

PROJECT BACKGROUND

The Delaware Valley Regional Planning Commission (DVRPC) worked with Middletown Township and Bucks County to improve bicycle and pedestrian access to Woodbourne Station, on SEPTA's West Trenton Regional Rail line. (See "Figure 1: Station area").

This collaboration is part of DVRPC's [Safe Routes to Transit](#) Program, a technical assistance program offered to municipalities and counties interested in enhancing pedestrian and bicycle access to transit stations. The goal of Safe Routes to Transit studies is to provide a project sponsor with the analysis necessary to prepare a compelling application for competitive funding sources, helping to advance a project through final design and construction.

The DVRPC project team worked with a local steering committee to identify the most viable strategy for providing safe nonmotorized access between Woodbourne Station and nearby residential and commercial districts. After balancing several feasibility factors, including scope, cost, and relationship to other Township projects, the steering committee identified Woodbourne Road just south of the station as the primary focus for this project.

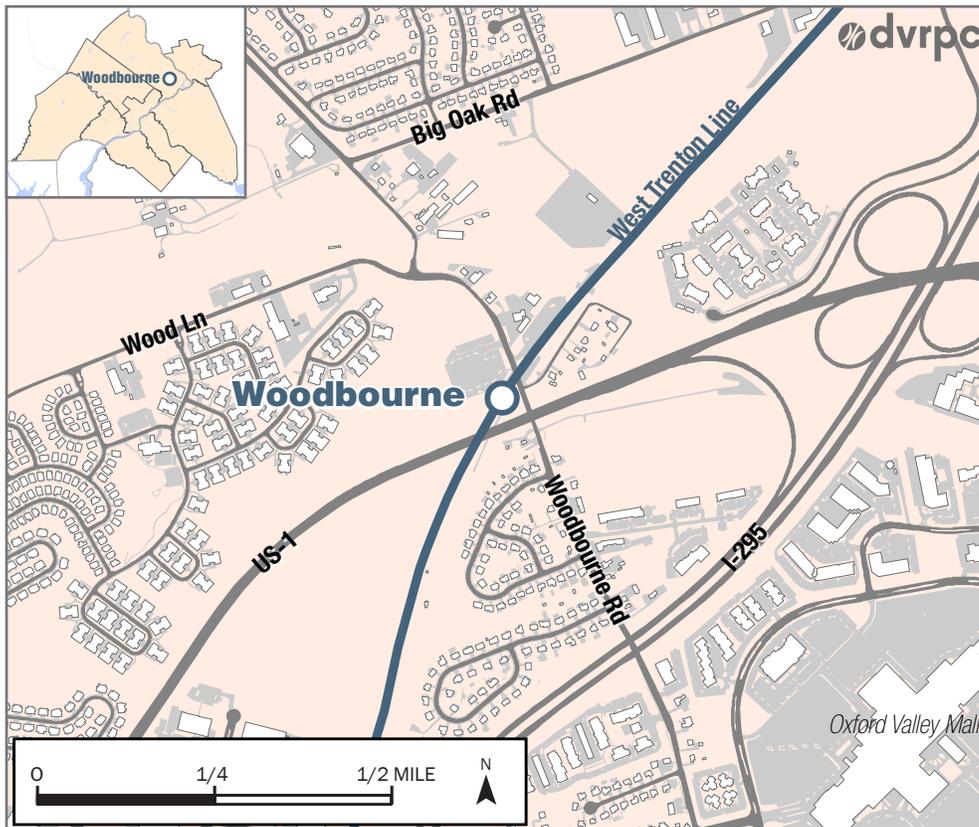


Figure 1: Station area

STEERING COMMITTEE

MIDDLETOWN TOWNSHIP

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Township Engineer*

BUCKS COUNTY PLANNING COMMISSION

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ABOUT DVRPC

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

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EXISTING CONDITIONS

Woodbourne is a station on SEPTA's West Trenton Line in Bucks County. The station is the third from the end of the line, and an approximately one-hour ride from Center City Philadelphia. According to SEPTA, approximately 600 passengers use Woodbourne Station on a typical weekday.

Nearly all passengers arrive at Woodbourne by car. The station has 513 parking spaces spread across two lots, including 20 handicapped spaces. The main parking lot, adjacent to the station platform, contains 381 parking spaces, while the auxiliary lot, across Woodbourne Road, contains 132 spaces.

The two parking lots are connected by a mid-block crosswalk. This crosswalk includes pedestrian crossing signs, but no stop sign or red light controls. A pedestrian crossing sign approximately 250 feet south of the crosswalk includes flashing beacons that do not appear to meet PennDOT's standards; this sign should be replaced during any improvements to this corridor with a PennDOT-compliant sign. In 2014, a pedestrian was killed while crossing Woodbourne Road at this crosswalk.

