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To: Chilmark Board of Selectman  
From: Michael Mauro, Transportation Program Manager  
Date: November 6, 2018  
Subject: Multi-Way Stop Sign at Basin Road/North Road Intersection

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At the request of the Chilmark Board of Selectmen, the Martha's Vineyard Commission staff carried out a multi-way stop sign warrant analysis at the intersection of North Road and Basin Road. Using the Manual on Uniform Traffic Control Devices (M.U.T.C.D.), the aim was to assess the application of a stop sign on the North Road westbound approach to the intersection.

### Study Area

The Basin Road/North Road intersection is located in the Village of Menemsha in Chilmark, MA. Basin and North Roads are both locally owned and fall under the jurisdiction of the Town (Chilmark). Basin Road (Menemsha) is one of the most popular destinations on Martha's Vineyard, especially during the peak summer seasons, so much so that the VTA added a "sunset" bus to their schedule to accommodate the scores of people who go to Menemsha for the popular sunsets. Other operations such as a Shell Gas Station, Menemsha Blues, Menemsha Deli, the Bite, and Larsen's Fish Market and other tourist destinations can be found along Basin Road.

Basin Road is a two-lane, locally owned roadway measuring 10-feet heading northbound, and 10-feet heading southbound until it begins to taper out to 20-feet wide in order to accommodate parking on the westbound side of the roadway. The widening starts at Creekville Art and Antiques for a total distance of roughly 108-feet to Menemsha Blues. It is estimated that roughly 10-12 cars can park in this area. The southbound Basin Road approach is stop sign controlled for those vehicles looking to head either eastbound or westbound onto North Road.

North Road is a two-lane, locally owned roadway with free-flowing movements in both the eastbound and westbound directions. The eastbound approach has two 12-foot travel lanes, while the westbound approach has two 10-foot wide travel lanes. Popular destinations like the Menemsha Galley and the Home Port are located just west of the study area intersection. The Home Port has its own standalone parking lot striped for roughly 22 spaces. An additional 5 spaces can be found in front of the restaurant and another 5 just west of Edy's Island Way.

In the site vicinity, speed limits of 25 mph are posted along the North Road westbound approach just prior to reaching the intersection. There are no sidewalks on either side of both North Road and Basin Road.

Staff evaluated the pavement conditions on both Basin Road and North Road. The overall pavement conditions on both Basin and North Road were found to be in fair condition. For the small segment evaluated, pavement distresses such as fatigue cracking (alligator), longitudinal cracking, edge cracking, and minor bleeding were present. Since these roadways are not federal-aid eligible, the Town can apply for Chapter 90 funding should they decide to repave the roadway or improve the shoulders, roadside drainage, sidewalks, traffic control, street lighting, etc.

A study area map is included in this packet highlighting both the existing stop sign on the Basin Road southbound approach as well as the proposed stop sign on the North Road westbound approach.

## Existing Conditions

**Peak Hour Traffic Volumes:** Manual turning movement counts were conducted at the existing intersection. The traffic count was conducted on Tuesday August 14<sup>th</sup>, 2018 from 10:00 am -12:00 pm and 5:00-7:00 pm; and again, on Wednesday August 15<sup>th</sup>, 2018 from 7:00-8:00 am, 11:00 am – 12:00 pm, and 6:00-7:00 pm. These volumes represent the total volume of traffic (Cars, Trucks, Buses, and Bikes) entering/exiting the intersection during the hours observed. A complete turn count summary is also provided. It should be noted that these counts were conducted during the seasonal peak period due to the fact that for much of the year, there is very little traffic traveling to the area.

