

ROAD SAFETY AUDIT

Randolph Avenue (Route 28) Corridor from Reedsdale
Road to north of Chickatawbut Road

Town of Milton

February 2024

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MassDOT



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Background

The Federal Highway Administration (FHWA) defines a Road Safety Audit (RSA) as the formal safety examination of an existing or future road or intersection by an independent, multidisciplinary team. The purpose of an RSA is to identify potential safety issues and possible opportunities for safety improvements, considering all roadway users. This RSA evaluates the Randolph Avenue (Route 28) corridor from Reedsdale Road to north of Chickatawbut Road in Milton, Massachusetts, as shown in **Figure 1**. For this report, Randolph Avenue will be referred to as Route 28.

This study was conducted as part of a larger corridor study being completed on Route 28 in response to safety concerns voiced by the community and a Massachusetts Department of Transportation (MassDOT) project located just south of the study area at the intersection of Route 28 at Chickatawbut Road. The Chickatawbut Road intersection is identified as a Highway Safety Improvement Program (HSIP) eligible cluster as well as a Top 200 crash cluster for the years 2018-2020, and an RSA was completed in 2016.

The Route 28 corridor has been the focus of the Metropolitan Planning Organization's (MPO's) Route 28 Priority Corridor Study. Additionally, MassDOT has identified the intersection of Route 28 at Reed Street and Access Road as a HSIP-eligible cluster. A HSIP-eligible cluster is one where the total number of equivalent property-damage-only (EPDO) crashes is within the top 5% within the regional planning agency (RPA). HSIP clusters were identified for the intersection from 2018-2020.

The MassDOT IMPACT crash-based and risk-based network screening information also identifies segments along the corridor as top crash locations or risk locations in the Boston Regional Metropolitan Planning Organization area. Route 28 from Highland Street to Hallen Avenue and from Hillside Street to Susi Lane are within the top 5% of locations based on observed crashes exceeding expected crashes. When only fatal and injury crashes are considered, Route 28 from Sassamon Avenue to Hillside Street is also within the top 5%, and Route 28 from Reedsdale Road to just south of Pleasant Street and from Hallen Avenue to Ridgewood Road are within the next 10% of locations in the area. Risk-based screening identifies Route 28 from Hilltop Street to Eager Road as a secondary risk location for lane departure and from Hillside Street to Eager Road as a secondary risk location for younger drivers. The corridor is identified as a primary risk location for older drivers from Highland Street to Chickatawbut Road and as a secondary risk location from Reedsdale Road to Highland Street.

The RSA is intended to identify potential short-, mid-, and long-term safety improvements that can be evaluated for inclusion as part of future design efforts for potential reconstruction.

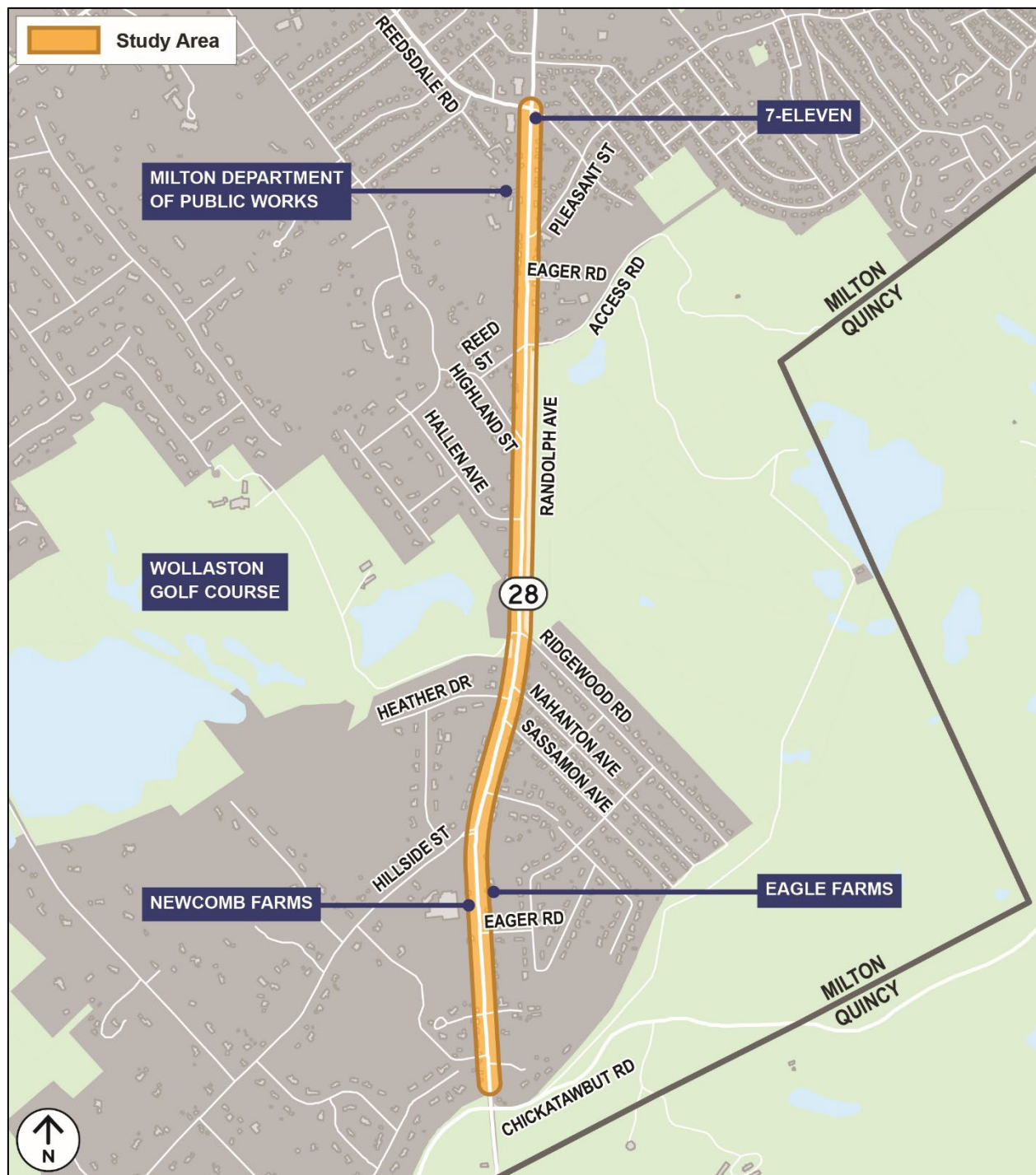


Figure 1: Locus Map

Project Data

The RSA was conducted in-person on Wednesday, November 8, 2023, from 9:00 a.m. to 2:00 p.m. The agenda for the RSA meeting held at the Milton Town Hall is provided in **Appendix A**. **Table 1** shows the participating members of the audit team, which included multidisciplinary representatives from state, regional, and local agencies. Contact information for the RSA team members is provided in **Appendix B**.

Crash data from the Milton Police Department was compiled for the entire study area for the time period from 2017-2020. During that time period, 25 crashes were reported at the intersection of Route 28 at Reedsdale Road, 17 crashes were reported at the intersection of Route 28 at Reed Street and Access Road, and 128 crashes were reported along the remaining portions of the Route 28 corridor. More details on the crashes reported in each portion of the corridor are provided below.

At the intersection of **Route 28 at Reedsdale Road**, 11 crashes (or 44%) resulted in personal injury. Of the 25 total crashes, 11 (44%) were rear-end crashes, 10 (40%) were angle crashes, 2 (8%) were head-on collisions, 1 (4%) was a sideswipe crash, and 1 (4%) was a single-vehicle crash. The highest crash month was April (20%), followed by May (16%), June (12%), July (12%), September (12%), and the remaining months seeing fewer crashes. Sunday and Wednesday were the highest crash days (20%), followed by Monday (16%), Saturday (16%), Tuesday (12%), Friday (12%), and Thursday with the fewest crashes (4%). Most of the crashes occurred between 3:00 – 6:00 p.m. (32%), with the next highest crash time periods being 6:00 – 9:00 p.m. (20%), 12:00 – 3:00 p.m. (16%), and 9:00 a.m. – 12:00 p.m. (12%). Most crashes occurred during the day (80%), under clear weather (68%), and on a dry roadway surface (72%). Crashes with property damage only were 56%, and 44% were non-fatal injuries.

At the intersection of **Route 28 at Reed Street**, 7 crashes (or 41%) resulted in personal injury. Of the 17 total crashes, 10 (59%) were rear-end crashes, 3 (18%) were angle crashes, 3 (18%) were single-vehicle crashes, and 1 (6%) was a sideswipe crash. March and September were the two months with the most crashes (18%) followed by May (12%), November (12%), and December (12%) and the remaining months seeing fewer crashes. The highest crash day was Saturday (35%), followed by Tuesday (18%), Wednesday (18%), Thursday (18%), Monday (6%), and Friday (6%). Most of the crashes occurred between 12:00 p.m. – 3:00 p.m. (24%), with the next highest crash time periods being 9:00 a.m. – 12:00 p.m. (18%), 3:00 – 6:00 p.m. (18%), 12:00 – 3:00 a.m. (12%), 6:00 – 9:00 a.m. (12%), and 6:00 – 9:00 p.m. (12%). Most of the crashes occurred during the day (71%), under clear weather (59%), or weather that saw clouds, rain, and/or snow (41%), and on a dry surface (71%). Crashes with property damage only were 53%, 41% were non-fatal injuries, and 6% had an unknown severity.

Along Route 28, south of Reedsdale Road to north of Reed Street and south of Reed Street to north of Chickatawbut Road, 59 crashes (or 45%) resulted in personal injury and two crashes resulted in a fatality. Of the 128 total crashes, 49 (38%) were rear-end crashes, 26 (20%) were angle crashes, 29 (23%) were single-vehicle crashes, 18 (14%) were sideswipe crashes, 2 (2%) were head-on crashes, 2 (2%) were collisions involving pedestrians, 1 (1%) was a collision with a cyclist, and 1 (1%) crash's manner of collision was unknown. The highest crash month was April (13%), followed by December (10%), with the remaining months seeing approximately the same number of crashes (7-9%), except for September, which was the lowest crash month (5%). Tuesday was the highest crash day of the week (18%), followed

by Friday (15%), with the remaining days seeing approximately the same number of crashes (13-14%). Most of the crashes occurred between 3:00 – 6:00 p.m. (21%), with the next highest crash time periods being 12:00 – 3:00 p.m. (18%), 6:00 – 9:00 a.m. (16%), 9:00 a.m. – 12:00 p.m. (15%), and 6:00 – 9:00 p.m. (14%), with the remaining time periods seeing the fewest crashes. Most crashes occurred during the day (67%), under clear weather (65%), and on a dry roadway surface (73%). Crashes with property damage only were 54%, 41% were non-fatal injuries, 4% had unknown severity, and 1% were reported as a fatal injury.

The angled collisions along Route 28, from Reedsdale Road to Chickatawbut Road, were most frequently attributed to vehicles turning left in or out of driveways for commercial businesses or unsignalized side streets and colliding with a vehicle along Route 28, including courtesy crashes. A courtesy crash occurs when a mainline vehicle in the outside lane stops to let a vehicle from a side-street or driveway enter the mainline, but the inside lane vehicle does not stop and collides with the entering vehicle. The rear-end crashes commonly occurred along Route 28 at both signalized and unsignalized intersections. Generally, crashes occurred during clear or cloudy conditions with 138 crashes (81%), during daylight with 120 crashes (71%), and on a dry roadway surface with 122 crashes (72%).

From January 2017 to December 2020, two fatal crashes were reported along the corridor. The first collision occurred in April 2017 at 4:03 p.m. (crash summary #12) and was a head-on collision between two vehicles traveling on Route 28 between Hallen Avenue and Ridgewood Road. The other collision occurred at 8:42 a.m. in August 2017 (crash summary #33) and was an angle collision between a motorcycle traveling southbound on Route 28 and a light truck making a left turn onto Hallen Avenue.

Detailed crash diagrams are provided in **Appendix C**. The crash data isolates the intersections of Route 28 at Reedsdale Road and Route 28 at Reed Street and Access Road from the rest of the corridor. Crashes occurring at the intersection of Route 28 at Chickatawbut Road were excluded from the summarized crash data as a separate RSA was previously conducted at this intersection. The included corridor collision data extends south beyond the limits of this RSA. A total of 170 mapped collisions are considered within the study area of this RSA.

Table 1: Participating Audit Team Members

Audit Team Member	Agency/Affiliation
Bill Kuttner	Central Transportation Planning Staff (CTPS)
Stephen Doody	Department of Conservation and Recreation (DCR)
Sam Oppong-Krampah	Department of Conservation and Recreation (DCR)
Mark Abbott	MassDOT D6 Traffic
Josh Bartus	MassDOT Major Projects
Kevin Chiu	MassDOT D6 Projects
Michelle Deng	MassDOT HQ Traffic and Safety
Evelyn Densmore	MassDOT HQ Traffic and Safety
Julie Dombroski	MassDOT D6 Traffic
Joseph Doucette	MassDOT D6 Projects
Kevin Fitzgerald	MassDOT HQ Traffic and Safety
Lisa Giunta	MassDOT D6 Projects
Benjamin Muller	MassDOT D6 Projects
Maximilian Pospichal Pavlov	MassDOT Highway Design
Aishwarya Sajeevakumaran	MassDOT D6 Traffic
Jarad Seligman	MassDOT Highway Design
Mark Alba	Milton Police Department
Chase Berkeley	Town of Milton
Tim Czerwienski	Town of Milton
Angela Bleeker	Howard Stein Hudson
Samuel Fazioli	Howard Stein Hudson
Allison Kelly	Howard Stein Hudson
Michaela Siegert	Howard Stein Hudson

Project Location and Description

Randolph Avenue (Route 28)

Randolph Avenue or Route 28 is classified as an urban principal arterial in the study area. It is under MassDOT jurisdiction to the south of Reedsdale Road and under local jurisdiction to the north of Reedsdale Road. The segment of the Route 28 corridor studied extends from the intersection with Reedsdale Road to the north to just north of Chickatawbut Road in the south. Route 28 is roughly 1.5 miles in length and generally runs in a north-south direction. The posted speed limit is 45 miles per hour (mph) in both directions throughout most of the corridor, and 40 mph approaching or departing the Reedsdale Road intersection and approaching the Chickatawbut Road intersection within the study area. It is a two-way roadway, with one lane in each direction north of the Reedsdale Road intersection and two lanes in each direction throughout the study area south of the intersection. Generally, the pavement is in good condition and pavement markings are present and visible along the corridor.

On-street parking and dedicated bicycle facilities are not provided within the study area. Sidewalks are provided on both sides of the roadway throughout the corridor. Crosswalk markings are provided across most of the side streets within the study area, and across Route 28 only at the signalized intersections. Land use along Route 28 is a mix of residential, commercial, and recreational parkland space. Pedestrian access points are provided to trails within the Blue Hills Reservation at locations along the corridor and driveways are located at commercial properties to provide both access and egress. Both the Massachusetts Bay Transportation Authority (MBTA) and the Brockton Area Transit Authority (BAT) run bus services on Route 28. The MBTA Route 240 buses runs on Route 28 throughout the entire study area and has marked stops at the intersections with Reedsdale Road, Pleasant Street, Reed Street, Highland Street, Hallen Avenue, Ridgewood Road, Nahanton Avenue, Hilltop Street, Hillside Street, Eager Road, and Susi Lane. The BAT Route #12 buses also run on Route 28 throughout the entire study area. BAT buses stop at locations designated by a BAT ribbon wrapped around telephone poles and only when flagged down by a passenger. Generally, signage posted along the roadway is in fair condition. MBTA bus stop signage specifically is generally worn, faded, and difficult to read. Some signage is obstructed by other signs or mounted at a high height or with significant offset from the road.

The portion of Route 28 within the study area includes a total of 14 intersections:

Signalized:

- Route 28 at Reedsdale Road
- Route 28 at Reed Street and Access Road
- Route 28 at Hillside Street

Unsignalized:

- Route 28 at Pleasant Street
- Route 28 at Highland Street
- Route 28 at Hallen Avenue
- Route 28 at Ridgewood Road and the Wollaston Golf Club Driveway
- Route 28 at Nahanton Avenue

- Route 28 at Heather Drive
- Route 28 at Sassamon Avenue
- Route 28 at Hilltop Street
- Route 28 at Eager Road
- Route 28 at Susi Lane
- Route 28 at Brook Lane

The roadways intersecting Route 28 are classified as local roadways under local jurisdiction except Reedsdale Road and Pleasant Street. Reedsdale Road is classified as an urban principal arterial west of Route 28 and an urban collector east of Route 28 under local jurisdiction. Pleasant Street is classified as an urban collector and is under local jurisdiction. Descriptions of the signalized and unsignalized intersections within the corridor are provided below.

The intersection of **Route 28 at Reedsdale Road** is a signalized intersection with four approaches owned and operated by MassDOT. The Reedsdale Road eastbound approach provides a shared left-turn/through lane and an exclusive right-turn lane. The eastbound approach operates permissively with the westbound approach. The exclusive right-turn lane has a designated signal and existing signage that permits a right turn on red on that approach. In addition, the eastbound right turn operates as an overlap to the northbound phase. The Reedsdale Road westbound approach intersects Randolph Avenue at a skew and provides a shared left-turn/through lane and a shared through/right-turn lane. The westbound approach consists of protected/permissive left turn phasing. The Route 28 northbound approach is a protected phase which provides an exclusive left-turn lane and a shared left/through/right-turn lane. The Randolph Avenue southbound approach provides a single shared left/through/right-turn lane which operates in its own protected phase. This intersection provides an exclusive pedestrian phase. Signal equipment is generally in good condition. Sidewalks are provided on all streets within the intersection. Crosswalks are present across all four legs of the intersection, and each includes pedestrian curb ramps, button style pushbuttons, and countdown pedestrian signal heads except for the southwest corner, which does not have a pedestrian curb ramp to cross Route 28. Detectable warning panels are not present at any of these crossings and the provided pushbuttons are not ADA-compliant. Many of the existing ramps are also cracked and generally in poor condition. No on-street parking is provided at any of the intersection approaches. Street parking on both the north and south sides of Reedsdale Road, east of the intersection, is permitted except between 4 p.m. and 7 p.m. only on the north side. Signage restricts parking between 4 p.m. and 7 p.m. on the north side of Reedsdale Road westbound, but on-street parking is otherwise unrestricted. Dedicated bicycle facilities are not provided within the intersection. Three bus stops are located at or near the intersection; two on the south leg serving MBTA Route #240 buses, with the southbound stop approximately 50 feet from the intersection and the northbound stop approximately 500 feet from the intersection, and one on the east leg, right at the stop line for that leg, serving MBTA Route #245 buses and only in the westbound direction.

The intersection of **Route 28 at Reed Street and Access Road** is a signalized intersection with four approaches owned and operated by MassDOT. The Reed Street eastbound approach and the Access Road westbound approach both provide a single shared left/through/right-turn lane. The Reed Street eastbound approach intersects Route 28 at a skew. Both the northbound and southbound Route 28 approaches consist of a shared left-turn/through lane and a shared through/right-turn lane. The current signal phasing

consists of a northbound and southbound phase with permissive left turns and an eastbound and westbound phase with permissive left turns. An exclusive pedestrian phase runs when called. Signal equipment is generally in good condition. Vehicles are not permitted to enter Reed Street between 7 a.m. and 9 a.m. on weekdays. Sidewalks are only provided along Route 28 within the intersection. Crosswalks are present on all four sides of the intersection, and each includes pedestrian curb ramps, button style pushbuttons, and countdown pedestrian signal heads. Detectable warning panels are not provided at the ramps on the west side of Route 28, and the pedestrian pushbuttons are not ADA-compliant. No on-street parking is provided at any intersection approach. Dedicated bicycle facilities are not provided at this intersection. Nearside bus stops are provided on Route 28 at this intersection for the MBTA Route #240 buses.

The intersection of **Route 28 at Hillside Street** is a signalized intersection with four approaches owned and operated by MassDOT. The Hillside Street eastbound approach intersects Route 28 at a skew and provides a wide, single, shared left/through/right-turn lane. The westbound approach is a residential driveway that falls within the intersection and allows vehicles to proceed left, through, or right. The northbound and southbound Route 28 approaches consist of a shared left-turn/through lane and a shared through/right-turn lane. The current signal phasing consists of a northbound phase with a protected left turn, a northbound and southbound phase with permissive left turns, and an eastbound and westbound phase with permissive left turns. An exclusive pedestrian phase runs when called. Signal equipment at the intersection is generally in good condition. Sidewalks are only provided along Route 28 within the intersection. Crosswalk markings are present on three legs of the intersection, excluding the residential driveway. Each marked crossing includes pedestrian curb ramps, button style pushbuttons, and countdown pedestrian signal heads. Detectable warning panels are not provided on any of the ramps within the intersection, and the pedestrian pushbuttons are not ADA-compliant. On-street parking and dedicated bicycle facilities are not provided at this intersection. Nearside bus stops serving the MBTA Route #240, and BAT Route #12 buses are provided at this intersection.

Descriptions of the unsignalized intersections along the corridor are provided below. All unsignalized intersections are under MassDOT jurisdiction. Exclusive turn lanes are not provided on Route 28 for any of the unsignalized intersections within the study area. Additionally, only one approach lane is provided on the minor streets. Unless otherwise stated, crosswalk markings with pedestrian curb ramps are provided crossing the cross streets, but the pedestrian curb ramps are not fitted with detectable warning panels. Sidewalks are not provided, and parking is unrestricted on the minor streets unless noted otherwise. Dedicated bicycle facilities are not provided at any of the intersections within the study area. At all the unsignalized intersections, on-street parking is not provided on Route 28 and concrete sidewalks are provided on both sides of Route 28.

The intersection of **Route 28 at Pleasant Street** is a three-leg unsignalized intersection with two approaches. Pleasant Street runs one-way departing the intersection at a skew in the northeastbound direction and provides one travel lane. The Route 28 northbound approach consists of a through lane and a shared through/right-turn lane. The Route 28 southbound approach consists of a shared through/left-turn lane and a through lane. Sidewalks and marked on-street parking spaces are provided on the southeast side of Pleasant Street. Curb ramps with detectable warning panels are provided for the marked crossing

on Pleasant Street. A bus stop is provided for the MBTA Route #240 buses and BAT Route #12 buses opposite Pleasant Street on the west side of Randolph Avenue.

The intersection of **Route 28 at Highland Street** is an unsignalized intersection with three approaches. The Highland Street eastbound approach is one-way, stop controlled, and consists of a shared left/right-turn lane. The Highland Street eastbound approach intersects Route 28 at a skew. The Route 28 northbound and southbound approaches each consist of two through lanes. An MBTA bus stop serving the MBTA Route #240 buses and BAT Route #12 buses is provided at this intersection on the north leg.

The intersection of **Route 28 at Hallen Avenue** is an unsignalized intersection with three approaches. The Hallen Avenue eastbound approach is stop controlled and provides a shared left/right-turn lane. The approach lane and departure lane are separated by a 50-foot-long landscaped island that is set back on Hallen Avenue from the stop line. The Route 28 northbound approach consists of a shared left-turn/through and a through lane. The Route 28 southbound approach consists of a through lane and a shared through/right-turn lane. A bus stop for the MBTA Route #240 buses and BAT Route #12 buses exists at the intersection on the north leg.

The intersection of **Route 28 at Ridgewood Street and the Wollaston Golf Club Driveway** is an unsignalized intersection with four approaches. The Golf Club Driveway is a private driveway that provides access to the Wollaston Golf Club. The Golf Club Driveway eastbound approach is stop controlled and provides a wide shared left/through/right-turn lane. The approach lane and departure lane are separated by a 20-foot-long landscaped island. The Ridgewood Road westbound approach is stop controlled and consists of a shared left/through/right-turn lane. The westbound Ridgewood Road approach intersects Route 28 at a skew. Signage at the intersection indicates that Ridgewood Road is a dead end, but Ridgewood Road does connect with a network of neighborhood streets in this area. The Route 28 northbound and southbound approaches both consist of a shared left-turn/through lane and a shared through/right-turn lane. Asphalt sidewalks are provided on both sides of Ridgewood Road. Curb ramps with detectable warning panels are provided at the marked crossing on Ridgewood Road. MBTA bus stops serving the Route 240 bus are provided on the south leg of the intersection.

The intersection of **Route 28 at Nahanton Avenue** is an unsignalized intersection with three approaches. The Nahanton Avenue westbound approach is stop controlled and provides a shared left/right-turn lane. Nahanton Avenue intersects Route 28 at a skew. The Route 28 northbound approach consists of a through lane and a shared through/right-turn lane. The Route 28 southbound approach consists of a shared left-turn/through lane and a through only lane. Asphalt sidewalks are provided on both sides of Nahanton Avenue. Curb ramps with detectable warning panels are provided at the marked crossing on Nahanton Avenue. According to the MBTA website, a bus stop serving the Route 240 bus is provided at this intersection, but bus stop signage is not present indicating the stop.

The intersection of **Route 28 at Heather Drive** is an unsignalized intersection with three approaches. The Heather Drive eastbound approach is stop controlled and provides a shared left/right-turn lane. The Route 28 northbound approach consists of a shared left-turn/through lane and a through only lane. The Route 28 southbound approach consists of a through lane and a shared through/right-turn lane. An asphalt sidewalk

is provided on the south side of Heather Drive. The Route 28 at Heather Drive intersection is located just south of and near the Route 28 at Nahanton Avenue intersection.

The intersection of **Route 28 at Sassamon Avenue** is an unsignalized intersection with three approaches. Sassamon Avenue intersects Route 28 at a skew. The Sassamon Avenue westbound approach is stop controlled and provides a shared left/right-turn lane. The Route 28 northbound approach consists of a through lane and a shared through/right-turn lane. The Route 28 southbound approach consists of a shared left-turn/through lane and a through lane. Asphalt sidewalks are provided on both sides of Sassamon Avenue. Curb ramps with detectable warning panels are provided at the marked crossing on Sassamon Avenue.

The intersection of **Route 28 at Hilltop Street** is an unsignalized intersection with three approaches. The Hilltop Street westbound approach is stop controlled and provides a shared left/right-turn lane. The Route 28 northbound approach consists of a through lane and a shared through/right-turn lane. The Route 28 southbound approach consists of a shared left-turn/through lane and a through lane. Hilltop Street is a dead end which is indicated with signage at this intersection. An asphalt sidewalk is provided on the north side of Hilltop Street. An MBTA bus stop for the 240 bus is provided on the south leg of the intersection.

The intersection of **Route 28 at Eager Road** is an unsignalized intersection with three approaches. The Eager Road westbound approach is stop controlled and provides a shared left/right-turn lane. The Route 28 northbound approach consists of a through lane and a shared through/right-turn lane. The Route 28 southbound approach consists of a shared left-turn/through lane and a through lane. Asphalt sidewalks are provided on both sides of Eager Road. A bus stop is provided serving the MBTA Route 240 bus on the south leg of this intersection.

Susi Lane and **Brook Lane** also intersect with Route 28 at unsignalized locations within the study area. Both Susi Lane and Brook Lane are privately owned. At their intersections with Route 28, there are no breaks in the double yellow center line on Route 28 and both roads function as driveways. An MBTA bus stop serving the Route 240 bus is provided on Route 28 at Susi Lane in both the northbound and southbound directions.

Audit Observations and Potential Safety Enhancements

The following sections will identify safety issues and RSA participant observations along the corridor and at specific intersections. Each safety issue will identify the type of collision that could have resulted from the safety issue. Finally, each safety issue will identify potential enhancements and safety improvements developed by the RSA team. It should be noted that some safety issues may require further study and engineering judgement to determine the feasibility of implementing applicable enhancements. The following section summarizes the issues and potential solutions, and assigns a safety payoff, timeframe, and jurisdiction.

Safety Issue #1: Driver Behavior

Corridor- Wide Issues

Route 28 provides four lanes of travel – two lanes in each direction. Audit members noted during the site visit that there is a significant downgrade along the corridor in the southbound direction north of Ridgewood Road and in the northbound direction south of Ridgewood Road. Audit members noted that the two lanes provided in each direction and the roadway grades contribute to speeding during periods of low congestion on Route 28, most notably near Ridgewood Road. October 2023 speed information on Route 28, north of Ridgewood Road, showed that vehicles travel with an average speed of approximately 40 mph in either direction but reach up to 68 mph at off-peak times in either direction.

Audit members also noted speeding as an issue on Pleasant Street. Drivers traveling along Route 28 northbound at high speeds reportedly turn right onto Pleasant Street and maintain their high speed of travel while continuing up Pleasant Street due to the wide turning radius provided at the intersection of Route 28 and Pleasant Street.



Pictured: Route 28 cross-section.

High speeds can result in higher severity crashes. Vehicles traveling at higher speeds require longer time to react and decelerate and may have difficulty stopping or slowing for a turning vehicle, resulting in rear-end collisions. Rear end collisions make up 41% (52 crashes) of the summarized collisions within the study area.

Audit members further noted driver behavior on Route 28 to be generally aggressive. During the audit, vehicles were observed making lane changes to pass turning vehicles at high travel speeds and at times without consideration to the vehicles in the adjacent lane during the lane change maneuver. High speed lane changes can lead to sideswipe collisions, a manner which makes up 14% (18 crashes) of the summarized collisions within the study area.



Pictured: Speed limit and speed feedback sign.

Due to the high speed environment along Route 28 drivers attempting to access either direction of Route 28 may have a difficult time determining an acceptable gap. The audit members reported that this is a complaint often filed by residents in the area. The ability to find and determine adequate gaps is exacerbated during periods of high congestion which audit members noted Route 28 experiences during peak hours. Along the Route 28 corridor and at unsignalized intersections and driveways, drivers that display risk-taking or impatient behavior may take inadequate gaps resulting in angle collisions which make up 20% of the corridor-wide collisions within this portion of the study area.

Audit members noted impaired, distracted, and erratic driving as other driver behaviors frequently seen along this corridor. While completing the site walk, audit members took note of alcohol bottles littering the sidewalks and edges of the roadway along the corridor. An audit member also noted that the police department has difficulty enforcing speed, impaired driving, and other violations related to driver behavior on Route 28 because the current cross section makes it difficult to run radar and safely pull drivers over. Distracted, impaired, or erratic driving is likely to lead to an increased prevalence of crashes. In 9% of the corridor-summarized crashes (11 crashes), a distracted driver was involved, and 81% of these crashes (9 out of 11) resulted in a non-fatal injury. In 7% of the corridor-summarized crashes (9 crashes), a driver operating in an erratic fashion was involved, and 78% of erratic driving crashes (7 crashes) resulted in a non-fatal injury and 11% (1 crash) resulted in a fatal injury. It should be noted that for the fatal injury, a witness observed the erratic behavior of the driver of one of the cars involved prior to the crash. In 2% of the corridor-summarized crashes (3 crashes), a driver operating under the influence was involved and resulted in non-fatal injuries.

Potential Enhancements:

1. Evaluate the potential to provide one or multiple pullover spaces at locations on the Route 28 corridor to allow for police enforcement of driving behaviors such as speeding, aggression, and impaired operation.
2. Consider tightening the turning radius at Pleasant Street to slow vehicles turning onto Pleasant Street from Route 28.
3. Evaluate alternative intersection control strategies, including a roundabout, at intersections along Route 28 to reduce vehicle speeds.
4. Consider collecting and analyzing speed data from existing speed feedback signs to gain a better understanding of driver behavior along the corridor throughout the year.
5. Evaluate traffic calming measures and/or a corridor-wide road diet on Route 28 reducing travel to one lane in each direction, either with or without a two-way left-turn lane (TWLTL), to decrease

speeds and eliminate unsafe lane changes. Consider opening pocket lanes or additional through lanes as applicable along the corridor.

6. Consider implementing a road-diet pilot on Route 28 as a short/medium term countermeasure to evaluate its effects on the corridor.
7. Evaluate signal timing adjustments at the signalized intersections along the corridor, such as coordinating the signals to create platooning on Route 28 or other signal timing methods, to generate gaps in traffic along Route 28.
8. Evaluate signal warrants at all unsignalized intersections throughout the corridor.

Safety Issue #2: Visibility

Issues

Corridor-Wide Issues

Sight line visibility issues were noted throughout the corridor. Audit members noted horizontal curvature with obstructions along the roadway on Route 28, particularly in the stretch between Ridgewood Road and Hillside Street. Trees located along the horizontal curves of Route 28 limit side-street drivers' visibility of upcoming vehicles. This may lead to a higher prevalence of rear-end crashes in this area as drivers are given a shorter time to react and decelerate in response to slowed or stopped vehicles. The curvature of the roadway may have contributed to nine of the rear-end collisions (corridor crash summary #21, #25, #40, #66, #85, #86, #115, #129, and #152) that occurred in this area.



Pictured: Horizontal curvature of Route 28 south of Ridgewood Road.

Insufficient lighting along the corridor was also noted as a concern by audit members. 29% (54 crashes) of the collisions reported within the study area occurred during low light conditions (dark, dawn, or dusk). A lack of sufficient lighting may decrease the visibility of vehicles, pedestrians, and cyclists traveling along the corridor, making it difficult for drivers to see other road users and react appropriately. If lighting conditions are not adequate along the corridor, this may have contributed to the prevalence of collisions occurring in low light conditions.

