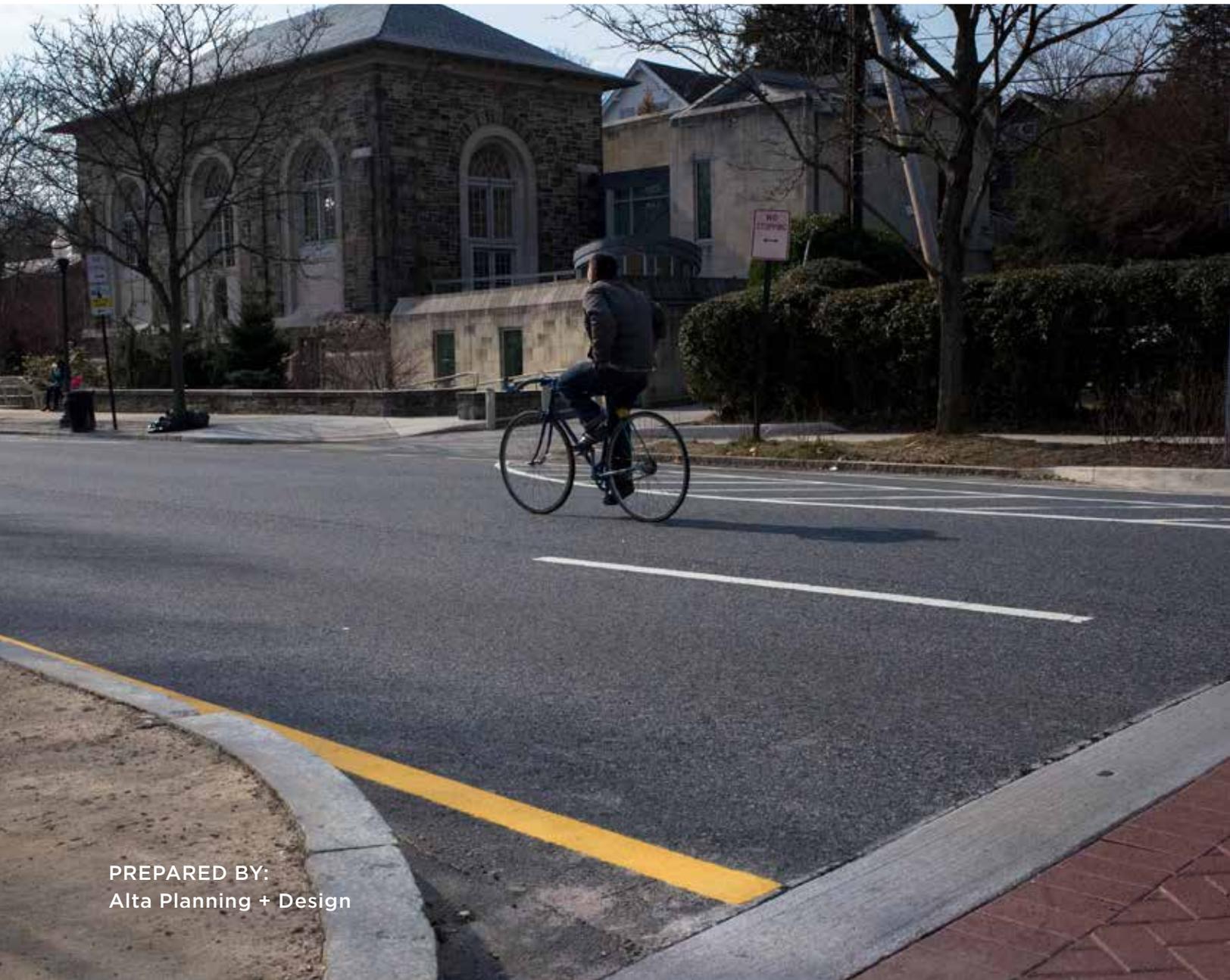


ROLAND PARK CIVIC LEAGUE

ROLAND AVENUE CYCLE TRACK



EVALUATION MEMO | May, 2017





800 S. Broadway, 2nd Floor
Baltimore, MD 21231
(443) 218-8165
www.altaplanning.com

Dear Roland Park Civic League Board and the Cycle Track Committee,

It has been a pleasure working with you on the evaluation of Roland Avenue. We recognize that the Roland Avenue protected bike lane, or "cycle track," has presented unique challenges for the neighborhood and we appreciate you entrusting Alta with undertaking this assessment.