**Tables I-4: August 14<sup>th</sup>, 2018 Turning Movement Count Data**

Table 1	North Road		Basin Road		North Road		
8/14/2018	Westbound		Southbound		Eastbound		
Interval starts	Thru	Right	Left	Right	Left	Thru	Total
10:00 - 11:00 AM	39	95	64	11	11	34	254

Table 2	North Road		Basin Road		North Road		
8/14/2018	Westbound		Southbound		Eastbound		
Interval starts	Thru	Right	Left	Right	Left	Thru	Total
11:00 AM - 12:00 PM	35	91	65	15	16	27	249

Table 3	North Road		Basin Road		North Road		
8/14/2018	Westbound		Southbound		Eastbound		
Interval starts	Thru	Right	Left	Right	Left	Thru	Total
5:00-6:00 PM	49	119	84	25	30	35	342

Table 4	North Road		Basin Road		North Road		
8/14/2018	Westbound		Southbound		Eastbound		
Interval starts	Thru	Right	Left	Right	Left	Thru	Total
6:00-7:00 PM	48	120	73	16	17	36	310

On Tuesday August 14<sup>th</sup>, 2018, the highest recorded peak hour was from 5:00-6:00 PM for a total volume of 342, of which 317 were cars, 8 buses, and 17 bicycles.



Tables 5-7: August 15<sup>th</sup>, 2018 Turning Movement Count Data

Table 5	North Road		Basin Road		North Road		
8/15/2018	Westbound		Southbound		Eastbound		
Interval starts	Thru	Right	Left	Right	Left	Thru	Total
7:00-8:00 AM	56	114	124	16	32	56	398

Table 6	North Road		Basin Road		North Road		
8/15/2018	Westbound		Southbound		Eastbound		
Interval starts	Thru	Right	Left	Right	Left	Thru	Total
11:00 AM - 12:00 PM	42	101	74	4	13	36	270

Table 7	North Road		Basin Road		North Road		
8/15/2018	Westbound		Southbound		Eastbound		
Interval starts	Thru	Right	Left	Right	Left	Thru	Total
6:00-7:00 PM	59	118	89	20	26	42	354

On Wednesday August 15<sup>th</sup>, 2018, the highest recorded peak hour was from 7:00-8:00 AM for a total volume of 398, of which 394 were cars, and 4 buses.

**Accident History:** The accident history of the study area intersection was evaluated to identify any safety deficiencies and to determine if the location experiences a higher than average accident rate. The accident data was obtained from MassDOT records for the three most recent years available (2014-2016). The MassDOT Crash Rate Worksheet (attached) was used to calculate accident rates in accidents per million vehicles entering each intersection. These rates are compared to Statewide and MassDOT District average rates by intersection type. The intersection of North Road and Basin Road experienced a total of 0 accidents over the three-year period, or 0.00 accidents per year. This results in an intersection crash rate of 0.00, which is lower than the average state-wide rate of 0.57 and the District 5 average of 0.57 for unsignalized intersections. The Chilmark Police Department also provided crash records for the past four years (2015-Present) and have not been dispatched or have investigated any crashes at this intersection. Although the accident rate has been low, there is a concern that the vegetation just at the corner of North/Basin Road if not maintained, could overgrow out into the roadway limiting the site distance for those on Basin Road and/or creating a travel lane hazard.

**Sight Distances:** The minimum required sight distance – the length of road visible for a driver – along a road with a posted speed limit of 25 mph is 155 feet. The existing sight distance for vehicles turning from Basin Road onto North Road looking eastbound is roughly 190 feet, which is adequate. The sight distances also exceed the required distances on roadways with upgrade percentages of 3% = 147 ft., 6% = 143 ft., and 9% = 140 ft. The existing sight distance for vehicles turning from Basin Road onto North Road looking westbound is well over 200 ft, which is adequate. The sight distances also exceed the required distances on roadways with downgrade percentages of 0% = 155 ft., 3% = 158 ft., 6% = 165 ft., and 9% = 173 ft. The site distance on North Road looking westbound is also 190 feet which though satisfies the adequacy requirement is limited by the vegetation along the roadway shoulder.

**North Rd – Westbound Approach**



**North Rd – Eastbound Approach**



**Basin Rd – Southbound Approach**





**Chapter 2B. Regulatory Signs, Barricades, and Gates** – The M.U.T.C.D. is the resource manual that contains standards, guidelines, and options for the signing of all types of highways and private/public roadways. The functions of signs are to provide regulations, warnings, and guidance information for road users. Signs are not typically used to confirm rules of the road. It also assists municipalities in determining if an application of a stop sign is warranted when the roadway is not state owned. If the road were owned by the Commonwealth, the municipality would need to seek permission for this application on top of satisfying the warrants.

