BOSTON REGION METROPOLITAN PLANNING ORGANIZATION
Gina Fiandaca, MassDOT Secretary and CEO and MPO Chair
Tegin L. Teich, Executive Director, MPO Staff

TECHNICAL MEMORANDUM

DATE: **August 17, 2023**
TO: **Meghan Jop, Town of Wellesley**
FROM: **Casey Cooper, MPO Staff**
RE: **Wellesley Intersection Improvement Study**

This memorandum summarizes the analyses and improvement strategies for the intersection of Linden Street and Weston Road in Wellesley.

This memorandum contains the following sections:

1. Study Background
2. Existing Conditions
3. Issues and Concerns
4. Bicycle and Pedestrian Travel
5. Crash Data Analysis
6. Intersection Analysis
7. Improvement Recommendations
8. Conclusions and Next Steps

The memorandum also includes technical appendices that contain data and methods applied in the study.

1 STUDY BACKGROUND

The purpose of this study is to improve safety and operations at intersections within the Boston Metropolitan Planning Organization (MPO) region with a focus on cost- and time-effective strategies. The intent of the work is to identify simple solutions that can be used to enhance intersection conditions in the short term. These changes have the potential to serve as a first step before municipalities secure funding for larger scale projects to improve conditions at the intersection in the future.

In 2014, the Boston Region MPO participated in an intersection improvement program with the Massachusetts Department of Transportation (MassDOT) Highway Division to provide low-cost, small scale, and quickly implementable improvements, including signal retiming, signing, and pavement markings. The

program was funded in the Transportation Improvement Program with Congestion Mitigation and Air Quality dollars.

The primary goal of the program was to identify low-cost improvements that would help alleviate congestion at problem intersections. These types of small-scale improvements enjoy a high benefit-to-cost ratio. Through the 2014 iteration of the Intersection Improvement Program, MPO staff selected candidate intersections and contacted the relevant municipalities using the Congestion Management Process. Howard Stein Hudson, a consulting firm, visited 35 intersections around the region, implemented signal timing improvements, and proposed other low-cost improvement recommendations that municipalities could implement.

The Intersection Improvement Program was reintroduced through the federal fiscal year 2021 Unified Planning Work Program with modifications to the original work. This project is on a smaller scale than the 2014 effort, carried out solely by MPO staff, and focused on providing recommendations that municipalities can implement themselves to improve the selected intersections.

This work gives the communities in which the intersections are located the opportunity to look at the needs of the studied intersections, with a focus on changes that the municipalities themselves can implement quickly and within their current operating budgets to improve safety and operations. This project also highlights significant intersection needs before the municipality commits funds for design and engineering. Eventually, if the project qualifies for federal funds, this study's documentation is useful to MassDOT. This study supports the MPO's visions and goals, which include increasing transportation safety, maintaining the transportation system, and advancing mobility.

This iteration of the Intersection Improvement Program began with the selection of municipality-owned intersections. MPO staff solicited recommendations from the community and compared the proposed locations based on crash averages, equity data, and consideration of which intersections' needs would be best addressed through this project. MPO staff consulted with municipal staff to validate the poor operations and safety issues at each intersection under consideration before finalizing the location selections. The following locations were selected for study:

1. Route 117 and Route 62 in Stow
2. Linden Street and Weston Road in Wellesley

This memorandum documents MPO staff's analysis of the selected intersection of Linden Street and Weston Road in Wellesley. The recommendations for low-

cost improvements outlined in this document can be used by Wellesley to develop a safety and traffic operation implementation plan for the location that the municipality would be responsible for funding.

2 EXISTING CONDITIONS

2.1 Regional Transportation Context

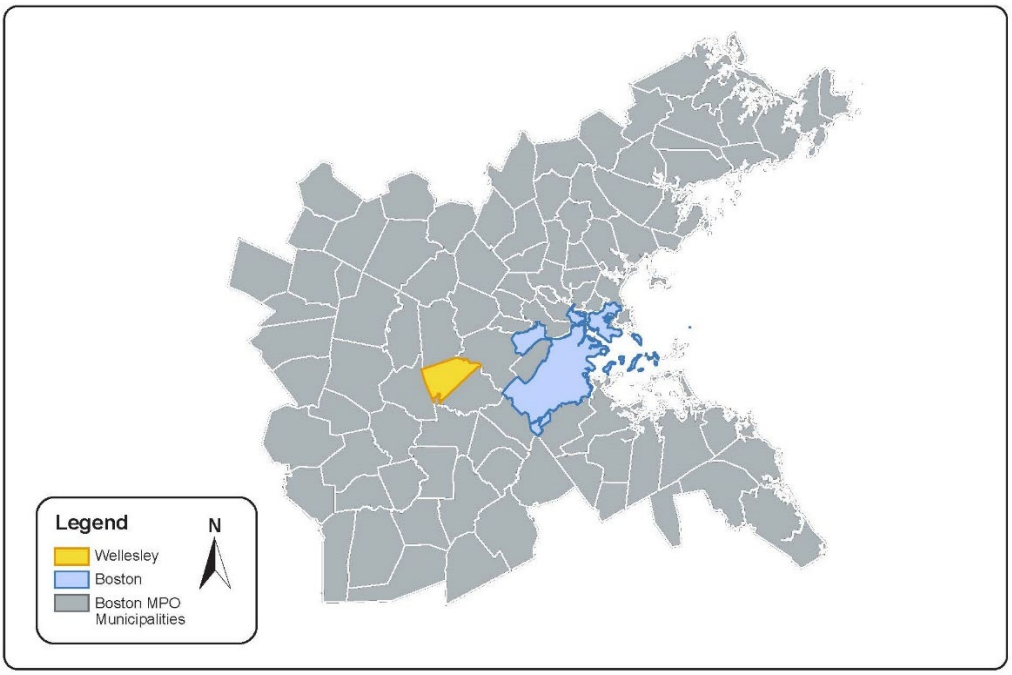
Wellesley is a town located west of Boston with a 2020 population of 29,550. It has a land area of 10.5 square miles, giving it an average population density of 2,814 persons per square mile. The Metropolitan Area Planning Council characterizes Wellesley as a maturing suburb.

Wellesley is located just southwest of the interchange of Interstate 90 (I-90) and I-95. I-90 is a critical east-west limited-access corridor, but direct access to businesses and residences west of Boston is provided by several east-west arterial roadways, such as Route 9 and the parallel Route 135 to its south.

Route 135 and Route 16 function together as a single, extended east-west corridor from Newton to Framingham. Route 16 traffic joins with Route 135 in Wellesley Square and then continues west to Natick and Framingham on Route 135. This section of Route 135 in Wellesley is called Central Street.

Just west of Wellesley Square, there is a signalized intersection where Route 135 meets Weston Road. Weston is a north-south arterial that connects the Wellesley and Weston town centers. It also connects with the partially limited-access Route 9 at a Depression-era mini-cloverleaf. The intersection of Weston Road and Route 135 is about 13 miles west of downtown Boston (Figure 1).

Figure 1
Wellesley within the Boston MPO Region



In the communities of Wellesley, Natick, Framingham, and Ashland, Route 135 is near or immediately adjacent to the Worcester commuter rail line on its south side. Almost all the roadways crossing the rail line are grade separated, including Weston Road, which includes a bridge to move traffic over the line.

Only 300 feet north of the Route 135 intersection, Weston Road has another signalized intersection with Linden Street, the primary intersection considered in this study (Figure 2). Linden Street parallels the rail corridor on its north side through most of Wellesley's downtown area. Due to the proximity of these two intersections, recommendations proposed for the Linden Street intersection have the potential to affect traffic operations at the Route 135 intersection. Figure 3 documents how traffic from Weston Road's intersection with Central Street can stretch to the study area at Linden Street and Weston Road. For the purposes of this study, therefore, traffic operations at both intersections will be considered. Figure 4 illustrates the proximity of these two intersections and their location within Wellesley.

Figure 2
Intersection Study Area: Linden Street and Weston Road

Figure 3
Study Location View Looking South along Weston Road toward Central Street

Figure 4
Study Area Proximity to Intersection of Central Street (Route 136) and Weston Road

2.2 The Study Intersection

The intersection of Linden Street and Weston Road is within walking distance of several destinations. The eastern terminus of the Crosstown Trail is less than 200 feet from the study location. The Crosstown Trail travels through North 40, a 46-acre undeveloped parcel of land owned by Wellesley that features walking trails, a vernal pool, and the Weston Road Community Gardens.[2] The Wellesley Square Commercial District and Wellesley College both begin at the intersection of Weston Road and Central Street about 300 feet south of the study location. Finally, Wellesley Square Station, which serves the Framingham/Worcester commuter rail line, is located 0.3 miles east of the study intersection.

The intersection of Linden Street and Weston Road is a T intersection, with the western terminus of Linden Street meeting Weston Road (Figures 5 and 6). The intersection is signalized but operates with flashing yellow lights for Weston Road and a flashing red light for Linden Street until pedestrian actuation calls for a pedestrian crossing phase. The pedestrian phase stops all vehicular traffic and allows for an exclusive pedestrian crossing phase of both Linden Street and Weston Road across the north leg of the intersection. Signage informs motorists at Weston Road's northbound approach that there is "No Turn on Red." The

[2] North 40. n.d. Town of Wellesley, Massachusetts (website). Accessed October 4, 2022. https://wellesleyma.gov/957/North-40.

same signage marks the Linden Street approach, accompanied by an “Except When Flashing” sign because the Linden Street signal flashes red by default (Figure 7).

Figure 5
View of Weston Road from the South Side of Linden Street at the T Intersection

Figure 6
View of Linden Street T Intersection, Looking North along Weston Road

Figure 7
No Turn on Red Signage at Study Intersection

Both Weston Road approaches include one lane that accommodates both through and turning traffic. The Linden Street approach features two lanes, one for right turns and the other for left turns. All three legs of the intersection are striped with one departure lane.

The Town of Wellesley zoning map shows that the entire intersection area is zoned “General Residence.” The west side of Weston Road at the intersection is also a “Residential Incentive Overlay District.” The lot directly west of the intersection at 112 Weston Road is a multifamily home, with vegetation to the north and Weston Road’s bridge over the Worcester commuter rail tracks to the south. The north corner of the intersection, north of Linden Street and east of Weston Road, features multifamily housing in The Wellesley Townhouses. South of Linden Street and east of Weston Road on the southeastern corner of the intersection is another multifamily housing development (Figure 8).

Figure 8
Southeast Corner of Study Intersection

3 ISSUES AND CONCERNS

The intersection of Linden Street and Weston Road is heavily used by people walking and bicycling to many destinations. In addition to the nearby attractions listed above, the location is within one mile of the town's Sprague Elementary, Hardy Elementary, and Wellesley Middle schools.

One of the biggest concerns at the intersection occurs when pedestrian activation stops all vehicular traffic. Motorists will turn despite the red light or impede the crosswalk while stopped at the light when traffic is backed up along Weston Road, creating dangerous conditions for people using the intersection's crosswalks.

Wellesley has approved a 26-unit residential development north of the Linden Street and Weston Road intersection. In addition, the multifamily development on the southeast corner of the intersection will be growing with additional residences. The increasing number of people living near the study location means that more people will be traveling through the intersection. Ensuring safe travel through the location is imperative, but by making the location as comfortable for bicycle and pedestrian travel as possible, the Town of Wellesley could also reduce vehicle demand at the intersection by encouraging residents to walk or bike to their destinations instead.

The intersection of Linden Street and Weston Road is on Wellesley's Complete Streets prioritization list, meaning that the Town wants to make the location safe and accessible for everyone of all ages and abilities: people walking; people bicycling; people using mobility devices: people using transit; and people in personal, commercial, and emergency vehicles. To improve conditions for all road users, Wellesley will be updating Weston Road's Linden Street and Central Street intersections with adaptive controls in the future. This will allow signal timings at both intersections to adapt to current conditions, optimizing the flow of traffic.

The most significant impact to traffic flow through the intersection is made by people on Linden Street making southbound turns on Weston Road, toward the Central Street intersection. This movement causes the largest traffic backups at the location.

The proximity of the Linden Street intersection to Central Street's intersection with Weston Road approximately 300 feet south is an important characteristic of the location, especially when considering the limited sightlines introduced by the Weston Road bridge over the Worcester commuter rail tracks. The inability to observe traffic conditions on the side of the roadway over the bridge reinforces the need to travel safely along Weston Road between the two intersections.

On July 7, 2023, the study intersection was included in a Road Safety Audit (RSA) conducted in Wellesley. The RSA considered Weston Road from Linden Street to Central Street (Route 135) and Central Street (Route 135) from Weston Road to Cross Street. Additional documentation of current conditions and safety concerns can be found in the RSA (Appendix H).

Finally, in 2012, a bicyclist was hit and killed traveling north on Weston Road at the study intersection. Wellesley wants to prevent any such tragedy from recurring in the future.

4 BICYCLE AND PEDESTRIAN TRAVEL

4.1 Bicycle and Pedestrian Overview

On November 18, 2021, the AM Peak hour at the Linden Street and Weston Road intersection was 8:00 AM to 9:00 AM and the PM Peak hour was 3:00 PM to 4:00 PM. The overall peak hour of data collection for all modes occurred during this PM Peak period. During the AM Peak, 17 pedestrians were counted, while 26 were counted during the PM Peak. The AM Peak featured four bicyclists in the road and two on the sidewalk, while the PM Peak didn't include any bicyclists in the road and three people bicycling on the sidewalk.

Bicycle facilities are not present at the intersection to facilitate bicycle travel.

Linden Street's connection to Weston Road features pedestrian actuated signals with countdown displays for two of the three intersection legs. Painted crosswalks accompany both crossings. Three curb ramps assist travel into the roadway, accompanied by detectable warning strips that alert users to the transition from sidewalk to roadway. On the northern corner of the intersection, a curb ramp and detectable warning strip pair serves each of the two crosswalks (Figure 9).

Figure 9
View of North Corner Curb Ramp and Detectable Warning Strip Pairs

The curb ramps and detectable warning strips are surrounded by concrete sidewalk, but only the sidewalk traveling south on the east side of Weston Road maintains the concrete material. Both sides of Weston Road north and Linden Street east of the intersection quickly transition from concrete to asphalt sidewalks. The west side of Weston Road south of the intersection does not feature sidewalks at all.

Figure 10
Sidewalk on East Side of Weston Road Looking North to Study Intersection

MPO staff graded the intersection of Linden Street and Weston Road in Wellesley using the Boston Region MPO's Pedestrian Report Card Assessment (PRCA)[3] and Bicycle Report Card[4] tools to assess the safety and comfort of the location for people walking and bicycling. The grading categories reflect the MPO's Long-Range Transportation Plan (LRTP) goals and assess the quality of four different aspects of the environment: Capacity Management and Mobility, Economic Vitality, Safety, and System Preservation. The report cards also prioritize locations based on Transportation Equity factors, incorporating another Boston region LRTP goal.

[3] Boston Region Metropolitan Planning Organization, "Pedestrian Level-of-Service" (Prepared by Ryan Hicks and Casey-Marie Claude, January 2017). https://www.ctps.org/ped-report-card. [Updated in 2019: Boston Region Metropolitan Planning Organization, "Pedestrian Report Card Assessment Interactive Database" (Prepared by Casey-Marie Claude, November 2019). https://www. https://www.ctps.org/PRCA-interactive-database.]

[4] Boston Region Metropolitan Planning Organization, "Development of a Scoring System for Bicycle Travel in the Boston Region" (Prepared by Casey-Marie Claude, November 2018). https://www.ctps.org/bicycle-level-of-service.

4.2 Pedestrian Report Card Assessment (PRCA)

Figure 11
Signalized Intersection PRCA for Linden Street and Weston Road

Pedestrian Report Card Assessment (PRCA)
Signalized Intersection

Capacity Management and Mobility			
Performance Measure	Percentage	Score (out of 3)	Rating
Pedestrian Delay	43%	3	Good
Sidewalk Presence	29%	2	Fair
Curb Ramp Presence	14%	2	Fair
Crosswalk Presence	14%	2	Fair
Total (Pedestrian Delay Score * 0.43) + (Sidewalk Presence Score * 0.29) + (Curb Ramp Presence Score * 0.14) + (Crosswalk Presence Score * 0.14)	**100%**	**2.4**	**Good**

Economic Vitality			
Performance Measure	Percentage	Score (out of 3)	Rating
Pedestrian Volumes	100%	**2.0**	**Fair**

Meaning of Ratings
Good: 3
Fair: 2
Poor: 1

Transportation Equity Priority
High: Four (4) or Five (5) Factors
Moderate: Two (2) or Three (3) Factors
Low: Zero (0) or One (1) Factor

Safety			
Performance Measure	Percentage	Score (out of 3)	Rating
Sufficient Crossing Time (Index)	38%	2	Fair
Pedestrian Crashes	38%	2	Fair
Pedestrian Signal Phase	13%	2	Fair
Vehicle Travel Speed	13%	2	Fair
Total (Sufficient Crossing Time (Index) Score * 0.38) + (Pedestrian Crashes Score * 0.38) + (Pedestrian Signal Presence Score * 0.13) + (Vehicle Travel Speed Score * 0.13)	**100%**	**2.0**	**Fair**

System Preservation			
Performance Measure	Percentage	Score (out of 3)	Rating
Sidewalk Condition	100%	**3.0**	**Good**

Transportation Equity Priority	
Area Condition	**Yes/No**
Low Income Population =/> 32.32%	No
Minority Population =/> 28.19%	No
6.69%+ of Population > 75 Years of Age	Yes
16.15%+ of Households w/o Vehicle	No
Within ¼ Mile of School/College	No

The intersection received a “Good” score for Capacity Management and Mobility on its PRCA, which was largely influenced by the minimal delay experienced by pedestrians trying to cross the intersection. Within seconds of actuating the pedestrian signal button, vehicle traffic receives a solid yellow signal, followed by a solid red light, after which the pedestrian crossing phase begins. The location lacks a sidewalk on the west side of Weston Road south of the intersection, there is not a curb ramp on the southwest corner, and the southern leg of the intersection does not feature a crosswalk, but people walking do not have to wait long for vehicular traffic to stop when they actuate the pedestrian signals at Linden Street and Weston Road. This, coupled with the decent sidewalk, curb ramp, and crosswalk conditions throughout the remainder of the intersection, earned the location a high score in the first grading category.

For Economic Vitality, the intersection received a “Fair” score, given that between five and 60 people an hour were observed walking through the location.

The intersection was deemed fair for all four performance metrics in the Safety category, earning the intersection a “Fair” score. Best practice recommends providing sufficient time for people walking to cross an intersection leg at a pace of 3.5 feet per second if they have left the curb at the end of the WALK phase.[5] In areas known to have pedestrians who walk more slowly or areas with considerable numbers of people using mobility devices, slower speeds should be considered. Given the width of the Linden Street crossing, the combined Flashing Don’t Walk and Red Clearance phases should add up to a duration of at least 17.5 seconds. MPO staff identified a Flashing Don’t Walk duration of 10 seconds and measured a four second Red Clearance phase, leaving the pedestrian crossing duration 3.5 seconds short. The current timing requires pedestrians to cross at a speed of 4.4 feet per second.

Similar to the Sufficient Crossing Time Index performance metric, the final three factors in the Safety category received moderate scores. There was one pedestrian crash at the intersection from 2015 through 2019, preventing the location from reaching the status of Highway Safety Improvement Program Pedestrian Crash Cluster, but the most effective intersections have zero crashes. The pedestrian signal phase at Linden Street’s intersection with Weston Road is exclusive. This allows pedestrians to cross safely without vehicular traffic obstructions but can require people walking to wait long periods of time to cross an intersection. It is important to note, however, that the unique nature of this location’s signalization and the speed with which the pedestrian phase begins after actuation work together to minimize the negative impacts of exclusive pedestrian phases at this intersection. Finally, the posted vehicle travel speed is 30 miles per hour, higher than the preferred 25 miles per hour, but not an excessive amount faster.

The Linden Street and Weston Road intersection received a “Good” score for System Preservation because the sidewalks at the location were all in decent condition and featured widths that meet or exceed the minimum five-foot requirement. Overall, the intersection was considered a Low Priority area for pedestrian transportation equity because only the proportion of one population at the location (elderly) exceeds the regional average, and the intersection is not located within one-quarter mile of a lower level school.

[5] Manual on Uniform Traffic Control Devices (MUTCD). 2009. “Pedestrian Control Features: Pedestrian Intervals and Signal Phases.” Accessed October 4, 2022. https://mutcd.fhwa.dot.gov/htm/2009/part4/part4e.htm.

4.3 Bicycle Report Card

Figure 12
Bicycle Report Card for Linden Street and Weston Road

Bicycle Report Card
Scoring Breakdown

Capacity Management and Mobility

Performance Measure	Percentage	Points	Grade
Bicycle Facility Presence	50%	0	F
Proximity to Bike Network	33%	100	A
Proximity to Transit	17%	100	A
Total	**100%**	**50**	**F**

Economic Vitality

Performance Measure	Percentage	Points	Grade
Bike Rack Presence	50%	0	F
Land Use	50%	100	A
Total	**100%**	**50**	**F**

Grading
A: 90–100 *Excellent*
B: 80–89 *Satisfactory*
C: 70–79 *Acceptable*
D: 60–69 *Needs Improvement*
F: 59–0 *Not recommended for bicycle travel*

Transportation Equity Priority
High: Four (4) or Five (5) Factors
Moderate: Two (2) or Three (3) Factors
Low: Zero (0) or One (1) Factor

Safety

Performance Measure	Percentage	Points	Grade
Bicycle Facility Presence	33%	0	F
Absence of Bicycle Crashes	33%	70	C
Bicyclist Operating Space	17%	0	F
Number of Travel Lanes	17%	90	A
Total	**100%**	**38.4**	**F**

System Preservation

Performance Measure	Percentage	Points	Grade
Bicycle Facility Continuity	50%	0	F
Bicycle Facility Condition	50%	0	F
Total	**100%**	**0**	**F**

Transportation Equity Priority

Area Condition	Yes/No
Low Income Population =/> 32.32%	No
Minority Population =/> 28.19%	No
18.2%+ of Population < 16 Years Old	Yes
16.15%+ of Households w/o Vehicle	No
Within ¼ Mile of School/College	No

The intersection received a failing score for the Capacity Management and Mobility category of the Bicycle Report Card. This is entirely due to the fact that there are no bicycle facilities at the study location, which accounts for half of the overall category score. The intersection of Linden Street and Weston Road is a good candidate for bicycle facilities because it is located within one-quarter mile of other bicycle facilities on the Wellesley College campus and less than one-half mile from the Wellesley Square commuter rail station.

The intersection received another failing score in the Economic Vitality category, in this case because the location does not include bike racks. Yet again, this performance metric accounts for half of the overall category score, so the lack of safe places to secure bicycles negated the location's positive score for land use.

The residential buildings surrounding the study area indicate that there is potential for economic vitality near the intersection.

Linden Street's intersection with Weston Road earned another failing score for the Safety category. The absence of bicycle facilities left the location with zero points for the associated performance metric. The intersection received 70 points for the Absence of Bicycle Crashes performance metric after a deduction of 30 points for the fatal bicycle crash at the location in 2012 noted in the Issues and Concerns portion of this study. Without bicycle facilities at the intersection, the location is not eligible to receive points for the Bicyclist Operating Space performance metric because people riding bicycles are required to share space with people driving, leaving them without dedicated operating space. Finally, the intersection received a score of 90 points for the Number of Travel Lanes performance metric. Weston Road only has one lane of travel in each direction and Linden Street only has one lane exiting the intersection. Ten points were deducted for Linden Street's two lanes at its approach to the intersection. Unfortunately, this high score was not able to outweigh the intersection's other considerable safety deficiencies for bicycle travel.

The intersection of Linden Street and Weston Road also failed the System Preservation category. This, once again, is a result of the lack of bicycle facilities at the study location. It is impossible to award points for bicycle facility continuity or condition without the presence of bicycle accommodations. Overall, the intersection was considered a Low Priority area for bicycle transportation equity because only the proportion of one population at the location (youth) exceeds the regional average, and the intersection is not located within one-quarter mile of a lower level school.

5 CRASH ANALYSIS

5.1 Crash Location Summaries

Crash Types and Times

Table 1 summarizes the 28 crashes from 2015–19 at the intersection of Linden Street and Weston Road. Rear-end crashes were the most frequent crash type at the study location, followed by angle crashes. Almost 68 percent of the crashes at Linden Street occurred during the AM and PM peak periods. Appendix A provides information about all 28 intersection crashes.

Crash Severity

There were no fatalities at the study location during the five-year period, although there were two injury crashes. Of these two crashes, one included injury to vehicle occupants while the other potentially injured a pedestrian. A total of one

non-motorist, the pedestrian from the second injury crash, was involved in crashes from 2015–19 at the study location.

