ROAD SAFETY AUDIT AND TRAFFIC STUDY

Palmer Road (Route 58) at Center Street

Municipality of Plympton, MA

June 18, 2024

Prepared For:

Town of Plympton

Prepared under MassDOT Contract #123116 By:
Old Colony Planning Council
70 School Street, Brockton, MA. 02301

Table of Contents

Contents

List of Appendices

List of Figures

List of Tables

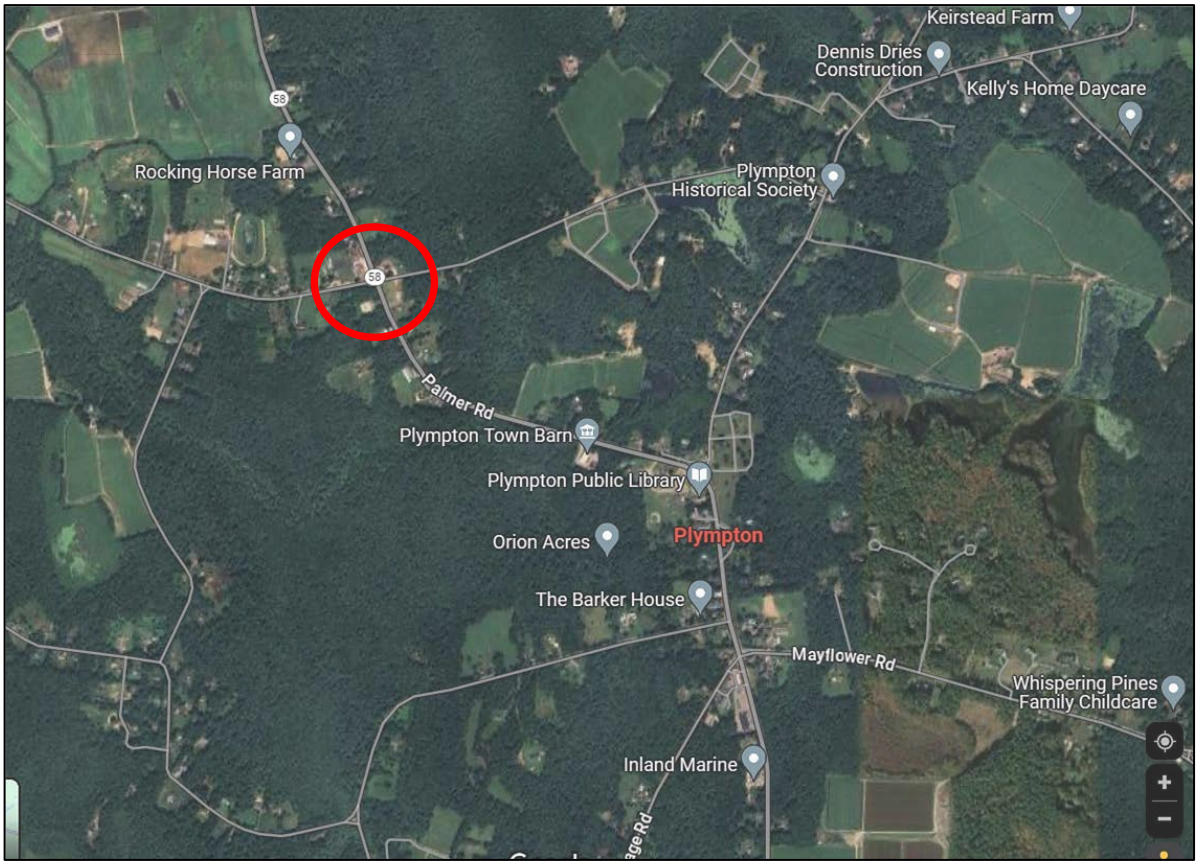
Background

This Road Safety Audit (RSA) and Traffic Study was completed by the Old Colony Planning Council (OCPC) at the request of the Town of Plympton. The study request was initiated due to speeding, safety concerns, and historic crashes at the intersection of Route 58 at Center Street in Plympton. The location of the intersection is shown in Figure 1.

The Federal Highway Administration defines the RSA as a proactive, formal examination that focuses on road safety conducted by a multi-disciplinary team independent of the project owner (or the requester of the study). The RSA is qualitative and quantitative in nature and crash data, traffic data, and analyses are included in this study. In the RSA, the safety of all road users is considered. The potential improvements from this study are categorized by timeframe and cost assisting the responsible agencies in their decisions to move forward with improvements.

This report includes average daily traffic volume counts, crash data compilation and analyses, speed surveys, heavy vehicle classifications, peak hour turning movement counts and operational analyses, and intersection warrant analyses for traffic signal and multi-way stop control implementation. The objective of this RSA was to review crash history at the intersection of Route 58 at Center Street, identify potential risks to all road users, and improve safety and mobility, particularly for vulnerable roadway users (pedestrians, cyclists, and persons using mobility assistance devices). The findings of this audit will assist the town in implementing potential short-term and long-term safety improvements (as well as low cost, medium, and high cost).

Figure 1: Locus Map



This Road Safety Audit was held on June 18, 2024, with an in-person meeting at the Board of Selectman's meeting room at Plympton Town Hall followed by a field visit to the site. The Audit consisted of an open discussion in the meeting room to discern observations and concerns, with a field visit to the site to observe the location as a group for its physical and operational attributes. Participants capped off the meeting with a discussion and documentation of potential short-term and long-term improvements. Participants included an interdisciplinary team of planners, engineers, public safety officials, and government officials. The members of the audit team were comprised of representatives from local and state agencies including first responders, local officials, transportation planners and engineers. A list of the audit team members is provided in Table 1 and is included in the appendix with their contact information.

Table 1: Participating Audit Team Members

Audit Team Member	Agency/Affiliation
Dan Hoffman	Plympton Police
John S. Jostedt	Plympton Fire
Cheryl Duddy	Plympton Fire Chief
Rob Firlotte	Plympton Highway
Jason Walters	MassDOT D5 Projects
Bailey Koestnar	MassDOT D5 Traffic
Derek Jackson	MassDOT D5 Projects
Isabella Alves	MassDOT D5
Majtoba Moharrer	MassDOT D5
Kevin Pierre Noel	MassDOT
Dakota DelSignore	MassDOT Traffic and Safety
Shawn Bailey	OCPC
Kyle Mowatt	OCPC
Matt Dyer	OCPC
Ray Guarino	OCPC
Guoqiang Li	OCPC

Project Location, Description, and Background Data

The Route 58/Center Street intersection is a two-way stop controlled intersection. The stop signs are posted on the minor street Center Street approaches with Route 58 being the major street. Route 58, also known as Palmer Road, is a rural major collector under the jurisdiction of Plympton, based on the MassDOT road inventory. Route 58 provides two travel lanes, and the speed limit is 40 miles per hour, according to the MassDOT Road inventory map. Route 58 is eligible for federal funding. Center Street is also under Plympton jurisdiction. It has a two-lane cross section and is classified as a minor collector road. According to the MassDOT Road Inventory viewer, it is eligible for federal funding. Route 58 is approximately 28 feet wide with two twelve-foot travel lanes and two-foot shoulders. Center Street is approximately 20 feet in width with two 10-foot travel lanes and provides no shoulders. There are no bicycle facilities at this intersection. Route 58 has a small shoulder; however, it is not wide enough for a bicycle to comfortably ride in, and Center Street has no shoulders. The Claire Saltonstall Bikeway runs along the southern leg of the intersection on Palmer Road (Route 58) and the western leg of the intersection along Center Street. The bikeway is 135 miles in length and runs from Boston to Cape Cod. The bikeway is marked on the Center Street west of the Route 58/Center Street intersection. The bikeway uses back roads and bike paths with occasional stretches of secondary highways. It follows various state parkways, highways, town roads and bike paths and in general, these roads have sufficient width for bicyclists; however, Center Street lacks a sufficient shoulder for bicycle use. Bicycle traffic is low except

during times of special events. The Pan Mass Challenge route is along the Claire Saltonstall Bikeway once a year as is the Best Buddies fund raiser.

