



**Capital District Transportation Committee (CDTC)/ Capital District Regional Planning Commission
(CDRPC) Technical Assistance Program**

TECHNICAL MEMORANDUM

Town of Glenville – Glenridge Rd. Pedestrian Connections

Glenridge Rd. Pedestrian Connections 4/4/22

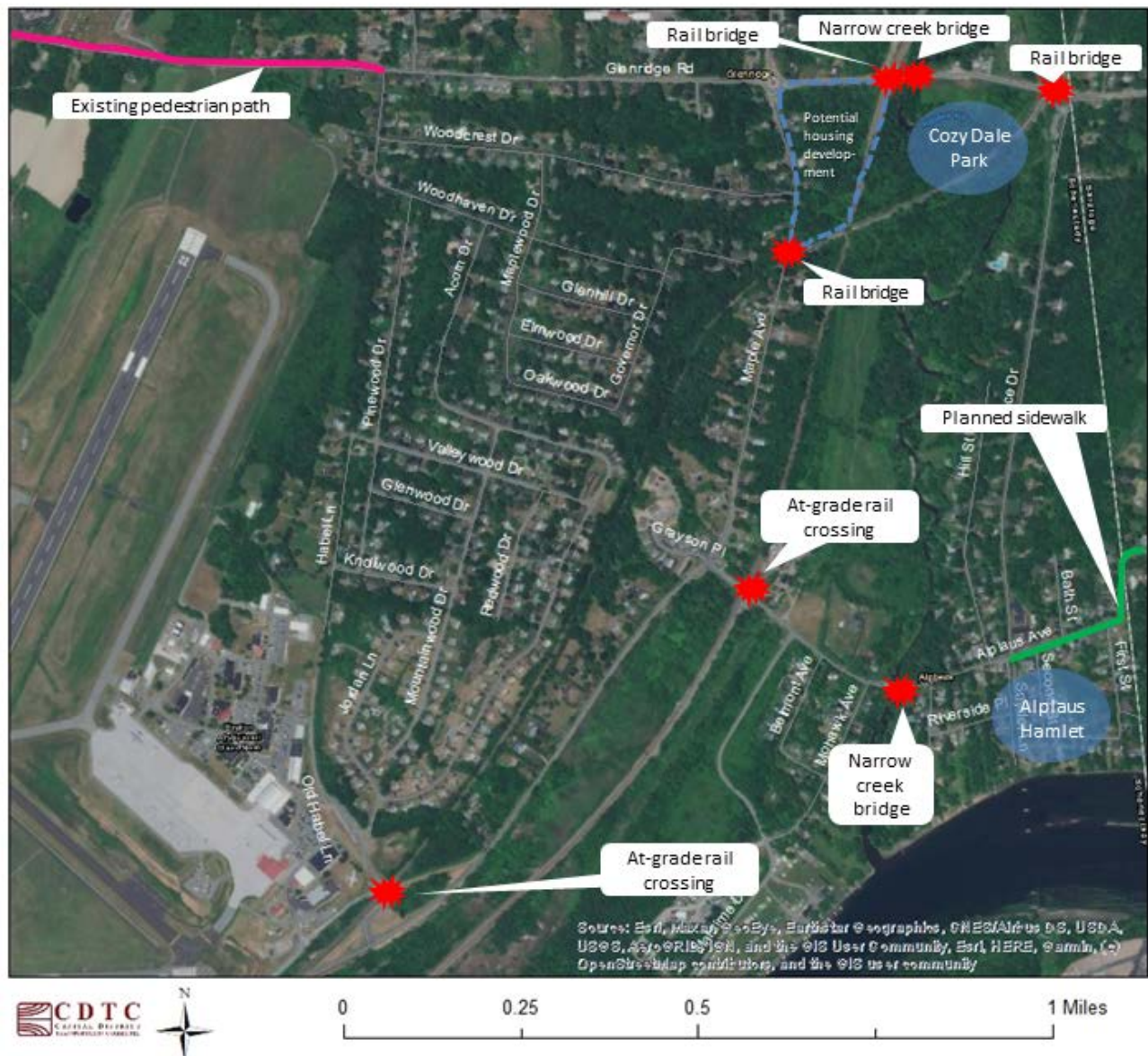
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Background

The Town of Glenville has requested technical assistance through the CDTC/CDRPC Community Planning Technical Assistance Program to provide an assessment of options to create safe, convenient pedestrian connections between the Glenridge Rd. sidepath (that terminates at the corner of Glenridge Rd. and Woodcrest Dr.) to Cozy Dale Park, the center of the Alplaus Hamlet at Alplaus Ave. and the site of a proposed multi-family housing development at the southeast corner of Maple Ave. and Glenridge Rd. The scope of work includes documenting existing conditions such as public Rights of Way (ROW), assessing road conditions, traffic levels and safety concerns, and barriers such as steep slopes. The scope also includes recommendations for wayfinding and pavement markings for further review by the Town.

Study Area

Town of Glenville - Glenridge Rd Pedestrian Connections - Study Area



Prior Planning Efforts

Alplaus Hamlet Plan, 2019

This Plan was created by the residents of the Alplaus Hamlet. Although this Plan was not adopted by the Town Board, it contains valuable information regarding residents' pedestrian safety concerns and indicates the residents' wishes for improved pedestrian amenities and traffic calming along Alplaus Ave. and Bruce Dr. The Plan also details road drainage problems on various roads in the Hamlet and indicates resident support for the creation of multi-use paths to connect Glenville neighborhoods.

Town of Glenville Comprehensive Plan, 2017

The Town of Glenville Comprehensive Plan was adopted in 2017. It includes a summary of bicycle and pedestrian-related issues in the town, such as the lack of sidewalks throughout the Town (with the exception of the Town Center, where sidewalks were built in 2015 and 2016). The Plan also describes the high-volume, high-speed conditions often found on its major arterials such as Glenridge Rd. that limit safe opportunities for bicyclists and pedestrians. It also describes how the CDTC and the New York State Department of Transportation (NYSDOT) recommends implementing access management strategies to manage the congestion along the Route 50 corridor rather than more costly fixes like adding travel lanes or center turning lanes. In this plan, specific recommendations related to improving the bicycling and walking experience in the Town include expanding the Mohawk-Hudson Bike-Hike Trail and the Long Path, building walking paths or multi-use paths to link the Town Center or various neighborhoods to recreational amenities such as the Indian Kill Nature Preserve or Maalwyck Park, or expanding the Mohawk-Hudson Bike-Hike Trail.

Town Center Master Plan, 2004

The Town Center Master Plan was adopted by the Town in 2004. The lack of walking and biking opportunities was identified as a hindrance in accessing the Town Center from surrounding neighborhoods such as the Woodhaven neighborhood. The Plan recommended developing a system of sidewalks and multi-use paths that extend beyond the Town Center and proposed a Multi-Use Path and Sidewalk System. The Plan proposed multi-use paths along Glenridge Rd. from the Town Center all the way east to Cozy Dale Park on Bruce Dr., on Bruce Dr. from Glenridge Rd. to Alplaus Ave., and on Alplaus Ave. beginning at Bruce Dr. and turning south to hug the river and link up with sidewalks on Freemans Bridge Rd.

Existing Conditions

NYSDOT Roadway Inventory System

According to the NYSDOT Roadway Inventory System (RIS), Glenridge Rd is classified as a Principal Arterial – Other (Functional Class 14) and is a Federal-aid Eligible State Road. Glenridge Road is a part of the

National Highway System (NHS). Maple Ave is classified as a Minor Arterial (Functional Class 16), and is a Federal-aid Eligible Local Road. Maple Ave is not part of the NHS. All the remaining roads in the study area are locally owned.

Traffic Volume and Speed

Data on vehicle speeds and classification counts were collected by Thomas Melander and provided to the Town of Glenville Safety Committee on various dates between 2003 and 2022. Available data are summarized in the table below. These data were also compared to available data through the NYS Traffic Data Viewer (also included in the table).

Glenridge Rd.

