Massachusetts State Police
Collision Analysis and Reconstruction Section
Collision Reconstruction Report

CASE #	**2022-CAR-000086**
Related Case#	

Requesting Agency:		**Marblehead**			
Date Rec'd:	**18 Mar 2022**	**Time Rec'd:**	**0344**	**Class:**	**Traffic, Crash - Fatal**
Primary Investigating Officer:		**Detective Sean Brady**		**Agency**	**Marblehead**
Reconstructionist Assigned:		**Det. Lieutenant Richard D Wolanski, #3203**		**Team**	**Northeast**

Collision Occurred:	**City/Town**	**County**	**Day**	**Date**	**Time**
	MARBLEHEAD	**ESSEX**	**Friday**	**18 Mar 2022**	**02:59**

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Massachusetts State Police Collision Analysis and Reconstruction Section
50 Maple Street Milford, MA 01757
cars.reports@state.ma.us

Commonwealth of Massachusetts
Collision Analysis and Reconstruction Section 2022-CAR-000086
Collision Reconstruction Report

Collision Analysis and Reconstruction Section 3/18/22 2:59 AM **# Vehicles:** 1 **# Injured:** 1
Det. Lieutenant Wolanski, Richard **On Call: Yes** **Speed Limit:** 30

Arrival Time: 2022-03-18 04:49:07 Cleared Time: 2022-03-18 06:21:07 **Crash - Fatal**

OCEAN AVENUE, 0.05 West of HARBOR AVENUE, MARBLEHEAD, MA

Latitude: 42.49191 **Longitude: -70.84848**

Requesting Agency: Marblehead **Requesting Agency Case#: 22-295-OF** **OUI Related: Yes**

Cause Determination: Operator/Human, Driving Behavior, Speed Recon Opinion **Charges: No**

Secondary Cause #1 Determination: Operator/Human, Driving Behavior, Marked Lanes

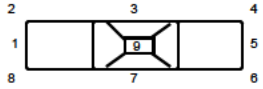
Secondary Cause #2 Determination:

UAS used?: No **UAS Notes:**

Light:	4 - Dark - lighted roadway	**Trafficway:**	1 - Two-way, not divided
Weather:	6 - Fog. Smog, smoke	**School Bus:**	No
Traffic Ctrl:	1 - No controls	**Work Zone:**	No
Ctrl Function:		**Collision:**	1 - Single Vehicle Crash
Road Surface:	1 - Dry	**1st Harmful:**	Curb
InterSection:	1 - Not at intersection	**1st Harmful Location:**	3 - Roadside

Vehicle# 1 Reg# 2HP471 MA PAN 2011 Mercedes-Benz GL450W Impounded

Insurance Co:	ARBELLA MUTUAL INSURANCE	**Action Prior:**	1 - Travelling Straight ahead
Veh Config:	2 - Light truck (Van, mini-van. pick-up. SUV)	**Most Harmful:**	Overturn/Rollover
Hit/Run:	No	**Event Seq. 1:**	20 - Curb
Moped:	No	**Event Seq. 2:**	41 - Ran off road left
Travel Direction:	E	**Event Seq. 3:**	51 - Other non-collision
Respond Emerg:	No	**Event Seq. 4:**	43 - Overturn/rollover
Driver Contributing:	12 - Over-correcting/over-steering	**Under/Override:**	1 - None
Tow Company:	G/J Towing	**Tow Reason:**	Crash
CDR:	No	**CDR Supported:**	No



Damaged Area(s) 1,4,11
Damage > $1000 Yes

Owner: Veh # 1

GALANTE , JAMES E

[redacted]
[redacted]

DOB: [redacted]
Sex: Male
Lic Num: [redacted]
Lic State: MA
Restrictions:
CDL END:

Medical Examiner:
Body Removed To:

Citation/Charge(s)

Seat Position:
Safety System:
Airbag Status:
Airbag Switch:
Eject Code:
Trap Code:
Injury Status:
Transported:
MedicalFac.
ME Notified and Came To:
Next of Kin Notified By:

Driver: Veh # 1

GALANTE , JAMES ROCCO

[redacted]
[redacted]

DOB: [redacted]
Sex: Male
Lic Num: [redacted]
Lic State: MA
Restrictions:
CDL END:

Medical Examiner:
Body Removed To:

Seat Position: 1 - Front seat - left seat (or
Safety System: 0 - None used
Airbag Status: 1 - Deployed - Front
Airbag Switch: 3 - ON-OFF switch not present
Eject Code: 0 - Not ejected
Trap Code: 2 - Freed by non-mechanical means
Injury Status: 1 - Fatal injury
Transported: 2 - EMS
MedicalFac. NORTH SHORE MEDICAL - SALEM
ME Notified and Came To:
Next of Kin Notified By:

Status: Approved
Approved by: #Sergeant Thomas Jensen ID# 3453

Officer Name	Signature	ID#	Station	Date
Det. Lieutenant Wolanski, Richard		3203	Collision Analysis and	12/19/2022

Commonwealth of Massachusetts
Collision Analysis and Reconstruction Section
Collision Reconstruction Report

2022-CAR-000086

UAS used?: No

UAS Notes:

Citation/Charge(s)

Status: Approved
Approved by: #Sergeant Thomas Jensen ID# 3453

Officer Name	Signature	ID#	Station	Date
Det. Lieutenant Wolanski, Richard		3203	Collision Analysis and	12/19/2022

INVESTIGATIVE INTRODUCTION

1. On Friday, March 18, 2022, at approximately 0259 hours, a single vehicle crash occurred on Ocean Avenue in the town of Marblehead. On March 18, 2022, at approximately 0344 hours, I was assigned to reconstruct this collision by Lieutenant Brad Sullivan #3357, AHQ TDO. I arrived on scene at approximately 0449 hours. Upon arrival, I made observations, took measurements, and documented the location of evidence. The vehicle remained at final rest and the roadway was closed to traffic upon my arrival. The scene was cleared and all travel lanes were re-opened at approximately 0621 hours.