Audit members noted that trees, general vegetation, roadside elements like fences, and the roadway curvature along Route 28 and at certain side-street intersections can restrict the sight lines of drivers on the side streets attempting to access Route 28. The Route 28 intersections that the audit members mentioned with one or a combination of these issues were Heather Drive, Hilltop Street, Highland Street, Ridgewood Road, Nahanton Avenue, Sassamon Avenue, and Hillside Street. Although not every

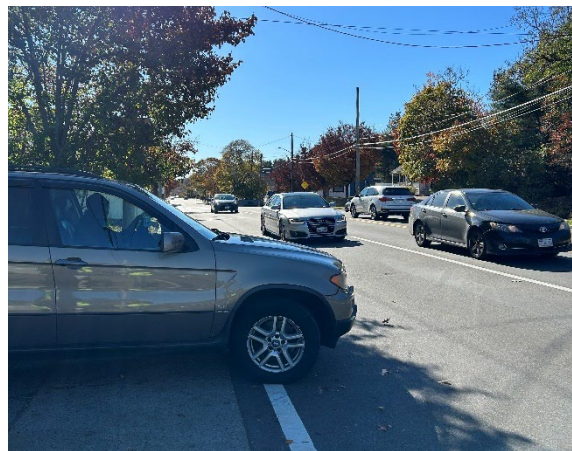
intersection mentioned previously experienced a crash related to these issues, there were some intersections with crashes that can be attributed to them, such as corridor crashes #126 (Route 28 at Sassamon Avenue), #132 (Route 28 at Hillside Street), and #156 (Route 28 at Hallen Avenue). Corridor crash #126 occurred between a vehicle traveling northbound on Route 28 and a vehicle taking a left onto Route 28 from Sassamon Avenue. Corridor crash #132 involved a vehicle traveling southbound on Route 28 and a driveway vehicle, south of Hilltop Street, turning left onto Route 28. Corridor crash #158 involved a vehicle taking a left onto Route 28 from Ridgewood Road. While collisions of this manner were not reported at the Route 28 intersections with Highland Street, Nahanton Avenue, and Hillside Street, the audit members noted that those locations may have a similar safety concern with the trees and roadway curvature – especially at Route 28 and Highland Street, which has an overgrown tree on the northwest corner. The audit members also added that the skewed angle these streets intersect Route 28 further exacerbates this safety concern.



Pictured: Intersection geometry at Sassamon Avenue.

590 Randolph Avenue Driveway (Currently 7-Eleven)

An audit member noted that a tree and other foliage south of the parking lot at 590 Randolph Avenue obstruct sight distance for vehicles attempting to exit at the driveway. During the audit, a vehicle was observed encroaching onto Route 28 while attempting to exit the driveway, likely due to these sight distance concerns. Three collisions (Reedsdale Road crash summary #1, #2, and #20) occurred between vehicles exiting the driveway at 590 Randolph Avenue and vehicles traveling on Route 28. These may have been a result of vehicles exiting the parking lot encroaching onto or prematurely pulling out onto Route 28 due to the sight distance concerns.



Pictured: Driver exiting driveway at 590 Randolph Avenue (Route 28) with sight lines blocked by trees.

Potential Enhancements:

1. Evaluate potential to make intersection angular geometry changes that create perpendicular intersections at Route 28 at Highland Street, Ridgewood Road, Nahanton Avenue, Sassamon Avenue, and Hillside Street to improve sight distance at these locations and slow down turning maneuvers from Route 28. Consider utilizing flex posts for a temporary trial of this potential enhancement to determine effectiveness of the perpendicular intersections.
2. Evaluate sight distance along horizontal curves throughout the corridor and provide advanced warning signage for upcoming blind driveways and/or side streets, horizontal alignment signage

with advisory speed plaques, or other applicable signage where sight distance may not be sufficient.

3. Evaluate if the appropriate sight distance is provided at the intersections of Route 28 at Highland Street, Ridgewood Road, Nahanton Avenue, Sassamon Avenue, Hillside Street, and the 590 Randolph Avenue parking lot exits and consider tree trimming and clearing vegetation to enhance it where necessary.
4. Consider conducting a lighting study along Route 28, and if feasible, provide additional lighting for areas with insufficient lighting along Route 28 to improve corridor visibility. Additional pedestrian level lighting should be considered at locations where pedestrian activity is high (e.g. intersections or mid-block crossings).
5. Consider converting side streets with poor sight distance and visibility into right-in and right-out only, to reduce angle crashes involving left turns at these locations.

Safety Issue #3: Access Management

Issues

Of the crashes summarized along the corridor, nine (Reed Street crash summary #5, corridor crash summary #77, #90, #97, and #99, and Reedsdale Road crash summary #1, #2, #19, and #23) were noted to be courtesy crashes. A courtesy crash is defined as a crash occurring when one vehicle traveling straight on the mainline in the lane closest to the turning vehicle stops to allow the vehicle to take a left but a vehicle in the farther lane traveling straight on the mainline does not see the turning vehicle causing an angle collision. It was noted within the study location that these crashes primarily occurred near commercial driveways at 590 Randolph Avenue (7-Eleven), 1126 Randolph Avenue (Eagle Farms), and 1139 Randolph Avenue (Newcomb Farms).



Pictured: Commercial driveway entrance at 590 Randolph Avenue (Route 28).

At 590 Randolph Avenue, courtesy crashes (Reedsdale Road crash summary #1, #2, #19, and #23) occurred between vehicles traveling northbound on Route 28 and vehicles accessing the driveway at 590 Randolph Avenue. At 1126 Randolph Avenue, a courtesy crash (corridor crash summary #99) occurred between a vehicle traveling northbound on Route 28 and a vehicle exiting the driveway at 1126 Randolph Avenue. At 1139 Randolph Avenue, a courtesy crash (corridor crash summary #97) occurred between a vehicle traveling southbound on Route 28 and a vehicle exiting the driveway at 1139 Randolph Avenue (Newcomb Farms). Some courtesy crashes were also reported at intersections along the corridor. Corridor crash summary #77 occurred at Heather Drive, corridor crash summary #90 occurred at Hallen Avenue, and Reed Street crash summary #5 occurred at Reed Street. The four-lane configuration of Route 28 along the corridor likely contributes to the prevalence of courtesy crashes. With two travel lanes in each

direction, there are two conflict points between vehicles on Route 28 turning left and vehicles traveling through on Route 28 in the opposite direction.

During the site walk, audit members specifically called out the driveways at 1139 Randolph Avenue (Newcomb Farms) and 590 Randolph Avenue (7-Eleven), and at 1126 Randolph Avenue (Eagle Farms) as being wider than necessary. A wider driveway may provide various access points for vehicles to turn left into and access any one of these commercial properties. This increases the opportunities for conflict with oncoming traffic. This condition may also make it difficult for opposing traffic on Route 28 to anticipate where that point of conflict will be since there is not a defined location for vehicles to be entering and exiting the driveway. Ten percent (13 crashes) of crashes were angle collisions involving left-turning vehicles and vehicles entering or exiting the commercial driveways. 5% (6 crashes) of these collisions were courtesy crashes, and the other 5% (7 crashes) were not courtesy crashes. The multiple conflict points created by the wide commercial driveways mentioned may contribute to the prevalence of angular collisions at the driveways.

Potential Enhancements:

1. Assess tightening and delineating entrance and exit curb cuts at commercial business entrances along Route 28. Evaluate the potential to reduce the number of curb cuts at each business entrance to one where possible. Consider utilizing planters or other temporary physical barriers to do so.
2. Evaluate a corridor-wide road diet. Consider installing a median, adding a TWLTL, or redistributing space to bicyclists and pedestrians, and decreasing to one lane of travel in each direction to reduce courtesy crashes.
3. To reduce the number of conflict points between left turning vehicles and vehicles traveling on Route 28, consider restricting the unsignalized side street intersections along the corridor to right in/right out only. Consider isolating left turns to the Route 28 and Eager Road intersection to provide access to the adjacent connected neighborhood. Conduct neighborhood outreach along with any considerations being made.

Safety Issue #4: Lane Designation Violations

Issues

Audit members flagged safety concerns at the Route 28 at Reedsdale Road intersection, which is a four-leg signalized intersection. Several audit members noted that vehicles traveling through this intersection often violate lane movement designations on the approaches. The northbound approach provides an exclusive left-turn lane and a shared left/through/right-turn lane. An audit member mentioned that vehicles have been observed completing a northbound through movement from the exclusive left-turn lane to continue traveling onto Randolph Avenue. Completing this movement would create an unintended conflict point with vehicles in the adjacent left/through/right-turn lane which may be making a left turn or also continuing through. While no collisions of this specific nature were reported during the study time period, Reedsdale Road crash summary #17 did occur due to a lane designation violation. A vehicle was attempting to turn left from Reedsdale Road westbound to Route 28 southbound when a collision occurred with a vehicle attempting to make the same left turn from the designated through/right-turn lane.



Pictured: Posted “right on red arrow after stop” signage on the Reedsdale Road eastbound approach.

Audit members also discussed a potential point of conflict on the Route 28 northbound approach between left-turning buses and other left turning vehicles in the adjacent lane since buses making this turn may cut into the neighboring lane while completing the turn. Although the crash data does not show any reported collisions of this manner during the study period, the audit team noted that it may be a potential safety



Pictured: Reedsdale Road westbound approach.

concern. Additionally, audit members noted during the site walk that the Reedsdale Road eastbound exclusive right-turn lane permits vehicles to turn right on red by providing a sign that says, “RIGHT ON RED AFTER STOP”. This was raised as a safety issue by audit members because during the site visit audit members noticed vehicles disregarding the sign and making a right turn without stopping to check for a potential conflict with southbound through vehicles and/or westbound left-turn vehicles. A vehicle taking a westbound left-turn from Reedsdale Road onto Route 28 may be difficult for an eastbound right-turning driver to notice as they may be focusing on southbound opposing vehicles. No collisions were reported during the study time period directly involving a Reedsdale Road westbound left turning vehicle and a Reedsdale Road eastbound right

turning vehicle. A rear-end collision (Reedsdale Road crash summary #21) did occur on the Reedsdale Road eastbound exclusive right turn approach where a vehicle was rear-ended after stopping while attempting to make a right turn onto Route 28 southbound. This rear-end may have occurred due to the turning vehicle stopping in response to a left turning vehicle coming from Reedsdale Road westbound.

During the site walk, the lack of advance signage indicating the lane distinctions was observed. Audit members noted that it may be difficult for drivers approaching the intersection to know the correct lane that they should be in. This may have contributed to the sideswipe collision (Reedsdale Road crash summary #22) reported at the intersection. The audit team also noted the absence of extension line pavement markings indicating the traffic movements within the intersection.

Finally, the Reedsdale Road westbound left turn may be a hard maneuver to complete due to the skewed approach at the intersection. Vehicles have to make a tighter turning maneuver to access the southbound direction and, combined with there being two southbound receiving lanes which may create confusion for drivers, drivers may not know which is the correct lane to turn into when going southbound.

Potential Enhancements:

1. Evaluate advance lane assignment signage and placement of guide signage at the Reedsdale Road intersection.
2. Consider installing extension line pavement markings to guide westbound left-turning vehicles through the Route 28 at Reedsdale Road intersection.
3. Evaluate the allowance of right-turns on red after stop and signal phasing for the Reedsdale Road eastbound exclusive right-turn approach at Route 28.

Safety Issue #5: Signalized Intersection Operations

Issues

Audit members highlighted the importance of this corridor as an emergency vehicle route due to its proximity to Beth Israel Deaconess Hospital on Reedsdale Road. Audit members familiar with the emergency vehicle operations in the area did not believe the signalized intersections along this corridor were equipped with an emergency vehicle preemption system; however, the site visit verified that they are present at the signalized intersections. Due to their reported low usage, audit members flagged that the emergency vehicle preemption located within the study area may not be in working condition. There were no reported collisions during the study period directly involving an emergency vehicle, but audit members noted that it may pose a safety concern if the emergency vehicle preemption is not working due to the importance of this corridor for emergency vehicle operations.



Pictured: Emergency Preemption System (Opticom) at Reed Street and Access Road intersection.

Audit members also noted the prevalence of red-light violations at the signalized intersections along this corridor. The issue was initially raised as something the police department observed frequently at the Reedsdale Road intersection but is seen more generally as an issue throughout the whole corridor. Red light violations may be a result of traffic delay and congestion that Route 28 experiences along the corridor during peak hours, causing drivers to become impatient and travel through a red light. Red light violations may also be the result of not providing adequate signal clearances for vehicles to slow down before the red signal. Red light violations may lead to a greater prevalence of angle collisions at signalized intersections. Reedsdale Road crash summary #16 occurred due to a red-light violation by a vehicle traveling eastbound on Reedsdale Road and resulted in injury.

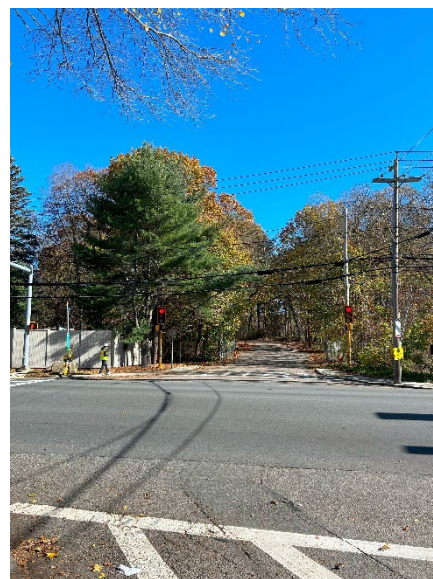
Route 28 at Reedsdale Road

During the site visit, audit members noted that the traffic signal cycle length at the Route 28 at Reedsdale Road intersection was long. It was noted that there was a long gap between pedestrian phases at this intersection due to the cycle length. Audit members noted that due to the inefficient timing at the intersection, pedestrians may become impatient and choose to cross the street outside of the designated pedestrian phase. It was also noted that 10 rear-end collisions (Reedsdale Road crash summary #4, #5, #10, #11, #13, #14, #15, #18, #21, and #24) occurred on the intersection approaches. Rear-end collisions occurring at this intersection may indicate that the signal clearances are inadequate and do not give the drivers enough time to react to a signal change and decelerate to a stop. The protected/permissive phasing and lane assignment on Reedsdale Road's westbound approach may contribute to left-turning vehicle crashes. Crash Summaries #7 and #8 involved conflicts between eastbound through vehicles and westbound left-turning vehicles. The phasing initially offers protected left-turns, transitioning to permissive after the yellow arrow clearance and no red indication, potentially confusing drivers about eastbound vehicle movements. Crash Summary #17 involved two westbound left-turning vehicles, suggesting unfamiliarity with lane use or inadequate markings and/or signage.

Route 28 at Reed Street and Access Road

At the intersection of Reed Street and Access Road, the audit members noticed a high prevalence of rear-end crashes occurring involving vehicles traveling on Route 28. Eight crashes of this nature occurred (Reed Street crash summary #2, #3, #4, #8, #11, #13, #15, and #16), which is 47% of all collisions summarized at this intersection. It was noted that this may be the result of inadequate clearance times at this intersection causing vehicles traveling at high speeds to stop suddenly in response to the light change.

An audit member also noted that a development is proposed to be constructed near this intersection with access to the property located on Access Road. This is expected to increase the volume of vehicles using the Access Road intersection approach both during construction and once the project is complete. During the audit, it



Pictured: Access Road approach.

was noted that it is unclear whether vehicle detection currently exists on this approach. With increased traffic on that approach, it may become necessary to install vehicle detection for vehicles trying to access Route 28 from Access Road.

Potential Enhancements:

1. Evaluate changing one of the two Reedsdale Road westbound approach lanes to an exclusive left-turn lane and providing a Flashing Yellow Arrow (FYA) for that approach..
2. Evaluate signal timings and recall settings at Reedsdale Road and Reed Street/Access Road intersections.
3. Evaluate signal clearances at the Reed Street and Access Road intersection and the Reedsdale Road intersection.
4. Confirm the presence of vehicle detection on the Access Road approach and consider installation of detection if necessary.
5. Evaluate the condition of the emergency vehicle preemption system at signalized intersections.

Safety Issue #6: Pedestrian, Bicycle, and Transit Accommodations

Issues

Within the study area, sidewalks are provided for pedestrian use along both sides of Route 28. Painted crosswalks are present crossing most minor streets along the corridor. However, crossings are only provided across Route 28 at the three signalized intersections within the study area (Route 28 at Reedsdale Road, Route 28 at Reed Street and Access Road, and Route 28 at Hillside Street), which means that there is a lack of crossing opportunities along the Route 28 corridor. Audit members noted during the site visit that the existing sidewalks are located directly adjacent to the roadway, are not provided with a grass buffer to provide separation from live traffic, and some portions of sidewalk have appeared to have a more significant cross slope than necessary for rain runoff, thus creating a narrow feel and an unbalanced walking surface.

It was further noted that the shoulders on Route 28 are narrow, putting the pedestrian path of travel close to active travel lanes. The team also noted that overgrown shrubbery along the sidewalks make the facilities feel narrower than they are and obligating pedestrians to walk single file through these areas. On trash pick-up day, trash cans put out on the side of the road may also narrow sidewalks or in some cases completely block them. Both the sidewalk width and proximity to high-speed traffic create an unpleasant walking environment for pedestrians. During the site walk, audit members also noted a break in the sidewalk on Route 28 near Reed Street where the sidewalk abruptly transitions to a patch of grass before



Pictured: Curb ramp at the Reedsdale Road intersection.

picking up again near the intersection. While signalized pedestrian crossings are provided at the three signalized intersections previously mentioned, audit members noted that the existing crossings do not meet ADA requirements for pedestrian crossings. The pedestrian pushbuttons and curb ramps are not compliant with current standards or accessibility requirements. As marked pedestrian crossings are concentrated at the three signalized intersections, there is a lack of crossing potential across Route 28 for pedestrians. This may result in pedestrians choosing to cross at unmarked locations where vehicles are not anticipating a pedestrian crossing. Of note is corridor crash number 37 where a pedestrian crossed Route 28 at the unsignalized intersection at Route 28 and Pleasant Street. This resulted in a rear-end collision as a vehicle stopped abruptly to avoid striking the pedestrian.

The corridor does not have existing dedicated bicycle infrastructure. During the site visit, the presence of some “bicycle stop on line for green” signage indicating that cyclists should ride in the street alongside vehicles was noted at the signalized intersections. Despite these signs being present, many of them were blocked and corresponding pavement markings were not provided indicating to the cyclists where to stop. Audit members also noted that the high vehicular speeds and volume along the corridor, combined with the lack of shoulders on the roadway, may create a high level of discomfort for cyclists riding alongside vehicles. Of the summarized crashes, one collision was reported along the corridor involving a cyclist (corridor crash summary #22) that resulted in a possible non-fatal injury.



Pictured: Existing bus and bike signage at Hillside Street.

In addition to pedestrian and cyclist accommodations, audit members also discussed transit accommodations along the corridor. Audit members noted that both the MBTA and the BAT run bus routes on Route 28 in this area. The MBTA provides 11 marked stops servicing the Route 240 bus within the study area. Audit members noted that ridership along these routes is not insignificant, and boardings and alightings along Route 28 within the study area are low. Most of the bus ridership may be generated outside the study area. The marked MBTA bus stops that do exist were also found to be deficient during the site walk. Many of the bus stop signs were faded and did not match current MBTA bus stop signage standards. Additionally, some bus stops, notably the stop at Route 28 and Pleasant Street, were provided only in one direction and did not have a reciprocal stop. Audit members noted a lack of pedestrian crossing generally along the corridor, but specifically called out the lack of crossing potential

in relation to the MBTA bus stops as many stops were not located near safe crossing locations for pedestrians. This issue specifically contributed to one collision (corridor crash summary #37) where a pedestrian crossed Route 28 at an unmarked crossing after deboarding the bus at the Route 28 and Pleasant Street stop.

Potential Enhancements:

1. Provide and/or improve bicycle facilities while ensuring connections to the existing bike network.
2. Maintain and landscape overgrown greenery to improve sidewalk access for pedestrians.

3. Evaluate locations, particularly at bus stops and at neighborhood side street intersections such as Pleasant Street, for additional crossings along with improved crossing facilities, such as Rectangular Rapid-Flashing Beacons (RRFBs) or Pedestrian Hybrid Beacons (PHBs) as compliant with the FHWA's Safe Transportation for Every Pedestrian (STEP) guidelines.
4. Update curb ramps at all intersections, as well as pedestrian-specific signal timing and pushbuttons at signalized intersections to be ADA-compliant.
5. Evaluate a corridor-wide road diet on Route 28 considering the redistribution of space for enhanced pedestrian and bicycle facilities.
6. Discuss with MBTA and BAT regarding potential improvements to transit service along the corridor including coordinating bus services to deliver more efficient and less redundant service, evaluating the potential for transit priority bus lanes and/or transit signal priority, and if MBTA and BAT buses can split departure headways at Ashmont Station.
7. Discuss with MBTA and BAT regarding their bus stop locations along the corridor and confirm that BAT stops within Milton and along Route 28 and, if so, consider providing updated bus stop signage for BAT and for MBTA with complete and updated information, consider providing bus stops reciprocal to existing stops, optimize bus stop locations, adding crosswalks near bus stops with RRFBs or PHBs (as allowed by standards), and evaluate opportunities for improved amenities at bus stops such as shelters and benches,
8. Evaluate each existing bus stop for ADA compliance and update the non-compliant stops.

Safety Issue #7: Through Traffic on Minor Roadways

Issues

Within the study area, there are seven unsignalized intersections and two signalized intersections where low-volume local streets intersect with Route 28. Most of these intersections form a T-intersection with Route 28, except for Ridgewood Road. On the east side of Route 28, Ridgewood Road, Nahanton Avenue, Sassamon Avenue, and Eager Road provide access to an isolated network of neighborhood streets that are only accessible from Route 28. On the west side of the roadway, Hallen Avenue and Reed Street (at the signalized intersection) provide access to another network of neighborhood streets that provide connections to other larger regional roads in the area as well as the Beth Israel Deaconess Hospital nearby. Towards the north end of the study area, Pleasant Street intersects with Route 28 at an unsignalized intersection and provides a connection for vehicles traveling towards East Milton Square.



Pictured: Existing “Do Not Enter” Signage on Hallen Avenue.

During the audit, Ridgewood Road, Eager Road, Hallen Avenue, Reed Street, and Pleasant Street were flagged as roads where cut-through traffic is often observed traveling. Additionally, an audit member mentioned that GPS systems often reroute vehicles from Route 28 through the isolated neighborhood on the east side to reconnect with Route 28 further along the corridor. Drivers following GPS will turn into the neighborhood on either Ridgewood Road or Eager Road, travel through the network of local roadways in the neighborhood and turn back onto Route 28 at either Eager Road or Ridgewood Road. In doing so, drivers avoid the signalized intersection at Route 28 at Hillside Street and congestion on Route 28. However, by following this route, drivers may be put in a greater risk by taking unnecessary left turns at unsignalized intersections or turning out of unsignalized intersections with poor sight distance.

Hallen Avenue and Reed Street were flagged as cut-through streets utilized by vehicles accessing the nearby hospital, and Pleasant Street was mentioned as being used by cut-through traffic moving in the direction of East Milton Square. Existing signage restricts entrance onto Hallen Avenue and Reed Street from 7 a.m. to 9 a.m. during weekdays, but it was noted that these restrictions are not enforced or adhered to. Audit members also noted during the site visit that the existing signage is primarily posted at the entrance to the restricted roadway and may not be highly visible to vehicles traveling on Route 28. Audit members noted that additional signage was installed on Route 28 within the crash years studied indicating the restricted movements; however, audit members noted that it may not be obvious which intersection the restriction signs are referring to when traveling on Route 28.

Audit members noted that many of these minor streets are narrow and do not provide a double center line or marked shoulders. Therefore, they likely were not designed to handle large volumes of vehicles or regional traffic. Further, increased volume on these side streets, particularly at unsignalized intersections, increases the number of vehicles attempting to make left turns across opposing traffic on Route 28 which may increase the prevalence of angle collisions. Of the summarized angle collisions, 12 directly involved a turning vehicle entering or exiting one of the highlighted minor roadways (Pleasant Street, Reed Street, Hallen Avenue, Ridgewood Road, Nahanton Avenue, Sassamon Avenue, and Eager Road). Of note is one crash (corridor crash summary #33) which resulted in a fatality and involved a vehicle turning onto Hallen Avenue in violation of the Do Not Enter restriction.

Potential Enhancements:

1. Evaluate potential installation of blank-out LED restriction signage at Hallen Avenue and Reed Street.
2. Evaluate potential for creating a dead end for vehicles only (pedestrian and bicycle connectivity to be maintained) on Pleasant Street including the possible impacts to Route 28 and Reedsdale Road, to prevent vehicles from using Pleasant Street as a cut-through.
3. Reevaluate current restriction signage on Reed Street and Hallen Avenue.
4. With neighborhood outreach, consider restricting unsignalized side street intersections to right in/right out only and consolidate left turns to one intersection.

Safety Issue #8: Intersection Geometry

Issues

Audit members noted that Reed Street, Highland Street, Ridgewood Road, Nahanton Avenue, Sassamon Avenue, and Hillside Street all intersect Route 28 at a skew. The audit members noted that the acute turning angle for vehicles turning onto one of these minor streets from Route 28 may be a safety concern. The posted speed limit on Route 28 is 45 mph at the location of these intersections along the corridor. Vehicles traveling at this speed may experience difficulty slowing to make an acute turn onto the minor roadway at these intersections. This may have contributed to three single vehicle crashes (corridor crash summary #28 and #150, and Reed Street crash summary #17) which involved out of control turning vehicles. These collisions occurred as vehicles traveling northbound on Route 28 attempted to make an acute turn at one of the previously mentioned intersections when the driver lost control of the vehicle and collided with the corner of the intersection. While crashes of this type were only reported at the intersection of Route 28 at Reed Street, Ridgewood Road, and Highland Street, the audit members noted that a similar concern may apply to all of the highlighted intersections where the minor street intersects Route 28 at a skew.



Pictured: Reed Street eastbound approach.

Route 28 at Hillside Street

During the site visit, the audit members also noted that the Hillside Street approach at its intersection with Route 28 was very wide. The width of the approach was flagged as a concern, as it may make it difficult for other vehicles traveling on Route 28 to anticipate the movements of turning vehicles. This may have contributed to two crashes at Route 28 at Hillside Street that were caused by turning vehicles. Corridor crash summary #21 was a rear-end collision that occurred as a vehicle traveling northbound on Route 28 was rear-ended after stopping to let an uninvolved vehicle turn left onto Hillside Street. Corridor crash summary #30 was a sideswipe collision that occurred when a vehicle traveling northbound on Route 28 made a lane change to avoid an uninvolved vehicle making a left-turn onto Hillside Street. These collisions may have occurred because the following vehicles were not anticipating where the turning vehicle would turn onto Hillside Street due to the wide approach.



Pictured: Separating island on Hallen Avenue eastbound approach

Route 28 at Hallen Avenue

Audit members noted during the site visit that the separating island on the Hallen Avenue approach is set back away from the intersection approximately 35 feet from the stop line. Audit members noted that this may cause confusion for drivers turning onto Hallen Avenue who may not be able to see the island immediately from Route 28. Although no crashes were attributed to this condition during the study period, audit participants noted that the design is non-standard and may cause driver confusion.

Potential Enhancements:

1. Consider reducing the width of the Hillside Street approach to the intersection with Route 28 to clarify the appropriate entry point for drivers.
2. Evaluate potential to make intersection angular geometry changes that create perpendicular intersections at Route 28 at Reed Street, Highland Street, Ridgewood Road, Nahanton Avenue, Sassamon Avenue, and Hillside Street to reduce acute turning angles, improve the side street visibility of Route 28, and slow down turning maneuvers from Route 28 at these locations. Consider utilizing flex posts for a temporary trial of geometry changes at these locations.
3. Evaluate the potential to extend the existing median on Hallen Avenue towards Route 28 to further define the departure lane on Hallen Avenue and avoid driver confusion.

Safety Issue #9: Lack of Appropriate Signage

Issues

During the site walk, audit members noted a lack of advance warning signage indicating upcoming unsignalized intersections throughout the corridor. Without advance intersection warning signage, drivers traveling on Route 28 may not be anticipating upcoming unsignalized intersections. This may result in a higher prevalence of rear-end collisions at these unsignalized intersections. Turning vehicles may stop suddenly to make a turn at one of the unsignalized intersections if they are not anticipating the upcoming intersection. Vehicles traveling on Route 28 may not expect vehicles to be slowing down to turn without warning of the upcoming unsignalized intersection. Both of these scenarios may result in a higher prevalence of rear-end collisions as drivers are not able to react to the slowing vehicle in time to decelerate and avoid a collision. Along the corridor, the lack of advanced warning signage likely contributed to 21 rear-end collisions which occurred at unsignalized intersections.

The audit members also noted that many of the intersections along the corridor were missing street name signage. It was noted that this may create navigation challenges for drivers unfamiliar with the area. This may result in vehicles stopping suddenly to make a turn onto the cross streets along the corridor which may also contribute to the prevalence of rear end collisions along the corridor. There were 28 rear-end collisions at both signalized and unsignalized intersections where the lack of street name signage may have contributed to the collision.

It is also of note that nine of the included collisions (Reed Street crash summary #12, and corridor crash summary #43, #53, #54, #95, #102, #117, #134, and #137) involved a deer entering the roadway, particularly in the stretch of Route 28 between Hallen Avenue and Ridgewood Road. Audit members noted a lack of deer crossing warning signage while completing the site walk. The signage that was present



Pictured: Deer advance warning sign.

was noted to be mounted at a high height which audit members familiar with design guidance noted was higher than advised. Vehicles traveling at high speeds on Route 28 may not have enough reaction time to safely decelerate and avoid a collision with a deer entering the roadway, especially if there is no advance warning allowing them to anticipate deer in this area. The deficiency of adequate advance warning signage may contribute to the prevalence of crashes involving deer in this area.

Potential Enhancements:

1. Evaluate installation of additional deer warning signage.
2. Evaluate the presence and location of street signs at intersections throughout the corridor.
3. Evaluate advance intersection warning signage at all intersections. Consider including street name plates along with advance warning signage to assist with navigation.

Summary of Road Safety Audit

Table 2 shows the estimated time frames of short-, mid-, and long-term solutions, as well as the cost ranges of low-, medium-, and high-cost projects. **Table 3** provides an estimate of the time frame and cost of each potential safety issue that may address each of the identified safety issues. Safety payoff determinations are also provided in **Table 3** and are based on engineering judgment.