It is our sincere hope that this effort will result in additional discussion between the neighborhood and the City, and ultimately appropriate action that addresses as many concerns as possible. While there may never be a perfect solution that will satisfy everyone, it is our belief that everyone wants a similar outcome: that of making Roland Avenue a safe, inviting environment for all users - whether they be residents, business owners, motorists, bicyclists, or pedestrians.

The scope of work for this project included a site visit with members of the Roland Park Civic League, a photo inventory of the corridor, documentation of constraints and modifications, a review of engineering drawings, evaluation of geometric design and signage, and potential modification. The purpose of the attached memo is to summarize findings and prepare the Civic League for future discussions with the Department of Transportation. Since this scope of work did not include an engineering survey, specific recommendations cannot be made. We recommend a survey be conducted prior to any significant design changes so the corridor can be evaluated block-by-block to determine the best design within the given space.

In summary, the attached memo includes:

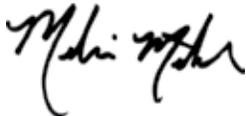
1. Background and contextual information about the Roland Avenue cycle track. This includes an introductory discussion about the impetus of the project and site history, as well as the guiding principles and policies that informed the objectives and implementation of the project. Overall, the cycle track was implemented by Baltimore City to achieve the goal of becoming a "complete street." Complete streets is a design approach for creating an environment that is safe and efficient for pedestrians, bicyclists, and motorists, while maintaining character and enhancing livability.
2. Our review and identification of the challenges along the corridor from the standpoint of various users of Roland Avenue. This includes high-level observations and evaluation of various elements of the existing cycle track and roadway pertaining to geometric design, pavement markings, signage, sight distance issues, conflicts, and other characteristics. In addition, we understand there is a post-occupancy study being completed by the City's consultant, McCormick Taylor, to understand how the community is responding to the changes in the street environment. This is not yet available to us or the public.
3. A description and illustrations of typical complete street treatments that, to varying degrees, could address some of the concerns raised. Each treatment has trade-offs, advantages, and disadvantages including impacts to the character of the neighborhood and potential scales of cost.
4. Suggested next steps, which include:
 - a. A meeting between community leaders and Baltimore DOT to review this memo and discuss both the City's and community's perspective on potential modifications.

b. Further study about the potential modifications presented herein, which in turn, could lead to various levels of implementation. This could range from modest modifications such as realigning portions of the bikeway to reduce conflicts and improve visibility, to more significant modifications such as reducing the number of travel lanes, which would also improve safety and comfort. Again, further study is needed to determine the feasibility of these ideas. Above all, any process that considers potential modifications should include working closely with all interested parties who have a stake in the outcome.

5. Case studies, which provide examples of situations where bicycle facilities were initially installed and later modified. While no two situations are exactly alike, these were selected to illustrate to the neighborhood and DOT that sometimes modifications are needed after the implementation of new facilities based on post occupancy evaluation.

We hope that these findings are helpful in advancing the discussions between the neighborhood and City, and provide useful insights that inform additional efforts going forward. Together, the City and neighborhood can work together to maintain the historic, charming character of Roland Park with a "complete street" environment along Roland Avenue that will provide safe circulation, multiple methods of travel, and an attractive tree-lined street for generations to come.

Sincerely,

A handwritten signature in black ink, appearing to read "Melissa Miklus". The signature is fluid and cursive, with the first name being more prominent.

Melissa Miklus, ASLA

Introduction and Site History

PURPOSE OF THIS SECTION: Provide context for the memo and the intended purpose of the recent street redesign. Roland Avenue is a charming residential street in Baltimore City that once had a street car connecting residents into downtown. Maintaining the character of a tree-lined neighborhood street while making improvements to reestablish the multimodal nature of the community is a challenge. The current design of the street has caused some challenges the neighborhood would like to address with DOT. Any design modifications in the future should focus on safety and character while being accompanied by an education and outreach effort.

Roland Park is one of the earliest garden suburbs in the United States. It was designed in part by Frederick Law Olmsted, Jr. as a streetcar suburb, located directly north of downtown Baltimore. The street's curvilinear design generally follows the rolling contours of the neighborhood, adding to Roland Parks' historic Baltimore charm.

