

## STATE HIGHWAY ADMINISTRATION

# Shared Use Path Feasibility Study 

## Report

MD 201 (Kenilworth Avenue)
From The Anacostia River Trail To Craftsman Circle Prince George’s County

June 2023

> Prepared By JMT
> For MDOT SHA

Office of Highway Development

## Executive Summary

This feasibility study is being performed for the MDOT SHA Office of Highway Development for consideration under the Bicycle Retrofit Program (Fund 88). The limits of study extend along MD MD 201 (Kenilworth Avenue) from the Anacostia River Trail to Craftsman Circle to increase connectivity between the Bladensburg Waterfront, Anacostia River Parks and the Cheverly neighborhood. Within these limits are industrial/commercial businesses and residential properties. This section of MD 201 is defined as Context Zone C- Suburban Activity Center.

The proposed study design will evaluate the installation of a shared use path along Lloyd Street, Newton Street, $52^{\text {nd }}$ Avenue, MD 201 Northbound, Lydell Road and Schuster Drive. The limits of the proposed design begin at the Anacostia River Trail entrance at the Washington Suburban Sanitary Commission (WSSC) and end at Craftsman Circle.

The shared use path travels along both industrial and residential properties, involving shoulder reductions where necessary to provide the required shared use path width.

Notable risks include a CSX railroad crossing, retaining wall construction adjacent to commercial property lines, local utility pole impacts, potential right of way impacts to both commercial and residential properties, and potential underground utility impacts.

Alternatives were considered, however the significant impacts to existing Right of Way and major utility pole relocations made these alternatives unfeasible.

## Background

The project study area is along MD 201 (Kenilworth Avenue) from the Anacostia River Trail to Craftsman Circle. The length of the study is approximately 1.43 miles ( 7,550 feet). This Feasibility Study was requested by MDOT SHA Office of Highway Development to improve bicyclist safety, enhance network connectivity, and serve future demand.

## Purpose and Need

The purpose of the proposed shared use path is to provide and enhance pedestrian and bicyclist connectivity along MD 201 from Bladensburg Waterfront Park to the Cheverly neighborhood. Improving connectivity within the study limits would improve pedestrian and bicyclist safety. The addition of a new shared use path would provide pedestrians and bicyclists a well-defined and safer route to utilize.

The intent of this study is to provide a bicyclist accommodation solution that meets the Fund 88 MDOT Programmatic Purpose and Need (August 2018) for the least cost. The Programmatic Purpose and Need requires that projects be prioritized based on the criteria that incorporates corridor information related to demand, connectivity and safety.

## Level of Service and Demand

The performance criteria for Fund 88 is determined based on the Level of Service (LOS) of the on-road and off-road bicycle facilities. The FHWA considers " $C$ " to be the minimum acceptable LOS.

There are no existing bicycle facilities within the study limits, therefore the existing bicycle LOS cannot be calculated.

The proposed shared use path is an off-road facility. Therefore, the Shared-Use Path Level of Service Calculator, developed by FHWA, was utilized. This calculator takes the volume of users, types of users, and path width into consideration to determine both the user perception and shared use path LOS. Based on the Shared-Use Path Level of Service Calculator, the following LOS values were determined at two locations along the study corridor:

## MD 201 at $52^{\text {nd }}$ Avenue

| Segment Name <br> Name | Path Width <br> Closest 0.5 ft <br> Width (ft) | Centerfine <br> athoCertelire <br> 1mCenterine | Volume (users per hour in 1 direction) and Mode Split |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | Volume |  |  | de Spilt (\% |  |  |  |
|  |  |  | One-way (per hour) | Adat Bicydists | Pedestrians | Runners | ancine shaters | Ohid nichatits | All Modes |
| MD 201 at 52nd Ave | 10.0 | 1 | 10.0 | 30.0\% | 60.0\% | 5.0\% | 0.0\% | 5.0\% | 100.0\% |