Improvements were made to the Palmer Road (Route 58)/ Center Stret intersection in 2008 including the installation of a flashing beacon and the addition of a curb on the southwest corner (as well as the tightening of the turning radius for traffic calming purposes).

Traffic Volumes and Analyses

Traffic counts, including turning movement count at the Route 58/Center Street intersection, and automatic traffic counts, on Route 58 and Center Street, were conducted by OCPC. The automatic traffic counts on Route 58 and Center Street include speed studies, heavy vehicle classifications, and vehicle counts.

Automatic Traffic Counts

The automatic traffic recorder (ATR) counts were taken for a 48-hour period to determine the average 24-hour weekday traffic. In addition, the ATRs recorded the 85th percentile speeds and the percentage of heavy vehicles in the traffic flow. Table 2 summarizes the ATR data.

Table 2: ATR Summary

ATR Location	24-Hour Average Daily Traffic	85th Percentile Speed (both directions)	Percent of Heavy Vehicle Traffic	Date of Traffic Count
Palmer Rd (Rt. 58), north of Center St	5,277	51 MPH	20.1 %	3/27-28/2024
Palmer Rd (Rt. 58), south of Center St	8,095	44 MPH	15.1 %	3/27-28/2024
Center St, east of Palmer Rd (Rt. 58)	455	42 MPH	15.7 %	3/27-28/2024
Center St, west of Palmer Rd (Rt. 58)	3,772	44 MPH	14.7 %	3/27-28/2024

Table 2 shows that Route 58 north of Center Street carries the most traffic with 8,095 vehicles per day and Route 58 south of Center Street carries 5,277 vehicles per day. Center Street west of Route 58 had 3,772 vehicles per day. Center Street east of Route 58 had only 455 vehicles per day. This disparity in 24-hour traffic is reflected in the peak hour turning movements at the intersection with heavy movements to and from Route 58 and the west leg of Center Street. The Route 58 north of Center Street location had the highest speeds with an 85th percentile speed of 51 MPH. Route 58 south of Center Street had an 85th percentile speed of 44 MPH. The 85th percentile speed on Center Street is 44 MPH west of Route 58 and 42 MPH east of Center Street. The percentage of heavy vehicles in the traffic flow was high on all the approaches to the intersection. MassDOT has a threshold of 5% heavy vehicles for requesting an alternative truck route in a municipality. Numbered routes in Massachusetts, such as Palmer Road (Route 58), are not eligible for heavy commercial vehicle exclusions; however, Center Street is potentially eligible for truck exclusion if requested by the town and a suitable alternative is found. The percentage of heavy vehicles on Route 58 was 20.1% north of Center Street and 15.1% south of Center Street. It was 15.7% east of Route 58 and 14.7% west of Route 58.

Turning Movement Counts and Levels-of-Service

Turning movement counts were conducted for OCPC by a consultant for a twelve-hour period (7:00 am to 7:00 pm, 3/27/24) to determine the AM and PM peak hours on a weekday and to conduct traffic signal warrant analyses based on the methodology in the *Manual of Uniform Traffic Control Devices* (MUTCD). The peak hour turning movement counts (TMC) were used to determine the intersection levels-of-service (LOS) for a two-way stop control based on the Highway Capacity Manual (utilizing SYNCHRO software). The AM and PM peak hour TMCs for the Route 58/Center Street intersection are shown in Figure 2. These counts show high peak hour volumes for the Route 58 northbound and southbound through movements and for the Route 58 northbound left turns and the Center Street eastbound approach right turns. Consistent with the ATR counts, the TMCs show light traffic in and out of the east leg of Center Street. Based on discussions with the Plympton Highway Department, Center Street is used as a popular alternative route between Route 58 in Plympton and Route 106 in Halifax. Center Street west of the Route 58/Center Street intersection is part of a cut-through route that bypasses the Route 106/Route 58 intersection in Halifax, which can become congested during the peak commute times with long queues and long delays.

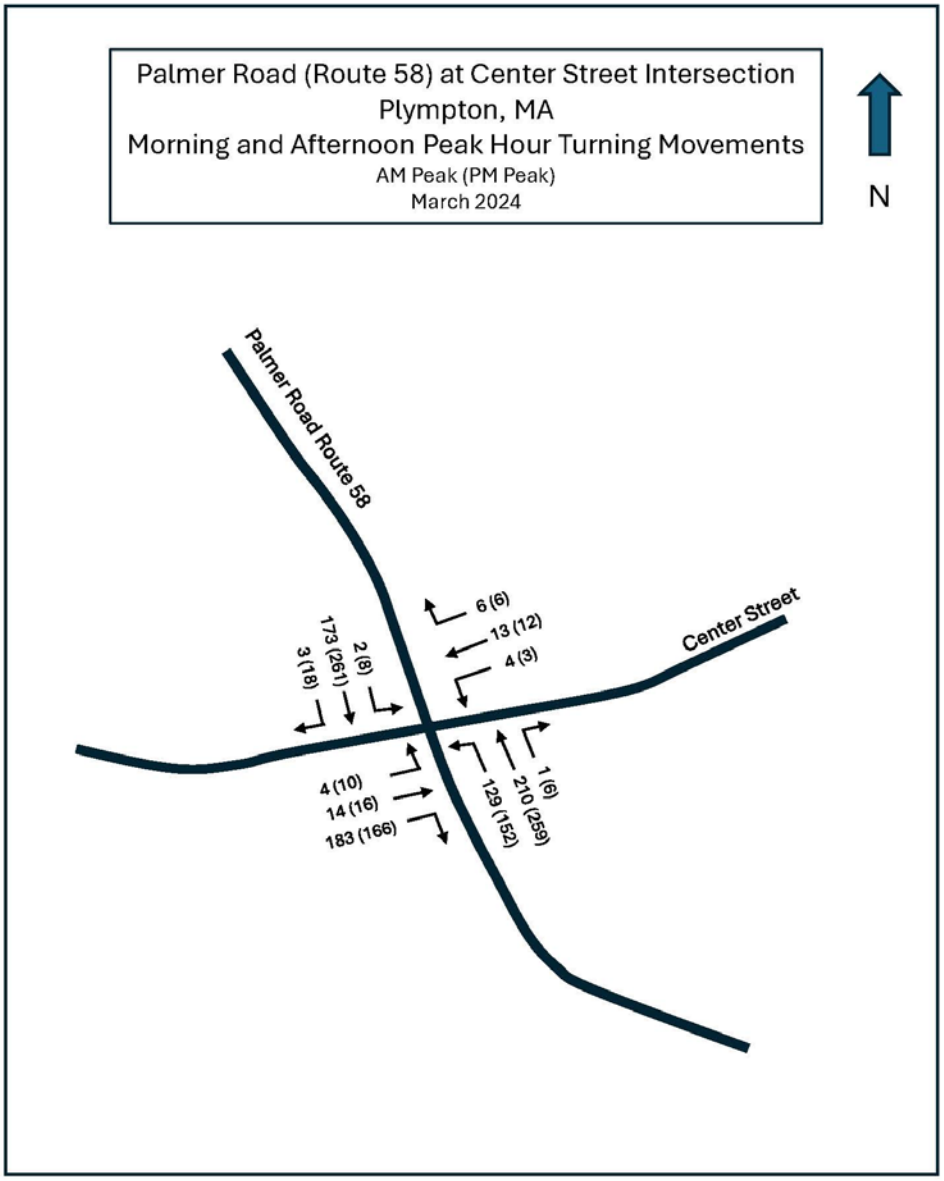
Intersection LOS was conducted for the Palmer Road (Route 58)/Center Street intersection. Level-of-service analysis is a qualitative and quantitative measure based on the analysis techniques published in the *Highway Capacity Manual*. Level-of-service is a general measure that summarizes the overall operation of an intersection or transportation facility. It is based upon the operational conditions of a facility including lane use, traffic control, and lane width, and considers such factors as operating speeds, traffic interruptions, and freedom to maneuver. Level-of-service represents a range of operating conditions and is summarized with letter grades from “A” to “F”, with “A” being the most desirable. Level-of-service “E” represents the maximum flow rate or the capacity of a facility. The LOS for the Center Street eastbound stop-controlled approach was at LOS “B” for all movements (left, through, and right) for the am peak hour. It was LOS “C” for all movements at this approach during the pm peak hour. The LOS for the Center Street westbound stop-controlled approach for all movements (left, through, and right) for the am peak hour was LOS “C”. It was LOS “C” for all movements at this approach during the pm peak hour. Delays under LOS “C” is considered acceptable for motorists at an intersection during peak hours.

