

# ROAD SAFETY AUDIT

Manley Street at West Street

West Bridgewater, Massachusetts

August 3, 2021

Prepared through Old Colony MPO FFY 2021 Unified Planning  
Work Program – Road Safety Audits at Multiple Locations:  
Under Contract with MassDOT



Prepared By:  
Old Colony Planning Council  
70 School Street, Brockton, MA. 02301



**OLD COLONY**  
PLANNING COUNCIL

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## Background

This Road Safety Audit for Manley Street at West Street in West Bridgewater was prepared as part of the Old Colony Metropolitan Planning Organization's (MPO) Road Safety Audits at Multiple Locations project in the MPO's FFY 2021 Unified Planning Work Program. The objective of the Road Safety Audits at Multiple Locations project is to identify known issues and potential improvements that can be implemented at high crash locations in a continuing effort to achieve safety performance targets for reducing serious injuries and fatalities on the regional highway network. Locations were selected through a data driven process as part of the MPO's Safety Management System and consultation with the communities of the Old Colony MPO.

This location was selected based on its ranking in the Old Colony Safety Management System. Based on crash data for the years 2018 through 2020, the intersection had a calculated Equivalent to Property Damage Only (EPDO) index value of 200, which exceeds the 2015-2017 regional EPDO threshold of 193. Based on that score, the intersection ranked #3 in the Town of West Bridgewater and #67 regionally in the Old Colony MPO region.

## Project Data

This Road Safety Audit was conducted on August 3, 2021. Out of an abundance of caution and respect to health and safety of Audit participants, this Road Safety Audit was conducted virtually through a webinar format. Participants were provided crash data and associated analysis (crash characteristics charts, collision diagrams) prior to the Audit for review, and background traffic data (traffic volumes, speeds, heavy vehicle traffic) along with surrounding land use were discussed during the Audit.

During the audit, crash analysis, land use, and traffic data was discussed. Aerial photographs of the intersection along with ground level photography were provided. There was an Old Colony Planning Council staff planner on site at the intersection, providing live video feed and commentary for the location, and responding to on-demand inquiries.

The RSA participants formed a multidisciplinary team representing many fields, including planning, engineering, law enforcement and emergency response, and advocacy. A list of RSA attendees is shown in Table 1.

Table 1: Participating Audit Team Members

Audit Team Member	Agency/Affiliation
Bill McNulty (host)	Old Colony Planning Council
Charles Kilmer, AICP	Old Colony Planning Council
Ray Guarino	Old Colony Planning Council
Guoqiang Li	Old Colony Planning Council
Kyle Mowatt	Old Colony Planning Council
Shawn Bailey	Old Colony Planning Council
Christopher Iannitelli	West Bridgewater Department of Public Works
Sean Anderson	West Bridgewater Department of Public Works
Meri Anderson	Town of West Bridgewater Select Board
Representative Michele Dubois	Massachusetts House of Representatives, 10 <sup>th</sup> Plymouth District
Sean Hanwell	Office of Massachusetts State Senator Walter Timilty
Dakota Delsignore	MassDOT Office of Traffic and Safety
Ana Fill	MassDOT Office of Traffic and Safety
Ale Kuncaitis	MassDOT District Five
Bianca Marshall	MassDOT District Five
Lauren McNaughton	MassDOT District Five
Jane Richardson	MassDOT District Five
Jason Walters	MassDOT District Five

## Project Location and Description

The intersection of Manley Street at West Street is a four-legged unsignalized intersection, controlled as a 4-way stop with STOP signs on each of the four approaches.

Manley Street runs from Route 106 northward through West Bridgewater into the City of Brockton, where it transitions to Liberty Street. The roadway parallels Route 24, and with easy access from Interchange 28 at Route 106 to the south and Interchange 31 at Route 123 to the north, Manley Street often serves as a bypass for Route 24 during times of peak congestion on the highway.

West Street primarily runs east-west from Route 106 westward through the Study intersection and into the Town of Easton.

The area is zoned as industrial, and land use is primarily developed with light industrial and office spaces.

- **Manley Street:** Manley Street is a two-lane roadway under local jurisdiction of the Town of West Bridgewater, functionally classified as an Urban Minor Arterial. There are no sidewalks on Manley Street in the immediate area of the intersection. None of the

approaches include bicycle accommodations. The posted speed limit on Manley Street is 50 MPH from the south and 45 MPH from the north, however, reduces to 25 MPH 650 feet in advance of the intersection on both approaches.

- **West Street:** West Street is a two-lane roadway under local jurisdiction of the Town of West Bridgewater, functionally classified as an Urban Collector west of the intersection and a Minor Arterial east of the intersection. The roadway does not have sidewalks, and neither approach includes bicycle accommodations, The posted speed limit is 40 MPH approaching the intersection from the west, and 35 MPH approaching from the east.