Roland Avenue runs north-south, and is the primary corridor to access Roland Park between W. Cold Spring Lane and W. Northern Parkway. The speed limit is posted at 25 MPH, but several radar speed signs indicate speeding is a routine occurrence. Roland Avenue is unique for being a primarily residential street, for it has two vehicle lanes and parallel parking lane in each direction with a wide landscaped median for most of its length.

The corridor has a noticeable change in character near the north end of the neighborhood. The segment between Colorado Avenue and Deepdene Road includes a busy commercial area, the Enoch Pratt Free Library, and a post office, as well as four educational campuses north of Deepdene Road, which increases demand during peak drop-off and pick-up hours. It has the potential to act as a visual gateway for Roland Park that also calms vehicular traffic and improves the walking and bicycling experience.

The Roland Park community has hosted four ciclovía (open streets) events. While there is vocal support for bicycle and pedestrian-friendly infrastructure, some of the community's reactions to the current installation have been critical of the design application in this treasured location.

Alta Planning + Design was retained by the Roland Park Civic League to provide technical assistance related to the cycle track recently installed by Baltimore City Department of Transportation. This memo includes the following:

- » Observations from a site walk with residents;
- » Evaluation of the geometric design, signs, and pavement markings; and
- » Potential modifications to improve interactions among motorists, pedestrians, and bicyclists.



WHY IMPLEMENT A CYCLE TRACK ON ROLAND AVE

While Alta was not involved in the decision making process, we assume the implementation of a cycle track was in response to existing challenges along the corridor: non-compliance with the speed limit, a wide travelway promoting speeding, vehicular dominance, and speed affecting pedestrian safety and experience. Implementing a cycle track can remedy these challenges. In addition, this corridor has recently been identified as an important connection within the City's bicycle network in the recent 2017 Low Stress Addendum to the Bicycle Master Plan. When the corridor was slotted for resurfacing, it created an opportunity to fast-track bicycle facility implementation in late 2015. While this presented an exciting opportunity to incorporate complete streets design tactics, the community feels there was not sufficient involvement in vetting the actual engineered design solution.

Alta understands there are some challenges with the post occupancy experience. This memo includes some suggested modifications, particularly in vehicle/bicycle/pedestrian conflict zones. While many options are available within the recommendations to modify the design; the context of time, budget, safety, and resources must be considered. Therefore a first step recommendation is to increase education and awareness. These should be in conjunction with design modifications that will create a more legible and consistent bicycling route with clear cues for motorists, pedestrians, and bicyclists. This will involve adjustments to existing bus pads and bikeway alignments that may increase the number of on-street residential parking spaces. Additional details and recommendations, as well as photographs and case studies are included for future reference.



Bicyclists are “taking the lane” instead of using the cycle track on Roland Avenue. This is expected of more experienced bicyclists, like the one above. The post occupancy survey (currently in progress) should reveal why other types of bicyclists may be avoiding using the separated bike lane.

Complete Streets Design Philosophy

PURPOSE OF THIS SECTION: Summarize the philosophy of complete street design for those neighborhood members who may not be aware. This section discusses the progression of complete streets design within the planning/design/engineering professions and highlights national trends responding to the changing needs and desires of American populations.

A street serves as a place and as a link. A majority of roadways in the United States have been designed with the primary function of serving as a link for automobile travel. Roland Avenue was previously designed to integrate a streetcar and later modified to accommodate a wide tree-lined median and vehicular travelway. Many American city streets were initially multimodal environments but have since become focused on prioritizing moving motor vehicles only. This is particularly challenging for neighborhoods like Roland Park that value the safety and character of a more pedestrian-focused place to live, work, play, and socialize.

Designing a complete street means prioritizing the fundamental modes of transportation - walking and bicycling. The human being is essentially treated as the most important design vehicle.

- » Sidewalks provide an area for pedestrian travel that is physically separated from vehicle traffic. Walking routes should be obvious, and give pedestrians a sense of security and predictability.
- » Intersections are an important element of the pedestrian realm. It is critical that pedestrians on the corner have a good view of vehicle travel lanes, and motorists can easily see pedestrians.
- » Separated bikeways, such as bike lanes and buffered bike lanes installed on Roland Avenue, use signage and striping to delineate the right-of-way assigned to bicyclists and motorists. Bike lanes encourage predictable movements by both bicyclists and motorists.
- » Separated bikeways reduce crossing distances for pedestrians, reducing the area where pedestrians are most endangered, the roadway.



A complete streets design philosophy enables safe, convenient, and comfortable travel and access for users of all ages and abilities. People are most important, and motor vehicles are welcomed as “guests.”

