

MEMORANDUM

TO: Khursheed Bilgrami, MCDOT Traffic Engineering Studies (DTEO)

FROM: Cipriana Eckford, P.E., RK&K

CONTRACT: Basic Ordering Agreement (BOA)
Engineering Services for Transportation Facilities
Contract No. 1082910

REFERENCE: Task No. 18013-3
Rock Creek Hills Study

DATE: June 28, 2018

1. INTRODUCTION

This study analyzes the roadways located in the Rock Creek Hills Community to address concerns and requests posed to Montgomery County Department of Transportation (MCDOT) by the community association. The concerns include safety, speeding, and cut-through traffic. The request includes an area transportation study, including sidewalk installation, implementing access restrictions, implementing traffic calming and improving geometry at two intersections within the community. The study was conducted by RK&K on behalf of MCDOT to address the concerns of the community.

2. PURPOSE

This memo is a summary of the safety and traffic operation evaluation results and findings of the study. The memo includes:

- The result of the traffic volume restriction eligibility for the cut-through traffic concerns.
- Findings from the traffic and safety assessment of the roadways in the community, including findings from the field observations and crash data.
- Different proposed intersection modification designs for the two intersections.
- Sidewalk connectivity and feasibility assessment results by MCDOT.
- Proposed traffic calming recommendations for speeding issues.

3. STUDY AREA

The study area is located in South Kensington, Montgomery County, MD. It is in the Rock Creek Hills residential neighborhood. It is in close proximity with MD-185 (Connecticut Avenue) and I-495 (Capital Beltway). The roadways in the study area are classified as residential roadways (primary and secondary), as defined in the Montgomery County Executive Regulation 17-94AM.

The study area consists of two primary residential roadways (Saul Road and Kensington Parkway) and nine secondary residential roadways (Littledale Road, Bexhill Drive, Old Spring Road, Kingston Road, Dunnel Lane, Barroll Lane, Franklin Street, Elrod Road, and Everett Street). **Figure 1** shows the study area map.

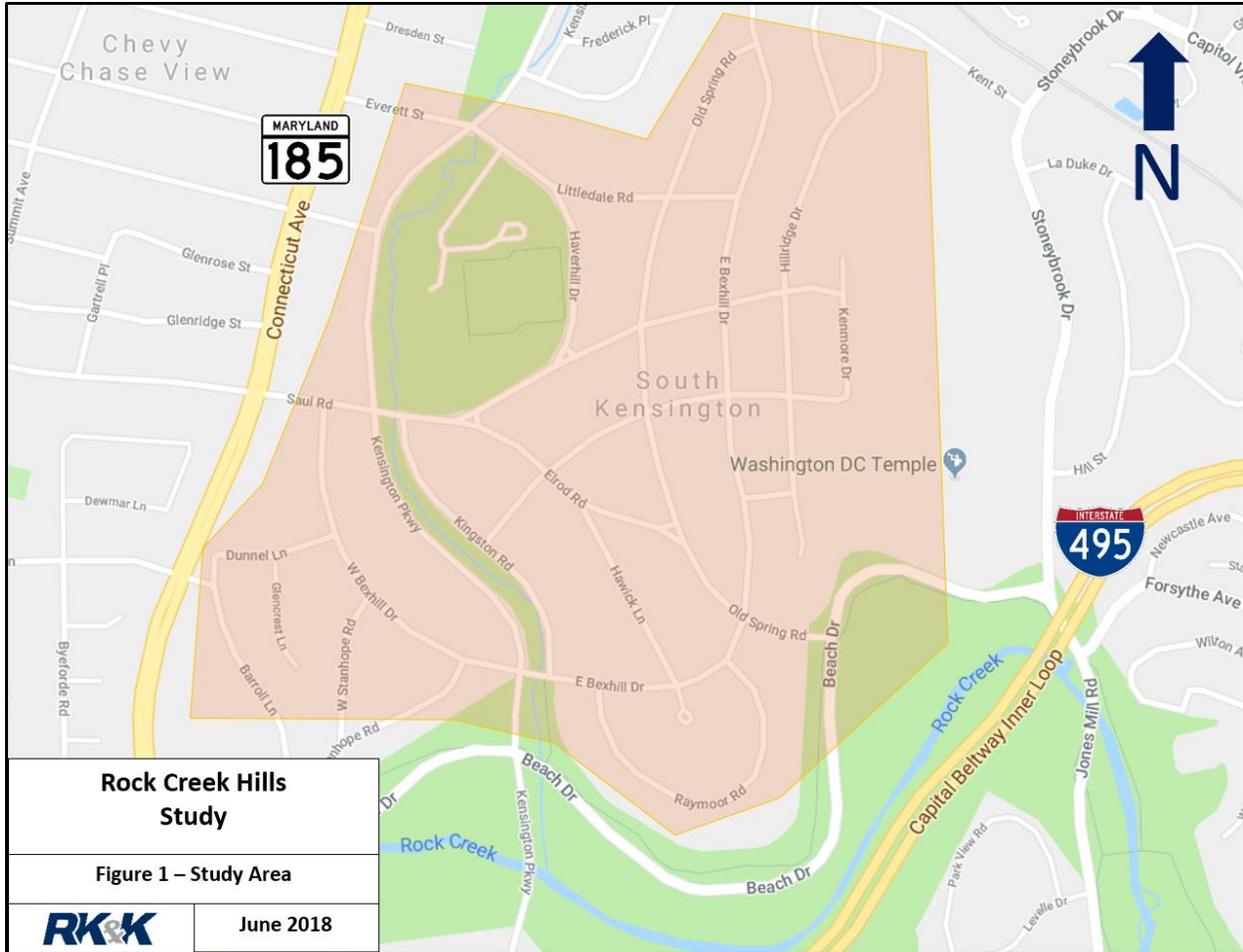


Figure 1: Rock Creek Hills Study Area

4. DATA COLLECTION

To perform assessment of traffic and safety operations along the roadway in the study area, RK&K collected volume, speed and crash data.

4.1. TRAFFIC VOLUME / SPEED DATA

RK&K conducted a 24-hour tube count to collect volume and speed at thirteen locations on April 18, 2018 in the study area. Traffic count locations are presented in **Figure 2**. Traffic counts are provided in **Appendix A**.