Table 2: Estimated Time Frame and Costs Breakdown

Time Frame		Costs	
Short-Term	<1 Year	Low	<\$10,000
Mid-Term	1-3 Years	Medium	\$10,001-\$50,000
Long-Term	>3 Years	High	>\$50,000

Table 3: Potential Safety Enhancement Summary

Safety Issue	Potential Safety Enhancement	Safety Payoff	Time Frame	Cost	Jurisdiction
Driver Behavior	Evaluate the potential to provide one or multiple pullover spaces at locations on the Route 28 corridor to allow for police enforcement of driving behaviors such as speeding, aggression, and impaired operation.	Low	Mid-Term	High	MassDOT/DCR/ Town of Milton
Driver Behavior	Consider tightening the turning radius at Pleasant Street to slow vehicles turning onto Pleasant Street from Route 28.	Low	Mid-Term	Medium	Town of Milton/MassDOT
Driver Behavior	Evaluate alternative intersection control strategies, including a roundabout, at intersections along Route 28 to reduce vehicle speeds.	High	Long-Term	High	MassDOT/ Town of Milton
Driver Behavior	Consider collecting and analyzing speed data from existing speed feedback signs to gain a better understanding of driver behavior along the corridor throughout the year.	Low	Short-Term	Low	MassDOT
Driver Behavior	Evaluate traffic calming measures and/or a corridor-wide road diet on Route 28 reducing travel to one lane in each direction, either with or without a two-way left-turn lane (TWLTL), to decrease speeds and eliminate unsafe lane changes. Consider opening pocket lanes or additional through lanes as applicable along the corridor.	High	Long-Term	High	MassDOT
Driver Behavior	Consider implementing a road-diet pilot on Route 28 as a short/medium term countermeasure to evaluate its effects on the corridor.	High	Short/Mid-Term	Medium	MassDOT
Driver Behavior	Evaluate signal timing adjustments at the signalized intersections along the corridor, such as coordinating the signals to create platooning on Route 28 or other signal timing methods, to generate gaps in traffic along the corridor.	Medium	Mid-Term	Low	MassDOT
Driver Behavior	Evaluate signal warrants at all unsignalized intersections throughout the corridor.	Low	Short-Term	Low	MassDOT

Safety Issue	Potential Safety Enhancement	Safety Payoff	Time Frame	Cost	Jurisdiction
Visibility	Evaluate potential to make intersection angular geometry changes that create perpendicular intersections at Route 28 at Highland Street, Ridgewood Road, Nahanton Avenue, Sassamon Avenue, and Hillside Street to improve sight distance at these locations and slow down turning maneuvers from Route 28. Consider utilizing flex posts for a temporary trial of this potential enhancement to determine effectiveness of the perpendicular intersections.	Medium	Long-Term	High	Town of Milton/ MassDOT
Visibility	Evaluate sight distance along horizontal curves throughout the corridor and provide advanced warning signage for upcoming blind driveways and/or side streets, horizontal alignment signage with advisory speed plaques, or other applicable signage where sight distance may not be sufficient.	Medium	Long-Term	High	MassDOT
Visibility	Evaluate if the appropriate sight distance is provided at the intersections of Route 28 at Highland Street, Ridgewood Road, Nahanton Avenue, Sassamon Avenue, Hillside Street, and the 590 Randolph Avenue parking lot exits and consider tree trimming and clearing vegetation to enhance it where necessary.	Low	Mid-Term	Low	Town of Milton/ MassDOT/ Abutters
Visibility	Consider conducting a lighting study along Route 28, and if feasible, provide additional lighting for areas with insufficient lighting along Route 28 to improve corridor visibility. Additional pedestrian level lighting should be considered at locations where pedestrian activity is high (e.g. intersections or mid-block crossings).	Medium	Mid-Term	Medium	MassDOT
Visibility	Consider converting side streets with poor sight distance and visibility into right-in and right-out only, to reduce angle crashes involving left turns at these locations.	High	Mid-Term	Low	Town of Milton/ MassDOT

Safety Issue	Potential Safety Enhancement	Safety Payoff	Time Frame	Cost	Jurisdiction
Access Management	Assess tightening and delineating entrance and exit curb cuts at commercial business entrances along Route 28. Evaluate the potential to reduce the number of curb cuts at each business entrance to one where possible. Consider utilizing planters or other temporary physical barriers to do so.	Medium	Mid-Term	Low/Medium	MassDOT/Town of Milton/Abutters
Access Management	Evaluate a corridor wide road diet. Consider installing a median, adding a TWLTL, or redistributing space to bicyclists and pedestrians and decreasing to one lane of travel in each direction to reduce courtesy crashes.	High	Long-Term	High	MassDOT
Access Management	To reduce the number of conflict points between left turning vehicles and vehicles traveling on Route 28, consider restricting the unsignalized side street intersections along the corridor to right in/right out only. Consider isolating left turns to the Route 28 and Eager Road intersection to provide access to the adjacent connected neighborhood. Conduct neighborhood outreach along with any considerations being made.	Medium	Mid-Term	Medium	MassDOT/Town of Milton
Lane Designation Violations	Evaluate advance lane assignment signage and placement of guide signage at the Reedsdale Road intersection.	Low/Medium	Short-Term	Low	MassDOT/Town of Milton
Lane Designation Violations	Consider installing extension line pavement markings to guide westbound left-turning movements through the Route 28 at Reedsdale Road intersection.	Medium	Short-Term	Low	MassDOT
Lane Designation Violations	Evaluate the allowance of right-turns on red after stop and signal phasing for the Reedsdale Road eastbound exclusive right-turn approach at Route 28.	Medium	Short-Term	Low	MassDOT
Signalized intersection Operations	Evaluate providing Flashing Yellow Arrow (FYA) indications for the Reedsdale Road westbound left-turning movements at the Route 28 intersection.	Medium	Mid-Term	Medium	MassDOT
Signalized intersection Operations	Evaluate signal timings and recall settings at Reedsdale Road and Reed Street/Access Road intersections.	Medium	Short/Mid-Term	Medium	MassDOT

Safety Issue	Potential Safety Enhancement	Safety Payoff	Time Frame	Cost	Jurisdiction
Signalized intersection Operations	Evaluate signal clearances at the Reed Street and Access Road intersection and the Reedsdale Road intersection.	High	Short-Term	Low	MassDOT
Signalized intersection Operations	Confirm the presence of vehicle detection on the Access Road approach and consider installation of detection if necessary.	Low	Short-Term	Medium	MassDOT
Signalized intersection Operations	Evaluate condition of the emergency vehicle preemption at signalized intersections.	Low	Short-Term	Low	MassDOT
Pedestrian, Bicycle, and Transit Accommodations	Provide and/or improve bicycle facilities while ensuring connections to the existing bike network.	High	Long-Term	High	MassDOT
Pedestrian, Bicycle, and Transit Accommodations	Maintain and landscape overgrown greenery to improve sidewalk access for pedestrians.	Medium	Short-Term	Low	MassDOT/Town of Milton/Abutters
Pedestrian, Bicycle, and Transit Accommodations	Evaluate locations, particularly at bus stops and at neighborhood side street intersections such as Pleasant Street, for additional crossings along Route 28 with improved crossing facilities, such as Rectangular Rapid Flashing Beacons (RRFBs) or Pedestrian Hybrid Beacons (PHBs), as compliant with the FHWA's Safe Transportation for Every Pedestrian (STEP) guidelines.	High	Mid-Term	Medium	MassDOT
Pedestrian, Bicycle, and Transit Accommodations	Update curb ramps at all intersections, as well as pedestrian-specific signal timing and pushbuttons at intersections to be ADA-compliant.	Low	Mid-Term	Medium	MassDOT
Pedestrian, Bicycle, and Transit Accommodations	Evaluate a corridor-wide road diet on Route 28 considering the redistribution of space for enhanced pedestrian and bicycle facilities.	High	Long-Term	High	MassDOT

Safety Issue	Potential Safety Enhancement	Safety Payoff	Time Frame	Cost	Jurisdiction
Pedestrian, Bicycle, and Transit Accommodations	Discuss with MBTA and BAT regarding potential improvements to transit service along the corridor including coordinating bus services to deliver more efficient and less redundant service, evaluating the potential for transit priority bus lanes and/or transit signal priority, and if MBTA and BAT buses can split departure headways at Ashmont Station.	Medium	Mid/Long-Term	Medium	MBTA/BAT/MassDOT
Pedestrian, Bicycle, and Transit Accommodations	Discuss with MBTA and BAT regarding their bus stop locations along the corridor and confirm that BAT stops within Milton and along Route 28 and, if so, consider providing updated bus stop signage for BAT and for MBTA with complete and updated information, consider providing bus stops reciprocal to existing stops, optimize bus stop locations, adding crosswalks near bus stops with RRFB's or PHB's (as allowed by standards), and evaluate opportunities for improved amenities at bus stops such as shelters and benches	Medium	Mid/Long-Term	Medium	MBTA/BAT/MassDOT
Through Traffic on Minor Roadways	Evaluate potential installation of blank-out LED restriction signage at Hallen Avenue and Reed Street.	Medium	Short-Term	Medium	Town of Milton/MassDOT
Through Traffic on Minor Roadways	Evaluate potential for creating a dead end for vehicles only (pedestrian and bicycle connectivity to be maintained) on Pleasant Street including the possible impacts to Route 28 and Reedsdale Road, to prevent vehicles from using Pleasant Street as a cut-through.	Medium	Long-Term	Medium	MassDOT/Town of Milton
Through Traffic on Minor Roadways	Reevaluate current restriction signage on Reed Street and Hallen Avenue.	Low	Short-Term	Low	MassDOT/Town of Milton
Through Traffic on Minor Roadways	With neighborhood outreach, consider restricting unsignalized side street intersections to right in/right out only and consolidate left turns to one intersection.	Medium	Mid-Term	Medium	MassDOT/Town of Milton
Intersection Geometry	Consider reducing the width of the Hillside Street approach to the intersection with Route 28 to clarify the appropriate entry point for drivers.	Low	Mid-Term	Medium	MassDOT/Town of Milton

Safety Issue	Potential Safety Enhancement	Safety Payoff	Time Frame	Cost	Jurisdiction
Intersection Geometry	Evaluate potential to make intersection angular geometry changes that create perpendicular intersections at Route 28 at Reed Street, Highland Street, Ridgewood Road, Nahanton Avenue, Sassamon Avenue, and Hillside Street to reduce acute turning angles at these locations, improve the side street visibility of Route 28, and slow down turning maneuvers from Route 28. Consider utilizing flex posts for a temporary trial of geometry changes at these locations.	Medium	Long-Term	High	Town of Milton/ MassDOT
Intersection Geometry	Evaluate the potential to extend the existing median on Hallen Avenue towards Route 28 to further define the departure lane on Hallen Avenue and avoid driver confusion.	Low	Short-Term	Medium	Town of Milton
Lack of Appropriate Signage	Evaluate installation of additional deer warning signage along Route 28.	Low	Short-Term	Low	MassDOT
Lack of Appropriate Signage	Evaluate the presence and location of street signs at intersections throughout the corridor.	Low	Short-Term	Low	Town of Milton
Lack of Appropriate Signage	Evaluate advance intersection warning signage at all intersections. Consider including street name plates along with advance warning to assist with navigation.	Low	Short-Term	Low	Town of Milton/MassDOT

Appendix A. RSA Meeting Agenda

Agenda

Road Safety Audit

Milton, MA

Randolph Avenue (Route 28) Corridor

Meeting Location:

Milton Town Hall

525 Canton Avenue, Milton, MA

Wednesday, November 8, 2023

9:00 AM – 2:00 PM

Type of meeting:

Road Safety Audit

Attendees:

Invited Participants to Comprise a Multidisciplinary Team

Please bring:

Thoughts and Enthusiasm!!

9:00 AM

Welcome and Introductions

9:15 AM

Discussion of Safety Issues

- Crash history – provided in advance
- Existing Geometries and Conditions
- Observe site from videos, street view, aerial maps
- As a group, identify areas for improvement

10:00 AM

Site Visit – Randolph Avenue (Route 28)

12:30 PM

Discussion of Potential Improvements

Meet at Milton Town
Hall (Blute
Conference Room)

- Discuss observations and finalize safety issue areas
- Discuss potential improvements and finalize recommendations

2:00 PM

Adjourn for the Day – but the RSA has not ended

Instructions for Participants:

- Before attending the RSA on November 8, 2023, participants are encouraged to drive through the interchange and complete/consider elements on the RSA Prompt List with a focus on safety.
- All participants will be actively involved in the process throughout. Participants are encouraged to come with thoughts and ideas, but are reminded that the synergy that develops and respect for others' opinions are key elements to the success of the overall RSA process.
- After the RSA meeting, participants will be asked to comment and respond to the document materials to assure it is reflective of the RSA completed by the multidisciplinary team.

Appendix B. RSA Audit Team Contact List

Participating Audit Team Members

Date: November 8, 2023 Location: Town of Milton Town Hall

Audit Team Members	Agency/Affiliation	Email Address	Phone Number
Bill Kuttner	Central Transportation Planning Staff (CTPS)	bkuttner@ctps.org	617-241-9383
Stephen Doody	Department of Conservation and Recreation (DCR)	Stephen.doody@mass.gov	
Sam Oppong-Krampah	Department of Conservation and Recreation (DCR)	Samuel.oppo- ngkrampah@mass.gov	
Mark Abbott	MassDOT D6 Traffic	Mark.s.abbott@dot.state.ma.us	
Josh Bartus	MassDOT Major Projects	Joshua.bartus@dot.state.ma.us	
Kevin Chiu	MassDOT D6 Projects	Kevin.chiu@dot.state.ma.us	
Michelle Deng	MassDOT HQ Traffic and Safety	Michelle.deng@dot.state.ma.us	857-368-9637
Evelyn Densmore	MassDOT HQ Traffic and Safety	Evelyn.s.densmore@dot.state.ma.us	
Julie Dombroski	MassDOT D6	Julie.l.dombroski@dot.state.ma.us	
Joseph Doucette	MassDOT D6	Joseph.k.doucette@dot.state.ma.us	
Kevin Fitzgerald	MassDOT HQ Traffic and Safety	Kevin.t.fitzgerald@dot.state.ma.us	857-368-9619
Lisa Giunta	MassDOT D6	Lisa.m.giunta@dot.state.ma.us	
Benjamin Muller	MassDOT D6	Benjamin.muller@dot.state.ma.us	
Maximilian Pospichal Pavlov	MassDOT Highway Design	Maximilian.d.pavlov@dot.state.ma.us	
Aishwarya Sajeevakumaran	MassDOT	Aishwarya.y.sajeevakumaran@dot.state.ma.us	
Jarad Seligman	MassDOT	Jarad.b.seligman@dot.state.ma.us	
Mark Alba	Milton Police Department	malba@mpdmilton.org	617-898-4814
Chase Berkeley	Town of Milton	cberkeley@townofmilton.org	617-898-4971
Tim Czerwienski	Town of Milton	tczerwienski@townofmilton.org	617-898-4847
Angela Bleeker	Howard Stein Hudson	ableeker@hshassoc.com	978-844-5162
Samuel Fazioli	Howard Stein Hudson	sfazioli@hshassoc.com	978-844-5256
Allison Kelly	Howard Stein Hudson	akelly@hshassoc.com	617-348-3324
Michaela Siegert	Howard Stein Hudson	msiegert@hshassoc.com	617-348-3377

Appendix C. Detailed Crash Data

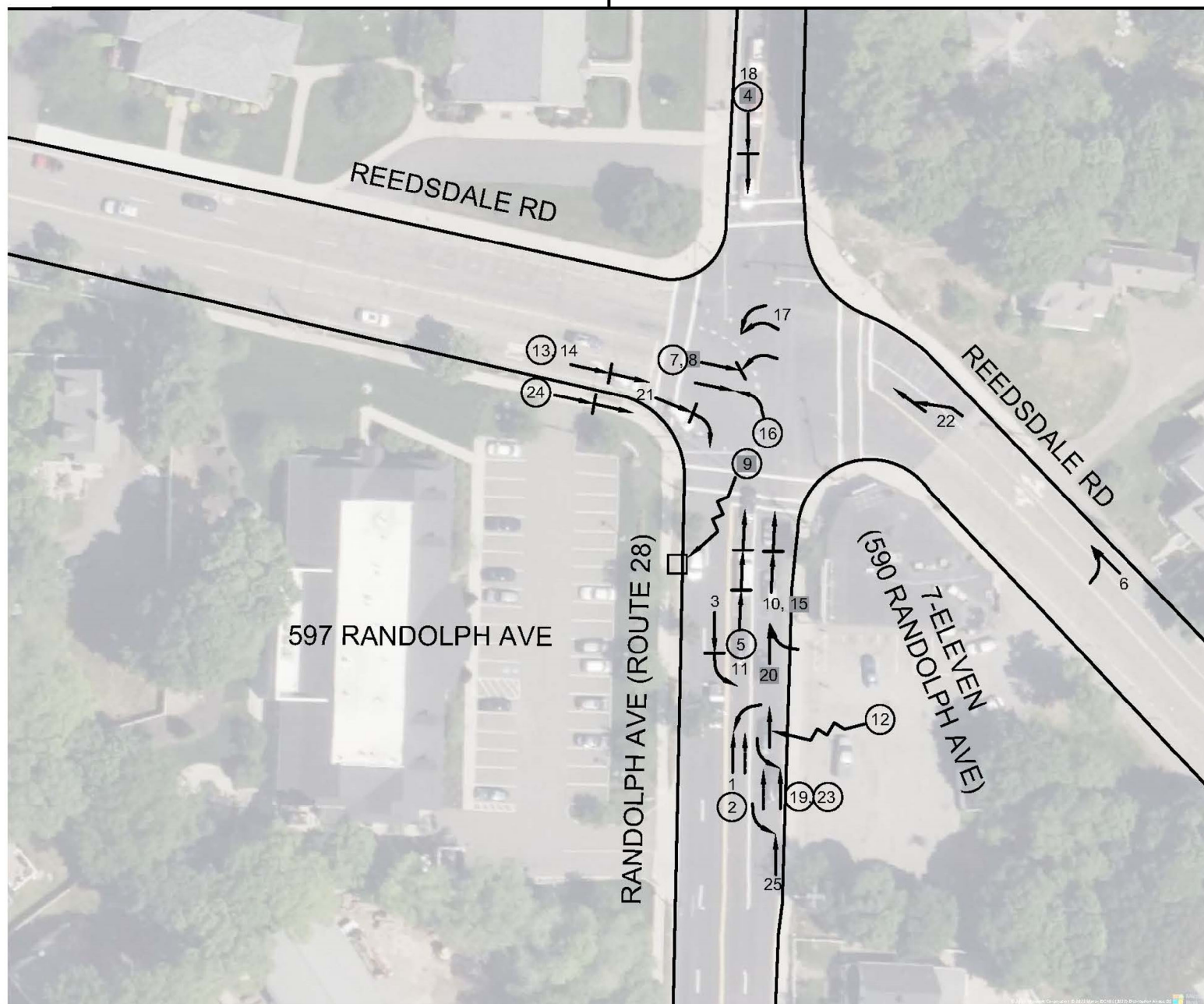



















HOWARD STEIN HUDSON

MILTON, MA
RANDOLPH AVENUE (ROUTE 28) AT REEDSDALE ROAD
REGION: MAPC

COLLISION DIAGRAM

TIME PERIOD ANALYZED: 2017 - 2020
SOURCE OF CRASH DATA: MILTON POLICE DEPARTMENT
DATE PREPARED: JULY 2023
PREPARED BY: A. KELLY



SYMBOLS	TYPES OF CRASH	SEVERITY
 Moving Vehicle	 Rear End	 Injury
 Backing Vehicle	 Head On	 Fatal
 Non-Involved Vehicle	 Angle	
 Pedestrian	 Turning Movement	
 Bicycle	 Sideswipe	
 Animal	 Out of Control	
 Parked Vehicle	 Non-daylight Crash	
 Fixed Object		



NOT TO SCALE

Crash Report Batch Crash Reports - Randolph Ave (Route 28) at Reedsdale Road (2017 - 2020)

Motor Vehicle Crash

Police Report

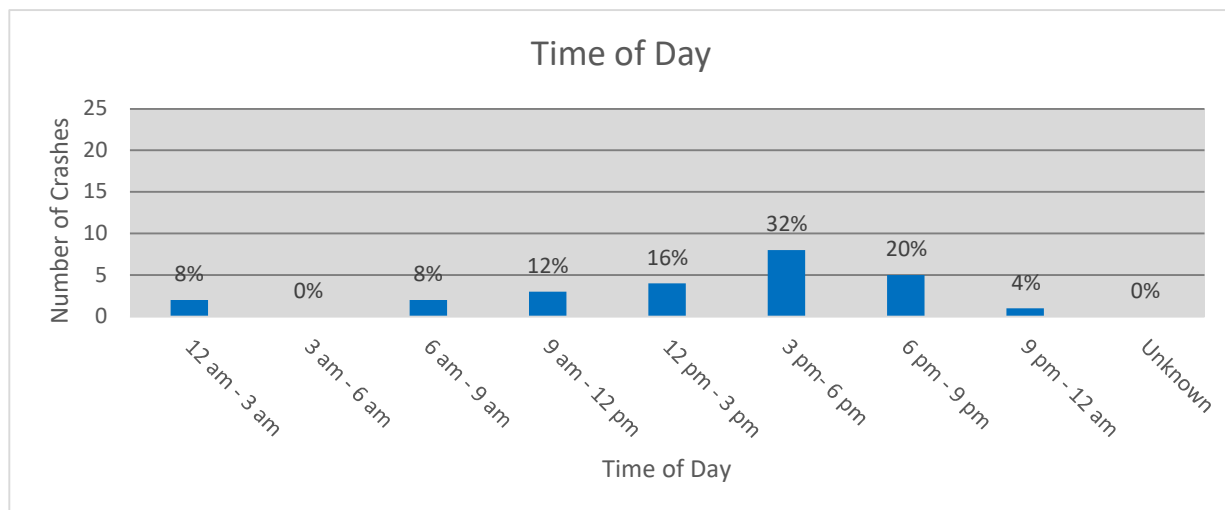
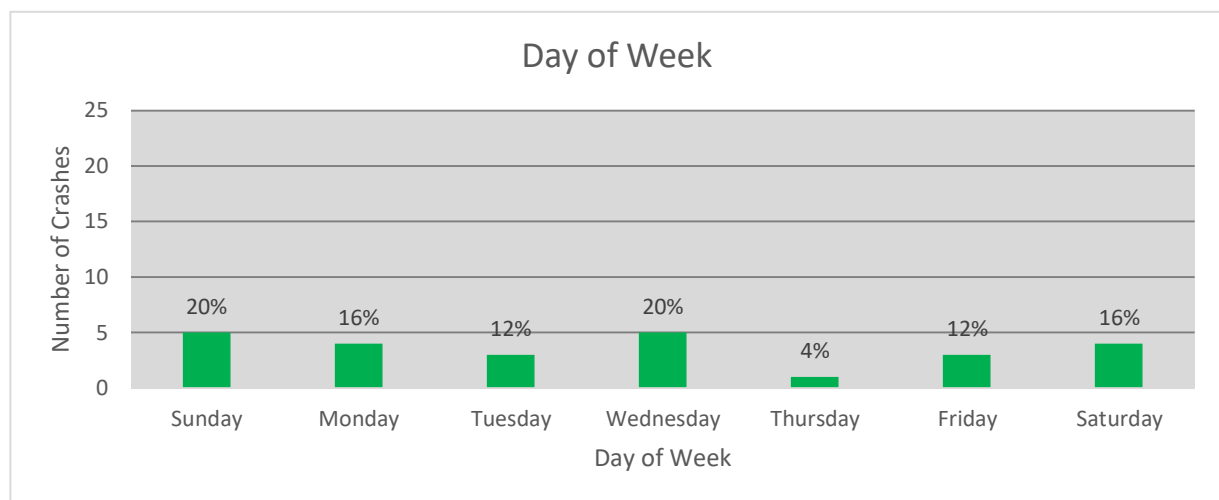
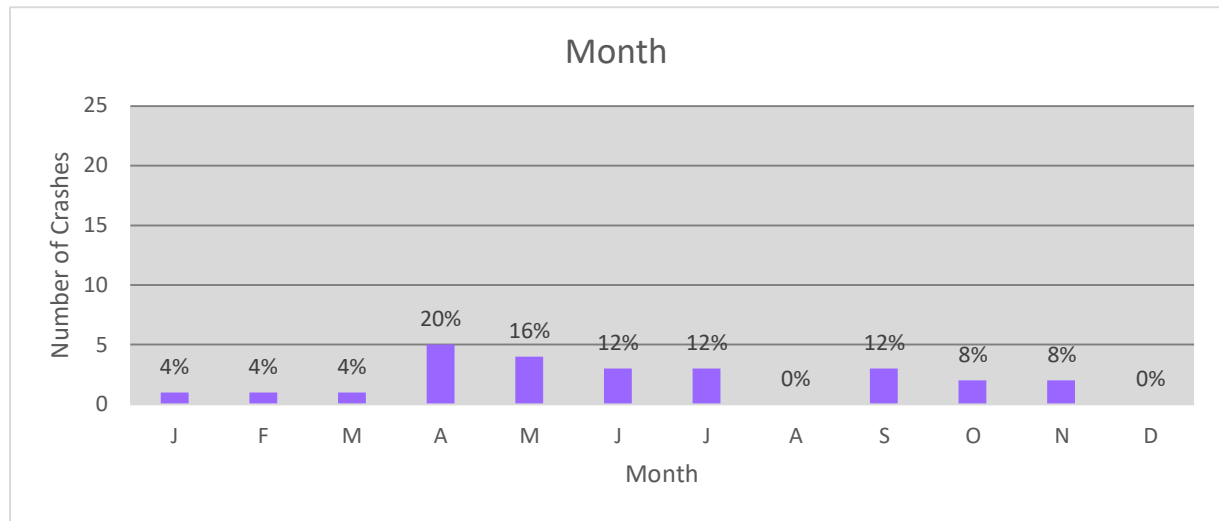
Crash Diagram Ref #	Crash Date	Crash Time	D1 Age	D2 Age	D3 Age	Driver Contributing Code	Max Injury Status	Light Condition	Weather Condition	Road Surface	Manner of Collision	Comments
#	mm/dd/yy	hh:mm	#	#	#	Type	Type	Type	Type	Type	Type	
1	02/26/2017	4:35 PM	30	32		No improper driving	No injury	Daylight	Clear	Dry	Angle	V1 was attempting to turn left onto Randolph Ave (Rte 28) in the SB direction from the parking lot at 590 Randolph Ave. V2 was traveling NB on Randolph Ave (Rte 28) in the left travel lane when V2 struck V1 on the driver side. This was a courtesy crash.
2	05/10/2017	12:58 PM	69	26		D2:(Failed to yield right of way)	Non-fatal injury - Possible	Daylight	Cloudy	Dry	Angle	V2 was attempting to turn left onto Randolph Ave (Rte 28) in the SB direction from the parking lot at 590 Randolph Ave. V1 was traveling NB on Randolph Ave (Rte 28) in the left travel lane when V2 struck V1 on the passenger side. This was a courtesy crash.
3	06/21/2017	7:49 PM	17	20		Unknown	No injury	Daylight	Clear	Dry	Rear-end	V1 and V2 were both traveling SB on Randolph Ave (Rte 28) in the left travel lane. V1 slowed to attempt to turn left into the parking lot at 590 Randolph Ave and was rear-ended by V2.
4	09/24/2017	10:49 PM	25	50		D2:(Inattention)	Non-fatal injury - Non-incapacitating	Dark - lighted roadway	Clear	Dry	Rear-end	V1 was stopped at the red light traveling SB on Randolph Ave (Rte 28) at the Reedsdale Rd intersection. V2 was traveling SB on Randolph Ave (Rte 28) and rear-ended V1.
5	09/30/2017	3:31 PM	26	37	77	No improper driving	Non-fatal injury - Non-incapacitating	Daylight	Cloudy; Rain	Wet	Rear-end	V1, V2, and V3 were traveling NB on Randolph Ave (Rte 28) at the Reedsdale Rd intersection when V1 rear-ended V2. This caused V2 to rear-end V3. The operator of V1 was distracted and was not fully paying attention to the road.
6	11/06/2017	3:19 PM	40	33		No improper driving	No injury	Daylight	Clear	Dry	Angle	V1, a school bus, was traveling WB on Reedsdale Rd. V2 was attempting to turn left onto Reedsdale Rd from 590 Randolph Ave in the WB direction when it struck V1 on the left side.
7	11/22/2017	8:29 AM	59	72		Unknown	Non-fatal injury - Possible	Daylight	Rain	Wet	Head-on	V1 was traveling EB on Reedsdale Rd towards the Randolph Ave (Rte 28) intersection. V2 was traveling WB on Reedsdale Rd and attempted to make a left turn onto Randolph Ave (Rte 28). V2 collided with V1. Both drivers claimed they had the green indication.
8	01/13/2018	8:07 PM	37	18		Unknown	No injury	Dark - lighted roadway	Clear	Dry	Head-on	V1 was traveling EB on Reedsdale Rd towards the Randolph Ave (Rte 28) intersection. V2 was traveling WB on Reedsdale Rd and attempted to make a left turn onto Randolph Ave (Rte 28) when the vehicles collided. Both drivers claimed they had the green indication.
9	04/08/2018	1:16 AM	32			Unknown	Non-fatal injury - Possible	Dark - lighted roadway	Clear	Dry	Single vehicle crash	V1 turned right onto Randolph Ave (Rte 28) traveling SB from Reedsdale Rd when the operator clipped a curb. This caused the operator to lose control of the vehicle and strike a telephone pole.
10	04/10/2018	10:43 AM	49	50		D1:(Distracted)	No injury	Daylight	Cloudy; Clear	Wet	Rear-end	V1 and V2 were traveling NB on Randolph Ave (Rte 28) at the Reedsdale Rd intersection when V2 slowed down and was rear-ended by V1. The operator of V1 was distracted looking at a building outside of the vehicle.
11	04/23/2018	4:28 PM	22	41	56	No improper driving	No injury	Daylight	Clear	Dry	Rear-end	V1, V2, and V3 were traveling NB on Randolph Ave (Rte 28) when V2 and V3 stopped at the red light at the Reedsdale Rd intersection. V1 then rear-ended V2 causing V2 to rear-end V3.
12	05/14/2018	4:02 PM	31	Unknown		Unknown	Non-fatal injury - Possible	Daylight	Clear	Dry	Angle	V1 was stopped at the red light traveling NB on Randolph Ave (Rte 28) at the Reedsdale Rd intersection. V2 (a truck), unoperated, was parked in the parking lot at 590 Randolph Ave when it rolled onto Randolph Ave (Rte 28) striking V1 on the passenger side.
13	06/04/2018	3:56 PM	55	49		No improper driving	Non-fatal injury - Possible	Daylight	Rain; Cloudy	Wet	Rear-end	V1 was stopped at the red light traveling EB on Reedsdale Rd at the Randolph Ave (Rte 28) intersection. V2 was traveling EB on Reedsdale Rd and rear-ended V1.
14	06/19/2018	2:50 PM	54	Unknown		No improper driving	No injury	Daylight	Clear	Dry	Rear-end	V1 was stopped at a red light at the Randolph Ave (Rte 28) intersection traveling EB on Reedsdale Rd. V2 was traveling EB on Reedsdale Rd and rear-ended V1.
15	07/07/2018	12:30 AM	26	20		D2:(Distracted)	No injury	Dark - lighted roadway	Clear	Dry	Rear-end	V1 was stopped at the red light traveling NB on Randolph Ave (Rte 28) at the Reedsdale Rd intersection. V2 was traveling NB on Randolph Ave (Rte 28) and rear-ended V1. The operator of V2 was distracted by an electronic device.

Crash Diagram Ref #	Crash Date	Crash Time	D1 Age	D2 Age	D3 Age	Driver Contributing Code	Max Injury Status	Light Condition	Weather Condition	Road Surface	Manner of Collision	Comments
#	mm/dd/yy	hh:mm	#	#	#	Type	Type	Type	Type	Type	Type	
16	05/03/2019	4:11 PM	73	21		Unknown	Suspected Minor Injury	Daylight	Rain; Cloudy	Wet	Angle	V2 was making a left turn from Randolph Ave (Rte 28) NB into Reedsdale Rd traveling WB. V1 was stopped at the light traveling EB on Reedsdale Rd when the car randomly accelerated through the red light and intersection and then struck V2 on the driver side.
17	07/17/2019	4:18 PM	31	26		Failure to keep in proper lane or running off road	No Apparent Injury	Daylight	Rain	Unknown	Angle	V1 was traveling WB in the inside lane of Reedsdale Rd and V2 was traveling WB in the outside lane of Reedsdale Rd at the Randolph Ave (Rte 28) intersection. Both vehicles were attempting to turn left onto Randolph Ave (Rte 28). As V1 began to turn, V2 turned and struck the side of V1.
18	07/23/2019	9:31 AM	24	Unknown		No improper driving	No Apparent Injury	Daylight	Rain	Unknown	Rear-end	V1 was stopped at the red light traveling SB on Randolph Ave (Rte 28) at the Reedsdale Rd intersection. V2 was traveling SB on Randolph Ave (Rte 28) and rear-ended V1.
19	09/04/2019	6:47 PM	36	47		D2:(Inattention)	Suspected Minor Injury	Daylight	Clear	Dry	Angle	V2 was traveling SB on Randolph Ave (Rte 28) and attempted to turn left into the parking lot at 590 Randolph Ave. V1 was traveling NB on Randolph Ave (Rte 28) in the right lane and was struck on the passenger side by V1. This was a courtesy crash.
20	03/05/2020	7:10 PM	76	31		No improper driving	No Apparent Injury	Dark - lighted roadway	Clear	Dry	Angle	V1 was traveling NB on Randolph Ave (Rte 28) approaching the Reedsdale Rd intersection. V2 was turning right onto Randolph Ave (Rte 28) heading NB from the parking lot at 590 Randolph Ave when it struck V1 on the passenger side.
21	04/11/2020	11:21 AM	45	51		No improper driving	No Apparent Injury	Daylight	Clear	Dry	Rear-end	V1 and V2 were both traveling EB on Reedsdale Rd attempting to make a right turn onto Randolph Ave (Rte 28). V2, who was traveling in front of V1, stopped midway through the turn. At this point, V1 rear-ended V2.
22	04/12/2020	12:45 PM	48	22		D2:(Inattention)	No Apparent Injury	Daylight	Clear	Dry	Sideswipe, same direction	V1, a delivery truck, was stopped in the left lane at the red light at the Randolph Ave (Rte 28) intersection traveling WB on Reedsdale Rd. V2 was traveling WB on Reedsdale Rd and sideswiped V1 on the passenger side passing on the right.
23	05/31/2020	7:44 PM	27	22	Unknown	No improper driving	Suspected Minor Injury	Daylight	Clear	Dry	Angle	V2 was traveling SB on Randolph Ave (Rte 28) and attempted to turn left into the parking lot at 590 Randolph Ave. V1 was traveling NB on Randolph Ave (Rte 28) in the right lane and struck V1 on the passenger side. This was a courtesy crash.
24	10/23/2020	8:48 AM	25	21		D2:(Inattention)	Possible Injury	Daylight	Clear	Dry	Rear-end	V1 was stopped at the red light traveling EB on Reedsdale Rd at the Randolph Ave (Rte 28) intersection. V2 was traveling EB on Reedsdale Rd and rear-ended V1. The operator of V2 was distracted by something outside of the vehicle.
25	10/23/2020	12:57 PM	58	50		No improper driving	No Apparent Injury	Daylight	Clear	Dry	Angle	V2 was traveling SB on Randolph Ave (Rte 28) and attempted to turn left into the parking lot at 590 Randolph Ave. V1 was traveling NB on Randolph Ave (Rte 28) in the right lane and struck V2 on the passenger side.