There are no sidewalks along Woodbourne Road that could provide access to the station for pedestrians. Woodbourne Road generally features shoulders

on either side of the roadway, but these shoulders disappear or shrink at several "pinch points" within a half mile of the station. These and other barriers present challenges for a pedestrian with no vehicle access to Woodbourne Station, and would also present challenges to any pedestrian improvement proposed as part of this project. The most notable of these barriers include:

1. CSX overpass
A freight rail line owned by CSX crosses over Woodbourne Road, creating an 18-foot-wide, one-lane underpass for traffic. In practice, drivers use this as a two-lane underpass, traveling through in both directions.
2. Woodbourne Rd./Wood Ln. intersection
This intersection is signed "No Pedestrians," and is not safe to cross on foot.
3. Box culvert over Mill Creek
The shoulders narrow as Woodbourne Road crosses Mill Creek, bringing traffic very close to any potential pedestrians.
4. Route 1 overpass
US-1 passes over Woodbourne Road just south of the station.



Figure 2: Station area, aerial view with impervious surfaces outlined. Aerial Imagery: Southeastern PA Regional Task Force, 2017

STATION INFRASTRUCTURE

Woodbourne is somewhat unusual for SEPTA's Regional Rail system, as rail operations on the station's three tracks are shared with CSX, the freight rail operator. Philadelphia-bound passengers board from a single, low-level platform. Woodbourne-bound passengers must alight from the center of the three tracks onto a concrete crossover of one of the outer track sets.

This has two major consequences. First, passengers must cross an active track, meaning SEPTA staff must take special care to ensure passenger safety during alighting. Second, passengers with disabilities cannot alight at Woodbourne. (Boarding in a wheelchair is possible via a single mini-high-level platform.)

Freight operations at Woodbourne also cause numerous closings of the at-grade crossings along Woodbourne Road. Closings by CSX trains happen at unpredictable times, and for unpredictable durations, causing long traffic back-ups, leading the project team to time one mid-morning closure at 13 minutes, and Township staff report regular instances of much longer than that.

PASSENGER ACTIVITY

The DVRPC project team observed passenger activity during a morning peak period in February 2019. In general, the team's observations confirmed a main prior assumption: the station is not safely accessible by pedestrians or bicyclists.

In spite of this, the team did observe some pedestrian and bicycle activity, especially at the crosswalk between the station's parking lots.

The project team noted at least eight "reverse commuters," who alighted from outbound trains during the A.M. peak period, and then waited to be picked up by ride-hailing services.

The team saw one inbound passenger who arrived at Woodbourne by bicycle, and locked up using the one bicycle rack provided at the station.

The single pedestrian using the station (other than those walking from parked cars or being dropped off) was an outbound alighting passenger who traveled south through the Route 1 underpass.

Besides the West Trenton Line, no public transit serves Woodbourne to enable transfers. From the mid-2000s until 2012, TMA Bucks operated a transit shuttle under the federal Job Access and Reverse Commute (JARC) program that provided connections between Woodbourne Station and employers in the Oxford Valley Mall area as well as business parks in the Newtown area. According to TMA Bucks staff, this shuttle attracted 45–50 riders per day, but was ultimately discontinued because of reductions in JARC funding.



Figure 3: A SEPTA train arrives on the inbound track as a CSX train moves on the outer track. The concrete pads for alighting SEPTA passengers are pictured.



Figure 4: A parked bicycle and alighting passengers waiting for ride-hailing services.



Figure 5: A SEPTA passenger walks through the US-1 underpass.