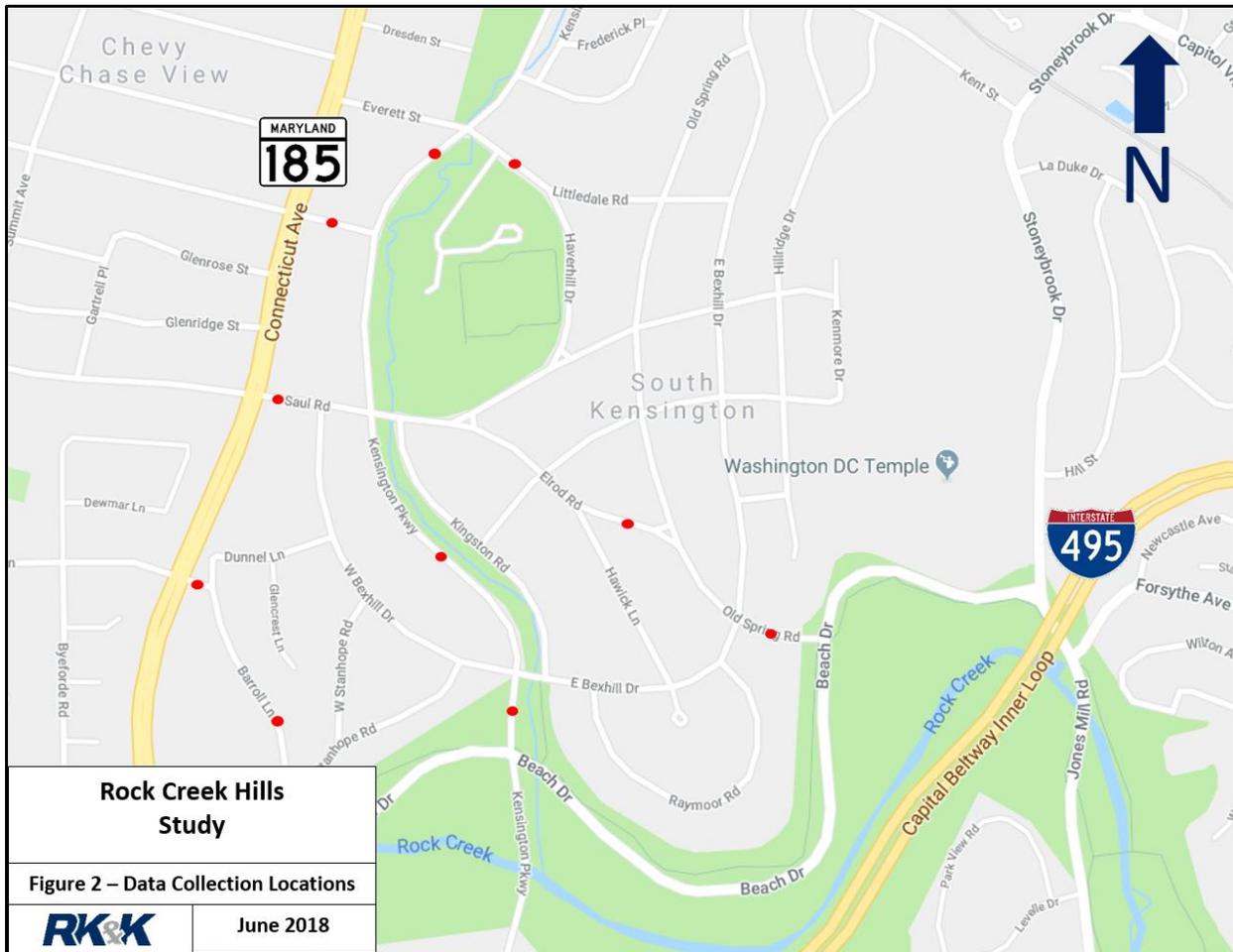


Figure 2: Traffic Count location

4.2. FIELD OBSERVATION

On Wednesday, May 30, 2018, RK&K performed a thorough field assessment of the operations along the roadways during the AM peak (7:00 – 9:00 AM), PM peak (4:30 – 6:30 PM) and school dismissal period (2:30 – 4:00 pm). A transportation infrastructure field review along the roadways was also conducted. The purpose of the field assessment was to evaluate the multimodal traffic operations throughout the Rock Creek Hills Community. The assessment reviewed traffic and geometric characteristics, including sight distance, ADA compliance, intersection and roadway configurations, pavement and signage conditions,

speed limit compliance, etc. The findings were used to support the roadway design team in identifying potential corridor and intersection geometry improvements, and traffic calming measures to complement the peak traffic safety and operational analyses.

4.3. CRASH DATA

Crash data from Montgomery County's Open Data Portal was used to obtain the crash records for roadways in the study area for the period of January 1, 2015 through March 30, 2018. The data was used in the safety evaluation of the study area. The raw crash data is provided in **Appendix B**.

5. SAFETY AND OPERATIONAL EVALUATION

With the opening of Silver Creek Middle School, the Rock Creek Hill community is concerned with cut-through and speeding in their neighborhood, because of the increase of walking students and the increase in traffic at intersections on the local streets used to access the school. Consequently, the community requested an area transportation study. The following analyses were conducted to fulfill the study, which includes cut-through traffic analysis, speed analysis, field analysis, and crash analysis, and the identification of measures and strategies to address issues mentioned by the community.

5.1. CUT-THROUGH TRAFFIC ANALYSIS

In response to the traffic access restriction for cut-through traffic requested by the community, an eligibility analysis, governed by the Montgomery County Executive Regulation 17-94AM, for traffic access restriction was conducted. The regulation states the residential area volume restriction must be based on satisfying the following criteria:

- Street Classification
- Traffic Volume
- Estimated Non-Local Traffic (License plate survey)

5.1.1. Street Classification

According to the regulation, only tertiary, secondary and primary residential streets are eligible for volume restriction measures. The roadways located in the community meet this criterion. The roadway classifications are presented in **Table 1**.