Table 1
2015–19 Crash Summary

Crash Severity	
Fatality	0
Injury	2
Property Damage Only	26
Total Crashes	**28**
Manner of Collision	
Single vehicle	6
Rear-end	12
Angle	10
Sideswipe, same direction	0
Sideswipe, opposite direction	0
Head-on	0
Not Reported/Unknown	0
Total Crashes	**28**
Road Surface Condition	
Dry	21
Wet	2
Ice	2
Snow	3
Not Reported/Unknown	0
Total Crashes	**28**
Ambient Condition	
Daylight	19
Dark-lighted roadway	7
Dusk	1
Dawn	1
Dark-not-lighted roadway	0
Total Crashes	**28**
Weather Conditions	
Clear	24
Cloudy	0
Rain	0
Snow	4
Total Crashes	**28**
Time Period	
AM Peak (6:00 AM to 9:00 AM)	5
PM Peak (3:00 PM to 6:00 PM)	14
Off-peak	9
Total Crashes	**28**

Crash Vehicle-Mix	
Vehicle-only	27
Pedestrian	1
Bicycle	0
Total Crashes	**28**
Average Crashes per Year	**5.6**

Source: Central Transportation Planning Staff

5.2 Travel Direction and Improper Driving

Table 2 shows the total number of vehicles that were involved in the various crashes at the Linden Street and Weston Road intersection, characterizes each vehicle by the direction it was traveling, and identifies whether the police report indicated any improper driving. The police reports only noted a specific type of improper driving (including inattention) for 17 of the 35 involved vehicles at the study intersection. Crash data for the location indicate that 30 vehicles were traveling north or south on Weston Road compared with 22 traveling on Linden Street. Most of the involved vehicles on Linden Street were traveling west.

Table 2
2015–19 Crash Summary by Travel and Driver Errors:
28 Crashes; 52 Vehicles

Crash Description	All Vehicles	Traveling West	Traveling East	Traveling North	Traveling South
All Drivers	**52**	**18**	**4**	**13**	**17**
Improper Driving Noted	17	6	2	4	5
No Improper Driving Noted	35	12	2	9	12

Source: Central Transportation Planning Staff

6 INTERSECTION ANALYSIS

6.1 Travel Patterns

Massachusetts Department of Transportation (MassDOT) Highway Division's Traffic Data Collection section collected traffic data for the study. Automatic traffic recorder (ATR) counts were collected during a seven-day period from Tuesday, November 16, 2021, to Monday, November 22, 2021. The ATR counts included daily traffic volumes and traffic mix (light and heavy vehicles). MassDOT also collected turning-movement counts (TMC) in the study area on Thursday, November 18, 2021, and Saturday, November 20, 2021. The TMC counts were performed during the weekday AM peak travel period (7:00 AM to 11:00 AM), weekday PM peak travel period (2:00 PM to 6:00 PM), and weekend midday period (10:00 AM to 2:00 PM). In all cases, passenger cars, heavy vehicles,

pedestrians, and bicycles were recorded separately. The traffic data are included in Appendix B.

Turning movement counts for the weekday AM and PM peak travel periods are illustrated in Figure 13. The total average number of vehicles that passed through the Linden Street and Weston Road intersection on both weekdays and weekend days is documented in Figure 14.

Figure 13
Weekday Turning Movement Counts: Linden Street and Weston Road

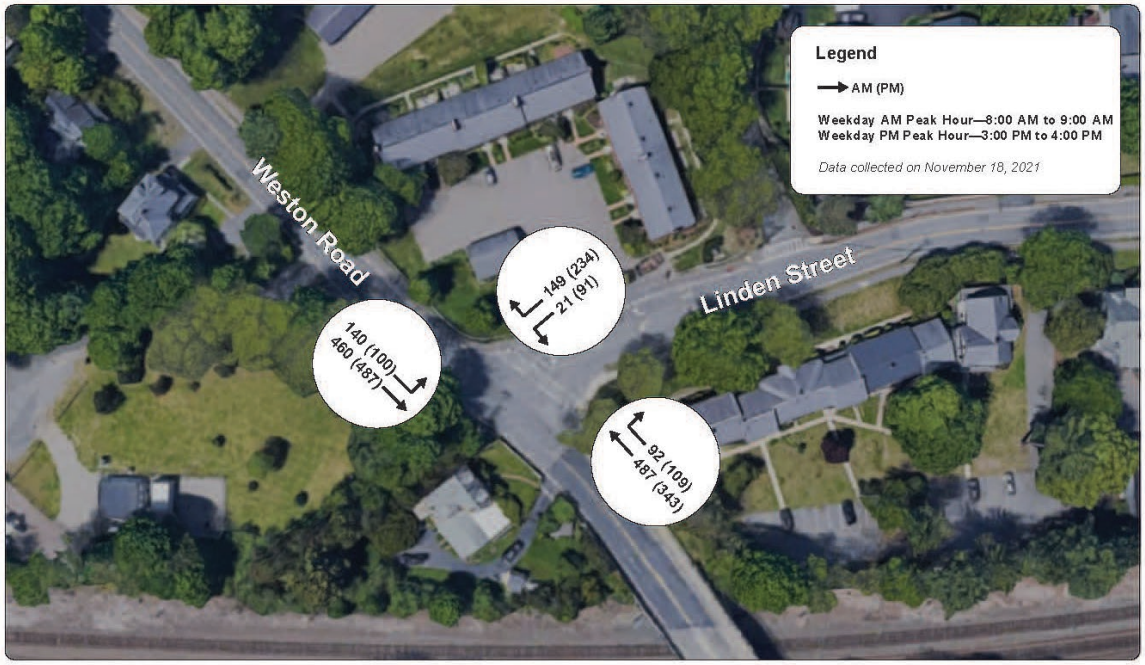
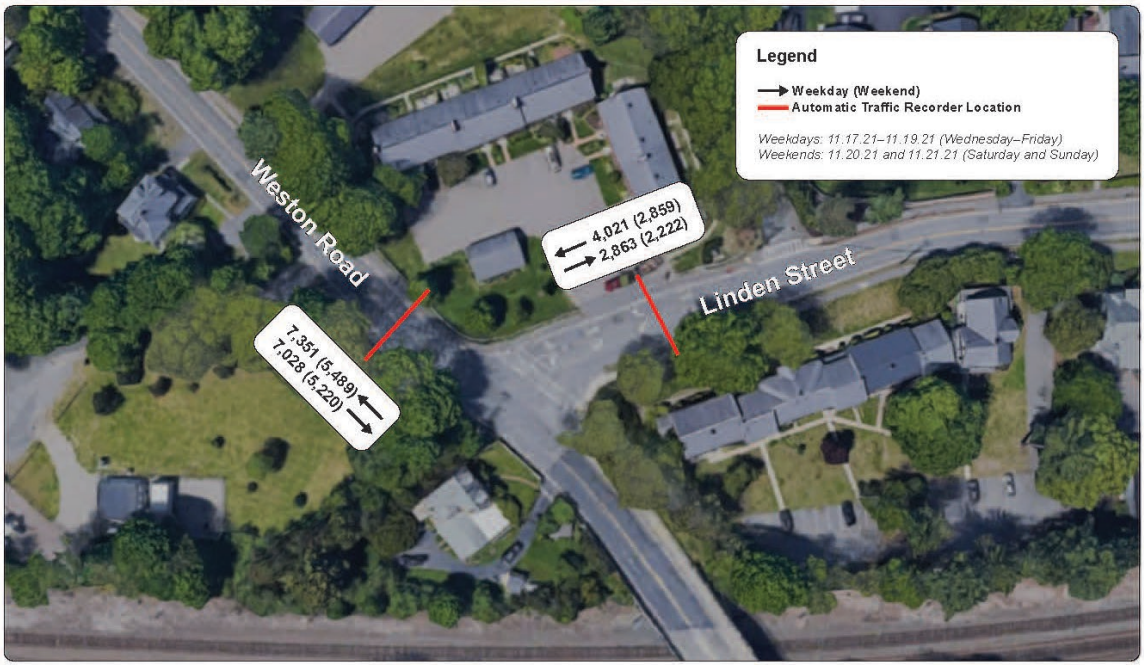


Figure 14
Average Total Weekday and Weekend Vehicles: Linden Street and Weston Road



The greatest share of traffic at the Linden Street and Weston Road intersection travels southbound along Weston Road, comprising 32.2 percent of the total volume. The remaining traffic from Weston Road's southbound approach, comprising 10.7 percent of the total intersection volume, turns left onto Linden Street.

The smallest amount of traffic at the intersection comes from the Linden Street approach. Between the two options for travel at the eastern intersection leg, the greater amount of traffic turns right and travels northbound along Weston Road, making up 16.8 percent of total traffic. The smallest directional volume of the entire intersection, comprising 4.8 percent of all traffic at the location, turns left from Linden Street and travels southbound along Weston Road.

The remaining intersection traffic comes from the northbound Weston Road approach. Most vehicles continue straight along Weston Road northbound, comprising 28.2 percent of the total intersection traffic. The turning movement count data indicate that only 7.3 percent of all traffic at the Linden Street and Weston Road intersection turns right from Weston Road northbound to Linden Street eastbound.

6.2 Signal Warrant Analysis

MPO staff conducted a signal warrant analysis for the intersection of Linden Street and Weston Road. Conditions at the study location satisfy the Manual of Uniform Traffic Control Devices (MUTCD) signal warrant analysis, meaning that the installation of a traffic control signal is justified at the location. The Highway Capacity Software Warrants Report is included in Appendix C. The intersection satisfies three of the MUTCD's nine traffic signal warrants:

- Warrant 1, Eight-Hour Vehicular Volume
- Warrant 2, Four-Hour Vehicular Volume
- Warrant 3, Peak Hour

6.3 Intersection Levels of Service (LOS)

MPO staff conducted traffic operations analyses consistent with the Highway Capacity Manual (HCM) methodologies.[6] HCM methodology is used to assess traffic conditions at signalized and unsignalized intersections and to rate the LOS from A to F. LOS A represents the best operating conditions (little to no delay), while LOS F represents the worst operating conditions (long delay). LOS E represents operating conditions at capacity (the limit of acceptable delay). Table 3 presents the control delays (standards for comparison) associated with each LOS for signalized and unsignalized intersections.

Table 3
Intersection Level of Service Criteria

Level of Service	Signalized Intersection Control Delay (seconds per vehicle)	Unsignalized Intersection Control Delay (seconds per vehicle)
A	< 10	< 10
B	10–20	10–15
C	20–35	15–25
D	35–55	25–35
E	55–80	35–50
F	> 80	> 50

Source: Highway Capacity Manual 2010.

Using Synchro traffic analysis software, MPO staff assessed the capacity and levels of service of Weston Road's intersections with Central Street and Linden

[6] Transportation Research Board of the National Academies, *Highway Capacity Manual*, *Sixth Edition: A Guide for Multimodal Mobility Analysis*, Washington, DC, September 2020.

Street. Appendix D presents the existing conditions LOS analysis worksheets. Based on the traffic operations analyses, the intersection of Weston Road and Central Street has a LOS of F during the AM peak and a LOS of C during the PM peak. The Linden Street and Weston Road intersection is currently operating at a LOS of F during both the AM and PM peaks, operating under congested conditions with long queues during peak travel hours.

6.4 Signal Clearance Timing

To support the potential signalization of the study intersection, MPO staff calculated the amount of time traffic signals at Linden Street and Weston Road would need to allow for the yellow phase, red clearance, and pedestrian intervals. These calculations are included in Appendix E.

7 IMPROVEMENT RECOMMENDATIONS

7.1 Short-Term Recommendations

One low-cost and quickly implementable change that would improve safety at the study intersection is painting narrower lane widths. By narrowing lane widths in the study area to 11 feet, people driving will travel at slower speeds, which reduces the severity of crashes.

This reduction in space allocated for vehicle travel lanes would allow Wellesley to additionally paint larger pedestrian zones on the east side of the Linden Street and Weston Road intersection. By designating more space for people walking, the distance which pedestrians need to cross when traveling through the intersection will be reduced. Extending the space for people walking will also increase drivers' ability to see pedestrians as they prepare to cross the roadway. These conditions decrease the chances for pedestrian-vehicle collisions. Wellesley could increase the safety of these painted zones by installing large planters, flexible bollards, traffic cones, or moveable curbs to separate vehicles from people walking.

MPO staff analysis of travel patterns at the study location found it would be possible to reduce the curb radius with a larger pedestrian zone on the southeastern corner of the intersection. This is a result of the small number of heavy vehicles that turn onto Linden Street from the Weston Road northbound approach, which are the types of vehicles for which wider curb radii are designed. Of the 7.3 percent of the total intersection traffic that turns onto Linden Street from Weston Road northbound, 1.3 percent is made up of heavy vehicles like single-unit trucks, articulated trucks, and buses. This direction of travel has the smallest percentage of heavy vehicle traffic of the entire intersection. The majority of traffic (98.1 percent) turning right onto Linden Street from Weston

Road is light vehicle traffic and the remaining 0.6 percent is made up of people bicycling.

Another short-term recommendation for the study intersection is to fully signalize the location. This would typically be considered a long-term improvement because traffic signals would need to be installed, but the intersection already features signal equipment. The signals themselves may need modification to feature all three light colors (red, yellow, and green), but this is relatively quickly achieved when compared to equipment installation. One key element that Wellesley would need to add to the current signals are yellow retroreflective borders to the signal backplates to increase visibility.

Using Synchro traffic analysis software, MPO staff determined optimal signal timings for Weston Road's intersections with Linden Street and Central Street. Appendix F presents the LOS analysis worksheets for this low-cost recommendation. If the Linden Street intersection is pretimed and the Central Street intersection remains actuated and uncoordinated with other signals, traffic operations analyses indicate that the intersection of Weston Road and Central Street would improve during the AM peak period from LOS F to LOS C and during the PM peak period from LOS C to LOS B. The LOS at the Linden Street and Weston Road intersection under the same conditions would increase from an F to a D during both the AM and PM peak travel periods.

Finally, there are steps Wellesley could take to facilitate bicycle access to North 40 from the Wellesley Square Commercial District and Wellesley College. The stretch of the roadway along Weston Road between Linden Street and Central Street varies in width from approximately 30 to 33 feet. Narrowing Weston Road's lanes to 10-foot widths leaves at least ten feet of space unaccounted for within the roadway between the two intersections. The National Association of City Transportation Officials recommends lane widths of 10 feet, explaining that they have a positive impact on street safety without negatively impacting traffic operations.[7]

To test the functionality and safety of allocating the extra space to non-vehicular uses, Wellesley could paint the excess roadway and add vertical separation similar to that used for the painted pedestrian zones proposed for the Linden Street intersection. Large planters, flexible bollards, traffic cones, or moveable curbs could be placed along the painted pavement area to separate the painted roadway from motorists. Studying the impact of this roadway design on vehicular

[7] "Lane Width," Urban Street Design Guide, National Association of City Transportation Officials (NACTO), accessed October 10, 2022, https://nacto.org/publication/urban-street-design-guide/street-design-elements/lane-width/.

travel patterns would allow Wellesley to determine the effect of allocating the extra space to people walking and bicycling.

If Wellesley feels comfortable redistributing space from people driving to people bicycling and walking after observing driver travel behavior along Weston Road's narrowed travel lanes, MPO staff recommend painting bicycle facilities along the roadway. Wellesley expressed a preference for shared-use paths instead of on-street bike lanes, but shared-use paths require funding and time to construct. To quickly test bicycle accommodations along the roadway segment, Wellesley could paint an interim shared-use path along the roadway. This would serve as a low-cost improvement until Wellesley is able to secure funding for shared-use path infrastructure.

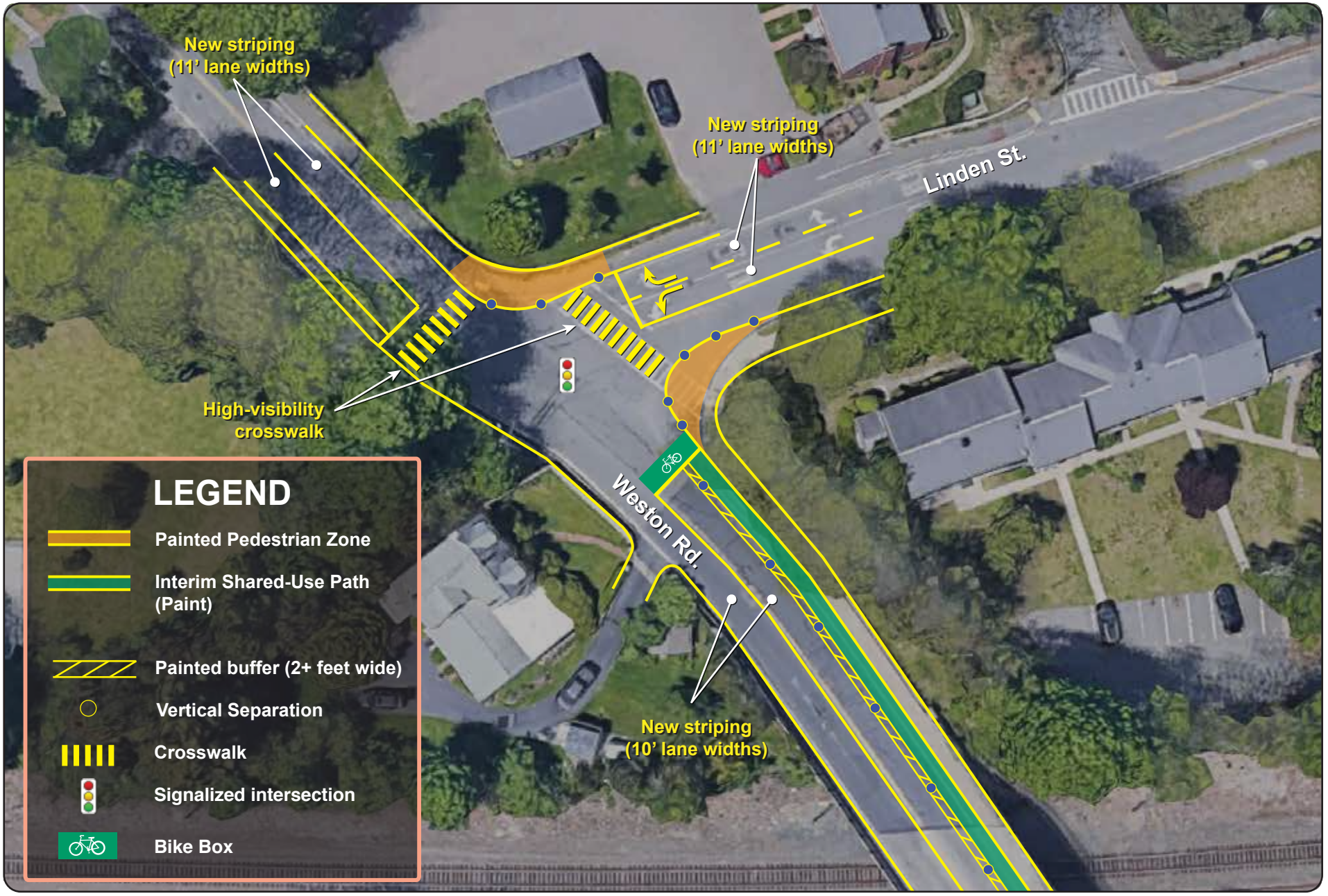
The interim shared-use path would measure eight feet wide and should be accompanied by a buffer with a minimum two-foot width between the vehicle travel lanes and the interim shared-use path. In this scenario it would also be ideal to install vertical separation in the form of large planters, flexible bollards, traffic cones, or moveable curbs to provide additional protection for people bicycling. MPO staff also recommend including a bike box across Weston Road's northbound approach to increase bicyclist visibility at the intersection and facilitate cyclists' left turns toward Crosstown Trail and North 40.

Due to the reduced width of Weston Road north of the study intersection, MPO staff recommend adding signage to inform bicyclists and pedestrians they have reached the terminus of the shared-use path at Linden Street. Signage would also be needed to facilitate bicycle travel to Crosstown Trail and North 40 and support pedestrian wayfinding.

Figure 15 illustrates the proposed low-cost, short-term improvements to Linden Street's intersection with Weston Road.

- Slow vehicle speeds by restriping the roadway and narrowing travel lanes to 11- and 10-feet wide.
- Using paint and temporary vertical separation, extend the sidewalks on the northeast and southeast corners of the intersection to create pedestrian zones that narrow crossing distances for and increase visibility of people walking.
- Fully signalize the intersection of Linden Street and Weston Road, adding yellow retroreflective borders to the existing signals' backplates to increase their visibility.

- Using paint and temporary vertical separation, create an interim shared-use path on the east side of Weston Road between Linden Street and Central Street.
    - Add signage at Linden Street that informs users that they have reached the shared-use path's terminus and directs bicyclists and pedestrians to Crosstown Trail and North 40.



BOSTON REGION MPO

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FIGURE 15
Low-Cost Intersection Improvements
Linden Street and Weston Road, Wellesley MA

Intersection Improvement Program

7.2 Long-Term Recommendations

While the relatively low-cost and quickly implementable recommendations addressed above will improve safety and operations at the intersection of Linden Street and Weston Road, there are several additional improvements that Wellesley could consider. These additional recommendations are anticipated to require larger investments of time and money to implement.

Wellesley could invest in actuating the signals at the Linden Street and Weston Road intersection. Given the fact that Weston Road's intersection with Central Street is already actuated, the town could optimize signal timing at both locations and increase LOS by coordinating the signals at the two intersections. Traffic operations analyses indicate that actuating and coordinating both locations would improve current conditions at the Weston Road and Central Street intersection from LOS F to LOS C during the AM peak and from LOS C to LOS B during the PM peak. The LOS at the Linden Street and Weston Road intersection would increase from an F under current AM and PM conditions to a B during both the AM and PM travel periods. The LOS analysis worksheets for these proposed conditions are presented in Appendix G.

If Wellesley finds conditions to be favorable after implementing the low-cost, short-term pedestrian zone and shared-use path recommendations, Wellesley could install concrete sidewalks with curbing and a vertically-separated, paved shared-use path to formalize the painted quick-build pedestrian and bicycle facilities implemented as short-term recommendations on the east side of the study intersection. This would provide permanent, vertical separation between motorists and people walking and bicycling between North 40 and the Wellesley Square Commercial District and Wellesley College. Wellesley's future plans for the roadway and development in the intersection area should consider how best to ensure safe access to the shared-use path for bicyclists from Linden Street and Weston Road north of the intersection.

Finally, Wellesley could consider introducing additional roadway treatments to the intersection to reduce vehicular travel speeds. The Town has received complaints related to the noise created by vehicles driving over raised crosswalks, so vertical countermeasures may not be appropriate in Wellesley, but they are an effective treatment for speed reduction that could accompany the curb extensions recommended in this memo as horizontal countermeasures. Additional treatments to slow speeds that Wellesley could explore include chicanes and lateral shifts along Weston Road's intersection approaches, although much of the existing roadway width is allocated to other uses through this memo's recommendations.

8 CONCLUSIONS AND NEXT STEPS

8.1 Conclusions

There are several quick fixes that can be made at the intersection of Linden Street and Weston Road that have the potential to improve conditions for all road users. These rapidly implementable improvements can be accomplished using relatively affordable materials, which should keep the overall cost of the short-term updates low. If Wellesley finds that these intersection modifications yield positive results, the Town could consider allocating funds to construct more permanent versions of the projects to create lasting safety and comfort benefits for all who travel through the intersection.

8.2 Next Steps

The Town of Wellesley could begin its intersection improvements by implementing the signal timing recommendations documented in this memorandum. This should be accompanied by the roadway paint and striping recommendations to provide more space for and better visibility of people walking and bicycling through the intersection. Wellesley would need to determine which type of temporary vertical separation feels most appropriate for the study location and the Town as a whole.

Wellesley staff expressed interest in adding another lane to Weston Road's southbound approach. This would create one southbound lane, one queue lane for left turns onto Linden Street, and one northbound lane. The impacts of this change on vehicular, bicycle, and pedestrian travel should be studied prior to adding a lane to the northern intersection leg, but it should be noted that the current roadway width of approximately 26 feet does not allow for three travel lanes. If Wellesley is able to expand the width of the roadway to accommodate an additional vehicular travel lane, the Town should look into whether additional space can be carved out to continue the recommended shared-use path northward along Weston Road. Bicycle accommodations should be prioritized corridor-wide, not just at the study intersection, and connectivity should be improved throughout Wellesley to improve safety, comfort, and utility for bicyclists.

Looking ahead at implementing the long-term study recommendations, the travel volume by mode and turning movement count data provided through this work may be used by Wellesley to complete applications for regional, state, and federal funding to support infrastructure improvements. If Wellesley is interested in constructing bicycle facilities within the study area, the town may consider

applying for Community Connections Program funding through the Boston Region MPO.