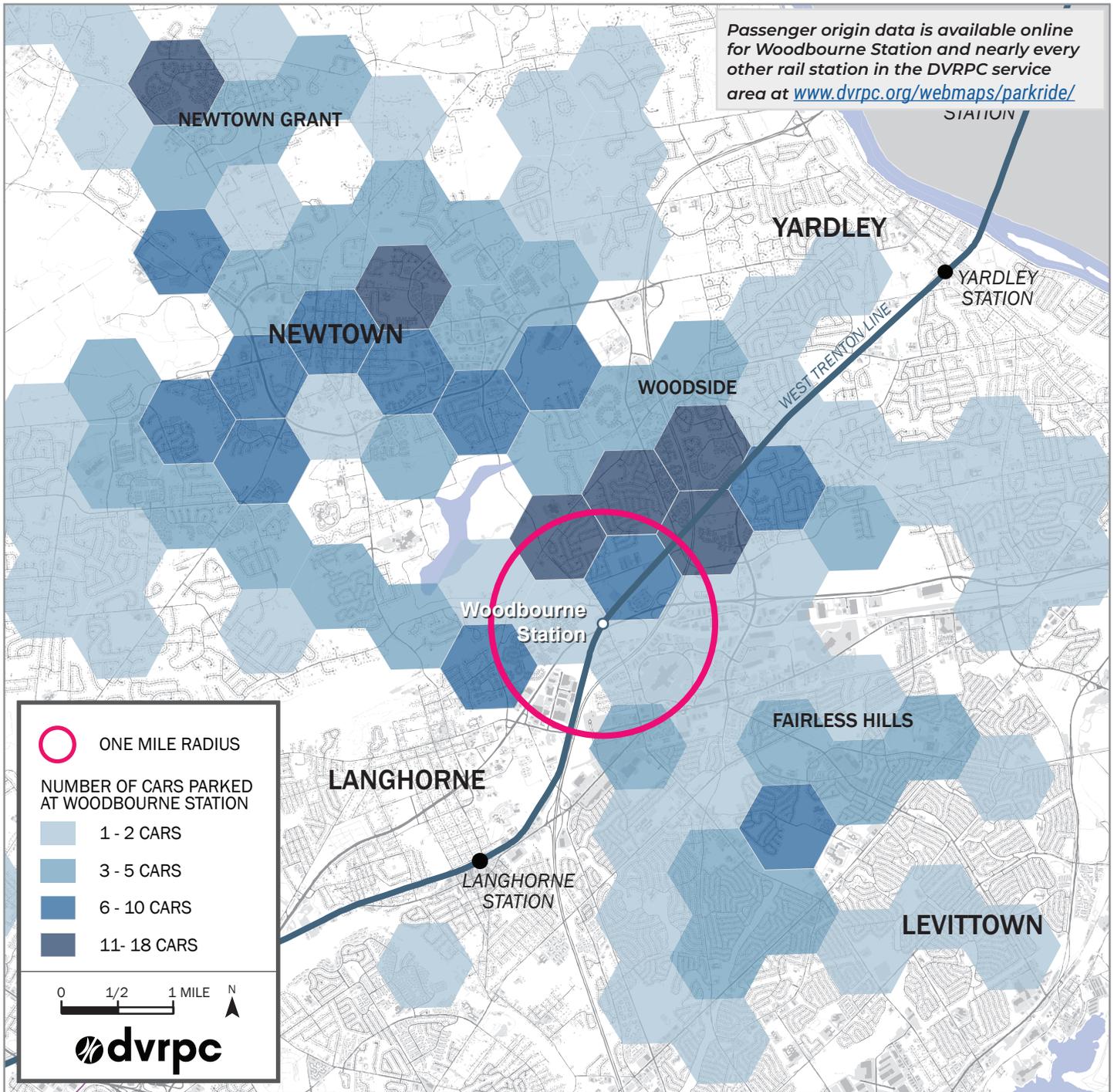


Figure 6: Park and Ride Passenger Origins map

PARK AND RIDE PASSENGER ORIGINS

This map illustrates registered addresses for cars parked in the Woodbourne Station parking lots. The dataset is based on a one day sample recorded in 2017 between 9 AM and 4 PM. License plate numbers of parked vehicles were recorded and sent to PennDOT to be anonymously geocoded.

The map shows that most passengers driving to Woodbourne Station come from the north, largely from Newtown and northern Middletown Township, making trips of 2–5 miles. Some passengers who live closer to Yardley Station and Langhorne Station drive to Woodbourne, which has free parking unlike the other two stations.

Some passengers who drive to Woodbourne come from less than a mile away, particularly residents of the residential areas north of the station. If adequate bicycle and pedestrian facilities existed, we would expect that some portion of these passengers would choose to walk or bicycle to Woodbourne Station.