5.1.2. Traffic Volume

The regulation states that the two-directional traffic volume on at least one roadway in the community for at least one hour of a weekday peak period or other off-peak period must meet the following criteria:

- 400 vehicles per hour (vph) on a Master Plan Primary Street that operates with two unobstructed travel lanes, one for each direction
- 250 vph on residential street, not designated as primary in the Master Plan, operates with two unobstructed travel lanes, one for each direction (Secondary Street)
- 100 vph on any residential street that based on width and parking characteristics, operates with only one unobstructed lane for travel in both directions.

Traffic volumes were collected at 10 locations for 24-hours. Peak two-directional traffic hourly volumes for the locations are presented in **Table 1**. The results show that none of the identified roadways in the community are eligible for traffic restriction.

Table 1: Eligibility Analysis Results

Roadway	Classification	Threshold	Volume	Eligibility
Saul Road	Primary Residential Road	400	220	NO
Dunnel Lane	Secondary Residential Road	250	63	NO
Barroll Lane	Secondary Residential Road	250	39	NO
Franklin Street	Secondary Residential Road	250	153	NO
Kensington Parkway (Bexhill Drive and Beach Drive)	Primary Residential Road	400	380	NO
Kensington Parkway (Bexhill Drive and Saul Drive)	Primary Residential Road	400	286	NO
Kensington Parkway (North of Franklin Street)	Primary Residential Road	400	230	NO
Littledale Road	Secondary Residential Road	250	90	NO
Old Spring Road	Secondary Residential Road	250	160	NO
Elrod Road	Secondary Residential Road	250	103	NO

5.1.3. Estimated non- local traffic (License plate survey)

Per the regulation, non-local traffic must exceed 50 percent of the highest hourly volume. The non-local traffic volume may be estimated by means of a license tag (plate) survey sample. The license plate survey is conducted by recording and comparing license plates of all vehicles entering and exiting the community from all entry and exit points. The License Plate Survey was not conducted because, based on the above eligibility analysis, none of the roadways studied are eligible for traffic access restriction.

5.2. SPEED STUDY

Speed data were collected at nine (9) locations. The posted speed limit on all the study roadways is 25 miles per hour (MPH). The results of the speed study, presented in **Table 2**, showed that all the roadways operate at an 85th percentile speed that is higher than the posted speed limit, except on Littledale Road. The roadways operate at an 85th percentile speed that ranges from 2 MPH to 9 MPH over the posted speed limit. Littledale Road operates with an 85th percentile speed 5 MPH less than the posted speed limit.

Table 2: Speed Study Results

Roadway	Speed Limit (MPH)	85th Percentile (MPH)	Difference (MPH)
Saul Road	25	28	+3
Barroll Lane	25	29	+4
Franklin Street	25	27	+2
Kensington Parkway (Bexhill Drive and Beach Drive)	25	29	+4
Kensington Parkway (Bexhill Drive and Saul Drive)	25	32	+7
Kensington Parkway (North of Franklin Street)	25	34	+9
Littledale Road	25	20	-5
Old Spring Road	25	29	+4
Elrod Road	25	30	+5

5.3. FIELD EVALUATION

Field observations were conducted on primary and secondary roadways in the community. The field observations were conducted during the AM and PM peak periods. Observations were also conducted near Silver Creek Middle School during school dismissal time. The observations included a variety of traffic and geometric characteristics from sight distance, ADA compliance, intersection and roadway configurations to pedestrian activity, pavement and signage conditions and speed limit compliance.

5.3.1. Traffic Operations

During the field observations, drivers were observed to either overlook or not follow some regulatory signs, such as stop signs, no-left turn signs and speed limit signs. Several instances of speeding were also observed on the roadway, especially on Kensington Parkway and Saul Drive-Elrod Road. Drivers were observed to not come to a full stop at the stop signs, instead they were observed to roll through the intersections on several occasions. This was observed mainly at the intersection of Saul Drive and Kensington Parkway, as well as at a few other intersections. There is a NO LEFT TURN sign at the exit of the school, on Saul Drive, as shown in **Figure 3**. A few vehicles were observed making a left from the school. School traffic during the AM drop-off and the PM pick-up didn't appear to have any adverse effect on the adjacent roadway (Saul Road).



Figure 3. “NO LEFT TURN SIGN” at school exit

Calming devices (speed humps) installed on Kensington Parkway appeared to have little or no impact on the speeding of the vehicles. Many drivers did not apply brakes /slow down when approaching the speed humps. The speed humps have a 20 MPH advisory speed. Vehicles were observed driving in the opposing direction's lane in order to pass bicyclists riding in the roadway. This was especially observed at the speed hump north of Bexhill Drive, along the curve, which made it particularly unsafe. Although many drivers were observed speeding along Kensington Parkway, they were generally cautious when bicyclists and pedestrians were present and would slow down and/or stop for them.

The peak periods didn't appear to have any impact on traffic patterns or behavior of the drivers.

5.3.2. Pedestrian Access

There are no sidewalks in the community other than on Kensington Parkway and Saul Road from Connecticut Avenue to the school access at 3705 Saul Road. Pedestrians were observed sharing the roadway with passenger vehicles, busses and bicycles, as seen in **Figure 4**. Lack of paved bus stops and sidewalks forces pedestrians, recreational and commuting, into sharing the roadways with vehicles. Most of the available sidewalks in the community have ADA compliant pedestrian ramps, as appropriate. At the intersection of Litledale Road and Kensington Parkway, pedestrian ramps on the east leg are not facing/aligning with each other and don't have a detectable warning surface (DWS) on them. At the intersection of Franklin Street and Kensington Parkway, there are no pedestrian facilities (sidewalk or ramp) leading to the pedestrian trail/bridge north of the intersection, except the crosswalk with fading markings on the north leg.



Figure 4. Pedestrian observed walking in the road

A Sidewalk Connectivity and Feasibility Assessment was conducted by the Montgomery County Department of Transportation (MCDOT) Division of Transportation Engineering in the area near Silver Creek Middle School. The project team is awaiting the results of this assessment and, once received, can determine if any proposed sidewalk would allow for additional opportunities for safety improvements.

