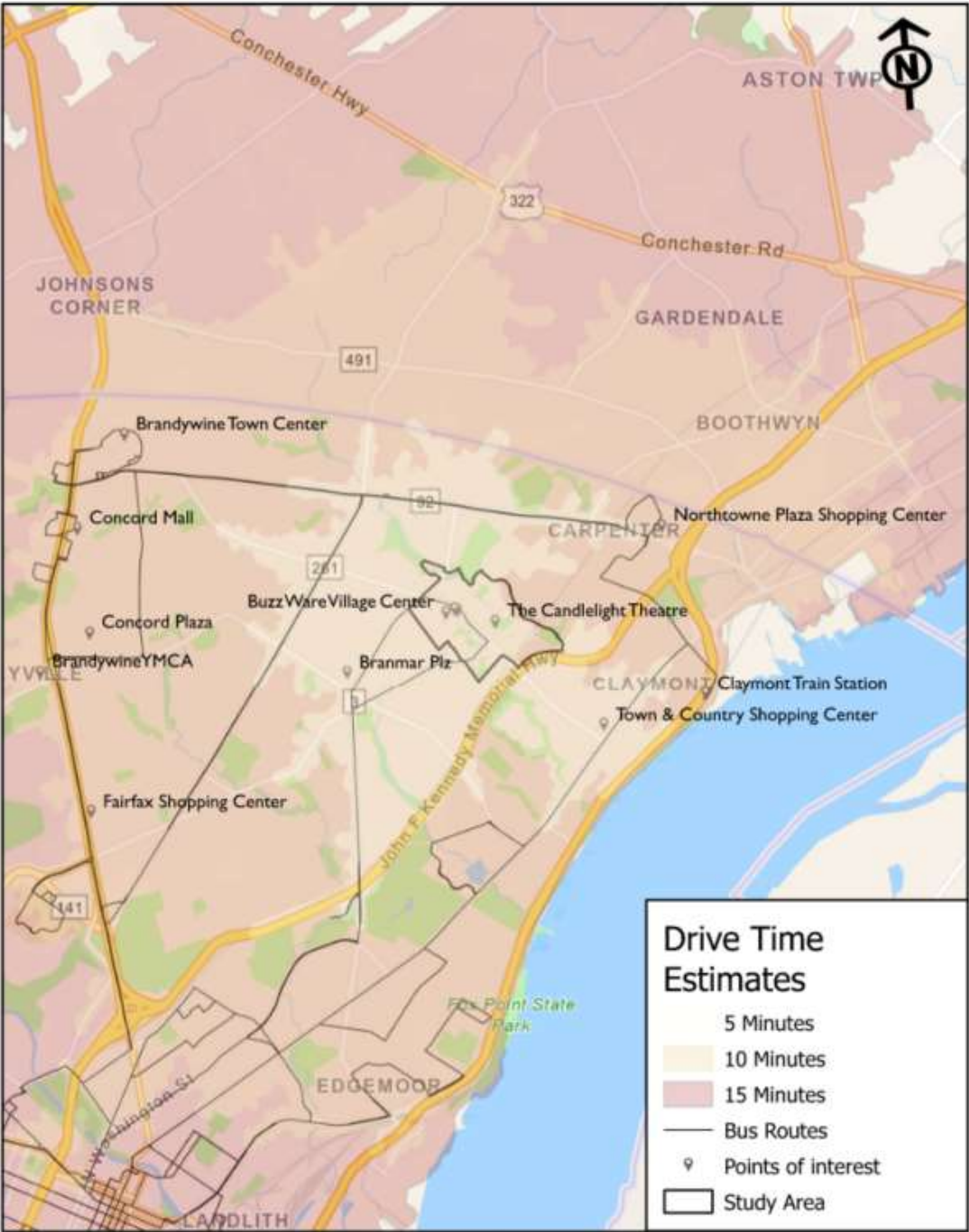
- Wilmington is still a good destination but the options above make bus more attractive.
- Library, airport,
- Downtown Wilmington, DAMuseum, Wilm train station
- Marcus Hook Train Station, Bus connection area near HomeDepot, To/From Wilmington after 7:00pm
- Brandywine Hundred and Claymont libraries; Downtown Wilmington
- Claymont Library
- Preferably the new station
- Branmar Plaza
- Riverfront Wilmington
- Phila Airport
- Bellevue State Park
- Wilmington
- Biden train station
- Trolley Square
- Wilmington Train station
- Marcus Hook train station





What is DART Connect?

DART Connect is a rideshare-like transit experience that uses smaller vehicles to provide bus service on-demand to customers. DART Connect uses the same vehicles and will be operated by the same DART drivers, while offering customers more direct, convenient and frequent trips to dozens of new destinations. DART Connect currently operates in the Georgetown/Millsboro area. The map below shows the existing service area in Sussex County.



Path to Plan Acceptance

Project Schedule + Next Steps

- ❑ Draft Plan by 5/8
- ❑ Steering Committee meeting: 5/23

Plan Acceptance in June:

- Ardentown – (Feb/May); 2nd Monday
- Ardencroft (May / July); 3rd Thursday
- Arden – 4th Monday (June)



Special Meeting? Joint?



Begin with Advisory Committee...

An aerial photograph of a suburban street intersection. A two-lane road runs vertically, intersecting with a wider road that runs horizontally from the bottom left towards the center. The area is heavily wooded with trees showing autumn foliage in shades of green, yellow, and orange. A brick house with a dark roof is visible on the left side of the vertical road. Several cars are visible on the roads. In the bottom right corner, there is a large, semi-transparent graphic element consisting of a white '1' and a large '0' that form part of the page number '10'.

10

Appendix Ten
Task 1 Report - Issues, Opportunities, and Constraints

Ardens Transportation Plan
Task 1 Report
Identify Issues, Opportunities, and Constraints

July 2022

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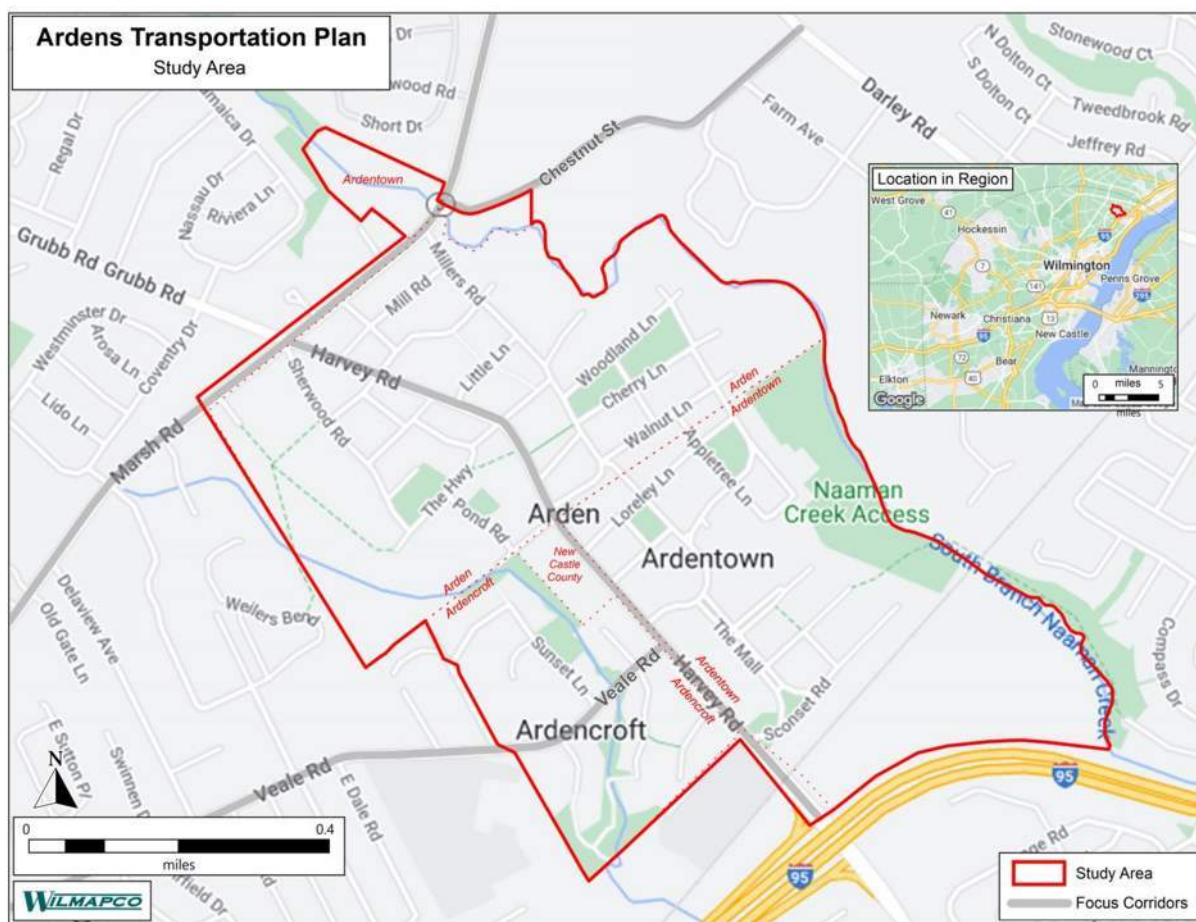
| | |
|---|----|
| Introduction | 3 |
| Demographics | 4 |
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| Land Use/Land Cover | 5 |
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Introduction

