Waldoboro Intersection of Rte 220 with Main St and Jefferson St

Safety Analysis
Intersection Location
Intersection Location
Main Street Westbound Approach
Main Street Eastbound Approach
Friendship Street Northbound Approach
Friendship Street Northbound Approach
Friendship Street Northbound Approach

Looking Left

Looking Right
Jefferson Street Southbound Approach
Jefferson Street Southbound Approach
Jefferson Street Southbound Approach

Looking Left

Looking Right
Annual Average Daily Traffic Volumes
2021 Turning Movement Count

12-Hour Count Volumes
September 15th, 2021
2021 Turning Movement Count

Significant movements
(> 300 vehicles in 12 hours)
2021 Turning Movement Count

PM Peak Hour
4:00 PM – 5:00 PM
2021 Turning Movement Count

AM Peak Hour
10:30 AM – 11:30 AM
2021 Turning Movement Count

Crossing Pedestrians (12-Hours)
- 54 pedestrians crossing Main Street from 6:00 AM to 6:00 PM
- Likely more pedestrians crossing after 6:00 PM
Current Crash Patterns

Maine Department Of Transportation  - Office of Safety, Crash Records Section

Crash Summary I

<table>
<thead>
<tr>
<th>Node</th>
<th>Route - MP</th>
<th>Node Description</th>
<th>U/R</th>
<th>Total Crashes</th>
<th>Injury Crashes</th>
<th>Percent Injury</th>
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<td>Int of FRIENDSHIP RD JEFFERSON ST MAIN ST</td>
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<td>15</td>
<td>0</td>
<td>26.7</td>
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Study Years: 5.00

**NODE TOTALS:** 15 0 0 1 3 11 26.7

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**Crashes by Year and Month**

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</table>

| Total      | 4    | 2    | 4    | 1    | 2    | 2    | 6    | 4    | 2    | 28   |
Current Crash Patterns

- **9 Failure to Yield**
  - Stopped at the stop sign and then pull into the intersection.

- **3 Ran Stop Sign**
  - Drove through the stop sign without stopping

- **3 Minor Road Backing and Rear End**

- Another failure to yield crash on 1-19-2022 where vehicle pulled out from Jefferson Street into a Main Street eastbound vehicle.
HCL History

- **High Crash Location (HCL)**
  - Requires minimum of 8 crashes in 3 years and a Critical Rate Factor $\geq 1$
  - Current HCL – 11 crashes and CRF of 4.22 (2018-2020)
  - HCL for 3 three-year periods since 2006

<table>
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<tr>
<th>Years</th>
<th>Number of Crashes</th>
<th>Critical Rate Factor (Approximate)</th>
<th>HCL?</th>
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<tr>
<td>2019-2021</td>
<td>11</td>
<td>4.22</td>
<td>Yes</td>
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<tr>
<td>2018-2020</td>
<td>11</td>
<td>4.22</td>
<td>Yes</td>
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<tr>
<td>2017-2019</td>
<td>9</td>
<td>3.25</td>
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<td>2016-2018</td>
<td>6</td>
<td>2.30</td>
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<td>2015-2017</td>
<td>5</td>
<td>1.92</td>
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<tr>
<td>2014-2016</td>
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<td>2.68</td>
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<tr>
<td>2013-2015</td>
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<td>2.68</td>
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<tr>
<td>2012-2014</td>
<td>10</td>
<td>4.05</td>
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<tr>
<td>2011-2013</td>
<td>6</td>
<td>2.58</td>
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<td>2010-2012</td>
<td>5</td>
<td>2.15</td>
<td>No</td>
</tr>
</tbody>
</table>
Network Screening Rankings

High rate of crashes and angle crashes:
• 418th highest on excess crash rankings
• T-95th most angle crashes among stop-controlled intersections
  • T-12th most in Mid-Coast Region
• 47th highest critical rate factor of any 2020 HCL intersection
  • 9th highest in the Mid-Coast Region

Low Average Crash Severity
• Injury percentage since 2017 is 31.3% (below average)
• No fatal or serious injury crashes at this intersection in our electronic records (since 2003)
• 41 of 42 crashes (97.6%) since 2003 are property damage or possible injury
Identified Issues with Intersection

• Steep grade approaching and through the intersection
  • Main Street grade is 12.6% 40 feet east of intersection and 9.2% 25 feet west of intersection

• Confusion of all-way stop
  • Some drivers may pull out in front of Main Street because they think this intersection is an all-way stop

• Limited vehicular sight distance
  • Limited by on-street parking, historic buildings, and horizontal curve.

