Bicyclist and Pedestrian

ConnectionsPlan2011

BACKGROUND

The Cranberry Township Bicyclist and Pedestrian Connections Plan is an outgrowth of the Cranberry Plan, the Township's comprehensive plan adopted in 2009. During the Cranberry Plan's development, members of the community strongly identified the need for mobility options and improved connections throughout the Township and to neighboring communities.

VISION AND GOAL OF THE PLAN

Much of the Cranberry Plan process was devoted to discussions and analysis related to transportation. A comprehensive and efficient transportation system is important to the continued growth and vitality of the Township. People, goods and services need to move efficiently and effectively in, out, and through the Township. To remain a sustainable community, Cranberry will need to diversify its transportation options, continue the creation of a grid street system, and become a regional transportation leader. As identified in the Cranberry Plan, two of Cranberry's goals for Transportation and Mobility are:

Connectivity – Cranberry Township will improve connectivity and mobility to become a community with a grid network of interconnected streets, sidewalks, and trails; and will connect and expand the local pedestrian and street network to access key north/south and east/west transportation corridors.

Transportation Options – Cranberry Township will provide a variety of transportation options for residents, employers, workers, and visitors.

To implement these goals, the following recommendations were included in the Cranberry Plan Strategic Action Plan:

1B: Develop and fund a program to complete missing sidewalk connections throughout the Township.

1E: Integrate PennDOT's Smart Transportation Principles into the Township's transportation planning policies and implementation efforts.

1H: Amend existing zoning and subdivision and land development ordinances to strengthen existing requirements for pedestrian and vehicular connections between adjacent developments.

2A: Develop a master bike and pedestrian plan to identify connections between neighborhoods, commercial developments, and local destinations that can be safely implemented by both on-road bicycle lanes and off-road bicycle and pedestrian trails and sidewalks.

Building upon the Cranberry Plan, as the bicyclist and pedestrian connections planning process began, the following vision statement was established:

"Cranberry Township is a community where residents and visitors of all ages and abilities can choose to bike and walk safely and securely for everyday transportation and recreation."

The overall goal of the plan is to improve quality of life in the community by promoting bicycle and pedestrian transportation use, safety, and accessibility. The plan highlights the importance of making meaningful connections to other activity nodes such as employment, shopping, schools, and recreation among others.

The importance of this plan cannot be understated. This document and its supporting maps and standards will substantiate the inclusion of bicycle and pedestrian accommodations in future roadway improvement projects and land development activities. In addition, it will strengthen funding requests for implementation of an interconnected multi-modal network.

WHY PLAN FOR BICYCLES AND PEDESTRIANS?

Planning and designing a community for bicyclists and pedestrians yields numerous benefits. Overall, advancing multi-modal connections advances Cranberry Township's Principles for Sustainable Development. Benefits include:

- Increases mobility and travel options;
- Improves safety;
- Reduces traffic congestion;
- Improves community health and quality of life;
- Improves air quality and reduces energy consumption;
- Reduces household transportation cost burden;
- Encourages self-reliance; and
- Strengthens the local economy.

PLANNING PROCESS

The bicyclist and pedestrian connections plan was completed in the following five steps:

- **Step 1 - Collect Background Information:** The project team collected and reviewed a wide range of existing conditions and information including the zoning ordinance, crash data, and locations of bicycle and pedestrian origins and destinations. Extensive updates to the Township's GIS were made as a result of this step.
- **Step 2 - Focus Group Meeting No. 1:** The project team held a working meeting with the Bicyclist/Pedestrian Focus Group to introduce the plan and solicit input on bicycle and pedestrian issues. In small groups, the attendees identified areas of safety concerns, critical gaps in the bicycle and pedestrian network, and bicycle and pedestrian travel generators.
- **Step 3 - Alternatives Development:** Using the information collected in Tasks 1 and 2, the project team generated a wide range of recommendations for establishing and maintaining a bicycle network and for bridging critical gaps in the pedestrian network.

- **Step 4 - Focus Group Meeting No. 2:** The project team shared its initial recommendations at a second meeting with the focus group. The project team sought the committee's input on the completeness of the recommendations.
- **Step 5 - Public Outreach Meeting:** A public meeting was held on July 27, 2010 to review the draft plan. The team collected comments for the final plan. The final plan was developed using the public input collected and input from various Township departments.

SUMMARY OF EXISTING CONDITIONS

The existing conditions component of the planning process consisted of a collection and review of information pertaining to bicycle and pedestrian issues. The following is a summary of the key components of the existing conditions assessment.

- **Review of Cranberry Township Code of Ordinances:** Cranberry Township's Code of Ordinances contains the requirement that sidewalks be constructed as a part of any new development.
- **Crash Data:** The project team collected crash data from the Pennsylvania Department of Transportation and Cranberry Township to see if there was a pattern of crashes involving bicyclists or pedestrians.
    - Cranberry Township: From 2008 to 2010 there were 7 crashes reported to the police involving bicycles and pedestrians. Two crashes involved a pedestrian and motor vehicle crash in parking lots while two crashes involved bicyclists losing control and falling off their bikes. One pedestrian on Rochester Road about to cross Route 19 was struck by a southbound vehicle turning onto Rochester Road.
    - PennDOT Crash Data: The project team reviewed five-year crash data for PennDOT-owned roads in the Township. From 2005 through 2009, there were very few crashes involving bicycles or pedestrians. All of the crashes occurred on two roadways, Route 19 and Franklin Road. On Route 19, a bicycle rear ended a car in the vicinity of Turnpike Ramp Road, a car hit a pedestrian (location unclear), and a motorcycle hit a pedestrian at Dutilh Road. On Franklin Road, a pedestrian was hit between Wolfe Run Road and Callery Road, and a bicyclist was hit by a motor vehicle at the intersection of Peters Road.
- **Review of Geographic Information Systems:** Utilizing Cranberry Township's GIS layers, the project team reviewed the current development patterns and land uses, zoning, sidewalk coverage, and bicycle and pedestrian travel generators including large employers, schools, parks, and shopping centers.