Signal Warrant and All-Way Stop Analysis

Signal Warrant and all-way stop analyses were conducted for the Route 58/Center Street intersection according to the methodology spelled out in the *Manual on Uniform Traffic Control Devices* (MUTCD). Warrant analyses are a preliminary step in the installation of traffic signals or an all-way stop. The MUTCD states, “Warrants are not a substitute for engineering judgment. The fact that a warrant for a particular traffic control device is met is not conclusive justification to install or not install all-way stop control.” The MUTCD states that an engineering study should be the basis for the decision to install an all-way stop or traffic signals. In addition, the MUTCD states that alternatives should be considered when considering the installation of a traffic signal such as flashing beacons, roundabouts, warning signs, and others (full list in Section 4B.03 of the MUTCD). The MUTCD states, “The safe and efficient movement of all road users is the primary consideration in the engineering study to determine whether to install a traffic control signal or to install some other type of control or roadway configuration. The purpose of the engineering study is to evaluate all the factors that are relevant to a specific location. The satisfaction of a warrant (or warrants) is one of the relevant factors in the engineering study, but it is not intended to be the only factor or even the overriding consideration.” Based on the MUTCD warrant analyses methodology, utilizing the 12-hour data from the intersection turning movement count, the Route 58/Center Street intersection satisfies Warrant 1, Eight-Hour Vehicular Volume and Warrant 2,

Four-Hour Vehicular Volume for installation of traffic signals. In addition, the warrant for the installation of an all-way stop was also met.

Figure 2: Turning Movement Counts



Audit Observations and Potential Safety Enhancements

Following an introduction to the RSA process and a discussion of the background traffic, crash experience, intersection geometry, and traffic operations, the RSA participants were asked to discuss safety concerns at the Palmer Road (Route 58)/Center Street intersection. Participant observations and comments were documented by OCPC staff. Audit team members then visited the study area as a team, at which time observations were offered in the field and documented by OCPC staff members.

The following sections discuss in detail the safety issues and potential enhancements that were identified during the RSA. It should be noted that current, applicable design standards referenced throughout the report include but are not limited to the *Manual on Uniform Traffic Control Devices* (MUTCD), Americans with Disabilities Act (ADA), Public Right-of-Way Accessibility Guidelines (PROWAG), MassDOT and the Town of Plympton standards and specifications; in addition, consideration should be given to applicable local, state, and national guidelines. Several of the issues identified require further study and engineering judgment to determine the feasibility of implementing the improvements to address them.

Crash reports were compiled from the Plympton Police Department and supplemented with data from MassDOT for the years 2018 through 2023. The collision diagrams and a summary of the crash data for the Palmer Road (Route 58)/Center Street intersection area is included in the appendix of this report. Trends in the crash data include that angle crashes were the most common crash type at the intersection. There were six injury crashes and seven crashes with property damage only. Six of the crashes occurred between the hours of 2PM to 6PM and all crashes occurred with dry road surface conditions. The following lists these safety concerns and the potential enhancements that were identified during the RSA.

Safety Issue: Limited sight distance on the Center Street eastbound and westbound approaches. The Center Street approaches have limited sight distance due to vegetation along Palmer Road (Route 58). The farm stand on the northwest corner of the intersection has a sign that hinders sight distance, along with the farmstand fence and any signs or bunting placed on the fence. In addition, trucks and large vehicles in the farmstand parking lot adjacent to the fence add to the sight distance blockage.

Enhancement: Clear the vegetation on the southwest and northeast corner of the intersection along Palmer Road (Route 58).

Enhancement: Work with the owner of the Sunrise Farm Stand to relocate signs and other sight distance impediments such as parked vehicles.

Safety Issue: There is a lack of sufficient gaps in the Route 58 traffic flow through the intersection to allow sufficient safe turning movement from the Center Street minor approaches. In addition, based on field observations by RSA participants, vehicles on the eastbound Center Street approach make a "rolling stop" at the stop sign instead of coming to a full stop. There were at least five crashes at the intersection that were described as "failure to yield to traffic control".

Enhancement: An Intersection Control Evaluation (I.C.E.) should be done for the intersection to evaluate alternative control types to the intersection's traffic control.

Enhancement: Install traffic signals and evaluate stop line locations. Seven of the thirteen crashes were cross movement crashes, (Warrant analysis was conducted by OCPC for the intersection, which satisfied Warrants 1 and 2 of the MUTCD for signal installation, the Warrant analysis results are included in the appendix to this report).

The Center Street Eastbound approach to the Palmer Road (Route 58) intersection.

Safety Issue: Intersection geometry, the back wheels of heavy vehicles are going over the curb on the Center Street Eastbound approach when taking a right turn to Route 58 southbound due to a tight turning radius.

Enhancement: Consider redesigning and reconstructing the intersection geometry including adding channel islands for the Center Street Eastbound approach and an acceleration lane on the Route 58 southbound receiving lane. This would help facilitate the high volume of right-turns from Center Street eastbound to Route 58 southbound.

Safety Issue: Intersection visibility. Vehicles approaching the intersection from all approaches, Center Street eastbound and westbound and on Route 58 northbound and southbound have limited visibility to recognize the oncoming intersection. Route 58 northbound has vertical and horizontal impediments to intersection visibility. In addition, the flashing beacon light is not centered in the intersection and vegetation is covering existing advanced warning signs on the Center Street Eastbound approach.

Enhancement: Install advance "Stop Ahead" warning signs on the Center Street approaches. Consider doubling-up advanced warning signage on both sides of the road on all intersection approaches.

Enhancement: Install enlarged Stop signs on the Center Street approaches and double up on the stop signs mounting signs on both sides of the street to increase visibility.

Enhancement: Install flashing (solar powered) Stop signs on the Center Street approaches and center the flashing beacons.

Enhancement: Clear vegetation from blocking advanced warning signs on all the intersection approaches.

Enhancement: Install retroreflective strips on stop signposts on the Center Street approaches to increase conspicuity of signs.

Safety Issue: Speeding on Route 58 and Center Street. Speeding is prevalent on both Route 58 approaches and on Center Street and is a particular safety hazard on Center Street west of Route 58 at the Sauchuk Festival during the fall months as turning movements and parking increase along this stretch of Center Street for the events.