The Ardens Transportation Plan will address transportation issues common among the villages of Arden, Ardentown, and Ardencroft, with a focus on calming traffic and increasing access and safety for active transportation. This plan will build on and integrate with prior efforts including the villages' foundational plans, Arden's [Water Quality Master Plan](#), the [Ardentown Paths Plan](#), and the Wilmington Montessori [Safe Routes to School](#) Plan.

This report highlights existing demographics, transportation, and land use conditions in the study area, which comprises the three villages, as well as a small section of unincorporated New Castle County between them. This report also summarizes plans for future transportation investments in the study area. The contents of this report will help inform the recommendations of the Ardens Transportation Plan.

When viewing this report digitally, you can zoom in to the maps to see more detail. The maps will also be made available at wilmapco.org/ardens.

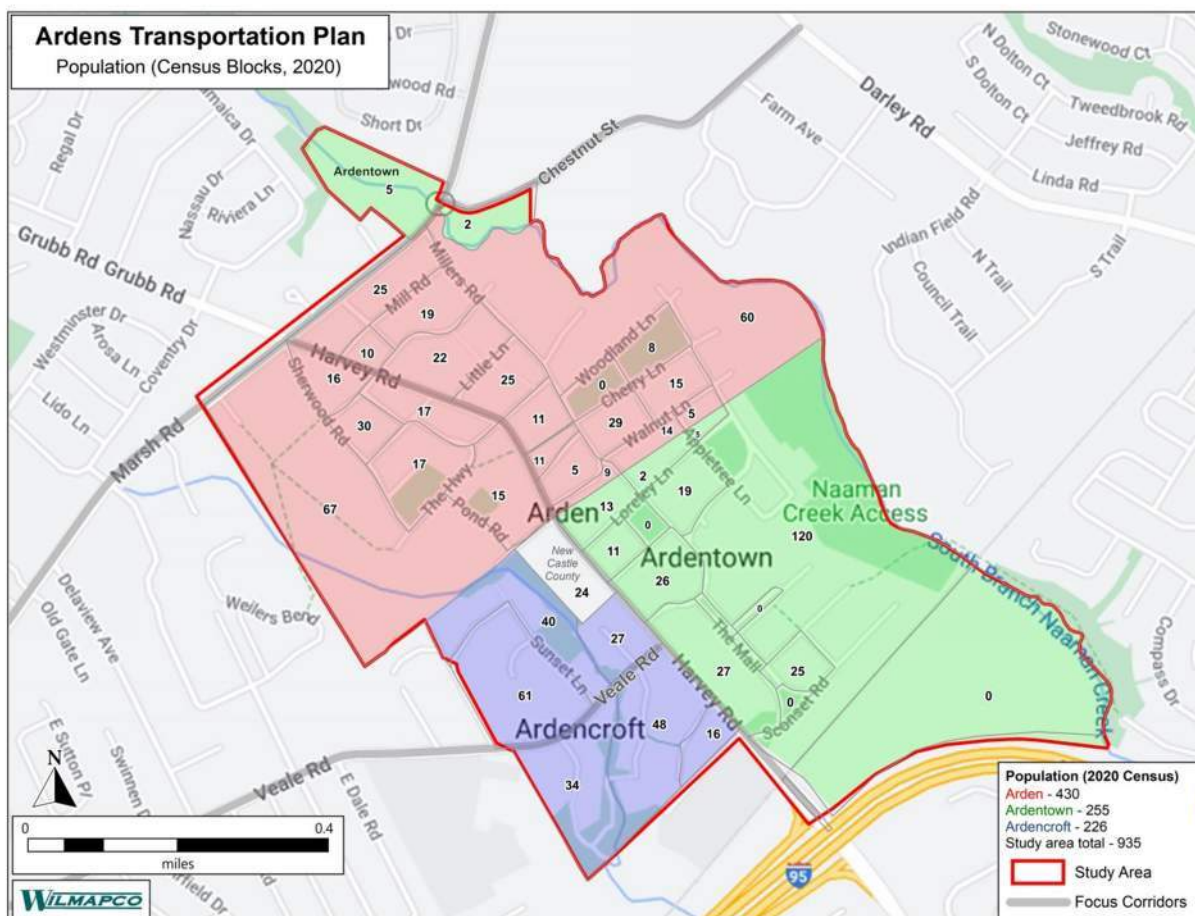


Demographics

According to the 2020 Census, 935 people live in the study area, including 24 in unincorporated New Castle County. Arden (pop. 430) is the largest and most populated of the three villages, followed by Ardentown (pop. 255) and Ardencroft (pop. 226). The study area is 0.58 square miles in size, with a population density of 1611 people per square mile.