Bicyclists and pedestrian are much more affected by poor facility design than motorists. Bicyclists and pedestrians lack the protection from the elements and roadway hazards provided by an automobile’s structure and safety features. It is important to consider bicyclists of all skill levels, so that the final infrastructure accommodates as many user types as possible.

Of the two populations growing rapidly in America, Baby Boomers and Millennials are consistently seeking communities to live and work in that accommodate safe and efficient transportation options and provide access to their daily needs via walking, bicycling, and transit. To accommodate this need, street designers are shifting their focus toward pedestrian forward environments with multimodal facilities of varying compositions. This change of culture and physical environments can not be achieved with design alone. Projects should be accompanied by education, outreach, and opportunities to listen to community concerns. Efforts should be taken to provide forums for consensus building and providing opportunities for all voices to be heard.

More educational materials can be found on [Smart Growth America's Research Page](https://www.smartgrowthamerica.org) (smartgrowthamerica.org). We also recommend visiting The National Associate of Transportation Official’s (NACTO) [website](https://www.nacto.org) and viewing treatment types.

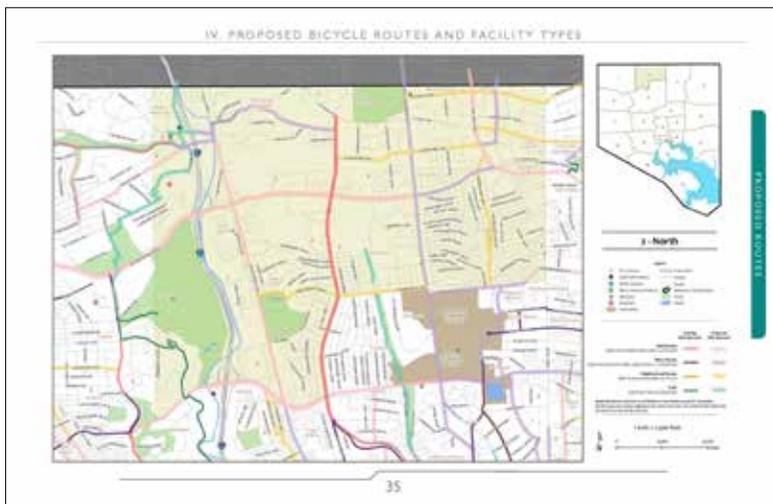
Existing Policies and Plans

PURPOSE OF THIS SECTION: Summarize recent bicycle planning efforts within Baltimore that are related to Roland Park. These summaries are not an evaluation of the planning efforts; they are indications of why Roland Avenue was selected for the inclusion of a separated bicycle facility. While these plans may not have indicated the exact treatment installed, it is a common practice to reevaluate street design prior to repaving projects to seek all opportunities for complete streets improvements during already sheduled construction.

BALTIMORE CITY BIKE MASTER PLAN

Baltimore City Department of Transportation completed the *Bike Master Plan* in 2015. The Plan lists Roland Avenue as an existing bicycle lane and refers to Roland Park’s successful ciclovia as ways to raise bicycle and pedestrian awareness.

Overall, this plan considers Roland Avenue as part of a network that will extend beyond the limits of the Roland Park neighborhood, and connect to the city for pedestrians and bicyclist.



DOWNTOWN BIKE NETWORK

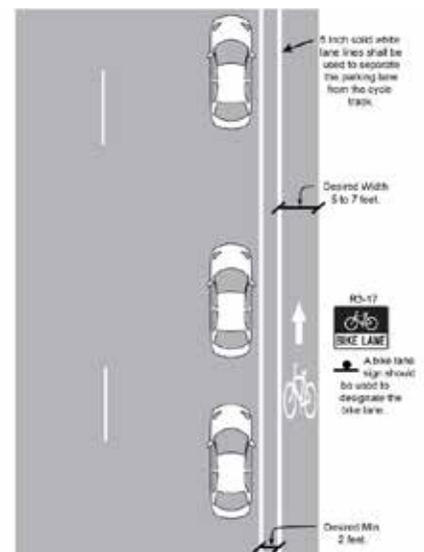
The downtown network is an important step forward by the City to upgrade bicycle infrastructure while reducing vehicle speeds. The project includes several miles of protected bike lanes. The City understands the dramatic safety improvements is achieved for all road users when cyclists are physically separated from faster-moving motorists.