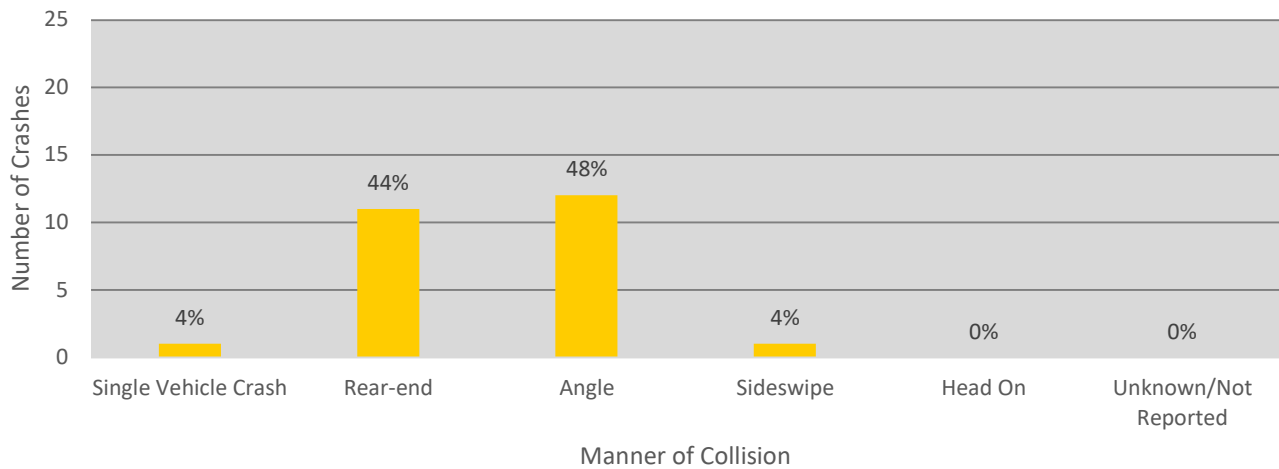
Collision Trends - Randolph Avenue (Route 28) at Reedsdale Road

Milton, MA

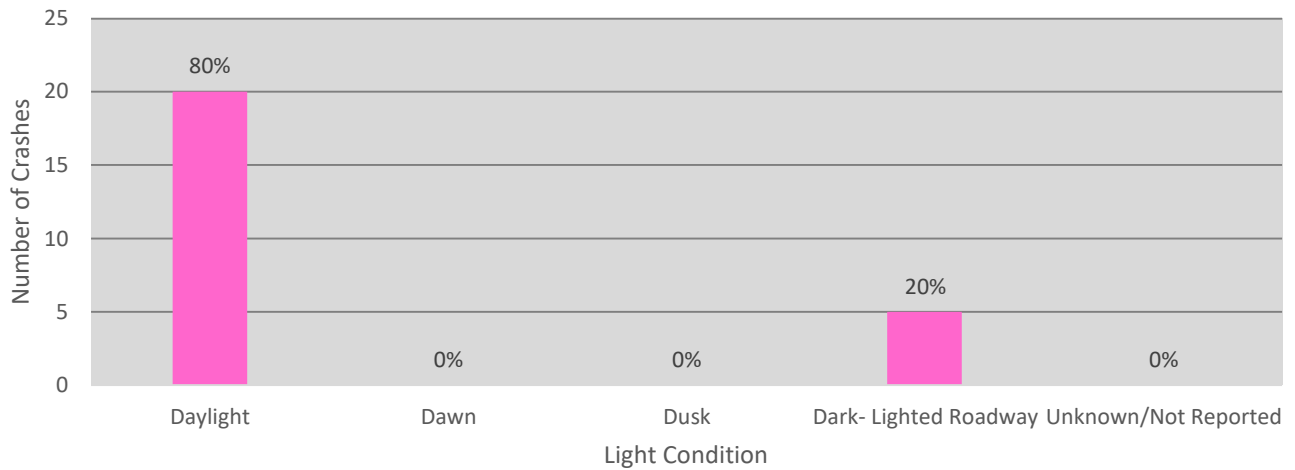
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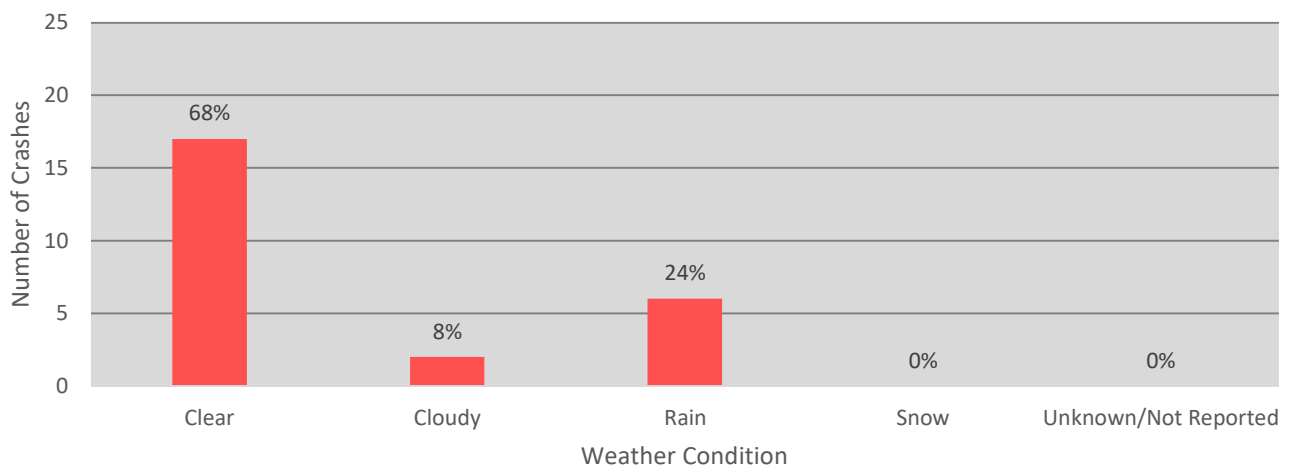
Manner of Collision



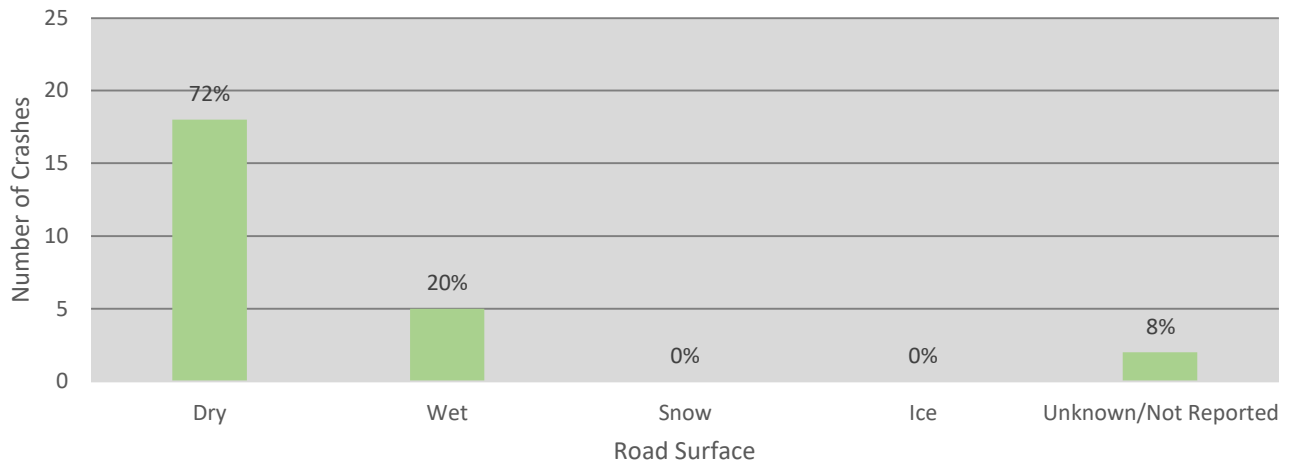
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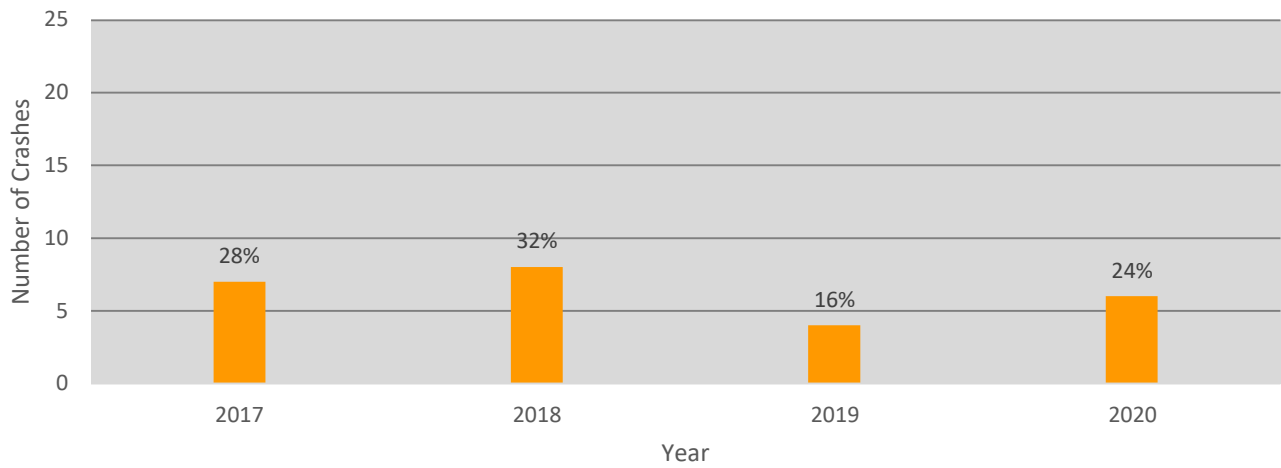
Weather Condition



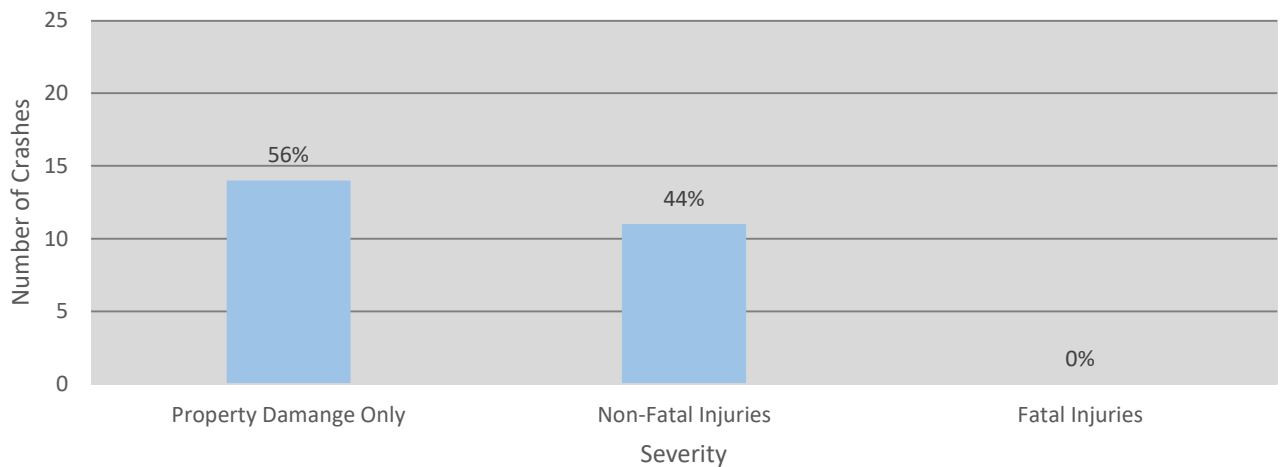
Road Surface



Year



Severity



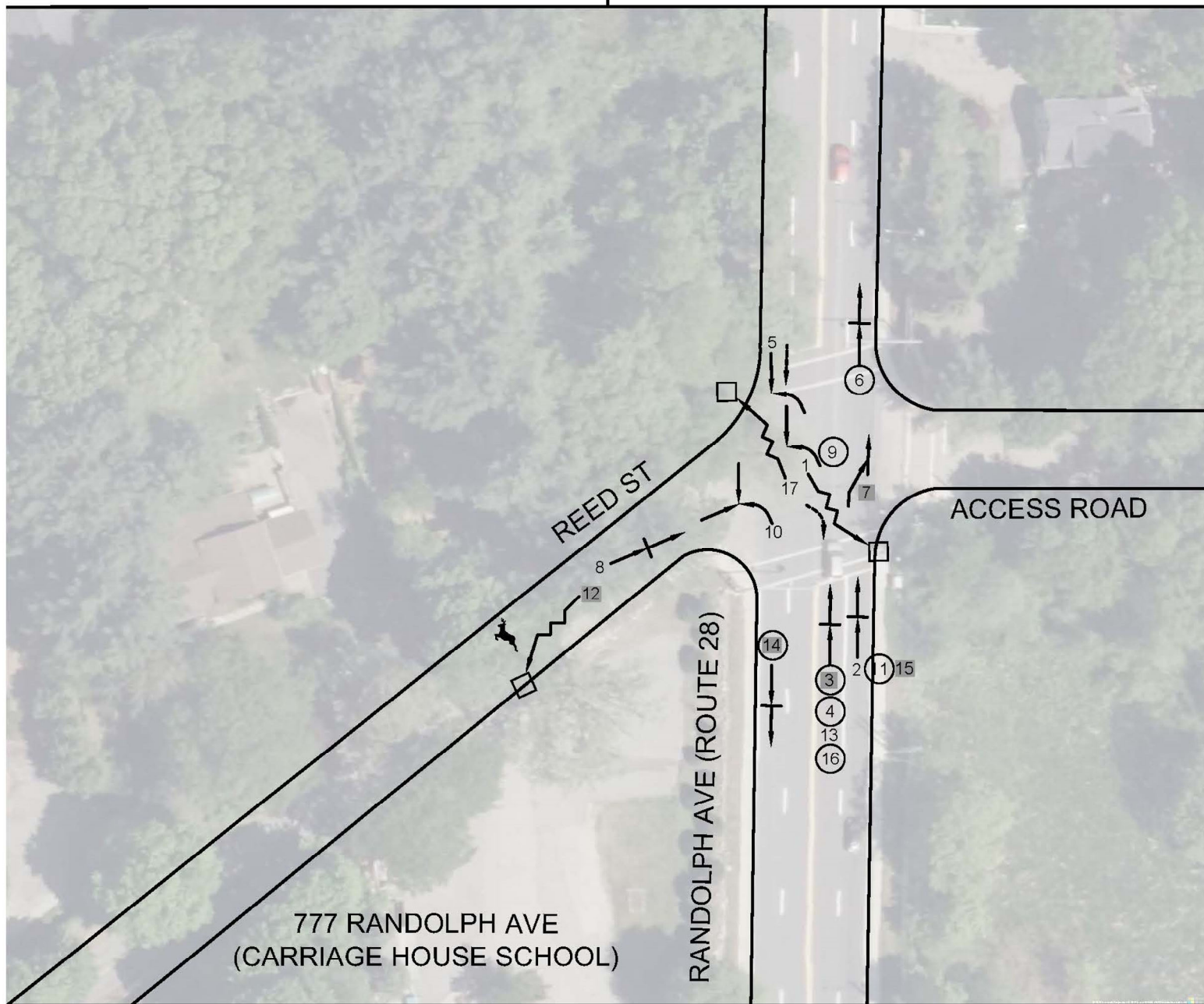


HOWARD STEIN HUDSON

MILTON, MA
RANDOLPH AVENUE (ROUTE 28) AT REED STREET
REGION: MAPC

COLLISION DIAGRAM

TIME PERIOD ANALYZED: 2017 - 2020
SOURCE OF CRASH DATA: MILTON POLICE DEPARTMENT
DATE PREPARED: JULY 2023
PREPARED BY: A. KELLY



SYMBOLS	TYPES OF CRASH	SEVERITY
Moving Vehicle	Rear End	Injury
Backing Vehicle	Head On	Fatal
Non-Involved Vehicle	Angle	
Pedestrian	Turning Movement	
Bicycle	Sideswipe	
Animal	Out of Control	
Parked Vehicle	Non-daylight Crash	
Fixed Object		



NOT TO SCALE

Crash Report Batch Crash Reports - Randolph Avenue (Route 28) at Reed St (2017 - 2020)

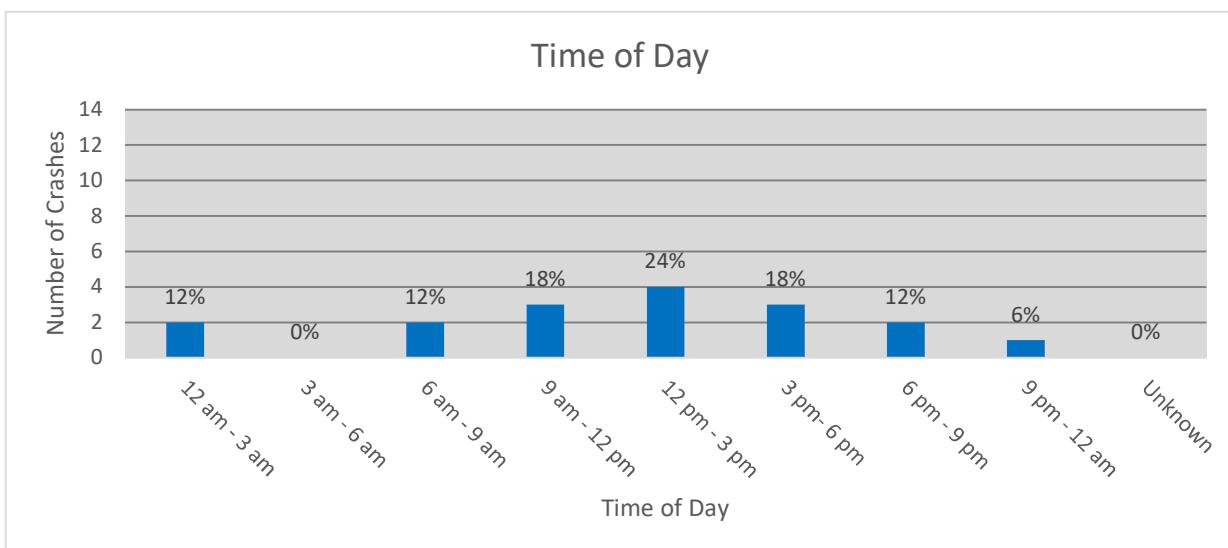
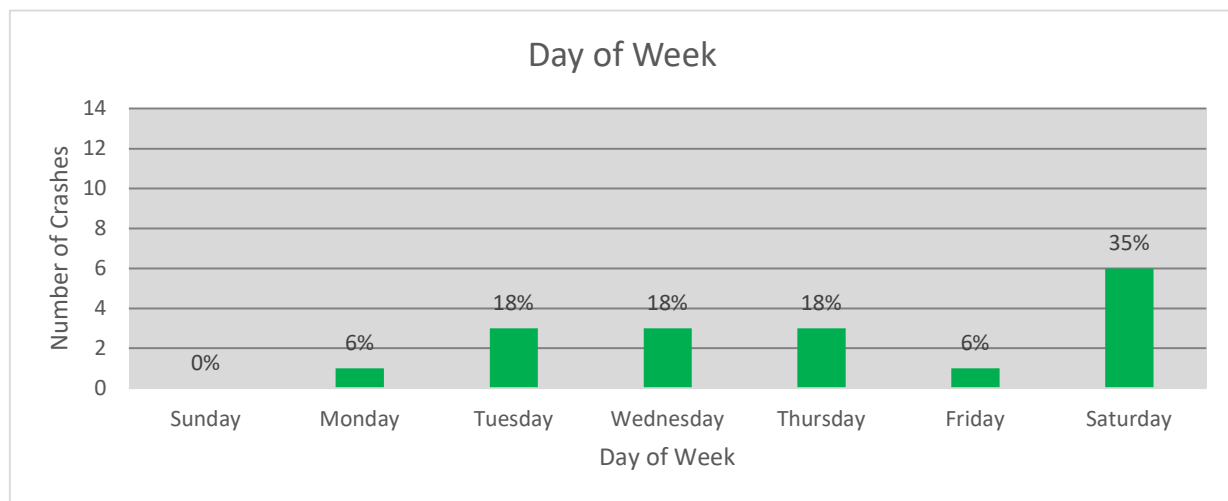
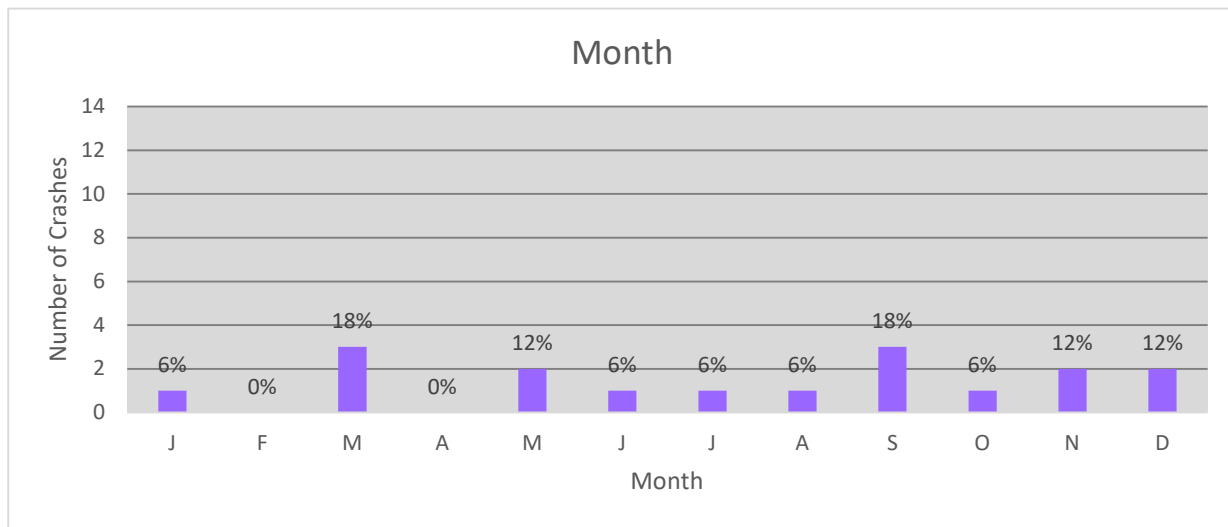
Motor Vehicle Crash Police Report

Crash Diagram Ref #	Crash Date	Crash Time	D1 Age	D2 Age	D3 Age	Driver Contributing Code	Max Injury Status	Light Condition	Weather Condition	Road Surface	Manner of Collision	Comments
#	mm/dd/yy	hh:mm	#	#	#	Type	Type	Type	Type	Type	Type	
1	06/22/2017	3:18 PM	21			D1:(Swerving or avoiding due to wind, slippery surface, vehicle, object, non-motorist in roadway)	No injury	Daylight	Clear	Dry	Single vehicle crash	V1 was traveling SB on Randolph Ave (Rte 28). V2 (unknown) was making a right turn from Reed St onto Randolph Ave (Rte 28) traveling SB. V1 swerved to avoid V2 causing the operator to lose control of the vehicle and strike the curb on the west side of Randolph Ave (Rte 28).
2	09/06/2017	10:22 AM	27	70		D2:(Inattention)	No injury	Daylight	Clear	Dry	Rear-end	V1 and V2 were traveling NB in the right lane on Randolph Ave (Rte 28). V1 came to a stop due to traffic. V2 rear-ended V1.
3	09/28/2017	11:08 PM	Unknown			Unknown	Non-fatal injury - Possible	Dark - lighted roadway	Clear	Dry	Rear-end	V1 and V2 were traveling NB on Randolph Ave (Rte 28). V1 was attempting to make a left turn onto Reed St and was rear-ended by V2.
4	10/02/2017	3:38 PM	80	37		D1:(Inattention)	Non-fatal injury - Possible	Daylight	Clear	Dry	Rear-end	V1 and V2 were traveling NB on Randolph Ave (Rte 28). V2 was attempting to make a left turn onto Reed St and was rear-ended by V1.
5	12/19/2017	2:50 PM	63	29		No improper driving	No injury	Daylight	Clear	Dry	Angle	V1 was traveling SB on Randolph Ave (Rte 28) in the right lane. V2 was traveling NB on Randolph Ave (Rte 28) and attempted to make a left turn onto Reed St. V2 struck V1 on the driver side. This was a courtesy crash.
6	03/03/2018	12:17 PM	57	63		D1:(Followed too closely)	Non-fatal injury - Possible	Daylight	Cloudy	Dry	Rear-end	V1 and V2 were traveling NB on Randolph Ave (Rte 28) just past the intersection with Reed St in the right lane. V2 was stopped in traffic when V1 rear-ended V2.
7	03/17/2018	12:33 AM	18	27		Unknown	No injury	Dark - lighted roadway	Clear	Dry	Sideswipe, same direction	V1 and V2 were traveling in the right travel lane NB on Randolph Ave (Rte 28) at the Reed St intersection. V2 attempted to pass V1 on the left side and ended up sideswiping V1 on the driver side. This crash was coded as a daylight crash but actually occurred at night.
8	05/01/2018	8:34 AM	48	33		D2:(Other improper action)	No injury	Daylight	Clear	Dry	Rear-end	V1 and V2 were traveling EB on Reed St. Both vehicles were stopped at the red light at the Randolph Ave (Rte 28) intersection when V1 rolled forward rear-ending V2.
9	05/18/2018	2:11 PM	69	19		D2:(Other improper action)	Non-fatal injury - Possible	Daylight	Clear	Dry	Angle	V1 was traveling SB on Randolph Ave (Rte 28) in the right lane. V2 was traveling NB on Randolph Ave (Rte 28) and attempted to make a left turn onto Reed St when V1 struck V2 on the passenger side.
10	08/08/2018	4:12 PM	26	57	52	D1:(Failed to yield right of way)	No injury	Daylight	Cloudy; Rain	Wet	Angle	V2 was traveling SB on Randolph Ave (Rte 28) in the right travel lane. V3 was stopped at the red light at the Randolph Ave (Rte 28) intersection traveling EB on Reed St. V1 was traveling NB on Randolph Ave (Rte 28) and attempted to make a left turn onto Reed St. V2 struck V1 on the rear passenger side causing V1 to strike V3 on the front driver side.
11	11/06/2018	10:18 AM	30	23		D2:(Inattention)	Non-fatal injury - Non-incapacitating	Daylight	Cloudy; Other	Wet	Rear-end	V1 and V2 were traveling NB on Randolph Ave (Rte 28) approaching the Reed St intersection in the right lane. V1 was slowing down and was rear-ended by V2. The operator of V2 was distracted by an electronic device.
12	03/16/2019	2:26 AM	53			No improper driving	No injury	Dark - lighted roadway	Cloudy; Fog, smog, smoke	Wet	Single vehicle crash	V1 turned right onto Reed St traveling WB from Randolph Ave (Rte 28) when a deer ran into the roadway. V1 swerved to avoid the deer and struck a stone wall on the south side of the road.
13	11/30/2019	2:32 PM	68	28		Unknown	Not reported	Daylight	Cloudy; Unknown	Dry	Rear-end	V1 and V2 were traveling NB on Randolph Ave (Rte 28) near Reed St in the left lane. V1 was slowing down when it was rear ended by V2.
14	01/18/2020	6:48 PM	35	19		No improper driving	Suspected Minor Injury	Dark - lighted roadway	Snow	Snow	Rear-end	V1 and V2 were traveling SB on Randolph Ave (Rte 28) south of the Reed St intersection when V1 was rear-ended by V2.
15	07/04/2020	8:43 PM	46	30		D2:(Other improper action)	No Apparent Injury	Dark - lighted roadway	Clear	Dry	Rear-end	V1 and V2 were traveling NB on Randolph Ave (Rte 28) in the right lane. V1 was stopped at the red light at the Reed St intersection when V1 was rear-ended by V2.
16	09/16/2020	10:13 AM	41	35		Unknown	Possible Injury	Daylight	Clear	Dry	Rear-end	V1 and V2 were traveling NB on Randolph Ave (Rte 28) at the Reed St intersection when V1 was rear-ended by V2.
17	12/10/2020	8:47 AM	19			No improper driving	No Apparent Injury	Daylight	Cloudy	Wet	Single vehicle crash	V1 was traveling NB on Randolph Ave (Rte 28) and attempted to make a left turn onto Reed St. While turning, the operator of V1 lost control of the vehicle causing the vehicle to collide with a tree on the NW corner of the intersection.

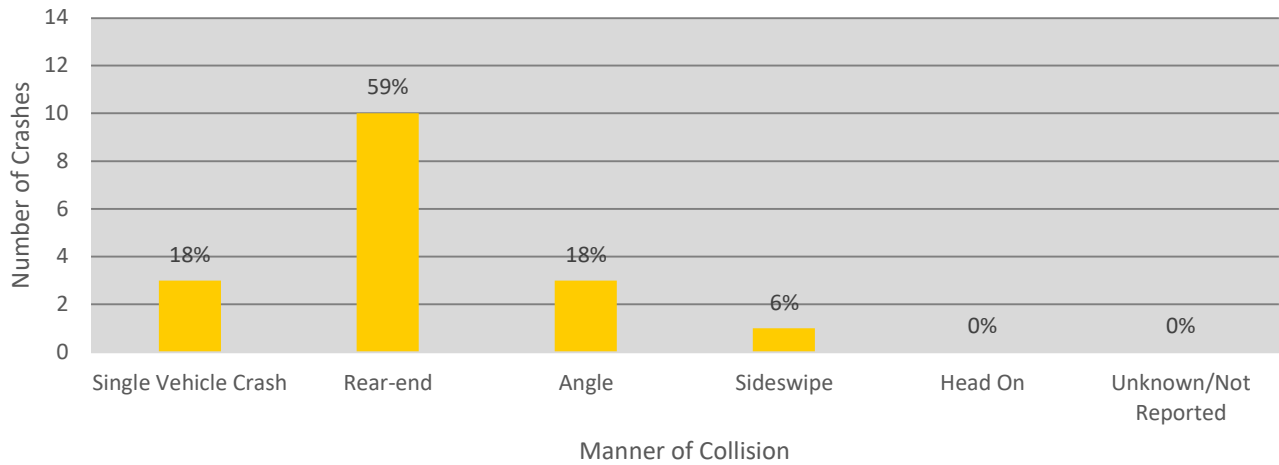
Collision Trends - Randolph Avenue (Route 28) at Reed Street and Access Road