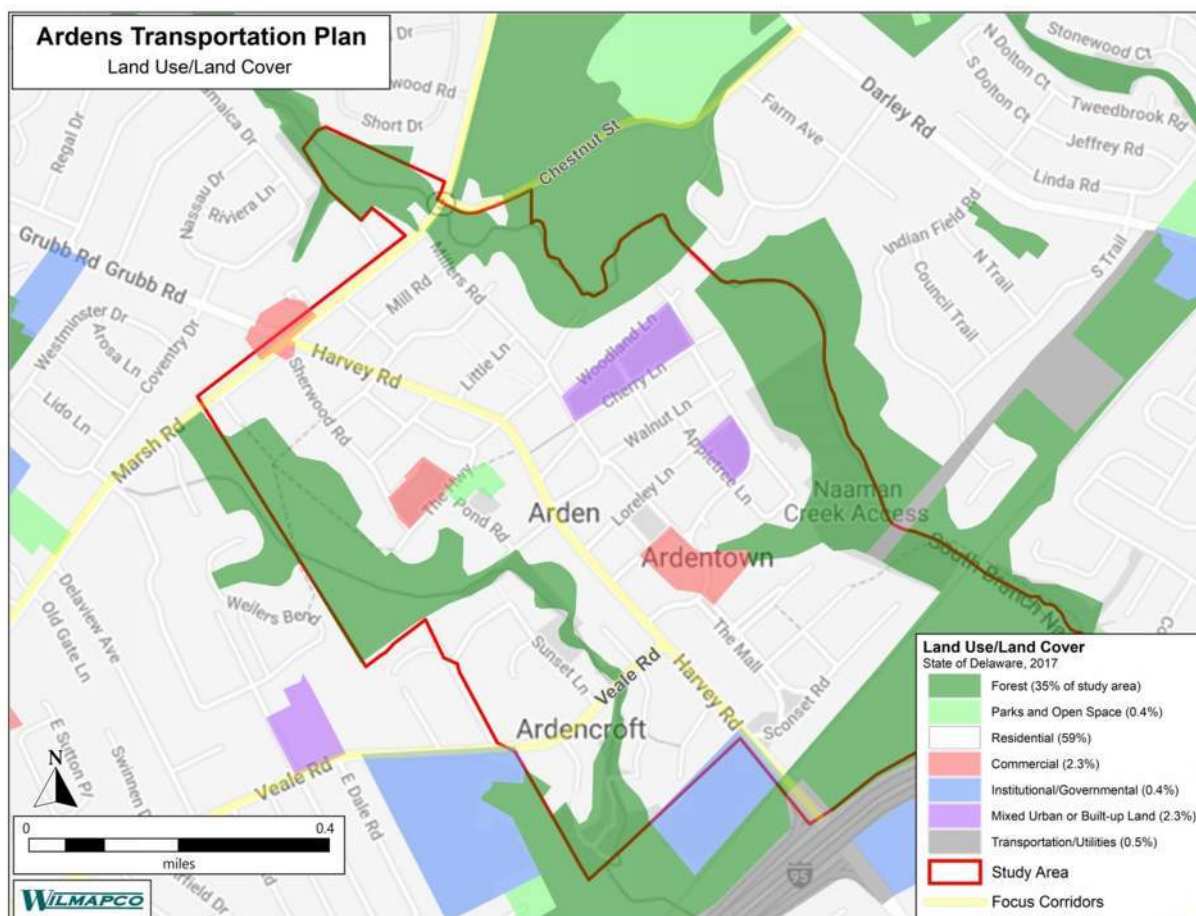
The study area is predominately (89%) non-Hispanic White, 2% non-Hispanic Black, and less than 1% non-Hispanic Asian, with the remaining 8% of the population identifying as other or mixed races. The median household income in Arden is \$78,125; in Ardentown, \$62,813; and in Ardencroft, \$103,438.

The study area was not identified as a tech desert (an area with limited computer or internet access), nor was it identified as an area with limited English proficiency. In the Census tract containing the study area, less than 3% of households do not have a computer, 9% of households do not have internet access, and 13% of residents aged 5 or older have limited English proficiency. 23% of residents are aged 65 or older, and 15% have a disability. Less than 2% of households do not have access to a vehicle.



Land Use/Land Cover

The vast majority of the study area consists of residential and forest land. Residential land covers 59% of the study area; however, much of the natural trees and shrubbery are preserved within this area. 35% of the study area consists of undeveloped forest. Less than 5% of the study area is dedicated to commercial uses, which include a community center, theatre, art museum, and an assisted living facility.

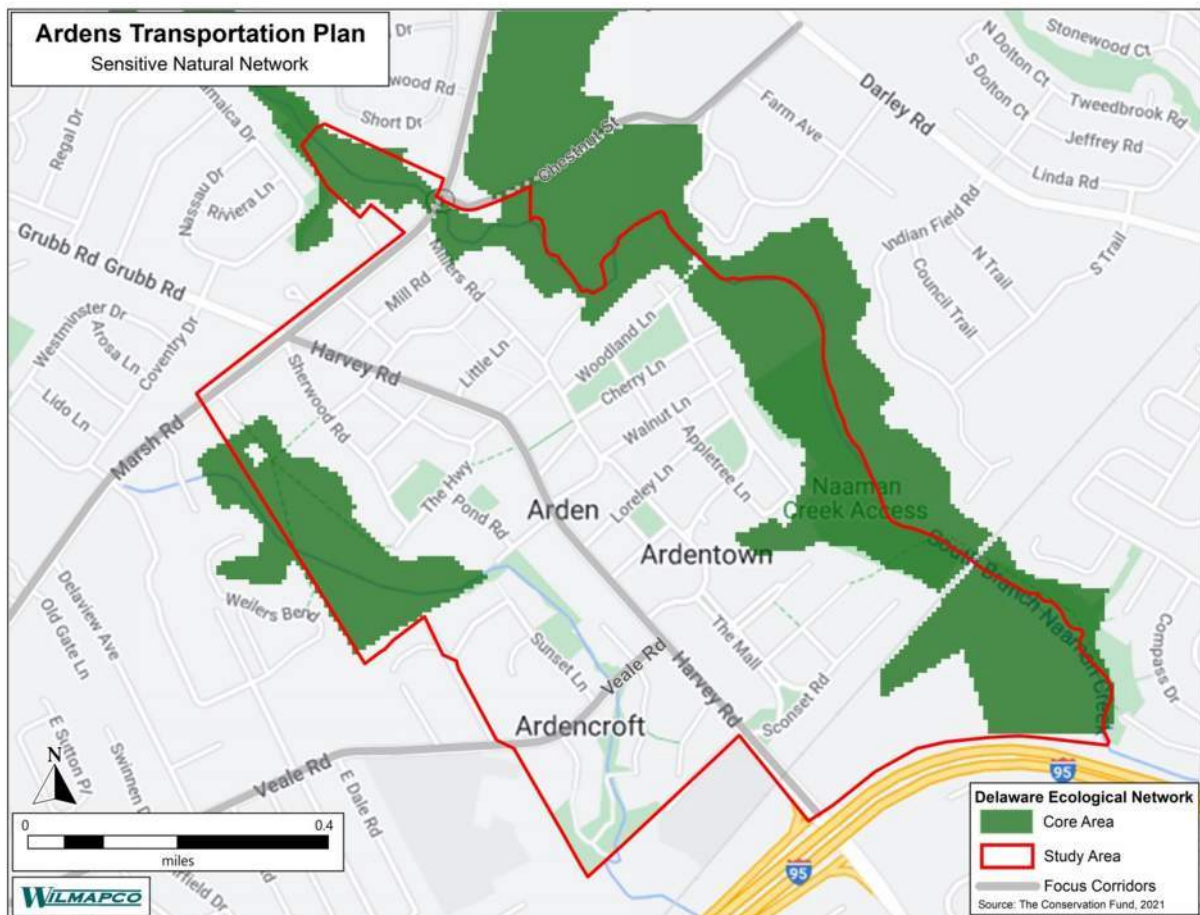


Historic Properties

Arden, Ardentown, and Ardencroft are each designated as a historic place by the National Park Service. Because each leasehold is owned by each village's common trust, every property within the Ardens is also designated as historic. The small section of unincorporated New Castle County in the study area does not contain any historic properties.