Figure 1: Locus Map

## Audit Observations and Potential Safety Enhancements

**Wide Intersection:** The intersection has a wide footprint, with flared corners on each corner allowing for wide turning radii to accommodate heavy vehicles. There are high volumes of heavy vehicle traffic on both streets, as the area is zoned primarily industrial and hence these roads provide access to several industrial and trucking businesses. The combination of this wide footprint with stop bars set back from the intersection along with a vertical crest in the intersection creates some difficulty for drivers to make eye contact and communicate with each other as they wait for right of way and clearance to proceed through the expansive intersection.



**Image 1: The wide footprint of the intersection combined with set back stop bars creates a large distance between vehicles.**

*Potential Safety Enhancements: Review traffic patterns and turning radii on corners and reduce footprint of intersection by pulling in corners if applicable. By doing so will reduce distance waiting drivers are separated from each other, improving visibility and ease of proceeding through the intersection. Long term, reconstructing the intersection with a roundabout or with a traffic signal can also mitigate this issue.*

**Operator Frustration and Impatience:** It was observed and noted in the crash data that a high percentage of crashes are occurring during peak hours of congestion. Long queues created by the 4-way stop along with driver confusion on the “rules of the road” as it pertains to all-way stop controlled intersections may be leading to driver frustration and impatience, resulting in drivers forcing their way through the intersection.

*Potential Safety Enhancements: Reconstruct the intersection with either a roundabout or installation of a traffic signal to better process traffic demand during peak hours.*

**Failure To Stop:** A review of the crash data suggests that failure to stop at the intersection may have been a cause in some of the angled collisions occurring here. Drivers approach the intersection at high rates of speed on Manley Street (50 MPH speed limit from the south, 45 MPH speed limit from the north). On West Street, there is somewhat of a tunnel effect created by heavy forestation. From each approach, drivers may be unaware that they are coming up on a stop sign controlled intersection.

*Potential Safety Enhancements: Use retroreflecting MUTCD compliant Stop Ahead (W3-1) advance traffic control warning signs on both sides of roadway on all four approaches. Consider using STOP signs on both sides of roadway and move STOP signs closer to stop bars. Enhance visibility of stop bar by using extra thick line and retroreflective thermoplastic paint. Consider STOP signs with flashing LED lights on border. Consider adding an overhead flashing warning control beacon to the*

*intersection. Consider adding “STOP Ahead” pavement markings on all approaches to the intersection.*

**High Speeds:** Travel speeds on the Manley Street approaches to the intersection are relatively high. The posted speed limit northbound is 50 MPH before a 650-foot 25 MPH zone in advance of the intersection, and similarly 45 MPH southbound before a 25 MPH zone in the vicinity of the intersection. These travel speeds may be a factor in some of the rear-end collisions occurring at the Manley Street STOP signs, as well as in some of the stop sign running.

*Potential Safety Enhancements: Provide better taper and advance warning for 25 MPH zones prior to intersection by using signage alerting drivers to reduce speed ahead and emphasize 25 MPH signs with larger signs and flashing yellow warning beacons. Increase speed enforcement in the area.*

**Restricted Sight Lines:** Roadway curvature and roadside vegetation inhibits sight lines at this location/

*Potential Safety Enhancements: Maintain as much clear zone with regularly maintained vegetative clearing as possible along right-of-way.*

**Insufficient Lighting:** Two overhead utility pole mounted streetlights were observed on the northeast and southeast corners. Participants familiar with the location noted the intersection is located in a generally dark area, and the intersection itself can be dark at night despite the overhead lights.

*Potential Safety Enhancements: Work with public utility to replace existing lighting with higher intensity, higher efficiency LED lighting.*

**Lack of Pedestrian Accommodations:** Neither Manley Street nor West Street have sidewalks. There is no accommodation for safe pedestrian crossing at the intersection. Residents have requested sidewalks on Manley Street, specifically between West Street and Route 106.

*Potential Safety Enhancements: Include the provision of sidewalks along Manley Street and West Street and pedestrian crossing accommodations at the intersection with any significant capital improvement to the intersection or area.*

**Lack of Bicycle Accommodations:** Neither Manley Street nor West Street have bike lanes, useable shoulders, or sharrows.