2. I was met on scene and was assisted in this reconstruction by Trooper Shane Pierce #3339 of MSP C.S.S.S., and officers assigned to the Marblehead Police Department. Detective Sean Brady of Marblehead PD was assigned as the primary investigator. The following reconstruction report summarizes an investigation conducted in conjunction with local and MSP personnel. The scope of this Trooper's investigation was limited to the reconstruction of the collision.

ABSTRACT

3. The following report concerns a crash involving a 2011 Mercedes-Benz GL450W utility vehicle. The Mercedes was traveling east on Ocean Avenue, operated by James Rocco Galante (DOB: [redacted]); Galante was the sole occupant of the vehicle. While navigating a moderate right-bearing curve in the roadway, the operator lost operational control over the vehicle and entered into an uncontrolled counter-clockwise spin. The front tires of the Mercedes struck the concrete curb bordering the northern edge of the roadway. The Mercedes then exited Ocean Avenue and became airborne, landing on the beach area below. The Mercedes entered into a rollover sequence for several feet before coming to final rest, upright on its tires. The unbelted operator suffered serious, life-threatening injuries and was transported via ambulance to the North Shore Medical Center where he was pronounced deceased several hours after the crash. The vehicle was removed from the scene by G&J Towing and transported to their facility in Revere, MA. Through this investigation, and with the collaboration of Detective Brady, it was determined that this was a single vehicle crash; the cause being Galante's failure to maintain operational control of the Mercedes.

COLLISION LOCUS

4. The collision locus of this crash is latitude 42° 29' 30"N and longitude 70° 50' 54"W.

Image 1 - Mercedes Direction of Travel

ROADWAY

5. I observed this street to be a two lane, locally maintained roadway running generally east and west. At the time of the collision, the lanes of travel were dry. I examined the roadway for any contributory debris or defects and found none. The speed limit, within the collision locus, is posted and regulated under M.G.L c. 90, § 17-18 at 30 mph.

6. The following roadway attributes were noted:

- Travel lanes (east and west) width approximately 16.5 feet
- Overall roadway width approximately 33.0 feet
- Travel lanes separated by solid double yellow lines
- Roadway bordered on northern edge with concrete curb
  - Height approximately 9 inches
  - Width approximately 12 inches
- Northern curb bordered on northern edge by low concrete wall
  - Height approximately 18 inches

  - Width approximately 36 inches
- Roadway elevated approximately 12.0 feet above shore line

7. The weather was cloudy with a low hanging fog and the temperature was approximately 48° Fahrenheit. I observed a moderate low-hanging fog at the time of the investigation; it is unknown if the fog resulted in reduced visibility at the time of the crash. The crash occurred during the hours of darkness. I observed artificial lighting along the southern edge of the roadway within the collision locus.

ON SCENE INVESTIGATION

8. I observed the vehicle at final rest upon my arrival. The Mercedes was located on the beach area to the north of the elevated roadway. The vehicle was fronting generally in an easterly direction and was resting, upright, on its tires. I observed significant damage on the roof and sides of the vehicle, consistent with a rollover crash. The front airbags had been deployed in the crash sequence. An extension ladder from the beach area to the elevated roadway was utilized to access the crash scene.

9. From the area of the vehicle at final rest, I observed an unabated trail of physical evidence that proceeded in a westerly direction. This evidence consisted of tire marks, scrapes, gouges, ruts, and vehicle debris. To the west of the Mercedes, I observed several deep ruts in the soft material of the beach. These ruts ranged in approximate length from 3 feet to 15 feet and generally led in a westerly direction, toward the retaining wall supporting the elevated roadway.

10. Atop Ocean Avenue, I observed several tire marks of varying lengths. These marks spanned a distance of approximately 70 feet, starting in the westbound travel lane and ending at the edge of the short wall bordering the roadway. These marks were generally located along the edges of the curb and wall and are best described as scuff marks. These marks had vertical striations and were accompanied by scrape marks, consistent with a rotating tire sliding along the concrete edge.

11. Located in the approximate center of the westbound travel lane, I observed a pavement scar running generally southwest to northeast. This mark was approximately 4.9 feet in length and had diagonal striations in the form of scrapes and gouges. The scrape/gouge was bordered by an amorphous tire mark. This pavement scar was consistent with a rotating tire sliding sideways, with the rim of the tire digging violently into the pavement. This type of scarring is consistent with a vehicle in an uncontrolled rotation and generally precipitates a rollover event when the tire catches the pavement and trips the vehicle.