5.3.3. Pavement and Pavement Marking

The roadway pavement in the neighborhood is mostly in fair to poor condition. There are asphalt cracking and potholes at most locations in the community. **Figure 5** shows examples of asphalt cracking on the roadway. Also, there are pavement edge drop-offs on some of the roadways, as shown in **Figure 6**.

The roadway pavement in the community is unmarked, except on Saul Road from Connecticut Avenue to 9709 Elrod Road. The roadway pavement marking here includes a double yellow centerline and a white edge line. The pavement marking on Kensington Parkway is in fair condition, but is fading. The markings

also include stop bars at the intersecting roadways and speed hump marking. The pavement marking on Saul Road is in good condition. It appears new.

The majority of the intersecting roadways with stop signs do not have stop bars.



Figure 5. Examples of damaged pavement in the community



Figure 6. Pavement edge drop off observed along Kensington Parkway

5.3.4. Roadway Signs

Signs in the community are generally in good condition. However, some signs were observed that were fading or damaged, substandard, or blocked by vegetation. Some signs were also missing at different locations. “ALL WAY” plaques are missing at the intersection of Saul Road and Kensington Parkway.

The ‘NO PARKING’ sign along Old Spring Road is fading, as shown in **Figure 7** and needs to be replaced. **Figure 8** shows a speed hump sign with advisory speed plaque blocked by vegetation along Kensington Parkway.



Figure 7. Faded “NO PARKING” sign



Figure 8. Blocked sign by vegetation

5.3.5. Sight Distance

Sight distance appears adequate at all the intersections in the community, except two locations. At the intersection of Bexhill Drive and Littledale Road, the intersection sight distance from the west leg, looking to the right is limited. At the intersection of Franklin Street and Kensington Parkway, the intersection sight distance from the west leg, looking to the right is limited. The vehicles on the eastbound approach were observed not to stop at the stop bar or sign, possibly due to reduced sight distance from the right.

5.3.6. Other Observations

Additional general observations in the community include:

- Parking on both sides of Elrod Road reduces it to one travel lane.
- Based on the night time observations conducted, the street lighting in the community appears to be adequate.
- Stop signs, measuring 24"x24", are located at the intersections of Calvend Lane and Elrod Road, and Hawick Lane.
- There is a lack of defined pedestrian accommodations (bus shelter, concrete pad) at the existing bus stops in the community.
- Children were observed crossing from the school in the middle of the block along Saul Road, as shown in **Figure 9**.
- There appear to be substandard guardrails in the community.



Figure 9. Children crossing with no crosswalk from the school.

5.4. CRASH ANALYSIS

Crash data for the roadways in the community for the period from January 1, 2015 to March 30, 2018 were analyzed, to identify high crash locations, crash patterns, and other safety issues. The crashes are summarized as follows:

- There was a total of five (5) crashes on the roadways in the community over the last three years, as presented in **Figure 10**. Two (2) crashes occurred on Kensington Parkway, one (1) crash occurred on Saul Road, one (1) occurred on Bexhill Drive, and one (1) occurred on Kent Street.
- The crashes included two (2) angle crashes, one (1) fixed object crash, one (1) rear end crash and one (1) crash involving a parked vehicle.
- The crashes resulted in four (4) property damage only (PDO) crashes and one (1) injury crash.
- Three (60%) of the crashes occurred during day time, and four (4) of the five (5) crashes occurred under dry conditions, with clear weather.
- The crash at Kensington Parkway and Beach Drive involved a bicycle.