*Potential Safety Enhancements: Include the provision of some combination of bike lanes or usable shoulders along Manley Street and West Street with any significant capital improvement to the intersection or area.*

## Summary of Road Safety Audit

Based on the review of data, observations of the intersection made in the field, and group discussion, the RSA team identified possible enhancements that could improve safety at the intersection. Further study and design work will need to be conducted to determine the feasibility of improvements. Table 2 summarizes the estimated time frame and costs, and Table 3 summarizes the safety issues, possible enhancements, estimated safety payoff, time frame, cost, and jurisdiction. Safety payoff estimates are based on engineering judgment and are categorized as low, medium, and high. The time frame is categorized as short-term (<1 year), midterm (1 to 3 years), or long-term (typically >3 years). Long-term improvements are typically considered to be substantial improvements with an expected time frame for implementation greater than 3 years. The costs are categorized as low (<\$10,000), medium (\$10,001 to \$50,000), or high (>\$50,000).”

**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
Wide Intersection	Reduce corner radii if traffic patterns permit. Move stop lines closer to intersection if possible.	High / Medium (moving stop lines)	Long Term / Short Term (moving stop lines)	High / Low (moving stop lines)	Town of West Bridgewater
Operator Frustration and Impatience	Reconstruct intersection with a roundabout or traffic signal.	High	Long Term	High	Town of West Bridgewater
Failure To Stop	Increase conspicuousness of stop signs and bars with double signage, larger signs, enhanced stop bars, and overhead flashing warning beacon. Consider adding "STOP Ahead" pavement markings, LED borders on STOP signs	High	Short-Mid Term	Medium	Town of West Bridgewater
High Speeds	Use improved signage and advance warning to alter drivers to reduced speed ahead. Use flashing warning beacons mounted to 25 MPH signs. Increase speed enforcement.	High	Short / Mid Term	Medium	Town of West Bridgewater
Restricted Sight Lines	Maintain as much clear zone on roadway edges as ROW will permit.	Medium	Short Term	Low	Town of West Bridgewater
Insufficient Lighting	Replace existing lighting with high intensity, higher efficiency LED.	Medium	Mid Term	Medium	Town of West Bridgewater / National Grid
Lack of pedestrian accommodations.	Consider inclusion of sidewalks with any future improvement. Add pedestrian crossings to intersection.	High	Long Term	High	Town of West Bridgewater
Local of bicyclist accommodations.	Consider upgrading roadways with bicycle lanes with any future improvement.	High	Long Term	Medium	Town of West Bridgewater

## Appendix A. RSA Meeting Agenda

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# Agenda

**Virtual Road Safety Audit for  
Manley Street at West Street  
West Bridgewater, MA  
Tuesday, August 3, 2021  
1:00 PM – 2:00 PM**

**Contact:** Bill McNulty, Old Colony Planning Council  
(508) 583-1833 ext. 207  
wmcnulty@ocpcrpa.org

**Attendees:** Invited Participants Include a Multidisciplinary Team including West Bridgewater Officials (Chief Elected Officials, DPW, Police, Fire, Administration, Planning), MassDOT, FHWA, Legislative Delegation

**Please Bring:** Thoughts and Suggestions

**Meeting Location:** **Virtual Meeting (Zoom):**  
<https://us02web.zoom.us/j/82122167307?pwd=dTk0SUxU1R0eHdTOzhGcitsdGNCZz09>  
**Webinar ID:** 821 2216 7307  
**Password:** 441512

**1:00 PM** Welcome and Introductions

**1:05 PM** Study Background and Review of Study Area

**1:10 PM** Virtual Road Safety Audit of Manley Street at West Street

- Review of Crash Data
- Existing Conditions and Known Challenges
- Identification of Potential Safety Improvements

**1:40 PM** Wrap-Up Site Audit; Discussion of Next Steps

## **Instructions For Participants:**

- Before attending the Road Safety Audit, participants are encouraged to familiarize themselves with the study area, and make note of existing conditions and any deficiencies they observe
- 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 Road Safety Audit process
- After the meeting, participants will be asked to comment and respond to the document materials to ensure it is reflective of the Road Safety Audit completed by the multidisciplinary team

## Appendix B. RSA Audit Team Contact List

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## Participating Audit Team Members

Date: August 3, 2021

Location: Manley Street at West Street, West Bridgewater

<b>Audit Team Members</b>	<b>Agency/Affiliation</b>
Bill McNulty (host)	Old Colony Planning Council
Charles Kilmer, AICP	Old Colony Planning Council
Ray Guarino	Old Colony Planning Council
Guoqiang Li	Old Colony Planning Council
Kyle Mowatt	Old Colony Planning Council
Shawn Bailey	Old Colony Planning Council
Christopher Iannitelli	West Bridgewater Department of Public Works
Sean Anderson	West Bridgewater Department of Public Works
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Sean Hanwell	Office of Massachusetts State Senator Walter Timilty
Dakota Delsignore	MassDOT Office of Traffic and Safety
Ana Fill	MassDOT Office of Traffic and Safety
Ale Kuncaitis	MassDOT District Five
Bianca Marshall	MassDOT District Five
Lauren McNaughton	MassDOT District Five
Jane Richardson	MassDOT District Five
Jason Walters	MassDOT District Five