MARYLAND STATE HIGHWAY ADMINISTRATION

The statewide Bicycle Policy & Design Guidelines offer the following explanation of one-way cycle tracks:

One-Way Cycle Tracks are exclusive bikeways that are at street level and use a variety of methods for physical separation from motorized vehicle traffic and pedestrians. A one-way cycle track may be combined with a parking lane or other barrier between the cycle track and motor vehicle travel lane. Cycle tracks should be placed adjacent to the curb. Cycle tracks combine the user experience of a separate path with the on-street infrastructure of a bike lane.

The Design Guidelines include a minimum cycle track width of 5 feet, and a minimum buffer (between parked cars) of 2 feet (see adjacent image). Other guides, including the *NACTO Urban Bikeway Design Guide*, recommend a 3 foot minimum buffer. Roland Avenue’s cycle track currently has varied widths, which at some points are below these guidelines.



Roland Avenue Observations

PURPOSE OF THIS SECTION: Provide a high level overview of the cycle track on Roland Avenue for readers not familiar with the design constraints. This section illustrate challenges and opportunities for improvement that are typical along Roland Avenue. This scope of work cannot include a complete redesign, but the discoveries below illustrate a need for additional exploration in circulation and safety as well as the need for a block by block analysis - not a blanket design - if modifications are to be made in the future.

The Roland Avenue cycle track was the first parking separated facility of its type in Baltimore. A complete streets design philosophy is a cultural shift for everyone - residents, visitors, elected officials, and transportation professionals. This type of shift usually begins with a comprehensive outreach program to educate the public about mobility options, design constraints, and trade-offs associated with vehicular traffic and parking habits.

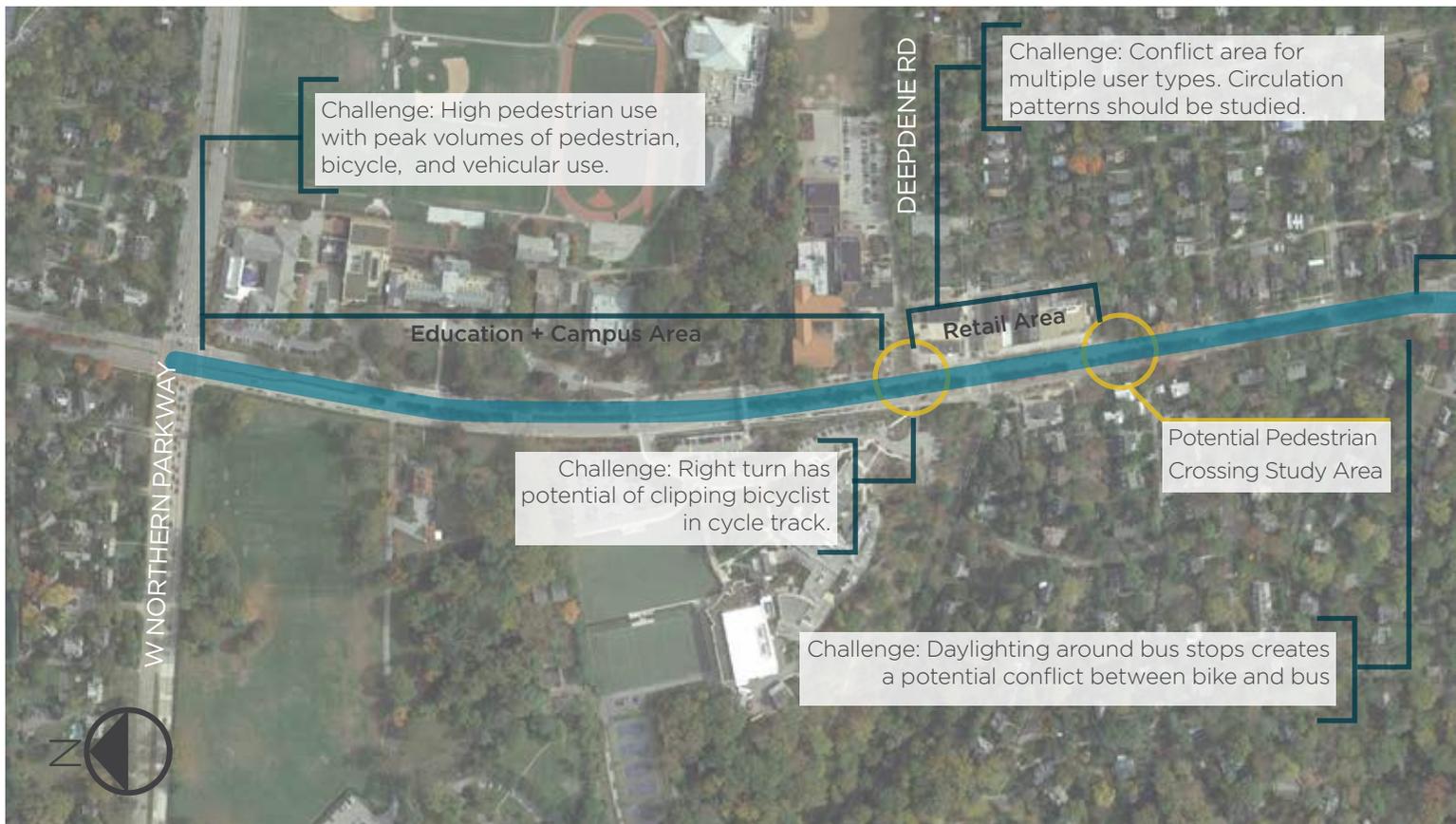
Designing the corridor for all modes can be viewed as a math problem. The width between curbs is limited, meaning trade-offs will be necessary.