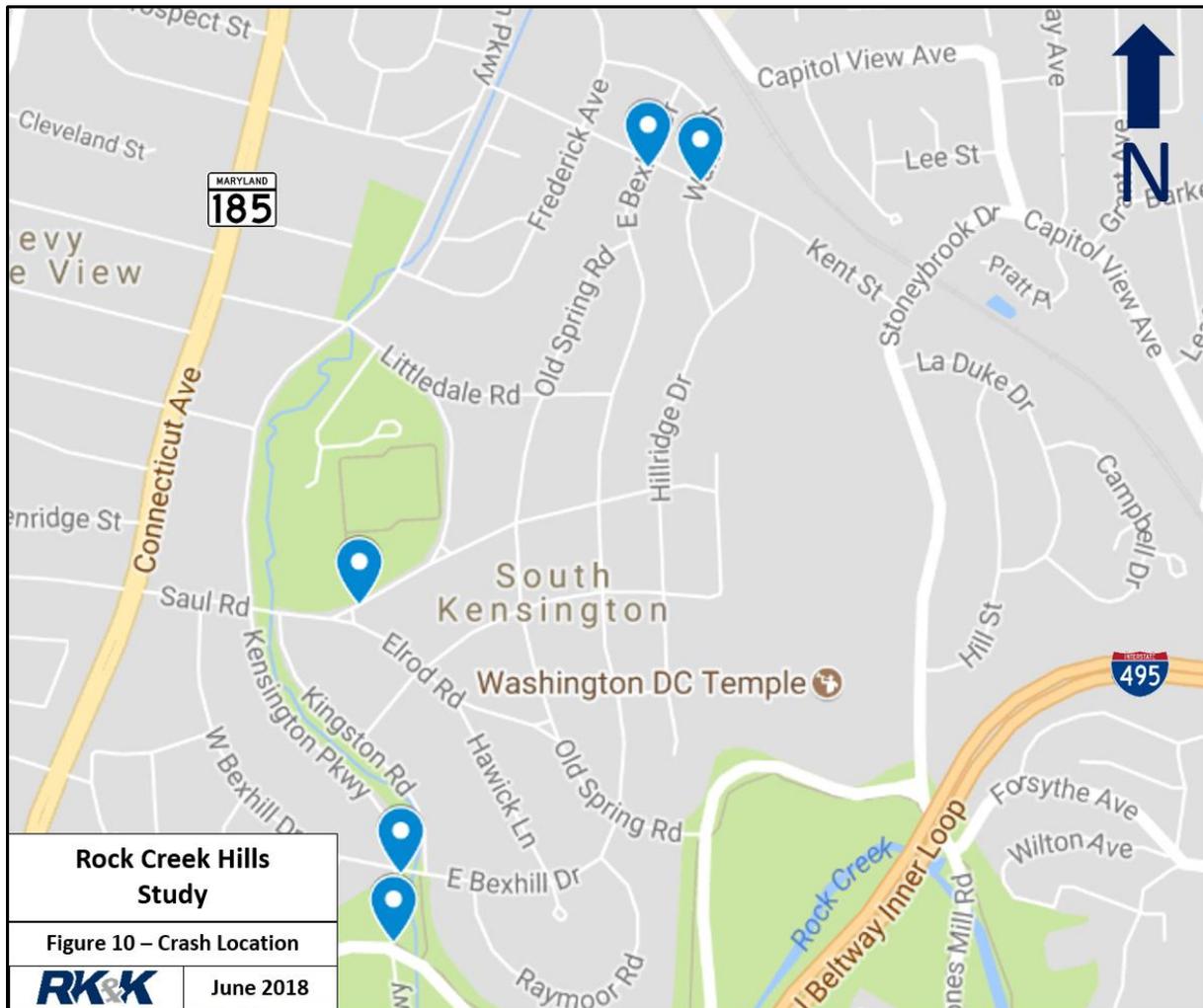


Figure 10: Crash Locations on Rock Creek Hills Community

Table 3 summarizes the crashes by location, crash type, and severity and light conditions. Based on the location and data of the crashes, no certain crash pattern or hotspot intersection/location was identified.

Table 3 - Crash Location by Type and Severity along Dale Drive

Location		Crash Type	Crash Severity	Illumination
Roadway	Cross-Street			
Saul Road	Elrod Road	Single Vehicle (Fixed Object)	PDO	Dark
Kensington Parkway	Beach Drive	Straight Movement Angle	Injury	Daylight
Kensington Parkway	E Bexhill Drive	Straight Movement Angle	PDO	Daylight
W Bexhill Drive	Kent Street	Other (Parked Vehicle)	PDO	Dawn
Kent Street	Wake Drive	Same Direction Rear End	PDO	Daylight

5.5. INTERSECTION MODIFICATION DESIGN

The Rock Creek Hills community requested intersection geometry changes at the intersections of Saul Road and Elrod Road, and Elrod Road and Old Spring Road, due to safety concerns. The existing geometry of both intersections is triangular with a channelizing island in the middle. Two different intersection modifications were designed for each intersection. The conceptual plans for these modifications are included in **Appendix C**.

5.5.1. Saul Road and Elrod Road

The two options considered for this intersection are a T-intersection conversion and a roundabout. The first option involves converting the intersection into a T-intersection. The southwest and southeast curbs would be bumped out toward the triangular channelizing island to reduce right-turn radius for the intersection. The channelizing island would be removed and the existing plaque located there, would be relocated to the new side of the roadway. Saul Road would be the mainline and Elrod Road would be considered the side street. The T-intersection will be stop controlled, with the stop sign on Elrod Road. A crosswalk would also be installed across Elrod Road.

The second option would install a roundabout in place of the existing triangular island, with splitter islands on each approach. The central island would have a mountable curb. The southwest and southeast curbs would be bumped out toward the triangular channelizing island. The triangular channelizing island would be removed.

5.5.2. Elrod Road and Old Spring Road

The options include two approaches to converting the triangular channelizing intersections into T-intersections. In Option A, the merging right turn movement from Elrod Road onto Old Spring Road would be closed off by bumping the southwest corner curb. The new intersection configuration would be a standard right angle right turn movement from Elrod Road onto Old Spring Road. The northwest curb would be bumped to reduce the right turning radius from Old Spring Road southbound to Elrod Road. The triangular island would be removed. Old Spring Road would be the mainline and Elrod Road would be considered the side street. The T-intersection would be stop controlled, with the stop sign on Elrod Road. A crosswalk would also be installed across Elrod Road.

Option 2 would control the through movement on Old Spring Road. The east side curb would be bumped out and the island would be removed. The merging right turn movement from Elrod Road onto Old Spring Road would change into a through movement. The new intersection configuration would be a T-intersection. For this option, Elrod Road would be the mainline and Old Spring Road would be considered the side street. The T-intersection would be stop controlled, with the stop sign on Old Spring Road. A crosswalk would be installed across Old Spring Road.

5.6. TRAFFIC CALMING

As indicated previously in the report, speed data was collected throughout the neighborhood. Of significance were the 85th percentile speeds along Kensington Parkway, which exceeded the posted speed limit by 4–9 MPH in three collection locations. There are five existing speed humps along Kensington Parkway, within the study area. However, these speed humps alone do not appear to provide the level of desired traffic calming. As mentioned in the observations section, drivers did not appear to slow down or brake while approaching and/or navigating these speed humps. This partly may be due to the lower profile of the humps.

Based on the field observations and measurements, the speed humps, observed to be in poor condition, were measured at a height of 4 inches and a length of 22 inches. Kensington Parkway is considered a transit route, requiring a lower profile hump that would be less disruptive to both transit and emergency vehicles. Therefore, these current speed humps do not meet the roadway speed hump criteria. Other traffic calming measures are recommended to supplement the existing speed humps along Kensington Parkway. The proposed calming measures include bump-outs before and after the speed humps, on the side of the roadway opposite the homes, with a lateral shift and a temporary lane reduction to 10', at four of the five existing speed humps. The existing speed hump that won't be modified is located south of Saul Road on Kensington Parkway. The modification to this speed hump is hindered by the existing guardrail located adjacent to the speed hump. In addition to the four existing locations, adding a bump-out with lateral shift closer to Everett Street/Littledale Road is also recommended. This will alert drivers much sooner that this section of roadway is intended for lower speeds. Lastly, it is recommended to improve the existing uncontrolled crossing at Franklin Street by tightening the curb radius in the northwest corner, providing slight bump-outs on the east side, on either side of the crosswalk, and refreshing the crosswalk pavement and signing. A figure illustrating these recommendations is included in **Appendix D**.

6. CONCLUSION AND RECOMMENDATIONS

The Rock Creek Hills Community reported that cut-through traffic and speeding have been a long-time concern for the community. It became a more pressing issue with the opening of the Silver Creek Middle School and the increased concern for the safety of the students walking in this area and throughout the community.