**Chapter 2B.07 Multi-Way Stop Application:** Multi-way stop control can be useful as a traffic control or safety measure at intersections if certain conditions exist. Safety concerns associated with multi-way stops include pedestrians, bicycles, and all road users expecting other road users to stop. Multi-way stop control is used where volume of traffic on intersecting roads is approximately equal.

The following criteria should be considered in determining the utility of a multi-way stop sign installation:

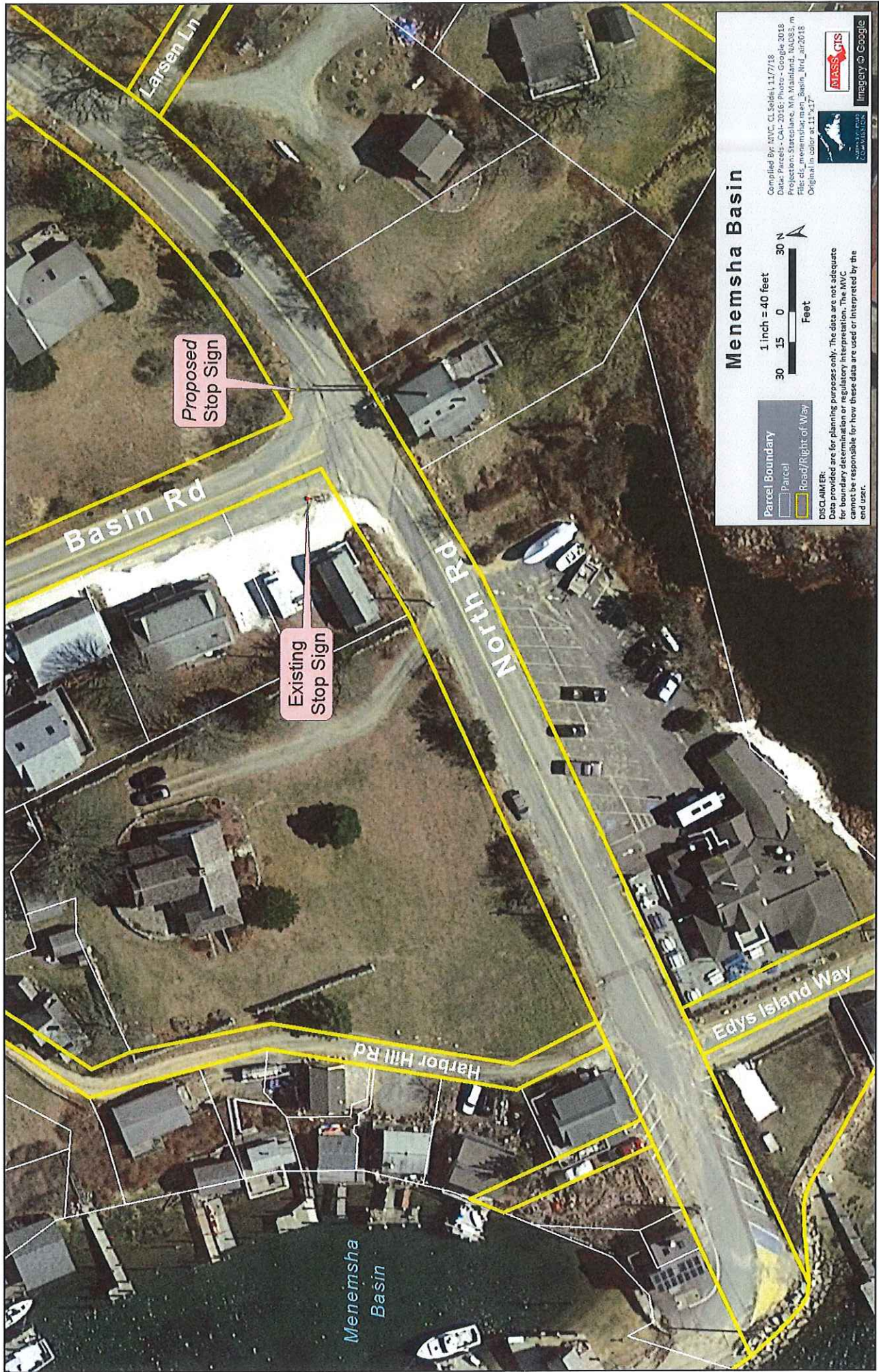
- a) Where traffic control signals are justified, the multi-way stop is an interim measure that can be installed quickly to control traffic while arrangements are being made for the installation of the traffic control signal: *Not Applicable*
- b) Five or more reported crashes in a 12-month period that are susceptible to correction by a multi-way stop installation. Such crashes include right-turn and left-turn collisions as well as right-angle collisions. *Not Satisfied*
- c) Minimum Volumes:
  - 1) The vehicular volume entering the intersection from the major street approaches (total of both approaches) averages at least 300 vehicles per hour for any 8 hours of an average day; and *Not Satisfied*
  - 2) The combined vehicular, pedestrian, and bicycle volume entering the intersection from the minor street approaches average at least 200 per hour *Not Satisfied*
  - 3) If the 85<sup>th</sup> percentile speeds exceeds 40 mph *Not Satisfied*

