# Standish, ME
# Route 114 and Route 35
# Road Safety Audit Report

Virtual RSA meeting: 11/16/2020, Field review: 12/8/2020

Prepared by


Issued on: 05/28/2021

**TABLE OF CONTENTS**

# INTRODUCTION

## Background

VHB is under contract with the Portland Area Comprehensive Transportation System (PACTS) to prepare desktop assessments for 24 High Crash Locations (HCLs) within the PACTS region. After the desktop review process, 10 sites were selected for field review and further investigation. The Route 114 and Route 35 intersection was one of the sites selected for field review.

This RSA took place across two meetings, a virtual RSA meeting on 11/16/2020 and a field review on 12/8/2020.


Overview showing the Route 114 and Route 35 high crash location.

# RSA SITE LOCATIONS

The intersection of Routes 35 and 114 is a four-way stop-controlled intersection with a red, overhead flashing beacon in the center of the intersection.

*See HCL Desktop Assessment in Appendix A for additional background information including crash diagrams.*

# RSA TEAM

## Attendees – RSA Virtual Meeting

- Tony Grande, VHB*
- Elissa Goughnour, VHB
- Ethan Flynn, VHB*
- Ania Chandler, VHB*
- Jason Plourde, VHB
- Elizabeth Roberts, GPCOG
- Harold Spetla, GPCOG
- Zach Mosher, Town of Standish*
- Roger Mosley, Town of Standish
- Bill Giroux, Town of Standish
- John Cross, Sherriff*

**Indicates attendance at field review*

## Potential Partners not in Attendance

- Randy Illian, MaineDOT

# ASSESSMENT FINDINGS

## Positive Features

The legs of this intersection are square giving drivers stopped at the intersection good visibility of each intersection leg.

## RSA Team Prioritization of Issues

The issues listed below were prioritized based on crash frequency, severity, and local interest in the issue:

1. Large morning and evening backups on the Route 35 southbound approach and Route 114 eastbound approach.
2. No pedestrian accommodations.

## Detailed Issues and Countermeasure Summary

The following section summarizes specific issues observed and discussed by the RSA team and identifies potential countermeasures to address these issues. Included in this summary is a discussion of crash modification factors (Table 1) related to the countermeasures. Additional discussion on the suggested countermeasures is included in the costs and challenges table of this report (Appendix B).

### Issue 1: Large AM and PM backups on the Route 35 southbound and Route 114 eastbound approaches.

| Specific Safety Concern | Suggested Improvements | Example of Issue |
|---|---|---|
| • Evening traffic can back-up for miles on the Route 35 southbound approach. Drivers are often impatient when they reach the intersection.<br>• Morning traffic can back up for a mile on the Route 114 eastbound approach. Drivers are often impatient when they reach the intersection. | ***Intermediate Range –***<br>• Replace the intersection four-way stop control with an adaptive traffic signal. The design master plan for Sebago Lake Village determined, in December of 2012, that this intersection warrants a traffic signal. |  <br>Route 35 southbound approach. |

### Issue 2: No accommodation for pedestrians.

| Specific Safety Concern | Suggested Improvements | Example of Issue |
|---|---|---|
| • There are intermittent sidewalks and no crosswalks throughout the study area for pedestrians. With only intermittent facilities available, pedestrians resort to walking in the shoulder through this area, putting them at higher risk for being struck by a motorized vehicle. | ***Intermediate Range-***<br>• Include sidewalks and crosswalks at this intersection. However, there is noted resistance from the town to include pedestrian facilities. |  <br>Southeast corner of Route 35 and Route 114, no sidewalk, pedestrian ramp, or crosswalk present on this corner. |

## Costs and Challenges

See the summary table in Appendix B for Costs and Challenges.

## Crash Modification Factors

A crash modification factor (CMF) is a multiplicative factor, based on documented safety research studies, used to compute the expected number of crashes after implementing a given countermeasure at a specific site. CMFs provide some indication of the potential benefit, or lack thereof, associated with specific countermeasures.