| User Perception |  |  | Delayed Passings Adjustment |  |  | Prelim tos Score | Trail Level of Service |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Adj. Factor (subtract from User Percep. score) |  |  |  |  |  |  |
| Score | Grade | Percent | \# Per Hr | Pre Adj Fac | Fin Adj Fac | Prelim Los Score | LOS Score | LOS Grade |
| $\mathbf{3 . 5 4}$ | B | $\mathbf{1 7 . 2 8} \%$ | $\mathbf{3 . 0 6}$ | $\mathbf{0 . 0 3}$ | $\mathbf{0 . 0 3}$ | $\mathbf{3 . 5 2}$ | $\mathbf{4 . 0 0}$ | A |

The input volume is the highest hour volume from the ITMS traffic counts (see Appendix C), and the Mode Split was determined by the future anticipated use of the facility.

Future demand for bicycle ridership cannot be accurately measured since there are no highquality bicycle facilities present today in the study area. As a result, potential users shift to other travel modes. Based on the Short-Trip Opportunity Area model within the Statewide Bicycle Master Plan, the study area is identified as a Very High Opportunity area. This signifies an increase in future volumes, and based on the LOS calculator, the following are the volume limits for the range of LOS scores:

| LOS | 10 Foot Shared Use Path <br> Volume (Users per Hour) | 8 Foot Shared Use Path <br> Volume (Users per Hour) |
| :---: | :---: | :---: |
| A | 0 to 11 | 0 to 11 |
| B | 12 to 34 | 12 to 23 |
| C | 35 to 63 | 24 to 41 |
| D | 64 to 89 | 42 to 68 |
| E | 90 to 114 | 69 to 94 |
| F | Over 114 | Over 94 |

One element not taken into consideration in the LOS calculator is the buffer and landscaping between the curb and the shared use path. Due to the narrow corridor lined with utility poles and other restrictions, there is only one location where buffer is provided in the proposed study design, at the $52^{\text {nd }}$ Avenue and MD 201 intersection. Future design will further analyze any locations that could potentially have a buffer space. Any buffer with a minimum width of 5 feet would provide space for trees. These aspects of the proposed study provide additional comfort for future pedestrians and bicyclists.

## Connectivity

One of the primary purposes of Fund 88 is to provide connections between completed segments of the bicycle network. The MD 201 corridor being examined in this study would connect the Cheverly neighborhood, as well as the residences between MD 201 and 52 ${ }^{\text {nd }}$ Avenue, with

Bladensburg Waterfront Park to the west. Within the park is a section of the Anacostia River Trail, which extends from the confluence Anacostia River and the Potomac River to the south and continues north beyond the divergence of the Anacostia River to the Northeast and Northwest branches.

## Safety

Since 2020, there has been one bicycle accident. The accident occurred at the intersection of MD 201 and Lydell Road and was a property damage crash. While providing an off-road shared use path will create a safer route for pedestrians and bicyclists, this study area does not allow for buffer space between the curb and shared use path. This lack of buffer lessens the safety compared to paths with a buffer and trees along the route.

## Existing Conditions

The following information was gathered through a site visit on January 5, 2023, and desktop research. The project study area is located along Lloyd Street, Newton Street, $52^{\text {nd }}$ Avenue, MD 201 Northbound, Lydell Road and Schuster Drive, between the Anacostia River Trail and Craftsman Circle. The study area is within a Priority Funding Area (PFA). MD 201 has a posted speed of 35 mph . MD 201 is a part of the National Highway System (NHS), while the other roadways incorporated into the proposed design are local roadways not a part of the NHS. The study area is within a heavily industrial corridor, where there is a high percentage of large trucks.

Pedestrian and bicycle counts were taken at the following locations:
2019 Counts:

- MD 201 at Lloyd Street
- MD 201 at Lawrence Street
- MD 201 at $52^{\text {nd }}$ Avenue
- MD 201 at Lydell Street

This information was taken from the Internet Traffic Monitoring System (I-TMS), where pedestrian and bike counts were broken down into total counts, counts during the AM vehicle peak, and counts during the PM vehicle peak. These counts are provided in Appendix C.