12. The length of the crash scene was measured to be, in total, approximately 176.7 feet.

13. The scene was electronically surveyed employing a Leica Viva GNSS GPS station. This system employs the use of global positioning system satellites and Massachusetts Department of Transportation (MassDOT) CORS Network to accurately measure the collision locus to a tolerance of 3 cm. This CORS Network is a series of high-accuracy GPS receivers set over positions with known coordinates, spreading over a wide geographic area. MassDOT has 18 CORS sites. This data is downloaded electronically to IMS Map360, an industry standard computer aided design program.

SCENE PHOTOGRAPHS

Photo 1 – Tire Gouge/Scrape (Pierce)

Photo 2 – Tire Marks (Pierce)

Photo 3 (Pierce)

Photo 4 – Gouge (First Touch) (Pierce)

VEHICLE INSPECTION

14. The Mercedes was towed from the scene by G&J Towing and secured inside their facility in Revere, MA. I examined the vehicle on scene.

15. Vehicle #1 was a black 2011 Mercedes-Benz GL450W utility vehicle. The vehicle bore Massachusetts registration plate [redacted] and vehicle identification number [redacted]. The Mercedes had been inspected and an inspection sticker dated 2/8/22 was affixed to the lower passenger area of the windshield. The inspection sticker bore a bold black "R", indicating a failure for emissions. During my inspection, I observed the following damage and vehicle conditions.

A. Exterior – The Mercedes had contact damage on all sides, consistent with a rollover crash. There was significant crush on the front end, resulting in the bumper, hood, and engine compartment being pushed back and the headlight assemblies destroyed. I observed scrapes along the top of the left front fender and "A" pillar. There was also significant contact damage on the right rear corner and rear hatch of the vehicle. I observed multidirectional scrapes along the right side roof edge. The contact areas had substantial coverings of sand and grit. Due to the lack of contact damage on the roadway

(with the exception of tire marks), I determined that the rollover sequence likely began after landing on the beach below.

B. Interior – The interior of the vehicle was generally free of compartment intrusion. The headlight control was set to "Auto". The driver's side front and knee airbags were deployed in the crash. The driver's seatbelt was stored in the "B" pillar and moved freely when pulled. I observed no stretching, scoring, or other signs that the seatbelt was used by the operator. The brake and accelerator pedals were engaged, offered expected resistance when pressed, and returned normally when released. I observed the driver's side floor mat was loose and covering the pedals upon inspection at the scene. It is unknown if the mat came loose during the rollover or obstructed the pedals and contributed to the operator's loss of control.

C. Engine Compartment – I was unable to inspect the engine compartment due to significant crush damage to the hood and front end.

D. Tires, Rims, and Brakes – The vehicle was equipped with four disc brakes, which were visually inspected on scene. The rotors were in good condition and the brake pads appeared to be of adequate thickness. The right rear tire was flat, and the rim had significant contact damage on the surface and edges. I observed no comparable contact damage on any of the remaining three tires or rims. I therefore concluded that the scrape/gouge observed on the roadway (as described in Paragraph 11) was most likely made by the right rear tire.

TIRE	MAKE	MODEL	SIZE	TREAD	PRESSURE
Left Front	Pirelli	Scorpion Verde	P255/55R19	Good	Good
Left Rear	Pirelli	Scorpion Verde	P255/55R19	Good	Good
Right Rear	Goodyear	Eagle Sport	P255/55R19	Good	FLAT
Right Front	Pirelli	Scorpion Verde	P255/55R19	Good	Good

VEHICLE INSPECTION PHOTOGRAPHS

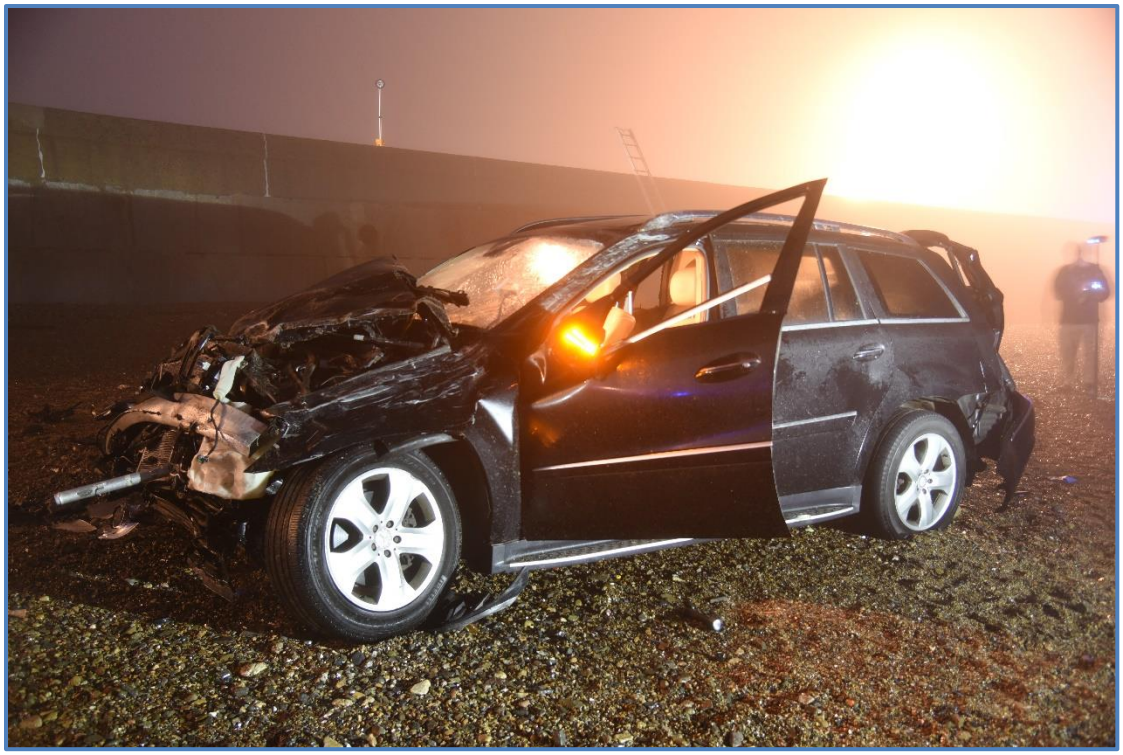


Photo 5 - Left Side (Pierce)