Appendices:

- Crash Data
- Traffic Data
- Highway Capacity Software Warrants Report
- Existing Conditions LOS
- Signal Clearance Timing Calculations
- Short-Term Proposed Conditions LOS
- Long-Term Proposed Conditions LOS
- Road Safety Audit

The Boston Region Metropolitan Planning Organization (MPO) operates its programs, services, and activities in compliance with federal nondiscrimination laws including Title VI of the Civil Rights Act of 1964 (Title VI), the Civil Rights Restoration Act of 1987, and related statutes and regulations. Title VI prohibits discrimination in federally assisted programs and requires that no person in the United States of America shall, on the grounds of race, color, or national origin (including limited English proficiency), be excluded from participation in, denied the benefits of, or be otherwise subjected to discrimination under any program or activity that receives federal assistance. Related federal nondiscrimination laws administered by the Federal Highway Administration, Federal Transit Administration, or both, prohibit discrimination on the basis of age, sex, and disability. The Boston Region MPO considers these protected populations in its Title VI Programs, consistent with federal interpretation and administration. In addition, the Boston Region MPO provides meaningful access to its programs, services, and activities to individuals with limited English proficiency, in compliance with U.S. Department of Transportation policy and guidance on federal Executive Order 13166.

The Boston Region MPO also complies with the Massachusetts Public Accommodation Law, M.G.L. c 272 sections 92a, 98, 98a, which prohibits making any distinction, discrimination, or restriction in admission to, or treatment in a place of public accommodation based on race, color, religious creed, national origin, sex, sexual orientation, disability, or ancestry. Likewise, the Boston Region MPO complies with the Governor's Executive Order 526, section 4, which requires that all programs, activities, and services provided, performed, licensed, chartered, funded, regulated, or contracted for by the state shall be conducted without unlawful discrimination based on race, color, age, gender, ethnicity, sexual orientation, gender identity or expression, religion, creed, ancestry, national origin, disability, veteran's status (including Vietnam-era veterans), or background.

A complaint form and additional information can be obtained by contacting the MPO or at http://www.bostonmpo.org/mpo_non_discrimination.

To request this information in a different language or in an accessible format, please contact

Title VI Specialist
Boston Region MPO
10 Park Plaza, Suite 2150
Boston, MA 02116
civilrights@ctps.org

By Telephone:
857.702.3700 (voice)

For people with hearing or speaking difficulties, connect through the state MassRelay service:

- **Relay Using TTY or Hearing Carry-over:** 800.439.2370
- **Relay Using Voice Carry-over:** 866.887.6619
- **Relay Using Text to Speech: 8**66.645.9870

For more information, including numbers for Spanish speakers, visit https://www.mass.gov/massrelay

Appendix A

Crash Data Summary Table

Crash Data Summary Table

Linden Street and Weston Road, Wellesley, MA

2015–19

Crash Date	Crash Day	Crash Time of Day	Manner of Collision	Nonmotorist	Light Condition	Weather Condition	Road Surface	Driver Contributing Code	Injury Severity
01/29/15	Thursday	7:05 PM	Rear-End	No	Dark - lighted roadway	Clear	Wet	D1: (No improper driving) / D2: (Inattention)	No Injury
02/06/15	Friday	6:07 PM	Angle	No	Dark - lighted roadway	Clear	Dry	D1: (No improper driving) / D2: (Unknown)	No Injury
09/24/15	Thursday	3:34 PM	Angle	No	Daylight	Clear	Dry	D1: (No improper driving) / D2: (Failed to yield right of way)	No Injury
10/19/15	Monday	1:20 PM	Rear-End	No	Daylight	Clear	Dry	D1: (No improper driving) / D2: (Followed too closely)	No Injury
06/06/16	Monday	7:53 AM	Single Vehicle Crash	No	Daylight	Clear	Dry	D1: (Swerving or avoiding due to wind, slippery surface, vehicle, object, non-motorist in roadway, etc)	Possible Non-Fatal Injury
06/23/16	Thursday	2:10 PM	Angle	No	Daylight	Clear	Dry	D1: (Failed to yield right of way) / D2: (No improper driving)	No Injury
07/05/16	Tuesday	6:13 PM	Angle	No	Daylight	Clear	Dry	D1: (No improper driving) / D2: (No improper driving)	No Injury
09/23/16	Friday	1:38 PM	Angle	No	Daylight	Clear	Dry	D1: (No improper driving) / D2: (Failed to yield right of way)	No Injury
11/23/16	Wednesday	12:42 PM	Rear-End	No	Daylight	Clear	Dry	D1: (No improper driving) / D2: (Glare)	No Injury
12/17/16	Saturday	7:13 AM	Single Vehicle Crash	No	Daylight	Snow	Snow	D1: (Driving too fast for conditions)	No Injury
03/16/17	Thursday	3:49 PM	Angle	No	Daylight	Clear	Dry	D1: (No improper driving) / D2: (Unknown) / D3: (Unknown)	No Injury
02/08/17	Wednesday	5:43 PM	Rear-End	No	Dark - lighted roadway	Clear	Dry	D1: (No improper driving) / D2: (Followed too closely)	No Injury
06/18/17	Sunday	3:54 PM	Rear-End	No	Dawn	Clear	Dry	D1: (No improper driving) / D2: (Unknown)	No Injury
07/07/17	Friday	4:27 PM	Angle	No	Daylight	Clear	Wet	D1: (No improper driving) / D2: (Inattention)	No Injury
10/02/17	Monday	4:56 PM	Rear-End	No	Daylight	Clear	Dry	D1: (No improper driving) / D2: (Inattention)	No Injury
10/26/17	Thursday	4:44 PM	Rear-End	No	Dusk	Clear	Dry	D1: (No improper driving) / D2: (Inattention)	No Injury
12/09/17	Saturday	5:00 PM	Rear-End	No	Dark - lighted roadway	Snow	Snow	D1: (No improper driving) / D2: (No improper driving)	No Injury
12/03/17	Sunday	5:09 PM	Rear-End	No	Dark - lighted roadway	Clear	Dry	D1: (No improper driving) / D2: (Followed too closely)	No Injury
12/21/17	Thursday	8:52 AM	Single Vehicle Crash	No	Daylight	Clear	Dry	D1: (Operating defective equipment),(Other improper action)	No Injury
05/03/18	Thursday	5:25 PM	Rear-End	No	Daylight	Clear	Dry	D1: (No improper driving) / D2: (Followed too closely) / D3: (No improper driving)	No Injury
07/20/18	Friday	5:01 PM	Angle	No	Daylight	Clear	Dry	D1: (No improper driving) / D2: (Unknown)	No Injury
09/04/18	Tuesday	5:05 PM	Rear-End	No	Daylight	Clear	Dry	D1: (No improper driving) / D2: (Followed too closely)	No Injury

Crash Data Summary Table

Linden Street and Weston Road, Wellesley, MA

2015–19

Crash Date	Crash Day	Crash Time of Day	Manner of Collision	Nonmotorist	Light Condition	Weather Condition	Road Surface	Driver Contributing Code	Injury Severity
11/15/18	Thursday	1:58 PM	Angle	No	Daylight	Clear	Dry	D1: (No improper driving) / D2: (Failed to yield right of way)	No Injury
01/21/19	Monday	5:08 PM	Single Vehicle Crash	No	Dark - lighted roadway	Clear	Ice	D1: (No improper driving)	No Injury
03/26/19	Tuesday	7:39 AM	Single Vehicle Crash	Pedestrian	Daylight	Clear	Dry	D1: (No improper driving)	Possible Injury
12/02/19	Monday	6:10 PM	Angle	No	Dark - lighted roadway	Snow	Snow	D1: (Failure to keep in proper lane or running off road) / D2: (No improper driving)	No Apparent Injury
12/13/19	Friday	12:06 PM	Rear-End	No	Daylight	Clear	Dry	D1: (No improper driving) / D2: (Operating vehicle in erratic, reckless, careless, negligent or aggressive manner)	No Apparent Injury
12/17/19	Tuesday	7:35 AM	Single Vehicle Crash	No	Daylight	Cloudy/Snow	Ice	D1: (No improper driving)	No Apparent Injury

Appendix B

Traffic and Signal Timing Data

1. Automatic Traffic Recorder (ATR) Data
2. Turning Movement Count (TMC) Data

Part 1: Automatic Traffic Recorder (ATR) Data

Mass Highway Department

WEEKLY SUMMARY FOR LANE 1 Page: 1
Starting: 11/16/2021

STA. 1 NB

Station #: 210400000071
Site ID: 000000000101
Location: Weston Rd. NB, N. of Linden St..
Direction: NORTH

File: D1116001.prn
City: Wellesley
County:

TIME	MON 22	TUE 16	WED 17	THU 18	FRI 19	WKDAY AVG	SAT 20	SUN 21	WEEK AVG	TOTAL
01:00	11		7	9	14	10	17	22	13	80
02:00	3		1	3	7	4	13	18	8	45
03:00	3		1	2	3	2	11	9	5	29
04:00	2		4	4	3	3	5	5	4	23
05:00	7		5	9	9	8	5	2	6	37
06:00	34		35	41	31	35	17	11	28	169
07:00	138		169	158	140	151	57	44	118	706
08:00	504		561	611	548	556	120	62	401	2406
09:00	582		662	639	572	614	288	153	483	2896
10:00	451		418	525	422	454	395	236	408	2447
11:00			447	424	496	456	529	353	450	2249
12:00			501	501	532	511	562	483	516	2579
13:00		474	485	545	617	530	630	516	544	3267
14:00		502	483	590	615	548	613	467	545	3270
15:00		604	588	622	691	626	600	504	602	3609
16:00		576	629	622	634	615	578	450	582	3489
17:00		509	556	522	558	536	501	394	507	3040
18:00		492	426	482	523	481	405	319	441	2647
19:00		384	403	408	420	404	287	217	353	2119
20:00		288	283	283	251	276	206	164	246	1475
21:00		161	189	220	182	188	172	113	173	1037
22:00		106	113	133	186	134	149	67	126	754
23:00		30	43	52	92	54	97	33	58	347
24:00		15	18	27	47	27	60	18	31	185
TOTALS	1735	4141	7027	7432	7593	7223	6317	4660	6648	38905
% AVG WKDY	24.0	57.3	97.3	102.9	105.1		87.5	64.5		
% AVG WEEK	26.1	62.3	105.7	111.8	114.2		95.0	70.1		
AM Times	09:00		09:00	09:00	09:00	09:00	12:00	12:00	12:00	
AM Peaks	582		662	639	572	614	562	483	516	
PM Times		15:00	16:00	15:00	15:00	15:00	13:00	13:00	15:00	
PM Peaks		604	629	622	691	626	630	516	602	

U4

NB 7223
SB 6934
COMB AWD 14157
FAC .99 (.99)
COMB ADT 13,900

Mass Highway Department

WEEKLY SUMMARY FOR LANE 1 Page: 1
Starting: 11/16/2021

Station #: 210400000127 STA. 15B File: D1116002.prn
Site ID: 000000000102 City: Wellesley
Location: Weston Rd. SB, N. of Linden St.. County:
Direction: SOUTH

TIME	MON 22	TUE 16	WED 17	THU 18	FRI 19	WKDAY AVG	SAT 20	SUN 21	WEEK AVG	TOTAL
01:00	15		6	7	10	10	26	20	14	84
02:00	4		2	2	9	4	13	7	6	37
03:00	4		4	2	5	4	13	11	6	39
04:00	4		3	3	2	3	6	5	4	23
05:00	7		7	6	7	7	5	1	6	33
06:00	50		57	55	54	54	19	6	40	241
07:00	139		119	158	144	140	68	38	111	666
08:00	468		508	452	513	485	175	97	369	2213
09:00	582		576	611	606	594	312	169	476	2856
10:00	428		457	504	499	472	426	330	441	2644
11:00			448	412	494	451	440	333	425	2127
12:00			457	486	489	477	597	420	490	2449
13:00		461	502	529	535	507	561	468	509	3056
14:00		410	486	489	542	482	566	496	498	2989
15:00		531	570	548	584	558	548	468	542	3249
16:00		635	581	593	588	599	508	381	548	3286
17:00		574	565	551	574	566	418	396	513	3078
18:00		558	554	545	562	555	381	248	475	2848
19:00		428	466	440	415	437	290	204	374	2243
20:00		193	228	247	253	230	221	158	217	1300
21:00		121	124	132	177	138	119	94	128	767
22:00		65	96	89	105	89	115	66	89	536
23:00		33	43	39	71	46	85	32	50	303
24:00		17	24	25	37	26	53	26	30	182
TOTALS	1701	4026	6883	6925	7275	6934	5965	4474	6361	37249
% AVG WKDY	24.5	58.1	99.3	99.9	104.9		86.0	64.5		
% AVG WEEK	26.7	63.3	108.2	108.9	114.4		93.8	70.3		
AM Times	09:00		09:00	09:00	09:00	09:00	12:00	12:00	12:00	
AM Peaks	582		576	611	606	594	597	420	490	
PM Times		16:00	16:00	16:00	16:00	16:00	14:00	14:00	16:00	
PM Peaks		635	581	593	588	599	566	496	548	

Mass Highway Department

WEEKLY SUMMARY FOR LANE 1 Page: 1
Starting: 11/16/2021

STA. 2 EB

Station #: 210400000125
Site ID: 000000000203
Location: Linden St. EB, E. of Weston Rd.
Direction: EAST

File: D1116003.prn
City: Wellesley
County:

TIME	MON 22	TUE 16	WED 17	THU 18	FRI 19	WKDAY AVG	SAT 20	SUN 21	WEEK AVG	TOTAL
01:00	1		0	0	2	1	5	2	2	10
02:00	0		2	0	0	0	4	0	1	6
03:00	2		0	1	0	1	4	1	1	8
04:00	2		0	0	0	0	3	1	1	6
05:00	2		3	6	6	4	2	1	3	20
06:00	26		18	16	17	19	12	5	16	94
07:00	66		55	75	66	66	32	27	54	321
08:00	246		256	254	244	250	93	37	188	1130
09:00	234		222	233	247	234	179	88	200	1203
10:00	183		193	197	204	194	200	130	184	1107
11:00	199		210	192	234	209	224	140	200	1199
12:00			233	247	258	246	277	189	241	1204
13:00		225	268	283	282	264	272	211	257	1541
14:00		211	225	225	248	227	262	182	226	1353
15:00		207	238	214	232	223	214	180	214	1285
16:00		202	205	218	197	206	212	172	201	1206
17:00		155	168	165	213	175	175	164	173	1040
18:00		172	167	177	172	172	173	118	163	979
19:00		123	143	147	159	143	119	64	126	755
20:00		62	81	107	104	88	65	52	78	471
21:00		35	45	36	70	46	47	27	43	260
22:00		19	19	16	33	22	28	19	22	134
23:00		4	6	4	12	6	14	5	8	45
24:00		3	4	8	8	6	8	4	6	35
TOTALS	961	1418	2761	2821	3008	2802	2624	1819	2608	15412
% AVG WKDY	34.3	50.6	98.5	100.7	107.4		93.6	64.9		
% AVG WEEK	36.8	54.4	105.9	108.2	115.3		100.6	69.7		
AM Times	08:00		08:00	08:00	12:00	08:00	12:00	12:00	12:00	
AM Peaks	246		256	254	258	250	277	189	241	
PM Times		13:00	13:00	13:00	13:00	13:00	13:00	13:00	13:00	
PM Peaks		225	268	283	282	264	272	211	257	

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EB 2802
WB 3959
COMB AWD 6761
FAC .99 (.99)
COMB ADT 6,600

Mass Highway Department

WEEKLY SUMMARY FOR LANE 1 Page: 1
Starting: 11/16/2021

STA. 2 WB

Station #: 210400000145
Site ID: 000000000204
Location: Linden St. WB, E. of Weston Rd.
Direction: WEST

File: D1116004.prn
City: Wellesley
County:

TIME	MON 22	TUE 16	WED 17	THU 18	FRI 19	WKDAY AVG	SAT 20	SUN 21	WEEK AVG	TOTAL
01:00	2		3	3	3	3	2	3	3	16
02:00	2		1	1	1	1	5	2	2	12
03:00	3		0	0	1	1	6	0	2	10
04:00	1		0	1	0	0	3	1	1	6
05:00	3		6	6	6	5	4	2	4	27
06:00	9		12	9	7	9	8	2	8	47
07:00	35		35	42	33	36	21	16	30	182
08:00	177		191	180	187	184	59	33	138	827
09:00	159		181	207	184	183	143	84	160	958
10:00	210		180	201	201	198	202	123	186	1117
11:00	245		210	233	258	236	291	153	232	1390
12:00			271	301	305	292	329	221	285	1427
13:00		319	278	343	360	325	340	276	319	1916
14:00		313	295	313	333	314	372	249	312	1875
15:00		317	324	346	340	332	315	249	315	1891
16:00		354	381	358	453	386	310	244	350	2100
17:00		361	428	481	507	444	299	235	385	2311
18:00		430	386	376	438	408	218	180	338	2028
19:00		259	264	271	251	261	156	99	217	1300
20:00		150	158	163	134	151	102	79	131	786
21:00		79	112	110	102	101	72	52	88	527
22:00		42	44	53	98	59	65	33	56	335
23:00		11	24	14	33	20	27	13	20	122
24:00		6	5	8	20	10	15	5	10	59
TOTALS	846	2641	3789	4020	4255	3959	3364	2354	3592	21269
% AVG WKDY	21.4	66.7	95.7	101.5	107.5		85.0	59.5		
% AVG WEEK	23.6	73.5	105.5	111.9	118.5		93.7	65.5		
AM Times	11:00		12:00	12:00	12:00	12:00	12:00	12:00	12:00	
AM Peaks	245		271	301	305	292	329	221	285	
PM Times		18:00	17:00	17:00	17:00	17:00	14:00	13:00	17:00	
PM Peaks		430	428	481	507	444	372	276	385	

Mass Highway Department

WEEKLY SUMMARY FOR LANE 1 Page: 1
Starting: 11/16/2021

STA. 3 EB

Station #: 210400000039
Site ID: 000000000303
Location: Rte.135 EB, E. of Weston Rd.
Direction: EAST

File: D1116005.prn
City: Wellesley
County:

TIME	MON 22	TUE 16	WED 17	THU 18	FRI 19	WKDAY AVG	SAT 20	SUN 21	WEEK AVG	TOTAL
01:00	17		9	14	22	16	56	28	24	146
02:00	14		7	8	10	10	31	17	14	87
03:00	6		9	4	13	8	19	19	12	70
04:00	17		10	5	17	12	17	11	13	77
05:00	25		36	25	32	30	14	8	23	140
06:00	63		74	76	71	71	35	22	57	341
07:00	285		279	320	286	292	81	52	217	1303
08:00	686		743	690	714	708	208	86	521	3127
09:00	618		698	733	608	664	290	192	523	3139
10:00	402		450	460	452	441	408	240	402	2412
11:00	434		392	432	422	420	483	316	413	2479
12:00	446		386	414	581	457	505	352	447	2684
13:00			401	412	533	449	457	437	448	2240
14:00		418	433	450	498	450	494	394	448	2687
15:00		429	480	439	542	472	493	404	464	2787
16:00		429	419	420	503	443	506	373	442	2650
17:00		375	409	446	450	420	416	340	406	2436
18:00		399	397	384	406	396	334	238	360	2158
19:00		357	388	327	312	346	286	233	317	1903
20:00		226	237	251	285	250	202	184	231	1385
21:00		130	212	149	191	170	155	108	158	945
22:00		99	93	100	148	110	106	72	103	618
23:00		60	72	58	93	71	79	38	67	400
24:00		23	35	43	61	40	67	28	43	257
TOTALS	3013	2945	6669	6660	7250	6746	5742	4192	6153	36471
% AVG WKDY	44.7	43.7	98.9	98.7	107.5		85.1	62.1		
% AVG WEEK	49.0	47.9	108.4	108.2	117.8		93.3	68.1		
AM Times	08:00		08:00	09:00	08:00	08:00	12:00	12:00	09:00	
AM Peaks	686		743	733	714	708	505	352	523	
PM Times		15:00	15:00	14:00	15:00	15:00	16:00	13:00	15:00	
PM Peaks		429	480	450	542	472	506	437	464	

U3

EB 6746
WB 5899
COMB AWD 12645
FAC .97 (.98)
COMB ADT 12,000

Mass Highway Department

WEEKLY SUMMARY FOR LANE 1 Page: 1
Starting: 11/16/2021

Station #: 210400000095 STA 3 WB File: D1116006.prn
Site ID: 000000000304 City: Wellesley
Location: Rte.135 WB, E. of Weston Rd. County:
Direction: WEST

TIME	MON 22	TUE 16	WED 17	THU 18	FRI 19	WKDAY AVG	SAT 20	SUN 21	WEEK AVG	TOTAL
01:00	16		19	20	30	21	40	47	29	172
02:00	15		13	15	14	14	31	35	20	123
03:00	8		5	9	13	9	19	33	14	87
04:00	6		3	7	7	6	10	12	8	45
05:00	17		19	13	20	17	15	9	16	93
06:00	50		61	55	55	55	25	11	43	257
07:00	113		147	138	127	131	70	38	106	633
08:00	219		237	249	264	242	132	66	194	1167
09:00	337		354	361	353	351	226	117	291	1748
10:00	341		324	349	342	339	349	213	320	1918
11:00	380		391	388	433	398	400	306	383	2298
12:00	398		359	358	420	384	412	322	378	2269
13:00			399	395	411	402	461	392	412	2058
14:00		379	394	389	456	404	433	353	401	2404
15:00		404	456	404	467	433	433	391	426	2555
16:00		466	490	511	504	493	460	331	460	2762
17:00		462	489	464	490	476	427	318	442	2650
18:00		506	508	451	471	484	342	283	427	2561
19:00		408	452	453	400	428	279	217	368	2209
20:00		259	301	291	285	284	211	209	259	1556
21:00		204	214	168	210	199	182	166	191	1144
22:00		146	176	168	200	172	191	123	167	1004
23:00		70	95	113	149	107	116	73	103	616
24:00		31	41	60	68	50	80	43	54	323
TOTALS	1900	3335	5947	5829	6189	5899	5344	4108	5512	32652
% AVG WKDY	32.2	56.5	100.8	98.8	104.9		90.6	69.6		
% AVG WEEK	34.5	60.5	107.9	105.8	112.3		97.0	74.5		
AM Times	12:00		11:00	11:00	11:00	11:00	12:00	12:00	11:00	
AM Peaks	398		391	388	433	398	412	322	383	
PM Times		18:00	18:00	16:00	16:00	16:00	13:00	13:00	16:00	
PM Peaks		506	508	511	504	493	461	392	460	

Mass Highway Department

WEEKLY SUMMARY FOR LANE 1 Page: 1
Starting: 11/16/2021

STA-4 NB

Station #: 210400000063
Site ID: 000000000401
Location: Weston Rd. NB, S. of Rte.135
Direction: NORTH

File: D1116007.prn
City: Wellesley
County:

TIME	MON 22	TUE 16	WED 17	THU 18	FRI 19	WKDAY AVG	SAT 20	SUN 21	WEEK AVG	TOTAL
01:00	2		5	4	7	4	7	4	5	29
02:00	3		0	0	3	2	4	5	2	15
03:00	1		2	3	1	2	0	2	2	9
04:00	1		2	3	3	2	2	2	2	13
05:00	7		3	7	3	5	4	0	4	24
06:00	21		48	36	16	30	11	8	23	140
07:00	99		157	153	99	127	40	33	97	581
08:00	294		509	513	289	401	64	37	284	1706
09:00	357		637	570	328	473	115	68	346	2075
10:00	227		389	401	226	311	176	119	256	1538
11:00	201		364	243	257	266	234	165	244	1464
12:00	246		410	272	258	296	221	204	268	1611
13:00		411	403	357	293	366	275	214	326	1953
14:00		412	406	319	284	355	261	202	314	1884
15:00		468	446	331	337	396	248	233	344	2063
16:00		503	601	382	379	466	260	200	388	2325
17:00		475	522	378	357	433	172	150	342	2054
18:00		445	476	358	296	394	169	111	309	1855
19:00		289	316	175	154	234	109	95	190	1138
20:00		181	162	103	111	139	83	68	118	708
21:00		93	127	77	55	88	51	42	74	445
22:00		58	66	47	56	57	31	20	46	278
23:00		21	35	15	27	24	31	9	23	138
24:00		20	10	12	17	15	23	8	15	90
TOTALS	1459	3376	6096	4759	3856	4886	2591	1999	4022	24136
% AVG WKDY	29.9	69.1	124.8	97.4	78.9		53.0	40.9		
% AVG WEEK	36.3	83.9	151.6	118.3	95.9		64.4	49.7		
AM Times	09:00		09:00	09:00	09:00	09:00	11:00	12:00	09:00	
AM Peaks	357		637	570	328	473	234	204	346	
PM Times		16:00	16:00	16:00	16:00	16:00	13:00	15:00	16:00	
PM Peaks		503	601	382	379	466	275	233	388	

U4

NB 4886
SB 4796
COMB AWD 9682
FAC .99 (.99)
COMB ADT 9,500

Mass Highway Department

WEEKLY SUMMARY FOR LANE 1 Page: 1
Starting: 11/16/2021

Station #: 210400000143
Site ID: 000000000402
Location: Weston Rd. SB, S. of Rte.135
Direction: SOUTH

STA. 4SB

File: D1116008.prn
City: Wellesley
County:

TIME	MON 22	TUE 16	WED 17	THU 18	FRI 19	WKDAY AVG	SAT 20	SUN 21	WEEK AVG	TOTAL
01:00	8		5	4	4	5	13	8	7	42
02:00	4		1	0	4	2	6	1	3	16
03:00	1		2	3	3	2	6	2	3	17
04:00	0		2	3	0	1	2	2	2	9
05:00	2		3	7	2	4	2	0	3	16
06:00			50	37	25	37	11	2	25	125
07:00			159	154	46	120	25	16	80	400
08:00			516	521	215	417	55	35	268	1342
09:00			597	570	240	469	105	71	317	1583
10:00			388	363	194	315	161	140	249	1246
11:00			367	165	193	242	197	138	212	1060
12:00			412	210	213	278	245	182	252	1262
13:00		414	407	270	232	331	234	209	294	1766
14:00		410	417	270	277	344	263	223	310	1860
15:00		478	460	310	282	382	266	216	335	2012
16:00		526	586	317	307	434	220	172	355	2128
17:00		539	534	274	290	409	198	180	336	2015
18:00		501	508	286	250	386	173	122	307	1840
19:00		329	325	213	192	265	120	100	213	1279
20:00		183	162	118	122	146	99	79	127	763
21:00		99	129	73	94	99	47	50	82	492
22:00		58	69	51	68	62	66	33	58	345
23:00		21	36	29	31	29	37	17	28	171
24:00		19	10	21	18	17	26	13	18	107
TOTALS	15	3577	6145	4269	3302	4796	2577	2011	3884	21896
% AVG WKDY	0.3	74.6	128.1	89.0	68.8		53.7	41.9		
% AVG WEEK	0.4	92.1	158.2	109.9	85.0		66.3	51.8		
AM Times	01:00		09:00	09:00	09:00	09:00	12:00	12:00	09:00	
AM Peaks	8		597	570	240	469	245	182	317	
PM Times		17:00	16:00	16:00	16:00	16:00	15:00	14:00	16:00	
PM Peaks		539	586	317	307	434	266	223	355	

Mass Highway Department

WEEKLY SUMMARY FOR LANE 1 Page: 1
Starting: 11/16/2021

STA. 5 EB

Station #: 210400000157
Site ID: 000000000503
Location: Rte.135 EB, W. of Weston Rd.
Direction: EAST

File: D1116009.prn
City: Wellesley
County:

TIME	MON 22	TUE 16	WED 17	THU 18	FRI 19	WKDAY AVG	SAT 20	SUN 21	WEEK AVG	TOTAL
01:00	15		7	14	17	13	23	32	18	108
02:00	11		8	9	8	9	18	13	11	67
03:00	4		6	2	7	5	10	14	7	43
04:00	13		5	4	10	8	11	11	9	54
05:00	23		26	25	35	27	14	6	22	129
06:00	73		68	71	76	72	36	27	58	351
07:00	280		270	294	271	279	74	58	208	1247
08:00	604		729	707	680	680	170	73	494	2963
09:00	505		607	651	505	567	246	153	444	2667
10:00	315		340	386	333	344	278	175	304	1827
11:00	261		274	285	290	278	334	246	282	1690
12:00	286		285	282	498	338	322	270	324	1943
13:00			331	330	352	338	353	320	337	1686
14:00		316	330	347	336	332	345	304	330	1978
15:00		338	336	348	372	348	359	298	342	2051
16:00		324	332	359	363	344	324	274	329	1976
17:00		351	366	365	397	370	298	227	334	2004
18:00		358	349	351	353	353	257	214	314	1882
19:00		251	262	291	282	272	202	191	246	1479
20:00		183	182	206	210	195	148	124	176	1053
21:00		107	132	111	124	118	119	91	114	684
22:00		70	77	81	123	88	97	71	86	519
23:00		48	61	65	75	62	61	33	57	343
24:00		21	29	46	43	35	64	24	38	227
TOTALS	2390	2367	5412	5630	5760	5475	4163	3249	4884	28971
% AVG WKDY	43.7	43.2	98.8	102.8	105.2		76.0	59.3		
% AVG WEEK	48.9	48.5	110.8	115.3	117.9		85.2	66.5		
AM Times	08:00		08:00	08:00	08:00	08:00	11:00	12:00	08:00	
AM Peaks	604		729	707	680	680	334	270	494	
PM Times		18:00	17:00	17:00	17:00	17:00	15:00	13:00	15:00	
PM Peaks		358	366	365	397	370	359	320	342	

U3

EB 5475
WB 6210
COMB AWD 11685
FAC .97 (.98)
COMB ADT 11,100

Mass Highway Department

WEEKLY SUMMARY FOR LANE 1 Page: 1
Starting: 11/16/2021

Station #: 210400000016
Site ID: 000000000504
Location: Rte.135 WB, W. of Weston Rd.
Direction: WEST

STA. 5 WB

File: D1116010.prn
City: Wellesley
County:

TIME	MON 22	TUE 16	WED 17	THU 18	FRI 19	WKDAY AVG	SAT 20	SUN 21	WEEK AVG	TOTAL
01:00	13		22	18	23	19	45	43	27	164
02:00	11		12	18	9	12	31	33	19	114
03:00	7		4	5	11	7	14	22	10	63
04:00	7		4	9	8	7	9	12	8	49
05:00	11		18	8	14	13	17	9	13	77
06:00	55		65	62	59	60	25	12	46	278
07:00	106		120	117	101	111	66	35	91	545
08:00	168		192	186	170	179	106	61	147	883
09:00	296		278	306	299	295	185	94	243	1458
10:00	291		302	303	309	301	288	192	281	1685
11:00	299		303	296	315	303	330	228	295	1771
12:00	277		286	279	334	294	391	277	307	1844
13:00			362	338	351	350	424	360	367	1835
14:00		384	388	362	389	381	394	301	370	2218
15:00		353	391	370	396	378	379	329	370	2218
16:00		603	588	589	644	606	455	306	531	3185
17:00		758	746	753	789	762	410	308	627	3764
18:00		838	826	741	838	811	335	268	641	3846
19:00		573	582	558	466	545	279	204	444	2662
20:00		242	292	277	287	274	201	172	245	1471
21:00		191	205	169	177	186	157	149	175	1048
22:00		131	163	157	174	156	163	129	153	917
23:00		77	101	108	154	110	108	70	103	618
24:00		34	40	52	73	50	85	39	54	323
TOTALS	1541	4184	6290	6081	6390	6210	4897	3653	5567	33036
% AVG WKDY	24.8	67.4	101.3	97.9	102.9		78.9	58.8		
% AVG WEEK	27.7	75.2	113.0	109.2	114.8		88.0	65.6		
AM Times	11:00		11:00	09:00	12:00	11:00	12:00	12:00	12:00	
AM Peaks	299		303	306	334	303	391	277	307	
PM Times		18:00	18:00	17:00	18:00	18:00	16:00	13:00	18:00	
PM Peaks		838	826	753	838	811	455	360	641	

Part 2: Turning Movement Count (TMC) Data

218250-A Weston Road @ Linden Street TMC - TMC

Thu Nov 18, 2021
Full Length (7 AM-11 AM, 2 PM-6 PM, 10 AM-2 PM)
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)
All Movements
ID: 902172, Location: 42.296767, -71.299888

Provided by: Precision Data Industries, LLC (PDI)
157 Washington Street, 2,
Hudson, MA, 01749, US

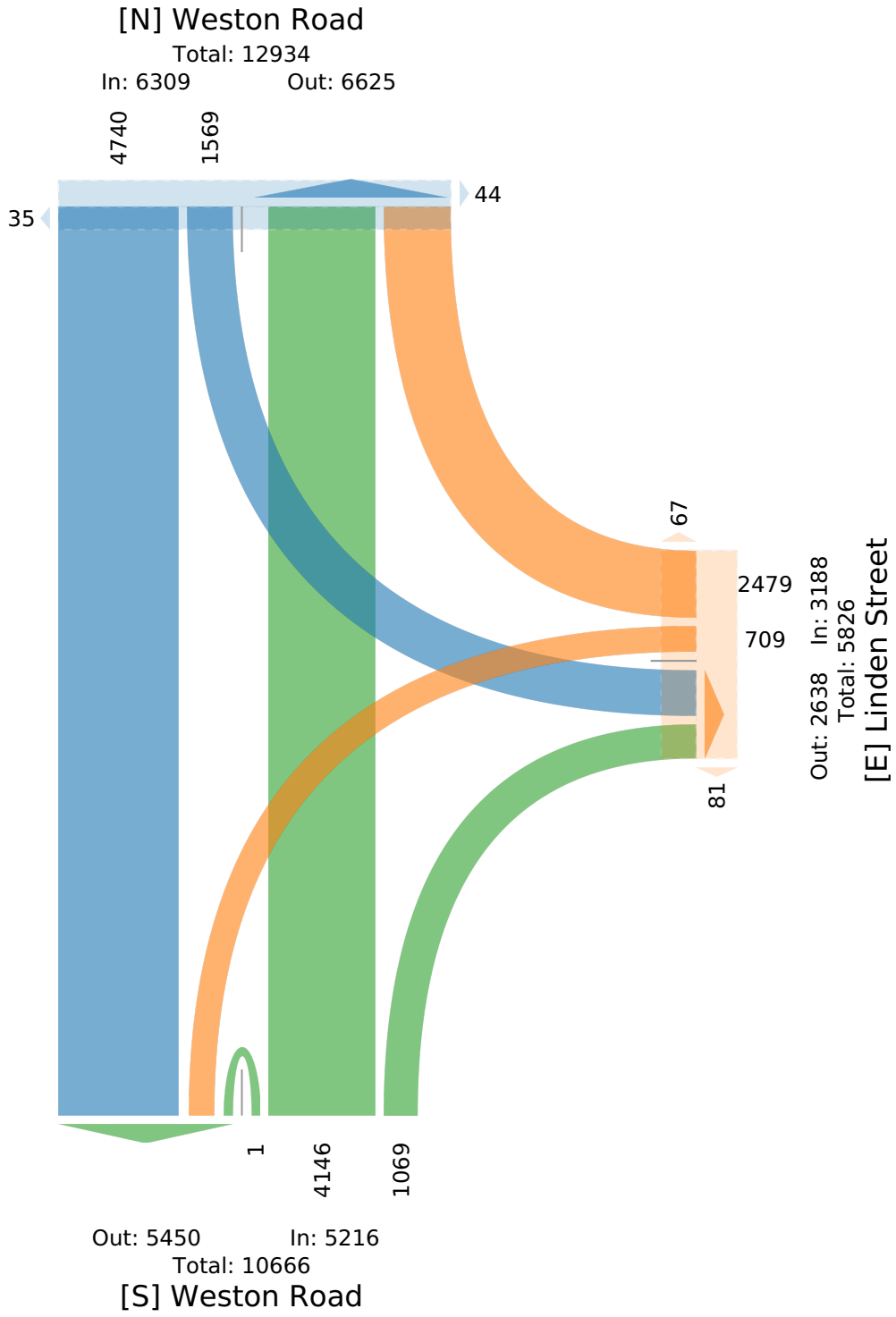
Leg	Weston Road					Linden Street					Weston Road					
Direction	Southbound					Westbound					Northbound					
Time	T	L	U	**App**	Ped*	R	L	U	**App**	Ped*	R	T	U	**App**	Ped*	**Int**
2021-11-18 7:00AM	293	151	0	**444**	3	115	15	0	**130**	8	97	454	0	**551**	0	**1125**
8:00AM	460	140	0	**600**	3	149	21	0	**170**	16	92	487	0	**579**	0	**1349**
9:00AM	379	124	0	**503**	2	146	28	0	**174**	10	72	373	0	**445**	0	**1122**
10:00AM	290	112	0	**402**	5	169	30	0	**199**	6	76	253	0	**329**	0	**930**
2:00PM	409	138	0	**547**	8	258	45	0	**303**	14	73	332	0	**405**	0	**1255**
3:00PM	487	100	0	**587**	14	234	91	0	**325**	15	109	343	0	**452**	0	**1364**
4:00PM	456	81	0	**537**	3	236	151	0	**387**	15	79	284	0	**363**	0	**1287**
5:00PM	451	86	0	**537**	1	198	141	0	**339**	9	87	282	1	**370**	0	**1246**
2021-11-20 10:00AM	308	127	0	**435**	11	217	43	0	**260**	20	97	307	0	**404**	0	**1099**
11:00AM	414	186	0	**600**	0	242	42	0	**284**	10	87	315	0	**402**	0	**1286**
12:00PM	387	166	0	**553**	11	242	55	0	**297**	7	99	379	0	**478**	0	**1328**
1:00PM	406	158	0	**564**	18	273	47	0	**320**	18	101	337	0	**438**	0	**1322**
Total	4740	1569	0	**6309**	79	2479	709	0	**3188**	148	1069	4146	1	**5216**	0	**14713**
% Approach	75.1%	24.9%	0%	**-**	-	77.8%	22.2%	0%	**-**	-	20.5%	79.5%	0%	**-**	-	**-**
% Total	32.2%	10.7%	0%	**42.9%**	-	16.8%	4.8%	0%	**21.7%**	-	7.3%	28.2%	0%	**35.5%**	-	**-**
Lights	4591	1543	0	**6134**	-	2426	691	0	**3117**	-	1049	4007	1	**5057**	-	14308
% Lights	96.9%	98.3%	0%	**97.2%**	-	97.9%	97.5%	0%	**97.8%**	-	98.1%	96.6%	100%	**97.0%**	-	97.2%
Single-Unit Trucks	94	15	0	**109**	-	32	11	0	**43**	-	10	87	0	**97**	-	249
% Single-Unit Trucks	2.0%	1.0%	0%	**1.7%**	-	1.3%	1.6%	0%	**1.3%**	-	0.9%	2.1%	0%	**1.9%**	-	1.7%
Articulated Trucks	26	4	0	**30**	-	5	3	0	**8**	-	2	20	0	**22**	-	60
% Articulated Trucks	0.5%	0.3%	0%	**0.5%**	-	0.2%	0.4%	0%	**0.3%**	-	0.2%	0.5%	0%	**0.4%**	-	0.4%
Buses	20	6	0	**26**	-	6	3	0	**9**	-	2	22	0	**24**	-	59
% Buses	0.4%	0.4%	0%	**0.4%**	-	0.2%	0.4%	0%	**0.3%**	-	0.2%	0.5%	0%	**0.5%**	-	0.4%
Bicycles on Road	9	1	0	**10**	-	10	1	0	**11**	-	6	10	0	**16**	-	37
% Bicycles on Road	0.2%	0.1%	0%	**0.2%**	-	0.4%	0.1%	0%	**0.3%**	-	0.6%	0.2%	0%	**0.3%**	-	0.3%
Pedestrians	-	-	-	-	75	-	-	-	-	138	-	-	-	-	0	
% Pedestrians	-	-	-	-	94.9%	-	-	-	-	93.2%	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	4	-	-	-	-	10	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	5.1%	-	-	-	-	6.8%	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

218250-A Weston Road @ Linden Street TMC - TMC

Thu Nov 18, 2021
Full Length (7 AM-11 AM, 2 PM-6 PM, 10 AM-2 PM)
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)
All Movements
ID: 902172, Location: 42.296767, -71.299888

Provided by: Precision Data Industries, LLC (PDI)
157 Washington Street, 2,
Hudson, MA, 01749, US



218250-A Weston Road @ Linden Street TMC - TMC

Thu Nov 18, 2021
AM Peak (Nov 18 2021 8AM - 9 AM)
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)
All Movements
ID: 902172, Location: 42.296767, -71.299888

Provided by: Precision Data Industries, LLC (PDI)
157 Washington Street, 2,
Hudson, MA, 01749, US

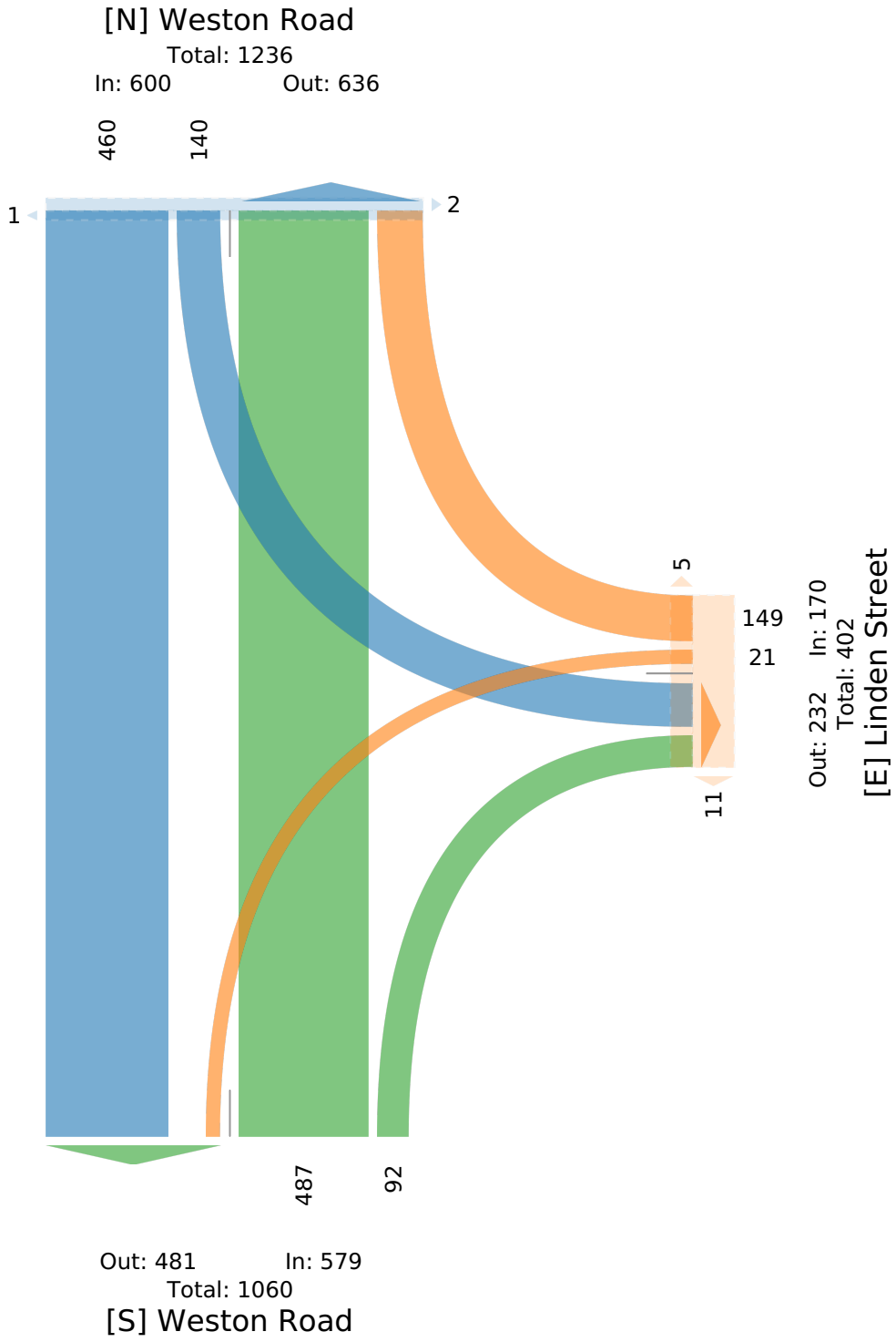
Leg	Weston Road					Linden Street					Weston Road					
Direction	Southbound					Westbound					Northbound					
Time	T	L	U	**App**	Ped*	R	L	U	**App**	Ped*	R	T	U	**App**	Ped*	**Int**
2021-11-18 8:00AM	98	39	0	**137**	0	31	3	0	**34**	3	21	143	0	**164**	0	**335**
8:15AM	117	30	0	**147**	2	33	7	0	**40**	8	24	119	0	**143**	0	**330**
8:30AM	114	30	0	**144**	0	50	4	0	**54**	2	24	111	0	**135**	0	**333**
8:45AM	131	41	0	**172**	1	35	7	0	**42**	3	23	114	0	**137**	0	**351**
Total	460	140	0	**600**	3	149	21	0	**170**	16	92	487	0	**579**	0	**1349**
% Approach	76.7%	23.3%	0%	**-**	-	87.6%	12.4%	0%	**-**	-	15.9%	84.1%	0%	**-**	-	**-**
% Total	34.1%	10.4%	0%	**44.5%**	-	11.0%	1.6%	0%	**12.6%**	-	6.8%	36.1%	0%	**42.9%**	-	**-**
PHF	0.872	0.854	-	**0.868**	-	0.740	0.750	-	**0.782**	-	0.958	0.851	-	**0.883**	-	0.958
Lights	442	137	0	**579**	-	146	18	0	**164**	-	90	469	0	**559**	-	1302
% Lights	96.1%	97.9%	0%	**96.5%**	-	98.0%	85.7%	0%	**96.5%**	-	97.8%	96.3%	0%	**96.5%**	-	96.5%
Single-Unit Trucks	10	2	0	**12**	-	2	1	0	**3**	-	1	13	0	**14**	-	29
% Single-Unit Trucks	2.2%	1.4%	0%	**2.0%**	-	1.3%	4.8%	0%	**1.8%**	-	1.1%	2.7%	0%	**2.4%**	-	2.1%
Articulated Trucks	4	1	0	**5**	-	0	1	0	**1**	-	0	3	0	**3**	-	9
% Articulated Trucks	0.9%	0.7%	0%	**0.8%**	-	0%	4.8%	0%	**0.6%**	-	0%	0.6%	0%	**0.5%**	-	0.7%
Buses	1	0	0	**1**	-	0	1	0	**1**	-	1	2	0	**3**	-	5
% Buses	0.2%	0%	0%	**0.2%**	-	0%	4.8%	0%	**0.6%**	-	1.1%	0.4%	0%	**0.5%**	-	0.4%
Bicycles on Road	3	0	0	**3**	-	1	0	0	**1**	-	0	0	0	**0**	-	4
% Bicycles on Road	0.7%	0%	0%	**0.5%**	-	0.7%	0%	0%	**0.6%**	-	0%	0%	0%	**0%**	-	0.3%
Pedestrians	-	-	-	-	3	-	-	-	-	14	-	-	-	-	0	
% Pedestrians	-	-	-	-	100%	-	-	-	-	87.5%	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	2	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	0%	-	-	-	-	12.5%	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

218250-A Weston Road @ Linden Street TMC - TMC

Thu Nov 18, 2021
AM Peak (Nov 18 2021 8AM - 9 AM)
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)
All Movements
ID: 902172, Location: 42.296767, -71.299888

Provided by: Precision Data Industries, LLC (PDI)
157 Washington Street, 2,
Hudson, MA, 01749, US



218250-A Weston Road @ Linden Street TMC - TMC

Thu Nov 18, 2021
PM Peak (Nov 18 2021 3PM - 4 PM) - Overall Peak Hour
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)
All Movements
ID: 902172, Location: 42.296767, -71.299888

Provided by: Precision Data Industries, LLC (PDI)
157 Washington Street, 2,
Hudson, MA, 01749, US