FHWA compiles CMF data from published safety studies in the CMF Clearinghouse (http://www.cmfclearinghouse.org/index.cfm) to help practitioners select the most effective safety treatments. While CMF data is not available for all potential countermeasures, the CMF Clearinghouse provides a useful and consolidated source of data to help engineers, planners, and project owners make informed decisions. It should be noted that as most CMFs represent the effect of a single treatment; it is difficult to accurately estimate the combined safety effects of multiple CMFs at one location. The combined effect of multiple treatments may be over-estimated if the CMFs are multiplied and engineering judgment is necessary to assess the interrelationships and independence of multiple treatments. In particular, CMFs should never be multiplied if the respective CMFs apply to different crash types and/or severities (e.g., the CMF for treatment A applies to total crashes and the CMF for treatment B applies to injury crashes) and the treatments address the same crashes (i.e., the treatments are not independent). For more information, please refer to the CMF Clearinghouse.

The following table summarizes CMFs related to some of the countermeasure suggestions in the previous section.

**Table 1. Crash Modification Factor (CMF) Summary.**

| Countermeasure | CMF (% Change in Crash Incidence) | Other Information |
|---|---|---|
| Issue 1: Large AM and PM backups on the Route 35 southbound and Route 114 eastbound approaches. | | |
| Install an adaptive traffic signal. | 0.81 (19%) | Applies to angle crashes and all severities |
| | 0.95 (5%) | Applies to all crash types and all severities |
| | 0.88 (12%) | Applies to rear-ends crashes and all severities |
| | 0.96 (4%) | Applies to all crash types and fatal and injury crashes |
| Issue 2: No accommodation for pedestrians. | | |
| Install sidewalks | N/A | There are no CMFs for sidewalks. |
| Install crosswalks | 0.60 (40%) | This CMF is for high-visibility crosswalks and applies to vehicle/pedestrian crashes and all severities. |

An adaptive traffic signal will provide both safety and operational benefits to the area. The largest potential safety improvement of this treatment (19-percent reduction) applies to angle crashes.

Although there are no CMFs for sidewalks, studies have found that installing sidewalks can result in a 65-89 percent reduction in crashes involving pedestrians walking along roadways. Installing high visibility (e.g., ladder, continental, zebra) may reduce vehicle/pedestrian crashes up to 40 percent.

## CONCLUSIONS

Given the safety and site needs at this intersection, the best opportunities for improving safety include installing an adaptive traffic signal. According to a study previously conducted in this area, this intersection warrants a traffic signal.

# APPENDIX A

HCL Desktop Assessment

# **STANDISH:** Intersection of Route 114 and Route 35


Overview map of HCLs reviewed in this assessment.


Street view of intersection at Route 114 and Route 35 traveling South on Route 35, from Google Maps

## Assessment

The intersection of Routes 35 and 114 is a four-way stop-controlled intersection with a red, overhead flashing beacon in the center of the intersection.

## Pending Projects

No major recent or pending MaineDOT projects.

## Municipal Input

Noted concerns by the city include the following:

- The two major issues with the intersection of Routes 114 and 35 is volume and safety concerns.
- Primary concern with the intersection is volume with traffic backing up usually at least a mile in the evenings coming from Windham into Standish. In the assessment the town would really value any recommendations there concerning volume.
- Town interested in dedicated turn lanes coming west and east into the intersection, similar to the Routes 25/35 intersection.
- Recent change to a form-based code in the village where that intersection exists requires sidewalks as part of new development. There is an existing sidewalk along Route 114 heading into Gorham.

## Safety Issues

There were 17 crashes at this intersection. The crashes are relatively evenly split among the intersection approaches with two to four occuring on each. Many of the crashes (8 of the 11) at this intersection are failures to yield and running the stop sign.