Photo 6 - Right Side (Pierce)

VEHICLE RECALLS

16. A check of the recall database of the National Highway Traffic Safety Administration's Office of Defects Investigation resulted in locating four recalls for a 2011 Mercedes-Benz GL-Class SUV. A recall was issued by the manufacturer on May 27, 2022 (NHTSA Campaign No. 22V315000) for corrosion in the brake booster. According to the recall notice, moisture may accumulate and cause corrosion in the brake booster housing unit, which can result in reduced braking performance or brake failure. A search of the manufacturer's website by VIN revealed that the recall notice had been issued on this specific vehicle and owner notification letters had been mailed on June 30, 2022.

17. On September 14, 2022 I contacted G&J Towing in Revere to inquire about the current location of the Mercedes. They advised that the vehicle had been sold by Arbella Insurance to Insurance Auto Auctions (IAA) in Manchester, NH. After speaking with a representative with IAA, I was informed that the Mercedes had been sold at auction and had been exported overseas in April of 2022. At this time, it is undetermined whether the recall for the brake booster housing unit played a role in the loss of control of the Mercedes.

18. The remaining three recalls reported by NHTSA appeared unrelated to the crash. A search of the Mecedes-Benz website revealed that this specific vehicle had a previous fulfilled recall for the Takata airbags in 2019. There were no other safety advisories or open campaigns listed for this vehicle.

19. A check of the NHTSA database revealed no recall notices for Pirelli Scorpion Verde tires or Goodyear Eagle Sport tires.

ADDITIONAL INVESTIGATION MEASURES

20. The investigation conducted by Detective Sean Brady revealed that the crash was reported by a passerby at approximately 0259 hours. The crash had occurred sometime prior to this time. First responders also reported that upon arrival, they observed that the operator was not wearing his seatbelt.

21. Medical records from the North Shore Medical Center indicated that James Galante had a [redacted]

Medical records are available through the Essex County District Attorney's Office upon request.

EVENT DATA RECORDER

22. This year, make, and model of vehicle is not supported by the Bosch Crash Data Retrieval tool. No Event Data Recorder information was imaged from the Mercedes.

KINEMATICS ANALYSIS

23. For this particular crash, an approximate vehicle speed can be calculated using an airborne analysis. Using the coordinates collected at the scene with the Leica Viva GNSS GPS station, I determined the reported elevation of the roadway at the approximate point of takeoff to be approximately 13.70 feet. I determined the elevation at the first visible signs of contact between the vehicle and the ground (Paragraph 9) to be approximately 1.82 feet. The difference in height was calculated to be approximately 11.88 feet.

$$13.70 - 1.82 = 11.88$$

Utilizing these same data points, I calculated the horizontal distance between take-off and first touch to be approximately 45.34 feet. Assuming a level take-off, I calculated the speed of the vehicle as it left the roadway and became airborne to be approximately 35.97 mph.

$$S = \frac{2.73 \times D}{\text{Cos}\Theta \times \sqrt{\pm h \pm (D \times \text{Tan}\Theta)}}$$

$$S = \frac{2.73 \times 45.34}{1.00 \times \sqrt{11.88 + (45.34 \times 0.00)}}$$

$$S = \frac{123.77}{1.00 \times \sqrt{11.88}}$$

$$S = \frac{123.77}{1.00 \times 3.44}$$

$$S = \frac{123.77}{3.44}$$

$$S = 35.97$$

S = The Speed in mph/kph.
2.73 = A Constant.
D = The Distance in feet.
h = The Height in feet.
Θ = The Departure Angle in Degrees.

Equation 1

24. In this calculation, the angle of the curb and wall are not taken into account. It is unknown if the vehicle's center of mass traveled in an upward angle over the curbing, or if the vehicle tripped and was projected out from the roadway in a level path. In order to determine the most likely speed of the vehicle at take-off, a statistical analysis was performed.

25. The equation above utilizes three distinct variables: *height* (distance in feet vertically from the roadway to the beach), *distance* (distance in feet horizontally from the point of departure to the point of landing), and *angle*.