BICYCLE NETWORK

The plan includes a network of roads that are suitable for bicyclists to use to travel around and through the Township. **The existing and future bike network is shown on Exhibit 1**. The selected roads serve as arterials for bicycles while streets within housing plans (which generally have low traffic volumes) will serve as collectors for the network. It should be noted that this existing and proposed network is a shared roadway network, not an exclusive bicycle lane network.

The map identifies roads that are recommended components of the initial bike network. This initial network can be implemented with a minor investment in signage and pavement markings, could be put into place in a very short time frame. The roads in this initial network were selected because they exhibit one or more characteristic that is amenable to bicycling such as: low traffic volume, comfortable terrain, good roadway surface, appropriate sight distances, wide paved shoulder, and meaningful connection.

The following roads are proposed as components of the initial bike route system:

- Haine School Road between Freedom Road and Rochester Road (with links to Rolling Road south of Freedom Road).
- Powell Road between Freedom Road and Rochester Road.
- Graham Park Drive within Graham Park.
- Freschcorn Road between Turnpike and Heights Drive.
- Heights Drive between Freshcorn Road and Route 19 (via Heights Drive extension).
- Graham School Road from Glen Eden Road to Rochester Road.
- Unionville Road from Glen Eden Road to Route 19.
- North Boundary Road from Route 19 to Pinehurst Road.
- Marshall Road from North Boundary Road to Rowan Road.
- Rowan Road from Route 19 to Franklin Road.
- Peters Road from Rowan Road to township line.
- Route 19 along length of Township.
- Ogle View Road from Route 19 to Unionville Road

Haine School Road

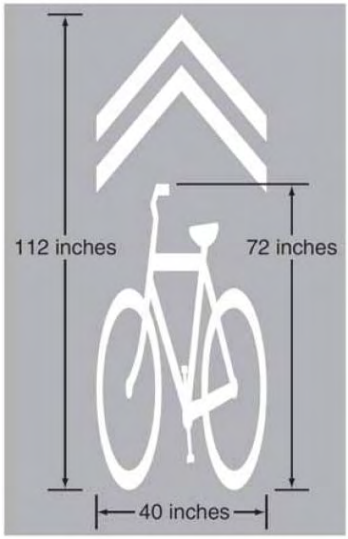
The following roads are proposed as future components of the bike route system. Their inclusion in the bike route network is contingent on reconstruction of the existing road to include bicycle elements, such as new or expanded paved shoulders or bike lanes.

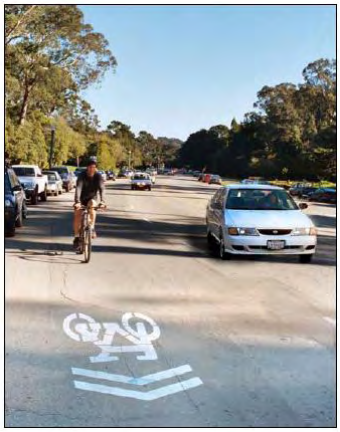
- Glen Eden Road from Township limits to Old Route 19.
- Rochester Road from Powell Road to Route 19.
- Powell Road from Rochester Road to PA Turnpike.
- Powell Road Bridge over the Turnpike.
- Freedom Road from the Township line to Route 19.
- Commonwealth Drive south from Freedom Road.
- Heights Drive Extension to Route 19.
- Route 228 from Route 19 to Township line.
- Mars Road.
- Franklin Road along length of Township.
- North Boundary Road from Pinehurst Drive to Franklin Road
- Rowan Road from Marshall Road to Route 19.
- Powell Road Bridge over the Turnpike

Powell Road Turnpike Bridge

As Cranberry Township looks to implement parts of its future system, it should look for opportunities to make improvements through land development, roadway repaving, maintenance, and reconstruction projects.

The treatments for the roads in the network include paved shoulders (where available), the shared lane pavement marking (sharrows), Share-the-Road signage, and bike route signs.





Shared Lane Pavement Marking

OFF-ROAD TRAILS

The bicycle and pedestrian network also includes recommendations for trail projects that would create important connections in the community or upgrade existing facilities. Off-road trails, particularly those within Township parks, offer great opportunities for interpretation of history and nature (e.g. wildflowers). Opportunities to create facilities that link trails and health (e.g. clearly marked trails for rehabilitation) would also be great community assets.

- **North Boundary Park trail**: The focus group provided a recommendation to pave the North Boundary Park Trail and make it a one-way loop to allow for greater separation of bicycles and pedestrians. Cut through trails can be provided for those that do not wish to do the entire loop.
- **Trail connecting Rowan Road and Mars Road/Route 228**: Marshall Road provides excellent access to North Boundary Park. Providing a trail connection from Rowan Road to Mars Road / Route 228 would significantly increase and improve this access.
- **Trail from Turnpike bridge into Graham Park**: There is an unimproved path that begins near the Turnpike Bridge on Powell Road and continues into Graham Park. Improving the trail would provide excellent access to the park from neighborhoods along Powell Road and Freshcorn Road.
- **Connection under the Turnpike connecting neighborhoods east of Graham School Road to Graham Park.** Cranberry Township will continue to have discussions with the Pennsylvania Department of Environmental Protection and the Turnpike Commission on the possible feasibility of this recommendation.

PERFORMANCE

As part of the Southwestern Pennsylvania Commission's (SPC) regional bicycle planning effort, Cranberry Township can request bicycle counts to supplement the planning effort. Information from SPC's effort can also be useful during implementation. **Refer to Exhibits 2 & 3, Bicycle Suitability Maps.** It is recommended that Cranberry Township formally request SPC to conduct bicycle counts on the following routes during the 2011 Spring / Summer timeframe:

- Graham Park Drive within Graham Park.
- Franklin Road
- Haine School Road between Freedom Road and Rochester Road
- Route 19 along length of Township.
- Graham School Road from Glen Eden Road to Rochester Road.
- Rowan Road from Route 19 to Franklin Road.
- North Boundary Road from Route 19 to Pinehurst Road.
- Powell Road between Freedom Road and Rochester Road.