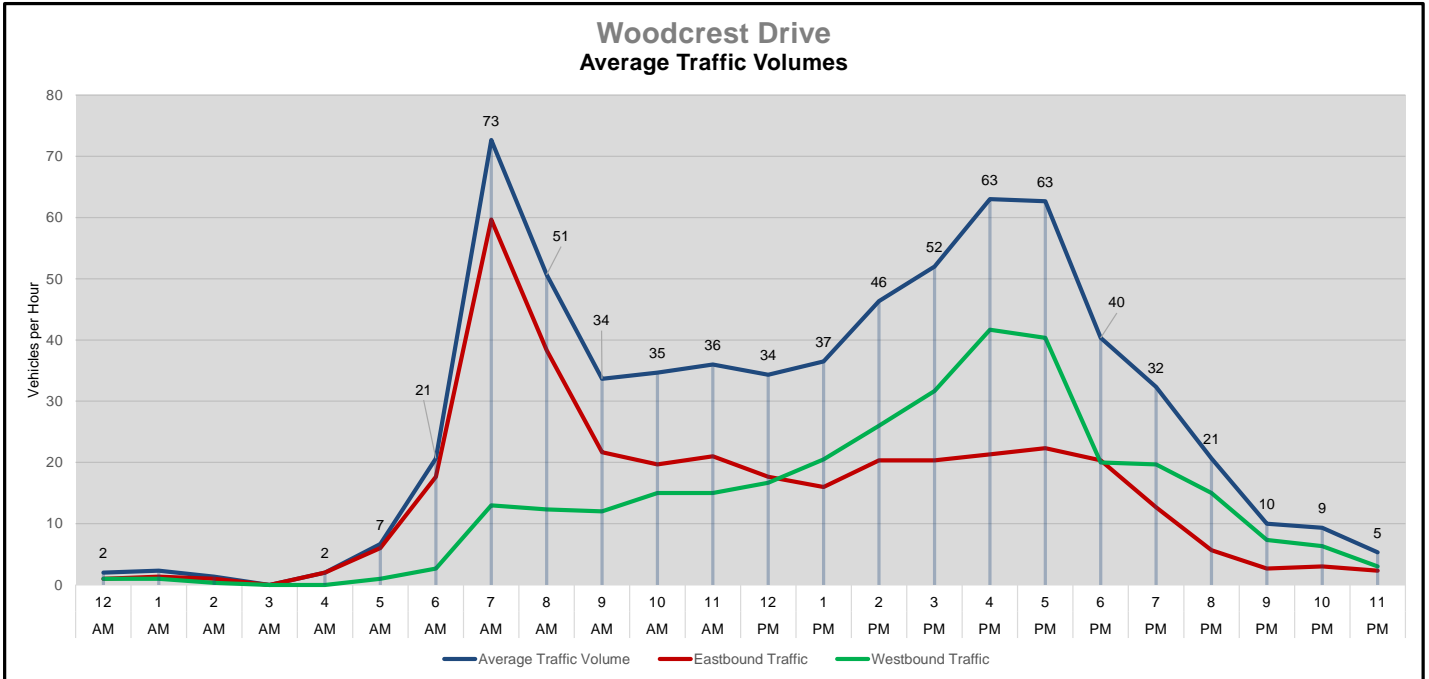
Data on vehicle speeds and classification counts were collected on Glenridge Rd. 0.3 miles east of Saratoga Rd., from Friday, December 2, 2011 through Wednesday, December 7, 2011 using a MC-2 traffic counter. The observed two-way average daily traffic (ADT) was 6,770 vehicles/day, with a peak hour traffic volume of 635 vehicles. The posted speed limit on Glenridge Rd. is 40 mph. The average speed observed was 37 mph. The 85th percentile speed was 43 mph. Sixty-five percent (65%) of vehicles were observed to be travelling between 34 and 44 mph. Trucks were observed to comprise 1% of the traffic.

Data on vehicle speeds and classification counts were collected on Glenridge Rd. 750 feet west of Bruce Dr., from Saturday, August 23, 2003 through Saturday, August 30, 2003 using a GITC traffic counter. The observed two-way average daily traffic (ADT) was 11,072 vehicles/day. The average speed observed was 38 mph. The 85th percentile speed was 44 mph. 84% of vehicles were observed to be travelling between 31 and 40 mph. Trucks were observed to comprise 2% of the traffic.

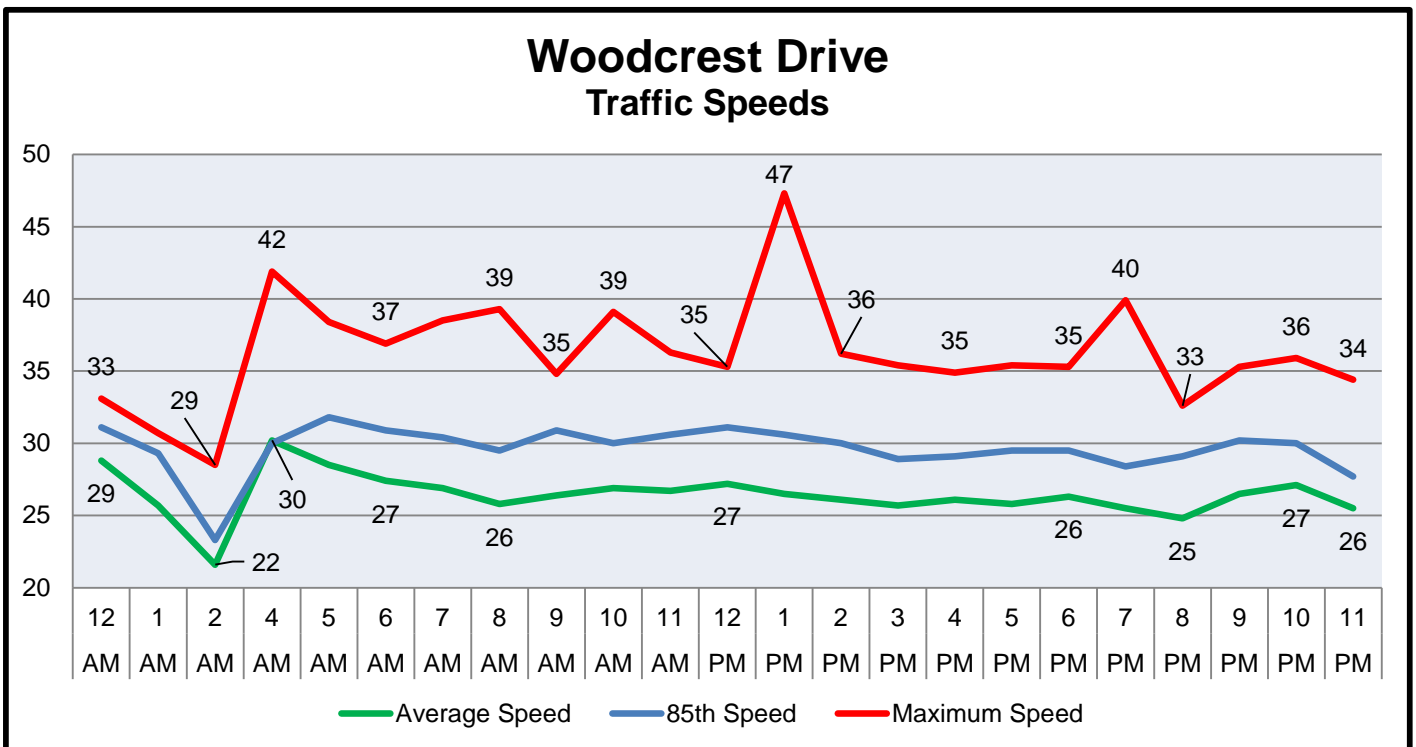
Woodcrest Dr.

A 3-day vehicle speed and classification count was conducted on Woodcrest Drive, 250 feet west of Maple Ave. from the afternoon of Tuesday, December 14, 2021 to the afternoon of Friday, December 17, 2021. Data from the count was prepared by Thomas Melander and provided to the Town of Glenville Traffic Safety Committee. The observed two-way average daily traffic (ADT) was 676 vehicles/day. Peak hour traffic volume was 77 vehicles, observed from 7 PM to 8 PM. The 85th percentile speed was 30 mph. Eighty-three percent (83%) of vehicles were observed to be travelling between 21 and 31 mph. Trucks were observed to comprise 6% of the traffic. The relatively large percentage of truck traffic may have been due to an increase in online shopping and home deliveries due to the COVID-19 pandemic and the Christmas shopping season.

Below are graphs that show the directionality of traffic by time of day, and traffic speeds by time of day on Woodcrest Dr.



Directionality of traffic was observed by time-of-day, with greater eastbound volume in the AM peak period and greater westbound volume in the PM peak period. Source: Memo, g-2021-015 – Woodcrest Drive Traffic Statistics.



The average, 85th percentile and maximum speed data by time-of-day. Source: Memo, g-2021-015 – Woodcrest Drive Traffic Statistics.