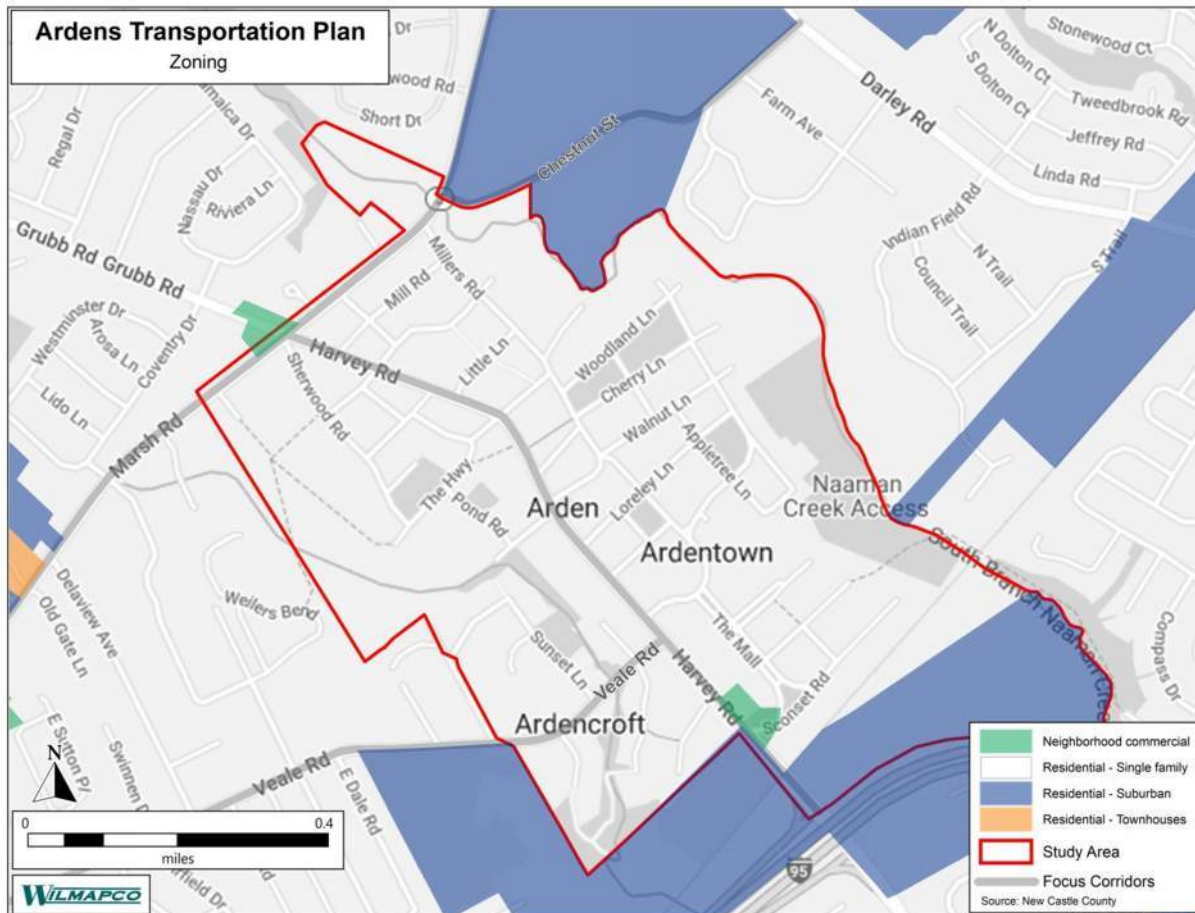
Sensitive Natural Network

The Conservation Fund has designated land within the Ardens as “core areas” in their ecological network. Core areas contain naturally functioning ecosystems and provide high-quality habitat for native plants and animals, and they are considered the highest priority for conservation. These core areas comprise 27% of land within the study area.



Zoning

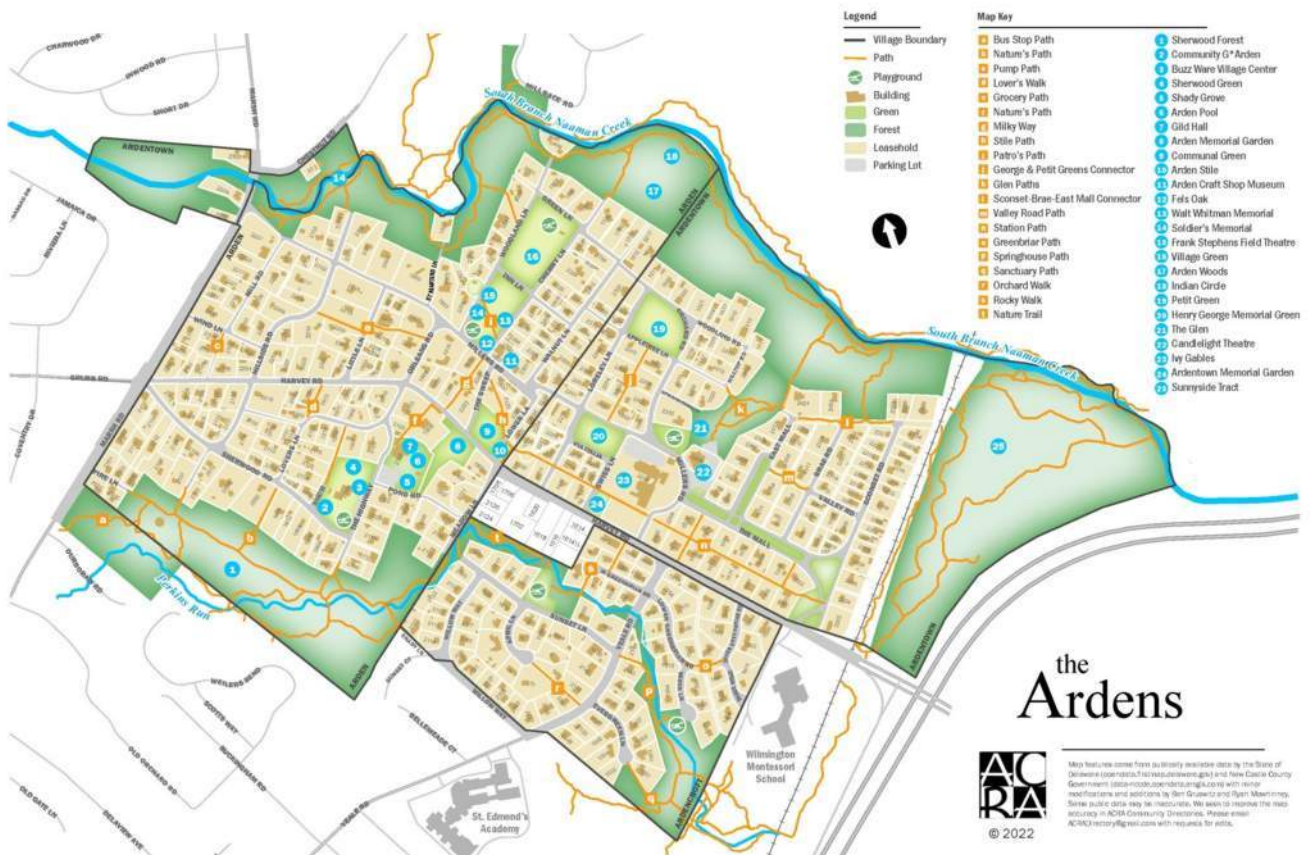
Nearly the entire study area is zoned single-family residential (NC10). The Sunnyside Tract, a nature preserve owned by the Village of Ardentown, is zoned suburban residential (S). A small section of land on the north corner of Harvey Road and Sconset Road is zoned neighborhood commercial (CN).