Enhancement: Consider traffic calming measures and speed reduction measures (possible geometric treatments) on Center Street and Route 58.

Safety Issue: Pavement marking, faded Stop Bars, and Edge Line consistency. The southbound approach center line is too far in the intersection.

Enhancement: Although the pavement markings are repainted every year, an engineering study evaluating the pavement markings should be completed for the intersection to address faded stop bars and edge line consistency.

Enhancement: Consider use of high-durability materials for pavement marking applications to reduce wearing.

Safety Issue: Lack of Bicycle accommodations:

Enhancement: Consider a bicycle plan for the town to better accommodate bicycle traffic especially for events such as the Pan Mass Challenge and the Best Buddies Fundraisers.

Safety Issue: Glare impacting the visibility of vehicles through the intersection (one crash was due to glare).

Enhancement: Install backplates on the overhead flashing beacons and center the flashing beacons in the intersection.

Safety Issue: The drainage catch basins show evidence of ponding.

Enhancement: Re-evaluate intersection drainage system.

Safety Issue: The intersection has only one streetlight, (four crashes occurred during non-daylight hours).

Enhancement: Re-evaluate intersection lighting.

Safety Issue: Access management issues. The driveway for the Sunrise Farm access is close to the intersection so that vehicles in and out of the Sunrise Farm lot impact turning movements at the intersection and traffic operations.

Enhancement: Convert the driveway operation to right turn in and right out only.

Summary of Road Safety Audit

Based on the review of data, observations of the study area made in the field, and group discussion, the RSA team identified possible enhancements that could improve safety at the study area locations. 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 responsibility. 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 3: Estimated Time Frame and Costs Breakdown

Time Frame	
Short-Term	<1 Year
Mid-Term	1-3 Years
Long-Term	>3 Years

Costs	
Low	<$10,000
Medium	$10,001-$50,000
High	>$50,000

Table 4: Potential Safety Enhancement Summary

Safety Issue	Potential Safety Enhancement	Safety Payoff	Time Frame	Cost	Jurisdiction
Limited sight distance on the Center Street eastbound approach due to several causes.	Clear the vegetation on the southwest and northeast corner of the intersection along Palmer Road (Route 58).	Medium	<1 Year	Low	Town
Limited sight distance on the Center Street eastbound approach due to several causes.	Work with the owner of the Sunrise Farm Stand to relocate signs and other sight distance impediments.	Medium	<1 Year	Low	Town
There is a lack of sufficient gaps in the Rte. 58 traffic flow through the intersection to allow sufficient safe turning movement from the Center St. minor approaches. Vehicles on the eastbound Center St. approach make a "rolling stop" at the stop sign instead of coming to a full stop.	An Intersection Control Evaluation (I.C.E.) should be done for the intersection to evaluate the intersection's traffic control.	High	<1 Year	Medium	Town
There is a lack of sufficient gaps in the Rte. 58 traffic flow through the intersection to allow sufficient safe turning movement from the Center St. minor approaches. Vehicles on the eastbound Center St. approach make a "rolling stop" at the stop sign instead of coming to a full stop.	Install traffic signals and evaluate stop line location, while considering sight lines.	High	>3 Years	High	Town
Intersection geometry, the back wheels of heavy vehicles are going over the curb on the Center Street EB approach when taking a right turn to Rte. 58 southbound due to a tight turning radius.	Consider redesigning and reconstructing the intersection geometry including adding channel islands for the Center Street Eastbound approach and an acceleration lane on the Route 58 southbound receiving lane.	Medium	>3 Years	High	Town

Table 4: Potential Safety Enhancement Summary (continued)

Safety Issue	Potential Safety Enhancement	Safety Payoff	Time Frame	Cost	Jurisdiction
Intersection visibility, vehicles approaching the intersection have limited visibility to the oncoming intersection. Rte. 58 NB has vertical and horizontal blocks to visibility.	Install advance "Stop Ahead" warning signs on the Center Street approaches. Consider doubling-up advanced warning signage on both sides of the road on all intersection approaches.	Medium	<1 Year	Low	Town
Intersection visibility, vehicles approaching the intersection have limited visibility to the oncoming intersection. Rte. 58 NB has vertical and horizontal blocks to visibility.	Install enlarged Stop signs on the Center Street approaches and double up on the stop signs to increase visibility.	Medium	<1 Year	Low	Town
Intersection visibility, vehicles approaching the intersection have limited visibility to the oncoming intersection. Rte. 58 NB has vertical and horizontal blocks to visibility.	Install flashing (solar powered) Stop signs on the Center Street approaches and center the flashing beacons.	Medium	<1 Year	Low	Town
Intersection visibility, vehicles approaching the intersection have limited visibility to the oncoming intersection. Rte. 58 NB has vertical and horizontal blocks to visibility.	Clear vegetation from blocking advanced warning signs on all the intersection approaches.	Medium	<1 Year	Low	Town
Intersection visibility, vehicles approaching the intersection have limited visibility to the oncoming intersection. Rte. 58 NB has vertical and horizontal blocks to visibility.	Install retroreflective strips on stop sign posts on the Center Street approaches to increase conspicuity of signs.	Low	< 1 Year	Low	Town

Table 4: Potential Safety Enhancement Summary (continued)

Safety Issue	Potential Safety Enhancement	Safety Payoff	Time Frame	Cost	Jurisdiction
Speeding is prevalent on both Rte. 58 approaches and on Center St. and is a particular safety hazard on Center St. west of Route 58 at the Sauchuk Festival.	Consider traffic calming measures and speed reduction measures (possible geometric treatments) on Center Street and Route 58.	Medium	1-3 Years	Medium	Town
Pavement marking and Edge Line consistency.	An engineering study evaluating the pavement markings should be completed for the intersection to address faded stop bars and edge line consistency.	Medium	<1 Year	Low	Town
Pavement marking and Edge Line consistency.	Enhancement: Consider use of high-durability materials for pavement marking applications to reduce wearing.	Low	1-3 Years	Low	Town
Lack of Bicycle accommodations.	Consider a bicycle plan for the town to better accommodate bicycle traffic especially for events such as the Pan Mass Challenge and the Best Buddies Fundraisers.	Medium	1-3 Years	Medium	Town
Glare impacting the visibility of vehicles through the intersection (one crash was due to glare).	Install backplates on the overhead flashing beacons and center the flashing beacons.	Medium	<1 Year	Low	Town
The drainage catch basins show evidence of ponding.	Re-evaluate intersection drainage system.	Low	<1 Year	Medium	Town
The intersection has only one streetlight.	Re-evaluate intersection lighting.	Medium	1-3 Years	Medium	Town
Access management issues. The driveway for the Sunrise Farm access close to the intersection impacting turning movements at the intersection and traffic operations.	Convert the driveway operation to right turn in and right out only.	Medium	<1 Year	Low	Town

Appendix A. RSA Meeting Agenda

Agenda

Road Safety Audit

Plympton, MA

Route 58 (Palmer Road) at Center Street Intersection

In-person Meeting Location:
Plympton Town House
5 Palmer Road, Plympton, MA 02367
Tuesday, June 18th, 2024
1 PM – 3 PM

Type of meeting:	**Road Safety Audit**
Attendees:	**Invited Participants to Comprise a Multidisciplinary Team**
Please bring:	**Thoughts and Enthusiasm**
1:00 PM	**Welcome and Introductions**
1:05 PM	**Review of Site-Specific Material - Review and Discuss Project** • Review of traffic and collision data • Review of operational and physical known challenges
1:30 PM	**Field Road Safety Audit** • RSA in a group • Car-pool recommended
2:30 PM	**Meeting Discussion** • Return to Meeting Room for discussion of findings, improvement strategies and action plan
3:00 PM	**Adjourn for the Day**