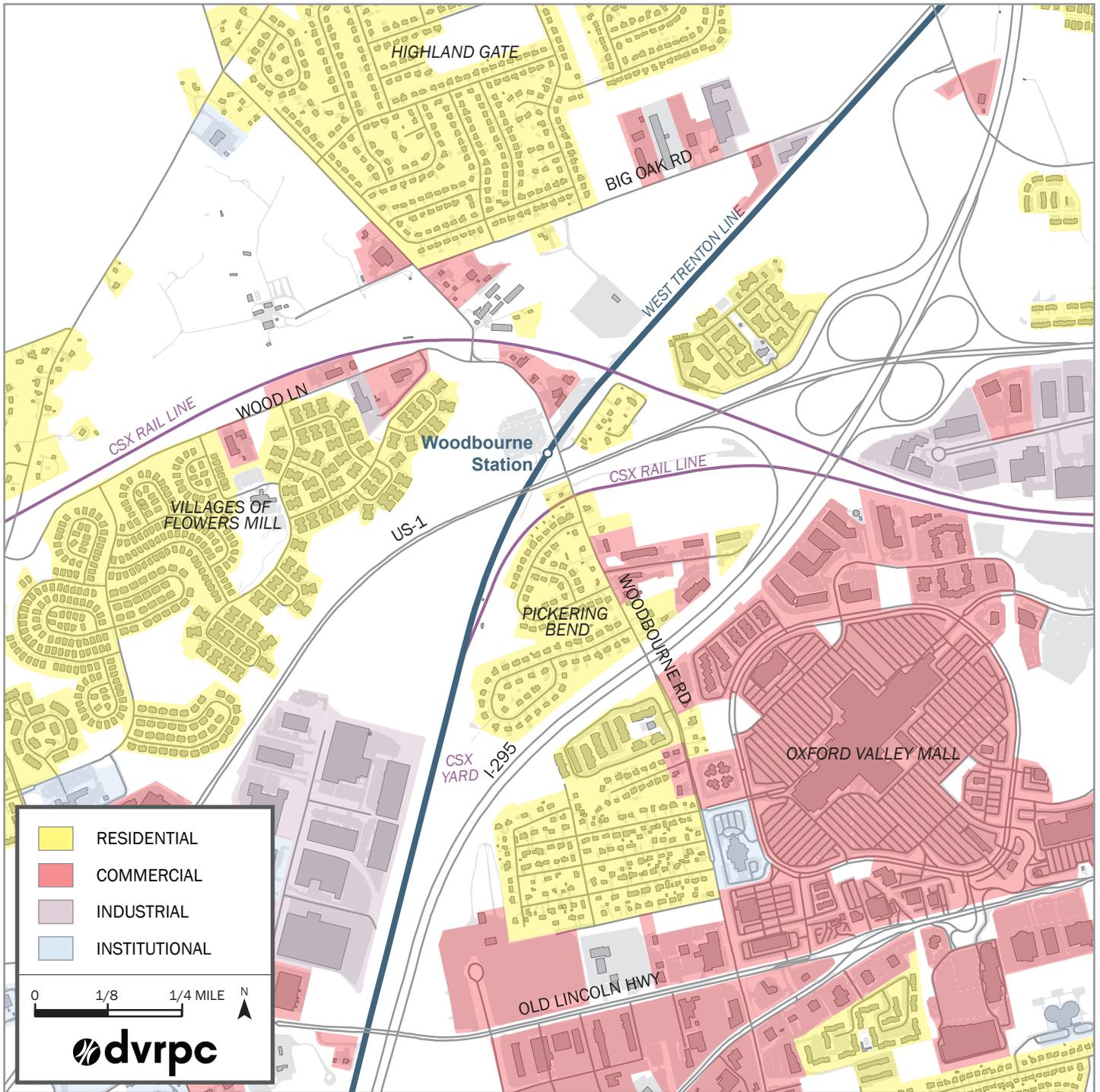


Figure 7: Land use
 DVRPC Enhanced Land Use, 2015

LAND USE

Woodbourne Station is surrounded by a range of land uses. There are several residential neighborhoods within walking distance, including a 55-and-over community to the west, the Villages of Flowers Mill.

Oxford Valley Mall is one mile to the south, and big-box style commercial development runs along Old Lincoln Highway. Sesame Place, a family amusement park, is one-and-a-half miles to the east. Along the tracks to the south of Woodbourne Station is an industrial area, including a yard for the freight rail operator CSX.