Transportation Conditions

Existing Path Network

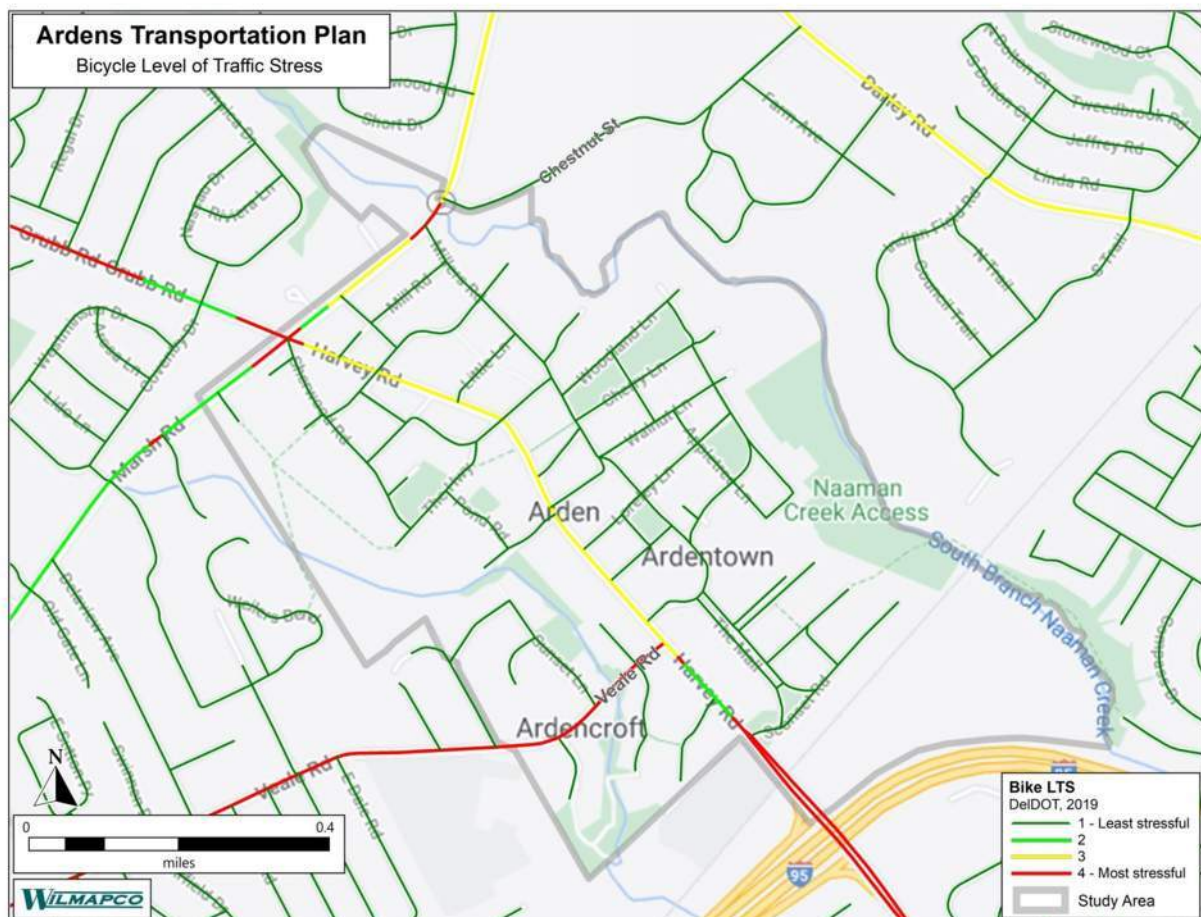
Each of the Ardens features an interconnected network of walking paths. Some of the paths are paved, while others consist of packed grass, dirt, or gravel. While not entirely ADA-compliant, these paths contribute to the Ardens' walkability. As shown on the following page, the majority of residential streets in the Ardens are narrow and have very light traffic volumes, making them comfortable for walking while sharing space with motor vehicles. These low-stress streets connect the gaps between the car-free paths, forming a dense walking grid that is comfortable and safe for nearly everyone, despite the Ardens' lack of sidewalks or other traditional pedestrian infrastructure.



Bicycle Level of Traffic Stress

Bicycle level of traffic stress (bike LTS) is a measure of how stressful roads are for bicycling, based on infrastructure conditions including traffic speeds, traffic volumes, and the number of lanes. In 2019, DelDOT developed its own bike LTS methodology, giving each road segment in Delaware a bike LTS score ranging from 1 (least stressful) to 4 (most stressful).

The majority of roads in the study area are narrow, residential streets that are comfortable for everyone to walk and bike on (bike LTS 1). However, Harvey Road bisects the Ardens and serves as a barrier both to biking and crossing on foot, with LTS scores of 3 and 4. Veale Road (LTS 4) divides Ardencroft, and Arden is bordered by Marsh Road, with sections ranging from LTS 2 to 4. These higher-stress roads should be considered for safety improvements in the Ardens Transportation Plan.



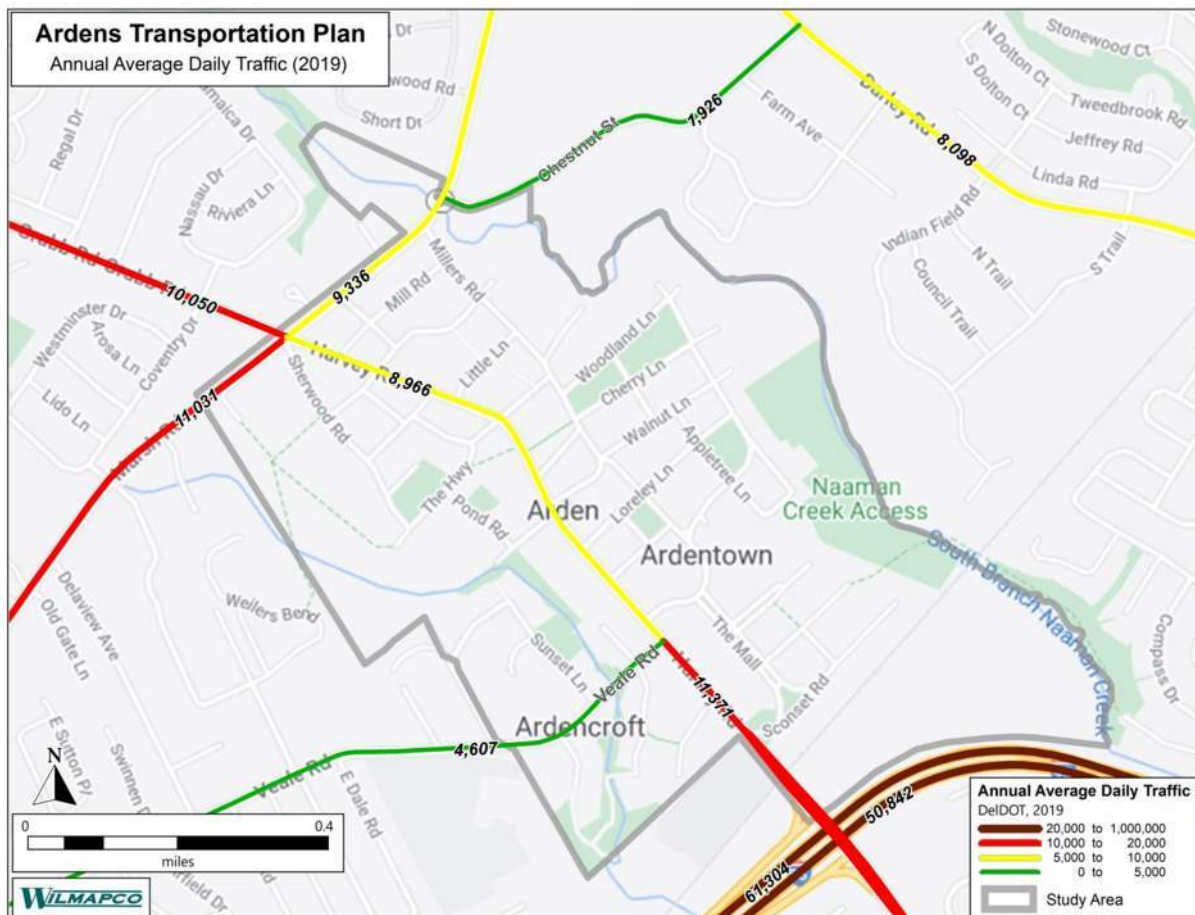
Bus Ridership

The study area is served by just one bus route, DART Route 11, which travels between downtown Wilmington and the Ardens, looping back on Harvey Road. The map below shows average weekday ridership (boardings and alightings) in October 2019 and Fall 2021. Ridership is very low in the Ardens, with an average of only 12 boardings and alightings per weekday in October 2019, falling to just 2 in Fall 2021. Ridership on DART Route 11 is higher outside of the study area. The Ardens Transportation Plan should assess transit needs in the Ardens and make any appropriate recommendations for adjustments to the bus network, with consideration to other areas served by this bus route.