Milton, MA

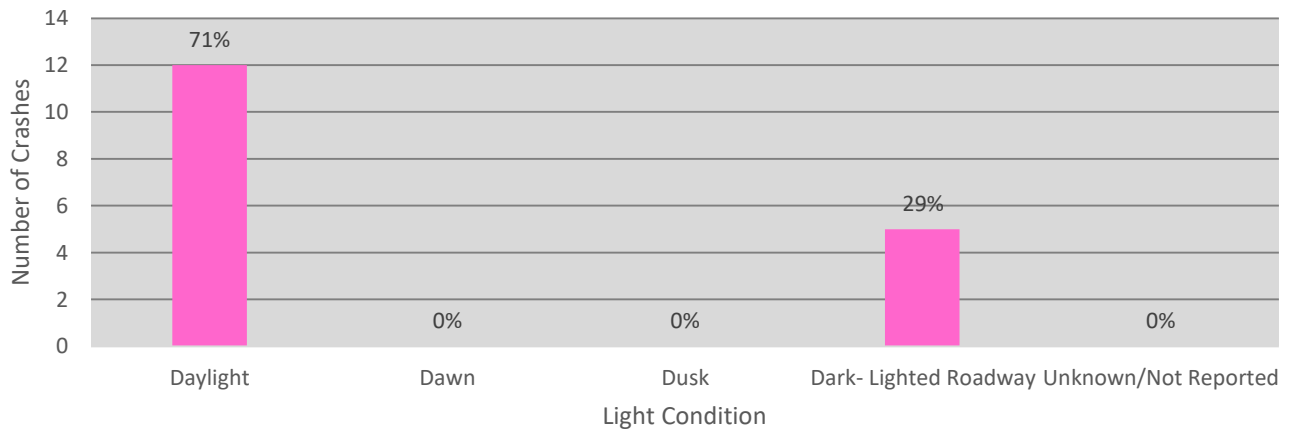
Years Analyzed: 2017-2020



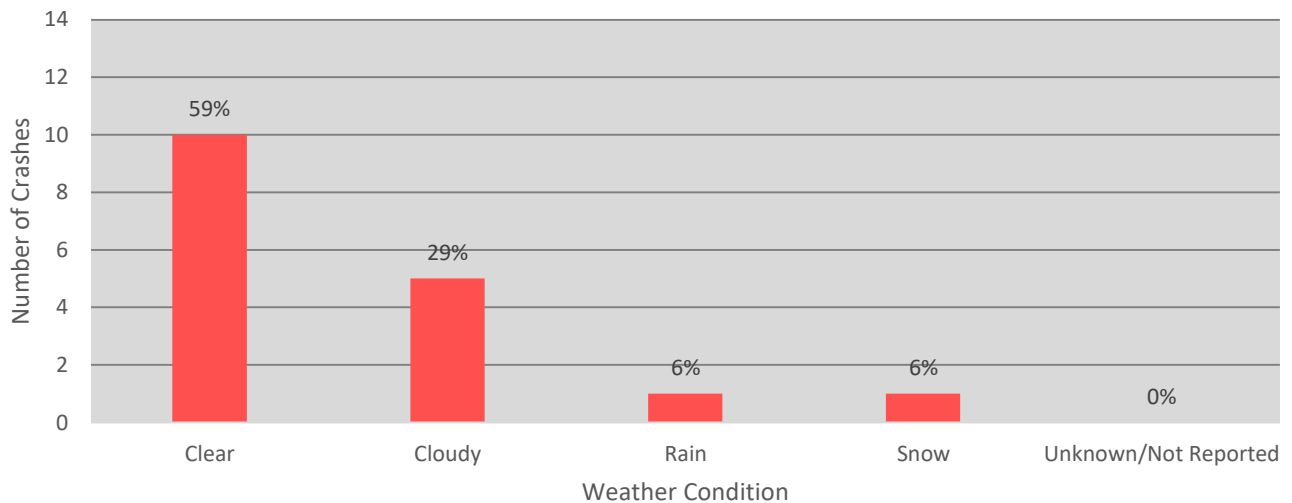
Manner of Collision



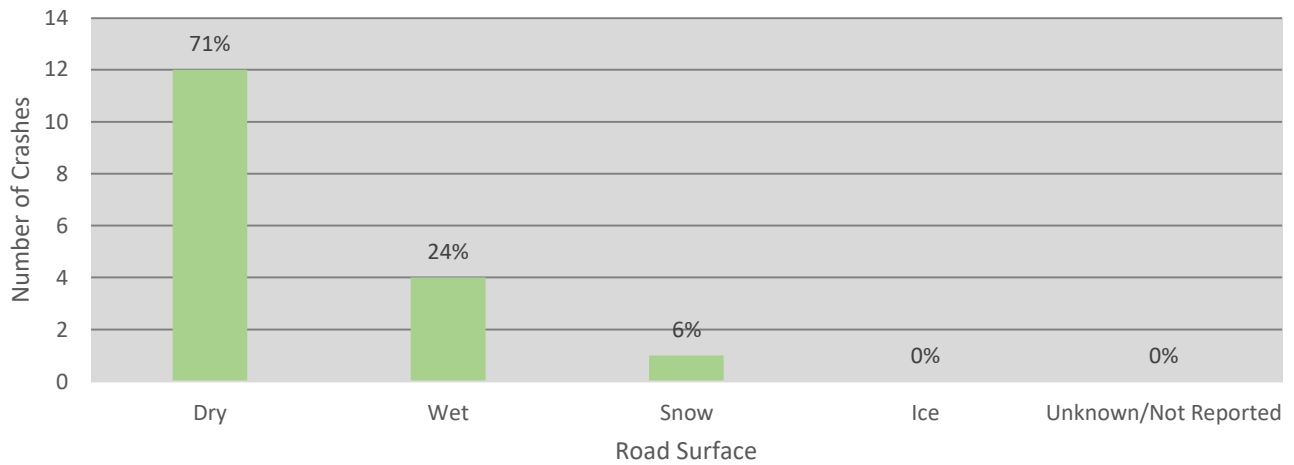
Light Condition



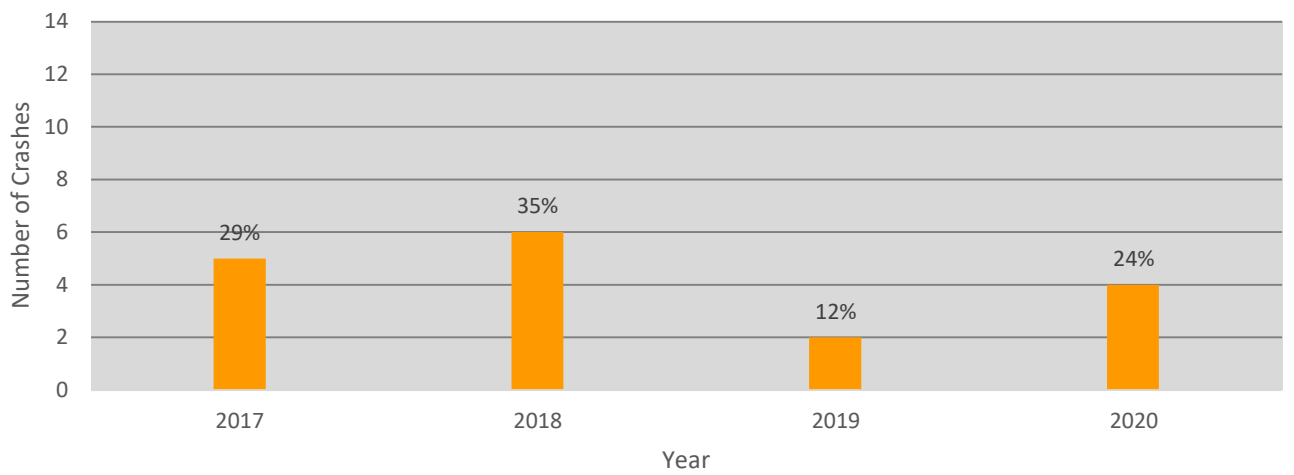
Weather Condition



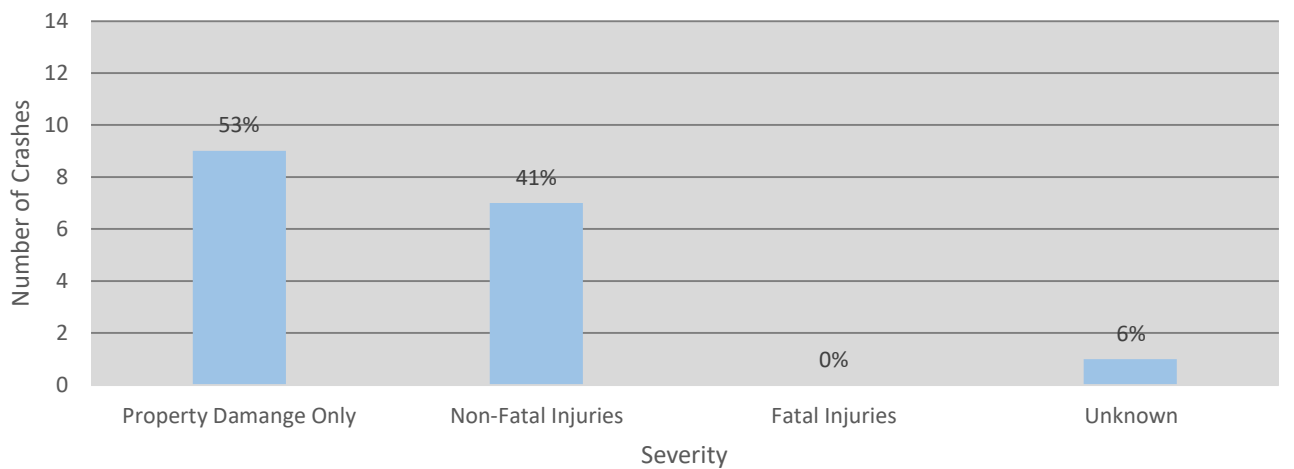
Road Surface



Year



Severity





HOWARD STEIN HUDSON

MILTON, MA
RANDOLPH AVENUE (ROUTE 28) AT PLEASANT STREET
REGION: MAPC

TIME PERIOD ANALYZED: 2017 - 2020
SOURCE OF CRASH DATA: MILTON POLICE DEPARTMENT
DATE PREPARED: SEPTEMBER 2023
PREPARED BY: A. KELLY

COLLISION DIAGRAM - 1

SYMBOLS

- Moving Vehicle
- Backing Vehicle
- Non-Involved Vehicle
- Pedestrian
- Bicycle
- Animal
- Fixed Object
- Parked Vehicle
- Exact location could not be determined based on crash report
- Manner of collision is unmapable

TYPES OF CRASH

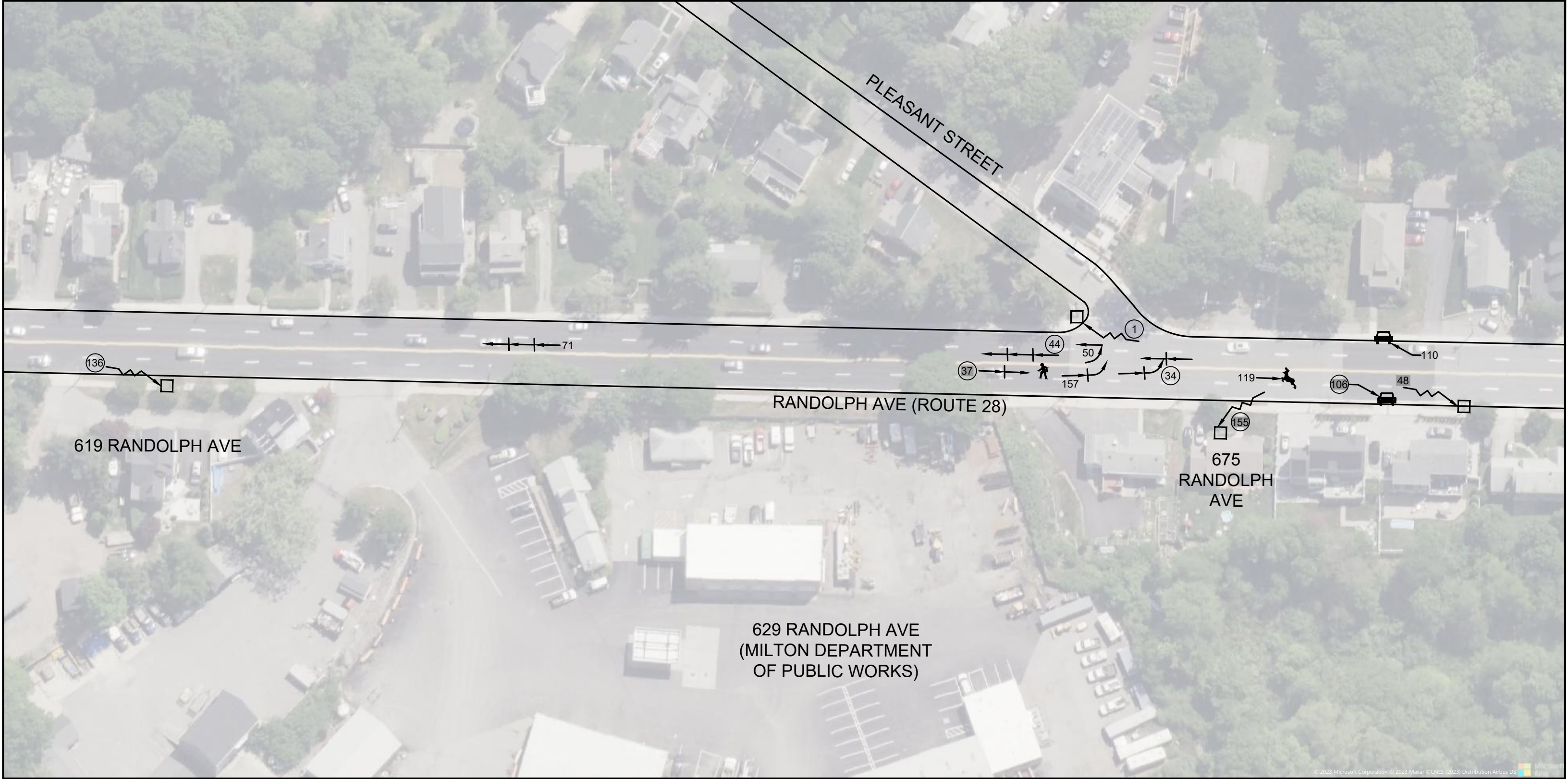
- Rear End
- Head On
- Angle
- Turning Movement
- Sideswipe
- Out of Control

SEVERITY

- Injury
- Fatal
- Non-daylight Crash



APPROX SCALE:
1"=70'-0"





HOWARD STEIN HUDSON

MILTON, MA
RANDOLPH AVENUE (ROUTE 28) AT HIGHLAND
STREET & HALLEN AVENUE
REGION: MAPC

TIME PERIOD ANALYZED: 2017 - 2020
SOURCE OF CRASH DATA: MILTON POLICE DEPARTMENT
DATE PREPARED: AUGUST 2023
PREPARED BY: A. KELLY

COLLISION DIAGRAM - 2

SYMBOLS



Moving Vehicle



Backing Vehicle



Non-Involved Vehicle



Pedestrian



Bicycle



Animal



Fixed Object



Parked Vehicle



Exact location
could not be
determined based
on crash report



Manner of collision
is unmappable

TYPES OF CRASH



Rear End



Head On



Angle



Turning Movement



Sideswipe



Out of Control

SEVERITY



Injury

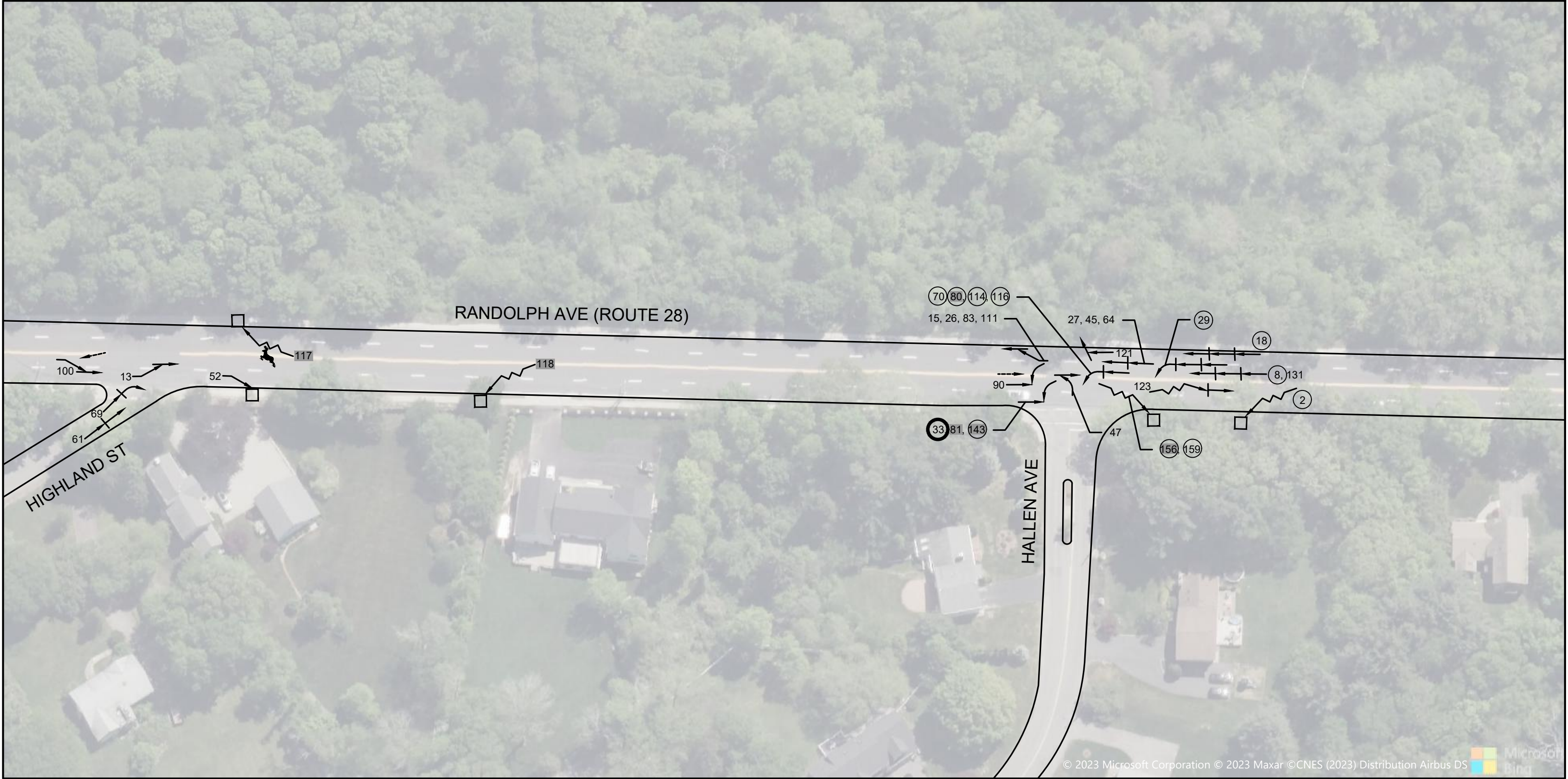


Fatal

Non-daylight Crash



APPROX SCALE:
1"=70'-0"





HOWARD STEIN HUDSON

MILTON, MA
RANDOLPH AVENUE (ROUTE 28) AT RIDGEWOOD
ROAD & NAHANTON AVENUE
REGION: MAPC

TIME PERIOD ANALYZED: 2017 - 2020
SOURCE OF CRASH DATA: MILTON POLICE DEPARTMENT
DATE PREPARED: AUGUST 2023
PREPARED BY: A. KELLY

COLLISION DIAGRAM - 3

SYMBOLS

- Moving Vehicle
- Backing Vehicle
- Non-Involved Vehicle
- Pedestrian
- Bicycle
- Animal

- Fixed Object
- Parked Vehicle
- Exact location could not be determined based on crash report
- Manner of collision is unmapable

TYPES OF CRASH

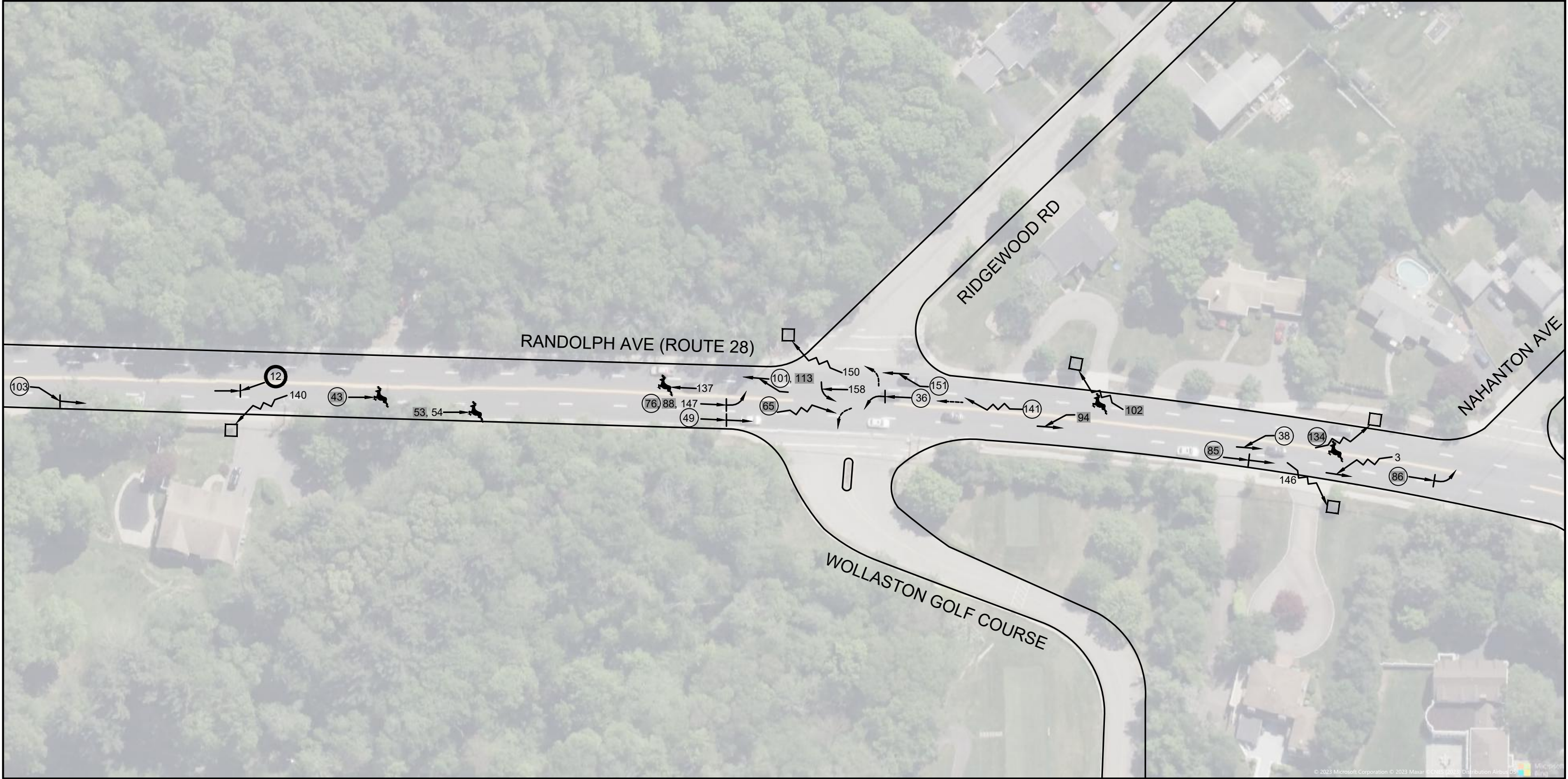
- Rear End
- Head On
- Angle
- Turning Movement
- Sideswipe
- Out of Control

SEVERITY

- Injury
- Fatal
- Non-daylight Crash



APPROX SCALE:
1"=70'-0"





HOWARD STEIN HUDSON

MILTON, MA
RANDOLPH AVENUE (ROUTE 28) AT HEATHER DRIVE,
SASSAMON AVENUE, & HILLTOP STREET
REGION: MAPC

TIME PERIOD ANALYZED: 2017 - 2020
SOURCE OF CRASH DATA: MILTON POLICE DEPARTMENT
DATE PREPARED: AUGUST 2023
PREPARED BY: A. KELLY

COLLISION DIAGRAM - 4

SYMBOLS

- Moving Vehicle
- Backing Vehicle
- Non-Involved Vehicle
- Pedestrian
- Bicycle
- Animal

- Fixed Object
- Parked Vehicle
- Exact location could not be determined based on crash report
- Manner of collision is unmapable

TYPES OF CRASH

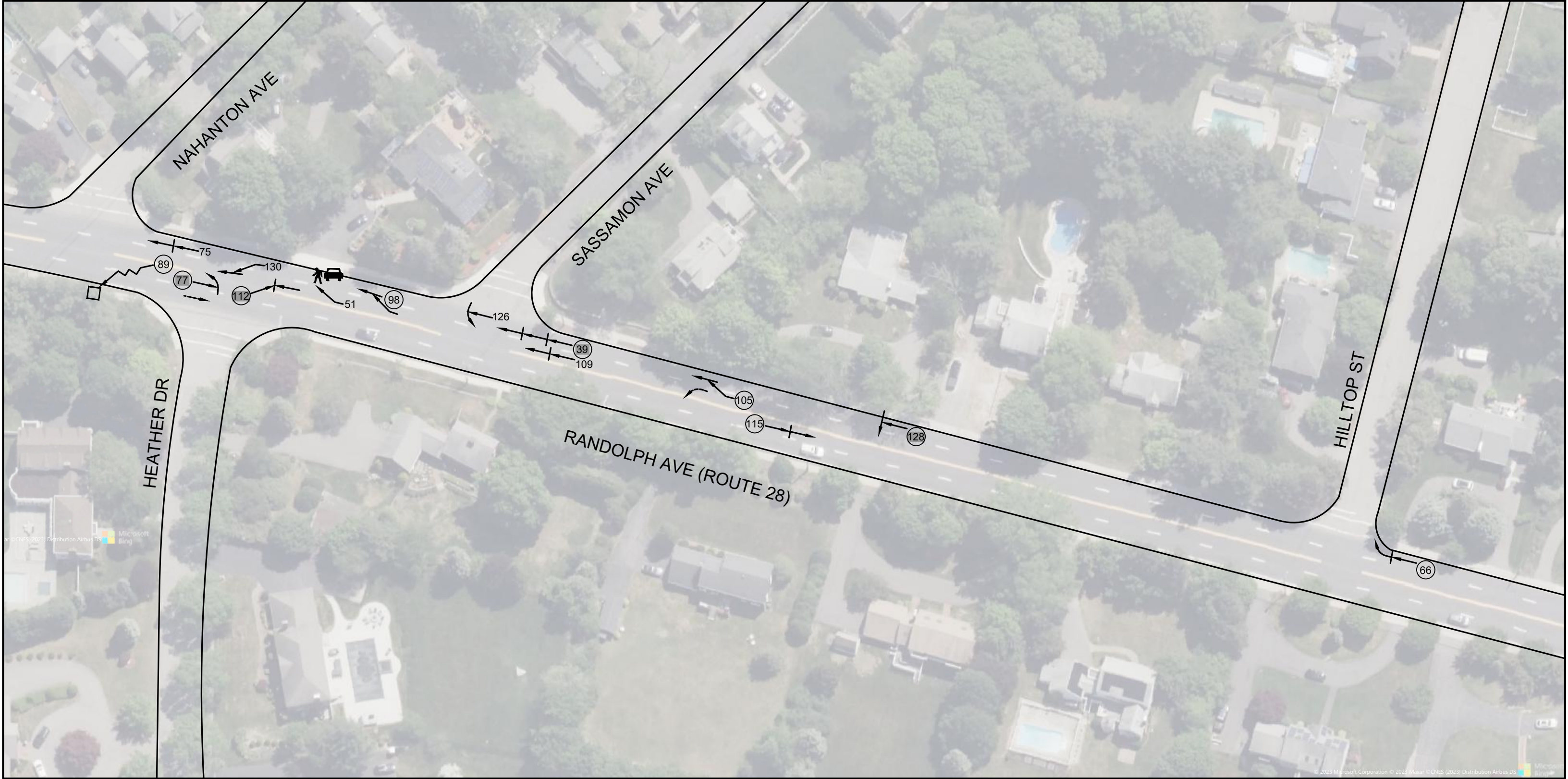
- Rear End
- Head On
- Angle
- Turning Movement
- Sideswipe
- Out of Control

SEVERITY

- Injury
- Fatal
- Non-daylight Crash



APPROX SCALE:
1"=70'-0"





HOWARD STEIN HUDSON

MILTON, MA
RANDOLPH AVENUE (ROUTE 28) AT HILLSIDE STREET
& EAGER ROAD
REGION: MAPC

TIME PERIOD ANALYZED: 2017 - 2020
SOURCE OF CRASH DATA: MILTON POLICE DEPARTMENT
DATE PREPARED: AUGUST 2023
PREPARED BY: A. KELLY

COLLISION DIAGRAM - 5

SYMBOLS

- Moving Vehicle
- Backing Vehicle
- Non-Involved Vehicle
- Pedestrian
- Bicycle
- Animal
- Fixed Object
- Parked Vehicle
- Exact location could not be determined based on crash report
- Manner of collision is unmapable

TYPES OF CRASH

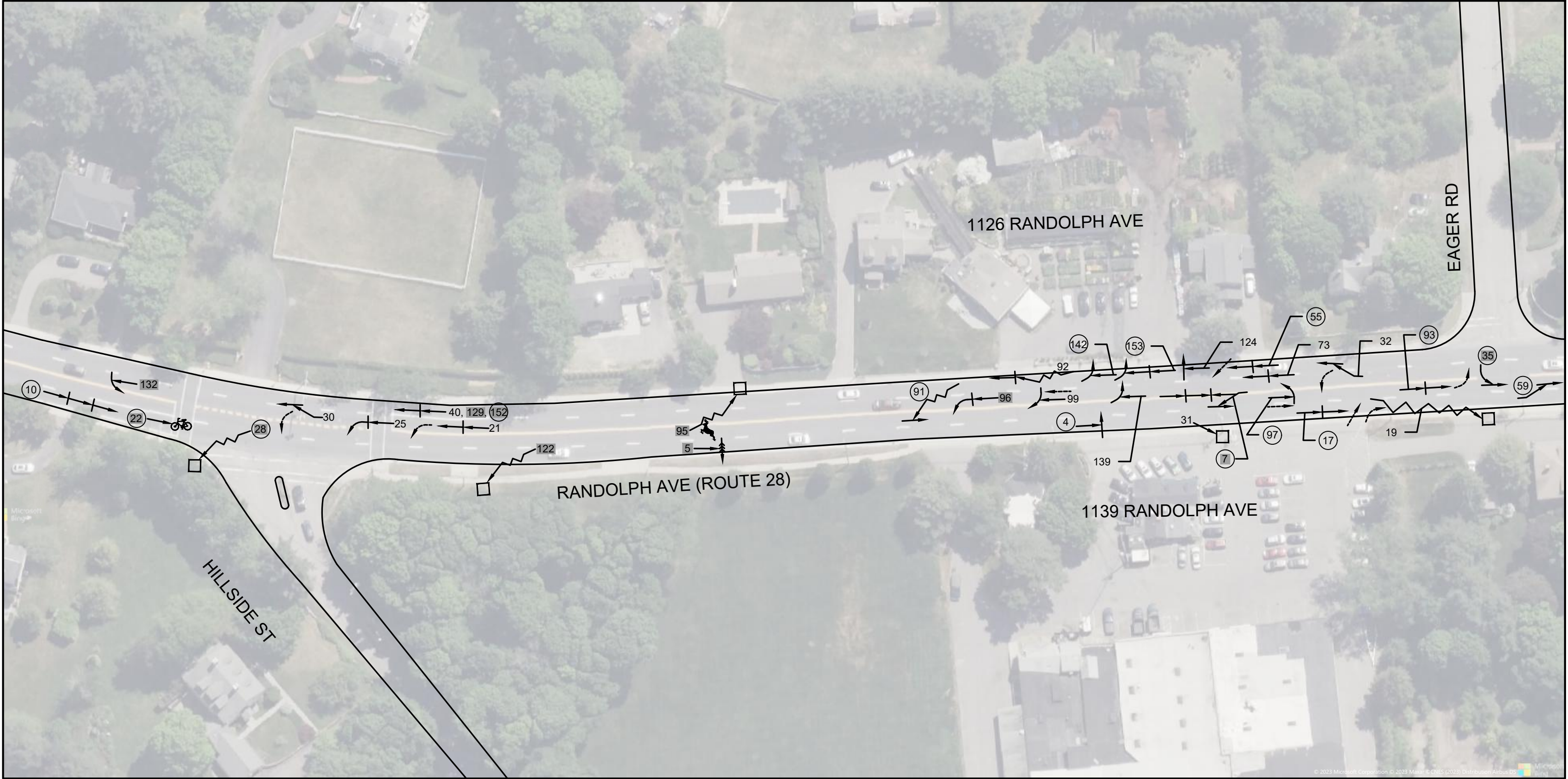
- Rear End
- Head On
- Angle
- Turning Movement
- Sideswipe
- Out of Control

SEVERITY

- Injury
- Fatal
- Non-daylight Crash



APPROX SCALE:
1"=70'-0"





HOWARD STEIN HUDSON

MILTON, MA
RANDOLPH AVENUE (ROUTE 28) AT SUSI LANE
REGION: MAPC

COLLISION DIAGRAM - 6

TIME PERIOD ANALYZED: 2017 - 2020
SOURCE OF CRASH DATA: MILTON POLICE DEPARTMENT
DATE PREPARED: AUGUST 2023
PREPARED BY: A. KELLY

SYMBOLS

- Moving Vehicle
- Backing Vehicle
- Non-Involved Vehicle
- Pedestrian
- Bicycle
- Animal
- Fixed Object
- Parked Vehicle
- Exact location could not be determined based on crash report
- Manner of collision is unmapable

TYPES OF CRASH

- Rear End
- Head On
- Angle
- Turning Movement
- Sideswipe
- Out of Control






















SEVERITY

- Injury
- Fatal
- Non-daylight Crash



APPROX SCALE:
1"=70'-0"



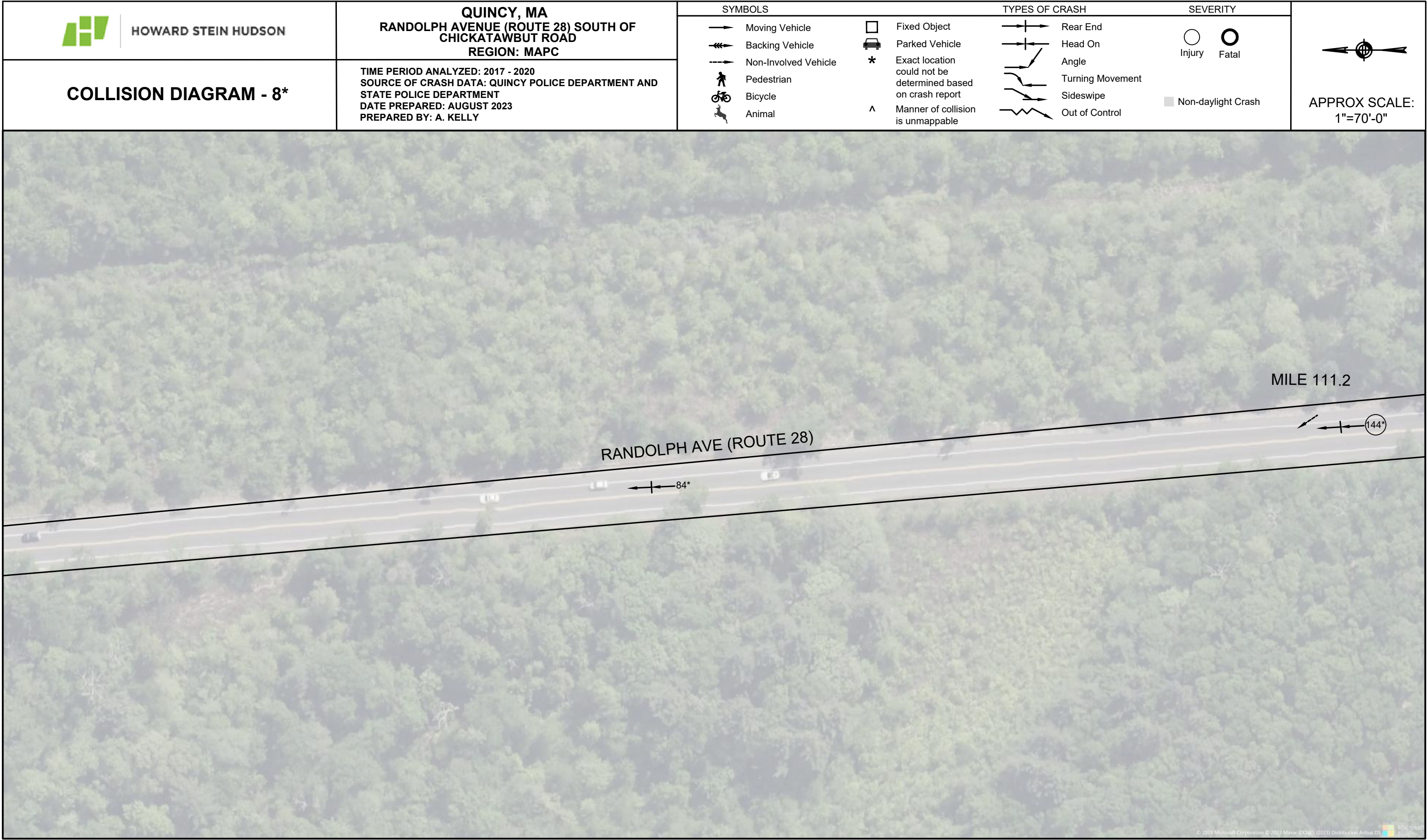
<div></div> <div>HOWARD STEIN HUDSON</div>	<div>MILTON, MA</div> <div>RANDOLPH AVENUE (ROUTE 28) SOUTH OF CHICKATAWBUT ROAD</div> <div>REGION: MAPC</div>	SYMBOLS		TYPES OF CRASH		SEVERITY		<div></div> <div>APPROX SCALE: 1"=70'-0"</div>
		<div> Moving Vehicle</div> <div> Backing Vehicle</div> <div> Non-Involved Vehicle</div> <div> Pedestrian</div> <div> Bicycle</div> <div> Animal</div> <div> Fixed Object</div> <div> Parked Vehicle</div> <div> Exact location could not be determined based on crash report</div> <div> Manner of collision is unmappable</div> <div> Rear End</div> <div> Head On</div> <div> Angle</div> <div> Turning Movement</div> <div> Sideswipe</div> <div> Out of Control</div> <div> Injury</div> <div> Fatal</div> <div> Non-daylight Crash</div>						
<div>COLLISION DIAGRAM - 7*</div>	<div>TIME PERIOD ANALYZED: 2017 - 2020</div> <div>SOURCE OF CRASH DATA: MILTON POLICE DEPARTMENT</div> <div>DATE PREPARED: AUGUST 2023</div> <div>PREPARED BY: A. KELLY</div>							

COLLISION DIAGRAM - 7*

TIME PERIOD ANALYZED: 2017 - 2020
SOURCE OF CRASH DATA: MILTON POLICE DEPARTMENT
DATE PREPARED: AUGUST 2023
PREPARED BY: A. KELLY



*Crashes at the Chickatawbut Road intersection were not included in the study area and crashes at this location were not mapped. Additional RSA to be conducted south of Chickatawbut Road to Russ Street/Scanlon Drive.