MOBILITY CHALLENGES

Some of the challenges Roland Avenue faces are summarized graphically above. The potential modifications can be found on PG 10-11, and are just one way to address those challenges. The challenges are also represented from the perspective of each travel mode below:

WALKING CHALLENGES

- » Some sections of Roland Avenue are challenging to cross, especially for small children and senior citizens. The two major reasons are (1) vehicle speed and (2) poor line-of-sight.
- » Pedestrians are not using the crosswalks with bulbouts installed south of Eddie's; instead they are crossing at the southern edge of the Eddie's block.
- » There are potential conflicts when loading and unloading parked cars.



- » Circulation near the library and commercial areas is challenging. Crosswalks exist, but the “desire lines” of most pedestrians align midway between the marked pedestrian crossings.
- » Vehicular speeds remain an issue, even with the existing speed enforcement monitoring devices.

BICYCLING CHALLENGES

- » Northbound Roland Avenue is almost entirely uphill, making a substantial speed differential between bicycles and motor vehicles.
- » Weaving the bike lane to and from the curb introduces uncertainty. Riding inches away from speeding car traffic feels much more dangerous than between parked vehicles and the curb.
- » The bikeway and buffer of the cycle track are, in places, below minimum design guide widths. This pinches the operating space for a bicyclist and restricts passing.
- » Wide radius vehicle turning movements and poor visibility created by parked cars can create conflicts.
- » Some intersections direct bicyclists directly into stormwater grates.
- » Bicycle circulation daylighting around bulbouts and bus stops creating a sharp, unnatural movement for bicyclists and can be perceived as unpredictable behavior by motorists operating near bicyclists.
- » *Note: debris removal and snow removal plans should be discussed with the neighborhood to set expectations for seasonal challenges.*

DRIVING/PARKING CHALLENGES

- » Weaving bike lanes at bus stops, in combination with the intersection approaches makes the cycle track excessively non-linear.
- » There are several bus stops along the corridor. The lack of daytime bus operations makes the bus pads seem like right-turn lanes. These are conflict points with bicyclists who expect to maintain safe, separated travel.
- » Parking lanes are narrow, leading to regular reports of car scrapes and side mirror damages.
- » Speeding is a common occurrence, and in combination with the curvilinear layout of Roland Park, parked cars are rear-ended and drivers are wary when entering and existing vehicles.



SITE WALK

Some members of the Roland Park Civic League's Cycle Track Committee joined Alta for a site walk of Roland Avenue. The photographs below highlight the key benefits of the cycle track and some of the design challenges.



Angle of bike lane gives motorists the perception of a potential collision.



Bike lane buffered by flexible posts in retail area near Deepdene Road.



Motorists on Colorado Avenue wait in the bike lane for a gap in traffic before turning.



Bike lanes shift adjacent to vehicle lanes at bus stops. This movement can be surprising to passing motorists.



Vehicles parked in the painted buffer zone introduce a dooring risk to bicyclists.



Many vehicles park in the painted buffer zone to create increased separation from passing vehicular traffic.



Cycle track “pinches” at far side of intersection, forcing riders into the stormgrate and the debris gathered there.