MAPPING

All GIS mapping created as part of this Connection Plan should be regularly updated to include additional infrastructure that is constructed or modified. Current mapping should be utilized during the Township land development review process to identify opportunities to make connections and it should be easily accessible to the public. In addition to the detailed inventory maps, alternative versions that are user-friendly and show route information (such as degree of slope) would be helpful to users of the network.

REGIONAL CONNECTIONS

Consistent with the Cranberry Plan's recommendations, the Connections Plan must also look for opportunities for creating connections to the communities surrounding Cranberry Township. **See Exhibit 4: Regional Connections.** Using this map, the Township will continue to inventory pedestrian and bicyclist amenities constructed outside of the community so that opportunities can be identified for trails and sidewalks in Cranberry to connect to trails and sidewalks in other communities.

SIDEWALKS

The priority for pedestrian improvements in Cranberry Township focus on 1) continuing to enforce zoning and land development ordinance requirements for the construction of sidewalks, 2) connecting critical gaps in the sidewalk network, 3) seeking direct connections to neighborhood parks, and 4) looking for opportunities for expansion through roadway maintenance and reconstruction projects.

See Exhibit 5: Existing and Proposed Pedestrian Network

Some critical gaps to connect, as identified by the focus group and the general public include:

- Rochester Road from Powell Road to Cranberry Community United Presbyterian Church
- Rochester Road from Route 19 to Graham Park Drive
- Powell Road from Freedom Road to Rochester Road
- Powell Road from Rochester to the bridge over the Turnpike
- Powell Road bridge over the Turnpike
- Freedom Road through the Township
- North Boundary Road from the North Boundary Park to Pinehurst Drive
- Rowan Road
- Peters Road
- Franklin Road from Route 228 to Peters Road
- Graham School Road from the existing sidewalk area to Rochester Road
- Thomson Park / Executive Drive

MAINTENANCE RESPONSIBILITY

As per Cranberry Township's current sidewalk ordinance, sidewalks shall be maintained and repaired, on an on-going basis by the lot owner, and/or adjoining lot owner, and/or Homeowners Association, and/or the Property Owners Association.

Of critical importance to the success of the bike network is its maintenance. Once a bike route system is in place through signage, pavement markings, and mapping, Cranberry Township must ensure that the routes are maintained and kept free of debris on a regular basis. On Cranberry Township roads, it will require coordination with the Public Works Department to create and follow a maintenance schedule. On PennDOT-owned roads, Cranberry Township will need to coordinate with District 10-0 to establish a maintenance schedule.

INTERSECTION IMPROVEMENTS

The project team assesses the bicycle and pedestrian conditions at seven key locations in the community and provide recommendations for improving access. The following is a description of recommended improvements. Refer to the Design Standards section of this report for a detailed description of each improvement.

Freedom Road (SR 3020)/Thorn Hill Extension (T-937)/Nicklas Supply Driveway

Existing Conditions

This four (4) leg intersection is controlled by an actuated traffic signal, which includes pedestrian traffic signal symbols for "Walk" and "Don't Walk" and pedestrian push buttons.

The Type A crosswalks (two [2] white 6" to 12" white lines spaced six [6] feet minimum apart) exist and intersect the barrier curb radius of each approach. No curb ramps exist at this intersection.

The posted speed limit on Freedom Road (SR 3020) and on Thorn Hill Extension is 35 miles per hour (MPH) and the Nicklas Supply Driveway is not posted.

Proposed Improvements

Curb Ramps

Install curb ramps located on the tangent curbs of the intersection. These curb ramps could be integrated for any future sidewalks located on Freedom Road (SR 3020), Thorn Hill Extension (T-937), and on the driveway.

Crosswalks

Install new crosswalks at locations intersecting with the new curb ramps.

Pedestrian Pushbuttons

The existing pedestrian pushbuttons are attached to the vertical support of the traffic signal mast arms. When the new curb ramps are installed, the pedestrian pushbuttons need to be relocated so

they are between 1.5 feet and 6 feet from the edge of the curb but not further than 10 feet from the edge of the curb.

Pedestrian Signal Heads

The existing pedestrian signal heads consist of a Walking Person Symbol (symbolizing WALK) and an upraised Hand (symbolizing DON'T WALK). Even though these signal heads are in compliance with current standards, a symbolic pedestrian signal head with a countdown display would enhance the pedestrian crossings.

Freedom Road (SR 3020)/La Port Drive/Haine School Road (T-302)

Existing Conditions

This four (4) leg intersection is controlled by an actuated traffic signal, which includes pedestrian traffic signal symbols for "Walk" and "Don't Walk" and pedestrian push buttons.

Sidewalks exist on the northern side of Freedom Road (SR 3020) and the eastern side of Haine School Road.

Type A crosswalks (two [2] white 6" to 12" white lines spaced six [6] feet minimum apart) exist on all (4) approaches to the intersection that intersect with curb ramps. Only the Haine School Road approach has a decorative crosswalk. The existing curb ramps are located on the curb radius of the intersection approaches.

The posted speed limit on Freedom Road (SR 3020) and Haine School Road (T-302) is 35 miles per hour (MPH) and the posted speed limit on La Porte Drive is 25 MPH.

Proposed Improvements

Curb Ramps

Even though the existing curb ramps appear to be ADA compliant, they are located on the curb radius of each approach. While this type of design is in the PennDOT Design Standards at the moment, it is recommended that new curb ramps be installed on curb tangent sections of each approach, if Freedom Road is reconstructed in the future.

Crosswalks

Install new crosswalks at locations intersecting with new curb ramps, if installed, on all four (4) approaches to the intersection. However, if the existing curb ramps remain, it is recommend that enhanced markings be installed to improve the pedestrian crossing.

Pedestrian Pushbuttons

The existing pedestrian pushbuttons are attached to the vertical support of the traffic signal mast arms where they appear to be ADA compliant. However, if new curb ramps are installed, pedestrian pushbuttons need to be relocated so they are between 1.5 feet and 6 feet from the edge of the curb but not further than 10 feet from the edge of the curb.

