**Free Flow Study**

**Macalpine Road Property Lot 21**

**3649 Macalpine Road, Ellicott City MD 21042**

**Tax Map 24, Parcel 216**

for

Scott Harbinson

9055 Meadowvale Court

Ellicott City MD, 21042

410-530-6925

Prepared by:

Mildenberg, Boender & Associates, Inc.

8318 Forrest Street

Ellicott City, MD 21043

(410) 997 0296

Omar Alomar

December 2021

I hereby certify that these documents were prepared or approved by me and that I am a duly licensed Professional Engineer under the laws of the State of Maryland.

License no. 34027, Expiration date 01/16/2023

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Michael G. Kretsch, P.E. Date:

**85th Percentile Operating Speed Study**

Mildenberg, Boender & Associates Inc. performed an 85th percentile operating speed determination at the access point to the above referenced parcel.

The proposed access point is located at 3649 Macalpine Road. The survey was conducted between the hours of 2:00pm and 4:00pm on Monday December 13, 2021. The weather was sunny and 54ºF. 66 vehicles were observed. The posted speed limit is 25mph on Macalpine Road.

***Raw Car Speeds (mph)***

|  |  |
| --- | --- |
| **Northbound** | **Southbound** |
| 13 | 25 |
| 28 | 28 |
| 32 | 31 |
| 24 | 31 |
| 41 | 26 |
| 27 | 25 |
| 27 | 36 |
| 26 | 27 |
| 25 | 24 |
| 28 | 23 |
| 25 | 26 |
| 24 | 24 |
| 25 | 27 |
| 24 | 28 |
| 21 | 25 |
| 29 | 29 |
| 19 | 32 |
| 21 | 42 |
| 18 | 36 |
| 15 | 31 |
| 28 | 27 |
| 14 | 28 |
| 25 | 30 |
| 26 | 23 |
| 26 | 29 |
| 26 | 32 |
| 27 | 23 |
| 32 | 24 |
| 23 | 31 |
| 25 | 29 |
| 23 | 21 |
| 21 | 29 |
| 14 | 38 |
| 15 | 30 |
| 25 |  |
| 30 |  |

***Northbound Data***

|  |  |  |  |
| --- | --- | --- | --- |
| **Speed (mph)** | **Number of Cars Observed** | **Percentage of Cars Observed (%)** | **Cumulative Percentage of Cars Observed (%)** |
| 13 | 1 | 2.8% | 2.8% |
| 14 | 2 | 5.6% | 8.3% |
| 15 | 2 | 5.6% | 13.9% |
| 18 | 1 | 2.8% | 16.7% |
| 19 | 1 | 2.8% | 19.4% |
| 21 | 3 | 8.3% | 27.8% |
| 23 | 2 | 5.6% | 33.3% |
| 24 | 3 | 8.3% | 41.7% |
| 25 | 6 | 16.7% | 58.3% |
| 26 | 4 | 11.1% | 69.4% |
| 27 | 3 | 8.3% | 77.8% |
| 28 | 3 | 8.3% | 86.1% |
| 29 | 1 | 2.8% | 88.9% |
| 30 | 1 | 2.8% | 91.7% |
| 32 | 2 | 5.6% | 97.2% |
| 41 | 1 | 2.8% | 100.0% |

***Southbound Data***

|  |  |  |  |
| --- | --- | --- | --- |
| **Speed (mph)** | **Number of Cars Observed** | **Percentage of Cars Observed (%)** | **Cumulative Percentage of Cars Observed (%)** |
| 23 | 3 | 10.0% | 10.0% |
| 25 | 3 | 10.0% | 20.0% |
| 26 | 2 | 6.7% | 26.7% |
| 27 | 3 | 10.0% | 36.7% |
| 28 | 3 | 10.0% | 46.7% |
| 29 | 4 | 13.3% | 60.0% |
| 30 | 2 | 6.7% | 66.7% |
| 31 | 4 | 13.3% | 80.0% |
| 32 | 2 | 6.7% | 86.7% |
| 36 | 2 | 6.7% | 93.3% |
| 38 | 1 | 3.3% | 96.7% |
| 42 | 1 | 3.3% | 100.0% |

**SUMMARY:**

An off-peak spot speed study utilizing a radar was collected within the vicinity of the access point at the proposed easement.

The maximum northbound speed observed was 41mph and the minimum speed was 13mph.

The maximum southbound speed observed was 42mph and the minimum speed was 23mph.

The following are the operating speeds calculated at the access point to the project.

***85th Percentile Speed***

|  |  |  |
| --- | --- | --- |
| **Montgomery Road** | **Number of Vehicles Observed** | **85th Percentile Speed (mph)** |
| **Northbound** | **36** | **28** |
| **Southbound** | **30** | **32** |

***Photos:***

A road with trees on the side

Description automatically generated with low confidenceA road with trees on the side

Description automatically generated with low confidence