*Additional RSA to be conducted south of Chickatawbut Road to Russ Street/Scanlon Drive.



HOWARD STEIN HUDSON

QUINCY, MA
RANDOLPH AVENUE (ROUTE 28) NORTH OF ROUTE 93
REGION: MAPC

COLLISION DIAGRAM - 9*

TIME PERIOD ANALYZED: 2017 - 2020
SOURCE OF CRASH DATA: QUINCY POLICE DEPARTMENT AND
STATE POLICE DEPARTMENT
DATE PREPARED: AUGUST 2023
PREPARED BY: A. KELLY

SYMBOLS

- Moving Vehicle
- Backing Vehicle
- Non-Involved Vehicle
- Pedestrian
- Bicycle
- Animal
- Fixed Object
- Parked Vehicle
- Exact location could not be determined based on crash report
- Manner of collision is unmapable

TYPES OF CRASH

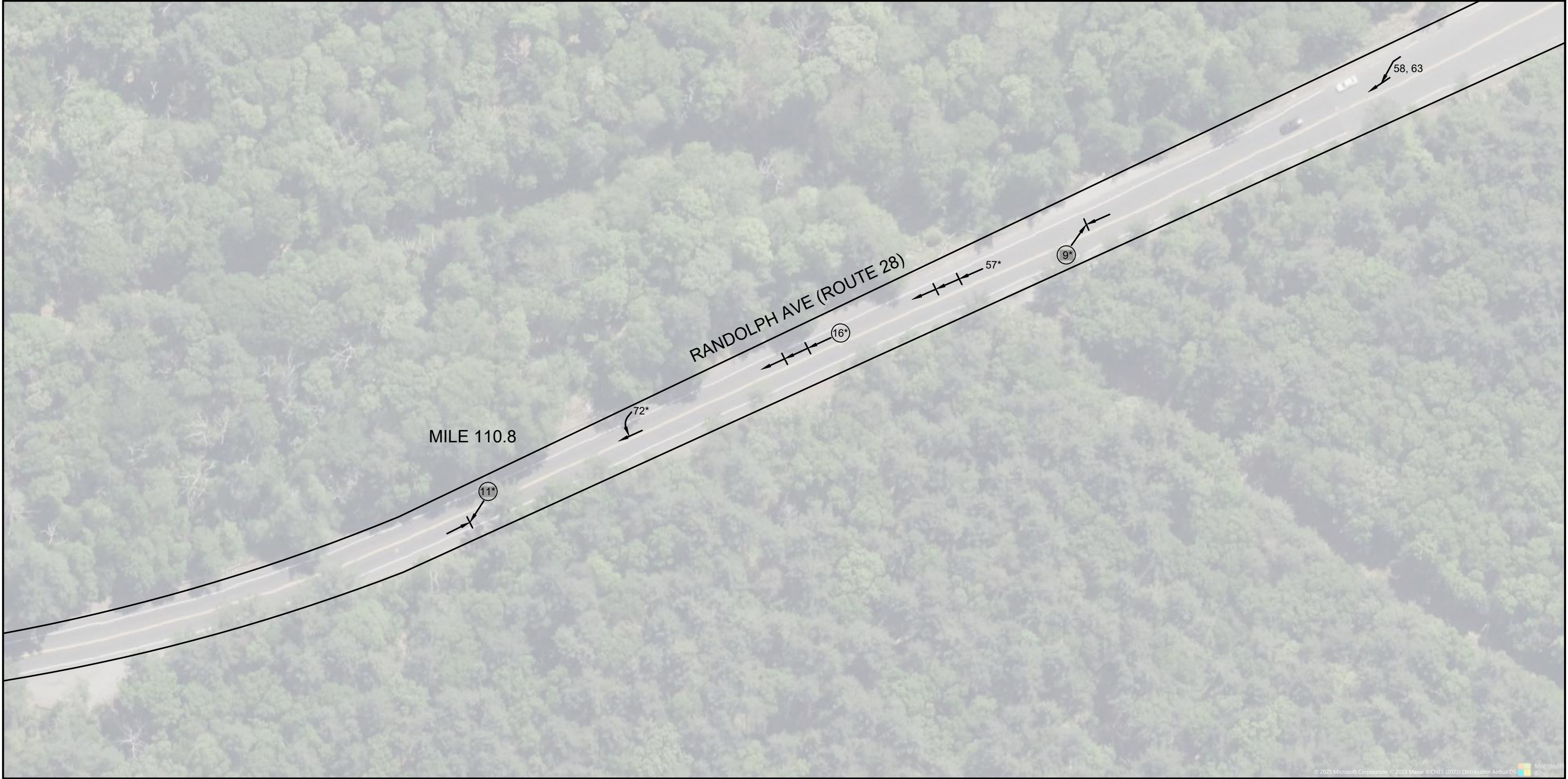
- Rear End
- Head On
- Angle
- Turning Movement
- Sideswipe
- Out of Control

SEVERITY

- Injury
- Fatal
- Non-daylight Crash



APPROX SCALE:
1"=70'-0"



*Additional RSA to be conducted south of Chickatawbut Road to Russ Street/Scanlon Drive.



HOWARD STEIN HUDSON

QUINCY, MA
RANDOLPH AVENUE (ROUTE 28) NORTH OF ROUTE 93
REGION: MAPC

TIME PERIOD ANALYZED: 2017 - 2020
SOURCE OF CRASH DATA: QUINCY POLICE DEPARTMENT AND
STATE POLICE DEPARTMENT
DATE PREPARED: AUGUST 2023
PREPARED BY: A. KELLY

COLLISION DIAGRAM - 10*

SYMBOLS

- Moving Vehicle
- Backing Vehicle
- Non-Involved Vehicle
- Pedestrian
- Bicycle
- Animal
- Fixed Object
- Parked Vehicle
- Exact location could not be determined based on crash report
- Manner of collision is unmapable

TYPES OF CRASH

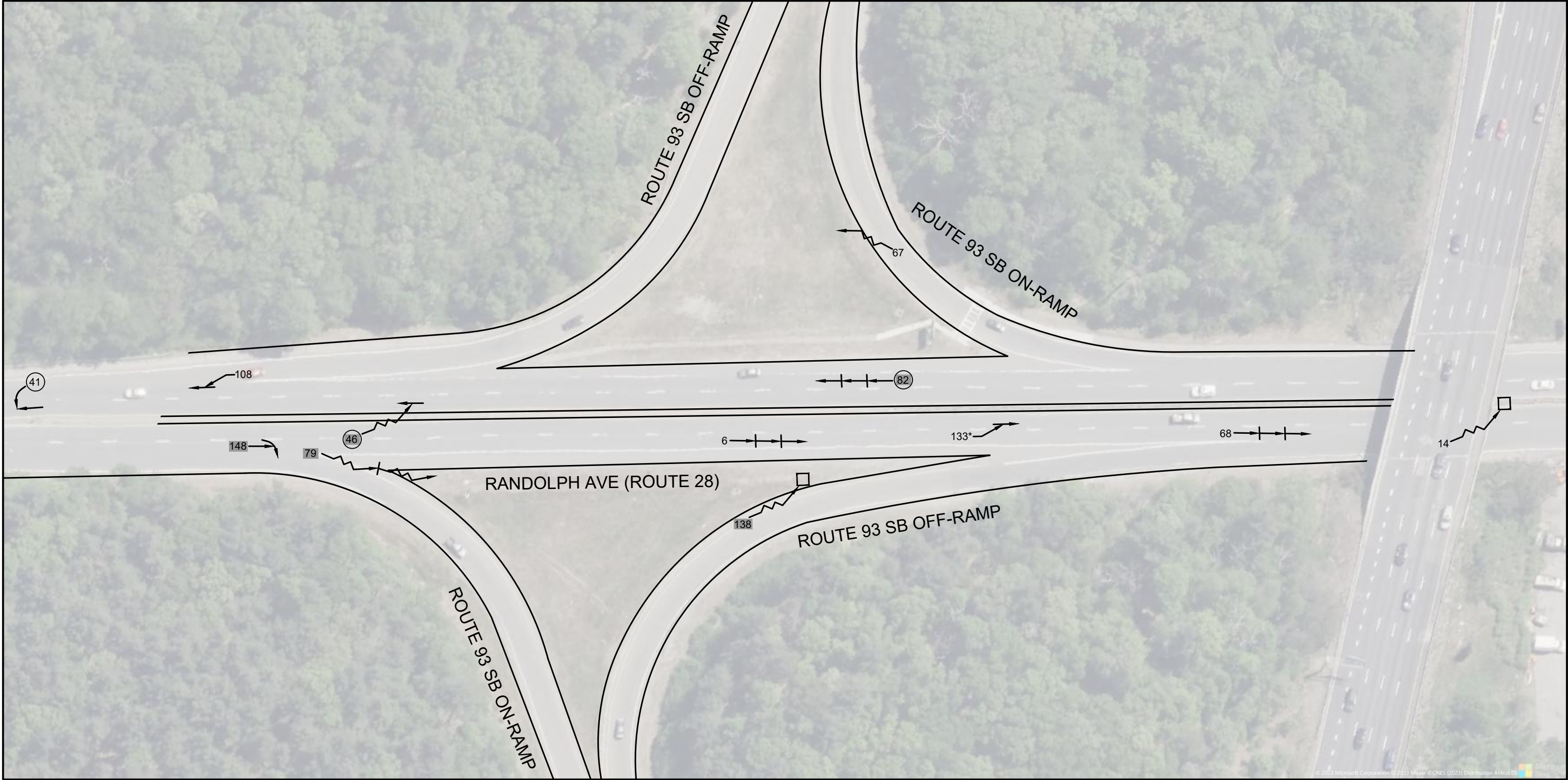
- Rear End
- Head On
- Angle
- Turning Movement
- Sideswipe
- Out of Control

SEVERITY

- Injury
- Fatal
- Non-daylight Crash



APPROX SCALE:
1"=70'-0"



*Additional RSA to be conducted south of Chickatawbut Road to Russ Street/Scanlon Drive.



HOWARD STEIN HUDSON

RANDOLPH, MA
RANDOLPH AVENUE (ROUTE 28) SOUTH OF ROUTE 93
REGION: MAPC

COLLISION DIAGRAM - 11*

TIME PERIOD ANALYZED: 2017 - 2020
SOURCE OF CRASH DATA: RANDOLPH POLICE DEPARTMENT
DATE PREPARED: AUGUST 2023
PREPARED BY: A. KELLY

SYMBOLS

- Moving Vehicle
- Backing Vehicle
- Non-Involved Vehicle
- Pedestrian
- Bicycle
- Animal

- Fixed Object
- Parked Vehicle
- Exact location could not be determined based on crash report
- Manner of collision is unmappable or unknown

TYPES OF CRASH

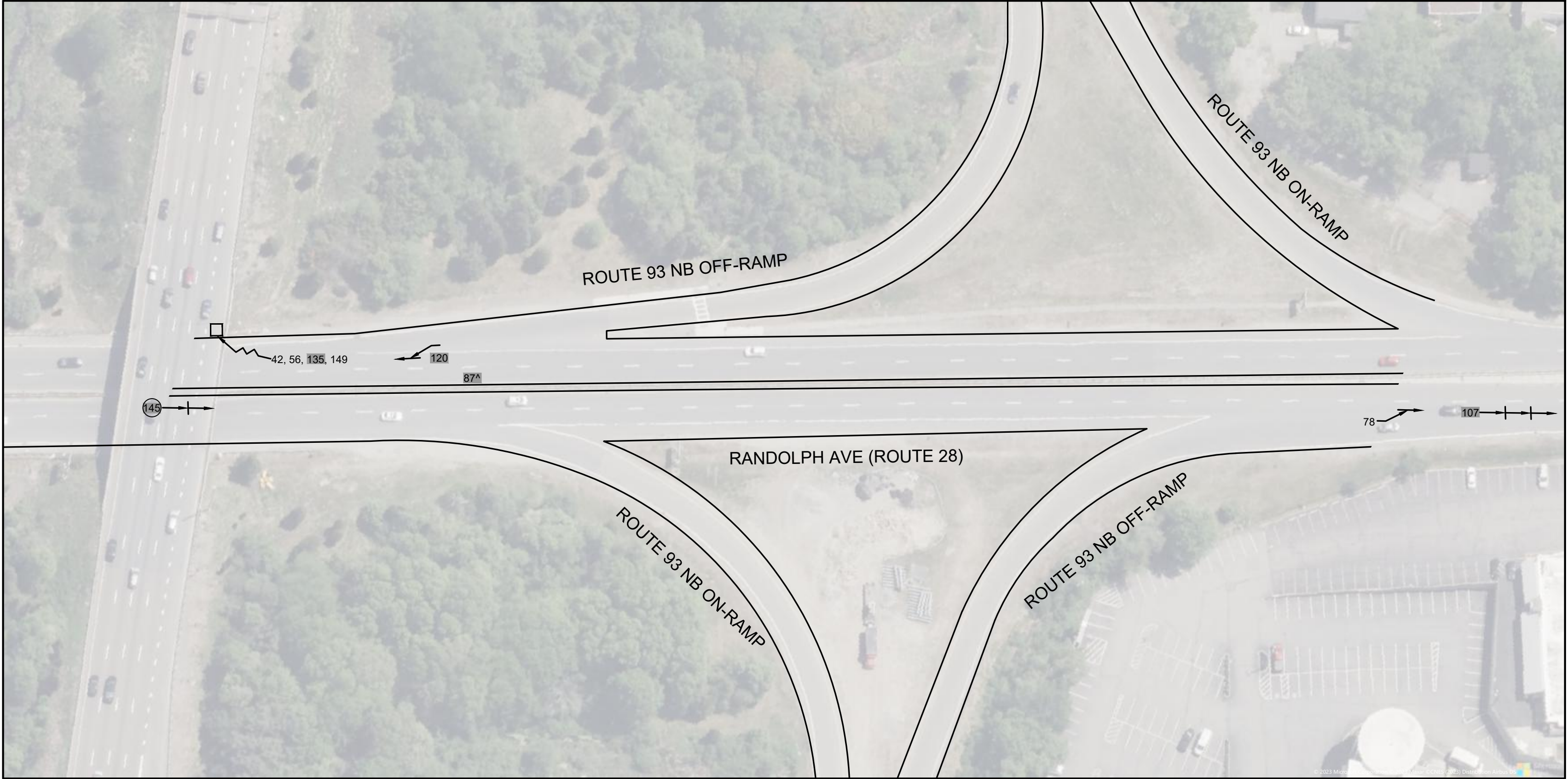
- Rear End
- Head On
- Angle
- Turning Movement
- Sideswipe
- Out of Control

SEVERITY

- Injury
- Fatal
- Non-daylight Crash



APPROX SCALE:
1"=70'-0"



*Additional RSA to be conducted south of Chickatawbut Road to Russ Street/Scanlon Drive.

Crash Report Batch Crash Reports - Randolph Ave (Route 28) from Reedsdale Road to Route 93 (2017-2020)

Motor Vehicle Crash Police Report

Crash Diagram Ref #	Collision Diagram Page #	Crash Date	Crash Time	D1 Age	D2 Age	D3 Age	D4 Age	Driver Contributing Code	Max Injury Status	Light Condition	Weather Condition	Road Surface	Manner of Collision	Comments
	#	mm/dd/yy	hh:mm	#	#	#	#	Type	Type	Type	Type	Type	Type	
1	1	01/10/2017	10:18 AM	42				Unknown	Non-fatal injury - Non-incapacitating	Daylight	Clear	Ice	Single vehicle crash	V1 was traveling NB on Randolph Ave (Rte 28) and was attempting to take a right turn onto Pleasant St when the vehicle slid on ice and collided with a rock on the north corner.
2	2	01/22/2017	7:15 AM	23				D1:(Operating vehicle in erratic, reckless, careless, negligent or aggressive manner)	Non-fatal injury - Possible	Daylight	Clear	Dry	Single vehicle crash	V1 was traveling NB on Randolph Ave (Rte 28) near Hallen Ave when the operator fell asleep losing control of the vehicle. V1 crossed over the SB lanes and struck a utility pole on the west side of the road.
3	3	02/07/2017	11:07 AM	52	48			Unknown	No injury	Daylight	Snow; Sleet, hail (freezing rain or drizzle)	Snow	Angle	V1 was traveling SB on Randolph Ave (Rte 28) in the right travel lane. V2 was traveling NB on Randolph Ave (Rte 28) in the right travel lane. V2 slid on ice causing the operator to lose control of the vehicle. V2 struck V1 on the driver side causing V1 to strike a lamp post on the side of the roadway near 933 Randolph Ave.
4	5	02/14/2017	1:56 PM	54	85			D2:(Failed to yield right of way)	Non-fatal injury - Possible	Daylight	Cloudy	Dry	Angle	V1 was traveling SB on Randolph Ave (Rte 28) in the right lane. V2 was pulling out of the parking lot at 1139 Randolph Ave when V2 was struck by V1.
5	5	02/15/2017	4:25 AM	54	54			Unknown	No injury	Dark - lighted roadway	Clear	Wet	Angle	V1 was traveling SB in the right lane on Randolph Ave (Rte 28) near 1120 Randolph Ave. V2, a backhoe/front end loader, was backing up into the SB travel lanes on Randolph Ave (Rte 28). V1 was unable to avoid V2 and struck V2.
6	10	02/21/2017	4:40 PM	33	36	27		D1:(Inattention)	No injury	Daylight	Clear	Dry	Rear-end	V1, V2, and V3 were traveling SB on Randolph Ave (Rte 28) north of Rte 93. V1 rear-ended V2 causing V2 to rear-end V3.
7	5	03/02/2017	5:51 PM	58	50	54	77	Unknown	Non-fatal injury - Possible	Dusk	Clear	Dry	Angle	V1, V2, and V3 were traveling SB on Randolph Ave (Rte 28) in the left lane near 1146 Randolph Ave. V4 was traveling NB on Randolph Ave (Rte 28) in the left lane. V4 swerved to avoid an object in the roadway and sideswiped V1. V4 then struck V2, which was traveling behind V1, in a head-on collision causing V2 to back into V3.
8	2	03/06/2017	1:43 PM	36	33	36		D3:(Inattention)	Non-fatal injury - Non-incapacitating	Daylight	Clear	Dry	Rear-end	V1 and V2 were both stopped in the left NB lane on Randolph Ave (Rte 28) to accommodate a stopped vehicle waiting to turn left onto Hallen Ave. V3 was traveling NB on Randolph Ave (Rte 28) in the left lane and rear-ended V2 causing V2 to rear-end V1.
9	9	03/18/2017	12:30 AM	25	39			D1:(Failure to keep in proper lane or running off road)	Non-fatal injury - Non-incapacitating	Dark - roadway not lighted	Clear	Dry	Head-on	V1 was traveling SB on Randolph Ave (Rte 28). V2 was traveling NB on Randolph Ave (Rte 28). V1 crossed into the NB lane and struck V2 in a head-on collision. It is believed that the operator of V1 was under the influence.
10	5	04/07/2017	5:55 PM	Unknown	50	21		D3:(Inattention)	Non-fatal injury - Non-incapacitating	Daylight	Cloudy; Clear	Dry	Rear-end	V1, V2, and V3 were traveling SB on Randolph Ave (Rte 28) north of Hillside St in the right lane. V1 and V2 were stopped in traffic when V3 rear-ended V2 causing V2 to rear-end V1.
11	9	04/16/2017	8:40 PM	29	46	38	33	D1:(Wrong side or wrong way)	Non-fatal injury - Non-incapacitating	Dark - roadway not lighted	Clear	Dry	Head-on	V1 was traveling NB on Randolph Ave (Rte 28). V2 was traveling SB on Randolph Ave (Rte 28). The operator of V1 was under the influence and drifted into the SB lane resulting in a head-on collision with V2.
12	3	04/25/2017	4:03 PM	46	40			Unknown	Fatal injury	Daylight	Rain; Cloudy	Wet	Head-on	V2 was traveling NB on Randolph Ave (Rte 28) near 904 Randolph Ave in the left lane. V1 was traveling SB on Randolph Ave (Rte 28) in the left lane. V2 crossed over the double yellow line and struck V1 in a head-on collision. Witnesses reported that V2 had been seen driving erratically.
13	2	04/25/2017	5:33 PM	35	33			Unknown	No injury	Daylight	Rain	Wet	Sideswipe, same direction	V1 was traveling SB on Randolph Ave (Rte 28) near Highland St in the left lane. V2 was traveling SB on Randolph Ave (Rte 28) in the right lane. V2 crossed into the left lane and sideswiped V1.
14	10	04/26/2017	12:25 PM	33				Unknown	No injury	Daylight	Rain	Water (standing, moving)	Single vehicle crash	V1 was traveling SB on Randolph Ave (Rte 28) under the Rte 93 overpass. V1 drove through an area of standing water, which caused the operator to lose control of the vehicle and spin. V1 collided with the guardrail in the median.

Crash Diagram Ref #	Collision Diagram Page #	Crash Date	Crash Time	D1 Age	D2 Age	D3 Age	D4 Age	Driver Contributing Code	Max Injury Status	Light Condition	Weather Condition	Road Surface	Manner of Collision	Comments
	#	mm/dd/yy	hh:mm	#	#	#	#	Type	Type	Type	Type	Type	Type	
15	2	04/27/2017	5:44 PM	64	32			D2:(Failed to yield right of way)	No injury	Daylight	Clear	Dry	Sideswipe, same direction	V1 was traveling in the right lane NB on Randolph Ave (Rte 28). V2 was traveling in the left lane NB on Randolph Ave (Rte 28). V2 shifted into the right lane to avoid a stopped vehicle waiting to make a left hand turn onto Hallen Ave and sideswiped V1 on the driver side.
16	9	05/09/2017	9:08 AM	19	68	27		D1:(Inattention)	Non-fatal injury - Non-incapacitating	Daylight	Clear	Dry	Rear-end	V1, V2, and V3 were all traveling NB on Randolph Ave (Rte 28) north of Rte 93. Traffic was slowing to a stop when V1 rear-ended V2 causing V2 to rear-end V3.
17	5	05/15/2017	10:18 AM	33	46	58		D1:(Followed too closely)	Non-fatal injury - Possible	Daylight	Rain; Cloudy	Wet	Rear-end	V1 and V2 were traveling SB on Randolph Ave (Rte 28) in the right lane. V3 was pulling out of the parking lot at 1139 Randolph Ave onto Randolph Ave (Rte 28). V2 stopped to avoid colliding with V3. V1 rear-ended V2.
18	2	06/03/2017	6:34 PM	54	21	40		Unknown	Non-fatal injury - Possible	Daylight	Cloudy	Dry	Rear-end	V1, V2, and V3 were traveling NB on Randolph Ave (Rte 28) in the right travel lane near the intersection with Hallen Ave. V1 came to a sudden stop resulting in V2 coming to a sudden stop. V3 rear-ended V2 causing V2 to rear-end V1.
19	5	06/06/2017	2:11 PM	42				Unknown	Not Reported	Daylight	Cloudy; Rain	Wet	Single vehicle crash	V1 was traveling SB on Randolph Ave (Rte 28). An unknown, uninvolved vehicle pulled out of the parking lot at 1139 Randolph Ave to travel SB on Randolph Ave (Rte 28) causing V1 to change lanes. The operator of V1 lost control of the vehicle and collided with a stone wall at 1183 Randolph Ave.
20	7	06/22/2017	12:59 AM	23				D1:(Fatigued/asleep)	Non-fatal injury - Non-incapacitating	Dark - roadway not lighted	Clear	Dry	Single vehicle crash	V1 was traveling NB on Randolph Ave (Rte 28) south of Chickatawbut Rd when the operator fell asleep and lost control of the vehicle. V1 veered off of the right side of the road and rolled over.
21	5	07/07/2017	6:16 PM	33	27			Unknown	No injury	Daylight	Cloudy; Rain	Wet	Rear-end	V1 and V2 were traveling NB on Randolph Ave (Rte 28) near Hillside St. V1 slowed to let an uninvolved vehicle go. V2 rear-ended V1.
22	5	07/17/2017	2:10 AM	21				No improper driving	Non-fatal injury - Possible	Dark - lighted roadway	Clear	Dry	Rear-end	V1 was traveling SB on Randolph Ave (Rte 28) near Hillside St in the right lane. A cyclist was traveling SB on Randolph Ave (Rte 28) in front of V1. V1 struck the cyclist from the rear.
23	6	07/26/2017	1:48 PM	25	30			D2:(Followed too closely)	Non-fatal injury - Possible	Daylight	Cloudy	Not reported	Rear-end	V1 and V2 were traveling NB on Randolph Ave (Rte 28) near 1200 Randolph Ave in the right lane. V2 stopped for a garbage truck. V1 rear-ended V2.
24	6	08/02/2017	3:04 PM	77	33			D1:(Failed to yield right of way)	Non-fatal injury - Possible	Daylight	Cloudy	Dry	Angle	V1 was traveling SB on Randolph Ave (Rte 28) in the right lane near 1205 Randolph Ave. V2 was traveling SB on Randolph Ave (Rte 28) in the left lane. V1 moved into the left lane and struck V2 on the passenger side bumper.
25	5	08/07/2017	1:47 PM	67	55			Unknown	No injury	Daylight	Cloudy	Dry	Rear-end	V1 and V2 were traveling NB on Randolph Ave (Rte 28). V2 stopped to make a left turn onto Hillside St. V1 rear-ended V2.
26	2	08/09/2017	3:28 PM	28	42			Unknown	No injury	Daylight	Clear	Dry	Sideswipe, same direction	V1 was traveling in the right lane NB on Randolph Ave (Rte 28). V2 was traveling in the left lane NB on Randolph Ave (Rte 28). V2 shifted into the right lane to avoid stopped traffic waiting to make a left hand turn onto Hallen Ave and sideswiped V1 on the driver side.
27	2	08/09/2017	4:39 PM	20	21			Unknown	No injury	Daylight	Clear	Dry	Rear-end	V2 was traveling NB in the left lane on Randolph Ave (Rte 28) and stopped suddenly due to a vehicle waiting to turn left onto Hallen Ave. V1 was traveling NB on Randolph Ave (Rte 28) behind V2 and rear-ended V2.
28	5	08/14/2017	4:10 AM	31				Unknown	Non-fatal injury - Possible	Dark - lighted roadway	Clear	Dry	Single vehicle crash	V1 was traveling NB on Randolph Ave (Rte 28). V1 crossed over the SB travel lanes at the Hillside St intersection and ran off of the road striking a tree on the NW corner of the intersection.
29	2	08/22/2017	2:27 PM	64	48	34		D3:(Inattention)	Non-fatal injury - Possible	Daylight	Clear	Dry	Rear-end	V1 and V2 were both stopped in the left NB lane on Randolph Ave (Rte 28). V1 was waiting to turn left onto Hallen Ave. V3 was traveling NB on Randolph Ave (Rte 28) in the left lane and rear-ended V2 causing V2 to rear-end V1.
30	5	08/22/2017	2:59 PM	34	23			D2:(Swerving or avoiding due to wind, slippery surface, vehicle, object, non-motorist in roadway)	No injury	Daylight	Clear	Dry	Sideswipe, same direction	V1 was traveling NB on Randolph Ave (Rte 28) in the right lane. V2 was traveling NB on Randolph Ave (Rte 28) in the left lane. An uninvolved vehicle made a sudden left turn onto Hillside St causing V2 to veer into the right lane. V2 sideswiped V1 on the driver side.