Instructions for Participants:

- **Before attending the RSA participants are encouraged to drive through the intersection and complete/consider elements on the RSA Prompt List with a focus on safety. All participants will be actively involved in the process throughout.**
- **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.**
- **CONTACT: Please direct questions regarding this RSA to Raymond Guarino, OCPC, (774) 539-2989, rguarino@ocpcrpa.org; or Guoqiang Li, OCPC, 774-539-5149 gli@ocpcrpa.org.**

Old Colony Planning Council
70 School Street, Brockton, MA 02301

Appendix B. RSA Audit Team Contact List

Participating Audit Team Members

Date: June 18, 2024 Location: Plympton, MA

Audit Team Members	Agency/Affiliation	Email Address	Phone Number
Name	Agency	Email	xxx-xxx-xxxx
Jason Walters	MassDOT D5 Projects	Jason.walters@dot.state.ma.us	
Bailey Koestnar	MassDOT D5 Traffic	Bailey.koestner@dot.state.ma.us	
Derek Jackson	MassDOT D5 Projects	Derek.jackson@dot.state.us	
Isabella Alves	MassDOT D5	Isabella.q.alves@dot.state.ma.us	
Dan Hoffman	Plympton Police	dhoffman@plymptontown.org	781-585-3339
John S Jostedt	Plympton Fire	Jsjostedt@plymptontown.org	781-585-2633
Majtoba Mohamed	MassDOT D5	mojtaba.m.moharrer@dot.state.ma.us	
Cheryl Duddy	Plympton Fire Chief	Firechief@plymptontown.org	508-958-1792
Rob Firlotte	Plympton Highway	Highway@plymptontown.org	781-585-3703
Kevin Pierre-Noel	MassDOT	Kevin.pierre-noel@dot.state.ma.us	
Dakota Delsignore	MassDOT Traffic and Safety	dakota.d.delsignore@dot.state.ma.us	857-274-3389
Shawn Bailey	OCPC	sbailey@ocpcrpa.org	
Kyle Mowatt	OCPC	kmowatt@ocpcrpa.org	
Matt Dyer	OCPC	mdyer@ocpcrpa.org	
Ray Guarino	OCPC	rguarino@ocpcrpa.org	
Guoqiang Li	OCPC	gli@ocpcrpa.org	

Appendix C. Detailed Crash Data

Old Colony Planning Council

Plympton, MA
Route 58 (Palmer Road) and Center St Intersection

COLLISION DIAGRAM

TIME PERIOD ANALYZED: 2018, 2019, 2020, 2021, 2022 and 2023
SOURCE OF CRASH REPORTS: PLYMPTON POLICE DEPARTMENT; SUPPLEMENTED BY MASSDOT DATA
PREPARED TIME: May 30th, 2024
PREPARED BY: SB, GL, RG

SYMBOLS
- Moving Vehicle
- Backing Vehicle
- Non-involve Vehicle
- Pedestrian
- Animal
- Trees
- Motorcycle
- Objects
- Bicycle
- Wall
- Power Line

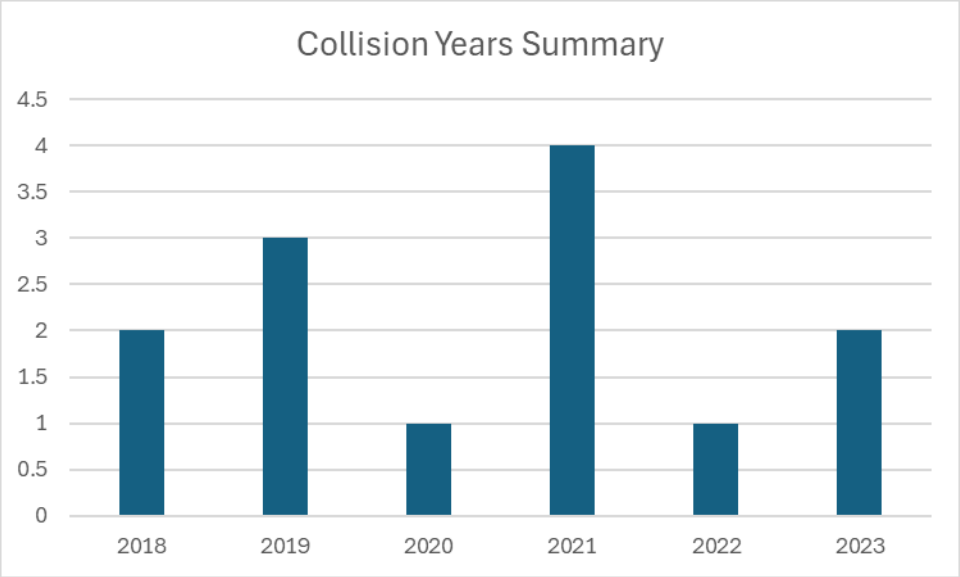
SEVERITY
- # PDO
- Injury
- # Fatal

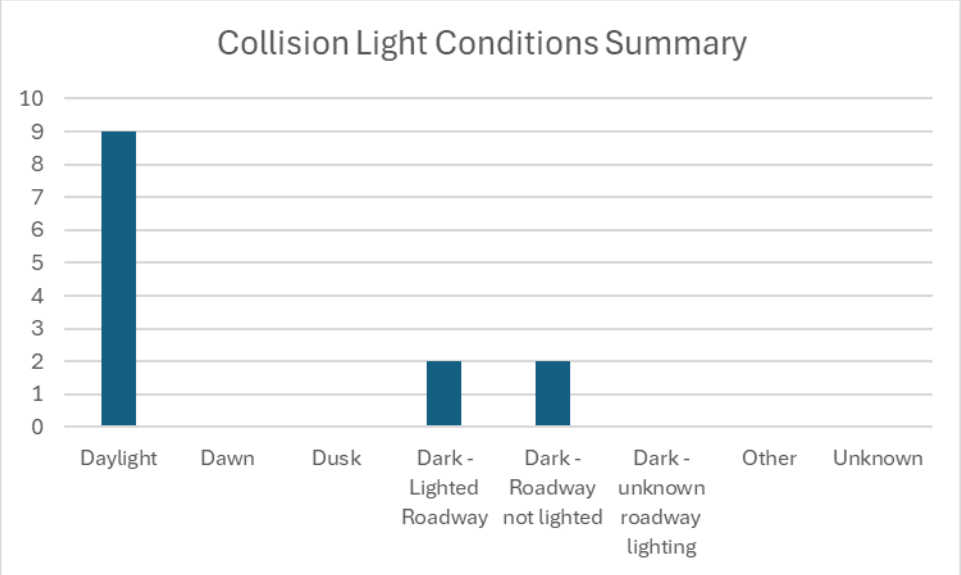
TYPES OF COLLISION
- Turn Movement
- Out of Control
- Night Time Crash
- Rear-end
- Head on
- Side-swipe
- Over-take
- Right Angle