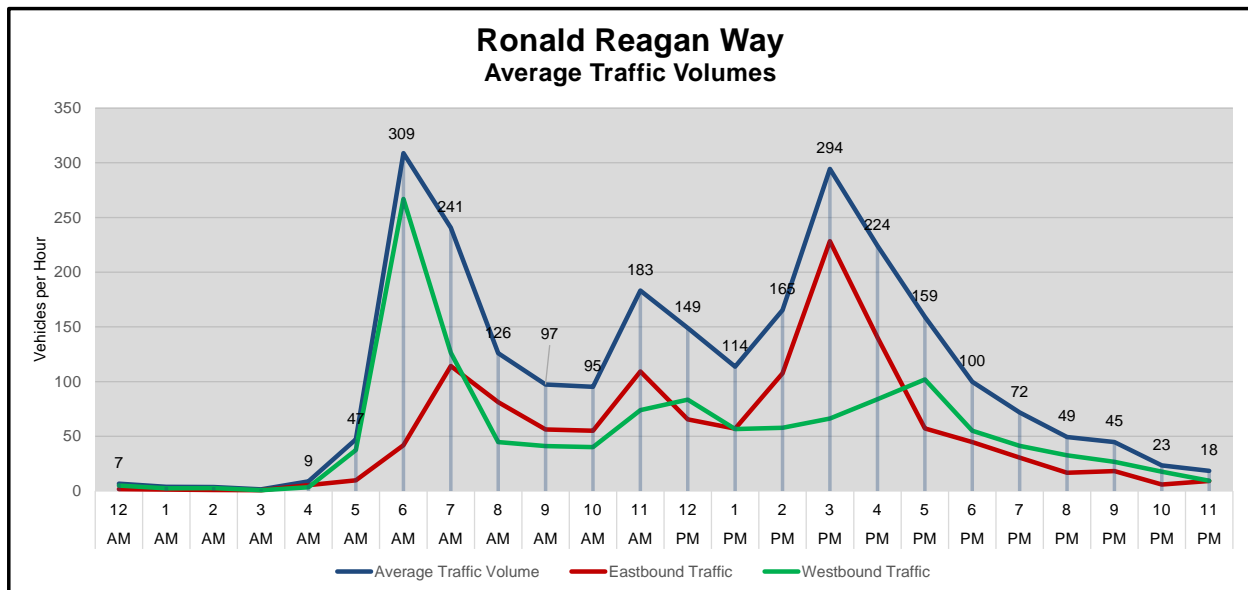
Maple Ave.

Data on vehicle speeds and classification counts were collected on Maple Ave. 600 feet northeast of Alplaus Ave., from Monday, June 22, 2015 through Friday, June 26, 2015 using a MC-4 traffic counter. The observed two-way average daily traffic (ADT) was 10,624 vehicles/day, with a peak hour traffic volume of 1,285 vehicles. The posted speed limit on Maple Ave. is 40 mph. The average speed observed was 40 mph. The 85th percentile speed was not reported. Seventy-eight percent (78%) of vehicles were observed to be travelling between 36 and 46 mph. Trucks were observed to comprise 0% of the traffic.

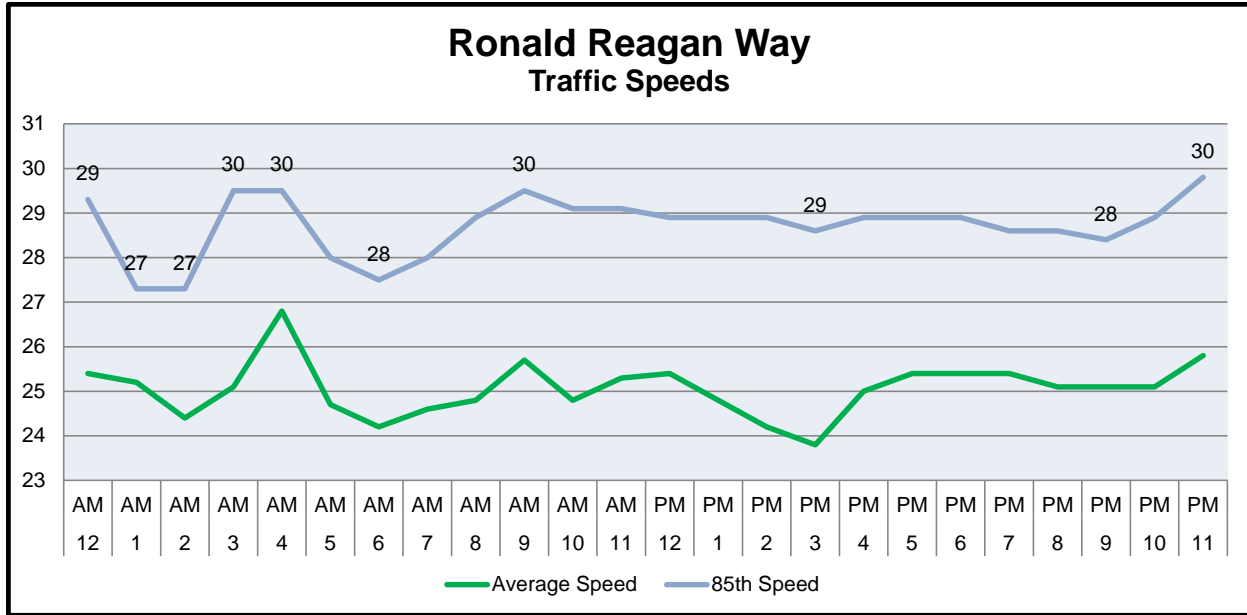
Ronald Reagan Way

Data on vehicle speeds and classification counts were collected on Ronald Reagan Way 400 feet west of Maple Ave., from Thursday, October 31, 2013 through Wednesday, November 6, 2013 using a MC-3 traffic counter. The observed two-way average daily traffic (ADT) was 2,535 vehicles/day, with a peak hour traffic volume of 480 vehicles on that Saturday from 6 am to 7 am. The posted speed limit on Ronald Reagan Way is 30 mph. The average speed observed was 25 mph. The 85th percentile speed was 29 mph. Eighty-two percent (82%) of vehicles were observed to be travelling between 20 and 30 mph. Trucks were observed to comprise 0% of the traffic. Some directionality of traffic was observed, with westbound traffic being greater in the AM peak hour (6 AM to 7 AM) and northbound traffic being greater in the PM peak hour (3 PM to 4 PM). Below are graphs that show the directionality of traffic by time of day, and traffic speeds by time of day on Ronald Reagan Way.

In 2017 the intersection was reconfigured in order to address safety concerns on Maple Ave. but the changes are unlikely to have altered traffic volumes because surrounding land uses remained the same. On the first weekend of each month the base has a major drill, which generates more traffic than other weekends.



Directionality of traffic was observed by time-of-day, with greater westbound volume in the AM peak period and greater eastbound volume in the PM peak period. Source: Memo, g-2013-041 – Ronald Reagan Way Traffic Statistics.



The graph below summarizes the average and 85th percentile speed data by time-of-day. Source: Memo, g-2013-041 – Ronald Reagan Way Traffic Statistics.

Alplaus Ave.

Estimates on vehicle speeds and classification counts were reported in the NYS Traffic Data viewer based on data collected on Alplaus Ave. 210 feet east of Maple Ave. on June 15, 2020. The estimated two-way average daily traffic (ADT) was 3,418 vehicles/day. The posted speed limit on Alplaus Ave. is 30 mph. The estimated average speed was 19 mph. The estimated 85th percentile speed was 28 mph. Trucks were estimated to comprise 3% of the traffic volume.

Data on vehicle speeds and classification counts were collected on Alplaus Ave. 100 feet west of Hill St., for the Town of Glenville Safety Committee from Monday, May 20, 2019 through Sunday, May 26, 2019 using a MC-3 traffic counter. The observed two-way average daily traffic (ADT) was 2,994 vehicles/day. The average speed observed was 31 mph. The 85th percentile speed was 36 mph. Seventy-three percent (73%) of vehicles were observed to be travelling between 27 and 37 mph. Trucks and buses were observed to comprise 1% of the traffic.

Bruce Dr.

Data on vehicle speeds and classification counts were collected on Bruce Dr. 0.4 miles south of Glenridge Rd., from Wednesday, April 17, 2013 through Thursday, April 25, 2013 using a MC-2 traffic counter. The observed two-way average daily traffic (ADT) was 1,395 vehicles/day, with a peak hour traffic volume of 353 vehicles. The posted speed limit on Bruce Dr. is 30 mph. The average speed observed was 37 mph. The 85th percentile speed was 42 mph. Seventy percent (70%) of vehicles were observed to be travelling between 31 and 41 mph. Buses were observed to comprise 1% of the traffic.

Traffic Volume and Speed in the Woodhaven Neighborhood

Besides Woodcrest Dr., no volume, speed or vehicle classification data are available for any of the streets in the Woodhaven neighborhood. The posted speed limit is 30 mph. Land use in the neighborhood is exclusively residential. The neighborhood possesses only three entrances: Woodcrest Dr. at Glenridge Rd., Woodcrest Dr. at Maple Ave., and Jordan Ln. at Ronald Regan Way. Anecdotal reports indicate that some drivers use the neighborhood as a short cut to by-pass traffic, but counts at both Woodcrest Dr. and Ronald Reagan Way suggest that such cut-throughs are minimal. Crash data show that the neighborhood enjoys a low crash rate with no pedestrian or bicycle-related crashes and no injuries (see Safety section, below).