Crash Diagram Ref #	Collision Diagram Page #	Crash Date	Crash Time	D1 Age	D2 Age	D3 Age	D4 Age	Driver Contributing Code	Max Injury Status	Light Condition	Weather Condition	Road Surface	Manner of Collision	Comments
	#	mm/dd/yy	hh:mm	#	#	#	#	Type	Type	Type	Type	Type	Type	
31	5	08/28/2017	4:55 PM	43				Unknown	No injury	Daylight	Clear	Dry	Single vehicle crash	V1 was traveling SB on Randolph Ave (Rte 28) in the right lane near 1139 Randolph Ave. V1 was approaching stopped traffic but did not have enough time to slow to a stop. V1 turned right off of the road to the right and struck a concrete post.
32	5	08/30/2017	4:28 PM	22	50			Unknown	No injury	Daylight	Clear	Dry	Sideswipe, same direction	V1 was traveling NB on Randolph Ave (Rte 28) near 1139 Randolph Ave in the right lane. V2 was traveling NB on Randolph Ave (Rte 28) in the left lane. An uninvolved vehicle traveling in front of V2 slowed to make a left turn at which point V2 sideswiped V1 on the driver side.
33	2	08/31/2017	8:42 AM	25	76			D2:(Failed to yield right of way)	Fatal injury	Daylight	Clear	Dry	Angle	V1, a motorcycle, was traveling SB on Randolph Ave (Rte 28). V2, a light truck, was turning left from Randolph Ave (Rte 28) NB onto Hallen Ave traveling WB when the vehicles collided.
34	1	09/06/2017	9:54 AM	27	22	25	58	D1:(Distracted)	Non-fatal injury - Possible	Daylight	Cloudy	Dry	Rear-end	V1 was traveling SB on Randolph Ave (Rte 28) in the left lane. V2 was traveling SB on Randolph Ave (Rte 28) in the left lane and stopped to make a left turn onto Pleasant St. V3 and V4 were traveling NB on Randolph Ave (Rte 28) in the left lane. V1 rear-ended V2 causing V2 to strike V3 and V4. V1 then struck a pole on the west side of the roadway. The operator of V1 was reaching for an object in the vehicle when the crash occurred.
35	5	09/30/2017	7:56 PM	61	42			D2:(Inattention)	Non-fatal injury - Non-incapacitating	Dark - lighted roadway	Clear	Wet	Angle	V1 was traveling SB on Randolph Ave (Rte 28) in the left lane. V2, a moped, was traveling WB on Eager Rd and attempted to make a left turn onto Randolph Ave (Rte 28). V2 collided with V1 on the driver side.
36	3	10/12/2017	12:18 PM	20	52			D1:(Followed too closely)	Non-fatal injury - Possible	Daylight	Cloudy	Dry	Rear-end	V1 and V2 were traveling NB on Randolph Ave (Rte 28) near 999 Randolph Ave in the left lane. V2 stopped to make a left turn into the 999 Randolph Ave entrance. V1 rear-ended V2.
37	1	10/16/2017	8:47 PM	47	25			Unknown	Non-fatal injury - Possible	Dark - lighted roadway	Clear	Dry	Rear-end	V1 and V2 were traveling SB in the left lane on Randolph Ave (Rte 28). A pedestrian was crossing Randolph Ave (Rte 28) at the Pleasant St intersection from a bus stop on the west side of the roadway. V1 stopped to avoid hitting the pedestrian. V2 rear-ended V1.
38	3	10/20/2017	4:03 PM	27				Unknown	Non-fatal injury - Non-incapacitating	Daylight	Clear	Dry	Sideswipe, opposite direction	V1 was traveling SB on Randolph Ave (Rte 28) near 930 Randolph Ave in the left lane. V2, a bus, was traveling NB on Randolph Ave (Rte 28) in the left lane. V2 sideswiped V1 on the driver side.
39	4	10/27/2017	6:47 PM	45	35	22		D2:(Followed too closely)	Non-fatal injury - Possible	Dark - lighted roadway	Clear	Dry	Rear-end	V1, V2, and V3 were traveling NB on Randolph Ave (Rte 28) in heavy traffic near Sassamon Rd. V1 was rear-ended by V2. V2 was rear-ended by V3.
40	5	11/17/2017	8:53 AM	46	27			D2:(Inattention)	No injury	Daylight	Clear	Dry	Rear-end	V1 and V2 were traveling NB on Randolph Ave (Rte 28) in the right lane. V1 stopped for the red light at the Hillside St intersection. V2 rear-ended V1.
41	10	12/11/2017	11:29 AM	70	19			No improper driving	Non-fatal injury - Non-incapacitating	Daylight	Clear	Dry	Angle	V1 was traveling NB on Randolph Ave (Rte 28) in the left lane. V2 was traveling NB on Randolph Ave (Rte 28) in the right lane. V2 attempted to make a u-turn and struck V1 on the passenger side.
42	11	12/26/2017	7:15 AM	47				No improper driving	No injury	Daylight	Cloudy	Ice	Single vehicle crash	V1 was traveling on the Rte 93 NB ramp to Randolph Ave (Rte 28) NB. V1 struck black ice which caused the vehicle to slide and collide with an overpass support structure.
43	3	12/26/2017	6:56 PM	69				No improper driving	Non-fatal injury - Possible	Dark - lighted roadway	Clear	Snow	Single vehicle crash	V1 was traveling SB on Randolph Ave (Rte 28) just north of 999 Randolph Ave in the left lane when V1 struck a deer that had entered the roadway from the east side.
44	1	01/03/2018	7:12 AM	26	56	54		No improper driving	Non-fatal injury - Non-incapacitating	Daylight	Clear	Dry	Rear-end	V1, V2, and V3 were traveling NB on Randolph Ave (Rte 28) near Pleasant St. V2 and V3 slowed in traffic. V1 rear-ended V2 causing V2 to rear-end V3.
45	2	01/14/2018	1:47 PM	61	17			D2:(Inattention)	No injury	Daylight	Cloudy	Dry	Rear-end	V1 and V2 were traveling NB in the left lane on Randolph Ave (Rte 28). V1 came to a stop intending to make a left turn onto Hallen Ave. V2 rear-ended V1.
46	10	01/15/2018	6:10 PM	50	23			D2:(Wrong side or wrong way)	Non-fatal injury - Non-incapacitating	Dark - roadway not lighted	Cloudy	Ice	Angle	V1 was traveling NB on Randolph Ave (Rte 28). V2 was traveling SB on Randolph Ave (Rte 28). V2 hit a patch of black ice causing the vehicle to spin out of control. V1 collided with V2 in the NB lane.

Crash Diagram Ref #	Collision Diagram Page #	Crash Date	Crash Time	D1 Age	D2 Age	D3 Age	D4 Age	Driver Contributing Code	Max Injury Status	Light Condition	Weather Condition	Road Surface	Manner of Collision	Comments
	#	mm/dd/yy	hh:mm	#	#	#	#	Type	Type	Type	Type	Type	Type	
47	2	02/05/2018	3:08 PM	56	63			No improper driving	No injury	Daylight	Clear	Dry	Angle	V1 was traveling SB on Randolph Ave (Rte 28). V2 was traveling EB on Hallen Ave. V2 attempted to make a left turn onto Randolph Ave (Rte 28) NB. V2 struck V1 on the right passenger side.
48	1	02/11/2018	12:12 AM	42				Unknown	No injury	Dark - lighted roadway	Rain	Wet	Single vehicle crash	V1 was traveling SB on Randolph Ave (Rte 28) near 687 Randolph Ave when the operator lost control of the vehicle due to the rain. V1 collided with a telephone pole on the west side of the roadway.
49	3	02/16/2018	10:08 AM	28	48			Unknown)	Non-fatal injury - Non-incapacitating	Daylight	Cloudy	Wet	Rear-end	V1 and V2 were traveling SB on Randolph Ave (Rte 28) near 999 Randolph Ave in the right lane. V1 stopped in response to an ambulance traveling NB. V2 rear-ended V1.
50	1	03/06/2018	7:49 AM	24	51			D2:(Failed to yield right of way)	No injury	Daylight	Cloudy	Dry	Angle	V1 was traveling SB on Randolph Ave in the left lane. V2 was traveling NB on Randolph Ave (Rte 28). V1 attempted to turn left onto Pleasant St and struck V2.
51	4	03/19/2018	10:40 AM	62				No improper driving	No injury	Daylight	Clear	Dry	Single vehicle crash	V1 was traveling NB on Randolph Ave (Rte 28) in the left lane. A pedestrian was standing next to a stopped vehicle in the right lane on Randolph Ave (Rte 28) near Heather Dr. V1's passenger side mirror struck the pedestrian.
52	2	03/25/2018	2:12 PM	29				D1:(Inattention)	No injury	Daylight	Clear	Dry	Single vehicle crash	V1 was traveling SB on Randolph Ave (Rte 28) near the Highland St intersection. V1 veered off of the west side of the roadway and struck a sign before continuing SB on Randolph Ave (Rte 28).
53	3	03/27/2018	10:28 PM	29				No improper driving	No injury	Dark - lighted roadway	Clear	Dry	Single vehicle crash	V1 was traveling SB on Randolph Ave (Rte 28) near 999 Randolph Ave in the right lane. V1 collided with a deer that had entered the roadway.
54	3	03/31/2018	6:55 AM	Unknown				Unknown	No injury	Daylight	Clear	Dry	Single vehicle crash	V1 was traveling SB on Randolph Ave (Rte 28) near 901 Randolph Ave. V1 collided with a deer that had entered the roadway.
55	5	04/03/2018	9:56 AM	48	68			No improper driving	Non-fatal injury - Possible	Daylight	Clear	Dry	Rear-end	V1 and V2 were traveling NB on Randolph Ave (Rte 28) near 1126 Randolph Ave in the right lane. V1 stopped for a firetruck that was attempting to enter the roadway. V2 rear ended V1.
56	11	04/06/2018	4:48 PM	20				Unknown	No injury	Daylight	Cloudy; Snow	Wet	Single vehicle crash	V1 was traveling on the Rte 93 NB ramp to Randolph Ave (Rte 28) NB. The operator lost control of the vehicle which slid and hit a curb before colliding with an overpass support structure.
57	9	04/26/2018	9:17 AM	37	22	42		D1:(Followed too closely)	No injury	Daylight	Clear	Dry	Rear-end	V1 , V2, and V3 were all traveling NB on Randolph Ave (Rte 28). Traffic was slowing to a stop when V1 rear-ended V2 causing V2 to rear-end V3.
58	9	05/01/2018	8:20 AM	68	47			D1:(Failed to yield right of way)	No injury	Daylight	Clear	Dry	Sideswipe, same direction	V1 was traveling NB on Randolph Ave (Rte 28) in the left lane. V2 was traveling NB on Randolph Ave (Rte 28) in the right lane. At a merger point, V2 attempted to merge into the left lane when V1 struck V2 on the driver side.
59	5	05/03/2018	1:41 PM	44	80			No improper driving	Non-fatal injury - Possible	Daylight	Clear	Dry	Sideswipe, same direction	V1 was traveling SB on Randolph Ave (Rte 28) near Eager Rd in the left lane. V2, a U-Haul, was traveling SB on Randolph Ave (Rte 28) in the right lane. V1 attempted to pass V2 when the vehicles collided in a sideswipe.
60	6	05/24/2018	8:21 AM	22	29			D2:(Failure to keep in proper lane or running off road)	No injury	Daylight	Clear	Dry	Sideswipe, same direction	V1 was traveling SB on Randolph Ave (Rte 28) in the right lane. V2 was traveling SB on Randolph Ave (Rte 28) in the left lane. V2 attempted to change lanes and sideswiped V1 on the driver side.
61	2	06/11/2018	6:27 PM	69	39			Unknown	No injury	Daylight	Clear	Dry	Rear-end	V1 and V2 were traveling EB on Highland St. V1 stopped at the stop sign at the Randolph Ave (Rte 28) intersection. V2 rear-ended V1. The operator of V2 was talking on a cellphone when the collision occurred.
62	6	06/21/2018	9:40 AM	41	20			No improper driving	No injury	Daylight	Clear	Dry	Angle	V2 was traveling NB on Randolph Ave (Rte 28) in the right lane. V1 was attempting to make a left turn onto Randolph Ave (Rte 28) from the parking lot at 1240 Randolph Ave. V2 struck V1 on the passenger side.
63	9	06/27/2018	8:30 AM	52	48			Unknown	No injury	Daylight	Clear	Dry	Sideswipe, same direction	V1 was traveling NB on Randolph Ave (Rte 28) north of Rte 93 in the left lane. V2, freightliner truck, was traveling NB on Randolph Ave (Rte 28) in the right lane. At a merge point, both vehicles attempted to merge down to a single lane when contact was made in a sideswipe.

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	#	mm/dd/yy	hh:mm	#	#	#	#	Type	Type	Type	Type	Type	Type	
64	2	06/30/2018	1:25 PM	45	32			Unknown	No injury	Daylight	Clear	Dry	Rear-end	V1 and V2 were traveling NB on Randolph Ave (Rte 28) in the left lane. V1 slowed due to stopped traffic and was rear-ended by V2.
65	3	07/01/2018	8:51 PM	53				Unknown	Non-fatal injury - Possible	Dark - lighted roadway	Clear	Dry	Single vehicle crash	V1, a motorcycle, was traveling SB on Randolph Ave (Rte 28). An uninvolved vehicle was traveling NB on Randolph Ave (Rte 28) and made a left turn into the entrance at 999 Randolph Ave cutting off V1. V1 stopped short in reaction to the vehicle causing the motorcycle to tip over.
66	4	07/07/2018	4:01 PM	30	50			Unknown	Non-fatal injury - Possible	Daylight	Clear	Dry	Rear-end	V1 and V2 were traveling NB on Randolph Av (Rte 28) in the right lane. V1 slowed to make a right turn onto Hilltop St. V2 rear-ended V1.
67	10	07/10/2018	7:46 AM	50	Unknown			D1:(Exceeded authorized speed limit)	No injury	Daylight	Clear	Dry	Single vehicle crash	V1, a tractor trailer, was traveling on the Rte 93 SB on-ramp from Randolph Ave (Rte 28) NB. V1 approached the ramp at too fast of a speed which caused the vehicle to roll over onto the driver side.
68	10	07/14/2018	3:23 PM	63	48	70		D3:(Followed too closely)	No injury	Daylight	Clear	Dry	Rear-end	V1, V2, and V3 were traveling SB on Randolph Ave (Rte 28). V1 and V2 slowed due to traffic. V3 rear-ended V1 causing V1 to rear-end V2.
69	2	08/02/2018	11:59 AM	35	44			D1:(Followed too closely)	No injury	Daylight	Cloudy	Dry	Rear-end	V1 and V2 were traveling EB on Highland St. V2 was beginning to turn right onto Randolph Ave (Rte 28) when V1 rear-ended V2.
70	2	08/03/2018	1:27 PM	39	34			D1:(Inattention)	Non-fatal injury - Possible	Daylight	Clear	Dry	Rear-end	V1 and V2 were traveling NB in the left lane on Randolph Ave (Rte 28). V1 came to a stop intending to make a left turn onto Hallen Ave. V2 rear-ended V1. The operator of V2 was distracted by something that had been dropped inside the vehicle.
71	1	08/10/2018	7:56 AM	52	48	37		No improper driving	No injury	Daylight	Clear	Dry	Rear-end	V1, V2, and V3 were traveling NB on Randolph Ave (Rte 28) in the left lane near 629 Randolph Ave. V1 and V2 were stopped in traffic. V3 rear-ended V2 and V2 rear-ended V1.
72	9	09/10/2018	4:10 PM	29	40			D2:(Made an improper turn)	No injury	Daylight	Rain	Wet	Angle	V1 was traveling NB on Randolph Ave (Rte 28). V2 was stopped in the breakdown lane on the east side. V2 was attempting to make a u-turn and struck V1 on the passenger side.
73	5	09/19/2018	8:44 AM	40	30			No improper driving	No injury	Daylight	Cloudy; Clear	Wet	Rear-end	V1 and V2 were traveling NB on Randolph Ave (Rte 28) near 1139 Randolph Ave in the right travel lane. V1 was stopped in heavy traffic. V2 was unable to stop completely and rear-ended V1.
74	6	10/06/2018	11:54 AM	25	20			D1:(Distracted)	Non-fatal injury - Incapacitating	Daylight	Clear	Dry	Rear-end	V1 and V2 were traveling NB on Randolph Ave (Rte 28) near 1220 Randolph Ave in the left lane. V2 stopped to make a left turn. V1 rear-ended V2. The operator of V1 was distracted by a GPS.
75	4	10/14/2018	3:50 PM	65	18			Unknown	No injury	Daylight	Clear	Dry	Rear-end	V1 was traveling NB on Randolph Ave (Rte 28) near Nahanton Ave in the left lane. V2 was traveling NB on Randolph Ave (Rte 28) in the right lane. V1 changed lanes from the left lane to the right lane in front of V2. V2 rear-ended V1.
76	3	10/18/2018	7:05 PM	45	20			D1:(Inattention)	Non-fatal injury - Non-incapacitating	Dark - lighted roadway	Clear	Dry	Rear-end	V1 and V2 were traveling SB on Randolph Ave (Rte 28) in the left lane. V1 was stopped waiting to make a left turn onto Ridgewood Rd. V2 rear-ended V1. The operator of V2 was distracted by something that had fallen inside the vehicle at the time of the collision.
77	4	11/01/2018	6:03 PM	16	20			No improper driving	Non-fatal injury - Possible	Dark - lighted roadway	Clear	Dry	Angle	V2 was traveling SB on Randolph Ave (Rte 28) in the left lane. V1 was traveling EB on Heather Dr. V1 attempted to make a left turn onto Randolph Ave (Rte 28) when V2 struck V1. This was a courtesy crash.
78	11	11/11/2018	1:31 PM	49	31			D1:(Disregarded traffic signs, signals, road markings)	No injury	Daylight	Clear	Dry	Sideswipe, same direction	V1 was traveling on the Rte 93 NB ramp to Randolph Ave (Rte 28) SB. V2 was traveling on Randolph Ave (Rte 28) SB in the right lane. V1 was attempting to merge onto Randolph Ave (Rte 28) and sideswiped V2 pushing V2 into the median guard rail.
79	10	11/15/2018	10:12 PM	24	17			No improper driving	No injury	Dusk	Snow	Snow	Rear-end	V1 and V2 were traveling SB on Randolph Ave (Rte 28). V1 slowed to take the on-ramp to Rte 93 SB. The operator of V1 lost control of the vehicle due to the winter conditions. The operator of V2 also lost control of the vehicle and struck V1 twice, once in the rear and again in the front. Both vehicles exited the roadway and came to a stop in the infield of Randolph Ave (Rte 28) SB and Rte 93.

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80	2	11/30/2018	8:45 PM	39	35			D2:(Inattention)	Non-fatal injury - Non-incapacitating	Dark - lighted roadway	Clear	Dry	Rear-end	V1 and V2 were traveling NB in the left lane on Randolph Ave (Rte 28). V1 came to a stop intending to make a left turn onto Hallen Ave. V2 rear-ended V1.
81	2	12/02/2018	4:12 PM	17	73			No improper driving	No injury	Dusk	Cloudy; Clear	Wet	Angle	V1 was traveling SB on Randolph Ave (Rte 28) in the right lane. V2 was traveling NB on Randolph Ave (Rte 28) and attempted to take a left turn onto Hallen Ave when V1 struck V2 on the front passenger side.
82	10	12/07/2018	6:15 PM	38	21	45		D1:(Inattention)	Non-fatal injury - Non-incapacitating	Dark - roadway not lighted	Clear	Dry	Rear-end	V1, V2, and V3 were traveling NB on Randolph Ave (Rte 28). V2 and V3 came to a stop due to traffic. V1 rear-ended V2 causing V2 to rear-end V3.
83	2	12/15/2018	11:30 AM	57	57			No improper driving	No injury	Daylight	Cloudy	Wet	Sideswipe, same direction	V2 was traveling in the right travel lane NB on Randolph Ave (Rte 28). V1 was traveling in the left travel lane NB on Randolph Ave (Rte 28). V1 attempted to change lanes to go around a vehicle slowing to make a left hand turn onto Hallen Ave and sideswiped V2 on the driver side.
84	8	12/20/2018	7:19 AM	23	25			D2:(Inattention)	No injury	Daylight	Cloudy	Dry	Rear-end	V1 and V2 were traveling NB on Randolph Ave (Rte 28) south of Chickatawbut Rd. Ve1 was slowing with the flow of traffic when V2 rear-ended V1.
85	3	12/20/2018	5:44 PM	66	46			No improper driving	Non-fatal injury - Non-incapacitating	Dark - lighted roadway	Clear	Dry	Rear-end	V1 and V2 were traveling SB on Randolph Ave (Rte 28) near 933 Randolph Ave in the right lane. V1 was stopped in stop and go traffic. V2 rear-ended V1.
86	3	12/28/2018	5:25 PM	27	25			D2:(Operating vehicle in erratic, reckless, careless, negligent or aggressive manner)	Non-fatal injury - Possible	Dark - lighted roadway	Rain	Wet	Rear-end	V1, a police cruiser, and V2 were traveling SB on Randolph Ave (Rte 28) in the left lane. V1 was stopped waiting to make a left turn onto Nahanton Ave. V2 rear-ended V1. The operator of V2 was distracted by an electronic device.
87	11	01/07/2019	7:45 PM	60				Unknown	No injury	Dark - lighted roadway	Clear	Dry	Single vehicle crash	V1 was found unoccupied, blocking traffic across from the Rte 93 NB off-ramp to Randolph Ave (Rte 28) NB. It is unclear how the crash occurred.
88	3	01/12/2019	5:50 PM	23	69			Unknown	No injury	Dark - lighted roadway	Clear	Dry	Rear-end	V1 and V2 were traveling SB on Randolph Ave (Rte 28) in the left lane. V1 was stopped waiting to make a left turn onto Ridgewood Rd. V2 rear-ended V1.
89	4	01/20/2019	3:15 PM	32				D1:(Driving too fast for conditions)	Non-fatal injury - Possible	Daylight	Sleet, hail (freezing rain or drizzle)	Snow	Single vehicle crash	V1 was traveling NB on Randolph Ave (Rte 28). The operator attempted to apply the brakes when they lost control of the vehicle. V1 slid across the SB lanes and struck a utility pole near 930 Randolph Ave.
90	2	01/23/2019	4:34 PM	39	29			Unknown	No injury	Daylight	Clear	Dry	Angle	V2 was traveling SB on Randolph Ave (Rte 28) in the right lane. V1 was travelling NB on Randolph Ave (Rte 28) and attempted to take a left turn onto Hallen Ave when V2 struck V1 on the front passenger side. This was a courtesy crash.
91	5	01/25/2019	7:10 AM	43	40			No improper driving	Non-fatal injury - Possible	Daylight	Clear	Ice	Angle	V1 was traveling SB on Randolph Ave (Rte 28) in the left lane near 1139 Randolph Ave. V2 was traveling NB on Randolph Ave (Rte 28). The operator of V2 lost control of the vehicle when it hit black ice causing the vehicle to spin and strike V1.
92	5	01/25/2019	7:40 AM	67	44			No improper driving	No injury	Daylight	Clear	Ice	Rear-end	V1, a bus, and V2 were traveling in traffic NB in the right lane on Randolph Ave (Rte 28) near 1139 Randolph Ave. V2 attempted to slow down when the vehicle slid on ice and rear-ended V1.
93	5	02/12/2019	2:15 PM	17	26			No improper driving	Non-fatal injury - Possible	Daylight	Snow; Blowing sand, snow	Snow	Rear-end	V1 and V2 were traveling SB on Randolph Ave (Rte 28) in the left lane. An uninvolved vehicle traveling in front of V1 stopped to make a left turn onto Eager Rd. V1 came to a stop in response to this vehicle. V2 was unable to stop in time and rear-ended V1.
94	3	02/13/2019	5:58 AM	34	50			No improper driving	No injury	Dark - lighted roadway	Cloudy	Wet	Unknown	V1 was traveling SB on Randolph Ave (Rte 28) near 999 Randolph Ave. V2 was traveling NB on Randolph Ave (Rte 28). V1's front driver side tire became unattached striking V2 on the front right side.
95	5	02/17/2019	4:23 AM	20				No improper driving	No injury	Dark - lighted roadway	Clear	Dry	Single vehicle crash	V1 was traveling SB on Randolph Ave (Rte 28) near 1139 Randolph Ave when it swerved to avoid a deer that had entered the roadway. As a result, V1 struck the curb on the east side of the roadway.
96	5	02/26/2019	7:50 PM	70	57			No improper driving	No injury	Dark - lighted roadway	Clear	Dry	Rear-end	V1 and V2 were traveling NB on Randolph Ave (Rte 28) in the left lane. V1 stopped to make a left turn into the driveway at 1135 Randolph Ave. V2 rear-ended V1.

Crash Diagram Ref #	Collision Diagram Page #	Crash Date	Crash Time	D1 Age	D2 Age	D3 Age	D4 Age	Driver Contributing Code	Max Injury Status	Light Condition	Weather Condition	Road Surface	Manner of Collision	Comments
	#	mm/dd/yy	hh:mm	#	#	#	#	Type	Type	Type	Type	Type	Type	
97	5	03/16/2019	12:15 PM	17	71			D2:(Failed to yield right of way)	Non-fatal injury - Possible	Daylight	Cloudy	Dry	Angle	V2 was traveling SB on Randolph Ave (Rte 28) in the left lane. V1 was exiting the parking lot at 1139 Randolph Ave attempting to make a left turn onto Randolph Ave (Rte 28). V2 struck V1 on the driver side. This was a courtesy crash.
98	4	05/04/2019	10:57 AM	62	38			Unknown	Possible Injury	Daylight	Cloudy; Rain	Wet	Sideswipe, same direction	V1 was traveling NB on Randolph Ave (Rte 28) near Heather Dr in the right lane. V2 was traveling NB on Randolph Ave (Rte 28) in the left lane. The vehicles collided in a sideswipe.
99	5	05/17/2019	2:58 PM	34	52			No improper driving	No Apparent Injury	Daylight	Cloudy; Rain	Wet	Angle	V2 was traveling NB in the left lane on Randolph Ave (Rte 28). V1 was pulling out of a driveway on the east side of Randolph Ave (Rte 28) near 1126 Randolph Ave. V1 was attempting to make a right turn onto Randolph Ave (Rte 28) into the left NB travel lane when V2 struck V1. This was a courtesy crash.
100	2	05/20/2019	7:48 AM	25	77			D2:(Swerving or avoiding due to wind, slippery surface, vehicle, object, non-motorist in roadway)	No Apparent Injury	Not reported	Cloudy	Dry	Sideswipe, same direction	V1 was traveling SB on Randolph Ave (Rte 28) near Highland St in the right lane. V2, a school bus, was traveling SB on Randolph Ave (Rte 28) in the left lane. A vehicle traveling NB began to cut into the SB lanes causing V2 to cross into the right SB lane and sideswipe V1.
101	3	06/03/2019	8:04 AM	41	33			Unknown	Possible Injury	Daylight	Cloudy	Dry	Sideswipe, same direction	V1 was traveling in the right travel lane NB on Randolph Ave (Rte 28) near 999 Randolph Ave. V2 was traveling in the left travel lane NB on Randolph Ave (Rte 28). V2 moved slight toward the right lane and sideswiped V1 on the driver side.
102	3	06/09/2019	4:39 AM	26				D1:(Swerving or avoiding due to wind, slippery surface, vehicle, object, non-motorist in roadway)	No Apparent Injury	Dawn	Clear	Dry	Single vehicle crash	V1 was traveling NB on Randolph Ave (Rte 28) in the right lane approaching Ridgewood Rd. A deer entered the roadway from the west side causing the vehicle to swerve off of the roadway and collide with a tree on the east side.
103	3	06/13/2019	3:19 PM	85	27			Inattention	Possible Injury	Daylight	Rain; Cloudy	Wet	Rear-end	V1 was traveling SB on Randolph Ave (Rte 28) near 901 Randolph Ave in the right lane after having made a right onto the roadway. V2 was traveling SB on Randolph Ave (Rte 28) in the left lane. V2 struck V1 on the driver side rear.
104	6	06/13/2019	5:59 PM	61	20			D2:(Distracted)	Possible Injury	Daylight	Cloudy; Rain	Wet	Rear-end	V1 and V2 were traveling SB on Randolph Ave (Rte 28) near 1205 Randolph Ave. V2 rear-ended V1.
105	4	07/10/2019	8:58 AM	29	28			D1:(Swerving or avoiding due to wind, slippery surface, vehicle, object, non-motorist in roadway)	Possible Injury	Daylight	Clear	Dry	Sideswipe, same direction	V1 was traveling NB on Randolph Ave (Rte 28) near 1041 Randolph Ave in the left lane. V2 was traveling NB on Randolph Ave (Rte 28) in the right lane. An uninvolved vehicle was stopped on Randolph Ave in the left lane waiting to make a left turn into a driveway. V1 attempted to change lanes in order to avoid this vehicle and sideswiped V2 on the driver side.
106	1	07/26/2019	2:03 AM	41	40			D2:(Operating vehicle in erratic, reckless, careless, negligent or aggressive manner)	Suspected Serious Injury	Dark - lighted roadway	Clear	Dry	Sideswipe, same direction	V1 was stopped on the west side of Randolph Ave (Rte 28) facing SB near 687 Randolph Ave. V2 was traveling SB on Randolph Ave (Rte 28) when V1 was struck by V2. It is suspected that the operator of V2 was operating under the influence.
107	11	08/06/2019	10:00 PM	26	22	21		D1:(Followed too closely)	No Apparent Injury	Dark - roadway not lighted	Clear	Dry	Rear-end	V1 was traveling on the Rte 93 NB off-ramp to Randolph Ave (Rte 28) SB. V2 and V3 were traveling SB on Randolph Ave (Rte 28). V2 and V3 were slowing due to traffic. Ve1 rear-ended V2 causing V2 to rear-end V3.
108	10	08/13/2019	7:41 AM	22	41			D1:(Failed to yield right of way)	No Apparent Injury	Daylight	Clear	Dry	Sideswipe, same direction	V1 was merging onto Randolph Ave (Rte 28) NB from the Rte 93 SB exit ramp. V2, a heavy crane truck was traveling NB on Randolph Ave (Rte 28). V1 did not see V2 and sideswiped V2 on the passenger side.
109	4	08/20/2019	6:05 PM	29	21			No improper driving	No Apparent Injury	Daylight	Clear	Dry	Rear-end	V1 and V2 were traveling NB on Randolph Ave (Rte 28) near Sassamon Ave in the left lane. V1 slowed to a stop in response to the vehicle traveling in front of it. V2 was not able to stop in time and rear-ended V1.
110	1	08/21/2019	11:46 AM	Unknown	43			No improper driving	No Apparent Injury	Daylight	Clear	Dry	Sideswipe, same direction	V1, a mail truck, was stopped partially on the sidewalk and partially in the right NB travel lane on Randolph Ave (Rte 28) near 688 Randolph Ave. V2 was traveling NB on Randolph Ave (Rte 28) in the right lane and sideswiped V1 on the driver side.

Crash Diagram Ref #	Collision Diagram Page #	Crash Date	Crash Time	D1 Age	D2 Age	D3 Age	D4 Age	Driver Contributing Code	Max Injury Status	Light Condition	Weather Condition	Road Surface	Manner of Collision	Comments
	#	mm/dd/yy	hh:mm	#	#	#	#	Type	Type	Type	Type	Type	Type	
111	2	08/23/2019	11:52 AM	39	20			D1:(Failure to keep in proper lane or running off road)	No Apparent Injury	Daylight	Clear	Dry	Angle	V1 was traveling in the right travel lane NB on Randolph Ave (Rte 28) near Hallen St. V2 was traveling in the left travel lane NB on Randolph Ave (Rte 28). V2 attempted to change lanes and struck V1 on the driver side.
112	4	09/15/2019	10:23 PM	27	32			D1:(Operating vehicle in erratic, reckless, careless, negligent or aggressive manner)	Suspected Serious Injury	Dark - lighted roadway	Clear	Dry	Head-on	V1 was traveling SB on Randolph Ave (Rte 28) near Heather Dr. V2 was traveling NB on Randolph Ave (Rte 28). V1 crossed over the double yellow line and collided with V2 in a head-on collision.
113	3	09/22/2019	7:38 PM	19	Unknown			No improper driving	No Apparent Injury	Dark - lighted roadway	Clear	Dry	Sideswipe, same direction	V1 was traveling NB on Randolph Ave (Rte 28) near the entrance at 999 Randolph Ave in the right lane. V2 was traveling NB on Randolph Ave (Rte 28) in the left lane. V2 began to merge into the right lane and sideswiped V1 on the driver side.
114	2	10/21/2019	11:14 AM	85	57			D2:(Inattention)	Possible Injury	Daylight	Clear	Dry	Rear-end	V1 and V2 were traveling NB in the left lane on Randolph Ave (Rte 28). V1 came to a stop intending to make a left turn onto Hallen Ave. V2 rear-ended V1.
115	4	10/24/2019	4:31 PM	50	52			No improper driving	Possible Injury	Daylight	Clear	Dry	Rear-end	V1 and V2 were traveling SB on Randolph Ave (Rte 28) near 1041 Randolph Ave in the left lane. V1 slowed down. V2 rear-ended V1.
116	2	10/28/2019	9:12 AM	43	57			D2:(Followed too closely)	Possible Injury	Daylight	Cloudy; Rain	Wet	Rear-end	V1 and V2 were traveling NB in the left lane on Randolph Ave (Rte 28). V1 stopped intending to make a left turn onto Hallen Ave. V2 rear-ended V1.
117	2	11/06/2019	12:41 AM	35				No improper driving	No Apparent Injury	Dark - lighted roadway	Clear	Dry	Single vehicle crash	V1 was traveling NB on Randolph Ave (Rte 28) near Highland St. A deer entered the roadway and V1 turned right to avoid striking the deer. V1 went over the curb and collided with a tree on the east side of the roadway.
118	2	11/09/2019	1:29 AM	28				D1:(Fatigued/asleep)	No Apparent Injury	Dark - lighted roadway	Clear	Dry	Single vehicle crash	V1 was traveling NB on Randolph Ave (Rte 28). The operator of V1 fell asleep and crossed over the double line colliding with a utility pole on the west side of the roadway near 804 Randolph Ave.
119	1	11/09/2019	8:24 AM	38				No improper driving	No Apparent Injury	Daylight	Clear	Dry	Single vehicle crash	V1 was traveling SB on Randolph Ave (Rte 28) in the left lane. A police K9 dog entered the roadway after having escaped from the backyard at 681 Randolph Ave. V1 struck the K9.
120	11	11/14/2019	6:30 PM	49	26			D2:(Physical impairment)	No Apparent Injury	Dark - lighted roadway	Clear	Dry	Sideswipe, same direction	V1 and V2 were traveling NB on Randolph Ave. V1 attempted to merge onto Randolph Ave (Rte 28) traveling NB from the Rte 93 NB off-ramp. V2 attempted to change lanes to enter the Rte 93 SB on ramp and sideswiped V1 on the driver side.
121	2	11/16/2019	10:39 AM	52	40			D2:(Inattention)	No Apparent Injury	Daylight	Clear	Dry	Angle	V1 was traveling NB on Randolph Ave (Rte 28) in the right lane. V2 was traveling NB on Randolph Ave (Rte 28) in the left lane. V2 stopped behind a vehicle attempting to make a left turn at Hallen Ave. V2 attempted to change lanes when V1 struck V2 on the passenger side.
122	5	11/28/2019	3:47 AM	36				D1:(Fatigued/asleep)	Unknown	Dark - lighted roadway	Rain	Wet	Single vehicle crash	V1 was located, unoccupied, on the sidewalk on the west side of Randolph Ave (Rte 28). The vehicle had struck a boulder and a utility pole near the driveway at 1077 Randolph Ave and was facing NB. V1 was likely traveling NB on Randolph Ave (Rte 28) prior to the accident.
123	2	12/03/2019	8:14 AM	47	31			No improper driving	No Apparent Injury	Daylight	Snow; Cloudy	Snow	Rear-end	V1 and V2 were traveling SB on Randolph Ave (Rte 28) near 895 Randolph Ave in the left lane. V2 began to slip due to the snowy conditions. V2 rear-ended V1.
124	5	12/08/2019	9:25 AM	47	74			D2:(Failed to yield right of way)	No Apparent Injury	Daylight	Cloudy	Dry	Angle	V1 was traveling NB on Randolph Ave (Rte 28) in the right lane. V2 was attempting to cross Randolph Ave (Rte 28) traveling from the parking lot at 1139 Randolph Ave to the parking lot at 1126 Randolph Ave. V1 struck V2 on the passenger side.
125	6	12/09/2019	4:26 PM	38	19			D2:(Inattention)	No Apparent Injury	Dark - lighted roadway	Rain; Cloudy	Wet	Rear-end	V1 and V2 were traveling SB on Randolph Ave (Rte 28) in stop and go traffic near 1240 Randolph Ave. V2 rear-ended V1.
126	4	12/17/2019	7:23 AM	43	68			D2:(Failed to yield right of way)	No Apparent Injury	Daylight	Snow; Rain	Wet	Angle	V1 was traveling NB on Randolph Ave (Rte 28) in the right lane. V2 was attempting to take a left from Sassamon Ave onto Randolph Ave (Rte 28) in the SB direction. V1 collided with V2 on the driver side.