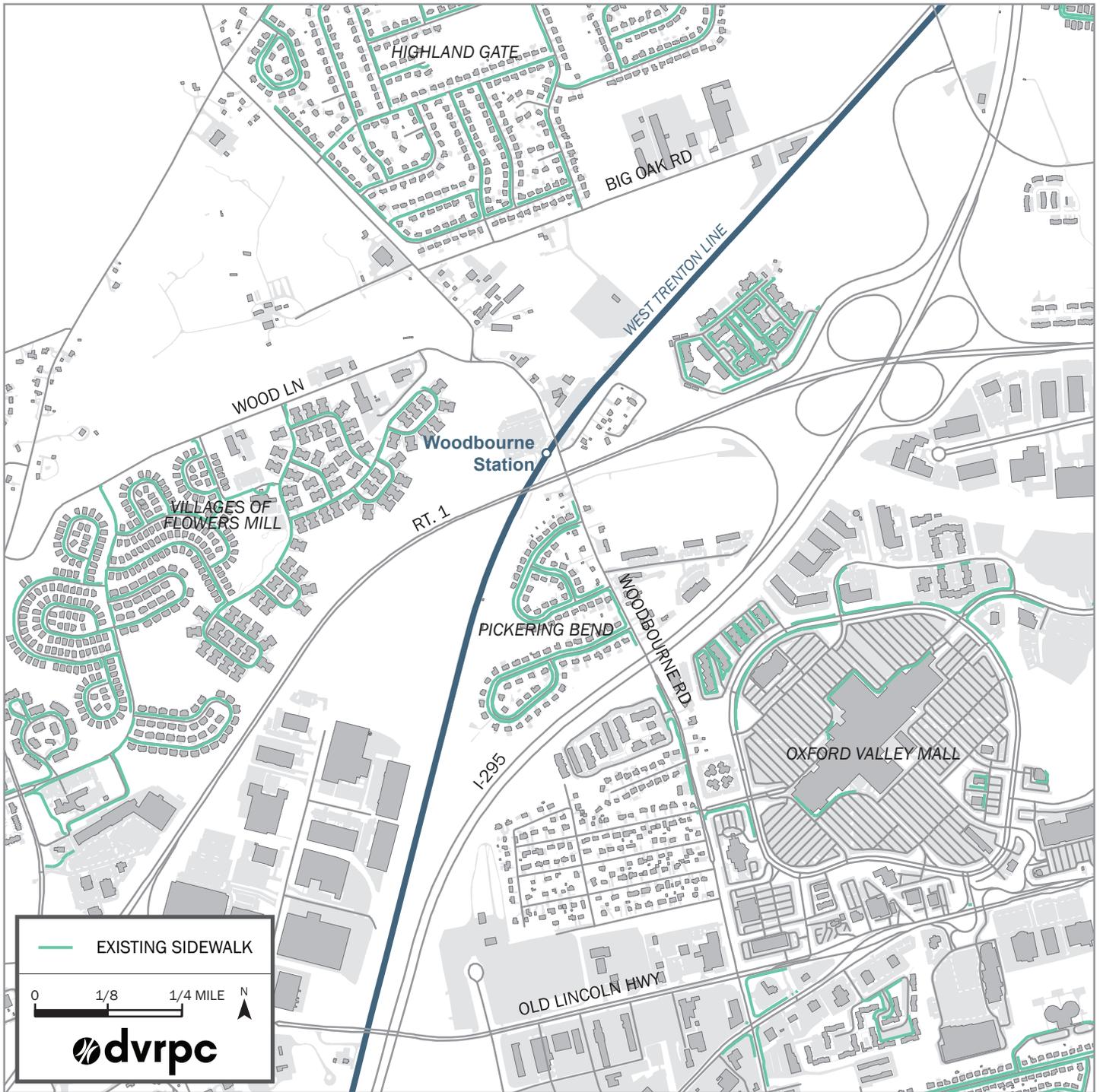


Figure 8: Sidewalk network map
 DVRPC Regional Sidewalk Inventory, 2018

SIDEWALKS

There are no sidewalks on Woodbourne Road that connect to Woodbourne Station, and the sidewalk network in the greater area is inconsistent. The residential area to the south on Pickering Bend Road, the Villages of Flowers Mill to the west, and the residential area to the north all have sidewalks, but Woodbourne Road and Wood Lane do not.