• Crosswalk sight distance
  • Limited by on-street parking

• No standard crosswalk signs for Main Street free flowing approaches
  • Difficult to find space to install signs

• Difficult to place signs
  • Supplemental signing could be beneficial
  • Dense buildings and driveways, on-street parking, and narrow sidewalks
  • No Crosswalk signs at this intersection on Main Street
Recent Improvements

- Stop signs were updated, a supplemental stop sign was installed on Friendship Road, and “CROSS TRAFFIC DOES NOT STOP” plaques were installed under each stop sign. This work order was submitted following a field review in July 2020.

- The intersection was also paved in 2020. Crosswalks have been repainted as they were before. Currently (Jan 2022) on-street parking spaces have either not been re-painted or have seasonally worn off.
Alternatives Considered

- Traffic Signal
- All-Way Stop
- Alternatives that keeps Main Street as free flowing
  - Reduced parking, increased signage and markings, remove crosswalk, crosswalk bumpout, RRFB
  - Raised crossings or speed tables to slow traffic on Main Street
    - Brings speed closer to intersection sight distance and improves pedestrian safety
Traffic Signal Warrant Analysis

- Signal warrant is **not met**
- Minor Street is high enough, but major road fails for 11 of the 12 hours
All-Way Stop Warrant Analysis

- All-way stop crash Warrant B is met because of 5 correctable angle crashes in 12 months during 2019.
- All-way stop volume Warrant C is not met because major road volume is too low. Minor road meets 80% for 9 hours and major meets 80% for 5.
- This intersection also meets other considerations for an all-way stop such as pedestrian conflicts and sight distance limitations.
## Synchro/SimTraffic Delays

### Existing:

<table>
<thead>
<tr>
<th>Approach</th>
<th>NB</th>
<th>SB</th>
<th>NE</th>
<th>SW</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denied Delay (hr)</td>
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<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
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<tr>
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<td>Total Del/Veh (s)</td>
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<td>7.4</td>
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### All-Way Stop:

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<th>SB</th>
<th>NE</th>
<th>SW</th>
<th>All</th>
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<tbody>
<tr>
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<tr>
<td>Total Delay (hr)</td>
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<td>0.3</td>
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<tr>
<td>Total Del/Veh (s)</td>
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<td>5.9</td>
<td>6.1</td>
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### Synchro/SimTraffic Queue Lengths

#### Existing:

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<tr>
<td>Maximum Queue (ft)</td>
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<td>77</td>
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<td>48</td>
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<tr>
<td>Average Queue (ft)</td>
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<td>37</td>
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<td>9</td>
</tr>
<tr>
<td>95th Queue (ft)</td>
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<td>62</td>
<td>14</td>
<td>36</td>
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</tbody>
</table>

#### All-Way Stop:

<table>
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<th>Movement</th>
<th>NB</th>
<th>SB</th>
<th>NE</th>
<th>SW</th>
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<td>Directions Served</td>
<td>LTR</td>
<td>LTR</td>
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<td>Maximum Queue (ft)</td>
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<td>Average Queue (ft)</td>
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<tr>
<td>95th Queue (ft)</td>
<td>67</td>
<td>55</td>
<td>77</td>
<td>57</td>
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</table>
MaineDOT believes grade on Main Street is too steep to stop traffic.

What are other alternatives?
Preliminary Signing Plan
Route 220 / Main Street / Jefferson Street
Waldoboro, ME
Augusta – Winthrop Street

Speed table just before crosswalk
Augusta – Cony Street

Raised crosswalk

Speed tables and raised crosswalks can be tipped down at the curb line to avoid drainage issues
Village Partnership Initiative

Potentially partner with state for traffic calming, pedestrian safety, etc. in “downtown” village

Current cost share (may change)

- Municipal Property Valuation <$150M, 70% State, 30% Municipal
- Municipal Property Valuation $150M to $350M, 60% State, 40% Municipal
- Municipal Property Valuation >$350M, 50% State, 50% Municipal

MaineDOT ADA improvements will be completed this year if a village project is not pursued.
2022 ADA Tip Down Project
(Cancelled if Village Project Pursued)

- Need to know decision before the end of March
Thoughts?

Other Ideas?
Other Intersections with Safety Concerns

- Route 235 / Manktown Road
  - Serious injury ran stop sign crashes from Manktown Road
- Route 32 / Main Street
  - Similar angle crashes to this intersection of Main St. / Jefferson St. / Friendship St.
  - Potential sight distance problems related to the vertical curve and grade
- Route 220 / Old Augusta Road
  - Fatal crash in 2017
  - Sight distance issue

- Just over the town line in Warren
  - Route 235 / Old Augusta Road