26. The *height* (vertical) was measured to be approximately 11.88 feet, without calculating the vehicle's center of mass. The center of mass measurements[1] for a 2011 Mercedes-Benz GL450 are as follows:

DESCRIPTION	COM (in)	COM (ft)
Inches from ground	28.73 in	2.39 ft
Inches from front bumper	81.40 in	6.78 ft
Inches from side	38.00 in	3.17 ft
Inches from rear bumper	119.60 in	9.97 ft
height of MV	72.00 in	6.00 ft
Inches from top	43.27 in	3.61 ft

Examining the scene evidence, it is probable that the Mercedes was sliding on its tires as it reached the limits of the roadway. Therefore, the center of mass for the vehicle would be 2.39 feet above the roadway, for a total elevation of 16.09 feet.

$$13.70 + 2.39 = 16.09\ ft$$

The vehicle landed at an elevation of 1.82 feet. It is unknown what position the vehicle was orientated upon landing. Examining the table above, the maximum height the center of mass could have achieved was approximately 9.97 feet (had the rear bumper touched down first); the minimum height was approximately 2.39 feet (had the tires touched down first). Therefore, the minimum *height* was calculated at 4.30 feet, and the maximum *height* was calculated at 11.88 feet.

$$\text{MIN: } 16.09 - (9.97 + 1.82) = 4.30\ ft$$

$$\text{MAX: } 16.09 - (2.39 + 1.82) = 11.88\ ft$$

These minimum/maximum calculations were used as the upper and lower limits for a uniform distribution of randomly generated numbers.

27. The distance (horizontal) was measured to be approximately 45.34 feet, from the tire mark on the roadway to the rut on the beach. Adding the distance of 3.17 feet (the distance from the center of mass to the side of the vehicle[2]) results in a total distance traveled of 48.51 feet.

$$45.34 + 3.17 = 48.51\ ft$$

This was considered the most likely distance travelled by the vehicle's center of mass before touchdown. However, the exact distance is not known. A normal distribution of randomly

[1] Expert AutoStats, 4N6XPRT Systems, Version 5.6.1

[2] This assumes, based on available roadway evidence, that the vehicle was sliding generally sideways upon exiting the roadway

generated numbers was used, with a standard deviation of 1.0 feet and an assumed mean of 48.51 feet.

28. The maximum take-off *angle* was calculated by using the height of the wall (the highest point of the roadway on the northern edge, measured to be approximately 1.5 feet) and the track width of the Mercedes, which was reported by AutoStats to be approximately 65 inches, or 5.41 feet.

$$\theta = \sin^{-1}\left(\frac{OPP}{HYP}\right)$$

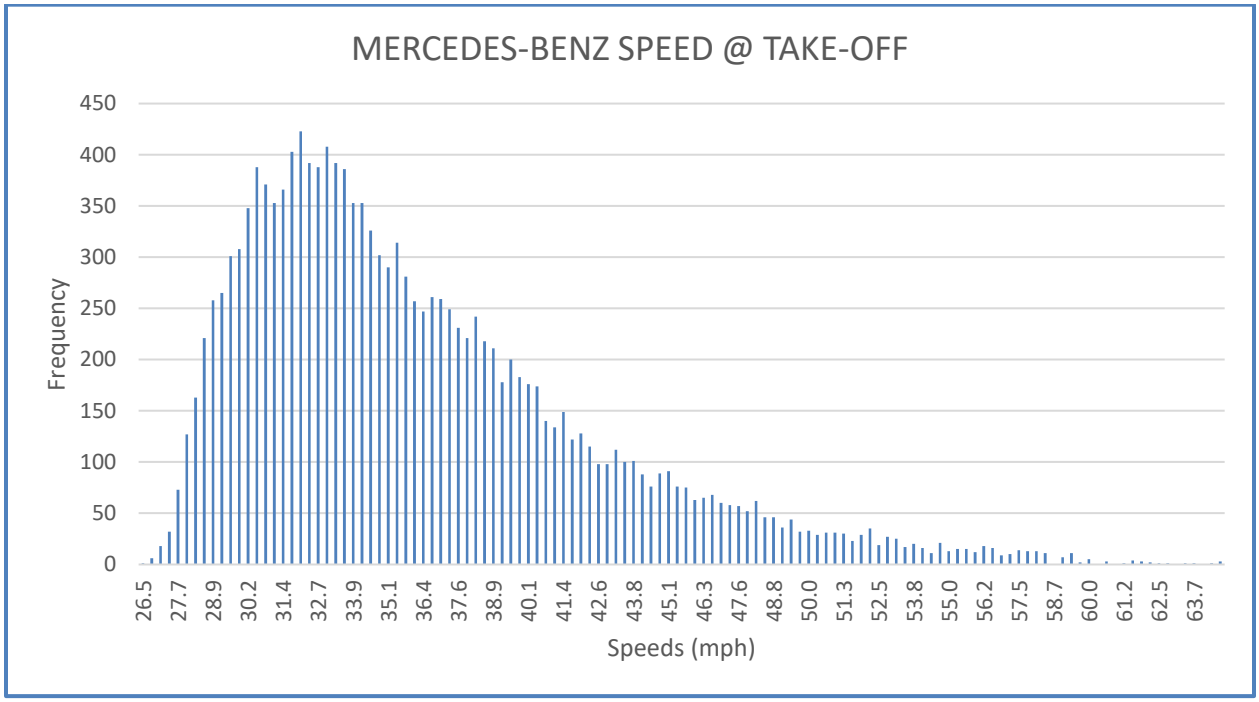
$$\theta = \sin^{-1}\left(\frac{1.5}{5.41}\right)$$

$$\theta = \sin^{-1}(0.27)$$

$$\theta = 16.09^{\circ}$$

The take-off angle was therefore likely between 0˚ and 16˚, which were then used as the upper and lower limits for a uniform distribution of randomly generated numbers.