Pedestrian Signal Heads

The existing pedestrian signal heads consist of a Walking Person Symbol (symbolizing WALK) and an Upraised Hand (symbolizing DON'T WALK). Even though these signal heads are in compliance with current standards, a symbolic pedestrian signal head with a countdown display is recommended to improve the pedestrian crossing.

Freedom Road (SR 3020)/Valley Forge Drive (T-818)/Parkwood Drive (T-761)

Existing Conditions

This four (4) leg intersection is controlled by an actuated traffic signal, which includes pedestrian traffic signal symbols for "Walk" and "Don't Walk" and pedestrian push buttons.

Type A (two [2] white 6" to 12" white lines spaced six [6] feet minimum apart) crosswalks are delineated on three (3) of the (4) approaches to the intersection that intersect on the radius of the intersection paved roadway shoulders. The shoulders are not ADA compliant where they intersect with the crosswalks.

No curb ramps exist; however, a sidewalk on the eastern side of Parkwood Drive (T-761) enters onto a modified curb ramp that does not meet ADA criteria.

The posted speed limit on Freedom Road (SR 3020) is 35 miles per hour (MPH) and the posted speed limit on Valley Forge Road (T-818) and Parkwood Drive (T-761) is 25 MPH.

Proposed Improvements

Curb Ramps

Since curbs do not exist at this intersection, curb ramps are not needed. However, it is recommended that where the crosswalks intersect with roadway shoulders that a detectable warning surface be installed in the shoulder, making it ADA compliant.

Crosswalks

Install new crosswalks at locations where they intersect with the tangent sections of the paved roadway shoulders on all four (4) approaches to the intersection.

Pedestrian Pushbuttons

The existing pedestrian pushbuttons are attached to the vertical support of the traffic signal mast arms where they appear to be ADA compliant. However, when new crosswalks are installed, pedestrian pushbuttons need to be relocated so they are between 1.5 feet and 6 feet from the edge of the curb, but not further than 10 feet from the edge of the curb.

Pedestrian Signal Heads

The existing pedestrian signal heads consist of a Walking Person Symbol (symbolizing WALK) and an Upraised Hand (symbolizing DON'T WALK). Even though these signal heads are in compliance

with current standards, a symbolic pedestrian signal head with a countdown display is recommended to improve the pedestrian crossing.

Freedom Road (SR 3020)/Powell Road (T-301)

Existing Conditions

This four (4) leg intersection is controlled by an actuated traffic signal, which includes pedestrian traffic signal symbols for "Walk" and "Don't Walk" and pedestrian push buttons.

Type A crosswalks (two [2] white 6" to 12" white lines spaced six [6] feet minimum apart) are delineated on two (2) of the four (4) approaches to the intersection that intersect with curb ramps. The crosswalks are located across both approaches to Powell Road (T-301) and the eastern approach to Freedom Road (SR 3020).

A sidewalk exists on the eastern side of Powell Road (T-761) north of Freedom Road (SR 3020), on the western side of Powell Road (T-791) south of Freedom Road (SR 3020), and along the northern side of Freedom Road (SR 3020) east of Powell Road (T-761). The curb ramp in the northeast corner of the intersection does not intersect with the existing sidewalk and pedestrians must walk on a grassy slope to access the curb ramp from the sidewalk. The curb ramp in the southeast corner intersects with the sidewalk.

The posted speed limit on Freedom Road (SR 3020) is 35 miles per hour (MPH) and the posted speed limit on Powell Road (T-301) is 25 MPH.

Proposed Improvements

Curb Ramps

Even though the existing curb ramps appear to be ADA compliant, they are located on the curb radius of each approach. While this type of design is currently in the PennDOT Design Standards, it is recommended that new curb ramps be installed on curb tangent sections of each approach, if Freedom Road is reconstructed in the future.

A sidewalk connection is recommended to the existing curb ramp located in the northeastern corner of the intersection.

Crosswalks

Install new crosswalks at locations intersecting with new curb ramps, if installed, on all four (4) approaches to the intersection. However, if the existing curb ramps remain, it is recommended that enhanced markings be installed to improve the pedestrian crossing.

Install new crosswalks at locations intersecting with new curb ramps on all four (4) approaches to the intersection.

Pedestrian Pushbuttons

The existing pedestrian pushbuttons are attached to the vertical support of the traffic signal mast arms where they appear to be ADA compliant. However, if new curb ramps are installed, they need to be relocated to where they are between 1.5 feet and 6 feet from the edge of the paved shoulder and not more than 10 feet from the edge of the shoulder.

Pedestrian Signal Heads

The existing pedestrian signal heads consist of a Walking Person Symbol (symbolizing WALK) and an Upraised Hand (symbolizing DON'T WALK). Even though these signal heads are in compliance with current standards, a symbolic pedestrian signal head with a countdown display is recommended to improve the pedestrian crossing.

US Route 19/Rowan Road (SR 3018)/Ogle View Road (T-305)

Existing Conditions

This four (4) leg intersection is controlled by an actuated traffic signal, which does not include pedestrian signals, push buttons, or crosswalks.

The posted speed limit on US Route 19 is 45 miles per hour (MPH), and the posted speed limit on Rowan Road (SR 3018) and Ogle View Road (T-305) is 35 MPH.

Proposed Improvements

Curb Ramps

Curb ramps should be installed on the tangent sections of all four (4) corners of the intersection.

Crosswalks

Install new crosswalks at locations intersecting with new curb ramps on all four (4) approaches to the intersection.

Pedestrian Pushbuttons

Install ADA-*compliant pedestrian pushbuttons.

Pedestrian Signal Heads

Install pedestrian signal heads with a countdown display.

Since no pedestrian accommodations exist at this intersection, the traffic signal will need to be re-timed to include the pedestrian traffic signal phases and sufficient time for the pedestrian to walk across the intersection approaches.