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#### Recommendation

The analysis results do not satisfy any of the warrants specifically the volume and accident history for the application of a multi-way stop sign on the North Road westbound approach to the intersection of Basin Road and North Road. There may be other factors however that justify the installation such as inadequate site lines however adequate advance notice of the signage must be considered. Should it choose to do so, the Town still has the ability to install a stop sign for the roadway as it falls under local (Town) jurisdiction. The MVC will continue to work with the Town in finding a solution to address their concerns.





# Menemsha Basin

- Parcel Boundary
- Parcel
- Road/Right of Way

1 inch = 40 feet  
30 15 0 30 N  
Feet

DISCLAIMER:  
Data provided are for planning purposes only. The data are not adequate for any determination or regulatory interpretation. The MVC cannot be responsible for how these data are used or interpreted by the end user.

Compiled By: MVC, CL Seidel, 11/7/18  
Data: Parcels - Cal-2016; Photo - Google 2018  
Projection: StatePlane, NAD 83, m  
File: cl\_menemsha\_basin\_11\_7\_18  
Original in color at 11/7/17





## Turn Count Summary 10-11 AM

Location: Basin Road and North Road, Chilmark, MA

Date: 2018-08-14

Day of week: Tuesday

Weather: Sunny

Analyst: A. Turner

### Total Vehicle Traffic

	North Road		Basin Road		North Road		
	Westbound		Southbound		Eastbound		
Interval starts	Thru	Right	Left	Right	Left	Thru	Total
10:00	39	95	64	11	11	34	254

### Car Traffic

	North Road		Basin Road		North Road		
	Westbound		Southbound		Eastbound		
Interval starts	Thru	Right	Left	Right	Left	Thru	Total
10:00	31	80	62	9	9	25	216

### Truck Traffic

	North Road		Basin Road		North Road		
	Westbound		Southbound		Eastbound		
Interval starts	Thru	Right	Left	Right	Left	Thru	Total
10:00	2	2	1	1	0	2	8

### Bus Traffic

	North Road		Basin Road		North Road		
	Westbound		Southbound		Eastbound		
Interval starts	Thru	Right	Left	Right	Left	Thru	Total
10:00	0	1	1	1	0	0	3

### Bicycle Traffic

	North Road		Basin Road		North Road		
	Westbound		Southbound		Eastbound		
Interval starts	Thru	Right	Left	Right	Left	Thru	Total
10:00	6	12	0	0	2	7	27

### Peak Hour Vehicle Summary

	North Road		Basin Road		North Road		
	Westbound		Southbound		Eastbound		
Vehicle	Thru	Right	Left	Right	Left	Thru	Total
Car	31	80	62	9	9	25	216
Truck	2	2	1	1	0	2	8
Bus	0	1	1	1	0	0	3
Bicycle	6	12	0	0	2	7	27
							254

## Turn Count Summary

### 11 AM-12 PM

Location: Basin Road and North Road, Chillmark, MA

Date: 2018-08-14

Day of week: Tuesday

Weather: Sunny

Analyst: A. Turner

### Total Vehicle Traffic

	North Road		Basin Road		North Road		
	Westbound		Southbound		Eastbound		
Interval starts	Thru	Right	Left	Right	Left	Thru	Total
11:00	35	91	65	15	16	27	249