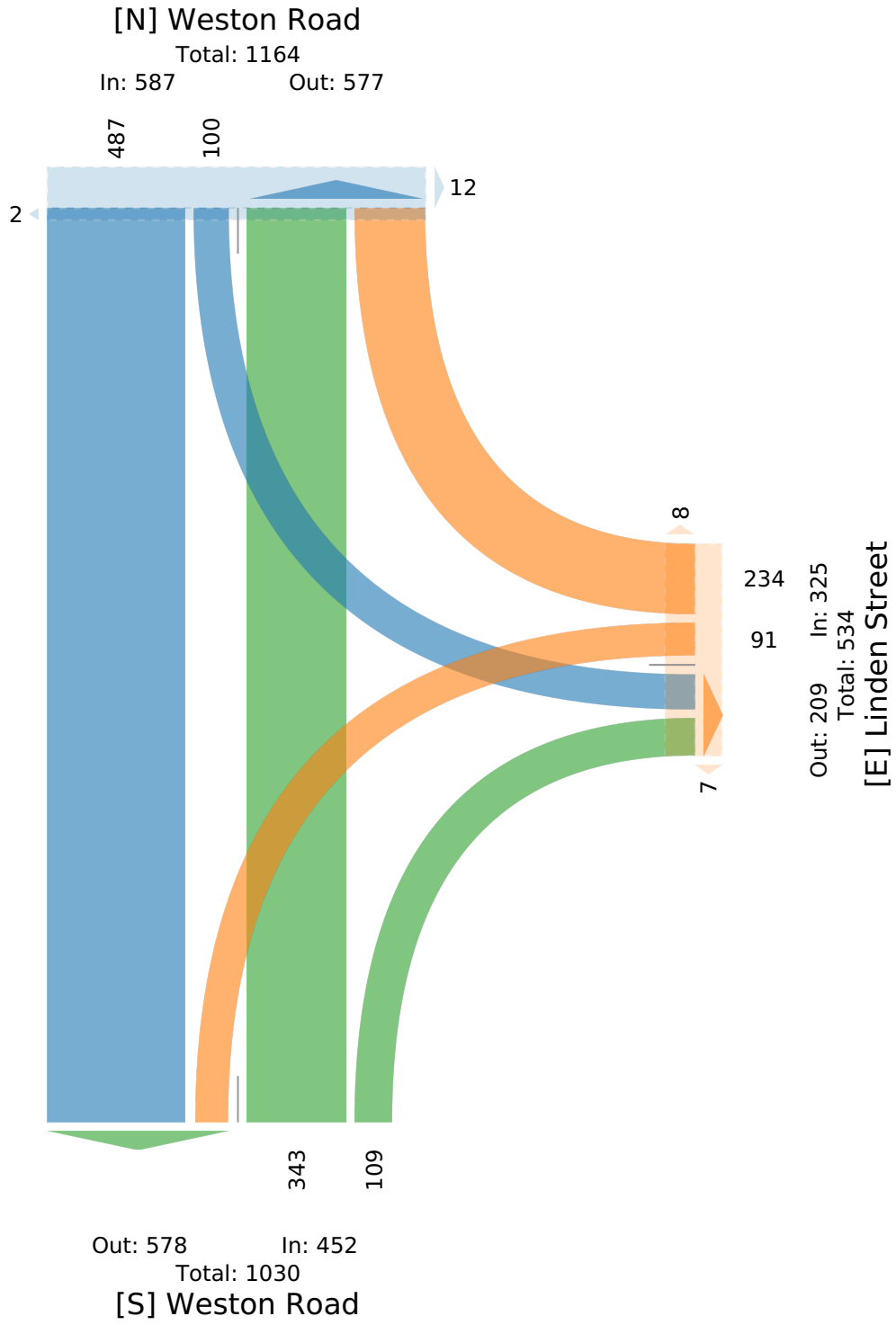
Leg Direction	Weston Road Southbound					Linden Street Westbound					Weston Road Northbound					
Time	T	L	U	**App**	Ped*	R	L	U	**App**	Ped*	R	T	U	**App**	Ped*	**Int**
2021-11-18 3:00PM	120	25	0	**145**	1	55	15	0	**70**	3	33	92	0	**125**	0	**340**
3:15PM	112	20	0	**132**	2	48	29	0	**77**	4	30	74	0	**104**	0	**313**
3:30PM	132	29	0	**161**	8	54	28	0	**82**	3	25	97	0	**122**	0	**365**
3:45PM	123	26	0	**149**	3	77	19	0	**96**	5	21	80	0	**101**	0	**346**
Total	487	100	0	**587**	14	234	91	0	**325**	15	109	343	0	**452**	0	**1364**
% Approach	83.0%	17.0%	0%	**-**	-	72.0%	28.0%	0%	**-**	-	24.1%	75.9%	0%	**-**	-	**-**
% Total	35.7%	7.3%	0%	**43.0%**	-	17.2%	6.7%	0%	**23.8%**	-	8.0%	25.1%	0%	**33.1%**	-	**-**
PHF	0.922	0.862	-	**0.911**	-	0.760	0.784	-	**0.846**	-	0.826	0.884	-	**0.904**	-	0.934
Lights	479	99	0	**578**	-	232	90	0	**322**	-	107	330	0	**437**	-	1337
% Lights	98.4%	99.0%	0%	**98.5%**	-	99.1%	98.9%	0%	**99.1%**	-	98.2%	96.2%	0%	**96.7%**	-	98.0%
Single-Unit Trucks	5	0	0	**5**	-	2	1	0	**3**	-	1	7	0	**8**	-	16
% Single-Unit Trucks	1.0%	0%	0%	**0.9%**	-	0.9%	1.1%	0%	**0.9%**	-	0.9%	2.0%	0%	**1.8%**	-	1.2%
Articulated Trucks	1	0	0	**1**	-	0	0	0	**0**	-	1	3	0	**4**	-	5
% Articulated Trucks	0.2%	0%	0%	**0.2%**	-	0%	0%	0%	**0%**	-	0.9%	0.9%	0%	**0.9%**	-	0.4%
Buses	2	1	0	**3**	-	0	0	0	**0**	-	0	3	0	**3**	-	6
% Buses	0.4%	1.0%	0%	**0.5%**	-	0%	0%	0%	**0%**	-	0%	0.9%	0%	**0.7%**	-	0.4%
Bicycles on Road	0	0	0	**0**	-	0	0	0	**0**	-	0	0	0	**0**	-	0
% Bicycles on Road	0%	0%	0%	**0%**	-	0%	0%	0%	**0%**	-	0%	0%	0%	**0%**	-	0%
Pedestrians	-	-	-	-	13	-	-	-	-	13	-	-	-	-	0	
% Pedestrians	-	-	-	-	92.9%	-	-	-	-	86.7%	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	2	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	7.1%	-	-	-	-	13.3%	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

218250-A Weston Road @ Linden Street TMC - TMC

Thu Nov 18, 2021
PM Peak (Nov 18 2021 3PM - 4 PM) - Overall Peak Hour
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)
All Movements
ID: 902172, Location: 42.296767, -71.299888

Provided by: Precision Data Industries, LLC (PDI)
157 Washington Street, 2,
Hudson, MA, 01749, US



218250-A Weston Road @ Linden Street TMC - TMC

Sat Nov 20, 2021
AM Peak (WKND) (Nov 20 2021 10AM - 11 AM)
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)
All Movements
ID: 902172, Location: 42.296767, -71.299888

Provided by: Precision Data Industries, LLC (PDI)
157 Washington Street, 2,
Hudson, MA, 01749, US

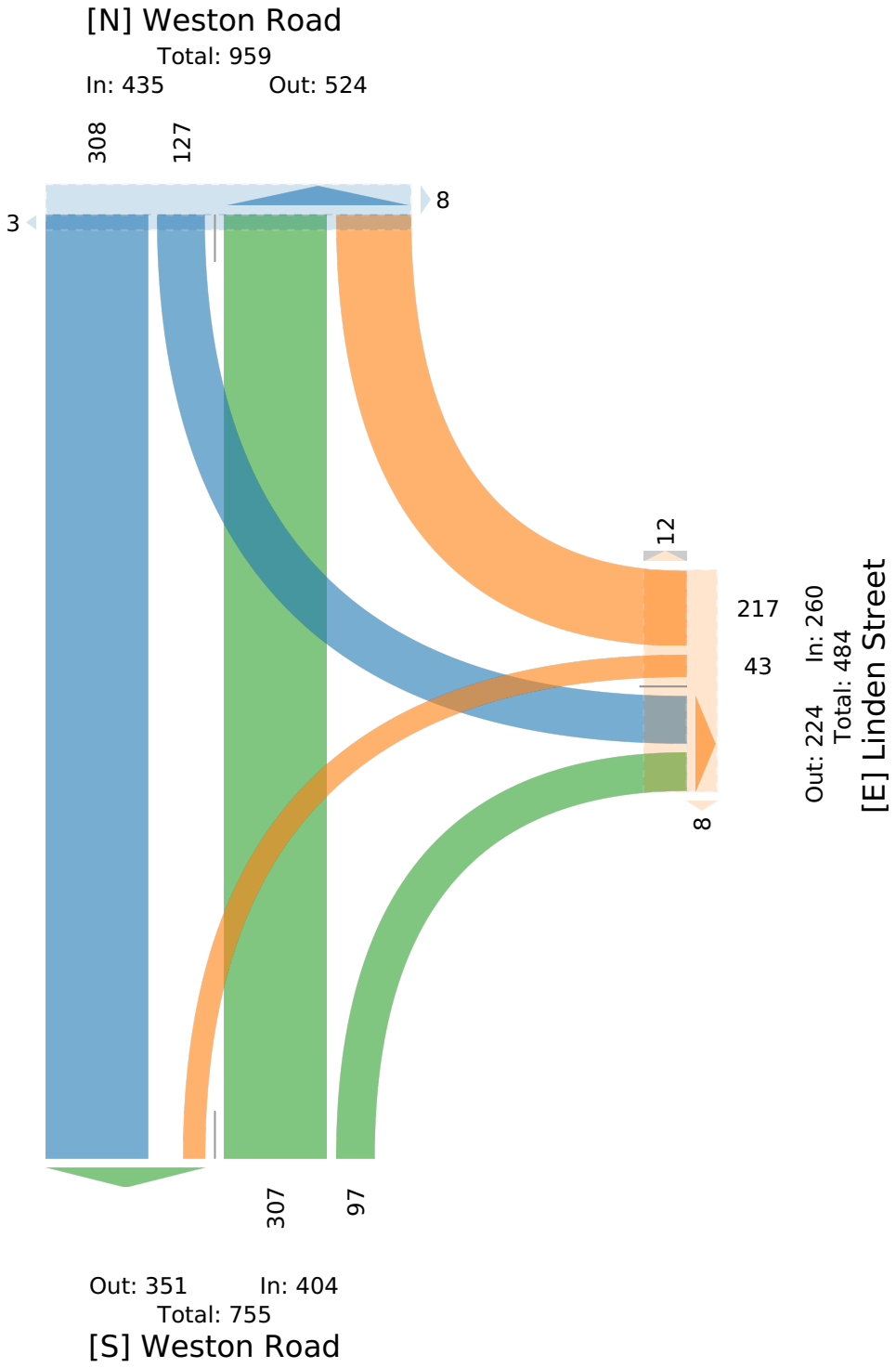
Leg	Weston Road					Linden Street					Weston Road					
Direction	Southbound					Westbound					Northbound					
Time	T	L	U	**App**	Ped*	R	L	U	**App**	Ped*	R	T	U	**App**	Ped*	**Int**
2021-11-20 10:00AM	70	28	0	**98**	7	52	13	0	**65**	3	23	67	0	**90**	0	**253**
10:15AM	71	30	0	**101**	2	48	7	0	**55**	6	21	70	0	**91**	0	**247**
10:30AM	81	30	0	**111**	2	53	10	0	**63**	6	26	93	0	**119**	0	**293**
10:45AM	86	39	0	**125**	0	64	13	0	**77**	5	27	77	0	**104**	0	**306**
Total	308	127	0	**435**	11	217	43	0	**260**	20	97	307	0	**404**	0	**1099**
% Approach	70.8%	29.2%	0%	**-**	-	83.5%	16.5%	0%	**-**	-	24.0%	76.0%	0%	**-**	-	**-**
% Total	28.0%	11.6%	0%	**39.6%**	-	19.7%	3.9%	0%	**23.7%**	-	8.8%	27.9%	0%	**36.8%**	-	**-**
PHF	0.895	0.808	**-**	**0.868**	-	0.820	0.808	**-**	**0.818**	-	0.870	0.825	**-**	**0.842**	-	0.888
Lights	302	126	0	**428**	-	209	41	0	**250**	-	94	300	0	**394**	-	1072
% Lights	98.1%	99.2%	0%	**98.4%**	-	96.3%	95.3%	0%	**96.2%**	-	96.9%	97.7%	0%	**97.5%**	-	97.5%
Single-Unit Trucks	4	0	0	**4**	-	1	1	0	**2**	-	0	6	0	**6**	-	12
% Single-Unit Trucks	1.3%	0%	0%	**0.9%**	-	0.5%	2.3%	0%	**0.8%**	-	0%	2.0%	0%	**1.5%**	-	1.1%
Articulated Trucks	1	0	0	**1**	-	0	0	0	**0**	-	0	0	0	**0**	-	1
% Articulated Trucks	0.3%	0%	0%	**0.2%**	-	0%	0%	0%	**0%**	-	0%	0%	0%	**0%**	-	0.1%
Buses	1	0	0	**1**	-	0	0	0	**0**	-	0	1	0	**1**	-	2
% Buses	0.3%	0%	0%	**0.2%**	-	0%	0%	0%	**0%**	-	0%	0.3%	0%	**0.2%**	-	0.2%
Bicycles on Road	0	1	0	**1**	-	7	1	0	**8**	-	3	0	0	**3**	-	12
% Bicycles on Road	0%	0.8%	0%	**0.2%**	-	3.2%	2.3%	0%	**3.1%**	-	3.1%	0%	0%	**0.7%**	-	1.1%
Pedestrians	-	-	-	-	11	-	-	-	-	20	-	-	-	-	0	
% Pedestrians	-	-	-	-	100%	-	-	-	-	100%	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

218250-A Weston Road @ Linden Street TMC - TMC

Sat Nov 20, 2021
AM Peak (WKND) (Nov 20 2021 10AM - 11 AM)
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)
All Movements
ID: 902172, Location: 42.296767, -71.299888

Provided by: Precision Data Industries, LLC (PDI)
157 Washington Street, 2,
Hudson, MA, 01749, US



218250-A Weston Road @ Linden Street TMC - TMC

Sat Nov 20, 2021
Midday Peak (WKND) (Nov 20 2021 12:30PM - 1:30 PM)
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)
All Movements
ID: 902172, Location: 42.296767, -71.299888

Provided by: Precision Data Industries, LLC (PDI)
157 Washington Street, 2,
Hudson, MA, 01749, US

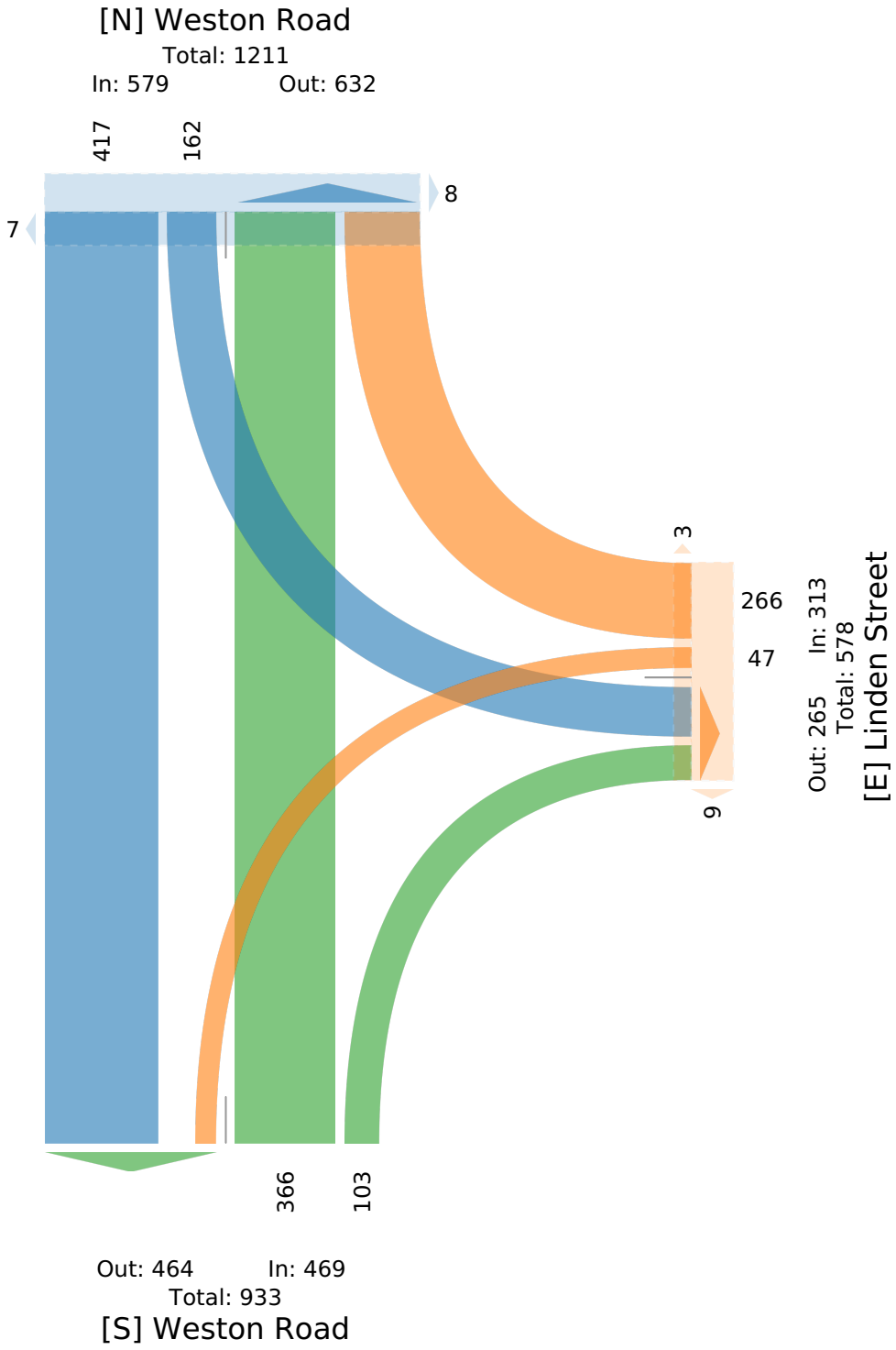
Leg Direction	Weston Road Southbound					Linden Street Westbound					Weston Road Northbound					
Time	T	L	U	**App**	Ped*	R	L	U	**App**	Ped*	R	T	U	**App**	Ped*	**Int**
2021-11-20 12:30PM	114	38	0	**152**	1	66	10	0	**76**	1	27	108	0	**135**	0	**363**
12:45PM	100	43	0	**143**	5	58	14	0	**72**	4	20	100	0	**120**	0	**335**
1:00PM	104	35	0	**139**	6	76	11	0	**87**	5	22	85	0	**107**	0	**333**
1:15PM	99	46	0	**145**	3	66	12	0	**78**	2	34	73	0	**107**	0	**330**
Total	417	162	0	**579**	15	266	47	0	**313**	12	103	366	0	**469**	0	**1361**
% Approach	72.0%	28.0%	0%	**-**	-	85.0%	15.0%	0%	**-**	-	22.0%	78.0%	0%	**-**	-	**-**
% Total	30.6%	11.9%	0%	**42.5%**	-	19.5%	3.5%	0%	**23.0%**	-	7.6%	26.9%	0%	**34.5%**	-	**-**
PHF	0.910	0.880	-	**0.949**	-	0.875	0.839	-	**0.899**	-	0.757	0.847	-	**0.869**	-	0.936
Lights	409	160	0	**569**	-	259	46	0	**305**	-	103	359	0	**462**	-	1336
% Lights	98.1%	98.8%	0%	**98.3%**	-	97.4%	97.9%	0%	**97.4%**	-	100%	98.1%	0%	**98.5%**	-	98.2%
Single-Unit Trucks	4	1	0	**5**	-	7	0	0	**7**	-	0	5	0	**5**	-	17
% Single-Unit Trucks	1.0%	0.6%	0%	**0.9%**	-	2.6%	0%	0%	**2.2%**	-	0%	1.4%	0%	**1.1%**	-	1.2%
Articulated Trucks	1	1	0	**2**	-	0	1	0	**1**	-	0	1	0	**1**	-	4
% Articulated Trucks	0.2%	0.6%	0%	**0.3%**	-	0%	2.1%	0%	**0.3%**	-	0%	0.3%	0%	**0.2%**	-	0.3%
Buses	1	0	0	**1**	-	0	0	0	**0**	-	0	1	0	**1**	-	2
% Buses	0.2%	0%	0%	**0.2%**	-	0%	0%	0%	**0%**	-	0%	0.3%	0%	**0.2%**	-	0.1%
Bicycles on Road	2	0	0	**2**	-	0	0	0	**0**	-	0	0	0	**0**	-	2
% Bicycles on Road	0.5%	0%	0%	**0.3%**	-	0%	0%	0%	**0%**	-	0%	0%	0%	**0%**	-	0.1%
Pedestrians	-	-	-	-	14	-	-	-	-	12	-	-	-	-	0	
% Pedestrians	-	-	-	-	93.3%	-	-	-	-	100%	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	0	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	6.7%	-	-	-	-	0%	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

218250-A Weston Road @ Linden Street TMC - TMC

Sat Nov 20, 2021
Midday Peak (WKND) (Nov 20 2021 12:30PM - 1:30 PM)
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)
All Movements
ID: 902172, Location: 42.296767, -71.299888

Provided by: Precision Data Industries, LLC (PDI)
157 Washington Street, 2,
Hudson, MA, 01749, US



218250-A Weston Road @ Linden Street TMC - TMC

Sat Nov 20, 2021
PM Peak (WKND) (Nov 20 2021 1PM - 2 PM)
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)
All Movements
ID: 902172, Location: 42.296767, -71.299888

Provided by: Precision Data Industries, LLC (PDI)
157 Washington Street, 2,
Hudson, MA, 01749, US

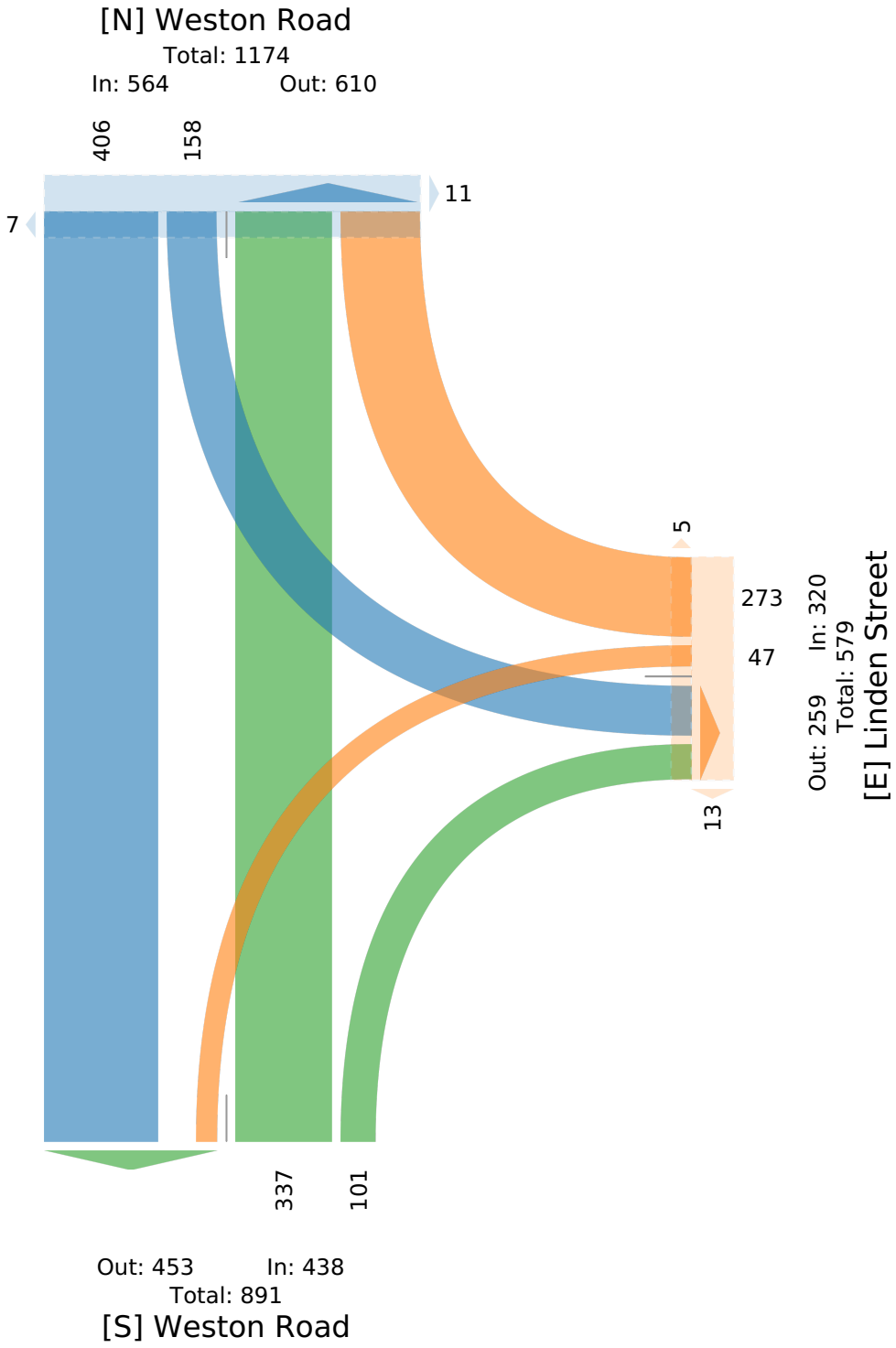
Leg	Weston Road					Linden Street					Weston Road					
Direction	Southbound					Westbound					Northbound					
Time	T	L	U	**App**	Ped*	R	L	U	**App**	Ped*	R	T	U	**App**	Ped*	**Int**
2021-11-20 1:00PM	104	35	0	**139**	6	76	11	0	**87**	5	22	85	0	**107**	0	**333**
1:15PM	99	46	0	**145**	3	66	12	0	**78**	2	34	73	0	**107**	0	**330**
1:30PM	93	41	0	**134**	3	62	13	0	**75**	7	25	90	0	**115**	0	**324**
1:45PM	110	36	0	**146**	6	69	11	0	**80**	4	20	89	0	**109**	0	**335**
Total	406	158	0	**564**	18	273	47	0	**320**	18	101	337	0	**438**	0	**1322**
% Approach	72.0%	28.0%	0%	**-**	-	85.3%	14.7%	0%	**-**	-	23.1%	76.9%	0%	**-**	-	**-**
% Total	30.7%	12.0%	0%	**42.7%**	-	20.7%	3.6%	0%	**24.2%**	-	7.6%	25.5%	0%	**33.1%**	-	**-**
PHF	0.920	0.859	-	**0.964**	-	0.898	0.904	-	**0.920**	-	0.743	0.928	-	**0.946**	-	0.992
Lights	401	158	0	**559**	-	269	46	0	**315**	-	101	330	0	**431**	-	1305
% Lights	98.8%	100%	0%	**99.1%**	-	98.5%	97.9%	0%	**98.4%**	-	100%	97.9%	0%	**98.4%**	-	98.7%
Single-Unit Trucks	2	0	0	**2**	-	4	0	0	**4**	-	0	2	0	**2**	-	8
% Single-Unit Trucks	0.5%	0%	0%	**0.4%**	-	1.5%	0%	0%	**1.3%**	-	0%	0.6%	0%	**0.5%**	-	0.6%
Articulated Trucks	1	0	0	**1**	-	0	1	0	**1**	-	0	1	0	**1**	-	3
% Articulated Trucks	0.2%	0%	0%	**0.2%**	-	0%	2.1%	0%	**0.3%**	-	0%	0.3%	0%	**0.2%**	-	0.2%
Buses	1	0	0	**1**	-	0	0	0	**0**	-	0	1	0	**1**	-	2
% Buses	0.2%	0%	0%	**0.2%**	-	0%	0%	0%	**0%**	-	0%	0.3%	0%	**0.2%**	-	0.2%
Bicycles on Road	1	0	0	**1**	-	0	0	0	**0**	-	0	3	0	**3**	-	4
% Bicycles on Road	0.2%	0%	0%	**0.2%**	-	0%	0%	0%	**0%**	-	0%	0.9%	0%	**0.7%**	-	0.3%
Pedestrians	-	-	-	-	18	-	-	-	-	17	-	-	-	-	0	
% Pedestrians	-	-	-	-	100%	-	-	-	-	94.4%	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	1	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	0%	-	-	-	-	5.6%	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