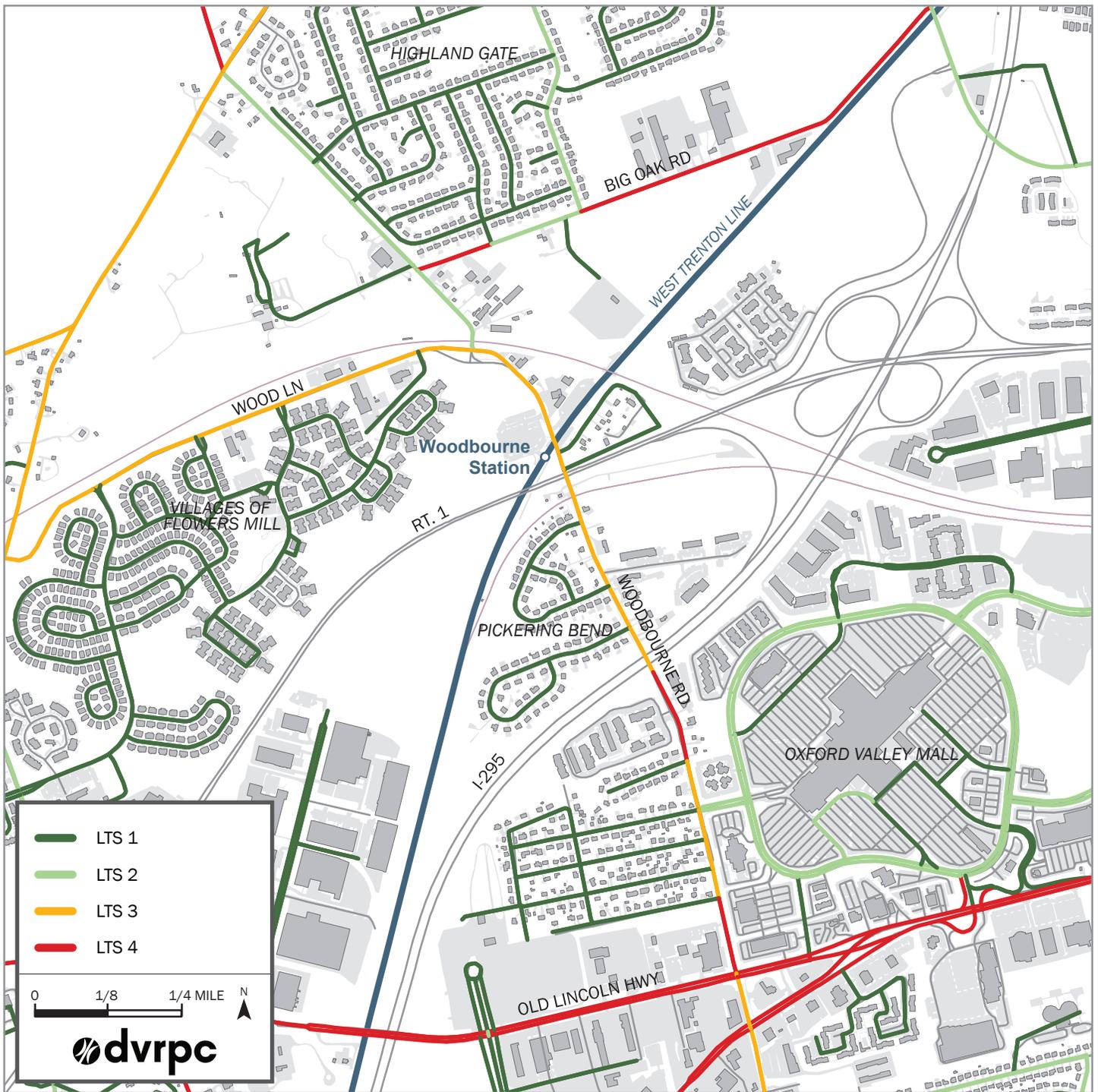


Figure 9: Bicycle LTS map

BICYCLE FACILITIES

Just as connectivity in the sidewalk network is important for pedestrian access to and from the station, so too is the bicycle network. Currently there are no dedicated, on- or off-street bicycle facilities that provide access to Woodbourne Station.

Level of Traffic Stress (LTS) is a road classification technique based on the comfort of bicyclists on a given roadway. DVRPC's LTS assignment is based on the number of lanes, effective vehicle speed, and presence of a type of bicycle facility (i.e. bike lane, sharrow, etc.). Higher LTS assignments are less comfortable for cyclists. Woodbourne Road is classified at LTS 3 or LTS 4 within a mile of Woodbourne Station, indicating that biking to the station is an option only for very confident cyclists. The station has one rack for bicycle parking that can accommodate 4–5 bicycles.

BICYCLE AND PEDESTRIAN ACCESS STRATEGIES

The project steering committee met on April 16, 2019 to discuss station data, the DVRPC team's field observations, and initial strategies for improving bicycle and pedestrian connections to Woodbourne Station.

The project team presented three potential strategies for bringing pedestrians and cyclists to Woodbourne, and the steering committee discussed the opportunities and challenges of each.

Each was reviewed in the context of the Safe Routes to Transit program, which provides the analysis communities will need to apply for a competitive grant to address an issue in the near-term. While only one of these strategies is pursued as part of this Safe Routes to Transit project, each strategy has merit, and may be worth pursuing in the future as part of a project with a different scope.

Access from the north on Woodbourne Road

The residential subdivisions beginning at the intersection of Woodbourne and Big Oak roads, approximately half-a-mile north of the station, are home to dozens of commuters who drive to Woodbourne Station, but who might walk or bike if provided with a safe way to do so.

This option was intriguing to the committee, but ruled out for feasibility reasons. Two pinch points are unlikely to be resolved in a project of this scope. The CSX underpass cannot accommodate pedestrians, cyclists, and vehicles in two directions without full replacement, a multi-million-dollar proposition. The culvert where Woodbourne Road crosses Mill Creek would also need to be widened at great expense in order to accommodate pedestrian or bicycle facilities.

Access from the northwest on Woodbourne Road

The Villages of Flowers Mill, an over-55 townhome community, is located a quarter-mile northwest of the station. The community features an internal sidewalk network, and could be within walking distance of Woodbourne if sidewalks existed along Woodbourne Road, and a pedestrian-only connection were made across Villages property.

This option was deprioritized for both feasibility and community issues. The culvert at Mill Creek remains a physical and financial barrier for this strategy. The Villages of Flowers Mill is a gated community with limited access points, and sufficient outreach has not yet been conducted to move forward with a proposed connection to that community.

Access from the south on Woodbourne Road

South of the station, Woodbourne Road passes several single-family home and apartment developments, as well as small commercial developments, within approximately half-a-mile. Continuing south, the Oxford Valley Mall and associated office buildings are less than a mile from the station.