### Car Traffic

	North Road		Basin Road		North Road		
	Westbound		Southbound		Eastbound		
Interval starts	Thru	Right	Left	Right	Left	Thru	Total
11:00	32	87	62	15	16	27	239

### Truck Traffic

	North Road		Basin Road		North Road		
	Westbound		Southbound		Eastbound		
Interval starts	Thru	Right	Left	Right	Left	Thru	Total
11:00	1	0	0	0	0	0	1

### Bus Traffic

	North Road		Basin Road		North Road		
	Westbound		Southbound		Eastbound		
Interval starts	Thru	Right	Left	Right	Left	Thru	Total
11:00	0	1	1	0	0	0	2

### Bicycle Traffic

	North Road		Basin Road		North Road		
	Westbound		Southbound		Eastbound		
Interval starts	Thru	Right	Left	Right	Left	Thru	Total
11:00	2	3	2	0	0	0	7

### Peak Hour Vehicle Summary

	North Road		Basin Road		North Road		
	Westbound		Southbound		Eastbound		
Vehicle	Thru	Right	Left	Right	Left	Thru	Total
Car	32	87	62	15	16	27	239
Truck	1	0	0	0	0	0	1
Bus	0	1	1	0	0	0	2
Bicycle	2	3	2	0	0	0	7
							249



## Turn Count Summary

### 5-6 PM

Location: Basin Road and North Road, Chilmark, MA

Date: 2018-08-14

Day of week: Tuesday

Weather: Sunny

Analyst: A. Turner

### Total Vehicle Traffic

	North Road		Basin Road		North Road		
	Westbound		Southbound		Eastbound		
Interval starts	Thru	Right	Left	Right	Left	Thru	Total
5:00	49	119	84	25	30	35	342

### Car Traffic

	North Road		Basin Road		North Road		
	Westbound		Southbound		Eastbound		
Interval starts	Thru	Right	Left	Right	Left	Thru	Total
5:00	46	108	80	25	26	32	317

### Truck Traffic

	North Road		Basin Road		North Road		
	Westbound		Southbound		Eastbound		
Interval starts	Thru	Right	Left	Right	Left	Thru	Total
5:00	0	0	0	0	0	0	0

### Bus Traffic

	North Road		Basin Road		North Road		
	Westbound		Southbound		Eastbound		
Interval starts	Thru	Right	Left	Right	Left	Thru	Total
5:00	0	4	4	0	0	0	8

### Bicycle Traffic

	North Road		Basin Road		North Road		
	Westbound		Southbound		Eastbound		
Interval starts	Thru	Right	Left	Right	Left	Thru	Total
5:00	3	7	0	0	4	3	17

### Peak Hour Vehicle Summary

	North Road		Basin Road		North Road		
	Westbound		Southbound		Eastbound		
Vehicle	Thru	Right	Left	Right	Left	Thru	Total
Car	46	108	80	25	26	32	317
Truck	0	0	0	0	0	0	0
Bus	0	4	4	0	0	0	8
Bicycle	3	7	0	0	4	3	17
							342

## Turn Count Summary 6-7 PM

Location: Basin Road and North Road, Chilmark, MA

Date: 2018-08-14

Day of week: Tuesday

Weather: Sunny

Analyst: A. Turner

### Total Vehicle Traffic

	North Road		Basin Road		North Road		
	Westbound		Southbound		Eastbound		
Interval starts	Thru	Right	Left	Right	Left	Thru	Total
6:00	48	120	73	16	17	36	310

### Car Traffic

	North Road		Basin Road		North Road		
	Westbound		Southbound		Eastbound		
Interval starts	Thru	Right	Left	Right	Left	Thru	Total
6:00	48	117	70	16	17	36	304

### Truck Traffic

	North Road		Basin Road		North Road		
	Westbound		Southbound		Eastbound		
Interval starts	Thru	Right	Left	Right	Left	Thru	Total
6:00	0	0	0	0	0	0	0