Because of the length a pedestrian will need to travel, to cross over US Route 19, a traffic median may need to be constructed between the northbound and southbound lanes in order to reduce the

time needed to cross the approach. Pedestrian push buttons and curb ramps may also be constructed within this median to be ADA compliant.

Installing a traffic median may require the narrowing of the traffic lanes on US Route 19. These narrower lanes may help minimize speeds and reduce pedestrian crossing distances.

In addition, since this intersection is interconnected to adjacent traffic signals in the corridor, the coordination timing between signals may need to be revised.

US Route 19/Glen Eden Road (SR 3024)/North Boundary Road (T-311)

Existing Conditions

This four (4) leg intersection is controlled by an actuated traffic signal that does not include pedestrian signals, push buttons, or crosswalks.

The posted speed limit on US Route 19 is 45 miles per hour (MPH) and the posted speed limit on Glen Eden Road (SR 3024) and North Boundary Road (T-311) is 35 MPH.

Sidewalks exist on the eastern side of US Route 19 north of North Boundary Road (T-311) , on the western side of US Route 19, south of Glen Eden Road (SR 3020), and on the southern side of Glen Eden Road (SR 3024). A guiderail exists in the southern corner of the intersection, which prohibits pedestrian access to this corner.

The sidewalk along the eastern side of US Route 19 enters onto shoulder radius of the intersection. The sidewalk on the western side of US Route 19 enters onto the radius with Glen Eden Road (SR 3024) via a non ADA-compliant curb ramp.

There is a median on US Route 19 north of Glen Eden Road (SR 3024)/North Boundary Road (T-311).

Proposed Improvements

Curb Ramps

A curb ramp should be installed on the southern tangent section of Glen Eden Road (SR 3024), a detectable warning surface should be installed in the northern tangent shoulder of Glen Eden Road (SR 3024), and a detectable warning surface should be installed in the western and eastern tangents of US Route 19, north of Gen Eden Road (SR 3024)/North Boundary Road (T-311).

Crosswalks

Install new crosswalks at locations intersecting with the curb ramp/shoulder detectable warning surfaces across the southern approach of US Route 19 and across the Glen Eden (SR 3024) approach to the intersection.

Pedestrian Pushbuttons

Install ADA-compliant pedestrian pushbuttons.

Pedestrian Signal Heads

Install pedestrian signal heads with a countdown display.

Since no pedestrian accommodations exist at this intersection, the traffic signal will need to be re-timed to include the pedestrian traffic signal phases and sufficient time for the pedestrian to walk across the intersection approaches.

Because of the length of time a pedestrian will need to travel, to cross over US Route 19, the traffic median may need to be widened between the northbound and southbound lanes (north of Glen Eden Road [SR 3024]/North Boundary Road [T-311]), in order to reduce the time needed to cross the approach. Pedestrian push buttons and curb ramps may also be constructed within this median to be ADA compliant. Installing a traffic median may require the narrowing of the traffic lanes on US Route 19. These narrower lanes may help minimize speeds and reduce pedestrian crossing distances.

In addition, since this intersection is interconnected to adjacent traffic signals in the corridor, the coordination of timing between signals may need to be revised.

Rochester Road (SR 3022)/Dover Drive/ Graham Park Entrance (T-713)

Existing and Planned Conditions

The existing control of this intersection is "STOP" control with right turns only into and out of the Graham Park entrance. A new traffic signal is current being designed to control this intersection, which would permit full access/egress to the Graham Park entrance.

The new traffic signal design is provided in the plans: Highway Occupancy Permit, T-713 (Graham Park Drive) and SR 3022 (Rochester Road) Intersection Improvements for Cranberry Township, located in Cranberry Township, Butler County, Pennsylvania, May 2010, Revised June 2010. These plans were Professionally Stamped by Darren Scott Myer, June 29, 2010 from Herbert Howland and Grubic, Inc.

Type A crosswalks are planned across Rochester Road (SR 3022) westbound approach, Dover Drive northbound approach, and Graham Park Entrance (T-713) southbound approach. The crosswalks intersect with ADA-compliant curb ramps located on the tangent sections of each approach.

At each crosswalk ADA-compliant pedestrian pushbuttons and pedestrian signal heads with a countdown display are also planned.

Proposed Improvements

Since a new traffic signal installation is being planned at this intersection, it meets current design criteria, including the ADA requirements. However, to improve pedestrian access, the new signal installation could include the following:

- Install a crosswalk across Rochester Road (SR 3022) eastbound approach with curb ramps located on the tangent.
- Install ADA compliant pedestrian pushbuttons and pedestrian countdown signals for the proposed crosswalk across Rochester Road (SR 3022) eastbound approach.
- Install enhanced markings for the crosswalks.

FACILITIES

Cranberry Township Parks and the Municipal Center are key destinations to which people travel on a regular basis. Access to the parks, in particular, by foot and bicycle is regularly identified as a priority by residents. Small improvements could help make these destinations easier for people to travel by bike.

- Install bike racks at Township parks and buildings. Encourage local businesses to do the same.
- Explore the idea of a bike rental program at parks, starting with Graham Park. Use resident cards for payment, reservation, etc.

EDUCATION AND ENFORCEMENT

The successful development and use of a pedestrian and bicycle network will depend on the education of the travelling public. Both the bicyclists/pedestrians and the motor vehicle drivers must be made aware of applicable laws and regulations, as well as common courtesies for share the road situations.

- Develop new and/or utilize existing bicycle education programs.
- Air public service announcements regarding safe bicycling practices.
- Use Township newsletter to highlight bicycle and pedestrian issues.
- Cultural, historic, and/or natural features identified along trails.
- New trail for those of all abilities or those recovering/rehabilitating from injury/illness.
- Need to educate both motorists and bicyclists. Bicyclists need to obey the rules of the road too. Refer to the PA Bicycle Instruction Manual.

PRIORITIZATION

Three factors may be considered during the prioritization of implementing the proposed bicycle and pedestrian network improvements. They are:

- Incorporate improvements into future roadway reconstruction/rehabilitation projects. This includes not only Township projects, but Butler County, Pennsylvania Department of Transportation and Pennsylvania Turnpike Commission bridge and roadway rehabilitation projects.