After thorough review of the traffic data and the field conditions in the Rock Creek Hills neighborhood, the project team identified several locations in need of improvements and developed appropriate traffic calming strategies and/or geometric improvements that would address the operational and safety issues within the study area. The majority of the issues and the respective recommendations were discussed in detail in the previous sections and are summarized below. The proposed recommendations are displayed in the concepts provided in the **Appendices C and D**.

6.1. CUT-THROUGH TRAFFIC

Based on the volume analysis conducted in this study, cut-through traffic was determined not to be an issue. None of the roadway volumes analyzed meet the criteria set by the Montgomery County Executive

Regulation; **therefore, traffic restrictions are not recommended on any roadway.** Existing truck restrictions currently exists on some of the roadways in the community.

6.2. INTERSECTION IMPROVEMENTS

The Rock Creek Hills Community requested intersection modifications at two locations in the community. The intersections are Elrod Road and Saul Road, and Elrod Road and Old Spring Road. The roadways are downhill roads and two-way stop controlled. ***It is recommended that intersections be modified to a T-intersection at both intersections, or conversion to a roundabout at the intersection of Saul Road and Elrod Road.*** Island refuges and/or small medians will be installed on the approaches of the roadway at the modified intersection.

6.3. TRAFFIC CALMING

Previous traffic calming measures have been implemented with the installation of five speed humps with an advisory speed of 20 MPH, along Kensington Parkway between Bexhill Drive and Everett Street, but they have not seemed to achieve the desired level of traffic calming. Vehicles were observed to not slow down at the speed humps, indicating a need for additional or new calming methods, enforcement and public education strategies in the community. ***It is therefore recommended to supplement the existing speed humps with bump-outs along Kensington Parkway, add an additional set of bump-outs south of Everett Street and improve the crossing at Franklin Street, as shown in the figure included in Appendix D.***

6.4. SIGNING, PAVEMENT MARKING AND PAVEMENT

Signs, pavement markings, and pavement improvements are faded/worn down in various locations throughout the community. ***It is recommended to replace faded/damage signs, refresh faded/worn pavement markings, install stop bars at existing stop sign locations (to promote increased compliance at stop signs), clear/trim any vegetation that impairs sign visibility and sight distance and repair damaged pavement.***

6.5. SIDEWALKS

MCDOT conducted a sidewalk connectivity and feasibility assessment. The findings of the assessment, once received, can be reviewed to determine if there any additional opportunities for safety improvements. Appropriate improvements to the sidewalk network will benefit the pedestrian accessibility in the area.

Appendix A

Traffic Counts

Station Name:Dunnel Ln
 Site ID:00000000185
 Station Num:00000000007
 Description:Dunnel Ln - East of Connecticut Ave
 City:Kensington
 County:Montgomery
 Start Date/Time:04-18-2018 00:00
 End Date/Time:04-18-2018 23:59

04-18-2018 West	All		Hourly Volume
00:00	0		0
00:15	0		0
00:30	0		0
00:45	0		0
01:00	0		0
01:15	0		0
01:30	0		0
01:45	0		0
02:00	0		0
02:15	0		0
02:30	0		0
02:45	0		0
03:00	0		0
03:15	0		0
03:30	0		0
03:45	0		0
04:00	0		1
04:15	0		1
04:30	0		1
04:45	1		1
05:00	0		0
05:15	0		0
05:30	0		0
05:45	0		2
06:00	0		8
06:15	0		13
06:30	2		20
06:45	6		29
07:00	5		30
07:15	7		34
07:30	11		35
07:45	7		59
08:00	9		63
08:15	8		62
08:30	35		63
08:45	11		32
09:00	8		23
09:15	9		16
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20:45	2		7
21:00	3		7
21:15	2		5
21:30	0		3
21:45	2		3
22:00	1		1
22:15	0		0
22:30	0		0
22:45	0		0
23:00	0		0
23:15	0		
23:30	0		
23:45	0		
Complete Day	334		

Appendix B

Crash Data

ROCK CREEK HILLS - RAW CRASH DATA

ACRS Report Type	Crash Date/Time	Road Name	Cross-Street Name	Off-Road Description	Related Non-Motorist	Collision Type	Weather	Surface Condition	Light	Traffic Control	Driver Substance Abuse	Non-Motorist Substance Abuse	First Harmful Event	Second Harmful Event	Fixed Object Struck	Junction	Intersection Type	Road Alignment	Road Condition	Road Division	Latitude	Longitude
Property Damage Crash	12/7/2017 20:40	SAUL RD	ELROD RD			SINGLE VEHICLE	CLEAR	DRY	DARK - UNKNOWN LIGHTING	NO CONTROLS	ALCOHOL CONTRIBUTED		OFF ROAD	N/A	CURB	N/A	N/A	STRAIGHT	NO DEFECTS	TWO-WAY, NOT DIVIDED	39.01522416	-77.07455277
Injury Crash	3/24/2016 9:02	KENSINGTON PKWY	BEACH DR		BICYCLIST	STRAIGHT MOVEMENT ANGLE	CLEAR	DRY	DAYLIGHT	STOP SIGN	NONE DETECTED	NONE DETECTED	BICYCLE	N/A	N/A	INTERSECTION RELATED	FOUR-WAY INTERSECTION	STRAIGHT	NO DEFECTS	TWO-WAY, NOT DIVIDED	39.010214	-77.07392246
Property Damage Crash	3/21/2018 10:21	KENSINGTON PKWY	E BEXHILL DR			STRAIGHT MOVEMENT ANGLE	SNOW	SNOW	DAYLIGHT	NO CONTROLS	NONE DETECTED		OTHER VEHICLE	N/A	N/A	INTERSECTION	FOUR-WAY INTERSECTION	STRAIGHT	N/A	TWO-WAY, DIVIDED, UNPROTECTED PAINTED MIN 4 FEET	39.01123167	-77.07375833
Property Damage Crash	2/23/2015 6:00	W BEXHILL DR	KENT ST			OTHER	CLEAR	DRY	DAWN	N/A	NONE DETECTED		PARKED VEHICLE	N/A	N/A	N/A	N/A	STRAIGHT	NO DEFECTS	TWO-WAY, NOT DIVIDED	38.98540833	-77.08890667
Property Damage Crash	3/23/2017 17:17	KENT ST	WAKE DR			SAME DIR REAR END	CLEAR	DRY	DAYLIGHT	STOP SIGN	ALCOHOL PRESENT, NONE DETECTED		OTHER VEHICLE	N/A	N/A	INTERSECTION	FOUR-WAY INTERSECTION	STRAIGHT	NO DEFECTS	TWO-WAY, NOT DIVIDED	39.02145928	-77.06808329

Appendix C

Concepts

SILVER CREEK MIDDLE SCHOOL

SAUL RD.