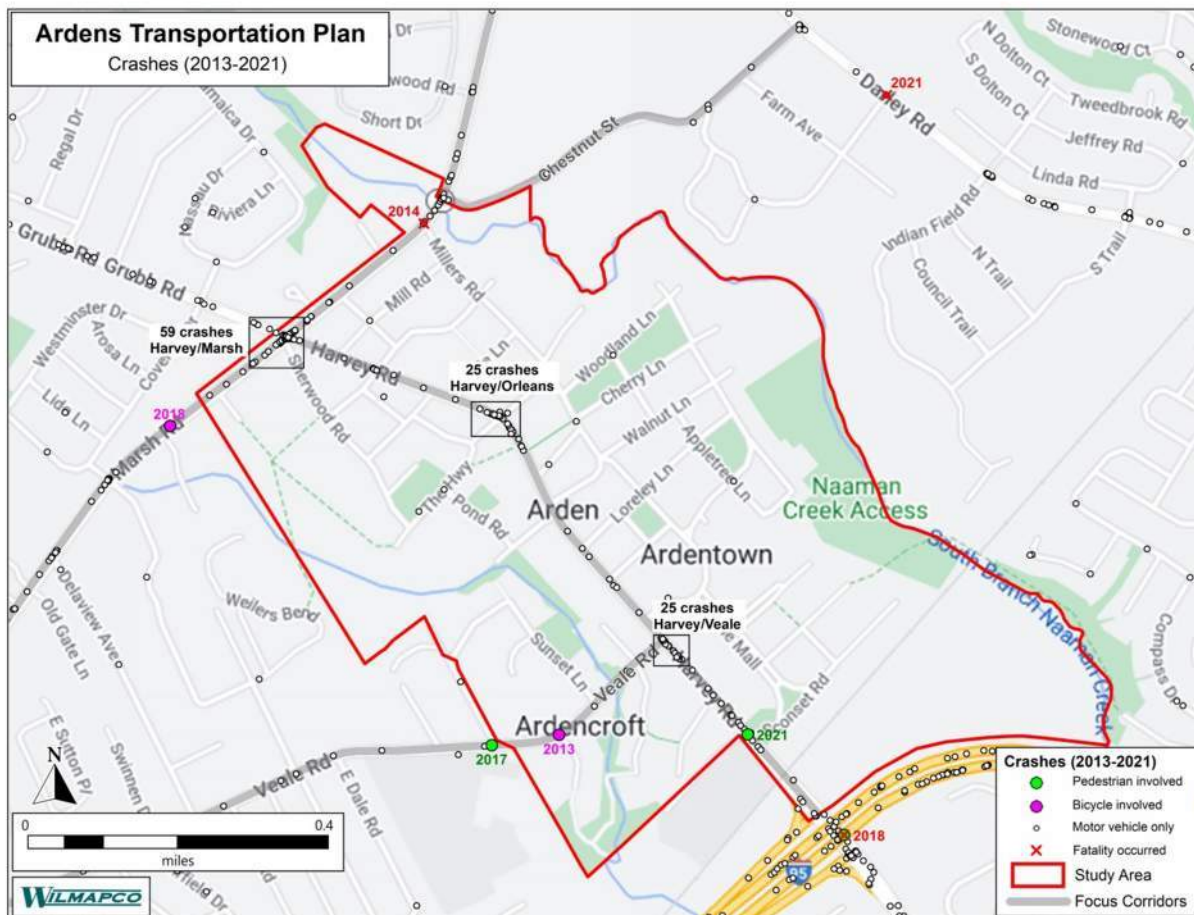
Traffic Volumes

DelDOT measures traffic volumes on state-owned roads, which in this study area include Harvey Road, Veale Road, Marsh Road, and Chestnut Street. In 2019, the annual average daily traffic was high on Harvey Road, likely as a result of its nearby connection to I-95. Similar traffic volumes were recorded on Marsh Road. Traffic volumes were low on Veale Road and Chestnut Street. Higher traffic volumes can serve as an impediment to biking, walking, and transit use. Improvements to pedestrian and bicycle infrastructure, as well as bus transit, may help reduce traffic volumes.



Crashes

Between 2013 and 2021, a total of 205 reported vehicle crashes occurred within the study area, including one bicycle crash in 2013, one pedestrian crash in 2021, and one fatality in 2014 that occurred in a motor vehicle. A few crash clusters were identified at intersection along Harvey Road: at Marsh Road there were 59 crashes; at Orleans Road, 25; and at Veale Road, 25. Safety improvements along Harvey Road and at each of these intersections should be considered to reduce the risk of crashes.



Planned Transportation

Harvey Road Traffic Calming

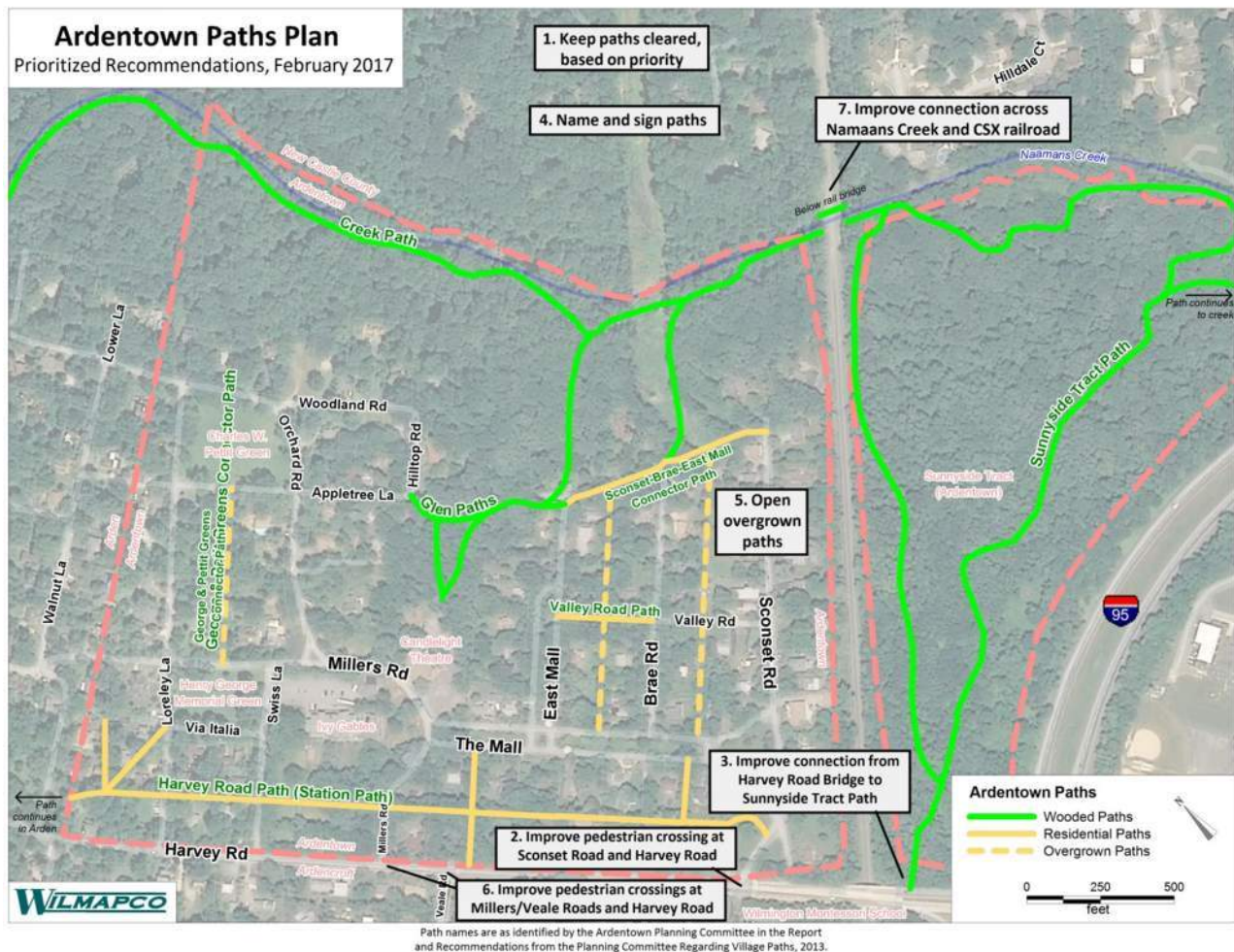
Efforts to calm traffic on Harvey Road and make it safer for people walking, biking, and using transit date back to 1999, when WILMAPCO developed a conceptual design for the corridor. This design includes a variety of features, such as crosswalks, traffic signals, radar cameras, a mini roundabout, a chicane, a median, and a speed table.