The proposed design runs along six different roadways, each with a unique typical section. MD 201 and $52^{\text {nd }}$ Avenue are State Routes, Lloyd Street and Newton Street are County Routes, and Lydell Road and Schuster Drive are Municipal Routes (Cheverly). The following typical section descriptions begin at the Anacostia River Trail entrance on the west end of the study and continue eastward ending at Schuster Drive.

Lloyd Street consists of approximately a 22 foot wide asphalt pavement section with concrete pads that collect drainage on both sides of the roadway. There are no striped shoulders, however commercial vehicles were observed using the concrete pads as a holding area during the site visit. On the westbound side, the concrete pad is 14 feet wide to the west, then
transitions down to 6 feet wide, turning into asphalt as it approaches the intersection with MD 201. On the eastbound side the concrete pad is 5 feet wide through the entire section.


Lloyd Street Looking West.
Newton Street is a 24 foot wide closed section roadway with curb and gutter on both sides. There is residential parking on both sides of the roadway, as well as 3 foot existing sidewalks. Fences line the fronts of the residential properties, set back approximately 11.5 feet from the back of curb on the north side of the road, and set back approximately 8 to 10 feet from the back of existing curb on the south side or the road. Utility poles run along Newton Street in the eastbound direction.


Newton Street Looking West
$52^{\text {nd }}$ Avenue varies in width from approximately 42 to 46 feet wide. It is closed section on the northbound side with curb and gutter, and is closed section on the southbound side from MD 201 to Lawrence Place, then becomes open section to the north. There is a varying shoulder northbound up to 13 feet wide which is used for parking, and southbound varying up to 10 feet wide. There is existing sidewalk on the northbound side from MD 201 to just north of Kilmer Place. There is no existing sidewalk in the southbound direction. Utility poles run along both sides of the roadway. Truck parking is prevalent throughout the entire study segment of northbound and southbound $52^{\text {nd }}$ Avenue.

$52^{\text {nd }}$ Avenue Looking North
MD 201 consists of two 12-foot through lanes in both the northbound and southbound directions, divided by a curbed grass median with closed drainage. There are 12 foot outside shoulders in both directions. The northbound direction has dense vegetation beyond the existing pavement. There is no existing sidewalk in either direction. Utility poles run along the northbound side.


MD 201 Looking North

Lydell Road is approximately 48 feet wide with one lane in each direction and no discernable pavement markings. It is closed section with curb and gutter on both sides of the roadway. There are no existing sidewalks on either side of the roadway, and a fence that is set back 13 feet from the back of curb in the eastbound direction. Utility poles run along the westbound side.


Lydell Road Looking East
Schuster Drive is approximately 44 feet wide with one lane in each direction and no discernable pavement markings, and parking occurs on both sides of the roadway. It is closed section with curb and gutter on both sides of the roadway. There are no existing sidewalks on either side, and utility poles run along the southbound side of Schuster Drive.


Schuster Drive Looking South

The combination of commercial and residential properties throughout the study area results in multiple pedestrian traffic generators within a half-mile radius of the study limits. Within this radius, there are:

- Bladensburg Waterfront Park
- Bladensburg Neighborhood Park
- Cheverly Euclid Street Neighborhood Park
- Cheverly Swim and Racquet Club

There is 1 bus stop located within the proposed design in the study area at the southeast corner of MD 201 and Lydell Road intersection. There are no crossings along the proposed shared use path with existing crosswalk striping or existing pedestrian signals. Existing pedestrian signals are located at the southeast and southwest corners of MD 201 and Lydell Road intersection, utilized for crossing MD 201, and at the four corners MD 201 and 52 ${ }^{\text {nd }}$ Avenue intersection, also utilized for crossing MD 201.