ELROD RD.

OPTION A

- LEGEND**
- PAVEMENT REMOVAL (PLANT WITH GRASS)
 - NEWRELOCATED SIGN
 - MONOLITHIC CONCRETE MEDIAN - MOD. STD. NO. MD 645.01 (6 INCH HEIGHT)
 - CONCRETE DRIVEWAY MOD. SHA. STD. NO. MD 630.01
 - CONCRETE SIDEWALK
 - DETECTABLE WARNING SURFACE
 - FULL DEPTH ASPHALT PAVEMENT (MATCH EX. PAVEMENT SECTION)
 - CONCRETE CURB WITH 6 INCH HEIGHT
 - COMBINATION CONCRETE CURB & GUTTER - TYPE A STD. MO. MC-100.01
 - 5 INCH YELLOW PAVEMENT MARKING PAINT
 - 24 INCH WHITE PAVEMENT MARKING PAINT

NOTE:
1. NOSE DOWN ON ALL ISLANDS.



\\dsr\01\Projects\2018\013_MCO\Tran\Tasks\Task_3 - Rock Creek Hills\CAD\Plans\PHD-0001-Rockcreek-Option_A.dgn
 Thursday, June 28, 2018 11:25:58 PM

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 Ph: (202) 479-2707 Fax: (855) 263-6293
 Engineers | Construction Managers | Planners | Scientists
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DEPARTMENT OF TRANSPORTATION
MONTGOMERY COUNTY
 100 EDISON PARK DRIVE, 4TH FLOOR
 GAITHERSBURG, MARYLAND 20878

ROCK CREEK HILLS STUDY
ELROD ROAD AND SAUL ROAD
 SCALE: 1" = 20' SHEET 1 OF 2

3624

9709

9707

9723

9716

9712

9708



TO MD 185

TO 1495

EX. TOKEN TO BE RELOCATED

REMOVE EX. YIELD SIGN

SEE NOTE 1

SEE NOTE 1

TIE IN TO EX. SIDEWALK

R4-7 @15°

R4-7 @15°

R=28'

R=55'

R=470'

R=90'

R=54'

R=12'

SILVER CREEK MIDDLE SCHOOL

SAUL RD.

ELROD RD.

OPTION B



TO MD 185

TO 1986

3624

9709

9707

9716

9712

9723

9708

LEGEND

-  PAVEMENT REMOVAL (PLANT WITH GRASS)
-  NEWRELOCATED SIGN
-  MONOLITHIC CONCRETE MEDIAN
MOD. STD. NO. MD 645.01 (6 INCH)
-  CONCRETE DRIVEWAY
MOD. SHA. STD. NO. MD 630.01
-  CONCRETE SIDEWALK
-  DETECTABLE WARNING SURFACE
-  FULL DEPTH ASPHALT PAVEMENT (MATCH EX. PAVEMENT SECTION)
-  CONCRETE CURB WITH 6 INCH HEIGHT
-  COMBINATION CONCRETE CURB & GUTTER - TYPE A
STD. MO. MC-100.01
-  5 INCH YELLOW PAVEMENT MARKING PAINT
-  24 INCH WHITE PAVEMENT MARKING PAINT
-  PCC PAVEMENT
NOTE:
1. NOSE DOWN ON ALL ISLANDS.

REMOVE EX. STOP SIGN



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Thursday, June 28, 2018 AT 12:58 PM

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MONTGOMERY COUNTY
100 EDISON PARK DRIVE, 4TH FLOOR
GAITHERSBURG, MARYLAND 20878

ROCK CREEK HILLS STUDY
ELROD ROAD AND SAUL ROAD
SCALE: 1" = 20' SHEET 2 OF 2

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Thursday, June 28, 2018 AT 12:59 PM



- LEGEND**
- PAVEMENT REMOVAL (PLANT WITH GRASS)
 - NEWRELOCATED SIGN
 - MONOLITHIC CONCRETE MEDIAN - MOD. STD. NO. MD. 645.01 (6 INCH HEIGHT)
 - CONCRETE DRIVEWAY MOD. SHA. STD. NO. MD. 630.01
 - CONCRETE SIDEWALK
 - DETECTABLE WARNING SURFACE
 - FULL DEPTH ASPHALT PAVEMENT (MATCH EX. PAVEMENT SECTION)
 - CONCRETE CURB WITH 6 INCH HEIGHT
 - COMBINATION CONCRETE CURB & GUTTER - TYPE A STD. MO. MC-100.01
 - 5 INCH YELLOW PAVEMENT MARKING PAINT
 - 24 INCH WHITE PAVEMENT MARKING PAINT

NOTE:
1. NOSE DOWN ON ALL ISLANDS.



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ROCK CREEK HILLS STUDY
ELROD ROAD AND
OLD SPRING ROAD
SCALE: 1" = 20' SHEET 1 OF 2

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 Thursday, June 28, 2018 AT 12:59 PM



LEGEND

- PAVEMENT REMOVAL (PLANT WITH GRASS)
- NEWRELOCATED SIGN
- MONOLITHIC CONCRETE MEDIAN - MOD. STD. NO. MD. 645.01 (6 INCH HEIGHT)
- CONCRETE DRIVEWAY MOD. SHA STD. NO. MD. 630.01
- CONCRETE SIDEWALK **9627**
- DETECTABLE WARNING SURFACE
- FULL DEPTH ASPHALT PAVEMENT (MATCH EX. PAVEMENT SECTION)
- CONCRETE CURB WITH 6 INCH HEIGHT
- COMBINATION CONCRETE CURB & GUTTER - TYPE A STD. MO. MC-100.01
- 5 INCH YELLOW PAVEMENT MARKING PAINT
- 24 INCH WHITE PAVEMENT MARKING PAINT

NOTE:
1. NOSE DOWN ON ALL ISLANDS.