Bump-out recently installed at several cross-streets to shorten pedestrian crossing distances and require bicyclists to ride adjacent to vehicular traffic.



People routinely cross Roland Avenue in front of the Enoch Pratt Library to access the business block across the street, despite the speeding car traffic.



Bus stops near intersections tend to function as right-turn lanes for motorists, which places the bicyclists between and crossing with moving vehicles and creates conflict for buses entering and existing traffic.



Many bicyclists were observed riding in the travel lane, indicating a preference for not riding in the cycle track.



Debris and snow in bike lanes may causes bicyclists to ride in vehicle lanes.

Complete Streets Design Treatments

PURPOSE OF THIS SECTION: This section illustrates different methods for creating complete streets. Many trade-offs are considered with each design: cost, implementation timing, preservation of character, tree canopy, safety for pedestrians, separation for bicyclists, changing culture, network connectivity, economic development, equality, etc. These considerations are discussed within each potential modification. *These are NOT recommended treatments for Roland Avenue. This section is intended to illustrate a host of options often considered and help the community better understand design trade-offs.*

Based on the site walk and engineering and design review, the study team identified example modifications that are often used in other settings with similar widths to help frame a conversation for design trade-offs. Without a survey (engineering survey of the corridor marking exact dimensions of all medians, street widths, placement of storm grates, etc.) we cannot make specific treatment recommendations. Design solutions will require further information and study. *Note: Implementation costs vary and are scaled as low (\$), medium (\$\$) or high (\$\$\$) investment.*

Potential modifications within the existing curb-to-curb dimensions include the following:

1. Restripe the corridor to reduce travel lanes between W. Cold Spring Lane and Deepdene Road. (\$\$)

This is commonly referred to as a road diet. Reducing vehicle travel lanes to one in each direction has three benefits:

- » **Vehicle speed reduction**, as it is the slowest driver that sets the prevailing speed rather than the fastest driver
- » Provides space to **bring the cycle track up to minimum standards**
- » **Eliminates the ‘double threat’** of vehicle speed and poor line-of-sight, **which exists on a 4-lane road.**

Bringing the cycle track up to a minimum guideline widths will increase sight distance along the cycle track, especially at points of crossing for pedestrians. Both bicyclists and pedestrians will have improved reaction times and more room to maneuver.

Restriping Roland Avenue would require a circulation study to determine whether or not left-turn lanes (or small turn “pockets”) would be necessary at each cross-street. Based on field observation, many left-turning vehicles pull into the space between medians to wait for gaps in oncoming traffic. A circulation study would quantify the amount of turning traffic during busy and quiet parts of a typical weekday. Adding left turn lanes would necessitate considerable modifications to the medians including tree removal.

Note: Alta does NOT recommend any treatments that would significantly decrease the tree canopy. Spot modifications may be acceptable but the overall character of the corridor should not be compromised.



2. Restripe the corridor to reduce travel lanes between W. Cold Spring Lane and Deepdene Road and return parking to the curb. (\$\$)

This road diet will also reduce travel lane to one lane in each direction and return the parking to curb. The bike lane will be moved between the parked cars and the travel lane, with buffers along both sides. This modification will not have the same effectiveness of the other road diet. The travel lane may not seem narrower with an adjacent bike lane and therefore will not calm traffic to the same degree as modification #1.



3. Restripe the bike lanes to remain curbside and realign unsafe crossings. (\$)

Several sections of Roland Avenue have sub-standard widths for bike lanes and painted buffers, which compounds the sense of the cycle track being a constrained space. The narrow bike lanes are especially noticeable (and uncomfortable) where cyclists are directed to ride between vehicle traffic and the bus stop. This introduces a potentially dangerous weaving pattern between cyclists and bus drivers.

If the bike lanes remained adjacent to the curbs or shared lane markers were added to the bus stops, the **added distance between fast-moving traffic would help improve the comfort level of cyclists**. Removing the weaving design would also help motorists, because **bicycle movements would be more predictable**.

4. Evaluate protected intersection design at large intersections. (\$\$)

Many of Roland Avenue's intersections are so large and uncontrolled that walking and bicycling feels risky, even with crosswalks and pedestrian-activated signal heads.

Protected intersections keep **bicycles physically separated from vehicle traffic**, improving sight distance and reaction times for both motorists and cyclists. Improving crosswalks and crossing indicators will highlight points of conflict and therefore increase awareness. These opportunities



could be evaluated in conjunction with a circulation study, in order to identify the most practical locations. See protectedintersection.com for more details.