## Appendix C. Detailed Crash Data

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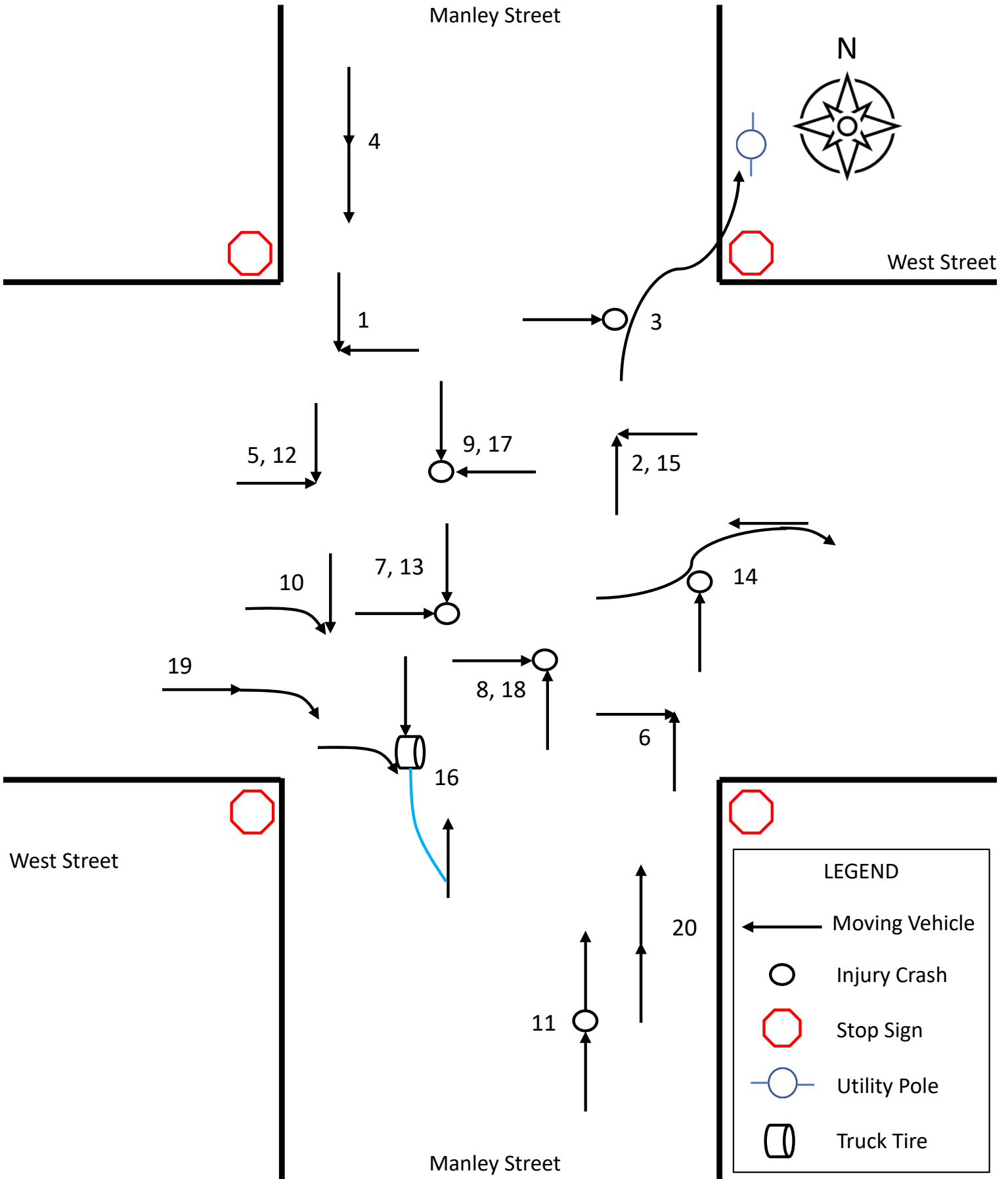
## Crash Data Summary Table