218250-A Weston Road @ Linden Street TMC - TMC

Sat Nov 20, 2021
PM Peak (WKND) (Nov 20 2021 1PM - 2 PM)
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)
All Movements
ID: 902172, Location: 42.296767, -71.299888

Provided by: Precision Data Industries, LLC (PDI)
157 Washington Street, 2,
Hudson, MA, 01749, US



218250-B Central Street @ Weston Road TMC - TMC

Thu Nov 18, 2021
Full Length (7 AM-11 AM, 2 PM-6 PM, 10 AM-2 PM)
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)
All Movements
ID: 902950, Location: 42.29592, -71.298929

Provided by: Precision Data Industries, LLC (PDI)
157 Washington Street, 2,
Hudson, MA, 01749, US

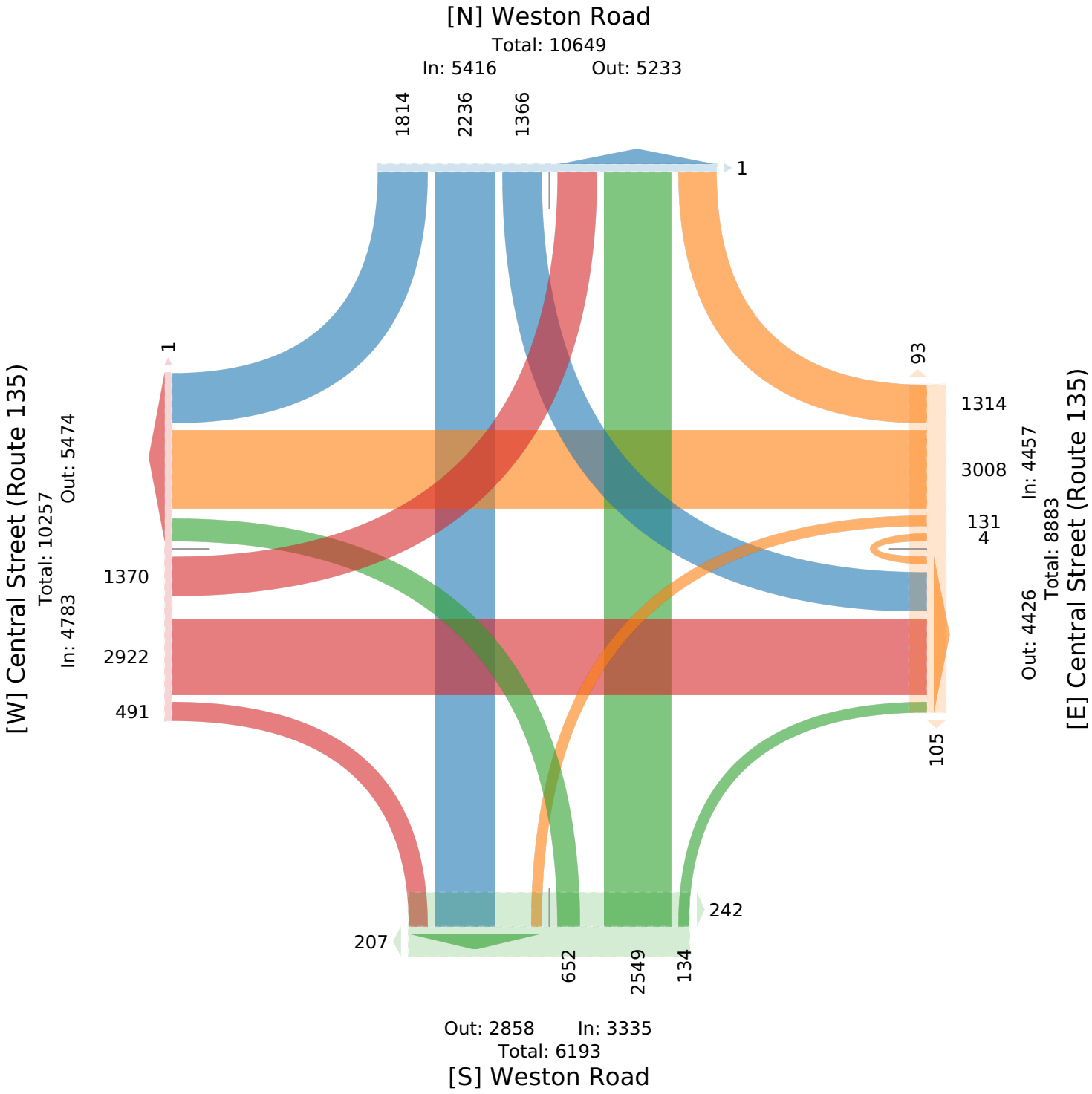
Leg	Weston Road						Central Street (Route 135)						Weston Road						Central Street (Route 135)						
Direction	Southbound						Westbound						Northbound						Eastbound						
Time	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	Int
2021-11-18 7:00AM	49	135	120	0	**304**	0	77	134	7	2	**220**	5	8	318	15	0	**341**	9	34	478	175	0	**687**	0	**1552**
8:00AM	98	219	154	0	**471**	0	116	185	15	1	**317**	16	12	302	30	0	**344**	23	43	439	160	0	**642**	0	**1774**
9:00AM	110	169	128	0	**407**	1	103	193	7	0	**303**	13	11	231	26	0	**268**	30	33	235	112	0	**380**	1	**1358**
10:00AM	90	121	116	0	**327**	0	105	201	7	0	**313**	14	10	147	25	0	**182**	38	25	177	79	0	**281**	0	**1103**
2:00PM	116	226	109	0	**451**	0	93	248	12	0	**353**	15	6	201	53	0	**260**	56	61	187	109	0	**357**	0	**1421**
3:00PM	254	243	96	0	**593**	0	117	356	8	0	**481**	19	10	239	82	0	**331**	43	59	198	97	0	**354**	0	**1759**
4:00PM	301	217	76	0	**594**	0	72	356	8	0	**436**	23	11	186	127	0	**324**	33	48	212	106	0	**366**	0	**1720**
5:00PM	315	198	70	0	**583**	0	91	370	7	0	**468**	10	12	159	100	0	**271**	36	42	198	116	0	**356**	0	**1678**
2021-11-20 10:00AM	88	142	118	0	**348**	0	115	212	16	0	**343**	18	16	180	53	0	**249**	35	31	195	109	0	**335**	0	**1275**
11:00AM	128	196	132	0	**456**	0	144	249	13	0	**406**	13	12	172	40	0	**224**	47	35	202	90	0	**327**	0	**1413**
12:00PM	141	180	113	0	**434**	0	149	257	17	0	**423**	27	9	209	57	0	**275**	54	34	201	120	0	**355**	0	**1487**
1:00PM	124	190	134	0	**448**	0	132	247	14	1	**394**	25	17	205	44	0	**266**	45	46	200	97	0	**343**	0	**1451**
Total	1814	2236	1366	0	**5416**	1	1314	3008	131	4	**4457**	198	134	2549	652	0	**3335**	449	491	2922	1370	0	**4783**	1	**17991**
% Approach	33.5%	41.3%	25.2%	0%	**-**	-	29.5%	67.5%	2.9%	0.1%	**-**	-	4.0%	76.4%	19.6%	0%	**-**	-	10.3%	61.1%	28.6%	0%	**-**	-	-
% Total	10.1%	12.4%	7.6%	0%	**30.1%**	-	7.3%	16.7%	0.7%	0%	**24.8%**	-	0.7%	14.2%	3.6%	0%	**18.5%**	-	2.7%	16.2%	7.6%	0%	**26.6%**	-	-
Lights	1755	2180	1328	0	**5263**	-	1261	2894	125	4	**4284**	-	127	2506	639	0	**3272**	-	488	2827	1321	0	**4636**	-	17455
% Lights	96.7%	97.5%	97.2%	0%	**97.2%**	-	96.0%	96.2%	95.4%	100%	**96.1%**	-	94.8%	98.3%	98.0%	0%	**98.1%**	-	99.4%	96.7%	96.4%	0%	**96.9%**	-	97.0%
Single-Unit Trucks	42	28	28	0	**98**	-	34	72	4	0	**110**	-	2	25	8	0	**35**	-	1	68	19	0	**88**	-	331
% Single-Unit Trucks	2.3%	1.3%	2.0%	0%	**1.8%**	-	2.6%	2.4%	3.1%	0%	**2.5%**	-	1.5%	1.0%	1.2%	0%	**1.0%**	-	0.2%	2.3%	1.4%	0%	**1.8%**	-	1.8%
Articulated Trucks	5	9	8	0	**22**	-	14	14	0	0	**28**	-	0	3	0	0	**3**	-	0	9	13	0	**22**	-	75
% Articulated Trucks	0.3%	0.4%	0.6%	0%	**0.4%**	-	1.1%	0.5%	0%	0%	**0.6%**	-	0%	0.1%	0%	0%	**0.1%**	-	0%	0.3%	0.9%	0%	**0.5%**	-	0.4%
Buses	11	11	0	0	**22**	-	4	13	0	0	**17**	-	0	6	3	0	**9**	-	1	6	14	0	**21**	-	69
% Buses	0.6%	0.5%	0%	0%	**0.4%**	-	0.3%	0.4%	0%	0%	**0.4%**	-	0%	0.2%	0.5%	0%	**0.3%**	-	0.2%	0.2%	1.0%	0%	**0.4%**	-	0.4%
Bicycles on Road	1	8	2	0	**11**	-	1	15	2	0	**18**	-	5	9	2	0	**16**	-	1	12	3	0	**16**	-	61
% Bicycles on Road	0.1%	0.4%	0.1%	0%	**0.2%**	-	0.1%	0.5%	1.5%	0%	**0.4%**	-	3.7%	0.4%	0.3%	0%	**0.5%**	-	0.2%	0.4%	0.2%	0%	**0.3%**	-	0.3%
Pedestrians	-	-	-	-	-	1	-	-	-	-	-	189	-	-	-	-	-	439	-	-	-	-	-	1	
% Pedestrians	-	-	-	-	-	100%	-	-	-	-	-	95.5%	-	-	-	-	-	97.8%	-	-	-	-	-	100%	-
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	9	-	-	-	-	-	10	-	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	-	0%	-	-	-	-	-	4.5%	-	-	-	-	-	2.2%	-	-	-	-	-	0%	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

218250-B Central Street @ Weston Road TMC - TMC

Thu Nov 18, 2021
Full Length (7 AM-11 AM, 2 PM-6 PM, 10 AM-2 PM)
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)
All Movements
ID: 902950, Location: 42.29592, -71.298929

Provided by: Precision Data Industries, LLC (PDI)
157 Washington Street, 2,
Hudson, MA, 01749, US



218250-B Central Street @ Weston Road TMC - TMC

Thu Nov 18, 2021
AM Peak (Nov 18 2021 7:45AM - 8:45 AM)
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)
All Movements
ID: 902950, Location: 42.29592, -71.298929

Provided by: Precision Data Industries, LLC (PDI)
157 Washington Street, 2,
Hudson, MA, 01749, US

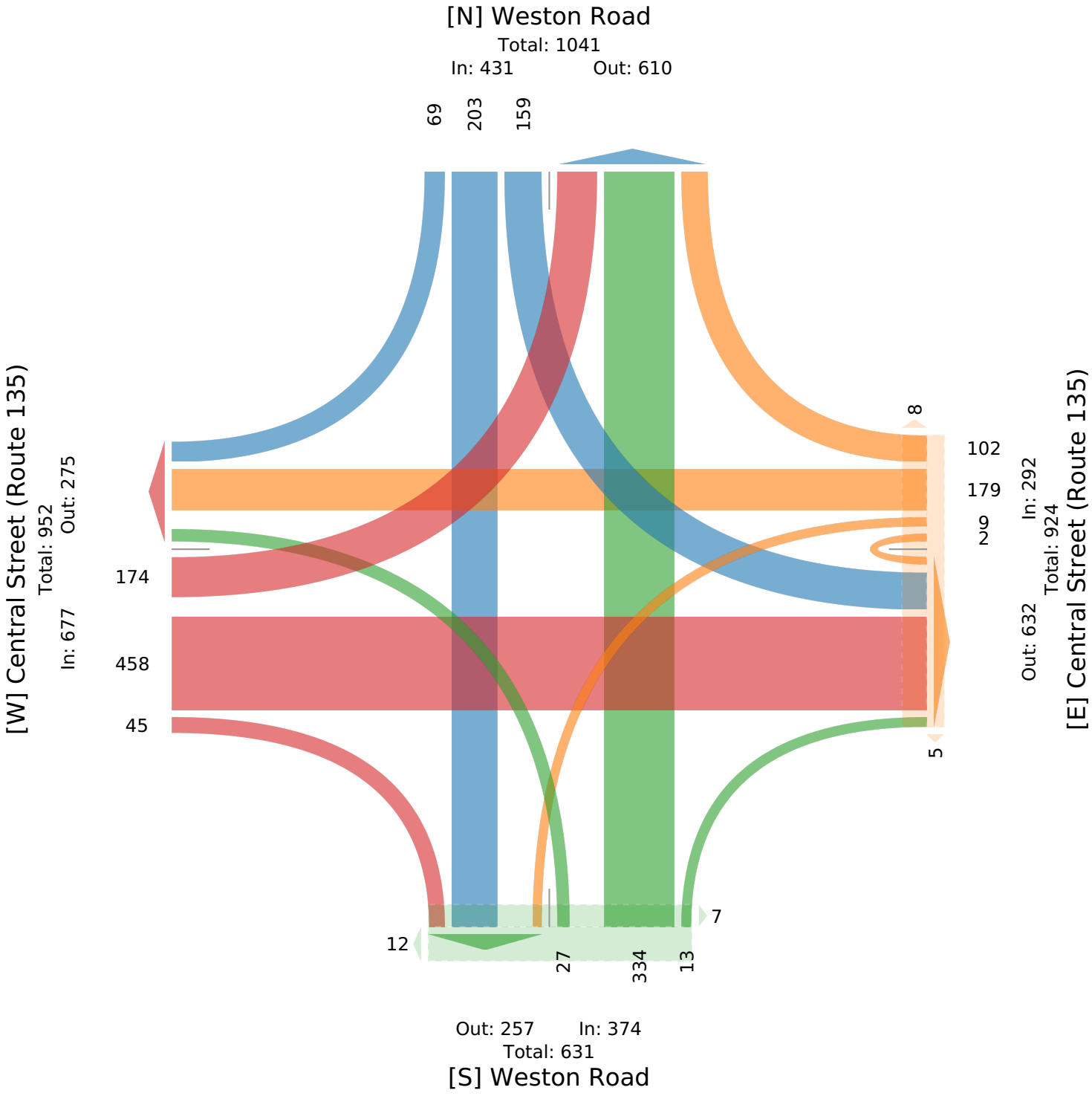
Leg Direction	Weston Road Southbound						Central Street (Route 135) Westbound						Weston Road Northbound						Central Street (Route 135) Eastbound						
Time	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	**Int**
2021-11-18 7:45AM	12	51	33	0	**96**	0	14	43	0	1	**58**	0	2	96	6	0	**104**	2	10	120	51	0	**181**	0	**439**
8:00AM	19	31	42	0	**92**	0	31	41	2	0	**74**	4	9	91	4	0	**104**	3	9	102	46	0	**157**	0	**427**
8:15AM	21	54	47	0	**122**	0	24	59	3	1	**87**	6	1	74	7	0	**82**	1	10	115	43	0	**168**	0	**459**
8:30AM	17	67	37	0	**121**	0	33	36	4	0	**73**	3	1	73	10	0	**84**	13	16	121	34	0	**171**	0	**449**
Total	69	203	159	0	**431**	0	102	179	9	2	**292**	13	13	334	27	0	**374**	19	45	458	174	0	**677**	0	**1774**
% Approach	16.0%	47.1%	36.9%	0%	**-**	-	34.9%	61.3%	3.1%	0.7%	**-**	-	3.5%	89.3%	7.2%	0%	**-**	-	6.6%	67.7%	25.7%	0%	**-**	-	**-**
% Total	3.9%	11.4%	9.0%	0%	**24.3%**	-	5.7%	10.1%	0.5%	0.1%	**16.5%**	-	0.7%	18.8%	1.5%	0%	**21.1%**	-	2.5%	25.8%	9.8%	0%	**38.2%**	-	**-**
PHF	0.821	0.773	0.846	-	**0.879**	-	0.773	0.754	0.563	0.500	**0.836**	-	0.361	0.870	0.675	-	**0.899**	-	0.703	0.944	0.853	-	**0.934**	-	0.964
Lights	65	194	150	0	**409**	-	95	163	9	2	**269**	-	12	327	27	0	**366**	-	45	438	166	0	**649**	-	1693
% Lights	94.2%	95.6%	94.3%	0%	**94.9%**	-	93.1%	91.1%	100%	100%	**92.1%**	-	92.3%	97.9%	100%	0%	**97.9%**	-	100%	95.6%	95.4%	0%	**95.9%**	-	95.4%
Single-Unit Trucks	4	2	8	0	**14**	-	4	9	0	0	**13**	-	1	6	0	0	**7**	-	0	14	5	0	**19**	-	53
% Single-Unit Trucks	5.8%	1.0%	5.0%	0%	**3.2%**	-	3.9%	5.0%	0%	0%	**4.5%**	-	7.7%	1.8%	0%	0%	**1.9%**	-	0%	3.1%	2.9%	0%	**2.8%**	-	3.0%
Articulated Trucks	0	2	1	0	**3**	-	0	4	0	0	**4**	-	0	1	0	0	**1**	-	0	4	2	0	**6**	-	14
% Articulated Trucks	0%	1.0%	0.6%	0%	**0.7%**	-	0%	2.2%	0%	0%	**1.4%**	-	0%	0.3%	0%	0%	**0.3%**	-	0%	0.9%	1.1%	0%	**0.9%**	-	0.8%
Buses	0	3	0	0	**3**	-	3	2	0	0	**5**	-	0	0	0	0	**0**	-	0	1	1	0	**2**	-	10
% Buses	0%	1.5%	0%	0%	**0.7%**	-	2.9%	1.1%	0%	0%	**1.7%**	-	0%	0%	0%	0%	**0%**	-	0%	0.2%	0.6%	0%	**0.3%**	-	0.6%
Bicycles on Road	0	2	0	0	**2**	-	0	1	0	0	**1**	-	0	0	0	0	**0**	-	0	1	0	0	**1**	-	4
% Bicycles on Road	0%	1.0%	0%	0%	**0.5%**	-	0%	0.6%	0%	0%	**0.3%**	-	0%	0%	0%	0%	**0%**	-	0%	0.2%	0%	0%	**0.1%**	-	0.2%
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	12	-	-	-	-	-	18	-	-	-	-	-	0	
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	92.3%	-	-	-	-	-	94.7%	-	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	7.7%	-	-	-	-	-	5.3%	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

218250-B Central Street @ Weston Road TMC - TMC

Thu Nov 18, 2021
AM Peak (Nov 18 2021 7:45AM - 8:45 AM)
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)
All Movements
ID: 902950, Location: 42.29592, -71.298929

Provided by: Precision Data Industries, LLC (PDI)
157 Washington Street, 2,
Hudson, MA, 01749, US



218250-B Central Street @ Weston Road TMC - TMC

Thu Nov 18, 2021
PM Peak (Nov 18 2021 3:30PM - 4:30 PM) - Overall Peak Hour
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)
All Movements
ID: 902950, Location: 42.29592, -71.298929

Provided by: Precision Data Industries, LLC (PDI)
157 Washington Street, 2,
Hudson, MA, 01749, US

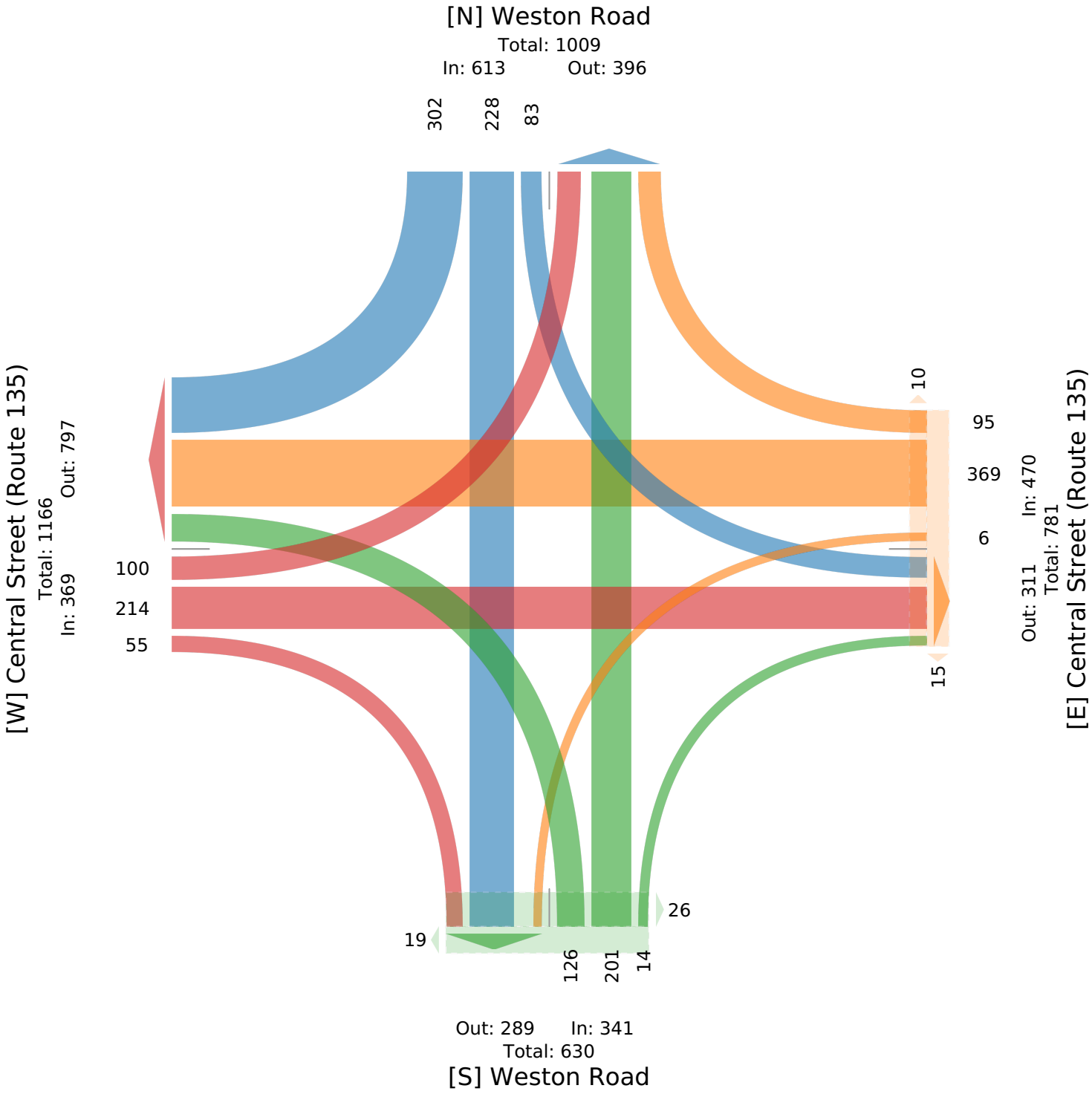
Leg	Weston Road						Central Street (Route 135)						Weston Road						Central Street (Route 135)						
Direction	Southbound						Westbound						Northbound						Eastbound						
Time	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	**Int**
2021-11-18 3:30PM	85	62	21	0	**168**	0	26	96	1	0	**123**	3	3	71	19	0	**93**	10	22	45	22	0	**89**	0	**473**
3:45PM	71	52	23	0	**146**	0	29	94	2	0	**125**	12	5	49	36	0	**90**	18	13	54	23	0	**90**	0	**451**
4:00PM	65	58	20	0	**143**	0	21	82	2	0	**105**	6	3	37	43	0	**83**	11	11	65	26	0	**102**	0	**433**
4:15PM	81	56	19	0	**156**	0	19	97	1	0	**117**	4	3	44	28	0	**75**	6	9	50	29	0	**88**	0	**436**
Total	302	228	83	0	**613**	0	95	369	6	0	**470**	25	14	201	126	0	**341**	45	55	214	100	0	**369**	0	**1793**
% Approach	49.3%	37.2%	13.5%	0%	**-**	-	20.2%	78.5%	1.3%	0%	**-**	-	4.1%	58.9%	37.0%	0%	**-**	-	14.9%	58.0%	27.1%	0%	**-**	-	-
% Total	16.8%	12.7%	4.6%	0%	**34.2%**	-	5.3%	20.6%	0.3%	0%	**26.2%**	-	0.8%	11.2%	7.0%	0%	**19.0%**	-	3.1%	11.9%	5.6%	0%	**20.6%**	-	-
PHF	0.888	0.915	0.902	-	**0.911**	-	0.819	0.948	0.750	-	**0.946**	-	0.550	0.708	0.733	-	**0.929**	-	0.643	0.819	0.862	-	**0.900**	-	0.950
Lights	295	223	80	0	**598**	-	90	359	6	0	**455**	-	11	198	125	0	**334**	-	54	209	98	0	**361**	-	1748
% Lights	97.7%	97.8%	96.4%	0%	**97.6%**	-	94.7%	97.3%	100%	0%	**96.8%**	-	78.6%	98.5%	99.2%	0%	**97.9%**	-	98.2%	97.7%	98.0%	0%	**97.8%**	-	97.5%
Single-Unit Trucks	5	4	1	0	**10**	-	4	7	0	0	**11**	-	0	2	1	0	**3**	-	0	4	0	0	**4**	-	28
% Single-Unit Trucks	1.7%	1.8%	1.2%	0%	**1.6%**	-	4.2%	1.9%	0%	0%	**2.3%**	-	0%	1.0%	0.8%	0%	**0.9%**	-	0%	1.9%	0%	0%	**1.1%**	-	1.6%
Articulated Trucks	0	0	2	0	**2**	-	0	1	0	0	**1**	-	0	0	0	0	**0**	-	0	0	0	0	**0**	-	3
% Articulated Trucks	0%	0%	2.4%	0%	**0.3%**	-	0%	0.3%	0%	0%	**0.2%**	-	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**0%**	-	0.2%
Buses	2	0	0	0	**2**	-	1	1	0	0	**2**	-	0	1	0	0	**1**	-	0	0	2	0	**2**	-	7
% Buses	0.7%	0%	0%	0%	**0.3%**	-	1.1%	0.3%	0%	0%	**0.4%**	-	0%	0.5%	0%	0%	**0.3%**	-	0%	0%	2.0%	0%	**0.5%**	-	0.4%
Bicycles on Road	0	1	0	0	**1**	-	0	1	0	0	**1**	-	3	0	0	0	**3**	-	1	1	0	0	**2**	-	7
% Bicycles on Road	0%	0.4%	0%	0%	**0.2%**	-	0%	0.3%	0%	0%	**0.2%**	-	21.4%	0%	0%	0%	**0.9%**	-	1.8%	0.5%	0%	0%	**0.5%**	-	0.4%
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	25	-	-	-	-	-	44	-	-	-	-	-	0	
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	- 100%	-	-	-	-	-	- 97.8%	-	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	0%	-	-	-	-	-	2.2%	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