Summary of Available Vehicle Speed and Count Data

Street Name	Location	Dates Collected	Collection Device	Posted Speed Limit	Average Speed	85th Percentile Speed	10 MPH Speed Range	Percentage within 10 MPH Speed Range	Average Daily Traffic Volume	Peak Hour Traffic Volume	Which hour? (i.e. 5pm-6pm)	% Cars	% Pickups/Vans	% Trucks
Glenridge Rd.	0.3 miles east of Saratoga Rd.	12/2/2011 - 12/7/2011	MC-2 traffic counter	40	37	43	34-44	65%	6,770	635	.	83%	16%	1%
Glenridge Rd.	750 feet west of Bruce Dr.	8/23/03 - 8/30/03	GITC traffic counter	40	38	44	31-40	63%	11,072	.	.	82%	15%	2%
Woodcrest Dr.	250 feet west of Maple Ave.	12/14/21 - 12/17/21	unknown	30	26	30	21-31	83%	676	77	7pm - 8pm	77%	17%	6%
Woodcrest Dr.	150 feet west of Maple Ave.	6/23/17 - 6/29/17	MC-6 traffic counter	30	26	29	21-31	84%	696	69	5pm-6pm	84%	14%	1%
Maple Ave	600 feet northeast of Alplaus Ave.	6/22/15 - 6/26/15	MC-4 traffic counter	40	40	.	36-46	78%	10,624	1285	.	82%	17%	0%
Ronald Reagan Way	400 feet was of Maple Ave.	10/31/13 - 11/6/13	MC-3 traffic counter	30	25	29	20-30	82%	2,535	480	Saturday 6am-7am	75%	23%	0%
Alplaus Ave.	100 feet west of Hill St.	5/20/19 - 5/26/19	MC-3 traffic counter	30	31	36	27-37	73%	2,994	.	.	80%	18%	1% (buses)
Alplaus Ave.	210 feet east of Maple Ave.	6/15/2020	NYS Traffic Data Viewer - estimate	30	19	28			3,418					3%
Bruce Dr.	0.4 miles south of Glenridge Rd.	4/17/13 - 4/25/13	MC-2 traffic counter	30	37	42	31-41	70%	1,395	353	.	83%	16%	1% (buses)

Pavement Condition

As part of CDTC's Pavement Condition Assessment program, several roads within the study area were accessed by CDTC staff in 2018, 2020 and 2021 using the NYSDOT Windshield Survey methodology. As Maple Ave. is a Non-State Federal Aid road, the pavement condition is rated every other year. In 2021, Maple Ave. was rated a 7 out of 10 for most of the study area. This score indicates that there are occasional distresses that are minor in severity. Glenridge Rd. is a State Federal-Aid road and was last inventoried in 2020. It also received a score of 7 out of 10. As Ronald Reagan Way and Alplaus Ave. are Schenectady County routes, they are only assessed every 4 years. In 2018 Alplaus Ave. received a score of 7. Also assessed in 2018, Ronald Reagan Way received a score of 6 out of 10, indicating occasional to frequent distresses that are moderately severe. Acorn Dr. and Bruce Dr. were both assessed in 2018 as part of the local road sample inventory, which is sampled every 4 years. Acorn Dr. was rated a 6 out of 10 and Bruce Dr. was rated a 7 out of 10.

Slope

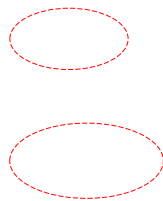
On Woodcrest Dr., the approximate elevation change from the Woodhaven Dr. intersection to Maple Ave. is about 90 feet and the distance between the intersections is approximately 3,200 feet. This creates an average slope of 2.8%. However, the eastern-most end of Woodcrest Dr. is steeper, sloping about 6% in the 500 feet the western approach to Maple Ave.

A view of the steepest portion of the slope on Woodcrest Dr., on the approach to Maple Ave. Credit: Google streetview, July 2019.

On Glenridge Rd., the approximate elevation change from the Woodcrest Dr. intersection to the traffic circle at Maple Ave. is 140 feet over a distance of approximately 2,900 feet. This creates an average slope of 4.8%. However, the eastern-most end of Glenridge Rd. is steeper, sloping about 7.5% on the last

530 feet of the western approach to the traffic circle. The remaining Woodhaven neighborhood streets consist of gentle slopes.

A view of the steepest portion of the slope on Glenridge Rd., looking west from the traffic circle at Maple Ave. Credit: Google streetview, August 2021.



Glenridge Dr. and Woodcrest Dr. are both more steeply sloped as they approach Maple Ave. from the west. Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community.

Barriers

Several barriers present a challenge to forming the desired pedestrian connections. On Glenridge Rd., a rail bridge directly east of Hetcheltown Rd. and a rail bridge west of Bruce Dr. narrows the right-of-way,

limiting safe pedestrian passage along the roadway between the existing pedestrian path and Cozy Dale Park.

Rail bridge over Glenridge Rd. east of Hetcheltown Rd. Credit: Google streetview August 2021.

Rail bridge over Glenridge Rd. west of Bruce Dr. Credit: Google Streetview August 2021.

Similarly, a rail bridge over Maple Ave. approximately 550 feet south of Woodcrest Dr. also restricts the right-of-way, providing only about 18 feet of width for two travel lanes and no shoulder.

Rail bridge over Maple Ave. south of Woodcrest Dr. Credit: Google Streetview July 2021.

Two at-grade rail crossings are present in the study area. One is located on Alplaus Ave. approximately 300 feet east of Maple Ave. The second can be found on Ronald Reagan Way immediately west of the intersection with Maple Ave.

The at-grade rail crossing on Alplaus Ave approximately 300 feet east of Maple Ave. Google Streetview July 2021.



The at-grade rail crossing on Ronald Reagan Way west of Maple Ave. Google Streetview July 2017.

Two bridges also span the Alplaus Kill in the study area, one on Glenridge Rd. and one on Alplaus Ave. The Glenridge Rd. bridge provides a wide shoulder but no sidewalks or bike lanes, while the Alplaus Ave. bridge includes a 5 foot sidewalk on both sides.

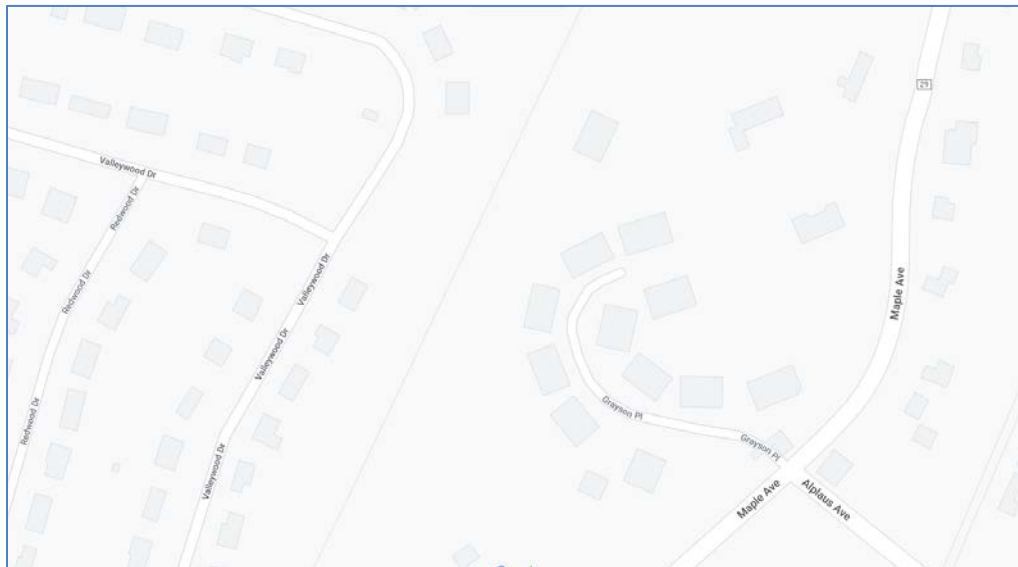


Bridge on Glenridge Rd. over the Alplaus Kill west of Bruce Dr. Credit: Rima Shamieh.



Bridge on Alplaus Ave. over the Alplaus Kill between Mohawk Ave. and Brookside Pl. Google Streetview July 2019.

The presence of railroad rights-of-way throughout the area also impact the street network and level of connectivity. For example, a street connection or simple pedestrian path would easily connect the Glenridge sidepath terminus with the Alplaus hamlet through the Woodhaven neighborhood were it not for the active railroad cutting off Valleywood Dr. from Grayson Pl. (see map below).



Valleywood Dr. and Grayson Pl. could easily be connected were it not for the active railroad separating them.

The residential development pattern along Glenridge Rd.'s eastern end presents more driveways than it does to the west and thus would create more conflicts for pedestrians. Utility poles line Glenridge Rd. along its entire length.