## Environmental Compliance and Permitting

There are no anticipated environmental impacts within the study area needing permitting.
A significant aspect of the proposed study needing permitting is the CSX railroad crossing at the western limit of the study area, where the proposed shared use path will ultimately connect to
the Anacostia River Trail entrance. This will involve extensive coordination and agreements with CSX. Requirements at this crossing would include, but is not limited to, working within the CSX Right of Way and replacing and/or adding additional crossing signals. This will introduce a major schedule risk.

## Wetlands and Waterways

At Craftsman Circle, near the proposed shared use path tie in limit, there is a freshwater emergent wetland. The wetland runs from the existing railroad tracks to the south, through the Cheverly Local Park to the north. The proposed design is not within the FEMA Flood Hazard Area. Additional analysis will be required to determine impacts to wetlands and any required permitting.

## Stormwater Management and Drainage

Lloyd Street has concrete pads on both sides of the roadway with inlets that collect drainage into a closed system. Newton Street is closed section with curb and gutter on both sides of the roadway, however there are no existing inlets on either side of Newton Street. $52^{\text {nd }}$ Avenue is closed section along northbound, and a partially closed and partially open section along southbound. MD 201 is open section along the outside edges of roadway, with a closed section median with drainage. Lydell Road and Schuster Drive are both closed section with curb and gutter on both sides of the roadway.

Lloyd Street, MD 201 north of $52^{\text {nd }}$ Avenue and 52 ${ }^{\text {nd }}$ Avenue south of Jackson Street have closed drainage systems that appear to flow to a R5UBH riverine just north of the WSSC property and ultimately into the Anacostia River. Newton Street and $52^{\text {nd }}$ Avenue North of Jackson Street have closed drainage systems that flow north to a pond just north of Newton Street. The ownership of this pond is not clear but most likely belongs to Prince George's County or Bladensburg municipality. MD 201 south of $52^{\text {nd }}$ Avenue has an open drainage system to the outside that flows to 2 culverts that run beneath MD 201, with one being just west of the Baltimore Washington Parkway bridge ( $48^{\prime \prime}$ pipe) and one being just east of the bridge ( 24 " pipe). Both of these pipes flow to the south along Baltimore Washington Parkway into open ditches. The closed median drainage has inlets that drop the median drainage into those same culvert pipes.

The proposed study design has 3 locations that impact the existing drainage system, along Lloyd Street, $52^{\text {nd }}$ Avenue from Jackson Street to Kilmer Place, and MD 201 Northbound from Lydell Road to $52^{\text {nd }}$ Avenue.

Along westbound Lloyd Street, curb and gutter will be introduced and new inlets will need to be tied into the existing drainage system. Along northbound $52^{\text {nd }}$ Avenue, the curb and gutter is proposed to be shifted 2 feet towards the roadway to allow for the necessary shared use path width. There are no existing inlets in this section of $52^{\text {nd }}$ Avenue, so no new inlets will be needed. MD 201 northbound will be changed from open section to closed section. The
proposed design and estimate assume 10 COG inlets and 5 manholes along MD 201 northbound due to the closed section condition. Further analysis will be required to determine the necessary inlet locations, but it is anticipated that the drainage captured by these inlets will flow to the existing culverts present in the existing condition.

One stormwater facility was identified in the vicinity of the proposed improvements. The facility is a filtering facility inside the WSSC Anacostia Service Facility adjacent to MD 201 (SWMFAC \#160613). There is an existing pond north of Newton Street and West of $52^{\text {nd }}$ Avenue, however the ownership cannot be determined at this point.

There are limited areas to provide Storm Water Management (SWM) within project limits. One potential opportunity could be adjacent to Baltimore Washington Parkway south of where it crosses over MD 201. All opportunities will be exhausted within the project scope. However, given the Impervious Area Requiring Treatment (IART), it will be required to go beyond the present scope to investigate other areas within the MDOT SHA ROW to treat existing impervious areas as mitigation for the new impervious areas (that are also within the same watershed) to meet all the SWM quantity and quality management for the project.

| New <br> Pavement | Redevelopment | Pavement <br> Removal | Impervious Area <br> Requiring Treatment |
| :---: | :---: | :---: | :---: |
| 34,800 SF | 37,300 SF | 0 SF | 53,450 SF; 1.23AC |

Note that the above values were determined using GIS data and aerial imagery.