- Concentrate on the missing links in the pedestrian network.

- Low cost items, such as the signing and marking of the existing bicycle network should be given high priority.

UNIT COSTS FOR PROPOSED IMPROVEMENTS

Unit costs for the major improvement items were estimated and are shown below (Year 2010 dollars). These costs do not include engineering, design or acquisition of right-of-way costs.

- Paved trail: $28.30 per foot of trail for 10' foot trail.
- Sidewalk: $80 per linear foot for sidewalk and curb.
- Paved shoulder: $60 per linear foot.
- Shared Lane Marking: $150 labor and materials
- Share-the-Road signage: $30 to $150 per sign, $250 per installation.

FUNDING OPPORTUNITIES

Below is a list of current state and federal grant programs that have funding available for bicycle and pedestrian improvements:

- PA Community Transportation Initiative
- Transportation Enhancements Program
- Hometown Streets/Safe Routes to School Program
- National Highway System
- Surface Transportation Program (STP)
- Hazard Elimination and Railway-Highway Crossing programs
- Congestion Mitigation and Air Quality Improvement Program
- Recreational Trails
- Federal Lands Highway Program
- National Scenic Byways Program
- High Priority Projects and Designated Transportation Enhancement Activities
- Highway Safety Programs
- DCNR
- Growing Greener

During the Stakeholder and public meetings, it was also suggested to seek out Public /Private Partnership funding to support implementation. This could include sponsorship for enhancements in the park areas.

DESIGN STANDARDS

Pedestrian Improvements

The following describes pedestrian crossing improvements to enhance pedestrian safety and accessibility at signalized and non-signalized intersections. These improvements could be applied to both existing and new intersections.

Each improvement provides a brief description along with a reference where more detail is provided in the design and application, as well as an opinion of probable cost.

Curb Ramps

Install a curb ramp with a Detectable Warning Surface (DWS) on each end of a crosswalk to be in compliance with the American Disabilities Act (ADA). Install curb ramps at signalized intersections, non-signalized intersections, and at mid-block pedestrian crossings. The curb ramp should be located on the tangent section of each intersection approach. It is not recommended that curb ramps share a crosswalk from another approach or be located on the curb radius (diagonal curb ramp) from both approaches.

Locating curb ramps on the tangent section places a pedestrian waiting to cross in better view of a motorist. In addition, it provides better protection for the pedestrian as opposed to the pedestrian waiting to cross on a ramp located on a radius where larger vehicles' tires may ride onto the radius where a pedestrian may be standing.

Since curb ramps should be located on the tangent section of each intersection approach, the location of the crosswalks may need to be shifted back into each approach to the intersection. Shifting the crosswalk may require shifting the approach stop bars and the traffic signal vehicle detectors (if at a signalized intersection) so they will be located at the appropriate location in accordance with design standards.

Where crosswalks intersect with paved roadway shoulders, DWS should be installed in the shoulder.

Opinion of Probable Costs

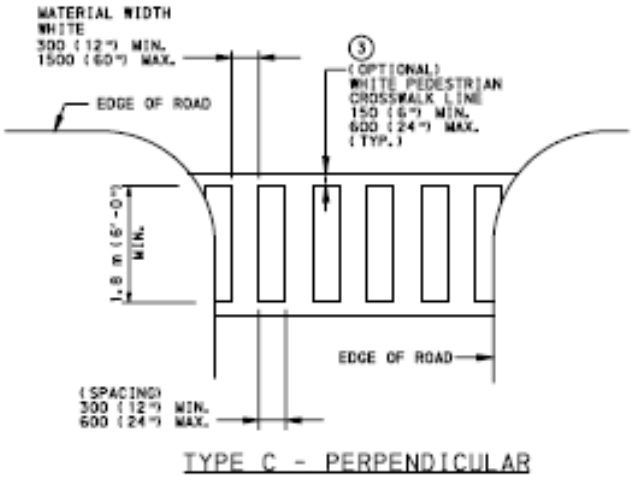
The cost is approximately $3000.00 to $5,000.00 per curb ramp (new or retrofitted). Costs would depend on quantity of curb ramps installed. The estimated cost does not include any engineering or modification of existing stop bars and traffic signal detectors.

References

The Americans with Disabilities Act Title II Technical Assistance Manual, II-6.0000 General and II-6.6000 Curb Ramps

PennDOT Publication 72 M, RC-67M – Curb Ramps and Sidewalks.

Crosswalks at Signalized Intersections



When the crosswalks are relocated due to the new locations of the curb ramps (see Curb Ramps above), it is recommended that a more visible type of crosswalk be delineated to enhance to visibility of the crossing. Crosswalks should be located across each approach to the intersection unless a corner is inaccessible to pedestrians.

Installing crosswalks that intersect the new curb ramps located on the tangent curbs of the approaches may require the relocation of the existing stop bars and traffic signal loop detectors. Since the stop bars and loop detectors are at a new location, this may require re-timing the traffic signal to accommodate the new locations where vehicles may be stopped (see Curb Ramps above).

Several types of enhanced markings may be installed in accordance with Pennsylvania standards, which include a Type B – Diagonal, a Type C – Perpendicular and the three (3) types of Decorative Crosswalks. The Type C –Perpendicular (also known as Continental and Ladder) marking is the recommended treatment pattern.

One of the best materials for marking crosswalks is inlay tape, which is installed on new or repaved streets. It is highly reflective, long-lasting, and slip-resistant, and does not require a high level of maintenance. Although initially more costly than paint, both inlay tape and thermoplastic are more cost-effective in the long run. Inlay tape is recommended for new and resurfaced pavement, while thermoplastic may be a better option on rougher pavement surfaces. Both inlay tape and thermoplastic are more visible and less slippery than paint when wet.

Opinion of Probable Costs

Approximate installation costs (two [2] to three [3] lane roadway) are $150.00 for a regular striped crosswalk, $400.00 for a ladder crosswalk, and $3,500.00 for a patterned concrete crosswalk. Installation costs vary by quantity of crosswalks installed and width of the roadway.