This stretch of Glenridge Rd. near Glenridge Ct. shows the increased number of driveways (red arrows). Google Streetview August 2021.

Pedestrian & Bicycle Infrastructure

Most of the study area does not currently provide dedicated pedestrian or bicycle infrastructure, but some sidewalks and sidepaths do exist in some areas, and are currently planned in others.

Glenridge Rd. Sidepath

The Glenridge Rd. sidepath begins at Saratoga Rd. and runs east to Woodcrest Dr. along a sparsely developed stretch of Glenridge Rd. The path is approximately 6 feet wide along its entire length, which is wide enough to be used by pedestrians but narrower than the recommended 8 foot minimum for shared use paths¹.

¹ Starnes, Nancy. Shared Use Path Accessibility Guidelines. Architectural and Transportation Barriers Compliance Board, Federal Register 76 (59), 17069-17010, Washington, DC: 2011. https://nacto.org/wp-content/uploads/2015/04/shared_use_path_accessibility_guidelines_federal_register.pdf



The Glenridge Rd. sidepath. Google Streetview August 2021.

Glenridge Rd. – Maple Ave. Traffic Circle

Sidewalks, ADA-compliant curbcuts and crosswalks were installed when the traffic circle was built at the Glenridge Rd. – Maple Ave. intersection.



Google Imagery 2022

Alplaus Ave. sidewalks

A new sidewalk is being planned on the north side of Alplaus Ave. from Bruce Dr. east to the Schenectady-Saratoga County line. There is also a short stretch of existing sidewalk on the Alplaus Ave. bridge over the Alplaus Kill. Sidewalks are present on both the north and south sides of the bridge itself, while the sidewalk on the north side continues for a short distance on either side of the bridge. The concrete bridge sidewalk appears in good condition while the remaining Alplaus Ave. sidewalk, primarily consisting of asphalt, is in fair condition.



Sidewalks on Alplaus Ave. and the Alplaus Kill bridge. Google Streetview July 2019.

Safety

CDTC conducted an analysis of the most recent available 5-year period of crash data for the study area. Crash data were pulled for a 5-year period from November 1, 2016 through October 31, 2021 using the NYSDOT Accident Location Information System (ALIS). During this period, 235 crashes were reported in the study area. Of these:

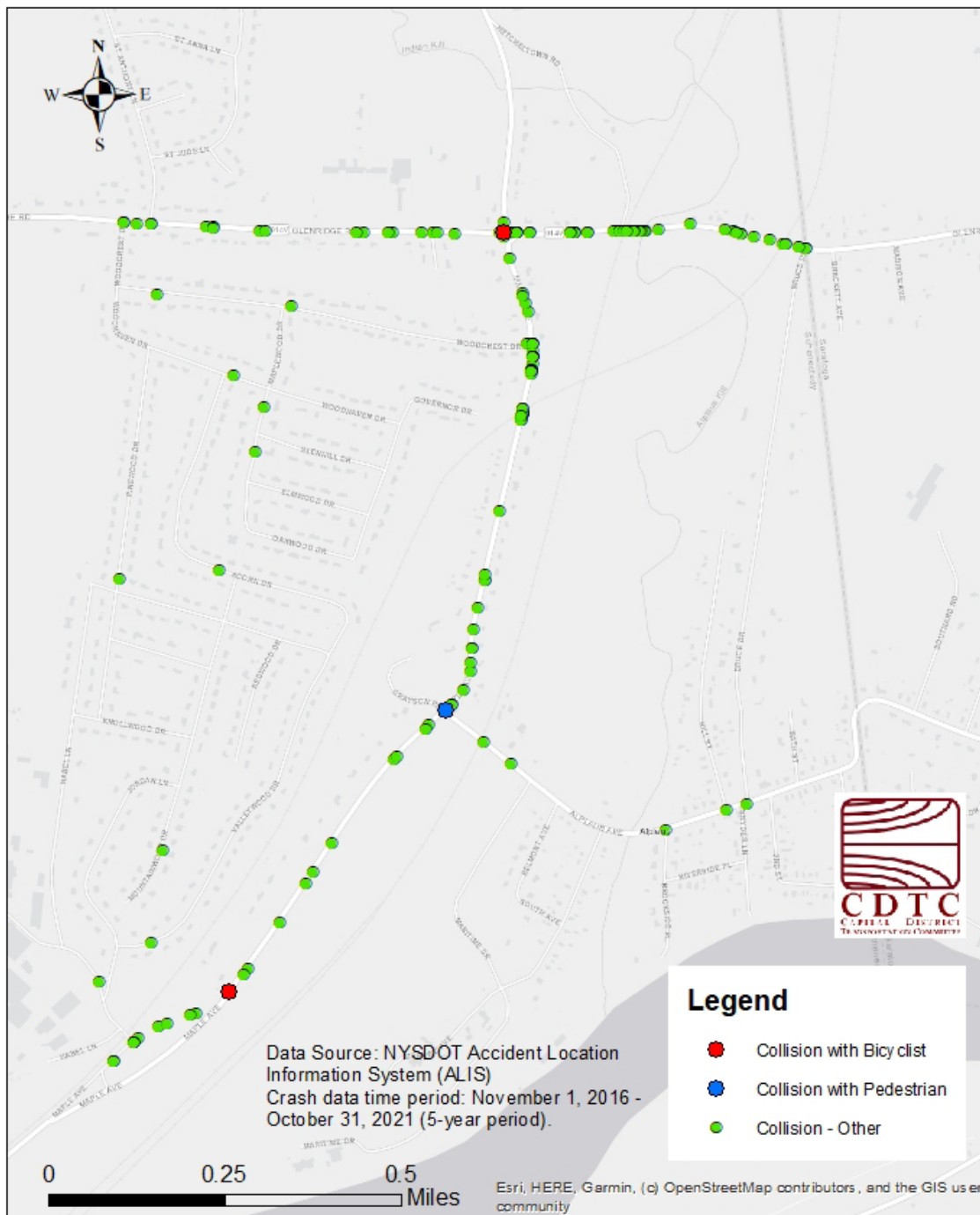
- 1 crash involved a pedestrian in a road rage incident near the intersection at Maple Ave. and Alplaus Ave. No injuries were reported².
- 3 crashes involved a bicyclist, including two crashes in the Glenridge Rd. – Maple Ave. traffic circle. Two of these three crashes reported injuries.
- 133 crashes occurred on Glenridge Rd. or near an intersection with Glenridge Rd.
- 85 crashes occurred on Maple Ave.³ or near an intersection with Maple Ave.
- 8 crashes occurred on Alplaus Ave. or near an intersection with Alplaus Ave.
- 81 crashes involved a collision with a bridge structure.
- 33 crashes involved a collision with a deer or other animal.
- 82 crashes involved a collision with a motor vehicle.
- 33 crashes involved a collision with a fixed object, sign post, tree, guide rail, or other stationary object.

² The crash occurred after an angry driver exited his vehicle to confront another driver in the middle of the street. The driver who was still in his vehicle tried to drive away, striking the angry man with the rear of his car.

³ Eleven crashes occurred on the old alignment of Maple Ave. east of Ronald Reagan Way. No crashes were recorded on the new alignment.

No serious injuries or fatalities were reported during the 5-year period studied. The map on the following page displays crash locations in the study area.

Crash Locations - Glenridge Road Pedestrian Connections Technical Assistance Study Area, Town of Glenville



Crashes in the Woodhaven Neighborhood

Of the 235 crashes that occurred during the 5-year period, 10 occurred within the Woodhaven neighborhood. Nine of those collisions were between motor vehicles and the tenth crash was with a culvert/headwall. There were no collisions with bicyclists or pedestrians in the Woodhaven neighborhood during the 5-year period examined. No crashes in the Woodhaven neighborhood resulted in injury but all ten did report property damage. The table below summarizes the collisions by type.

Type of Collision	Number
Overtaking	1
Rear end	1
Right angle	4
Sideswipe	1
Other/Unknown	2
Grand Total	9

Crashes on Alplaus Ave. and Bruce Dr.

Ten crashes occurred on Alplaus Ave. and Bruce Dr., including at intersections with either Alplaus Ave. or Bruce Dr., during the 5-year period between November 1, 2016 and October 31, 2021. One collision involved a deer, and three crashes involved a light support/ utility pole or guide rail, two of which resulted in property damage and injury. One crash involved a pedestrian (previously discussed). The remaining 5 crashes involved collisions with another motor vehicle; two caused property damage, one caused property damage and injury, and the remaining two crashes resulted in non-reportable damage. The table below summarizes the collisions by type.