## Utilities

Utility poles are present throughout the entire study area. They are located along Newton Street eastbound, $52^{\text {nd }}$ Avenue northbound and southbound, MD 201 northbound, Lydell Road westbound and Schuster Drive southbound. Most of the poles along 52 ${ }^{\text {nd }}$ Avenue and MD 201 appear to be within MDOT SHA Right of Way. Utility poles in the other locations appear to be within Prince George's County or Municipal Right of Way. A utility designation quality level B will be necessary to locate any underground utilities.

It is anticipated that approximately 11 local utility poles will be impacted. The relocation of utility poles will potentially involve property easements among other impacts.

## Right of Way

Based on preliminary Right of Way (ROW) information, the existing MDOT SHA ROW varies in width as follows.

| Location | ROW Width (FT) |
| :---: | :---: |
| MD 201 from Lydell Road to Lloyd Street | Approx. 90-120 |
| 52 ${ }^{\text {nd }}$ Avenue from MD 201 to Newton Street | Approx. 50-75 |

Right of Way information along Lloyd Street, Newton Street, Lydell Road and Schuster Drive are not shown in the provided plans as this study only includes MDOT SHA Right of Way information. The Prince George's County and Municipal Right of Way information will be needed to provide the anticipated impacts along those roadways.

Locations where the proposed design extends beyond the existing back of sidewalk, and potentially impacts right of way are as follows:

1. MD 201 NB between Lloyd Street and Monroe Street

Further investigation will need to occur in preliminary engineering to determine all right of way impacts, including those along the County and Municipal roadways.

## Proposed Design

The proposed design adds a new shared use path for a majority of the study area and replaces existing sidewalk where applicable. The proposed shared use path is 10 feet wide, narrowing to 8 feet wide in heavily constrained locations. Curb and gutter is proposed at all shared use path locations. The curb and gutter will replace existing curb and gutter in kind and in the same location at the edge of pavement except for the following locations:

1. Lloyd Street - New curb and gutter is proposed at the existing edge of asphalt pavement, eliminating the existing concrete pad.
2. $52^{\text {nd }}$ Avenue north of Kilmer Place - proposed bump out to avoid Right of Way impacts and tie into the existing driveway.
3. $52^{\text {nd }}$ Avenue between Jackson Street and Kilmer Place - proposed curb and gutter moved 2 feet towards travel lane to avoid significant Right of Way impacts.
4. $52^{\text {nd }}$ Avenue south of Jackson Street - proposed bump out to avoid parking lot and Right of Way impacts.
5. MD 201 Northbound - proposed curb and gutter where there is no curb and gutter today.

The proposed curb and gutter on Lloyd Street would eliminate the concrete pad waiting area used by commercial vehicles. The proposed curb bump outs along $52^{\text {nd }}$ Avenue will eliminate parking in those locations. Along MD 201 northbound, the proposed curb and gutter will be placed at the existing edge of travel lane, eliminating the existing 12-foot shoulder. MD 201 is
classified as a Principal Arterial Other, therefore it is acceptable per AASHTO guidelines to remove this shoulder, but a bike waiver would be required.

Retaining walls are proposed due to proximity of existing Right of Way and steep slopes adjacent to the shared use path. Three retaining walls are proposed at the following locations:

1. Lloyd Street - from MD 201 intersection to approximately 250 feet west of intersection.
2. MD 201 Northbound - between Lloyd Street and Monroe Street
3. Schuster Drive - In front of MY-A \& Co. property.

Along Newton Street there is a potential need for steps to be provided at residences where the proposed option introduces a significant change in elevation.

As noted in the stormwater management section, new inlets will be required along the new proposed curb and gutter locations along Lloyd Street and MD 201 northbound and will connect to the main drainage system. Impacted driveway connections and the bus stop at the southeast corner of Lydell Road and MD 201 intersection will be replaced.