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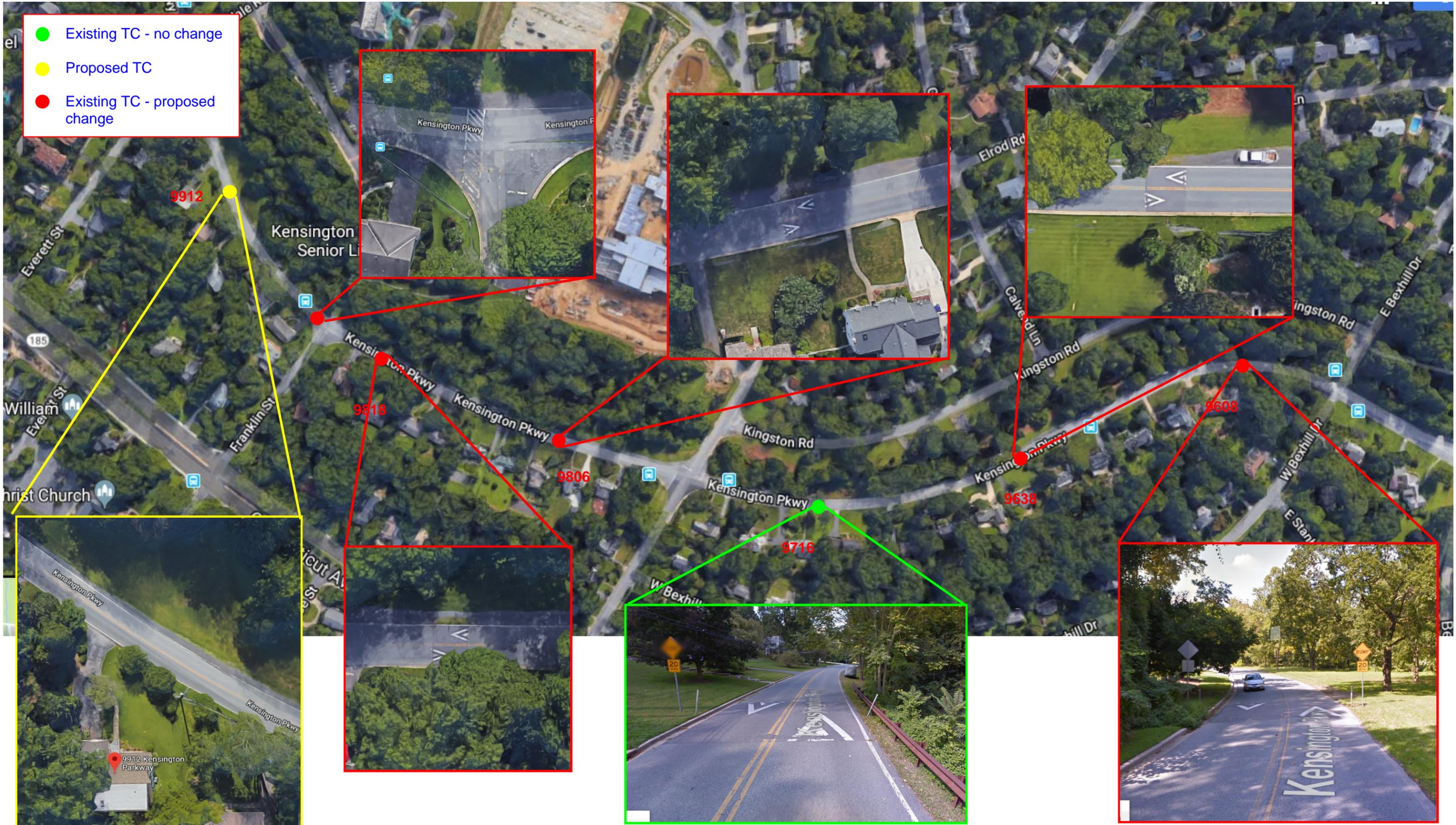
ROCK CREEK HILLS STUDY
ELROD ROAD AND
OLD SPRING ROAD
 SCALE: **1" = 20'** SHEET **2 OF 2**

Appendix D

Traffic Calming

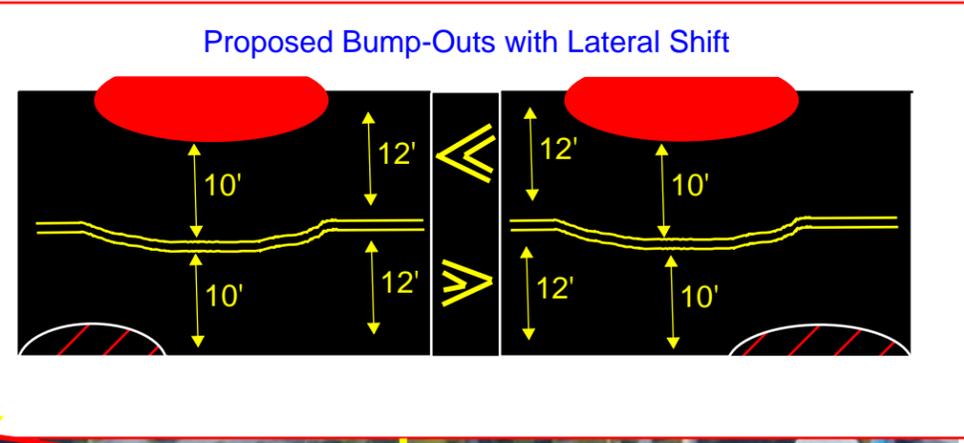
Kensington Parkway Existing Traffic Calming

- Existing TC - no change
- Proposed TC
- Existing TC - proposed change



Kensington Parkway Proposed Traffic Calming

- Existing TC - no change
- Proposed TC
- Existing TC - proposed change



*This location can be with or without the hump