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	#	mm/dd/yy	hh:mm	#	#	#	#	Type	Type	Type	Type	Type	Type	
127	6	12/17/2019	2:40 PM	64				Unknown	No Apparent Injury	Other	Cloudy; Sleet, hail (freezing rain or drizzle)	Slush	Single vehicle crash	V1 was traveling SB on Randolph Ave (Rte 28). The operator of V1 lost control of the vehicle due to the roadway conditions and collided with multiple objects in the front lawn at 1275 Randolph Ave.
128	4	12/25/2019	6:07 PM	58	56			No improper driving	Suspected Minor Injury	Dark - lighted roadway	Clear	Dry	Angle	V1 was traveling NB on Randolph Ave (Rte 28) in the right lane. V2 was exiting the driveway at 1036 Randolph Ave onto Randolph Ave (Rte 28). V1 struck V2 on the driver side.
129	5	01/03/2020	6:06 PM	54	48			No improper driving	No Apparent Injury	Dark - lighted roadway	Clear	Dry	Rear-end	V1 and V2 were traveling NB on Randolph Ave (Rte 28) in the right lane approaching the Hillside St intersection. V2 did not realize how slow V1 was traveling and rear-ended V1. The operators involved provided conflicting driver statements regarding the collision.
130	4	01/13/2020	9:31 AM	26	43			D2:(Inattention)	No Apparent Injury	Daylight	Cloudy	Dry	Sideswipe, same direction	V1 was traveling NB on Randolph Ave (Rte 28) near Heather Dr in the left lane. V2 was traveling NB on Randolph Ave (Rte 28) in the right lane. V2 swerved into the left lane and sideswiped V1. The operators involved provided conflicting driver statements regarding the collision.
131	2	01/17/2020	2:16 PM	50	75	37		No improper driving	No Apparent Injury	Daylight	Clear	Dry	Rear-end	V1 and V2 were traveling NB on Randolph Ave (Rte 28) near Hallen Ave in the left lane. V3 was traveling NB on Randolph Ave (Rte 28) in the right lane. V2 attempted to change lanes when V3 rear-ended V2 causing V2 to rear-end V1.
132	5	01/17/2020	10:50 PM	55	53			No improper driving	No Apparent Injury	Dark - lighted roadway	Clear	Dry	Angle	V2 was traveling NB on Randolph Ave (Rte 28) near Hillside St. V1 was traveling NB on Randolph Ave (Rte 28). V1 pulled into an unknown driveway with the intention of turning around and continuing to travel SB on Randolph Ave (Rte 28). V1 attempted to turn around and was struck by V2 on the driver side.
133	10	03/02/2020	3:06 PM	43	32			D1:(Failed to yield right of way)	No Apparent Injury	Daylight	Clear	Dry	Sideswipe, same direction	V1 was traveling SB on Randolph Ave (Rte 28) in the right lane. V2 was traveling SB on Randolph Ave (Rte 28) in the left lane. V1 attempted to change lanes and sideswiped V2. V1 then spun and struck the median guardrail before traveling off of the roadway on the west side and colliding with a tree.
134	3	03/03/2020	12:20 AM	29				D1:(Swerving or avoiding due to wind, slippery surface, vehicle, object, non-motorist in roadway)	Suspected Serious Injury	Dark - lighted roadway	Clear	Dry	Single vehicle crash	V1 was traveling SB on Randolph Ave (Rte 28) in the left lane. V1 swerved to avoid a deer that had entered the roadway. V1 crossed over the double yellow lines and ran off of the roadway on the east side. V1 sideswiped a tree and struck a utility pole near 930 and 940 Randolph Ave.
135	11	03/03/2020	12:53 AM	Unknown				D1:(Operating vehicle in erratic, reckless, careless, negligent or aggressive manner)	Not reported	Dark - lighted roadway	Clear	Dry	Single vehicle crash	V1 was found unoccupied off of Randolph Ave (Rte 28) NB on the east side. The vehicle had struck a cement pillar under the Rte 93 overpass.
136	1	03/05/2020	7:02 AM	39				D1:(Operating vehicle in erratic, reckless, careless, negligent or aggressive manner)	Suspected Minor Injury	Daylight	Clear	Dry	Single vehicle crash	V1 was traveling SB on Randolph Ave (Rte 28) in the right lane. The operator of V1 fell asleep causing the vehicle to veer off of the roadway to the right. V1 struck a tree on the property of 619 Randolph Ave.
137	3	03/18/2020	8:47 AM	33				No improper driving	No Apparent Injury	Daylight	Clear	Dry	Single vehicle crash	V1 was traveling NB on Randolph Ave (Rte 28) near 999 Randolph Ave in the left lane. A deer entered the roadway from the west side. V1 was unable to avoid the deer and struck it.
138	10	04/06/2020	1:42 AM	21				D1:(Failure to keep in proper lane or running off road)	No Apparent Injury	Dark - roadway not lighted	Cloudy	Dry	Single vehicle crash	V1 was traveling on the Rte 93 SB off-ramp to Randolph Ave (Rte 28) SB. V1 drove off of the road on the left side and lost control of the vehicle upon hitting the dirt. V1 spun out, hit a yield sign, and rolled over.
139	5	04/25/2020	2:41 PM	49	72			No improper driving	No Apparent Injury	Daylight	Clear	Dry	Angle	V1 was traveling SB on Randolph Ave (Rte 28) in the left lane. V2 was traveling NB on Randolph Ave (Rte 28) in the left lane. V1 attempted to turn left into the parking lot at 1126 Randolph Ave. V2 struck V1 on the passenger side pushing V1 into a stone pillar north of 1126 Randolph Ave.
140	3	04/29/2020	12:33 PM	Unknown				Unknown	Unknown	Unknown	Unknown	Unknown	Single vehicle crash	V1 was traveling NB on Randolph Ave (Rte 28). V1 crossed over the SB travel lanes and ran off of the road damaging several items on the property of 901 Randolph Ave.

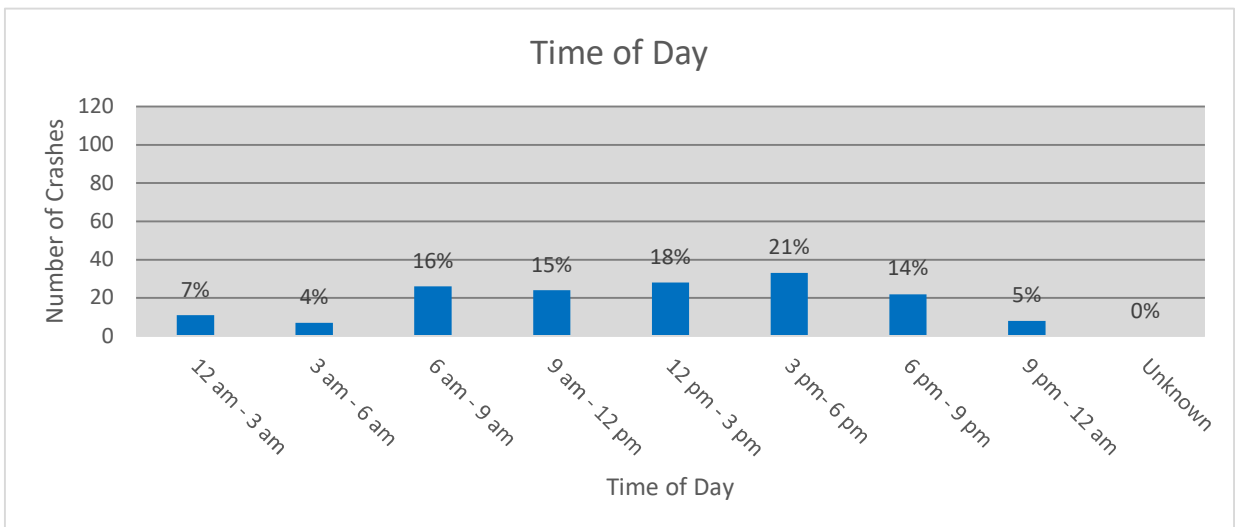
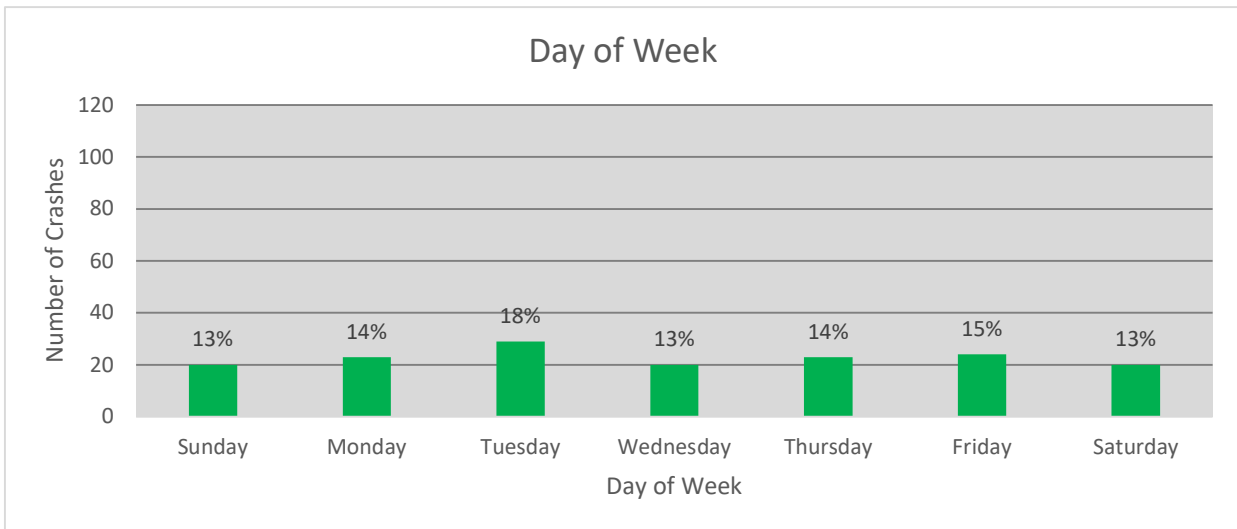
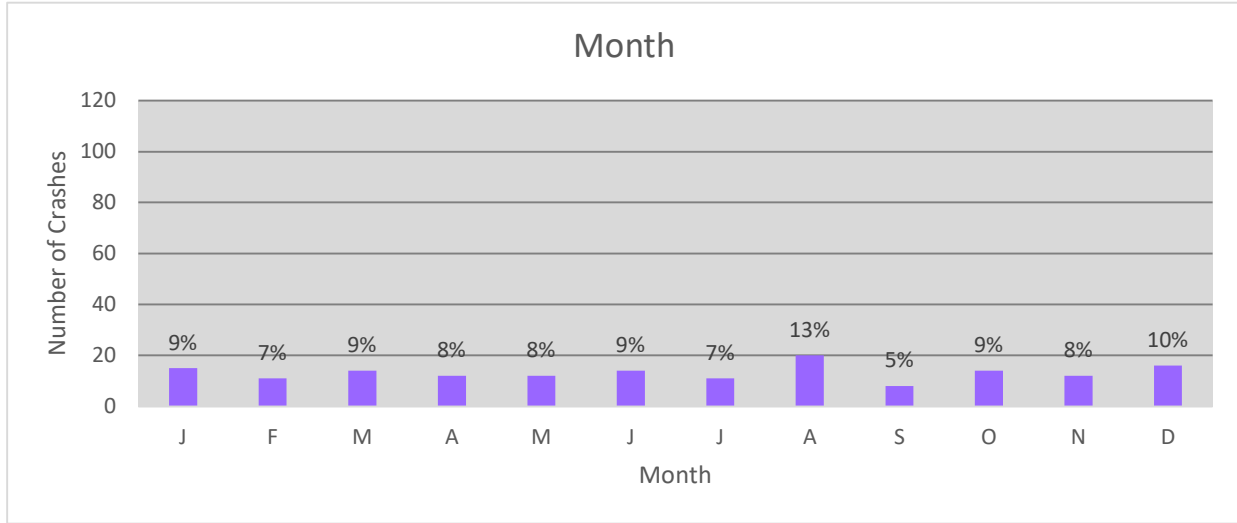
Crash Diagram Ref #	Collision Diagram Page #	Crash Date	Crash Time	D1 Age	D2 Age	D3 Age	D4 Age	Driver Contributing Code	Max Injury Status	Light Condition	Weather Condition	Road Surface	Manner of Collision	Comments
	#	mm/dd/yy	hh:mm	#	#	#	#	Type	Type	Type	Type	Type	Type	
141	3	05/02/2020	4:30 PM	49				No improper driving	Possible Injury	Daylight	Clear	Dry	Single vehicle crash	V1, a motorcycle, was traveling NB on Randolph Ave (Rte 28). An uninvolved vehicle traveling in front of V1 stopped short in response to a stopped vehicle waiting to make a left turn into the entrance at 999 Randolph Ave. V1 fell over when reacting to the stopped vehicles.
142	5	05/16/2020	11:07 AM	28	88			No improper driving	Possible Injury	Daylight	Clear	Dry	Angle	V1, a motorcycle, was traveling NB on Randolph Ave (Rte 28) in the right lane. V2 was traveling SB on Randolph Ave (Rte 28) in the left lane. V2 attempted to make a left turn into the parking lot at 1126 Randolph Ave. V1 struck V2 on the passenger side.
143	2	05/24/2020	9:51 PM	30	52			D2:(Made an improper turn)	Possible Injury	Dark - lighted roadway	Clear	Dry	Angle	V1 was traveling SB on Randolph Ave (Rte 28) in the left lane. V2 was traveling NB on Randolph Ave (Rte 28) and attempted to turn left onto Hallen Ave. V1 struck the passenger side rear of V2.
144	8	05/31/2020	1:34 PM	53	33			D2:(Followed too closely)	Suspected Minor Injury	Daylight	Clear	Dry	Rear-end	V1 and V2 were traveling NB on Randolph Ave (Rte 28). V1 slowed down to allow a parked car to pull off of the shoulder. V2 rear-ended V1.
145	11	06/20/2020	1:17 AM	26	59			D1:(Operating defective equipment)	Suspected Minor Injury	Dark - roadway not lighted	Clear	Dry	Rear-end	V1 and V2 were traveling SB on Randolph Ave (Rte 28) under the Rte 93 overpass in the left lane. V1 stopped in the left lane after the occupants realized the vehicle was on fire. V1 was then rear-ended by V2.
146	3	06/25/2020	10:38 AM	Unknown				Unknown	Not reported	Daylight	Clear	Dry	Single vehicle crash	V1 was traveling SB on Randolph Ave (Rte 28) when it veered off of the road and struck a tree near the driveway at 933 Randolph Ave.
147	3	06/30/2020	2:00 PM	22	18			D2:(Inattention)	No Apparent Injury	Daylight	Rain	Wet	Rear-end	V1 and V2 were traveling SB on Randolph Ave (Rte 28). V1 was stopped waiting to turn left onto Ridgewood Rd. V2 rear-ended V1.
148	10	07/12/2020	9:16 PM	63	31			D1:(Failed to yield right of way)	No Apparent Injury	Dark - lighted roadway	Cloudy	Dry	Angle	V1 and V2 were traveling SB on Randolph Ave (Rte 28). When Randolph Ave (Rte 28) SB opens to two lanes, V1 was traveling in the left lane and V2 was traveling in the right lane. V1 attempted to turn right in front of V2 to enter the Rte 93 SB on-ramp. V2 struck V1 on the passenger side.
149	11	07/23/2020	5:33 PM	19				D1:(Driving too fast for conditions)	No Apparent Injury	Daylight	Cloudy; Rain	Water (standing, moving)	Single vehicle crash	V1 was traveling NB on Randolph Ave (Rte 28) under the Rte 93 overpass. V1 drove through an area of pooling water which caused the operator to lose control of the vehicle and spin. V1 struck a fence and a bridge support on the east side of the roadway.
150	3	08/12/2020	12:57 PM	23				No improper driving	No Apparent Injury	Daylight	Clear	Dry	Single vehicle crash	V1 was traveling NB on Randolph Ave (Rte 28). V1 attempted to make a right turn onto Ridgewood Rd when the operator lost control of the vehicle and collided with a tree off of the NE corner of the intersection.
151	3	08/21/2020	2:44 PM	27	29			D1:(Swerving or avoiding due to wind, slippery surface, vehicle, object, non-motorist in roadway)	Possible Injury	Daylight	Clear	Dry	Sideswipe, same direction	V1 was traveling NB on Randolph Ave (Rte 28) in the left lane. V2 was traveling NB on Randolph Ave (Rte 28) in the right lane. An uninvolved vehicle was taking a left onto Randolph Ave (Rte 28) from the entrance at 999 Randolph Ave. To avoid the vehicle, V1 swerved into the right travel lane and sideswiped V2. The collision caused V2 to leave the roadway and collide with a tree off of the NE corner of the intersection of Randolph Ave (Rte 28) at Ridgewood Rd.
152	5	09/12/2020	7:57 PM	51	58			No improper driving	Suspected Minor Injury	Dark - lighted roadway	Clear	Dry	Rear-end	V1 and V2, a moped, were traveling NB on Randolph Ave (Rte 28). V1 stopped at the red light at the Hillside St intersection. V2 rear-ended V1.
153	5	09/27/2020	3:01 PM	91	25	26		D1:(Failed to yield right of way)	Possible Injury	Daylight	Cloudy	Dry	Rear-end	V1 was traveling SB on Randolph Ave (Rte 28) in the left lane. V2 and V3 were traveling NB on Randolph Ave (Rte 28) in the right lane. V1 attempted to make a left turn into the parking lot at 1126 Randolph Ave. V1 was struck by V2. V2 was rear-ended by V3.
154	6	10/02/2020	3:35 PM	35	41			No improper driving	No Apparent Injury	Daylight	Clear	Dry	Rear-end	V1 and V2 were traveling SB on Randolph Ave (Route 28) near 1237 Randolph Ave in the right lane. V2 rear-ended V1.
155	1	10/09/2020	11:34 PM	20				D1:(Operating vehicle in erratic, reckless, careless, negligent or aggressive manner)	Suspected Minor Injury	Dark - lighted roadway	Clear	Dry	Single vehicle crash	V1 was traveling NB on Randolph Ave (Route 28). The operator of V1 fell asleep and crossed over the SB lanes crashing into the property at 675 Randolph Ave.

Crash Diagram Ref #	Collision Diagram Page #	Crash Date	Crash Time	D1 Age	D2 Age	D3 Age	D4 Age	Driver Contributing Code	Max Injury Status	Light Condition	Weather Condition	Road Surface	Manner of Collision	Comments
	#	mm/dd/yy	hh:mm	#	#	#	#	Type	Type	Type	Type	Type	Type	
156	2	10/11/2020	4:08 AM	52				Unknown	Suspected Minor Injury	Dark - lighted roadway	Clear	Dry	Single vehicle crash	V1 was traveling SB on Randolph Ave (Rte 28) at Hallen Ave when it began to slide causing it to hit a utility pole.
157	1	10/27/2020	12:42 PM	45	42			No improper driving	No Apparent Injury	Daylight	Clear	Dry	Rear-end	V1 and V2 were traveling SB on Randolph Ave (Rte 28) in the left lane. V2 slowed to a stop to take a left turn onto Pleasant St. V1 rear-ended V2.
158	3	11/13/2020	2:18 PM	33	58			D1:(Failed to yield right of way)	No Apparent Injury	Daylight	Rain; Cloudy	Wet	Angle	V2 was traveling NB on Randolph Ave (Rte 28) in the left lane. V1 was traveling WB on Ridgewood Rd. V1 attempted to make a left turn onto Randolph Ave (Rte 28) to travel SB. V1 was struck by V2 on the driver side.
159	2	12/14/2020	8:27 AM	70				D1:(Operating vehicle in erratic, reckless, careless, negligent or aggressive manner)	Possible Injury	Daylight	Cloudy	Wet	Single vehicle crash	V1 was traveling SB on Randolph Ave (Rte 28) near Hallen Ave when the vehicle struck a utility pole.

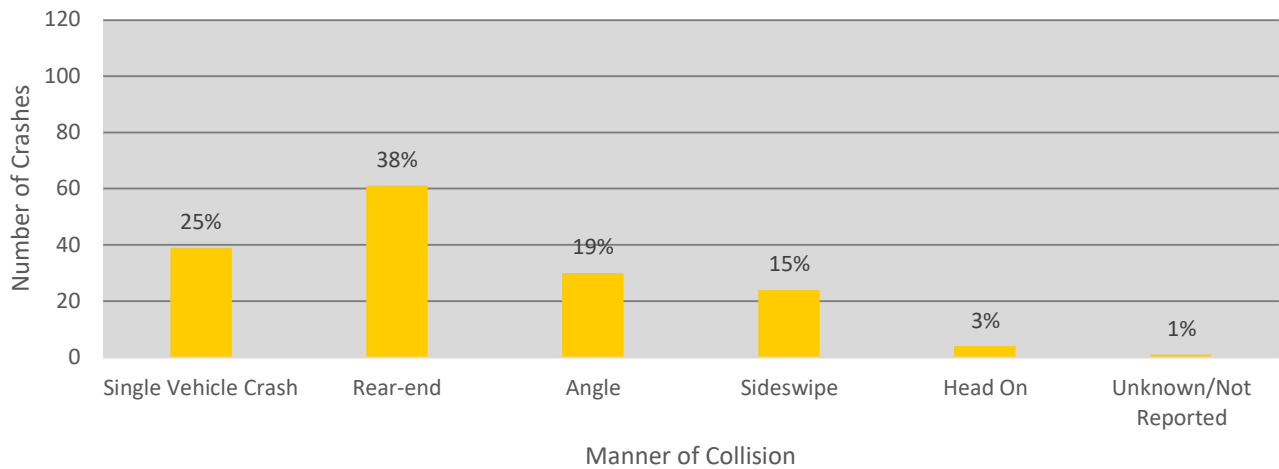
Collision Trends - Randolph Avenue (Route 28) Corridor

Milton, MA

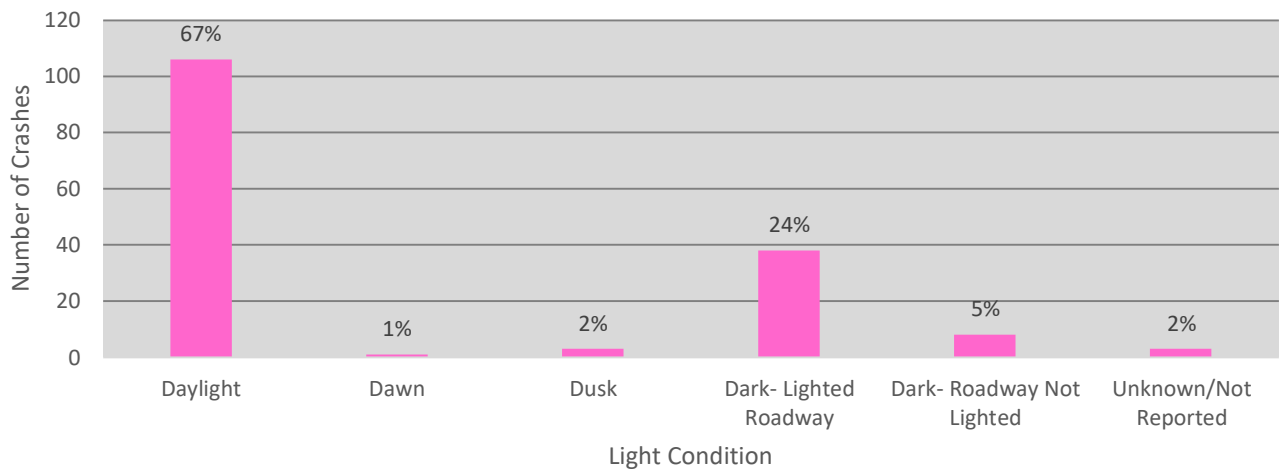
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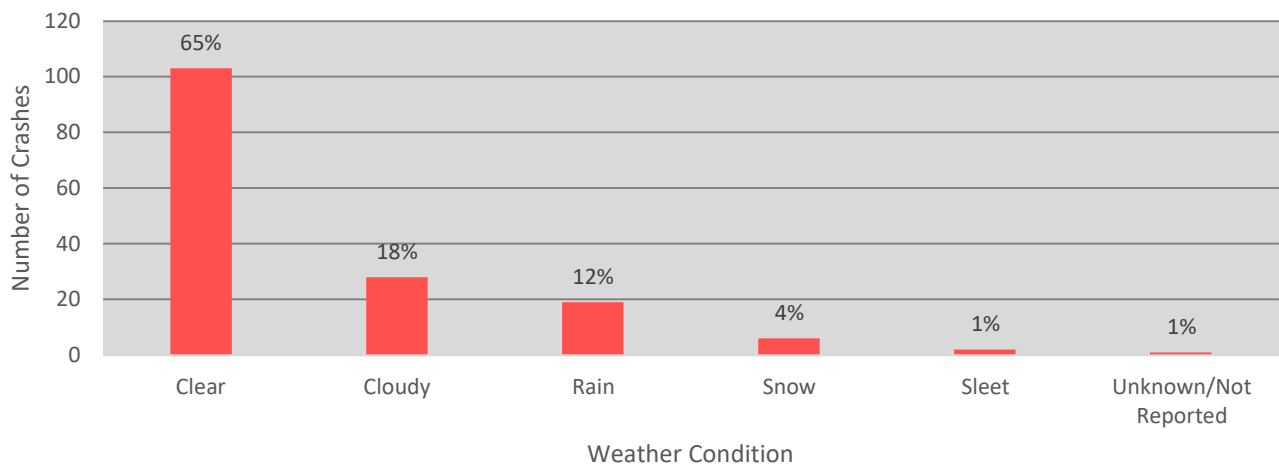
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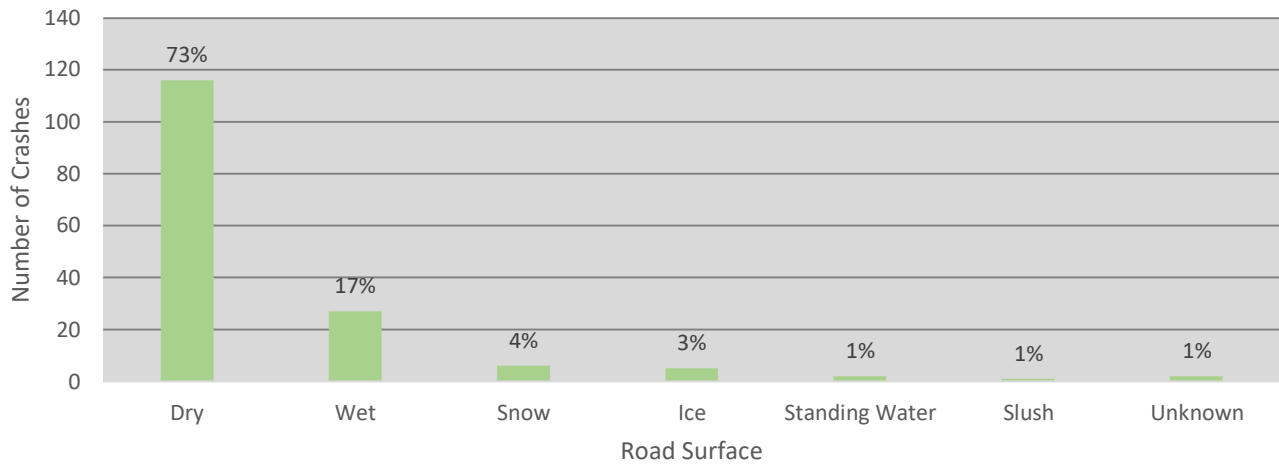
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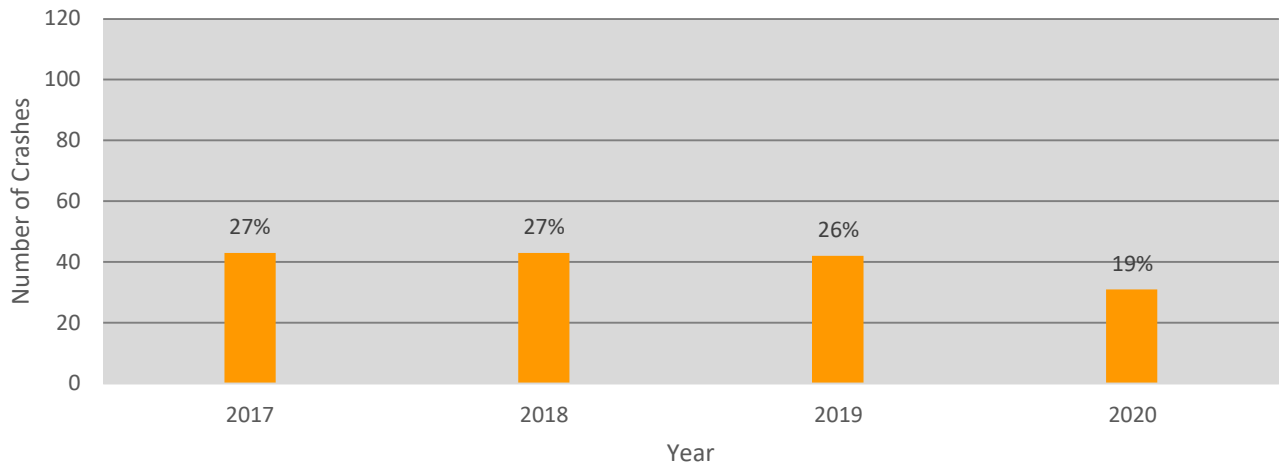
Weather Condition



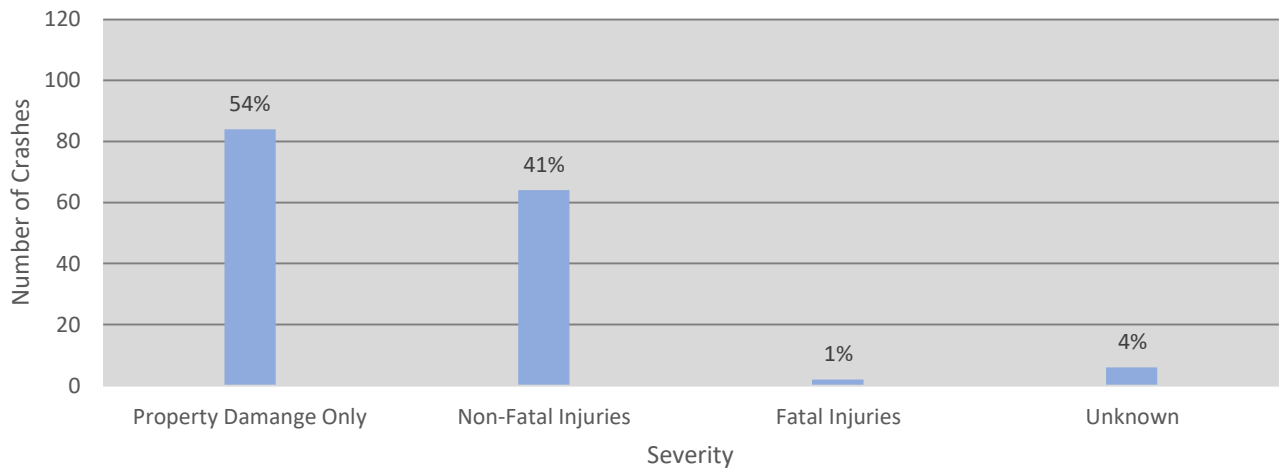
Road Surface



Year



Severity



Appendix D. Road Safety Audit References

Road Safety Audit References

FHWA Office of Safety - Proven Safety Countermeasures, U.S. Department of Transportation, Federal Highway Administration <https://safety.fhwa.dot.gov/provencountermeasures/>.

Road Safety Audits, A Synthesis of Highway Practice. NCHRP Synthesis 336. Transportation Research Board, National Cooperative Highway Research Program, 2004.

Road Safety Audits. U.S. Department of Transportation, Federal Highway Administration, <https://safety.fhwa.dot.gov/rsa/>

FHWA Road Safety Audit Guidelines. U.S. Department of Transportation, Federal Highway Administration, 2006.

Road Safety Audit, 2nd edition. Austroads, 2000.

Road Safety Audits. ITE Technical Council Committee 4S-7. Institute of Transportation Engineers, February 1995.