Manley Street at West Street - West Bridgewater, MA  
2017-2020

Crash Diagram Ref #	Crash Date <i>m/d/y</i>	Crash Day	Time of Day	Manner of Collision <i>Type</i>	Light Condition <i>Type</i>	Weather Condition <i>Type</i>	Road Surfa <i>Type</i>	Driver Contributing Code <i>Type</i>	Ages				Comments
									DOB	DOB	D1	D2	
1	4/1/17	Saturday	7:29 AM	Angle	Daylight	Rain	Wet	Disregarded traffic signs, signals, road markings	7/25/1992	3/3/1994	24	23	17-97-AC
2	4/6/17	Thursday	7:29 PM	Angle	Dark - roadway not lighted	Rain	Wet	Disregarded traffic signs, signals, road markings	3/18/1999	1/24/1997	18	20	17-108-AC
3	1/30/18	Tuesday	5:05 PM	Angle	Dusk	Cloudy	Wet	Failed to yield right of way	6/5/1949	6/3/1993	68	24	18-43-AC
4	5/15/18	Tuesday	3:52 PM	Rear-end	Daylight	Clear	Dry	Followed too closely	11/16/1958	10/2/1990	59	27	18-159-AC
5	12/26/18	Wednesday	4:46 PM	Angle	Dark - lighted roadway	Clear	Dry	Unknown	6/15/1941	7/21/1961	77	57	18-413-AC
6	1/10/19	Thursday	6:02 PM	Angle	Dark - lighted roadway	Clear	Dry	Inattention	6/8/1986	1/29/1983	32	35	19-15-AC
7	5/15/19	Wednesday	7:24 AM	Angle	Daylight	Clear	Dry	Operating Vehicle in erratic, reckless, careless, negligent, or aggressive manner	5/28/1962	1/31/1986	56	33	19-139-AC
8	6/10/19	Monday	12:04 PM	Angle	Daylight	Clear	Dry	No Improper Driving	4/5/1942	2/8/1948	77	71	19-166-AC
9	8/6/19	Tuesday	7:03 AM	Angle	Daylight	Clear	Dry	Unknown	3/29/1942	8/18/1953	77	65	19-222-AC
10	10/1/19	Tuesday	4:10 PM	Sideswipe, same direction	Daylight	Clear	Dry	No Improper Driving	12/7/1985	11/11/1941	33	77	19-275-AC
11	10/10/19	Thursday	11:51 AM	Rear-end	Daylight	Cloudy	Wet	Inattention	4/17/1938	4/8/2000	81	19	19-289-AC
12	12/19/19	Thursday	7:05 PM	Angle	Dark - lighted roadway	Clear	Dry	Disregarded traffic signs, signals, road markings	1/22/1982	7/17/1992	37	27	19-364-AC
13	12/24/19	Tuesday	6:10 PM	Angle	Dark - lighted roadway	Clear	Dry	Unknown	3/5/1970	5/18/1989	49	30	19-366-AC
14	7/10/20	Friday	11:06 AM	Angle	Daylight	Clear	Dry	Unknown	1/22/2000	7/17/1980	20	39	20-124-AC
15	9/29/20	Tuesday	7:34 AM	Angle	Daylight	Clear	Dry	Disregarded traffic signs, signals, road markings	12/27/1993	2/17/1983	26	37	20-174-AC
16	10/7/20	Wednesday	12:27 PM	Angle	Daylight	Clear	Dry	Operating defective equipment	11/3/1978	11/13/1936	41	83	20-186-AC
17	10/12/20	Monday	1:05 PM	Angle	Daylight	Clear	Dry	Inattention	2/17/1971	4/12/1974	49	46	20-193-AC
18	12/8/20	Tuesday	7:28 AM	Angle	Daylight	Clear	Dry	No Improper Driving	7/14/2000	7/19/2001	20	19	20-243-AC
19	8/17/17	Thursday	4:03 PM	Rear-end	Daylight	Clear	Dry	Unknown					17-245-AC
20	3/9/20	Monday	1:39 PM	Rear-end	Daylight	Clear	Dry	Inattention					20-52-AC

\*Courtesy Crash - A term used to describe a crash that occurs subsequent to a non-involved mainline driver who gives the right of way, contrary to the rules of the road, to another driver.