The steering committee gravitated to this option for several reasons. This strategy could serve both residents taking SEPTA to work, and reverse commuters heading toward area businesses. This approach also allows stakeholders to build upon an existing, if incomplete, sidewalk network along Woodbourne Road. There is potential for developers along this portion of Woodbourne Road to contribute to completing a continuous pedestrian connection between the station and the Oxford Valley Mall.

Township staff reported that the Township is currently pursuing a quiet zone project—safety measures that allow trains to cross a road without sounding a horn—on Woodbourne Road that could work in concert with sidewalk access from the south.

Physical barriers are also less difficult to overcome along this route. The main physical challenge is the Route 1 underpass, which, at approximately 33', is wider than either the CSX underpass to the north (18') and the Mill Creek crossing to the north (30').

The steering committee agreed that the DVRPC project team should pursue this option because it appeared likely to serve many passengers within a reasonable project scope.



Figure 10: CSX underpass



Figure 11: Woodbourne Road at Mill Creek



Figure 12: US-1 underpass

PEDESTRIAN ACCESS PROPOSAL

At the steering committee's request, the project team produced a proposed sidewalk connection from Woodbourne Station to an existing sidewalk about 750' south of the station. This proposal connects to the portion of sidewalk proposed as part of the Township's quiet zone proposal, and continues south under U.S. Route 1, to meet the existing sidewalk. The sidewalk is typically 5'-wide, and located in the existing southbound shoulder. Access to existing driveways is preserved with curb cuts, and pedestrian gates and detectable warning surfaces are proposed at each at-grade railroad crossing.

Figure 13, below, presents an annotated view of the full extent of the proposed sidewalk.