218250-B Central Street @ Weston Road TMC - TMC

Thu Nov 18, 2021
PM Peak (Nov 18 2021 3:30PM - 4:30 PM) - Overall Peak Hour
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)
All Movements
ID: 902950, Location: 42.29592, -71.298929

Provided by: Precision Data Industries, LLC (PDI)
157 Washington Street, 2,
Hudson, MA, 01749, US



218250-B Central Street @ Weston Road TMC - TMC

Sat Nov 20, 2021
AM Peak (WKND) (Nov 20 2021 10AM - 11 AM)
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)
All Movements
ID: 902950, Location: 42.29592, -71.298929

Provided by: Precision Data Industries, LLC (PDI)
157 Washington Street, 2,
Hudson, MA, 01749, US

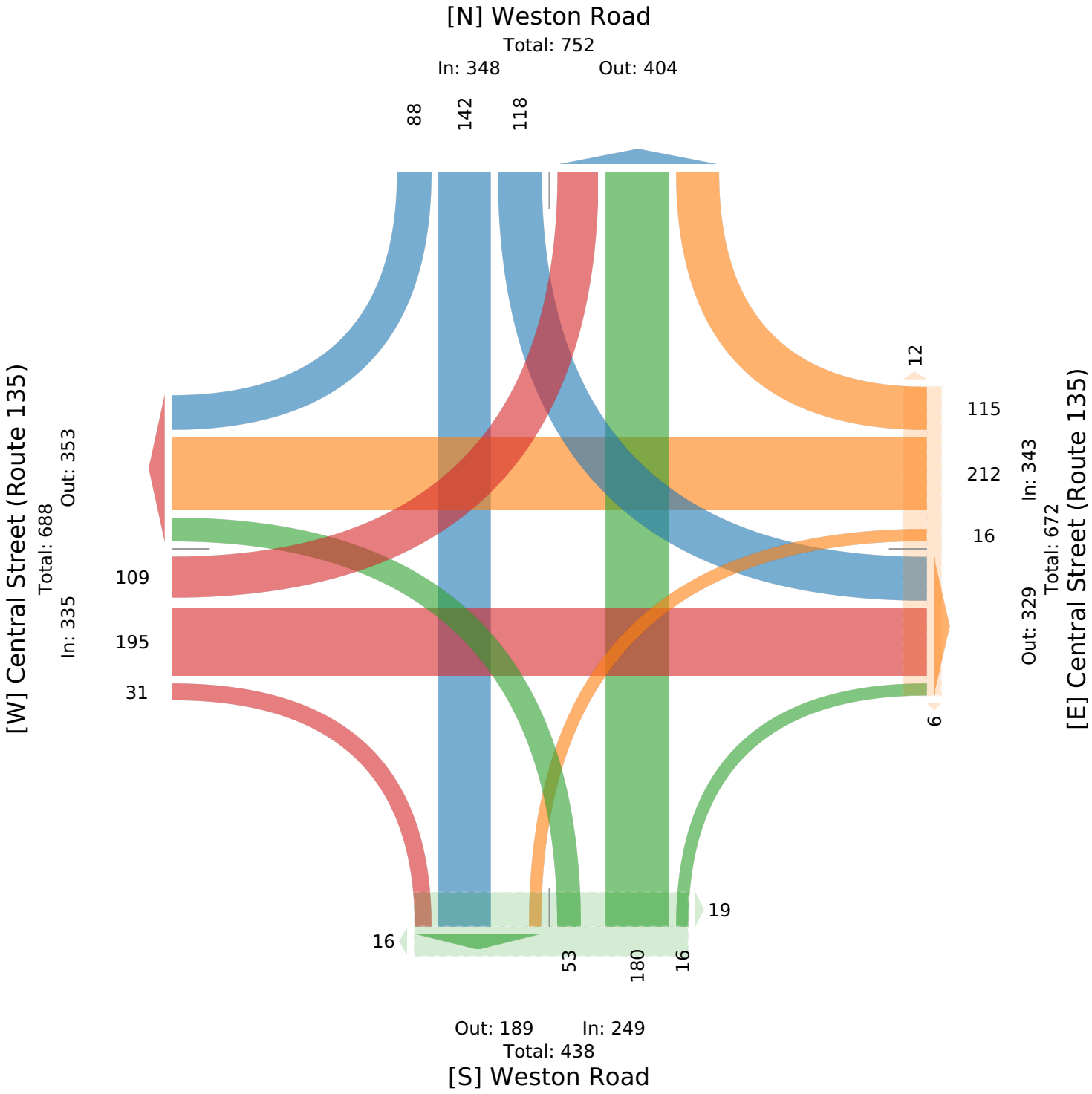
Leg	Weston Road						Central Street (Route 135)						Weston Road						Central Street (Route 135)						
Direction	Southbound						Westbound						Northbound						Eastbound						
Time	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	**Int**
2021-11-20 10:00AM	21	27	25	0	**73**	0	26	39	4	0	**69**	2	1	39	12	0	**52**	6	4	53	24	0	**81**	0	**275**
10:15AM	20	34	32	0	**86**	0	24	54	4	0	**82**	5	7	38	8	0	**53**	14	9	54	31	0	**94**	0	**315**
10:30AM	14	46	32	0	**92**	0	35	63	4	0	**102**	4	2	55	18	0	**75**	5	10	45	27	0	**82**	0	**351**
10:45AM	33	35	29	0	**97**	0	30	56	4	0	**90**	7	6	48	15	0	**69**	10	8	43	27	0	**78**	0	**334**
Total	88	142	118	0	**348**	0	115	212	16	0	**343**	18	16	180	53	0	**249**	35	31	195	109	0	**335**	0	**1275**
% Approach	25.3%	40.8%	33.9%	0%	**-**	-	33.5%	61.8%	4.7%	0%	**-**	-	6.4%	72.3%	21.3%	0%	**-**	-	9.3%	58.2%	32.5%	0%	**-**	-	-
% Total	6.9%	11.1%	9.3%	0%	**27.3%**	-	9.0%	16.6%	1.3%	0%	**26.9%**	-	1.3%	14.1%	4.2%	0%	**19.5%**	-	2.4%	15.3%	8.5%	0%	**26.3%**	-	-
PHF	0.667	0.766	0.922	-	**0.904**	-	0.821	0.837	1.000	-	**0.838**	-	0.571	0.818	0.736	-	**0.830**	-	0.775	0.903	0.946	-	**0.912**	-	0.905
Lights	86	137	118	0	**341**	-	114	204	16	0	**334**	-	16	178	53	0	**247**	-	31	189	104	0	**324**	-	1246
% Lights	97.7%	96.5%	100%	0%	**98.0%**	-	99.1%	96.2%	100%	0%	**97.4%**	-	100%	98.9%	100%	0%	**99.2%**	-	100%	96.9%	95.4%	0%	**96.7%**	-	97.7%
Single-Unit Trucks	1	2	0	0	**3**	-	1	7	0	0	**8**	-	0	2	0	0	**2**	-	0	6	1	0	**7**	-	20
% Single-Unit Trucks	1.1%	1.4%	0%	0%	**0.9%**	-	0.9%	3.3%	0%	0%	**2.3%**	-	0%	1.1%	0%	0%	**0.8%**	-	0%	3.1%	0.9%	0%	**2.1%**	-	1.6%
Articulated Trucks	0	2	0	0	**2**	-	0	0	0	0	**0**	-	0	0	0	0	**0**	-	0	0	0	0	**0**	-	2
% Articulated Trucks	0%	1.4%	0%	0%	**0.6%**	-	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**0%**	-	0.2%
Buses	1	0	0	0	**1**	-	0	0	0	0	**0**	-	0	0	0	0	**0**	-	0	0	1	0	**1**	-	2
% Buses	1.1%	0%	0%	0%	**0.3%**	-	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**0%**	-	0%	0%	0.9%	0%	**0.3%**	-	0.2%
Bicycles on Road	0	1	0	0	**1**	-	0	1	0	0	**1**	-	0	0	0	0	**0**	-	0	0	3	0	**3**	-	5
% Bicycles on Road	0%	0.7%	0%	0%	**0.3%**	-	0%	0.5%	0%	0%	**0.3%**	-	0%	0%	0%	0%	**0%**	-	0%	0%	2.8%	0%	**0.9%**	-	0.4%
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	18	-	-	-	-	-	34	-	-	-	-	-	0	
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	100%	-	-	-	-	-	97.1%	-	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	0%	-	-	-	-	-	2.9%	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

218250-B Central Street @ Weston Road TMC - TMC

Sat Nov 20, 2021
AM Peak (WKND) (Nov 20 2021 10AM - 11 AM)
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)
All Movements
ID: 902950, Location: 42.29592, -71.298929

Provided by: Precision Data Industries, LLC (PDI)
157 Washington Street, 2,
Hudson, MA, 01749, US



218250-B Central Street @ Weston Road TMC - TMC

Sat Nov 20, 2021
Midday Peak (WKND) (Nov 20 2021 12:15PM - 1:15 PM)
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)
All Movements
ID: 902950, Location: 42.29592, -71.298929

Provided by: Precision Data Industries, LLC (PDI)
157 Washington Street, 2,
Hudson, MA, 01749, US

Leg	Weston Road						Central Street (Route 135)						Weston Road						Central Street (Route 135)						
Direction	Southbound						Westbound						Northbound						Eastbound						
Time	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	**Int**
2021-11-20 12:15PM	39	39	23	0	**101**	0	30	73	3	0	**106**	10	5	62	13	0	**80**	19	10	52	24	0	**86**	0	**373**
12:30PM	35	55	35	0	**125**	0	46	65	2	0	**113**	1	0	52	16	0	**68**	7	6	47	39	0	**92**	0	**398**
12:45PM	36	49	29	0	**114**	0	37	57	7	0	**101**	7	2	47	8	0	**57**	12	11	42	34	0	**87**	0	**359**
1:00PM	30	48	35	0	**113**	0	29	65	3	0	**97**	7	2	51	13	0	**66**	13	17	45	29	0	**91**	0	**367**
Total	140	191	122	0	**453**	0	142	260	15	0	**417**	25	9	212	50	0	**271**	51	44	186	126	0	**356**	0	**1497**
% Approach	30.9%	42.2%	26.9%	0%	**-**	-	34.1%	62.4%	3.6%	0%	**-**	-	3.3%	78.2%	18.5%	0%	**-**	-	12.4%	52.2%	35.4%	0%	**-**	-	-
% Total	9.4%	12.8%	8.1%	0%	**30.3%**	-	9.5%	17.4%	1.0%	0%	**27.9%**	-	0.6%	14.2%	3.3%	0%	**18.1%**	-	2.9%	12.4%	8.4%	0%	**23.8%**	-	-
PHF	0.897	0.868	0.871	-	**0.906**	-	0.772	0.896	0.536	-	**0.918**	-	0.500	0.875	0.781	-	**0.870**	-	0.647	0.897	0.808	-	**0.959**	-	0.935
Lights	137	187	120	0	**444**	-	142	257	15	0	**414**	-	8	209	50	0	**267**	-	44	180	123	0	**347**	-	1472
% Lights	97.9%	97.9%	98.4%	0%	**98.0%**	-	100%	98.8%	100%	0%	**99.3%**	-	88.9%	98.6%	100%	0%	**98.5%**	-	100%	96.8%	97.6%	0%	**97.5%**	-	98.3%
Single-Unit Trucks	1	2	2	0	**5**	-	0	0	0	0	**0**	-	0	1	0	0	**1**	-	0	3	2	0	**5**	-	11
% Single-Unit Trucks	0.7%	1.0%	1.6%	0%	**1.1%**	-	0%	0%	0%	0%	**0%**	-	0%	0.5%	0%	0%	**0.4%**	-	0%	1.6%	1.6%	0%	**1.4%**	-	0.7%
Articulated Trucks	1	2	0	0	**3**	-	0	1	0	0	**1**	-	0	0	0	0	**0**	-	0	0	0	0	**0**	-	4
% Articulated Trucks	0.7%	1.0%	0%	0%	**0.7%**	-	0%	0.4%	0%	0%	**0.2%**	-	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**0%**	-	0.3%
Buses	1	0	0	0	**1**	-	0	0	0	0	**0**	-	0	0	0	0	**0**	-	0	0	1	0	**1**	-	2
% Buses	0.7%	0%	0%	0%	**0.2%**	-	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**0%**	-	0%	0%	0.8%	0%	**0.3%**	-	0.1%
Bicycles on Road	0	0	0	0	**0**	-	0	2	0	0	**2**	-	1	2	0	0	**3**	-	0	3	0	0	**3**	-	8
% Bicycles on Road	0%	0%	0%	0%	**0%**	-	0%	0.8%	0%	0%	**0.5%**	-	11.1%	0.9%	0%	0%	**1.1%**	-	0%	1.6%	0%	0%	**0.8%**	-	0.5%
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	25	-	-	-	-	-	48	-	-	-	-	-	0	
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	- 100%	-	-	-	-	-	- 94.1%	-	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	3	-	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	0%	-	-	-	-	-	5.9%	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

218250-B Central Street @ Weston Road TMC - TMC

Sat Nov 20, 2021
Midday Peak (WKND) (Nov 20 2021 12:15PM - 1:15 PM)
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)
All Movements
ID: 902950, Location: 42.29592, -71.298929

Provided by: Precision Data Industries, LLC (PDI)
157 Washington Street, 2,
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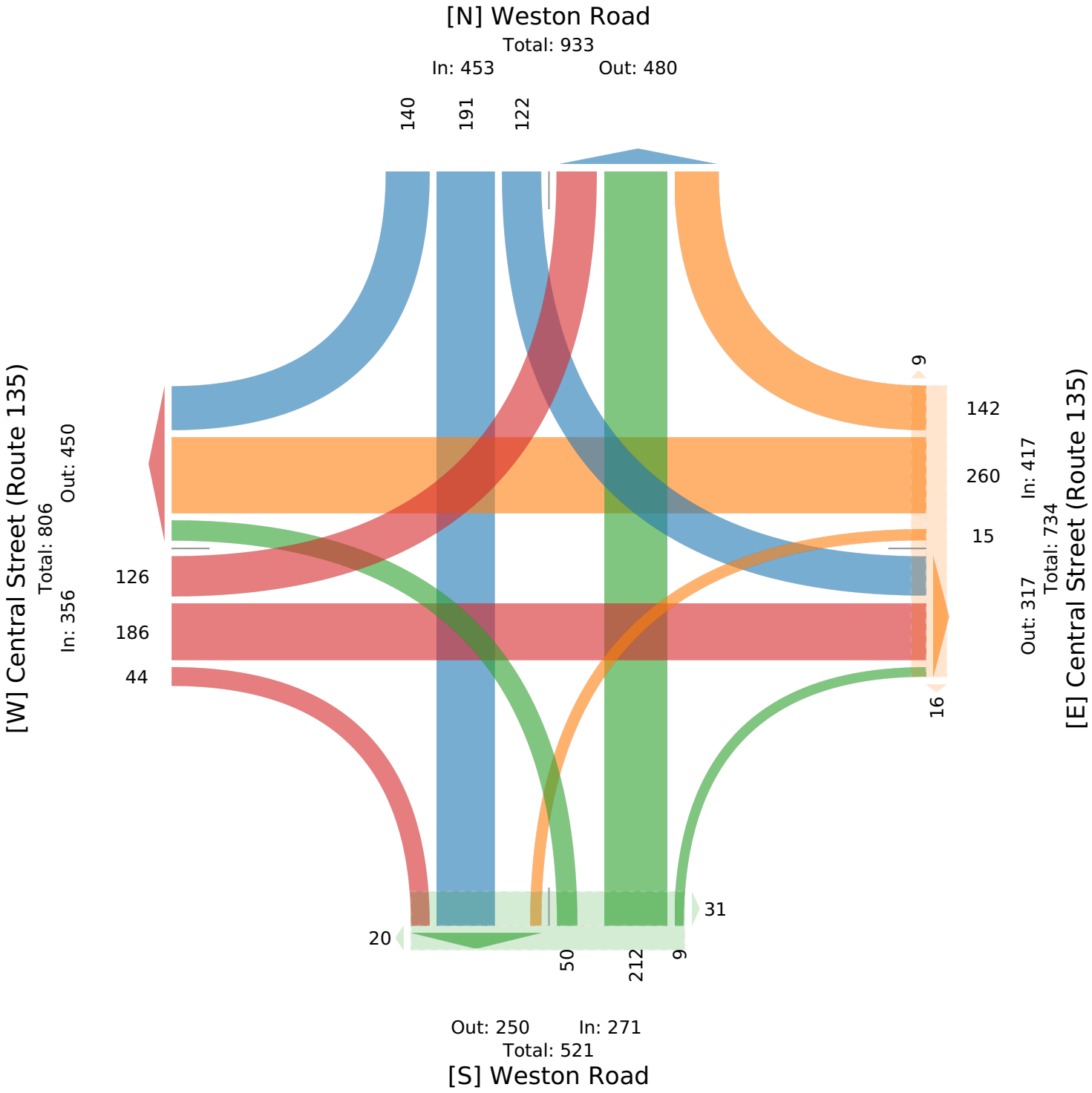

218250-B Central Street @ Weston Road TMC - TMC

Sat Nov 20, 2021
PM Peak (WKND) (Nov 20 2021 1PM - 2 PM)
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)
All Movements
ID: 902950, Location: 42.29592, -71.298929

Provided by: Precision Data Industries, LLC (PDI)
157 Washington Street, 2,
Hudson, MA, 01749, US

Leg Direction	Weston Road Southbound						Central Street (Route 135) Westbound						Weston Road Northbound						Central Street (Route 135) Eastbound						
Time	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	R	T	L	U	**App**	Ped*	**Int**
2021-11-20 1:00PM	30	48	35	0	**113**	0	29	65	3	0	**97**	7	2	51	13	0	**66**	13	17	45	29	0	**91**	0	**367**
1:15PM	30	40	33	0	**103**	0	40	70	1	0	**111**	4	7	47	19	0	**73**	10	11	51	19	0	**81**	0	**368**
1:30PM	33	43	35	0	**111**	0	31	59	9	0	**99**	5	5	48	7	0	**60**	9	8	51	34	0	**93**	0	**363**
1:45PM	31	59	31	0	**121**	0	32	53	1	1	**87**	9	3	59	5	0	**67**	13	10	53	15	0	**78**	0	**353**
Total	124	190	134	0	**448**	0	132	247	14	1	**394**	25	17	205	44	0	**266**	45	46	200	97	0	**343**	0	**1451**
% Approach	27.7%	42.4%	29.9%	0%	**-**	-	33.5%	62.7%	3.6%	0.3%	**-**	-	6.4%	77.1%	16.5%	0%	**-**	-	13.4%	58.3%	28.3%	0%	**-**	-	**-**
% Total	8.5%	13.1%	9.2%	0%	**30.9%**	-	9.1%	17.0%	1.0%	0.1%	**27.2%**	-	1.2%	14.1%	3.0%	0%	**18.3%**	-	3.2%	13.8%	6.7%	0%	**23.6%**	-	**-**
PHF	0.939	0.805	0.957	-	**0.926**	-	0.825	0.879	0.389	0.250	**0.885**	-	0.607	0.869	0.579	-	**0.911**	-	0.676	0.939	0.713	-	**0.929**	-	0.984
Lights	122	189	133	0	**444**	-	130	244	14	1	**389**	-	17	203	44	0	**264**	-	46	197	95	0	**338**	-	1435
% Lights	98.4%	99.5%	99.3%	0%	**99.1%**	-	98.5%	98.8%	100%	100%	**98.7%**	-	100%	99.0%	100%	0%	**99.2%**	-	100%	98.5%	97.9%	0%	**98.5%**	-	98.9%
Single-Unit Trucks	0	1	1	0	**2**	-	2	2	0	0	**4**	-	0	2	0	0	**2**	-	0	2	0	0	**2**	-	10
% Single-Unit Trucks	0%	0.5%	0.7%	0%	**0.4%**	-	1.5%	0.8%	0%	0%	**1.0%**	-	0%	1.0%	0%	0%	**0.8%**	-	0%	1.0%	0%	0%	**0.6%**	-	0.7%
Articulated Trucks	1	0	0	0	**1**	-	0	0	0	0	**0**	-	0	0	0	0	**0**	-	0	0	1	0	**1**	-	2
% Articulated Trucks	0.8%	0%	0%	0%	**0.2%**	-	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**0%**	-	0%	0%	1.0%	0%	**0.3%**	-	0.1%
Buses	1	0	0	0	**1**	-	0	0	0	0	**0**	-	0	0	0	0	**0**	-	0	0	1	0	**1**	-	2
% Buses	0.8%	0%	0%	0%	**0.2%**	-	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**0%**	-	0%	0%	1.0%	0%	**0.3%**	-	0.1%
Bicycles on Road	0	0	0	0	**0**	-	0	1	0	0	**1**	-	0	0	0	0	**0**	-	0	1	0	0	**1**	-	2
% Bicycles on Road	0%	0%	0%	0%	**0%**	-	0%	0.4%	0%	0%	**0.3%**	-	0%	0%	0%	0%	**0%**	-	0%	0.5%	0%	0%	**0.3%**	-	0.1%
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	23	-	-	-	-	-	45	-	-	-	-	-	0	
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	92.0%	-	-	-	-	-	100%	-	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	8.0%	-	-	-	-	-	0%	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