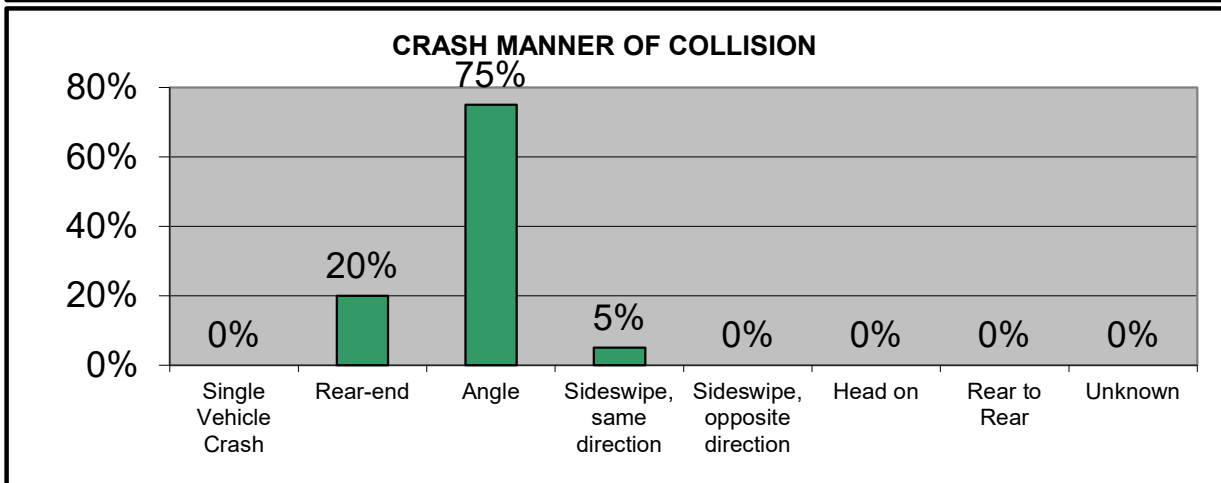
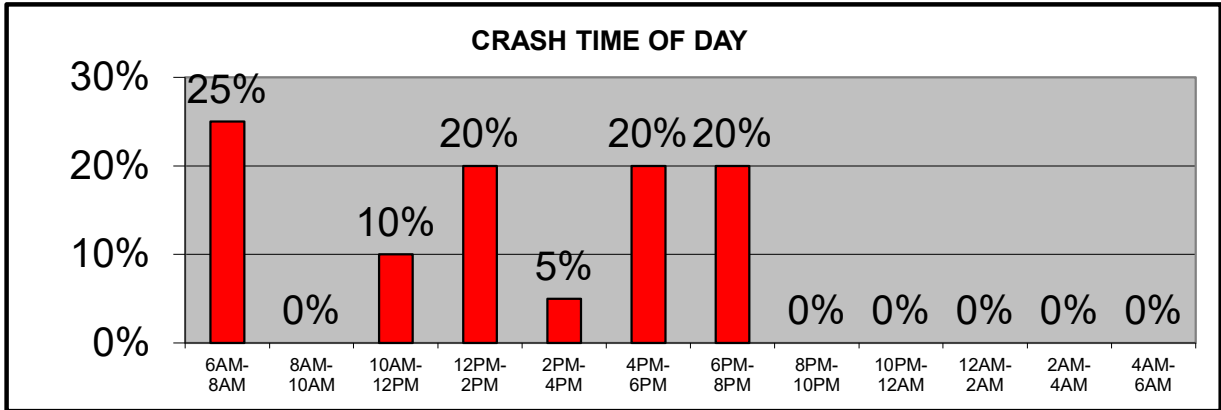
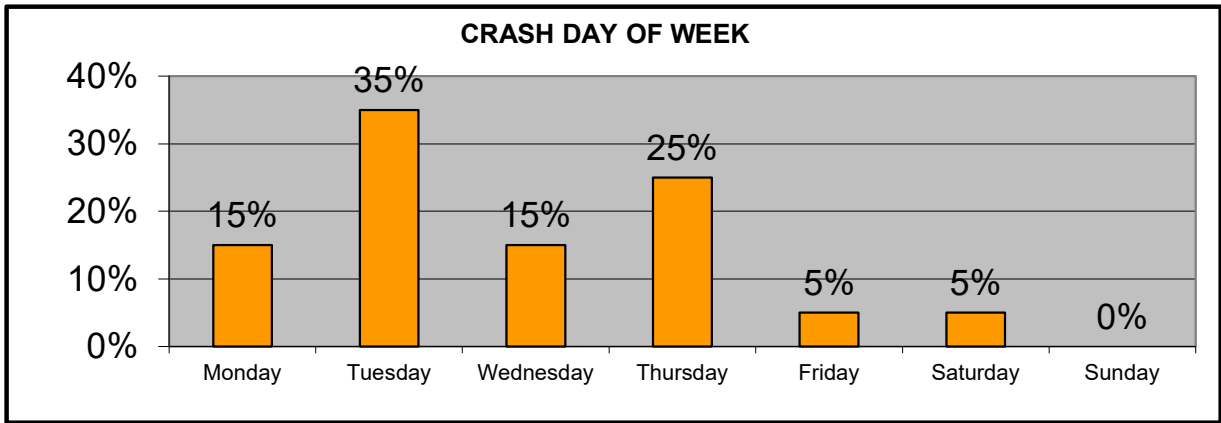
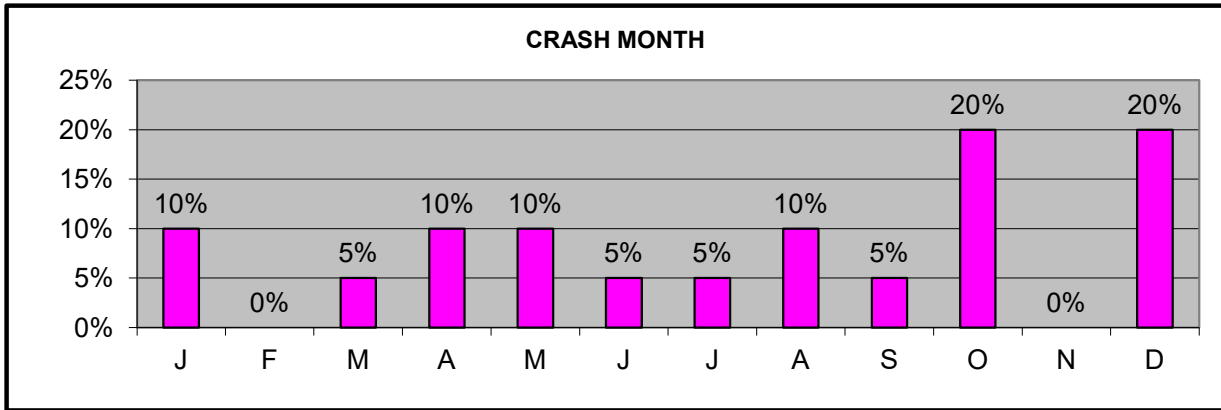
**COLLISION DIAGRAM**  
 Manley Street at West Street  
 Collision Diagram for Crashes (2017-2020)  
 Prepared by OCPC (SB 05/2021) (Source: West Bridgewater Police Dept.)