### Bus Traffic

	North Road		Basin Road		North Road		
	Westbound		Southbound		Eastbound		
Interval starts	Thru	Right	Left	Right	Left	Thru	Total
6:00	0	3	3	0	0	0	6

### Bicycle Traffic

	North Road		Basin Road		North Road		
	Westbound		Southbound		Eastbound		
Interval starts	Thru	Right	Left	Right	Left	Thru	Total
6:00	0	0	0	0	0	0	0

### Peak Hour Vehicle Summary

	North Road		Basin Road		North Road		
	Westbound		Southbound		Eastbound		
Vehicle	Thru	Right	Left	Right	Left	Thru	Total
Car	48	117	70	16	17	36	304
Truck	0	0	0	0	0	0	0
Bus	0	3	3	0	0	0	6
Bicycle	0	0	0	0	0	0	0
							310



## Turn Count Summary 7-8 AM

Location: Basin Road and North Road, Chilmark, MA

Date: 2018-08-15

Day of week: Wednesday

Weather: Sunny

Analyst: A. Turner

### Total Vehicle Traffic

	North Road		Basin Road		North Road		
	Westbound		Southbound		Eastbound		
Interval starts	Thru	Right	Left	Right	Left	Thru	Total
7:00	56	114	124	16	32	56	398

### Car Traffic

	North Road		Basin Road		North Road		
	Westbound		Southbound		Eastbound		
Interval starts	Thru	Right	Left	Right	Left	Thru	Total
7:00	56	112	122	16	32	56	394

### Truck Traffic

	North Road		Basin Road		North Road		
	Westbound		Southbound		Eastbound		
Interval starts	Thru	Right	Left	Right	Left	Thru	Total
7:00	0	0	0	0	0	0	0

### Bus Traffic

	North Road		Basin Road		North Road		
	Westbound		Southbound		Eastbound		
Interval starts	Thru	Right	Left	Right	Left	Thru	Total
7:00	0	2	2	0	0	0	4

### Bicycle Traffic

	North Road		Basin Road		North Road		
	Westbound		Southbound		Eastbound		
Interval starts	Thru	Right	Left	Right	Left	Thru	Total
7:00	0	0	0	0	0	0	0

### Peak Hour Vehicle Summary

	North Road		Basin Road		North Road		
	Westbound		Southbound		Eastbound		
Vehicle	Thru	Right	Left	Right	Left	Thru	Total
Car	56	112	122	16	32	56	394
Truck	0	0	0	0	0	0	0
Bus	0	2	2	0	0	0	4
Bicycle	0	0	0	0	0	0	0
							398

## Turn Count Summary

### 11 AM-12 PM

Location: Basin Road and North Road, Chilmak, MA

Date: 2018-08-15

Day of week: Wednesday

Weather: Sunny

Analyst: A. Turner

### Total Vehicle Traffic

	North Road		Basin Road		North Road		
	Westbound		Southbound		Eastbound		
Interval starts	Thru	Right	Left	Right	Left	Thru	Total
11:00	42	101	74	4	13	36	270

### Car Traffic

	North Road		Basin Road		North Road		
	Westbound		Southbound		Eastbound		
Interval starts	Thru	Right	Left	Right	Left	Thru	Total
11:00	42	97	70	4	13	36	262

### Truck Traffic

	North Road		Basin Road		North Road		
	Westbound		Southbound		Eastbound		
Interval starts	Thru	Right	Left	Right	Left	Thru	Total
11:00	0	3	3	0	0	0	6

### Bus Traffic

	North Road		Basin Road		North Road		
	Westbound		Southbound		Eastbound		
Interval starts	Thru	Right	Left	Right	Left	Thru	Total
11:00	0	1	1	0	0	0	2

### Bicycle Traffic

	North Road		Basin Road		North Road		
	Westbound		Southbound		Eastbound		
Interval starts	Thru	Right	Left	Right	Left	Thru	Total
11:00	0	0	0	0	0	0	0

### Peak Hour Vehicle Summary

	North Road		Basin Road		North Road		
	Westbound		Southbound		Eastbound		
Vehicle	Thru	Right	Left	Right	Left	Thru	Total
Car	42	97	70	4	13	36	262
Truck	0	3	3	0	0	0	6
Bus	0	1	1	0	0	0	2
Bicycle	0	0	0	0	0	0	0
							270