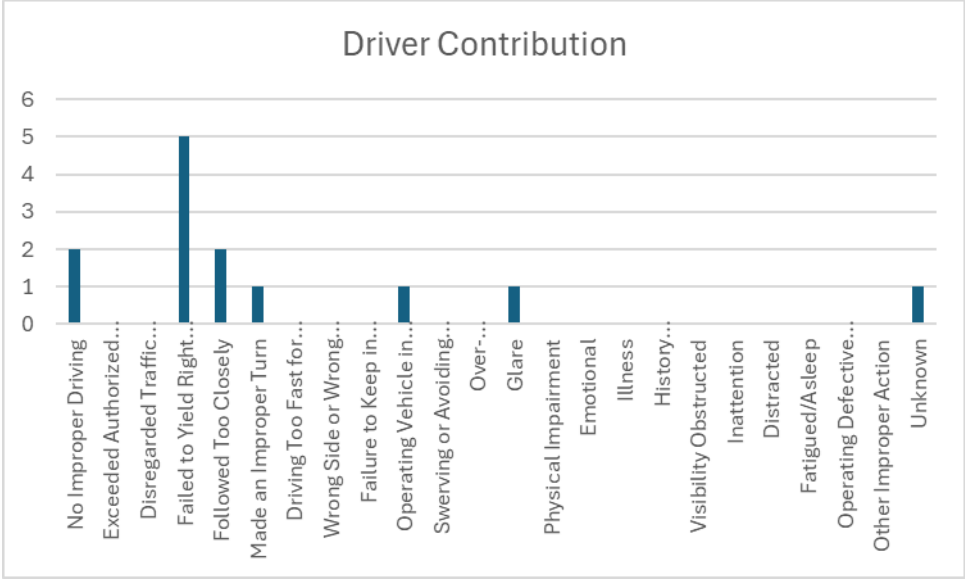
N

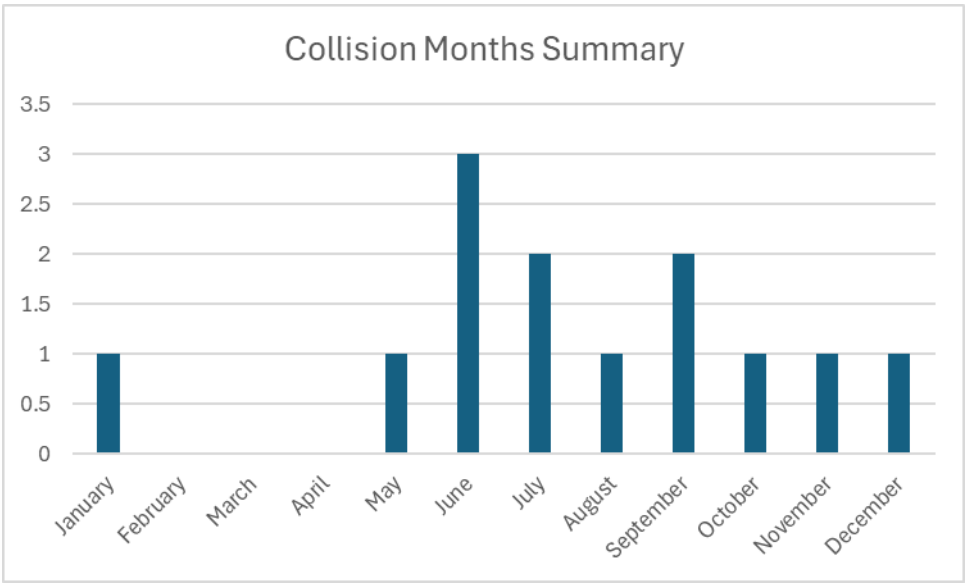
NOT TO SCALE

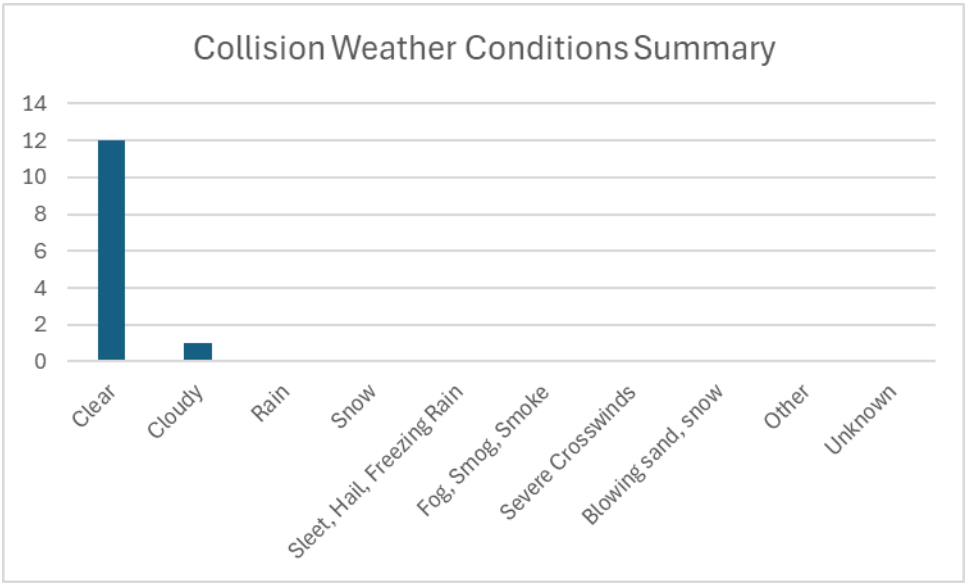
Diagram ID	Year	Time of Day	Light Conditions	Weather Conditions	Road Surface	Manner of Collision	Driver Contibuting Type	Severity	Citation	Abbeviated Narrative
1	6/11/2018	10:45	Daylight	Clear	Dry	Angle	Operating Vehicle in Erratic Manner	Injury	Yes	Eastbound V2 failed to stop at the stop sign and collided with southbound V1.
2	10/19/2018	18:49	Dark-roadway not lighted	Clear	Dry	Single Vehicle Crash	No Improper Driving	Injury	No	V1 was traveling southbound when a deer entered the roadway. V1 struck the deer who ran off into the woods.
3	1/14/2019	17:27	Dark-lighted roadway	Clear	Dry	Head on	Glare	Injury	No	Southbound V2 crossed over the double yellow line due to glare and struck northbound V1 head on.
4	7/7/2019	13:21	Daylight	Clear	Dry	Rear-end	Failed to Yield Right of Way	Injury	Yes	V1 was traveling eastbound and failed to yield for traffic. V1 struck southbound V2, causing V2 to cross into the northbound lane and hit northbound V3.
5	7/25/2019	11:09	Daylight	Clear	Dry	Single Vehicle Crash	No Improper Driving	PDO	No	V1 was traveling northbound when a deer ran out into the road, striking V1 before running off into the woods.
6	6/18/2020	16:22	Daylight	Clear	Dry	Rear-end	Followed Too Closely	PDO	Yes	V2 was traveling northbound attempting to turn left onto Center Street. Northbound V1, following too closely, rear ended V1.
7	8/13/2021	15:45	Daylight	Clear	Dry	Angle	Made an Improper Turn	PDO	Yes	V1 was traveling northbound and made a left turn onto Center Street, colliding with southbound V2 who had the right of way.
8	9/11/2021	12:28	Daylight	Clear	Dry	Angle	Failed to Yield Right of Way	PDO	No	V2 was traveling northbound and made a left turn onto Center Street, colliding with southbound V1 who had the right of way.
9	9/20/2021	14:27	Daylight	Clear	Dry	Angle	Failed to Yield Right of Way	Injury	Yes	V1 was traveling eastbound and failed to stop at the stop sign. V1 struck northbound V2, causing V2 to roll over, strike a utility pole, and land on its roof.
10	12/24/2021	20:14	Dark-roadway not lighted	Cloudy	Dry	Single Vehicle Crash	Unknown	PDO	Yes	V1 was traveling southbound, missed the right turn onto Center Street, left the roadway, and crashed into a tree. The driver of V1 fled the scene.
11	6/21/2022	14:18	Daylight	Clear	Dry	Rear-end	Followed Too Closely	PDO	Yes	V1 and V2 were both traveling eastbound towards the intersection. V1 was distracted, following too closely, and rear ended V2.
12	5/8/2023	16:52	Daylight	Clear	Dry	Angle	Failed to Yield Right of Way	Injury	No	V2 was traveling westbound, failed to yield to traffic, and collided with southbound V1.
13	11/20/2023	17:23	Dark-lighted roadway	Clear	Dry	Angle	Failed to Yield Right of Way	PDO	Yes	V2 was traveling eastbound, failed to yield to traffic, and collided with northbound V1.