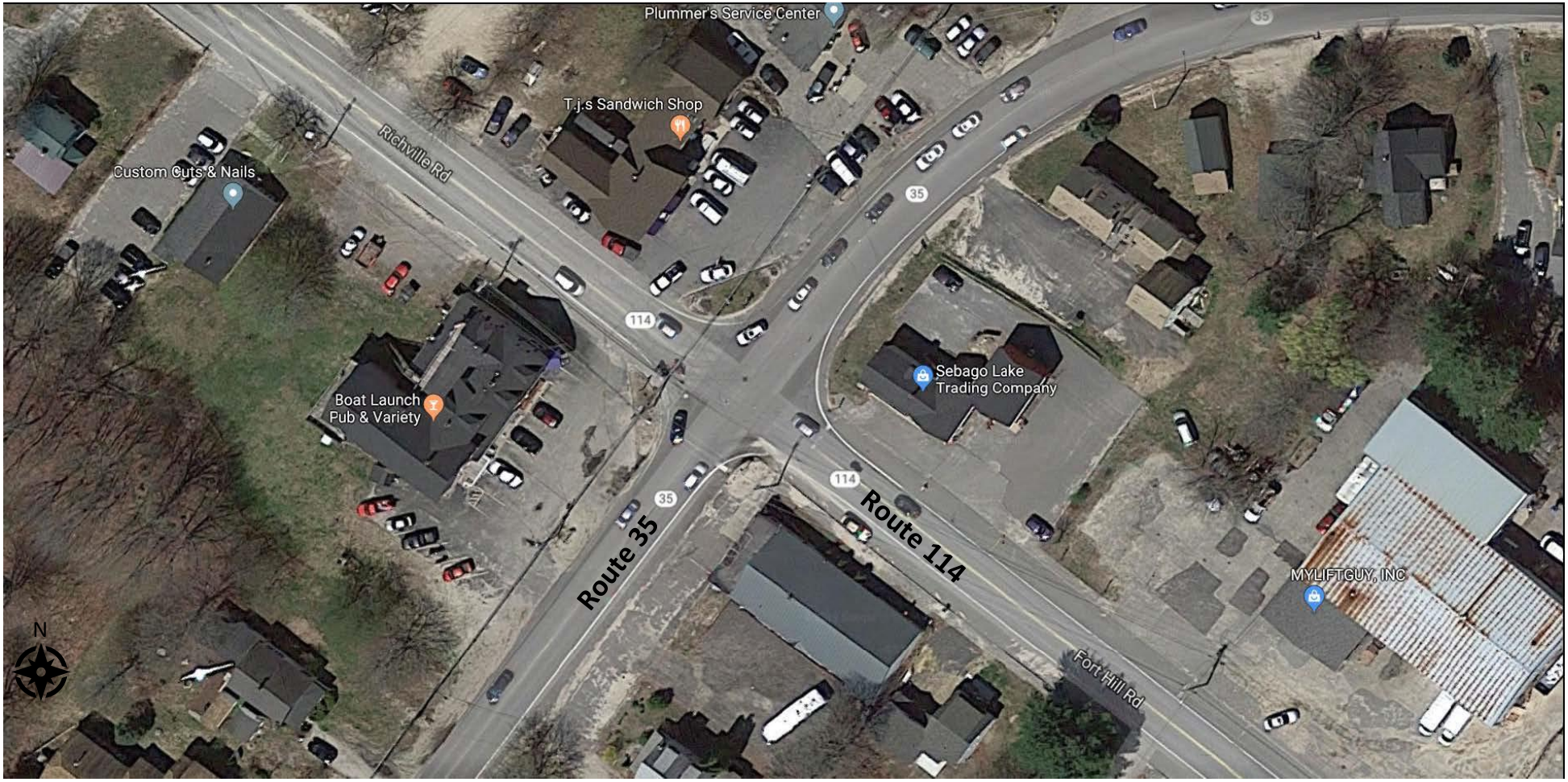
As noted by the municipality, if volumes are high and traffic backs-up for a mile, driver's are likely impatient by the time they reach the intersection and do not wait their turn or run the stop sign. There are also numerous driveways near the intersection that drivers could use to bypass the intersection.

# **STANDISH:** Intersection of Route 114 and Route 35

## Recommendations

- Add turn lanes for heavy-demand movements.
    - Potentially use PACTS Miovision to determine movement patterns.
- Consider alternative intersection controls such as a roundabout or a traffic signal. A roundabout would help with both efficiency and safety, but may require right of way impacts. Right-turn bypass lanes could be incorporated, depending on right-turn demand.
- Consider access management options for the driveways near the intersection, like better driveway definition, more narrow entries and exits, and combining/consolidating driveways.