29. Using an MS Excel spreadsheet, the speed of the Mercedes at take-off was calculated 15,000 times. Each calculation was done with randomly generated numbers for each variable. The resultant statistical calculations found the mean (average) speed to be approximately 36.1 mph, with a standard deviation of 6.19. The range of most likely speeds (i.e., speeds calculated between the 24th and 76th percentile) was found to be within approximately 31.4 mph to 39.3 mph. These calculations are represented graphically as the following:



30. Based on this statistical analysis, I determined that Mercedes speed at take-off was most likely approximately 36 mph. This analysis does not factor in speed loss from the tires striking the curb, and therefore represents a minimum speed calculation of the vehicle at take-off. Furthermore, this analysis does not account for braking and/or speed loss from rotation, and therefore does not represent an accurate speed of the Mercedes prior to the operator's loss of control.

CONCLUSIONS

31. The following conclusions are the result of the compilation of evidence collected at the scene and the vehicle inspection, and are a likely account of what occurred at the time of the collision.

A. A 2011 Mercedes-Benz GL450 was traveling eastbound on Ocean Avenue on March 18, 2022.

B. The Mercedes was operated by the sole occupant of the vehicle, James Galante. He was not wearing his seatbelt at the time of the crash.

C. Galante entered a hard left steering input and lost operational control of the Mercedes. The vehicle entered into an uncontrolled counter-clockwise rotation and subsequently exited the roadway at a statistically-likely speed of approximately 36 mph, above the posted speed limit of 30 mph.

D. The vehicle fell approximately 11.8 feet and began to roll over, coming to final rest on the beach north of the elevated roadway.

E. I did not observe any engineering problems with the roadway that caused this crash.

F. I did not observe any mechanical defects with the Mercedes (not resulting from the impact) that caused this crash. It is unknown if a manufacturer's defect in the brake booster contributed to this crash.

G. I did not observe any environmental factors that caused this crash. It is unknown if moderate fog contributed to a lack of visibility at the time of the crash.

OPINIONS

32. The cause of this crash was James Galante's failure to maintain forward operational control of his vehicle. The evidence found at the scene and on the vehicle strongly suggest that the vehicle was in an uncontrolled rotation prior to exiting Ocean Avenue, and this was most likely a result of Galante entering a hard steering input to the left. There exist several factors that could have contributed to Galante's panicked steering:

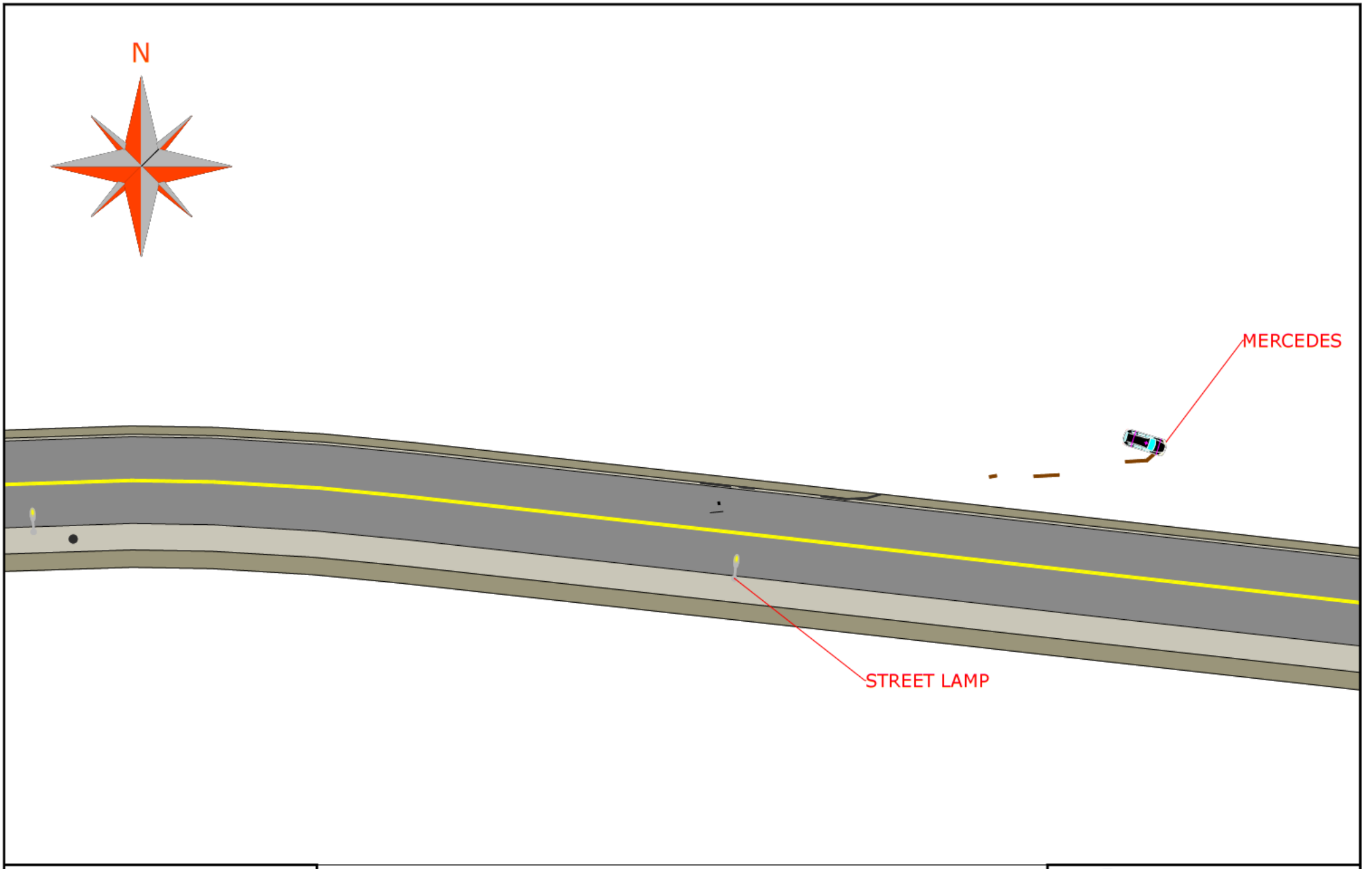
- A loose floor mat could have obstructed the brake pedal, accelerator pedal, or both;
- A vehicle recall was issued in June 2022, more than 3 months after the crash occurred. This recall, unknown to the vehicle owner or operator in March 2022, could have resulted in a diminished braking capacity;
- Moderate fog could have obscured the roadway markings to oncoming traffic;
- Operating in excess of a safe and reasonable speed for roadway conditions could have exacerbated the vehicle dynamics.