Type of Collision	Number
Rear end	2
Right angle	1
Sideswipe	1
Unknown	1
Grand Total	5

Analysis

Glenridge Rd. and Maple Ave. present the most direct route from the Glenridge sidepath terminus at Woodcrest Dr. to Cozy Dale Park and the Alplaus Hamlet. However, there are several reasons why safe pedestrian access along these routes is not feasible. First, data show heavy traffic on both Glenridge Rd. and Maple Ave. (11,072 vehicles/day and 10,624 vehicles/day, respectively) and relatively high speeds (the 85th percentile speed on Glenridge Rd. was 43 mph according to 2011 data). Second, crash data show over 90% of the collisions in the study area occurring on Glenridge Rd. and Maple Ave. All three bicycle-related collisions in the study area occurred on Glenridge Rd. and Maple Ave. Third, narrow

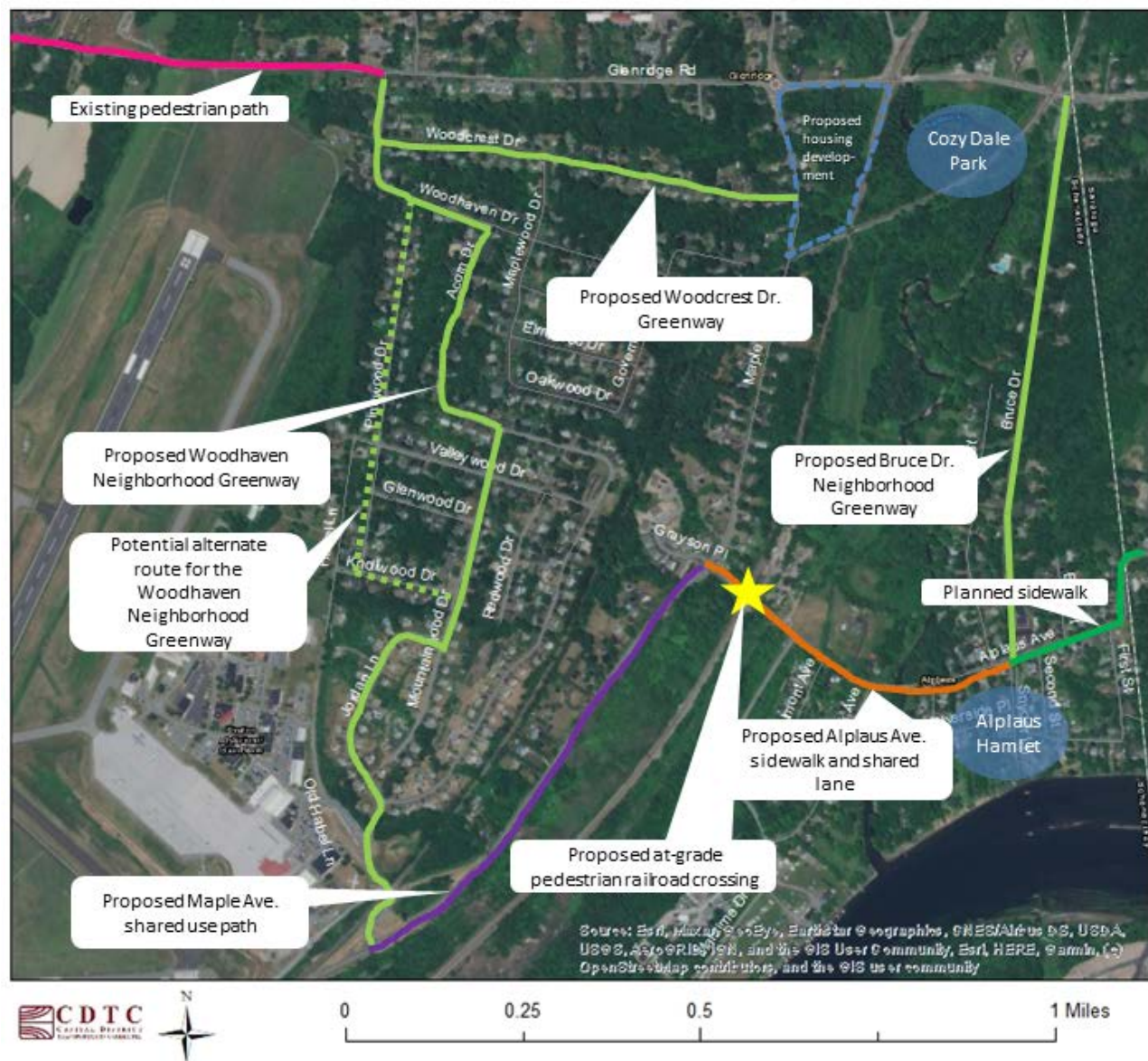
railroad bridges and a creek bridge create unsafe bottlenecks in the road rights-of-way on both Glenridge Rd. and Maple Ave. that prevent the creation of a continuous, dedicated space for pedestrians or bicyclists such as a sidepath, sidewalk, or widened shoulder. An additional consideration is the increased frequency of driveways on Glenridge Rd. between Woodcrest Dr. and Maple Ave. and along Maple Ave. between Glenridge Dr. and Alplaus Ave., which introduces additional opportunities for driver-pedestrian and driver-bicyclist conflicts in those areas.

In contrast, Alplaus Ave., Bruce Dr. and the streets within the Woodhaven neighborhood are safer for pedestrians and bicyclists due to less traffic, slower traffic speeds and fewer collisions. While there are many driveways within the Woodhaven neighborhood, the quieter streets make driver-pedestrian and driver-cyclist conflicts less likely than on Glenridge Rd. and Maple Ave. It is on these streets that recommendations are made for feasible pedestrian access routes between the Glenridge sidepath and Cozy Dale Park, the Alplaus Hamlet and the potential housing development at the southeast corner of Glenridge Rd. and Maple Ave.

Recommendations

Feasible Access Routes

Town of Glenville - Glenridge Rd Pedestrian Connections - Recommendations



Woodcrest Dr. Greenway⁴

The parcel located at the southeast corner of Maple Ave. and Glenridge Rd. can be easily accessed by the Glenridge Rd. sidepath via a neighborhood greenway on Woodcrest Dr. Woodcrest Dr.'s slow speeds (an average of 26 mph compared to an average of 38 mph on Glenridge Rd.), gentle slope (less than 3% on average), and ample pavement width (28 feet) would provide convenient access to Maple Ave. directly across the street from the potential housing development. An appropriate road crossing treatment should be determined as the parcel's site plan is developed. Due to the low traffic volume and speeds, minimal additional treatments beyond wayfinding signage would be needed to create this greenway.

Woodhaven Neighborhood Greenway

A neighborhood greenway route through the Woodhaven neighborhood would create a connection between the existing Glenridge Rd. pedestrian sidepath and the proposed Maple Ave. pedestrian sidepath (see below). This would open up a route to the Alplaus Hamlet and to Cozy Dale Park beyond. There are several different paths this greenway could take. One possible route follows Acorn Dr. to Mountainwood Dr., to Jordan Ln., to Ronald Reagan Way.

Due to the low traffic volume and speeds, minimal additional treatments beyond wayfinding signage would be needed to create this greenway throughout most of its route. However, the Town may consider incorporating traffic calming and diversionary treatments to encourage the traffic from the air base to use Maple Ave. rather than cut through the Woodhaven neighborhood⁵.



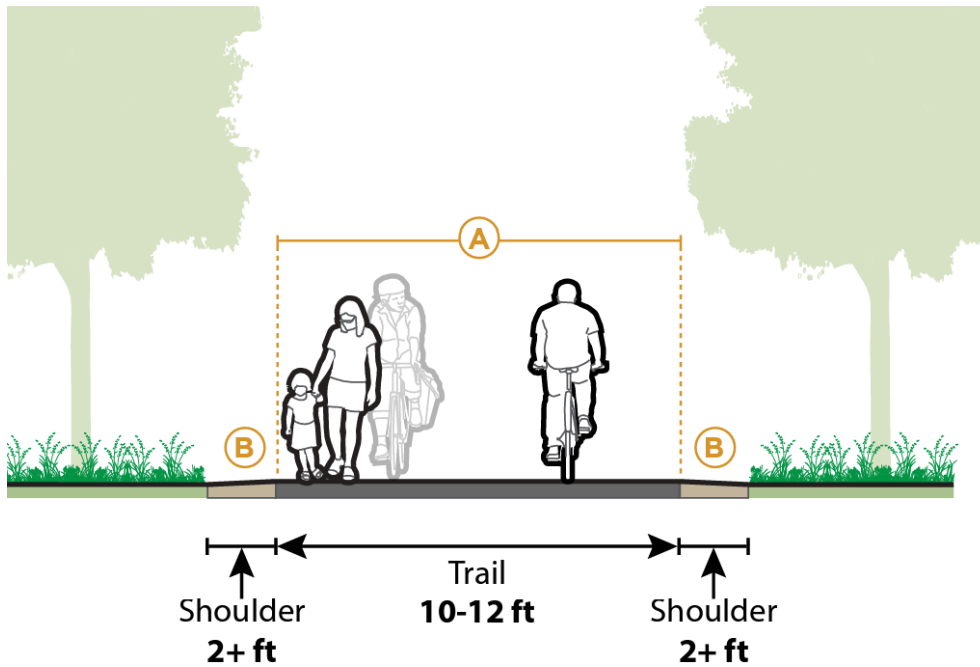
Source Credit: City of San Diego.