The only elements of this conceptual design that remain today are traffic signals and pedestrian crossings at intersections. Speed bumps were installed, but they have since been removed in response to noise complaints. In WILMAPCO's 2050 Regional Transportation Plan, "Harvey Road Traffic Calming" is listed as a long-term, fiscally constrained project, with a planned service year of 2036.

Ardentown Paths Plan

The [Ardentown Paths Plan](#), endorsed in November 2017, presents recommendations for improvements to Ardentown's path network and serves as an update to the [2013 Ardentown Paths Report](#). This plan was developed with extensive involvement of Ardentown residents, who were surveyed to determine which paths were most used and how the path network could best be improved. The recommendations in the map below are numbered in order of priority.

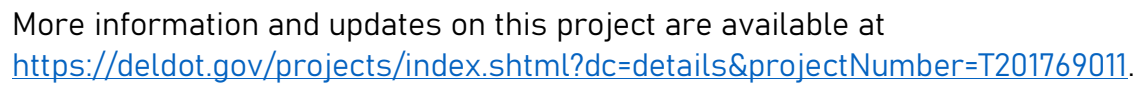


Wilmington Montessori School Safe Routes to School Plan

WILMAPCO and DelDOT administer the [Safe Routes to School](#) (SRTS) program in this region. SRTS is a federal grant program that provides a limited amount of funding for infrastructure improvements and education programs to make it safer for students to walk and bike to school. In May 2017, Wilmington Montessori School (WMS) and Ardentown requested SRTS funding for the infrastructure improvements in the map below. These recommendations were developed in collaboration between WILMAPCO, DelDOT, WMS, and Ardentown and focus on safety improvements for the intersection of Harvey Road and Sconset Road.



Some of these recommendations will be implemented in an intersection improvement project that is scheduled to begin construction in Fall 2022. As shown on the following page, this project will include a sidewalk on Sconset Road leading to the intersection, a curb extension on the east corner, and a crosswalk across Sconset Road. This project is expected to be completed by winter 2022/2023.



Marsh Road and Harvey Road/Grubb Road Intersection Improvements

In 2020, a traffic study was requested to analyze safety and operational improvements for the intersection of Marsh, Harvey, and Grubb Roads, which is on the northwest border of the Ardens Transportation Plan study area. DelDOT presented a concept plan in March 2020 at a virtual workshop, with near unanimous approval, and it was finalized in December 2020. This concept plan provides crosswalks along all legs of the intersection, with pedestrian signals, push buttons, and ramps. It also features lane reconfigurations along the northbound, southbound, and eastbound approaches to provide a shared through/right turn lane and a separate left turn lane. The design phase was completed in December 2021. As of July 2022, the project is currently under construction and nearing completion.



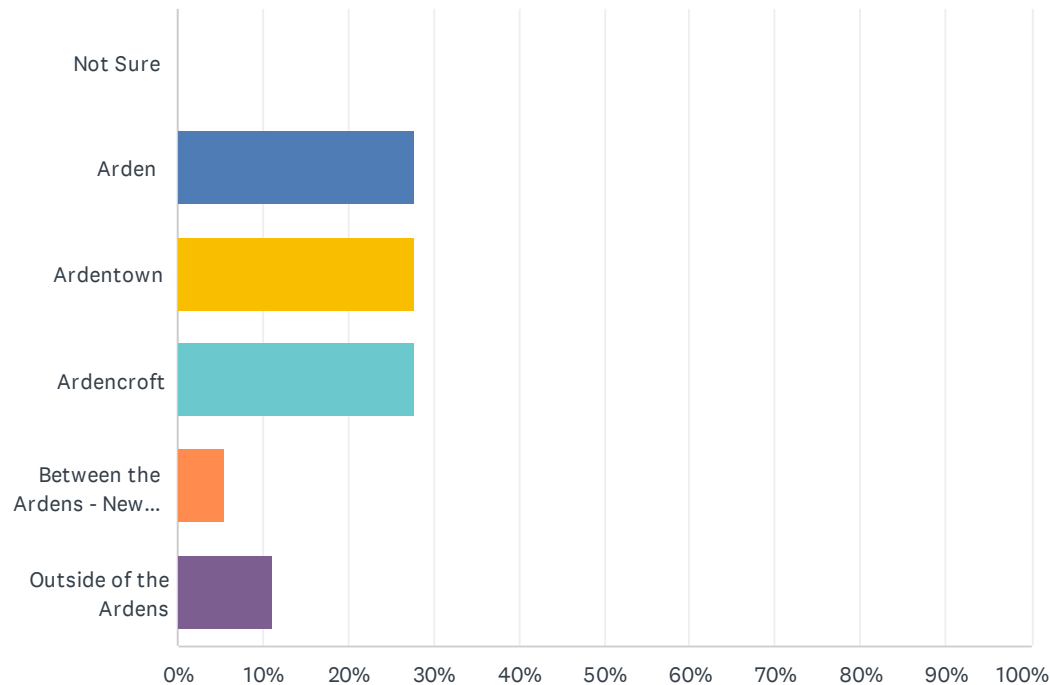
An aerial photograph of a suburban street intersection. A two-lane road runs vertically, intersecting with a wider road that runs horizontally from the bottom left towards the center. The area is heavily wooded with trees showing autumn foliage in shades of green, yellow, and orange. A brick house with a dark roof is visible on the left side of the vertical road. Several cars are visible on the roads. In the bottom right corner, there is a large, semi-transparent white graphic element that looks like a stylized number '1' or a large bracket, which serves as a background for the text.

Appendix Eleven

Kids' Survey Results

Q1 Do you live in:

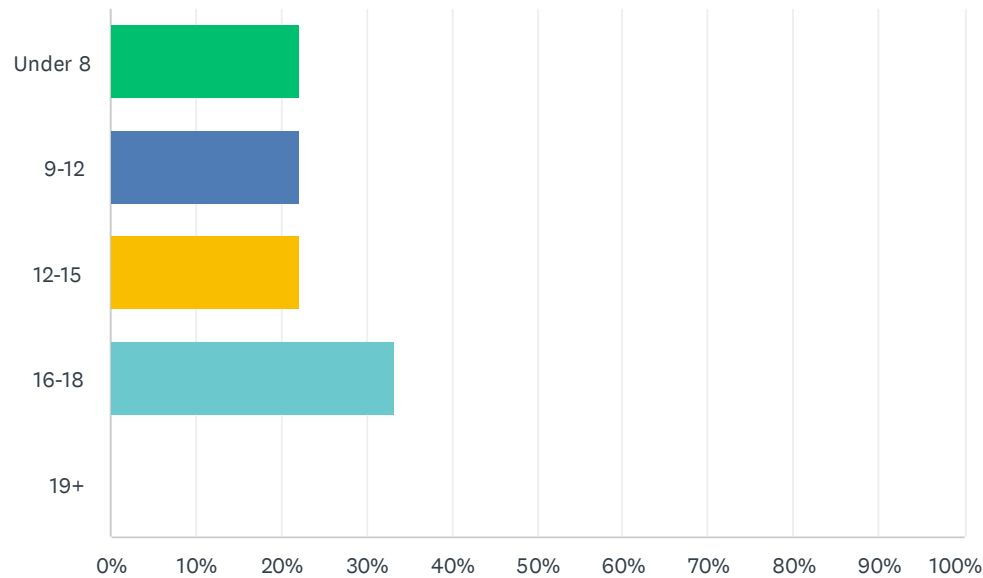
Answered: 18 Skipped: 0



| ANSWER CHOICES | RESPONSES | |
|---|-----------|----|
| Not Sure | 0.00% | 0 |
| Arden | 27.78% | 5 |
| Ardentown | 27.78% | 5 |
| Ardencroft | 27.78% | 5 |
| Between the Ardens - New Castle County 'donut hole' | 5.56% | 1 |
| Outside of the Ardens | 11.11% | 2 |
| TOTAL | | 18 |

Q2 What is your age?

