



## Collision Analysis and Reconstruction Section

### SUPPLEMENTAL REPORT

1. On January 4, 2023, at approximately 1545 hours, C.A.R.S. was requested to forensically map an officer-involved shooting scene, located at 59 Chestnut Street in Cambridge, MA. On scene to assist were Trooper Philip Kucha #3823 and Trooper Christopher Dumas #3942. The scene was documented using the Leica RTC360 laser scanner. Upon arrival, members of the Middlesex State Police Detective Unit directed me to the scene and advised me of the relevant evidence to be documented.

2. The Leica RTC360 is designed to capture an environment in 3 dimensions. When deployed in the field, it is mounted atop a tripod and rotates 360°. As it rotates, the device acquires data in two ways: imaging and laser scanning. The imaging is performed by a 3-camera system that captures hundreds of 36 megapixel photographs. The scanner emits a laser which registers a distance and position relative to the RTC and saves that as a “point.” The RTC records thousands of points per scan. The RTC takes 1-3 minutes to complete a single scan. The user then moves the scanner to a nearby location, and the process is repeated.

3. These images and scans are then rendered into a single digital file using the software Cyclone Register360. Each individual scan is optimized by finding common points between each adjacent scan. The scans are then combined to create a cohesive whole. The final rendered file can be viewed through the software TruView, provided free by Leica. In TruView, the individual scan setups are represented as red dots. The system is calibrated using pre-measured targets that are placed in the scene and measured through TruView. In this particular investigation, the targets were placed on the sidewalk outside of 59 Chestnut Street and were measured to be 1.0 meters apart, or 3.28 feet. See Image 11, attached with this report.

4. The following scene measurements were taken, using the TruView software:

IMAGE	DESCRIPTION	MESUREMENTS	SETUP #	NOTES
1A	Overall dimensions of the backyard (side to side)	58.39 ft	009	
1B	Overall dimensions of the backyard (front to back)	80.73 ft	007	
2	Shell casing placards to the back fence	21.82 ft	010	
3	Shell casing placards to the Knife	25.97 ft	010	
4	Shell casing placards to the Quran	9.91 ft	010	
5	Back board to the shell casings	30.85 ft	011	
6	"Foot print" to the to the shell casing	9.63 ft	010	
6	"Foot print" to the back fence	14.35 ft	010	
7	Backboard/medical items to the front of the Ford Focus	49.09 ft	011	
8	Ford Focus to the end of the driveway	17.70 ft	006	
9A	Less lethal placards to the front of the Ford Focus (EM#1)	7.58 ft	003	Adjusted from 4.66 feet
9B	Less lethal placards to the front of the Ford Focus (EM#2)	17.94 ft	003	Adjusted from 3.61 feet
10A	Overall dimensions of the driveway (width)	8.95 ft	002	
10B	Overall dimensions of the driveway (length)	70.69 ft	001	Adjusted from 38.66 feet
11	Calibration	3.28 ft	001	1.0 m Calibration Check



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Due to the narrow available space around the Ford Focus, full measurements were not able to be taken directly from the scanned file. The closest available reference points were utilized and the measurements were added. The relevant dimensions of the 2015 Ford Focus are as follows<sup>1</sup>:

VEHICLE DIMENSION	INCHES	FEET
2015 Ford Focus - Overall Length	172 in	14.33 ft
2015 Ford Focus - Overall Width	72 in	6.00 ft
2015 Ford Focus - Front Bumper to Front Axle	35 in	2.92 ft

- Evidence Marker #1 measured 4.66 ft to the center of the left front tire; the distance from the front axle to the front bumper is 2.92 ft; added together for a total of approximately 7.58 ft.

$$4.66 + 2.92 = 7.58$$

- Evidence Marker #2 measured 3.61 ft to the rear bumper; the overall length of the Ford is 14.33 ft; added together for a total of approximately 17.94 ft.

$$3.61 + 14.33 = 17.94$$

- Distance from the rear of the Ford to the end (street) of the driveway measured 38.66 ft; the overall length of the Ford is 14.33 ft; distance from the front of the Ford to the end of the driveway (backyard) measured 17.70 ft; added together for a total of approximately 70.69 ft.

$$38.66 + 14.33 + 17.70 = 70.69$$

5. All notes and data remains on file.

Respectfully Submitted,

*D.Lt. RD Wolanski #3203*

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Collision Analysis and Reconstruction Section  
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<sup>1</sup> A compilation of all vehicle dimensions were collected using Expert AutoStats, 4N6XPRT Systems, version 5.61; a copy of the generated report is included with this report.