⁴ A Neighborhood Greenway is a street where the safe movement of bicyclists and pedestrians is prioritized, and the fast, through movement of vehicles is minimized. This is achieved by using different treatments to slow down drivers or discourage them from using the street as a cut through. <https://montgomerycountymd.gov/dot-dte/Resources/Files/GroveSt/NeighborhoodGreenwayTreatmentsPrimer.pdf>

⁵ NYDOT Engineering Division Office of Design Chapter 25 – Traffic Calming. <https://www.dot.ny.gov/divisions/engineering/design/dgab/hdm/chapter-25>. See especially Appendix C, pp. 20-32.

Maple Ave. Sidepath

A sidepath appears feasible along the eastern side of Maple Ave. from Ronald Reagan Way to Alplaus Ave. The public right-of-way of Maple Ave. varies from approximately 46 feet to approximately 62 feet, estimated based on parcel data from the www.simgis.org website. A sidepath on the eastern side between Ronald Reagan Way and Alplaus Ave., are exclusively on the western side of the road. It is recommended that the path link to the proposed Woodhaven Neighborhood Greenway and cross Maple Ave. at the controlled intersection with Ronald Reagan Way. It is also recommended that the path be a minimum of 8 feet wide, but preferably 10 to 12 feet wide, to accommodate pedestrians, bicyclists, wheelchair users, joggers and other users.



A cross section of a shared use path in the Empire State Trail Design Guide⁶.

Alplaus Ave. Sidewalk and Shared Lane

The Alplaus Kill bridge on Alplaus Ave. prevents the creation of a continuous shared use path (that would accommodate all users) along Alplaus Ave. in the short term but, because it already has sidewalks, presents an opportunity to create continuous dedicated pedestrian access. The combination of a sidewalk and shared lane would provide both pedestrian and bicycle access along Alplaus Ave. from the proposed Maple Ave. sidepath to the proposed Bruce Dr. Greenway (described below). A shared lane is a travel lane that is shared by drivers and bicyclists, and which is often marked by “sharrows,” or shared arrows, to indicate where bicyclists should ride in the roadway and to remind drivers to share the road with bicyclists. The right-of-way of Alplaus Ave. varies from approximately 30 feet to approximately 62 feet, estimated based on parcel data from the www.simgis.org website. New sidewalks should be at least 5 feet wide.

⁶ Empire State Trail Design Guide. October 10, 2017.

https://www.dot.ny.gov/divisions/engineering/design/dgab/hdm/hdm-repository/2017_10_10_EST_Design%20Guide_LR.pdf



A Shared Lane indicated by the sharrow pavement marking. Source credit: Oscar Global Limited



A five-foot sidewalk and curb along a residential street. Source credit: Twitter @KostelecPlan



A calm neighborhood street with sidewalks and a grass strip next to the curb. Source credit: Portland Monthly

Bruce Dr. Greenway

The Bruce Dr. Greenway connects the heart of the Alplaus Hamlet with Cozy Dale Park along a low-volume road (an estimated 1,395 vehicles/day). Bruce Dr.'s pavement is 26 feet wide (Town provided data). With a posted speed of 30 mph but an average speed of 37 mph and an 85th percentile speed of 42 mph, Bruce Dr. may also benefit from traffic calming measures similar to those proposed for the Woodhaven Neighborhood Greenway.

Wayfinding Signage

The NYSDOT provides 17 NYCRR Chapter V (New York Supplement) to the Manual on Uniform Traffic Control Devices (MUTCD) that imposes additional regulations in New York State⁷. The recommendations below comply with both the New York Supplement and the MUTCD.

Local Bicycle Route Sign

To establish a unique identification (route designation) for a local bicycle route, the Local Bicycle Route (NYM6-2) sign may be used⁸ (see Sign Drawing SD-G13, below). Bicycle routes, which might be a combination of various types of bikeways, should establish a continuous routing. The Local Bicycle Route sign shall be for use in guiding bicyclists along a local bicycle route for which a numerical designation has been established.

The standard is as follows:

- The Local Bicycle Route signs shall have green backgrounds with retroreflective white legends and borders, except that green lettering shall be used for the name of the locality.

⁷ New York Supplement to the Manual on Uniform Traffic Control Devices for Streets and Highways (current edition, March 16, 2011), <https://www.dot.ny.gov/mutcd>

⁸ New York Supplement, <https://www.dot.ny.gov/divisions/operating/oom/transportation-systems/repository/B-2011Supplement-adopted.pdf>, page 258.

- Local Bicycle Route signs shall not contain any advertising.

Options and guidance included in the New York Supplement include:

- If the locality name will not fit within the Local Bicycle Route signs in the indicated size of series E lettering, series D or series C lettering may be substituted.
- A unique logo may be used in place of the numerical designation on the Local Bicycle Route signs.
- Local Bicycle Route signs should be placed at intervals frequent enough to keep bicyclists informed of changes in route direction and to remind motorists of the presence of bicyclists.
- Local Bicycle Route signs may be installed on shared roadways or on shared-use paths to provide guidance for bicyclists.

It is recommended that local bicycle route numbers be established for current and future bicycle routes that the Town wishes to identify with signs.

SIGN DRAWING SD-G13	Green Background	White Legend
<i>Bicycle Route Signs</i> <i>(NYM6-2, NYM6-3)</i>		



Sign	Size	Border	Line 1	Line 2	Line 3	Line 4
NYM6-2	12" x 15"	Varies	1"-E	Symbol	4"-D or Symbol	
NYM6-3	18" x 18"	Varies	1"-E	Symbol	4"-D or Symbol	1"-E

Sign Drawing SD-G13 of the New York Supplement.

Bicycle Sign and IN LANE Plaque

The New York policy dictates that on any facility (both low-speed and high-speed), the Bicycle (W11-1) warning sign may be used alone to warn motorists of the presence of bicyclists in a lane that is 14 feet

wide or less⁹. The travel lanes on Alplaus Ave. are approximately 11 feet wide. The Bicycle sign can be used in conjunction with the IN LANE plaque on roads with shared lane markings (sharrows) to warn motorists of the presence of bicyclists (see below). It is recommended that this sign pairing be installed along Alplaus Ave. to warn motorists of the presence of bicyclists.

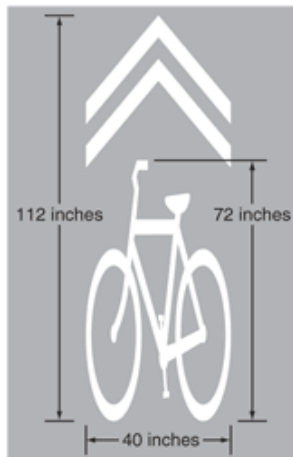


New York State Bicycle sign (W11-1) and IN LANE plaque (NYW5-32P) can be used with sharrows to warn motorists of the presence of bicyclists. Source credit: NYDOT's Shared Lane Marking Policy, NYSDOT TSMI 13-07.

Pavement Markings

Sharrows are used to indicate where bicyclists should ride on the roadway and to remind drivers that bicyclists have the right to use the roadway. An image of a MUTCD-complaint sharrow is below. For more information, see NYDOT's Shared Lane Marking (SLM) Policy, TSMI 13-07.