27. Galante's failure to wear a seatbelt likely contributed to the severity of his injuries. Galante's [redacted] and contributed to his loss of control.

Respectfully Submitted,

D/Lt. RD Wol: #3203

Detective Lieutenant Richard D Wolanski #3203
Collision Analysis and Reconstruction Section
ACTAR #2665



DRA ING LO US
Ocean Ave ue
Marb eh a , MA
ATE: /18/ 2 CALE: 1"= 0'

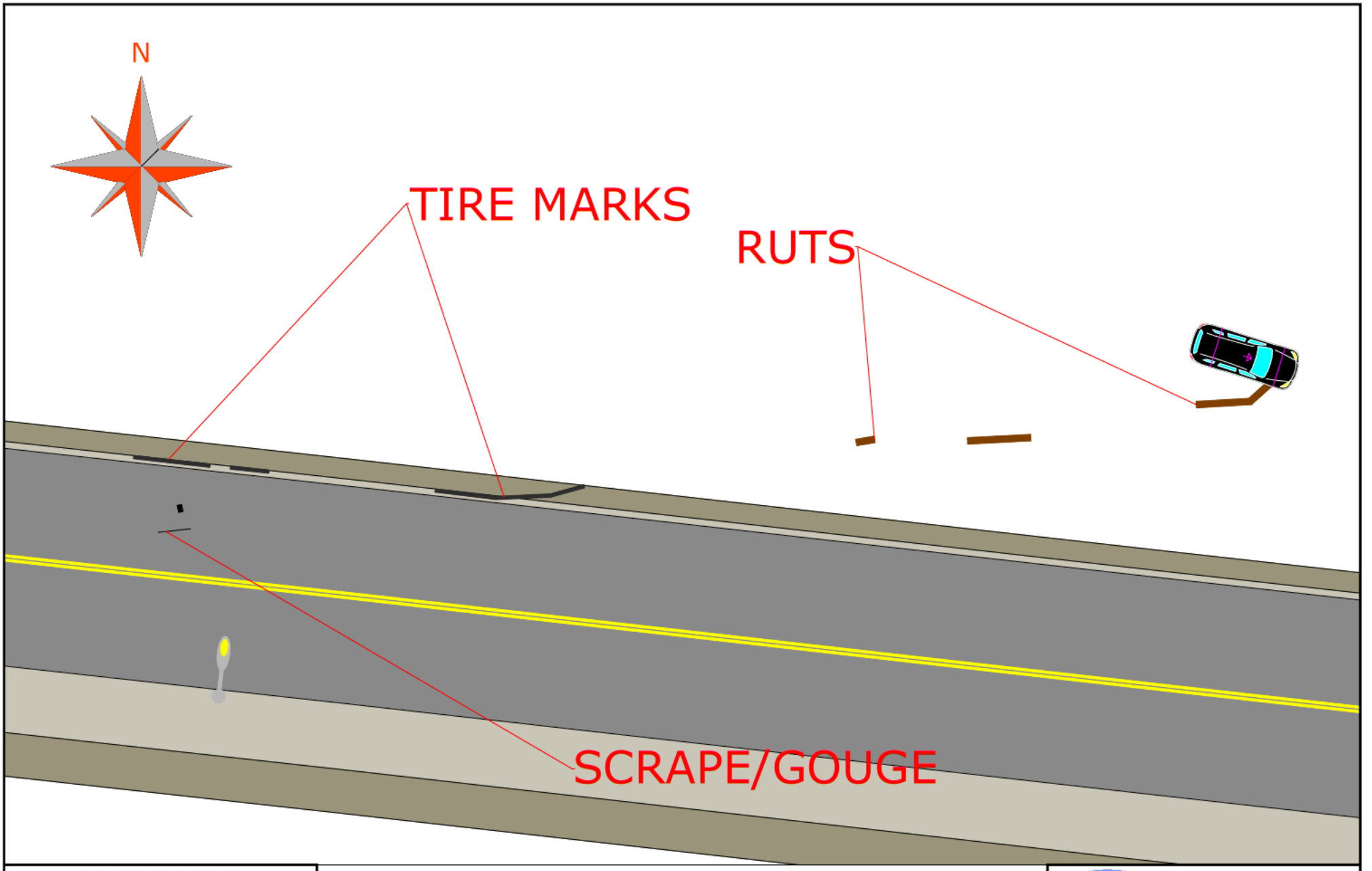
50 0 50

SCALE IN FEET

FINAL REST

as achusetts State Police
ollision Analysis & Reconstruction Section
50 Maple Street
Milford, MA 01757
978.538.6061