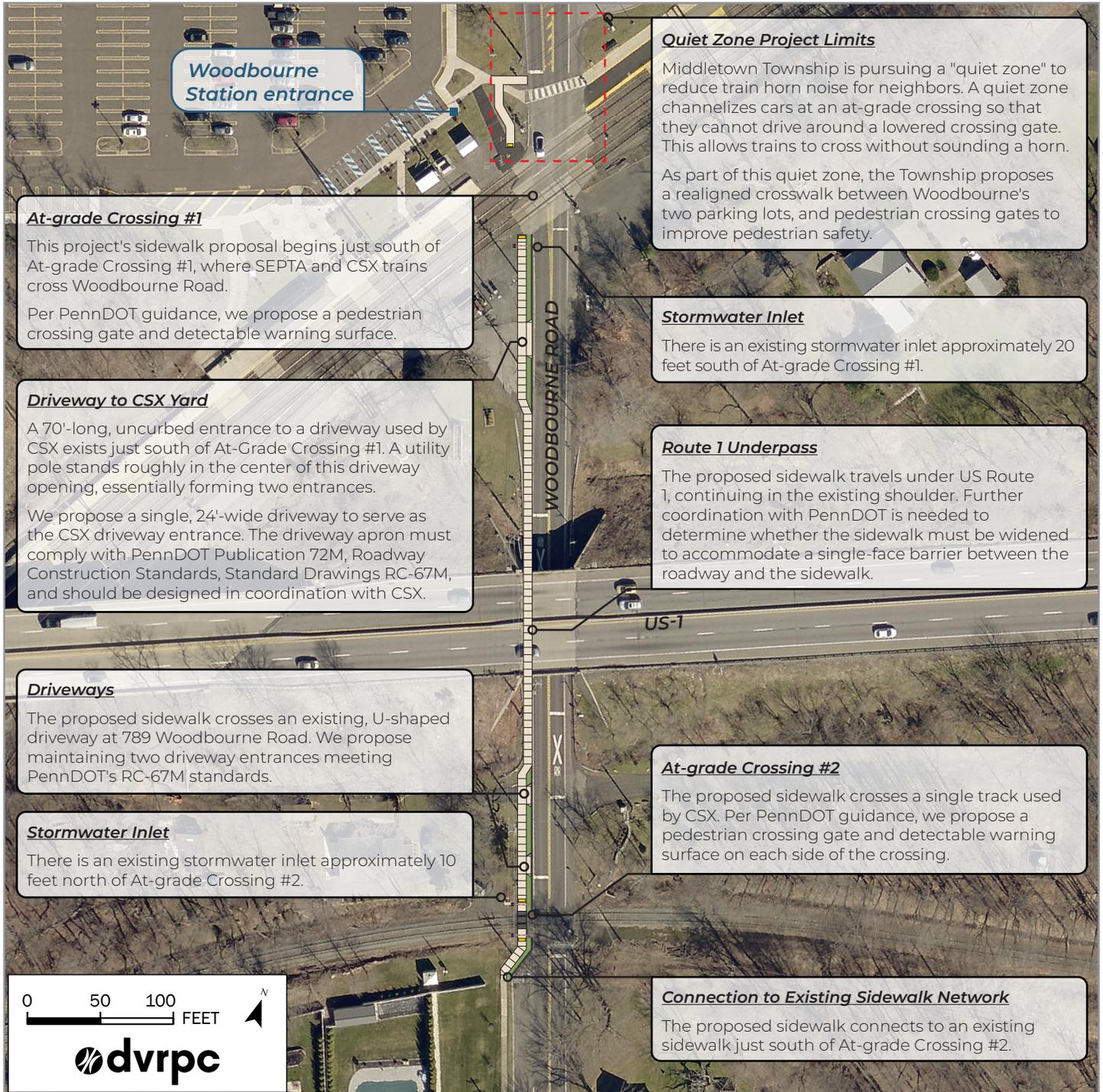


Figure 13: Proposed Sidewalk

COST ESTIMATE

The following cost estimate for the proposed sidewalk detailed on page 9 are based on unit costs, and exclude soft costs. Coordination with PennDOT, CSX, local property owners, and other stakeholders is required.

| Item | Unit | Quantity | Unit Price | Approximate Cost |
|---------------------------|------|----------|------------|------------------|
| 5' wide concrete sidewalk | 290 | SY | \$150 | \$43,500 |
| ADA ramp | 3 | EA | \$7,500 | \$22,500 |
| Concrete curb | 375 | LF | \$100 | \$37,500 |
| Barrier & fence | 150 | LF | \$500 | \$75,000 |
| Signage | 3 | EA | \$250 | \$750 |
| Driveway adjustments | 3 | EA | \$1,000 | \$3,000 |
| Clearing and grubbing | 1 | EA | \$5,000 | \$5,000 |
| Total: | | | | \$187,250 |

Estimate does not include:

| | |
|--|--------|
| Maintenance and Protection of Traffic: | 3–5% |
| Mobilization: | 3–5% |
| Construction Inspection: | 10–15% |

Notes:

- + Sidewalk may need to be narrowed to 4'-wide behind barrier under Route 1.
- + If ADA ramps are design/build, add \$1,000 in construction phase.
- + PennDOT reviews will likely be required for improvements to state routes.
- + Mailbox may need to be relocated at 789 Woodbourne Road.
- + Sidewalk locations are proposed to prevent utility pole relocations.
- + Two existing stormwater inlets may require further evaluation.
- + The headwall south of the Route 1 underpass may require an extension or adjustments.
- + 250 linear feet of existing guiderail will require further evaluation to determine warrants, length, need, and other factors.
- + Coordination with CSX is required for pedestrian crossings, gate arms, and approach.
- + A survey has not been completed for this study. Easements may be required.

FUNDING OPPORTUNITIES

This study's recommendations and cost estimate tables are designed to assist Middletown Township in applying for grant funding. DVRPC's Municipal Funding Resource is an online database intended to assist local governments, community groups, and non-profit organizations in identifying federal, state, regional, county, and private sources of funding for locally initiated planning and development projects.

Some of the most relevant potential construction funding sources for pedestrian and bicycle projects include: DVRPC's [Congestion Mitigation and Air Quality Improvement Program \(CMAQ\)](#), PennDOT's [Multimodal Transportation Fund](#), The Pennsylvania Department of Community and Economic Development's [Multimodal Transportation Fund](#), and PennDOT's [Transportation Alternatives Set-Aside](#).

A potential funding source for future planning needs is the [Transportation and Community Development Initiative \(TCDI\)](#) program. TCDI supports municipalities by providing funding to undertake planning, analysis, or design initiatives which enhance the efficiency of the regional transportation system and implement the long-range plan. Applications for the next funding round for TCDI are expected in early 2022. This program may be particularly appropriate for planning or designing a sidewalk connection farther south towards the Oxford Valley Mall, or for pursuing sidewalk access from north of the station.

Nonprofit and advocacy groups often fund small walkability projects with microgrants, including [America Walks Community Change](#) grant and [AARP's Community Challenge](#) grant. The [Pedestrian and Bicycle Information Center \(PBIC\)](#) also provides examples of non-government funding sources.

FUTURE BICYCLE AND PEDESTRIAN OPPORTUNITIES

This project focused on the sidewalk gap closest to Woodbourne Station. Completing the partial sidewalk network south of the station offers several benefits:

Several sidewalk segments already exist, having been constructed along with developments on Woodbourne Road over the years.

Woodbourne Road south of Woodbourne Station does not suffer from the same physical constraints as those north of the station (see page 8), making it the natural next step for sidewalk access to Woodbourne Station.

The Oxford Valley Mall, along with other nearby businesses, is an employment destination for "reverse commuters."

Completing this connection would require approximately 1,125 linear feet of sidewalk, nine ADA-compliant curb ramps, and striping for four crosswalks.