Figure 9C-9. Shared Lane Marking



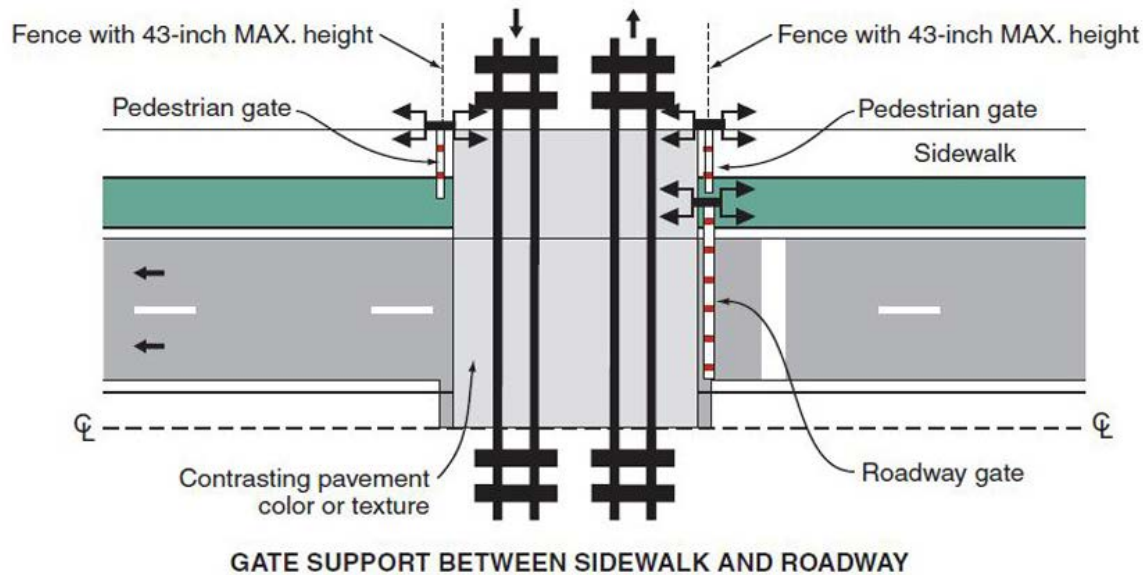
Schematic showing MUTCD-compliant sharrow, <https://mutcd.fhwa.dot.gov/htm/2009/part9/part9c.htm>

Pedestrian At-Grade Railroad Crossings

At-grade railroad crossings require pedestrian control techniques beyond what is required at intersections with automobile traffic. Devices and controls vary depending on the circumstances, and include passive devices such as pedestrian swing gates, fencing, channelizations and directional surfaces,

⁹ NYSDOT Office of Traffic Safety and Mobility Share Lane Marking (SLM) Policy), TSMI 13-07, <https://www.dot.ny.gov/programs/completestreets/repository/TSMI13-07final.pdf>.

and active devices such as smart warning systems and pedestrian gates. Passive devices may be appropriate for the recommended pedestrian at-grade railroad sidewalk crossing on Alplaus Ave., but the Town would need to work with an engineer and the railroad owner to determine appropriate control techniques^{10, 11, 12, 13, 14}.



Example of placement of pedestrian gates. Source Credit: MUTCD, 2009 Edition, Section 8C.13 Figure 8C-7.

¹⁰ At-Grade Passenger Rail Pedestrian & Trail Crossings Empire Corridor South White Paper & Resources. November, 2018.

<https://www.scenic Hudson.org/sites/default/files/pdf-downloads/At%20Grade%20Passenger%20Rail%20Pedestrian%20and%20Trail%20Crossings.pdf>

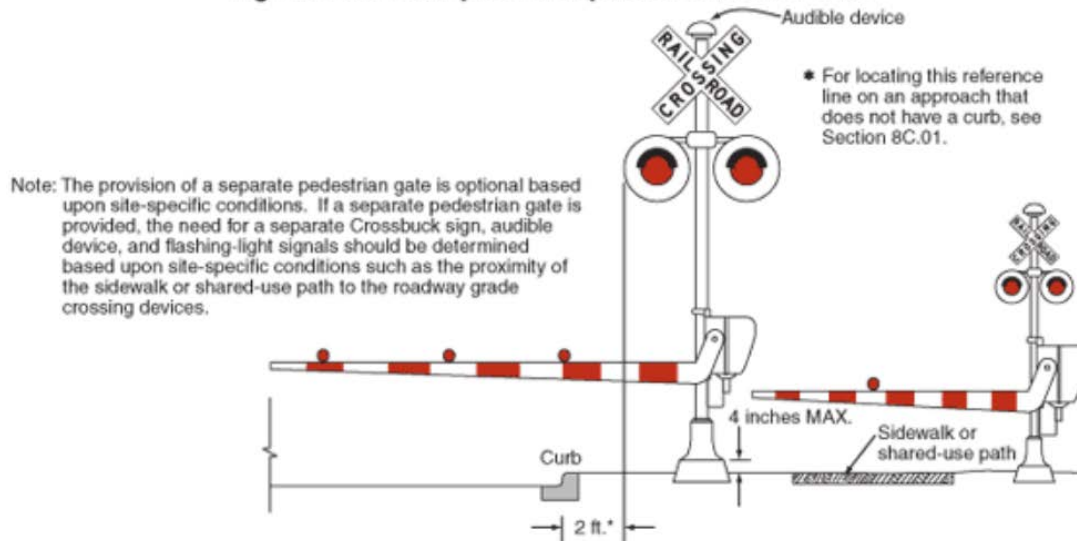
¹¹ Highway-Rail Crossing Handbook, Third Edition. USDOT Federal Railroad Administration and Federal Highway Administration, pages 102-116 and 129. https://safety.fhwa.dot.gov/hsip/xings/com_roaduser/fhwasa18040/fhwasa18040v2.pdf

¹² MUTCD, 2009 Edition, Section 8B, <https://mutcd.fhwa.dot.gov/htm/2009r1r2/part8/part8b.htm>

¹³ MUTCD, 2009 Edition, Section 8C, <https://mutcd.fhwa.dot.gov/htm/2009r1r2/part8/part8c.htm>

¹⁴ New York Supplement, <https://www.dot.ny.gov/divisions/operating/oom/transportation-systems/repository/B-2011Supplement-adopted.pdf>, Chapters 8B and 8C

Figure 8C-6. Example of a Separate Pedestrian Gate



Example of a separate pedestrian gate. Source Credit: MUTCD, 2009 Edition, Section 8C.13 Figure 8C-6.

Other Recommendations

1. Creating bike-able access to Cozy Dale Park invites cyclists to visit. Adding a bike rack near the corner of Bruce Dr. and Glenridge Rd. would make it even more feasible for bicyclists to spend time there, especially given the limited possibilities for secure bike storage currently at the park.

Resources

1. New York Supplement to the Manual on Uniform Traffic Control Devices for Streets and Highways (current edition, March 16, 2011),
<https://www.dot.ny.gov/divisions/operating/oom/transportation-systems/repository/B-2011Supplement-adopted.pdf>
2. MUTCD, 2009 Edition, <https://mutcd.fhwa.dot.gov/>
3. Highway Design Manual. NYDOT Engineering Division Office of Design, especially Chapter 25, Appendix C – Traffic Calming.
<https://www.dot.ny.gov/divisions/engineering/design/dqab/hdm/chapter-25>
4. NYSDOT Office of Traffic Safety and Mobility Share Lane Marking (SLM) Policy), TSMI 13-07,
<https://www.dot.ny.gov/programs/completestreets/repository/TSMI13-07final.pdf>
5. Empire State Trail Design Guide. October 10, 2017,
https://www.dot.ny.gov/divisions/engineering/design/dqab/hdm/hdm-repository/2017_10_10_EST_Design%20Guide_LR.pdf
6. Starnes, Nancy. Shared Use Path Accessibility Guidelines. Architectural and Transportation Barriers Compliance Board, Federal Register 76 (59), 17069-17010, Washington, DC: 2011,

- https://nacto.org/wp-content/uploads/2015/04/shared_use_path_accessibility_guidelines_federal_register.pdf
7. At-Grade Passenger Rail Pedestrian & Trail Crossings Empire Corridor South White Paper & Resources. November, 2018. <https://www.scenichudson.org/sites/default/files/pdf-downloads/At%20Grade%20Passenger%20Rail%20Pedestrian%20and%20Trail%20Crossings.pdf>
 8. Highway-Rail Crossing Handbook, Third Edition. USDOT Federal Railroad Administration and Federal Highway Administration.
https://safety.fhwa.dot.gov/hsip/xings/com_roaduser/fhwasa18040/fhwasa18040v2.pdf
 9. NACTO Urban Design Streets Guide, <https://nacto.org/publication/urban-street-design-guide/>
 10. Small Town and Rural Multimodal Networks. USDOT Federal Highway Administration. December, 2016.
https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/small_towns/fhwahep17024_lg.pdf
 11. CDTC Unit Cost Summary, https://www.cdtcmpo.org/images/tip/22-27_TIP_Solicitation/Cost_Estimates/Cost_Estimate_Summary_2022-2027_1.pdf
 12. CDTC 2018 Unit Costs for Bike-Pedestrian Projects, https://www.cdtcmpo.org/images/tip/22-27_TIP_Solicitation/Cost_Estimates/Bike-PedCosts_22-27.pdf
 13. NYSDOT Cost Estimates and Contracts,
<https://www.dot.ny.gov/divisions/engineering/design/dqab/hdm/chapter-21>
 14. NYSDOT Preliminary Cost Estimating Tool,
https://www.dot.ny.gov/divisions/engineering/design/dqab/hdm/hdm-repository/PIN_est_prelim_rev0.xlsm
 15. A Policy on Geometric Design of Highways and Streets, 2018, 7th Edition. American Association of State Highway and Transportation Officials. <https://aashtojournal.org/2018/09/28/aashto-releases-7th-edition-of-its-highway-street-design-green-book/>