Maintenance of the markings must also be considered and varies by region of the country and materials used. Estimated costs do not include engineering or modification of existing stop bars and traffic signal detectors.

Reference

PennDOT Publication 111 M, TC-8600 – Pavement Markings, Crosswalks.

Crosswalks at Non-Signalized Intersections

Crosswalks should be located across each approach to the intersection unless a corner is inaccessible to pedestrians.

Several types of enhanced markings may be installed in accordance with Pennsylvania standards, which include a Type B – Diagonal, a Type C – Perpendicular and the three (3) types of Decorative Crosswalks.

When installing crosswalks that intersect curb ramps located on the tangent curbs of the "STOP" controlled approaches to an intersection, it is recommended that a Stop Line be installed at a location that is a minimum of four (4) feet in advance of and parallel to the crosswalk lines.

The minimum width of a Stop Line is 12 inches and the maximum width of Stop Line is 24 inches.

When installing crosswalks that intersect curb ramps located on the tangent curbs of the non-controlled approaches to an intersection, it is recommended that a Yield Line be installed at a location that is a minimum of 20 feet or a maximum of 50 feet in advance of the crosswalk lines. Yield Lines consist of a row of solid white Isosceles Triangles pointing toward approaching vehicles extending across approach lanes to indicate the point at which the yield is intended or required to be made. 12 inch x 18 inch triangles should be used when the posted speed limit is less than 40 MPH. 24 inch x 36 inch triangles can be used at any speed limit.

Use the Pedestrian (W11-2) sign with the Diagonal Downward Pointing Arrow (W16-7P) plaque immediately at the crossing of a non-controlled approaches to the intersection. In addition, locate a Yield Here to Pedestrian with a right or left arrow (R1-5L or R1-5R) at the Yield Line.

Opinion of Probable Costs

Approximate installation costs (two [2] to three [3] lane roadway) are $150.00 for a regular striped crosswalk, $400.00 for a ladder crosswalk, and $3,500.00 for a patterned concrete crosswalk. Costs of installation vary by quantity of crosswalks installed and width of the roadway. Approximate installation costs of a Yield Line or Stop Bar is $150.00 for each lane.

Costs range from $30.00 to $150.00 per typical sign plus installation at $250.00 per sign. Costs would depend on quantity of signs installed.

Maintenance of the markings must also be considered and varies by region of the country and materials used. Estimated costs do not include engineering.

References

PennDOT Publication 111 M, TC-8600 – Pavement Markings, Conventional, Crosswalks, and Speed Humps, Yield and Bicycle.

PennDOT Publication 46, Traffic Engineering Manual, Section 3.2.8 Stop and Yield Lines, Section 3.2.9 Crosswalks, and Section 11.9 Unsignalized Mid Block Crosswalks.

Crosswalks At (Non Signalized) Mid-Block Locations

An engineering study needs to be completed to justify any mid-block crosswalk in accordance with the PennDOT Publication 46, Traffic Engineering Manual. The minimum requirements include the following:

- Speed Limit is less than 35 MPH;
- The nearest marked crosswalk on the same roadway is over 300 feet from the proposed crossing;
- Number of pedestrian crossings should be 80 or more during any one (1) hour, or 40 or more during each of any four (4) hours, or if a high concentration of children, elderly or disabled pedestrians then use 50% of the one (1) and any four (4) hour thresholds;
- Maximum volume = 10,000 Average Daily Traffic (ADT) except for two-lane roadways = 15,000 ADT;
- No parking within 75 feet of the crosswalk; and
- Minimum Sight Distance requirements are met.

Several types of enhanced markings may be installed in accordance with Pennsylvania standards which include a Type B – Diagonal, a Type C – Perpendicular and the three (3) types of Decorative Crosswalks.

One of the best materials for marking crosswalks is inlay tape, which is installed on new or repaved streets. It is highly reflective, long-lasting, and slip-resistant and does not require a high level of maintenance. Although initially more expensive than paint, both inlay tape and thermoplastic are more cost-effective in the long run. Inlay tape is recommended for new and resurfaced pavement, while thermoplastic may be a better option on rougher pavement surfaces. Both inlay tape and thermoplastic are more visible and less slippery than paint when wet.

When installing crosswalks at mid-block locations, it is recommended that a Yield Line be installed at a location that is a minimum of 20 feet or a maximum of 50 feet in advance of the crosswalk lines. Yield Lines consist of a row of solid white Isosceles Triangles pointing toward approaching vehicles extending across approach lanes to indicate the point at which the yield is intended or required to be made. 12 inch x 18 inch triangles should be used when the posted speed limit is less than 40 MPH. 24 inch x 36 inch triangles can be used at any speed limit.

Use the Pedestrian (W11-2) sign with the Diagonal Downward Pointing Arrow (W16-7P) plaque immediately at the crossing. Locate a Yield Here to Pedestrian with a right or left arrow (R1-5L or R1-5R) at the Yield Line.

Opinion of Probable Costs

Approximate installation costs (two [2] to three [3] lane roadway) are $150.00 for a regular striped crosswalk, $400.00 for a ladder crosswalk, and $3,500.00 for a patterned concrete crosswalk. Costs of installation vary by quantity of crosswalks installed and width of the roadway.

Approximate installation costs of a Yield Line or Stop Bar is $150.00 for each lane.

Costs range from $30.00 to $150.00 per typical sign plus installation at $250.00 per sign. Costs would depend on quantity of signs installed.

Maintenance of the markings must also be considered and varies by region of the country and materials used. Estimated costs do not include engineering.

References

PennDOT Publication 111 M, TC-8600 – Pavement Markings, Conventional, Crosswalks, and Speed Humps, Yield and Bicycle.

PennDOT Publication 46, Traffic Engineering Manual, Section 3.2.8 Stop and Yield Lines, Section 3.2.9 Crosswalks, and Section 11.9 Unsignalized Mid Block Crosswalks.