5. Relocate cycle track to left side of travel lanes, along median, with most intersections signalized or controlled. (\$\$\$)

By relocating the cycle track to the interior curb (adjacent to the center median), the majority of **bicycle and pedestrian conflicts would be reduced**. It will be necessary to study all intersections with left turns options to understand which form of control is need to reduce bicycle and vehicular conflicts. This may also require special signalization and modifications to the median islands.

6. Provide a Shared-use Path within the existing median. (\$\$)

The existing trees in the median along Roland Avenue are one of the main contributing factors to Roland Park historic streetscape charm, yet it is also an under utilized space. The current space could accommodate a shared-use path, for both pedestrians and bicyclists. Yet, due to the construction and design impacts, all of the mature trees in the median would be impacted and have to be replaced, which would change the aesthetic of the street. There would also be new conflict at the intersection with the multiple crossings, which would increase design and construction cost.

Potential modification with revisions to curb, on one or both sides of the street include the following:

7. Create raised multi-use path (one-way). (\$\$\$)

By raising the cycle track, the conflict between parked cars and bicyclists will be eliminated. Bicyclists and pedestrians will share a wide path, increasing sight lines for both users. This will improve the comfort level for bicyclist. The cost is a limiting factor for the existing bump outs and intersection crossings will need to be evaluated, and maybe adjusted or removed. This modification would also impact the street trees and properties along Roland Avenue.

SUGGESTED NEXT STEPS

The potential modifications of Roland Avenue each have their benefits and challenges. The study team suggests the following framework to collaborate with the City to determine the best solution for enhancing and creating a comfortable, safe, complete street for all users:

- » Meet with Baltimore City Department of Transportation to discuss the findings regarding potential corridor modifications.
- » A more in-depth engineering study using a complete streets design approach should be undertaken by the City to evaluate the feasibility of the potential modifications identified herein. This would involve identifying optimal block-by-block solutions customized to alleviate as many issues along the corridor for the widest array of users as possible. A road diet would be ideal to use the extra lane space to accommodate a more Complete Street environment.
- » In the interim, discuss small modifications with DOT to increase safety for all users of Roland Avenue. These include: realigning the cycle track to avoid stormwater grates, striping through the bus stops instead of around, posting signage that indicates how to use the facility, and removing superfluous signage.
- » Prior to making any decisions on potential modifications, our team recommends that a robust public involvement plan be an integral component of the design. This will provide an important opportunity for thoroughly vetting potential modifications and building consensus with stakeholders, including neighbors, business owners, pedestrians, bicyclists, and other affected users.

CASE STUDIES

PURPOSE OF THIS SECTION: Provide examples of situations where cycle tracks were modified. These case studies were selected to illustrate to the neighborhood and DOT that sometimes modifications are needed to street design after the implementation of new facilities based on post occupancy evaluation. These are not direct land use comparisons to Roland Avenue.

BIKE LANE TO PROTECTED BIKE LANE

5TH STREET TUNNEL, PHILADELPHIA, PA

Drivers and bicyclist of the 5th Street Tunnel express concerns about safety within the tunnel and the limited separation between bikes and cars. After meetings and planning discussion, the Delaware River Port Authority re-painted the bike lane and intersection and installed flexi-posts along the either length of the bike lanes within the tunnel.



Before



After

CYCLE TRACK TO RAISED CYCLE TRACK

SHERBOURNE STREET, TORONTO, ON

15 years after the installation of the original cycle track, the Toronto City Council direct the City to improve the popular route and provide separation between cars and bikes. By removing the on-street parking, which was offset onto a neighboring street, the bike route was upgraded with two type of cycle track. The tracked was raised south of Gerrard Street and buffered cycle track north of Gerrard Street.



Before- South of Gerrard Street



After - South of Gerrard Street

BIKE LANE TO CYCLE TRACK TO PROTECTED CYCLE TRACK

2ND AVENUE, SEATTLE, WA

As one of the primary routes through downtown Seattle, the 2nd Ave bike route has evolved from a bike lane in 2007, to a cycle track in 2012, and now is a protected cycle track.



2007



2012



2016

OTHER NEIGHBORHOOD SEPARATED BICYCLE FACILITIES



WASHINGTON, DC AND ARLINGTON, VA



BOULDER, CO



ST. LOUIS, MO



HAMILTON, ONTARIO



SAN FRANCISCO, CA