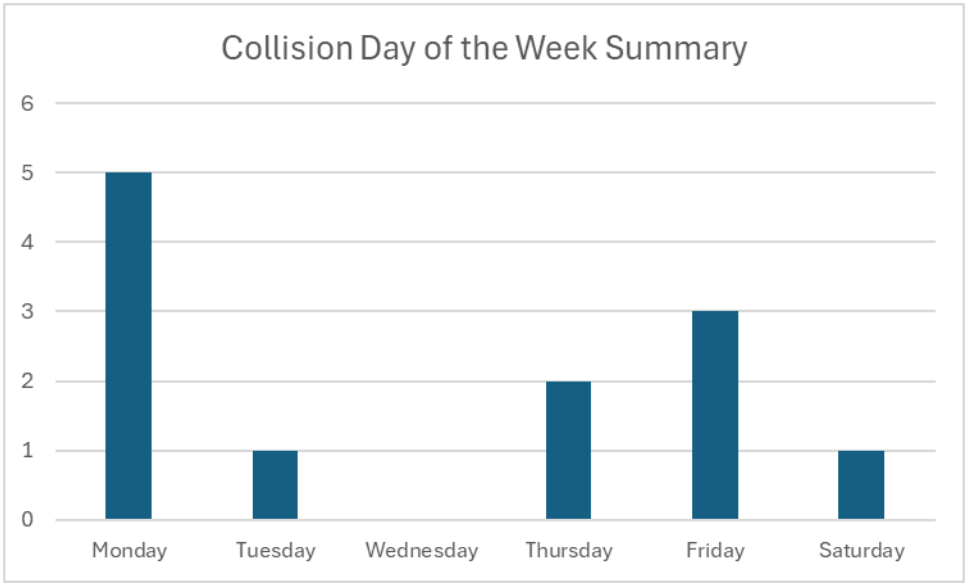

Collision Years Summary
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
2018
2019
2020
2021
2022
2023

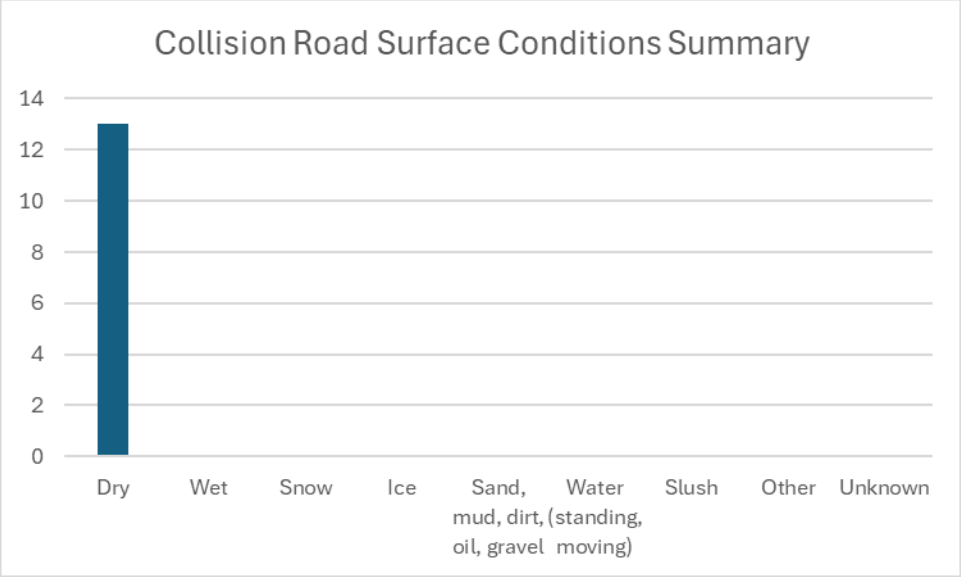

Collision Light Conditions Summary
10
9
8
7
6
5
4
3
2
1
0
Daylight
Dawn
Dusk
Dark - Lighted Roadway
Dark - Roadway not lighted
Dark - unknown roadway lighting
Other
Unknown

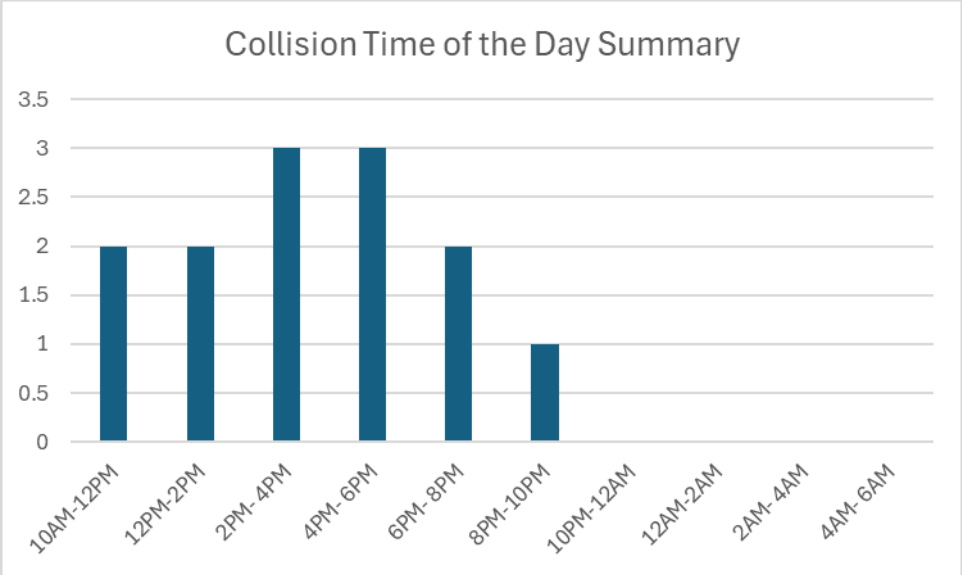

Driver Contribution
6
5
4
3
2
1
0
No Improper Driving
Exceeded Authorized...
Disregarded Traffic...
Failed to Yield Right...
Followed Too Closely
Made an Improper Turn
Driving Too Fast for...
Wrong Side or Wrong...
Failure to Keep in...
Operating Vehicle in...
Swerving or Avoiding...
Over-...
Glare
Physical Impairment
Emotional
Illness
History...
Visibility Obstructed
Inattention
Distracted
Fatigued/Asleep
Operating Defective...
Other Improper Action
Unknown