Crossings are proposed at all locations where they do not exist today. This includes a proposed crossing on MD 201 just south of $52^{\text {nd }}$ Avenue. There are existing pedestrian crossing signals and crosswalk striping, however no existing sidewalk.

The major risk to this project, as mentioned in the permitting section, is the proposed CSX railroad crossing. Extensive coordination, agreements and permitting will be required to provide the shared use path connection to the existing Anacostia River Trail entrance. There is high risk to the overall project schedule and additional costs including replacement and additional crossing signals. All feasible shared use path connections to the trail within the study area involve crossing the CSX railroad tracks.

The eastern study limit at Craftsman Circle ties into the proposed trail easement as shown in the Craftsman Circle Development Plan (See Appendix E).

Maintenance of traffic will involve at a minimum an outside lane closure during construction.
The estimate for the proposed study design is estimated to cost $\$ 5.4 \mathrm{M}$ excluding right of way acquisitions and utility impacts other than utility pole relocation. This project resides in a Priority Funding Area, and an agreement will need to be made as to the cost sharing of this project between MDOT SHA, Prince George's County, and the Cheverly Municipality.

## Design Considerations

While analyzing the study, four design considerations were identified that are not shown in the proposed study design:

1. 10-foot Shared Use Path on Lloyd Street

The proposed study design shows a 10-foot shared use path along the west portion of Lloyd Street, then narrowing to 8 feet wide where the existing fence shifts closer to the road. Impacting the fence can be considered to maintain a continuous 10 -foot-wide shared use path, which would result in fence relocation, a potential retaining wall, and potential right of way impact.
2. Shared Use Path on North Side of $49^{\text {th }}$ Avenue

The proposed study design shows the shared use path running along the south side of $49^{\text {th }}$ Avenue, between MD 201 and Newton Street. There is a combination of residential properties and utility poles that could cause challenges. Along the north side of $49^{\text {th }}$ Avenue is guardrail, trees and thick vegetation. However, moving the shared use path could become an option if the residential properties lead to insurmountable difficulties.
3. Relocating $52^{\text {nd }}$ Avenue Curb and Gutter

Locations were noted in the previous section where relocating the existing curb and gutter was necessary to provide a shared use path. In addition to these locations, there are other locations in this section of $52^{\text {nd }}$ Avenue where the curb and gutter can be moved closer to the travel lane, narrowing the existing shoulder, or removing it altogether. This would potentially provide a 10 -foot shared use path where only an 8 -foot path is provided in the proposed study design, as well as buffer space between the curb and shared use path.
4. Cheverly Hospital Site Redevelopment

The redevelopment of the existing Cheverly hospital site is in the planning stage currently and would potentially provide an alternative endpoint for the proposed shared use path. The site plans include residential, retail and dining facilities and is located just east of Baltimore Washington Parkway on Hospital Drive. Additional information on the site redevelopment can be found on Prince George's County website.

## Conclusions and Recommendations

## Benefits:

- Improves bicyclist and pedestrian safety by moving bicyclists off the roadway.
- Provides bicycle facilities where there are none today.
- Increases connectivity between the Anacostia River Trail, commercial destinations, and the surrounding neighborhoods.
- Most of the proposed shared use path will be within existing ROW.


## Concerns:

- CSX railroad crossing introduces a major risk to schedule and cost.
- There is minimal opportunity to provide Storm Water Management within the study area to compensate for the additional and redeveloped impervious surface.
- Proposed retaining walls are required to avoid significant right-of-way impacts.
- Proposed work falls within SHA, County, and Municipal Right of Ways, which will require coordination from all parties.
- Impacts to existing utilities including impacts to existing utility poles and potential utility impacts in the areas where proposed storm drain systems will be required.


## Recommendation:

There is a need for shared use path connectivity between the Cheverly neighborhood and the surrounding destinations. The lack of adequate existing facilities creates safety concerns and forces potential bicyclists to use an alternative mode of transportation. The proposed alternative is recommended as it creates a safe bicycle and pedestrian environment with minimal impacts on the surrounding community, while providing an enhanced off-road experience.