# **STANDISH:** Intersection of Route 114 and Route 35




Aerial view of Route 35 and Route 114, from Google Maps

# **STANDISH:** Intersection of Route 114 and Route 35

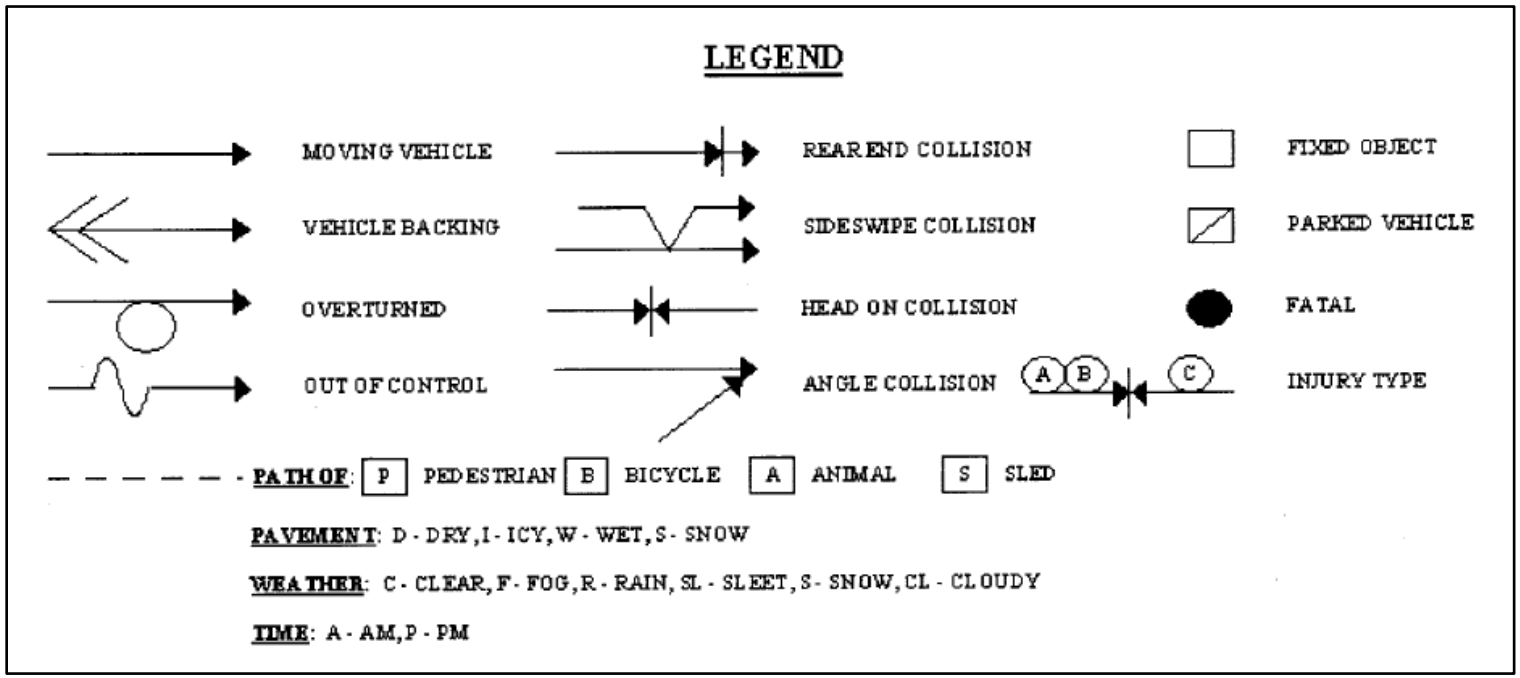
## Crash Data

The crash data used for this assessment was based on 2015-2017 crash data. The following table summarizes the crash data for this location and also shows additional crashes from 2018. The crash diagram for this location is shown on the following page.

| Location | HCL Node | Crashes by Year | | | | Total Crashes (2015-18) | Percent Injury (2015-17) | Critical Rate Factor (2015-17) | Highway Corridor Priority (2015-17) | Speed Limit | Estimated AADT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 2015 | 2016 | 2017 | 2018 | | | | | | |
| Route 114 and Route 35 | 15643 | 2 | 5 | 4 | 6 | 17 | 27.3% | 1.89 | 2/3 | 35 mph | 5,000-9,000 |