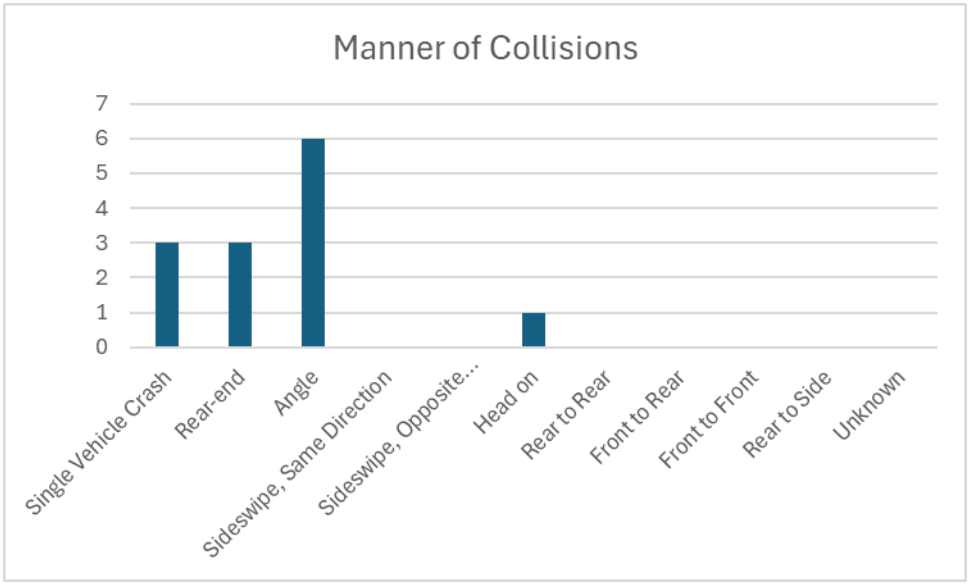

Collision Months Summary
3.5
3
2.5
2
1.5
1
0.5
0
January
February
March
April
May
June
July
August
September
October
November
December

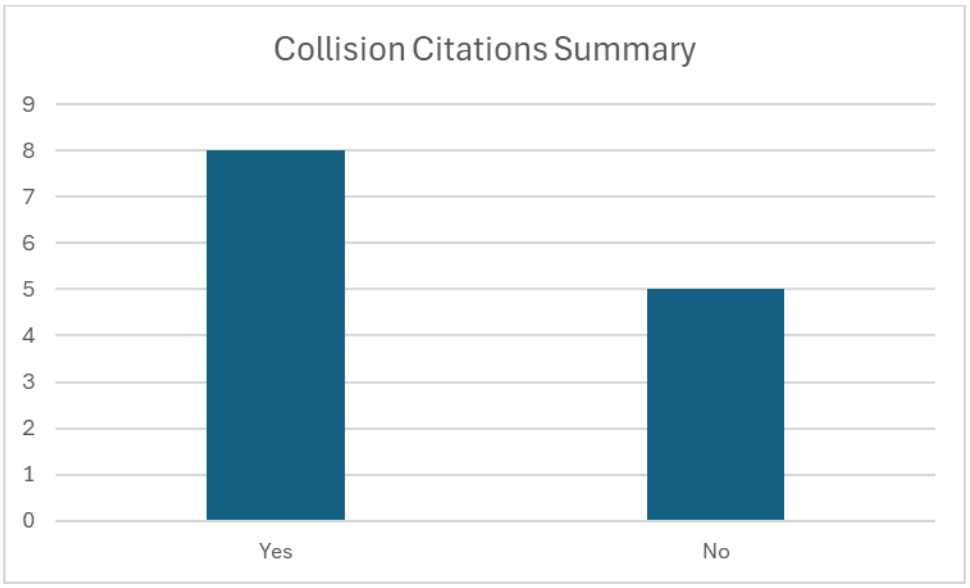

Collision Weather Conditions Summary
14
12
10
8
6
4
2
0
Clear
Cloudy
Rain
Snow
Sleet, Hail, Freezing Rain
Fog, Smog, Smoke
Severe Crosswinds
Blowing sand, snow
Other
Unknown

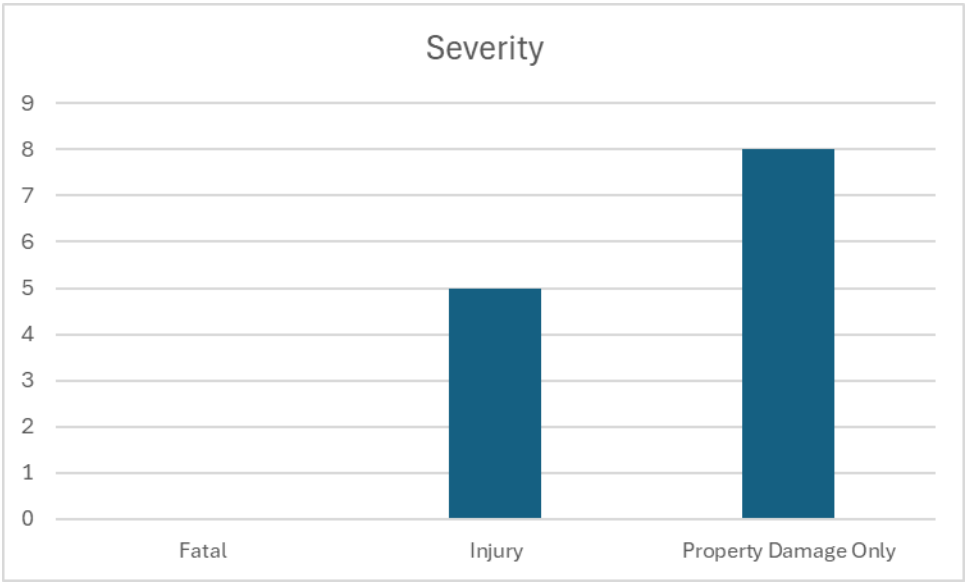

Collision Day of the Week Summary
6
5
4
3
2
1
0
Monday
Tuesday
Wednesday
Thursday
Friday
Saturday


Collision Road Surface Conditions Summary
14
12
10
8
6
4
2
0
Dry
Wet
Snow
Ice
Sand, mud, dirt, oil, gravel
Water (standing, moving)
Slush
Other
Unknown


Collision Time of the Day Summary
3.5
3
2.5
2
1.5
1
0.5
0
10AM-12PM
12PM-2PM
2PM-4PM
4PM-6PM
6PM-8PM
8PM-10PM
10PM-12AM
12AM-2AM
2AM-4AM
4AM-6AM


Manner of Collisions
7
6
5
4
3
2
1
0
Single Vehicle Crash
Rear-end
Angle
Sideswipe, Same Direction
Sideswipe, Opposite...
Head on
Rear to Rear
Front to Rear
Front to Front
Rear to Side
Unknown


Collision Citations Summary
9
8
7
6
5
4
3
2
1
0
Yes
No


Severity
9
8
7
6
5
4
3
2
1
0
Fatal
Injury
Property Damage Only

Appendix D. Additional Information

Warrants Summary Report

1: Route 58 Palmer at Center St

Intersection Information

	Major Street	Minor Street
Street Name	Rt 58 Palmer	Center St
Direction	NB/SB	EB/WB
Number of Lanes	1	1
Approch Speed	30	30

Warrant	Met?	Notes
Warrant 1, Eight-Hour Vehicular Volume		
	Yes	
Condition A or B Met	Yes	9 Hours met (8 required)
Condition A and B Me	No	6 Hours met (8 required)
Warrant 2, Four-Hour Vehicular Volume		
	Yes	5 Hours met (4 required)
Warrant 3, Peak Hour		
	Yes	
Condition A Met?	No	0 Hours met (1 required)
Condition B Met?	Yes	2 Hours met (1 required)
Warrant 4, Pedestrian Volume		
	No	
Condition A Met?	No	0 Hours met (4 required)
Condition B Met?	No	0 Hours met (1 required)
Warrant 5, School Crossing		
	No	

Warrant 6, Coordinated Signal System

No

Warrant 7, Crash Experience

No

Traffic Volume Condi	Yes	11 Hours met (8 required)
Ped Condition?	No	0 Hours met (8 required)

Warrant 8, Roadway Network

No

Warrant 9, Intersection Near a Grade Crossing

No

AWSC Warrant, Multiway Stop Application

Yes

Condition A Met?	Yes
Condition B Met?	No
Condition C Met?	No

Appendix E. 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.