## Appendices

Appendix A: Proposed Shared Use Path (9 Plan Sheets)
Appendix B: Cost Estimate

Appendix C: Pedestrian Counts
Appendix D: Photos of Existing Conditions
Appendix E: Craftsman Circle Development Plan


-PROPOSED BUFFER
PROPOSED SIDEWALK

- PROPOSED DRIVEWAY


JMTT











Notes:

1. Cost estimate does not include Right-of-Way costs, utility costs other than those listed, or CSX railroad crossing costs


$\underbrace{}_{\substack{\text { MARYAAND DEPARTMENT } \\ \text { OF TRANSPORTATION. }}}$ STATE HIGHWAY
ADMINISTRATION
Station ID: S2000160126

Maryland Department of Transportation
State Highway Administration

## Turning Movement Summary Report

Date: 11/13/2019 12.00:00 AM County
Town:
Prince Georges
Comments:

Location: MD 201 at 52nd Ave (Eastbound)

| Interval: | 60 Min | PEAK | AM PERIOD | Start | End | Volume | LOS | V/C | PM PERIOD | Start | End | Volume | LOS | V/C |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Hours | 6:00AM-12:00PM | 07:00 | 08:00 | 2633 | A | 0.5 | 12:00PM-19:00PM | 17:00 | 18:00 | 2861 | A | 0.48 |


|  |  | MD 201 |  |  | MD 201 |  |  | 52nd Ave |  | Salvatio | my Store |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | From North |  |  | From South |  |  | From East |  |  | West |  |
| Begin <br> Hour | School Children | Pedestrians | Bicycles | School Children | Pedestrians | Bicycles | School Children | Pedestrians | Bicycles | School Children | Pedestrians | Bicycles |
| 00:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 01:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 02:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 03:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:00 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 06:00 | 0 | 9 | 0 | 0 | 4 | 0 | 0 | 1 | 0 | 0 | 4 | 0 |
| 07:00 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 5 | 0 |
| 08:00 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 09:00 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 |
| 10:00 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11:00 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 |
| 12:00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 13:00 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 |
| 14:00 | 0 | 3 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 3 | 0 |
| 15:00 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 0 |
| 16:00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 |
| 17:00 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 18:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 19:00 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 0 |
| 20:00 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 |
| 21:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 22:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 23:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL | 0 | 72 | 0 | 0 | 5 | 0 | 0 | 9 | 0 | 0 | 44 | 0 |
| AMPEAK | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 5 | 0 |
| PMPEAK | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| DAYPEAK | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |


STATE HIGHWAY
ADMINISTRATION
Station ID: S2000160125
Date: $\quad 11 / 13 / 2019$ 12:00:00 AM
Location: MD 201 at Lydell Rd
Interval: 60 Min

Maryland Department of Transportation
State Highway Administration

## Turning Movement Summary Report



| From North |  |  |  | From South |  |  | From East |  |  | From West |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Begin Hour | School Children | Pedestrians | Bicycles | School Children | Pedestrians | Bicycles | School Children | Pedestrians | Bicycles | School Children | Pedestrians | Bicycles |
| 00:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 01:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 02:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 03:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 06:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:00 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 2 | 0 | 0 | 0 | 0 |
| 08:00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 09:00 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11:00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 12:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14:00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 0 |
| 15:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 16:00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 19:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 20:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 21:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 22:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 23:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL | 0 | 2 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 0 | 0 |
| AMPEAK | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 2 | 0 | 0 | 0 | 0 |
| PMPEAK | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| DAYPEAK | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |

Appendix D: Photos of Existing Conditions












MD 201 Northbound Looking North


MD 201 Northbound Looking North
Existing 48 Inch Culvert West of Baltimore Washington Parkway


MD 201 Northbound Under Baltimore Washington Parkway Bridge


Existing 24 Inch Culvert at MD 201 Northbound East of Baltimore Washington Parkway Bridge