## Turn Count Summary

6-7 PM

Location: Basin Road and North Road, Chilmark, MA

Date: 2018-08-15

Day of week: Wednesday

Weather: Sunny

Analyst: A. Turner

### Total Vehicle Traffic

	North Road		Basin Road		North Road		
	Westbound		Southbound		Eastbound		
Interval starts	Thru	Right	Left	Right	Left	Thru	Total
6:00	59	118	89	20	26	42	354

### Car Traffic

	North Road		Basin Road		North Road		
	Westbound		Southbound		Eastbound		
Interval starts	Thru	Right	Left	Right	Left	Thru	Total
6:00	59	115	86	20	26	42	348

### Truck Traffic

	North Road		Basin Road		North Road		
	Westbound		Southbound		Eastbound		
Interval starts	Thru	Right	Left	Right	Left	Thru	Total
6:00	0	0	0	0	0	0	0

### Bus Traffic

	North Road		Basin Road		North Road		
	Westbound		Southbound		Eastbound		
Interval starts	Thru	Right	Left	Right	Left	Thru	Total
6:00	0	3	3	0	0	0	6

### Bicycle Traffic

	North Road		Basin Road		North Road		
	Westbound		Southbound		Eastbound		
Interval starts	Thru	Right	Left	Right	Left	Thru	Total
6:00	0	0	0	0	0	0	0

### Peak Hour Vehicle Summary

	North Road		Basin Road		North Road		
	Westbound		Southbound		Eastbound		
Vehicle	Thru	Right	Left	Right	Left	Thru	Total
Car	59	115	86	20	26	42	348
Truck	0	0	0	0	0	0	0
Bus	0	3	3	0	0	0	6
Bicycle	0	0	0	0	0	0	0
							354



## INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Chilmark, MA COUNT DATE : 8/14/2018

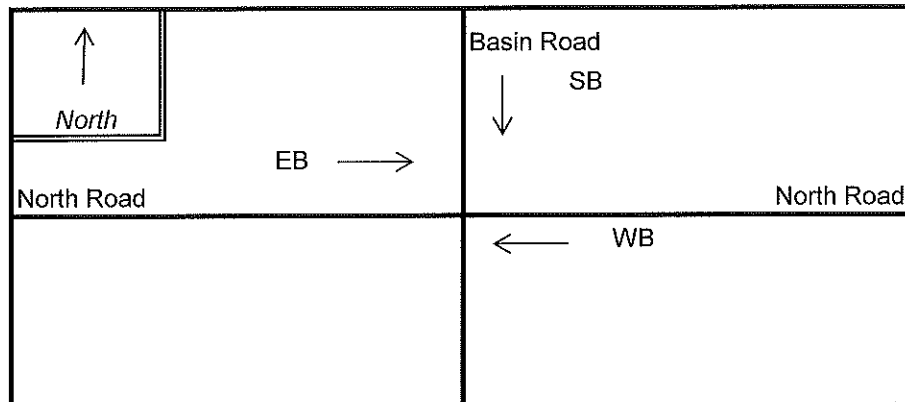
DISTRICT : 5 UNSIGNALIZED : ☒ X SIGNALIZED : ☐

### ~ INTERSECTION DATA ~

MAJOR STREET : North Road

MINOR STREET(S) : Basin Road

**INTERSECTION  
DIAGRAM**  
(Label Approaches)



### PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	EB	NB	WB	SB		
PEAK HOURLY VOLUMES (AM/PM) :	88	0	170	140		398

" K " FACTOR : 0.090 INTERSECTION ADT ( V ) = TOTAL DAILY APPROACH VOLUME : 4,422

TOTAL # OF CRASHES : 0 # OF YEARS : 3 AVERAGE # OF CRASHES PER YEAR ( A ) : 0.00

CRASH RATE CALCULATION :

0.00

$$\text{RATE} = \frac{(A * 1,000,000)}{(V * 365)}$$

Comments : \_\_\_\_\_

Project Title & Date: \_\_\_\_\_