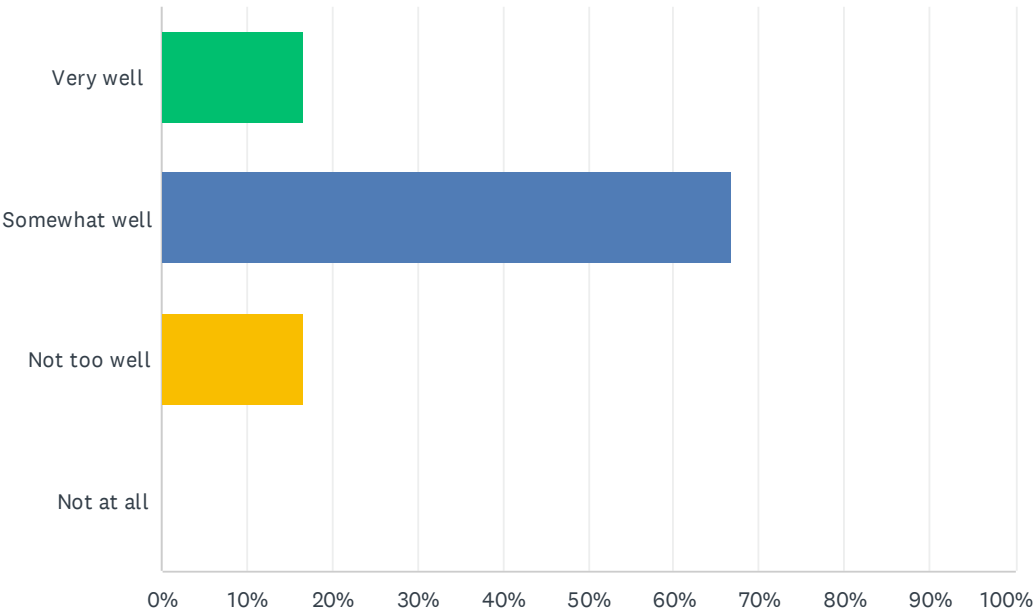
Answered: 18 Skipped: 0



| ANSWER CHOICES | RESPONSES | |
|----------------|-----------|----|
| Under 8 | 22.22% | 4 |
| 9-12 | 22.22% | 4 |
| 12-15 | 22.22% | 4 |
| 16-18 | 33.33% | 6 |
| 19+ | 0.00% | 0 |
| TOTAL | | 18 |

Q3 How well do you feel the transportation system in the Ardens meets your travel needs?

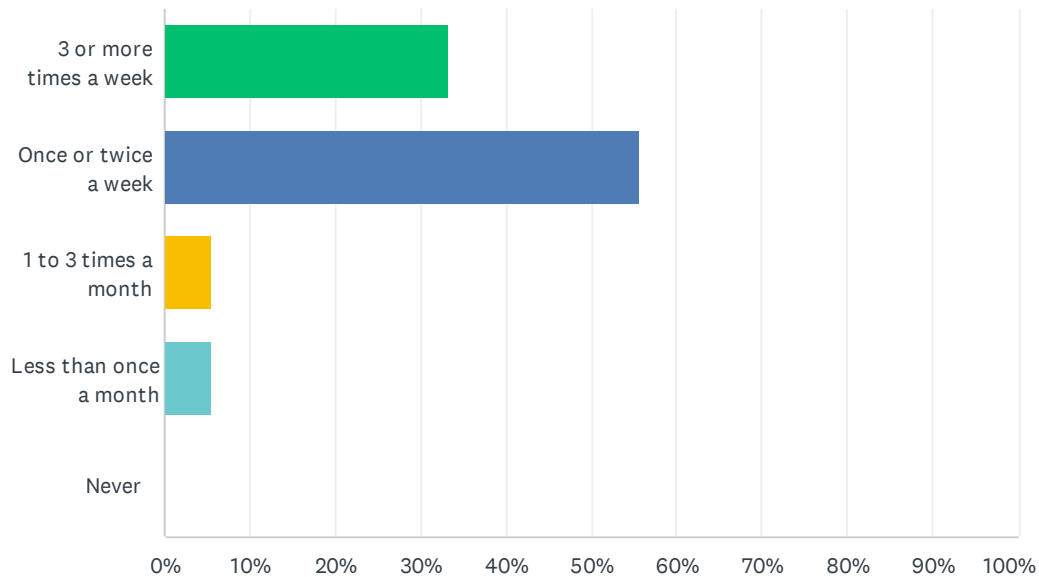
Answered: 18 Skipped: 0



| ANSWER CHOICES | RESPONSES | |
|----------------|-----------|----|
| Very well | 16.67% | 3 |
| Somewhat well | 66.67% | 12 |
| Not too well | 16.67% | 3 |
| Not at all | 0.00% | 0 |
| TOTAL | | 18 |

Q4 How often do you walk for transportation (to travel from one place to another)?

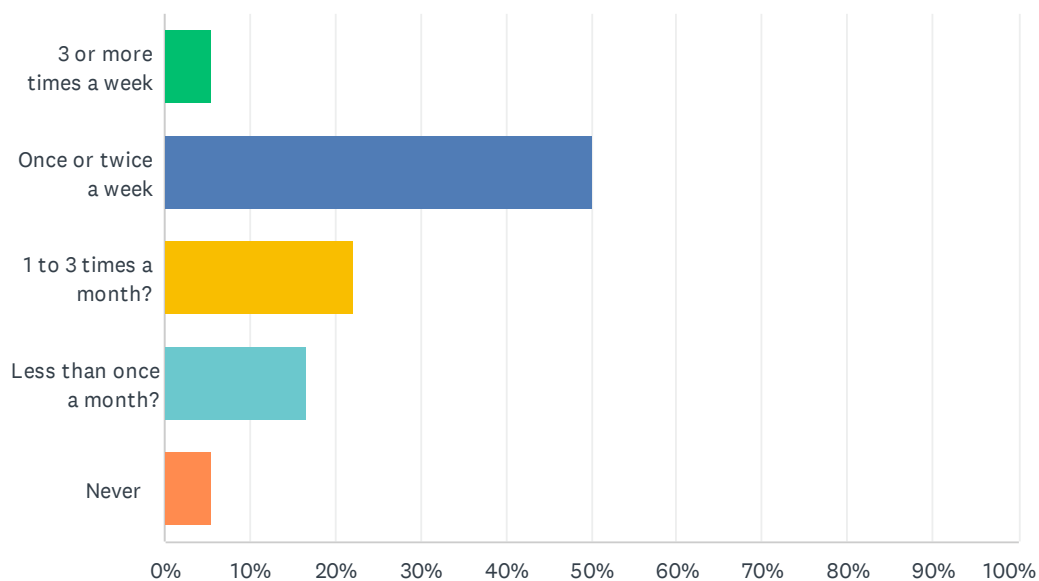
Answered: 18 Skipped: 0



| ANSWER CHOICES | RESPONSES | |
|------------------------|-----------|----|
| 3 or more times a week | 33.33% | 6 |
| Once or twice a week | 55.56% | 10 |
| 1 to 3 times a month | 5.56% | 1 |
| Less than once a month | 5.56% | 1 |
| Never | 0.00% | 0 |
| TOTAL | | 18 |

Q5 How often do you bike for transportation?

Answered: 18 Skipped: 0



| ANSWER CHOICES | RESPONSES | |
|-------------------------|-----------|-----------|
| 3 or more times a week | 5.56% | 1 |
| Once or twice a week | 50.00% | 9 |
| 1 to 3 times a month? | 22.22% | 4 |
| Less than once a month? | 16.67% | 3 |
| Never | 5.56% | 1 |
| TOTAL | | 18 |

Bowman