CASE NUMBER:	2022-CAR-000086
DRAWING BY:	DLt Richard Wolanski #3203



DRAWING LOCUS		
Ocean Avenue		
Marblehead, MA		
DATE: 3/18/22	SCALE: 1"= 20'	

20 0 20

SCALE IN FEET

EVIDENCE

Massachusetts State Police
Collision Analysis & Reconstruction Section
50 Maple Street
Milford, MA 01757
978.538.6061

CASE NUMBER:	2022-CAR-000086
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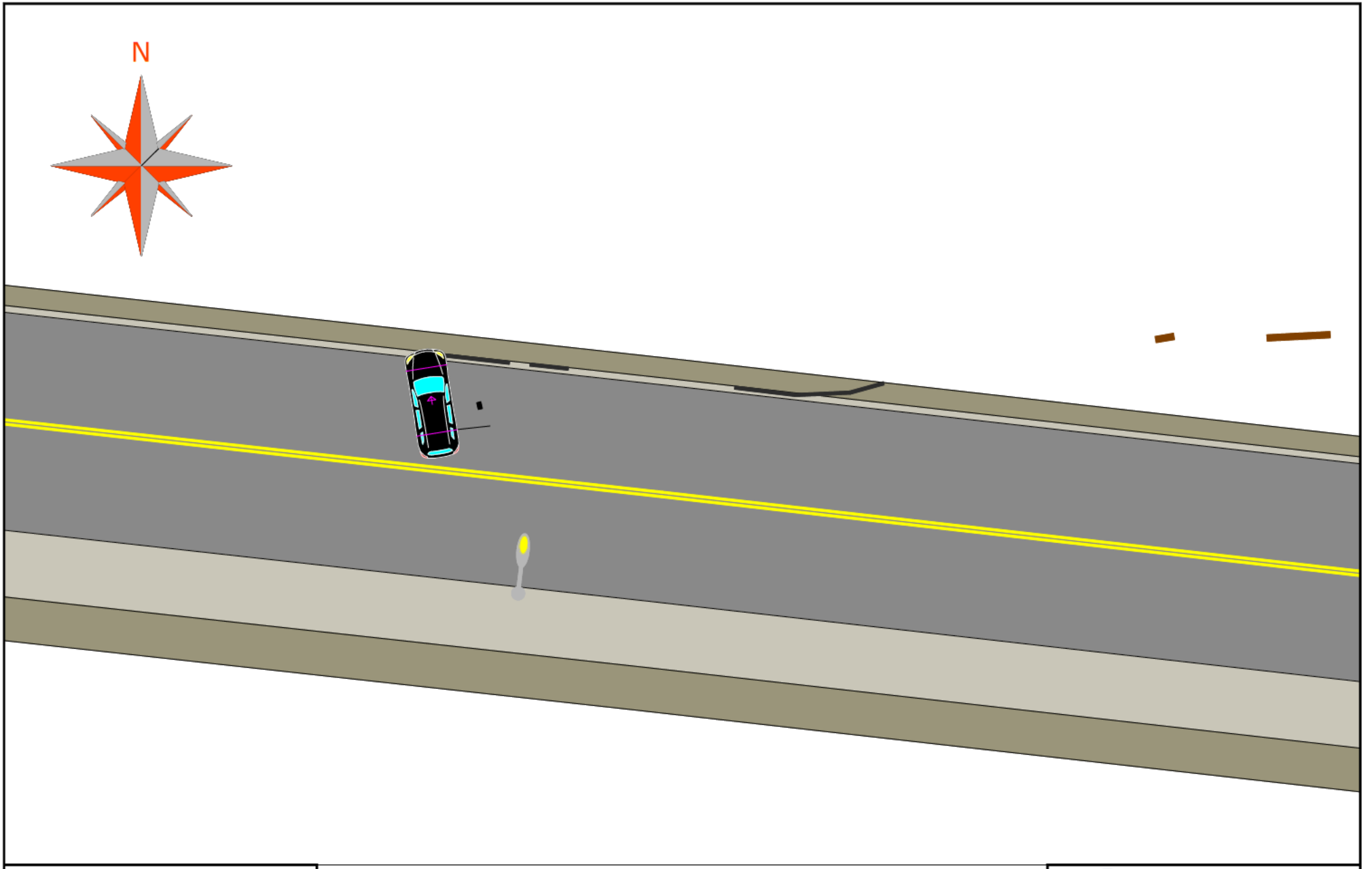

DRAWING LOCUS	
Ocean Avenue	
Marblehead, MA	
DATE: 3/18/22	SCALE: 1"= 20'

20 0 20

SCALE IN FEET

PRE-IMPACT

Massachusetts State Police
Collision Analysis & Reconstruction Section
50 Maple Street
Milford, MA 01757
978.538.6061

CASE NUMBER:	2022-CAR-000086
DRAWING BY:	DLt Richard Wolanski #3203