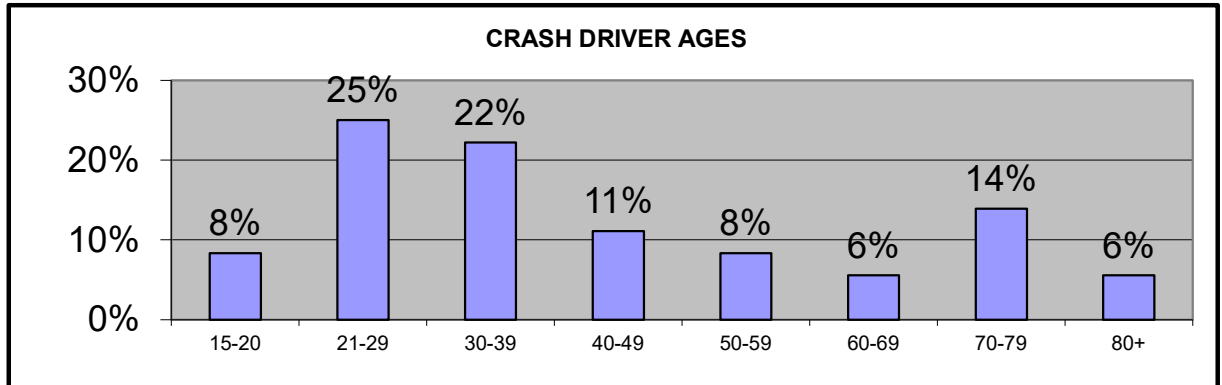
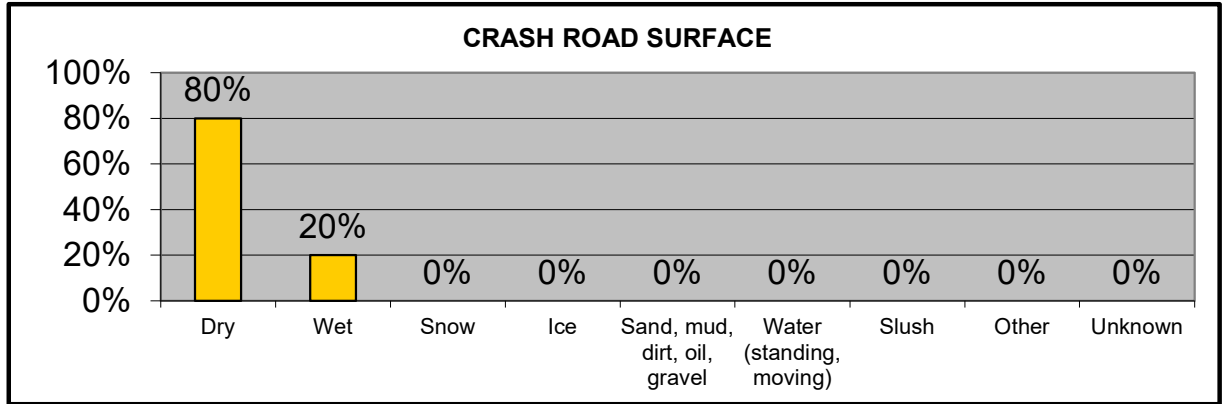
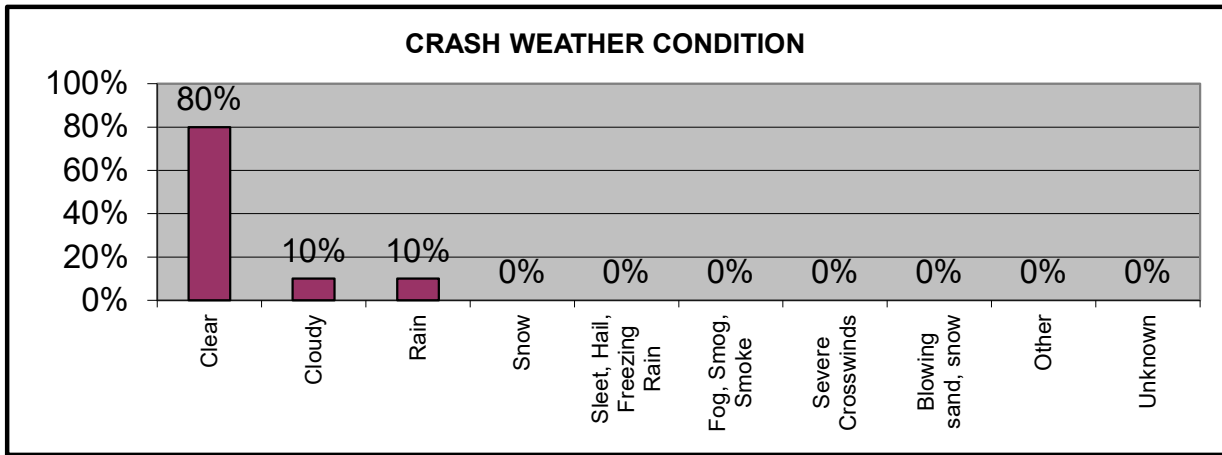
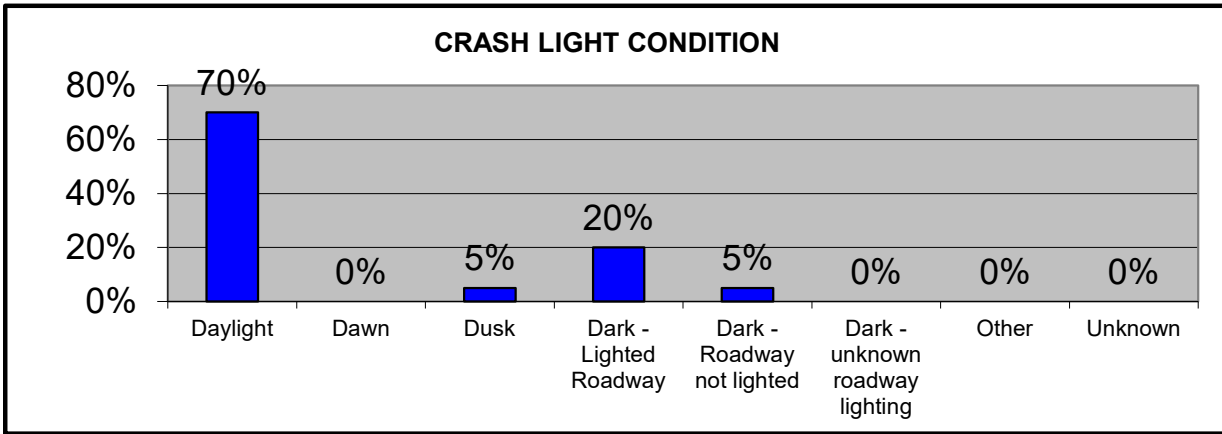
LEGEND	
	Moving Vehicle
	Injury Crash
	Stop Sign
	Utility Pole
	Truck Tire



**Crash Data Summary Tables and Charts**  
 Manley Street at West Street - West Bridgewater, MA



**Crash Data Summary Tables and Charts**  
 Manley Street at West Street - West Bridgewater, MA



## Appendix D. Additional Information

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## Appendix E. Road Safety Audit References

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## 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.

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