Pedestrian Pushbuttons

Since curb ramps should be located on the tangent section of each intersection approach, the pedestrian push buttons need to be located so they are also in compliance with ADA requirements.

They may need to be located where they are between 1.5 feet and 6 feet from the edge of the curb, shoulder, or pavement and should not be further than 10 feet from the edge of the curb, shoulder, or pavement.

Opinion of Probable Costs

Pedestrian Signal Heads – Opinion of Probable Costs.

Reference

See the Federal Highway Administration (FHWA) Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD), 2009 Edition, Section 4E.08 Pedestrian Detectors.

Pedestrian Signal Heads

A pedestrian signal head with a countdown display is recommended for each crosswalk/curb ramp location. The objective of the countdown display is to provide information to pedestrians about how much time is left to cross the street at signalized intersections.

The device consists of a standard pedestrian signal with standard shapes and color, with an added display that shows the countdown of the remaining crossing time. The countdown timer starts either at the beginning of the pedestrian phase or at the onset of the flashing DON'T WALK. The timer continues counting down through the pedestrian clearance interval. At the end of the pedestrian clearance interval, the countdown device displays a zero and the DON'T WALK indication or solid red hand appears.

The advantages of this countdown signal include:

- Easily understood by all age groups
- Increases the feeling of safety

- Reduces the number of pedestrians stranded in the crosswalk when the light changes
- Appropriately suited for wide crossing and areas where there are many senior citizens and people with walking disabilities
- The great majority of installations are simple drop-in replacement

The timing of the pedestrian traffic should be based on a pedestrian walking 4 feet/second.

Opinion of Probable Costs

Approximate cost is between $20,000.00 and $40,000.00 to install/retrofit a four (4) approach intersection with pedestrian signals and pedestrian push buttons. Estimated costs do not include engineering.

Reference

Federal Highway Administration (FHWA) Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD), 2009 Edition, Section 4E.05 Pedestrian Intervals and Signal Phases, and Section 4E.07 Countdown Pedestrian Signals.

Bicycle Shared Lane Markings on Roadways

Title 75 of the Pennsylvania Consolidated Statutes contains the laws that govern the operation of vehicles on Pennsylvania roads. In Pennsylvania, a bicycle is considered a vehicle and, as such, is governed by a general set of rules (common to all vehicles) and a specific set of rules (designed for bicycles).

Bicycles proceeding at less than the normal speed of traffic on roadways shall be driven as close as practicable to the right-hand curb or edge of the roadway. A bicycle may be operated on the shoulder of a highway and shall be operated in the same direction as required of vehicles operated on the roadway.

Pavement Marking

Whenever shoulders of highways are in poor condition, narrow, or do not exist, a recommended improvement on the roadway to alert drivers that bicyclists are also in the lane is to install a shared lane marking within roadway travel lanes. A Shared Lane Marking (SLM) is a white symbol of a bicycle with an outline of an arrow placed above. It is approximately eight (8) feet high and four (4) wide.

The SLM may be used to:

- Assist bicyclists with lateral positioning in a shared lane with on-street parallel parking in order to reduce the chance of a bicyclist impacting the open door of a parked vehicle;
- Assist bicyclists with lateral positioning in lanes that are too narrow for a motor vehicle and a bicycle to travel side by side within the same traffic lane;
- Encourage safe passing of bicyclists by motorists; and
- Reduce the incidence of wrong-way bicycling.

The SLM should not be placed on roadways that have a speed limit above 35 mph.

If used in a shared lane with on-street parallel parking, SLM should be placed so that the centers of the markings are at least 11 feet from the face of the curb, or from the edge of the pavement where there is no curb.

If used on a street without on-street parking that has an outside travel lane that is less than 14 feet wide, the centers of the SLM should be at least 4 feet from the face of the curb, or from the edge of the pavement where there is no curb.

If used, the SLM should be placed immediately after an intersection and spaced at intervals not greater than 250 feet thereafter. Shorter intervals are recommended if numerous driveways exist in a corridor.

Markings are usually done with paint or thermoplastic. Paint is cheaper but tends to fade quickly, while thermoplastic lasts longer but may be slippery. If thermoplastic is used for bicycle markings, a thin, non-skid type is preferred. Amount of skid resistance varies with each product. Sometimes glass beads, crushed glass and aggregate can be added during placement to increase skid resistance, but the skid resistant particles tend to sink before the thermoplastic cools.

Care in the placement of painted markings will increase their longevity. For example, avoid placement of markings near far-side bus stops or near driveways or other locations, particularly those with high truck traffic, to avoid wear from tires.

Opinion of Probable Costs

A rough cost estimate of labor and materials for the SLM applied using methyl methacrylate is $150.00 each. Costs of other markings would depend on quantity and type and materials used. Estimated costs do not include engineering.

Warning Signs

To complement the Shared Lane Markings, it is recommended to install warning signs along the roadway.

One (1) warning sign is a Share the Road sign (W16-1) which is a diamond-shaped sign with a black symbol.

This sign installation should be used along the road where the SLM are located. The spacing of these signs should be the same spacing as the SLM. Judgment as to how many signs should be installed where the SLM are closely spaced.

In addition, these signs should be located on the major roads intersection of those roadways where the SLM are located. The sign installations should be installed at least 500 feet of the intersecting street with the SLM. Attach a Distance Plaque (W16-2) under the W16-1 sign with the appropriate distance indicated.

Opinion of Probable Costs

Costs range from $30.00 to $150.00 per typical sign, plus installation at $250.00 per sign. Costs would depend on quantity of signs installed. Estimated costs do not include engineering.

References

PennDOT Publication 111 M, TC-8600 – Pavement Markings, Conventional, Crosswalks, and Speed Humps, Yield and Bicycle.

Federal Highway Administration (FHWA) Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD), 2009 Edition for the size and shape of the Shared Lane Markings other guidelines for their installation.

Exhibit 1: Existing and Proposed Bike Network

Exhibits 2 & 3: Southwestern Pennsylvania Commission Bicycle Suitable Maps

Exhibit 4: Regional Connections

Exhibit 5: Existing and Proposed Pedestrian Network