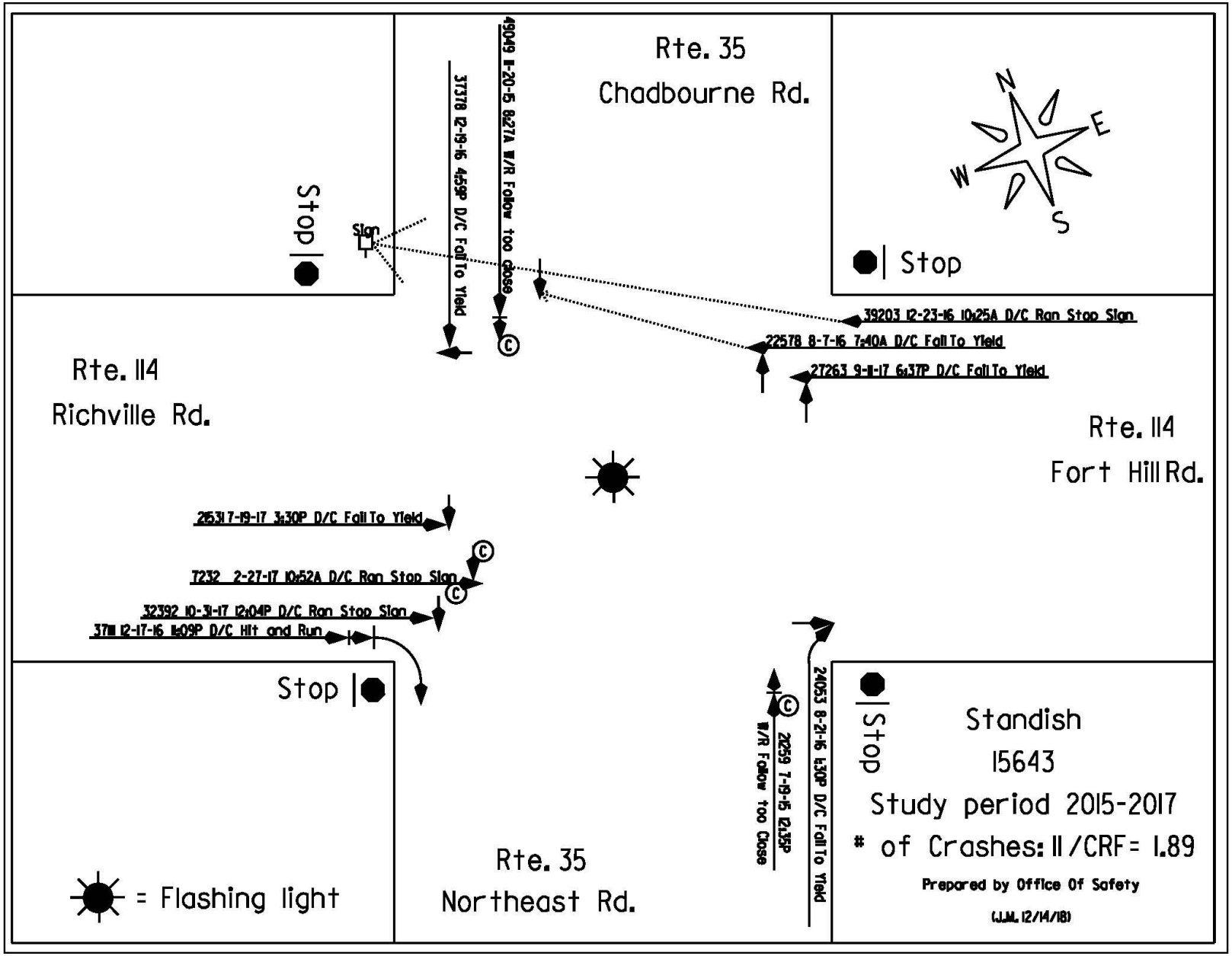
**See the abbreviations and definitions section at the beginning of this report for more information about each data point.*

The legend below will aid in understanding the crash diagram that follows.



# **STANDISH:** Intersection of Route 114 and Route 35

**Intersection of Route 114 and Route 35**



# APPENDIX B

Summary Table

| Issue | Countermeasure | Challenges | Cost Range |
|---|---|---|---|
| Issue 1: Large AM and PM backups on the Route 35 southbound and Route 114 eastbound approaches | Install adaptive traffic signal. | Would require further design and extensive construction. | High |
| Issue 2: No accommodation for pedestrians | Include sidewalks and crosswalks. | Residents of the town have voted against the addition of sidewalks in the past. | Moderate |

The above table summarizes the findings from the RSA conducted on 11/16/2020 and 12/8/2020. Countermeasures highlighted in green are recommended by VHB for implementation. The scale for costs is as follows:

| | |
|---|---|
| Low | < $10,000 |
| Moderate | $10,000 - $100,000 |
| High | > $100,000 |

These costs do not include professional engineering, construction engineering, or right of way.