218250-B Central Street @ Weston Road TMC - TMC

Sat Nov 20, 2021
PM Peak (WKND) (Nov 20 2021 1PM - 2 PM)
All Classes (Lights, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)
All Movements
ID: 902950, Location: 42.29592, -71.298929

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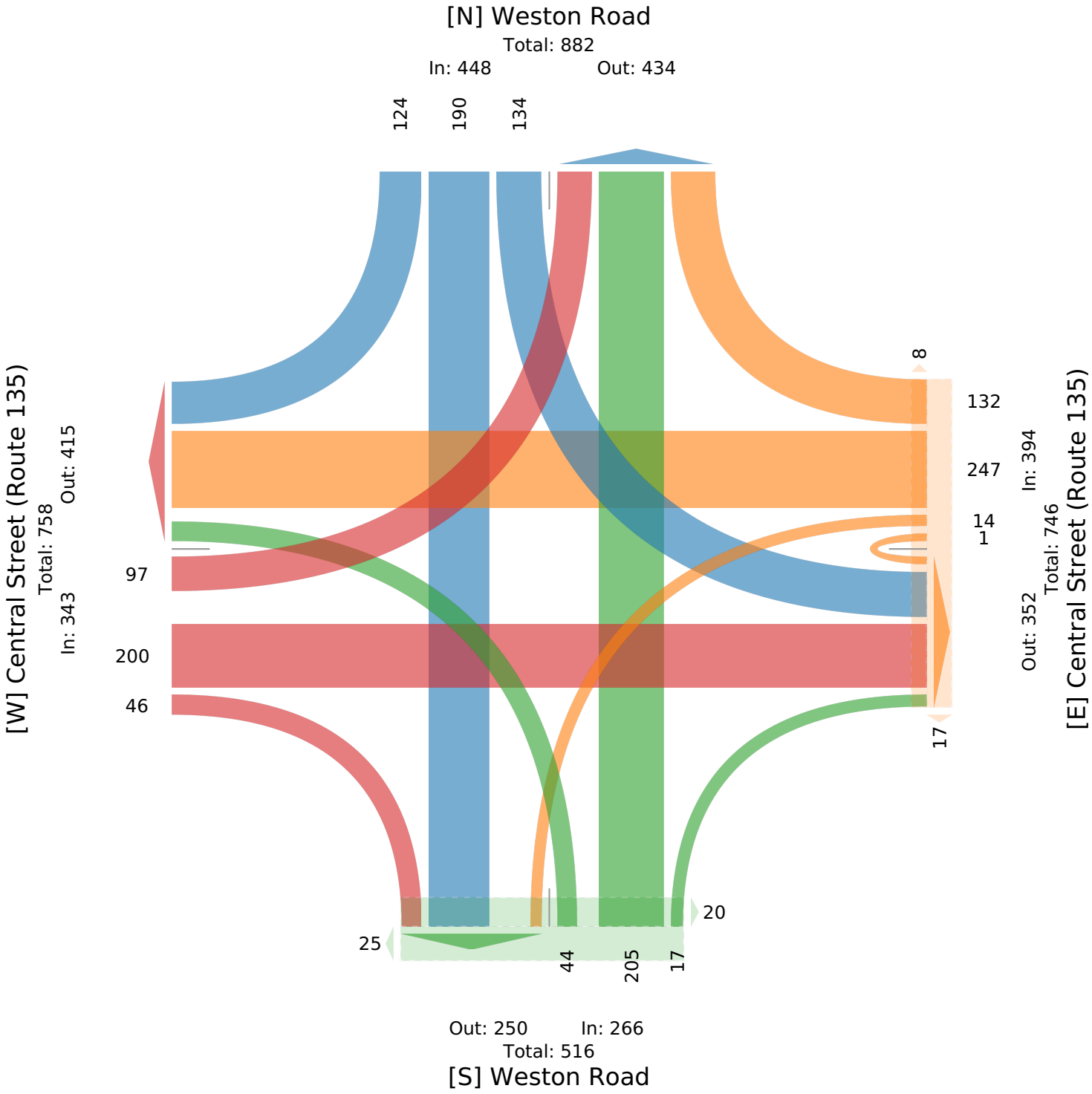


Appendix C

Highway Capacity Software
Warrants Report

HCS Warrants Report

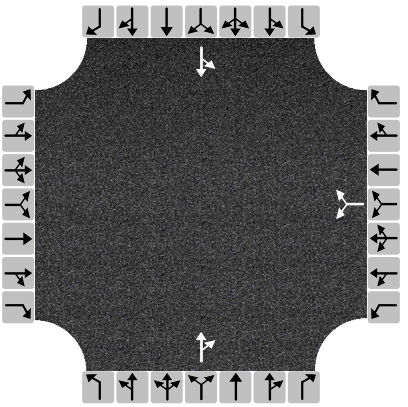
Project Information

Analyst	Casey Cooper	Date	8/19/2022
Agency	Central Transportation Planning Staff (CTPS) to the Boston Region MPO	Analysis Year	2022
Jurisdiction	Wellesley	Time Period Analyzed	11.18.2021 - 11.20.2021
Project Description	Linden Street and Weston Road Intersection		

General

Major Street Direction	North-South	Population < 10,000	No
Starting Time Interval	7	Coordinated Signal System	No
Median Type	Undivided	Crashes (crashes/year)	6
Major Street Speed (mi/h)	30	Adequate Trials of Crash Exp. Alt.	No
Nearest Signal (ft)	350		

Geometry and Traffic



Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Number of Lanes, N	0	0	0	0	0	0	0	1	0	0	1	0
Lane Usage					LR			TR			LT	
Vehicle Volumes Averages (veh/h)	0	0	0	43	0	125	0	234	57	77	268	0
Pedestrian Averages (peds/h)	1			1			3			3		
Gap Averages (gaps/h)	0			0			0			0		
Delay (s/veh)	0.0			0.0			0.0			0.0		
Delay (veh-hrs)	0.0			0.0			0.0			0.0		

School Crossing and Roadway Network

Number of Students in Highest Hour	0	Two or More Major Routes	No
Number of Adequate Gaps in Period	0	Weekend Counts	Yes
Number of Minutes in Period	0	5-year Growth Factor (%)	0

Railroad Crossing

Grade Crossing Approach	None	Rail Traffic (trains/day)	0
Highest Volume Hour with Trains	Unknown	High Occupancy Buses (%)	0
Distance to Stop Line (ft)	-	Tractor-Trailer Trucks (%)	2

Volume Summary

Hour	Major Volume	Minor Volume	Total Volume	Peds/h	Gaps/h	1A (100%)	1A (80%)	1B (100%)	1B (80%)	2 (100%)	3A (100%)	3B (80%)	4A (100%)	4B (80%)
07 - 08	995	130	1125	11	0	No	Yes	Yes	Yes	Yes	No	No	No	No
08 - 09	1179	170	1349	17	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
09 - 10	948	175	1123	10	0	Yes	Yes	Yes	Yes	Yes	No	No	No	No
10 - 11	731	199	930	10	0	Yes	Yes	No	Yes	Yes	No	No	No	No
11 - 12	0	0	0	0	0	No	No	No	No	No	No	No	No	No
12 - 13	0	0	0	0	0	No	No	No	No	No	No	No	No	No
13 - 14	0	0	0	0	0	No	No	No	No	No	No	No	No	No
14 - 15	952	303	1255	20	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
15 - 16	1039	325	1364	26	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
16 - 17	900	387	1287	16	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
17 - 18	906	339	1245	10	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
18 - 19	0	0	0	0	0	No	No	No	No	No	No	No	No	No
Total	7650	2028	9678	120	0	7	8	7	8	8	0	5	0	0

Warrants

Warrant 1: Eight-Hour Vehicular Volume	✔
A. Minimum Vehicular Volumes (Both major approaches --and-- higher minor approach) --or--	
B. Interruption of Continuous Traffic (Both major approaches --and-- higher minor approach) --or--	
80% Vehicular --and-- Interruption Volumes (Both major approaches --and-- higher minor approach)	✓
Warrant 2: Four-Hour Vehicular Volume	✔
Four-Hour Vehicular Volume (Both major approaches --and-- higher minor approach)	✓
Warrant 3: Peak Hour	✔
A. Peak-Hour Conditions (Minor delay -- and-- minor volume --and-- total volume) --or--	
B. Peak-Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)	✓
Warrant 4: Pedestrian Volume	
A. Four Hour Volumes --or--	
B. One-Hour Volumes	
Warrant 5: School Crossing	
Gaps Same Period --and--	
Student Volumes	
Nearest Traffic Control Signal (optional)	✓
Warrant 6: Coordinated Signal System	
Degree of Platooning (Predominant direction or both directions)	
Warrant 7: Crash Experience	
A. Adequate trials of alternatives, observance and enforcement failed --and--	
B. Reported crashes susceptible to correction by signal (12-month period) --and--	✓
C. 80% Volumes for Warrants 1A, 1B, --or-- 4 are satisfied	✓
Warrant 8: Roadway Network	
A. Weekday Volume (Peak hour total --and-- projected warrants 1, 2, or 3) --or--	
B. Weekend Volume (Five hours total)	
Warrant 9: Grade Crossing	
A. Grade Crossing within 140 ft --and--	
B. Peak-Hour Vehicular Volumes	

Appendix D

Existing Intersection Level of Service Conditions

1. AM Existing Conditions
2. PM Existing Conditions

Part One: AM Existing Conditions

Movement	WBL	WBR	SEL	SET	NWT	NWR
Lane Configurations						
Sign Control	Stop			Yield	Yield	
Traffic Volume (vph)	21	149	140	460	487	92
Future Volume (vph)	21	149	140	460	487	92
Peak Hour Factor	0.78	0.78	0.87	0.87	0.88	0.88
Hourly flow rate (vph)	27	191	161	529	553	105

Direction, Lane #	WB 1	WB 2	SE 1	NW 1
Volume Total (vph)	27	191	690	658
Volume Left (vph)	27	0	161	0
Volume Right (vph)	0	191	0	105
Hadj (s)	0.53	-0.67	0.09	-0.05
Departure Headway (s)	8.1	6.9	5.7	5.6
Degree Utilization, x	0.06	0.37	1.09	1.02
Capacity (veh/h)	437	515	634	658
Control Delay (s)	10.4	12.7	87.2	63.2
Approach Delay (s)	12.4		87.2	63.2
Approach LOS	B		F	F

Intersection Summary			
Delay	66.7		
Level of Service	F		
Intersection Capacity Utilization	83.5%	ICU Level of Service	E
Analysis Period (min)	15		

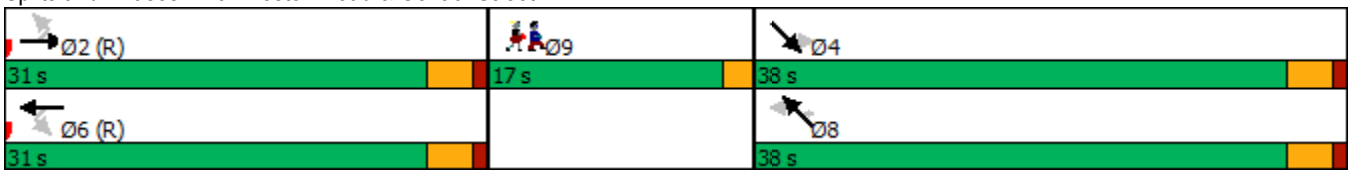
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	174	458	45	9	179	102	159	203	69	27	334	13
Future Volume (vph)	174	458	45	9	179	102	159	203	69	27	334	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.987			0.947			0.979				0.850
Flt Protected	0.950				0.998			0.982			0.996	
Satd. Flow (prot)	1736	1803	0	0	3159	0	0	1740	0	0	1855	1583
Flt Permitted	0.492				0.834			0.485			0.951	
Satd. Flow (perm)	899	1803	0	0	2640	0	0	859	0	0	1771	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			121			13				38
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		550			143			414			627	
Travel Time (s)		12.5			3.3			9.4			14.3	
Peak Hour Factor	0.93	0.93	0.93	0.84	0.84	0.84	0.88	0.88	0.88	0.90	0.90	0.90
Heavy Vehicles (%)	4%	4%	4%	8%	8%	8%	5%	5%	5%	2%	2%	2%
Adj. Flow (vph)	187	492	48	11	213	121	181	231	78	30	371	14
Shared Lane Traffic (%)												
Lane Group Flow (vph)	187	540	0	0	345	0	0	490	0	0	401	14
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		8
Minimum Split (s)	11.0	11.0		11.0	11.0		10.0	10.0		10.0	10.0	10.0
Total Split (s)	31.0	31.0		31.0	31.0		38.0	38.0		38.0	38.0	38.0
Total Split (%)	36.0%	36.0%		36.0%	36.0%		44.2%	44.2%		44.2%	44.2%	44.2%
Maximum Green (s)	27.0	27.0		27.0	27.0		34.0	34.0		34.0	34.0	34.0
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0			0.0			0.0			0.0	0.0
Total Lost Time (s)	4.0	4.0			4.0			4.0			4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	27.0	27.0			27.0			34.0			34.0	34.0
Actuated g/C Ratio	0.31	0.31			0.31			0.40			0.40	0.40
v/c Ratio	0.66	0.95			0.38			1.41			0.57	0.02
Control Delay	39.0	57.1			16.0			227.0			24.3	1.3
Queue Delay	0.0	0.0			0.0			0.0			0.0	0.0

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Minimum Split (s)	17.0
Total Split (s)	17.0
Total Split (%)	20%
Maximum Green (s)	15.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Walk Time (s)	4.0
Flash Dont Walk (s)	11.0
Pedestrian Calls (#/hr)	0
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Total Delay	39.0	57.1			16.0			227.0			24.3	1.3
LOS	D	E			B			F			C	A
Approach Delay		52.5			16.0			227.0			23.5	
Approach LOS		D			B			F			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 86			
Actuated Cycle Length: 86			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 110			
Control Type: Pretimed			
Maximum v/c Ratio: 1.41			
Intersection Signal Delay: 83.3		Intersection LOS: F	
Intersection Capacity Utilization 91.4%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 3: Weston Road & Central Street



Lane Group	Ø9
Total Delay	
LOS	
Approach Delay	
Approach LOS	

Intersection Summary

Part Two: PM Existing Conditions

Movement	WBL	WBR	SEL	SET	NWT	NWR
Lane Configurations						
Sign Control	Stop			Yield	Yield	
Traffic Volume (vph)	91	234	100	487	343	109
Future Volume (vph)	91	234	100	487	343	109
Peak Hour Factor	0.85	0.85	0.91	0.91	0.90	0.90
Hourly flow rate (vph)	107	275	110	535	381	121

Direction, Lane #	WB 1	WB 2	SE 1	NW 1
Volume Total (vph)	107	275	645	502
Volume Left (vph)	107	0	110	0
Volume Right (vph)	0	275	0	121
Hadj (s)	0.52	-0.68	0.07	-0.09
Departure Headway (s)	7.9	6.7	6.1	6.0
Degree Utilization, x	0.24	0.51	1.09	0.84
Capacity (veh/h)	442	522	589	589
Control Delay (s)	12.1	15.4	89.4	32.9
Approach Delay (s)	14.5		89.4	32.9
Approach LOS	B		F	D

Intersection Summary			
Delay	52.1		
Level of Service	F		
Intersection Capacity Utilization	77.6%	ICU Level of Service	D
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	100	214	55	6	369	95	83	228	302	126	201	14
Future Volume (vph)	100	214	55	6	369	95	83	228	302	126	201	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.969			0.970			0.934				0.850
Flt Protected	0.950				0.999			0.993			0.981	
Satd. Flow (prot)	1770	1805	0	0	3396	0	0	1728	0	0	1845	1599
Flt Permitted	0.413				0.952			0.903			0.600	
Satd. Flow (perm)	769	1805	0	0	3237	0	0	1571	0	0	1129	1599
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15			36			65				36
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		550			143			414			627	
Travel Time (s)		12.5			3.3			9.4			14.3	
Peak Hour Factor	0.90	0.90	0.90	0.95	0.95	0.95	0.91	0.91	0.91	0.93	0.93	0.93
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	2%	2%	2%	1%	1%	1%
Adj. Flow (vph)	111	238	61	6	388	100	91	251	332	135	216	15
Shared Lane Traffic (%)												
Lane Group Flow (vph)	111	299	0	0	494	0	0	674	0	0	351	15
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100		20	100	20
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		8
Detector Phase	2	2		6	6		4	4		8	8	8
Switch Phase												

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Minimum Initial (s)	7.0	7.0		7.0	7.0		6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	11.0	11.0		11.0	11.0		10.0	10.0		10.0	10.0	10.0
Total Split (s)	33.0	33.0		33.0	33.0		41.0	41.0		41.0	41.0	41.0
Total Split (%)	36.3%	36.3%		36.3%	36.3%		45.1%	45.1%		45.1%	45.1%	45.1%
Maximum Green (s)	29.0	29.0		29.0	29.0		37.0	37.0		37.0	37.0	37.0
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0			0.0			0.0			0.0	0.0
Total Lost Time (s)	4.0	4.0			4.0			4.0			4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.6	2.6		2.6	2.6		2.4	2.4		2.4	2.4	2.4
Recall Mode	Max	Max		None	None		None	None		None	None	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	29.0	29.0			29.0			37.0			37.0	37.0
Actuated g/C Ratio	0.39	0.39			0.39			0.50			0.50	0.50
v/c Ratio	0.37	0.42			0.38			0.82			0.62	0.02
Control Delay	20.5	17.7			15.9			24.9			19.5	1.4
Queue Delay	0.0	0.0			0.0			0.0			0.0	0.0
Total Delay	20.5	17.7			15.9			24.9			19.5	1.4
LOS	C	B			B			C			B	A
Approach Delay		18.5			15.9			24.9			18.8	
Approach LOS		B			B			C			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 91			
Actuated Cycle Length: 74			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 20.1		Intersection LOS: C	
Intersection Capacity Utilization 94.0%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 3: Weston Road & Central Street

Lane Group	Ø9
Minimum Initial (s)	1.0
Minimum Split (s)	17.0
Total Split (s)	17.0
Total Split (%)	19%
Maximum Green (s)	15.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	0.2
Recall Mode	None
Walk Time (s)	4.0
Flash Dont Walk (s)	11.0
Pedestrian Calls (#/hr)	0
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

Intersection Summary

Appendix E

Signal Clearance Timing Calculations

APPENDIX E

Estimation of Yellow Change, Red Clearance, and Pedestrian Intervals

Estimate for Through and Right-Turn Movements

Approach	Speed Limit (mph)	V (mph)	W (ft)	L (ft)	Yellow Interval (sec)	Red Clearance (sec)	Total Duration (sec)
Weston Road NB	30	37	99	20	4.0	1.5	5.5
Weston Road SB	30	37	89	20	4.0	1.5	5.5
Linden Street WB	30	37	64	20	4.0	1.0	5.0

Estimate for Left-Turn Movements

Approach	Speed Limit (mph)	V (mph)	W (ft)	L (ft)	Yellow Interval (sec)	Red Clearance (sec)	Total Duration (sec)
Weston Road SB	30	25	91	20	3.0	2.5	5.5
Linden Street WB	30	25	87	20	3.0	2.0	5

Estimate for All Movements

Approach	Speed Limit (mph)	V (mph)	W (ft)	L (ft)	Yellow Interval (sec)	Red Clearance (sec)	Total Duration (sec)
Weston Road NB	30	37	62	20	4.0	1.5	5.5
Weston Road SB	30	37	60	20	4.0	2.5	6.5
Linden Street WB	30	37	60	20	4.0	2.0	6.0

Estimate for Pedestrian Movements

Approach	Distance (ft)	Walk Interval (sec)	Pedestrian Clearance Time (sec)	Total Pedestrian Phase Time (sec)	Suggested Red Clearance (sec)
Weston Road (North Leg)	30	10.0	8.6	18.6	1.0 to 3.0
Linden Street (East Leg)	63	10.0	18.0	28.0	1.0 to 3.0

Notes:

Approach: EB= Eastbound. NB = Northbound. WB= Westbound.
L = Length of vehicle; set at 20 feet.
V = 85th percentile approach speed; miles per hour (mph).
W = Intersection width measured from the approaching movement stop line to the far side of the intersection (feet).

Based on the Institute of Transportation Engineers' Guidelines for Determining Traffic Signal Change and Clearance Intervals. This study applied the following assumptions: The through movement 85th percentile approach speeds and intersection clearance speeds were estimated by adding 7 mph to the posted speeds, the left-turn 85th percentile approach speeds were estimated by deducting 5 mph from the posted speeds, and the left-turn intersection clearance speeds were assumed to be 20 mph. The motorist perception-reaction time was assumed to be 1.0 second for through and right-turn movements and 0.6 second for left-turn movements. The conflicting movement start-up delay was assumed to be one second. The deceleration rate was assumed 10 feet/second/second. The approach grade was assumed to be zero for all approaches.

Appendix F

Proposed Short-Term Intersection Level of Service Conditions

1. AM Proposed Short-Term Conditions
2. PM Proposed Short-Term Conditions

Part One: AM Proposed Short-Term Conditions

Lane Group	WBL	WBR	SEL	SET	NWT	NWR	Ø9
Lane Configurations							
Traffic Volume (vph)	21	149	140	460	487	92	
Future Volume (vph)	21	149	140	460	487	92	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	10	10	11	11	11	11	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.850			0.978		
Flt Protected	0.950			0.988			
Satd. Flow (prot)	1652	1478	0	1766	1749	0	
Flt Permitted	0.950			0.579			
Satd. Flow (perm)	1652	1478	0	1035	1749	0	
Right Turn on Red		No				No	
Satd. Flow (RTOR)							
Link Speed (mph)	30			30	30		
Link Distance (ft)	201			378	414		
Travel Time (s)	4.6			8.6	9.4		
Peak Hour Factor	0.78	0.78	0.87	0.87	0.88	0.88	
Heavy Vehicles (%)	2%	2%	2%	3%	3%	1%	
Adj. Flow (vph)	27	191	161	529	553	105	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	27	191	0	690	658	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(ft)	10			0	0		
Link Offset(ft)	0			0	0		
Crosswalk Width(ft)	16			16	16		
Two way Left Turn Lane							
Headway Factor	1.09	1.09	1.04	1.04	1.04	1.04	
Turning Speed (mph)	15	9	15			9	
Turn Type	Prot	Perm	Perm	NA	NA		
Protected Phases	8			6	2		9
Permitted Phases		8	6				
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5		20.0
Total Split (s)	32.0	32.0	148.0	148.0	148.0		20.0
Total Split (%)	16.0%	16.0%	74.0%	74.0%	74.0%		10%
Maximum Green (s)	27.5	27.5	143.5	143.5	143.5		15.5
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		
Total Lost Time (s)	4.5	4.5		4.5	4.5		
Lead/Lag							
Lead-Lag Optimize?							
Walk Time (s)	7.0	7.0	7.0	7.0	7.0		
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0		
Pedestrian Calls (#/hr)	0	0	0	0	0		
Act Effct Green (s)	27.5	27.5		143.5	143.5		
Actuated g/C Ratio	0.14	0.14		0.72	0.72		
v/c Ratio	0.12	0.94		0.93	0.52		
Control Delay	77.3	132.1		44.8	14.6		

Lane Group	WBL	WBR	SEL	SET	NWT	NWR	Ø9
Queue Delay	0.0	0.0		0.0	24.2		
Total Delay	77.3	132.1		44.8	38.8		
LOS	E	F		D	D		
Approach Delay	125.3			44.8	38.8		
Approach LOS	F			D	D		

Intersection Summary			
Area Type:	Other		
Cycle Length: 200			
Actuated Cycle Length: 200			
Offset: 0 (0%), Referenced to phase 2:NWT and 6:SETL, Start of Green			
Natural Cycle: 150			
Control Type: Pretimed			
Maximum v/c Ratio: 0.94			
Intersection Signal Delay: 53.5		Intersection LOS: D	
Intersection Capacity Utilization 78.6%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 6: Weston Road & Linden Street

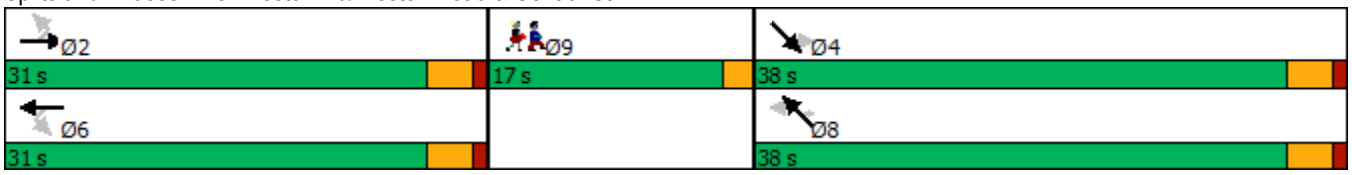
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	174	458	45	9	179	102	159	203	69	27	334	13
Future Volume (vph)	174	458	45	9	179	102	159	203	69	27	334	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.987			0.947			0.979				0.850
Flt Protected	0.950				0.998			0.982			0.996	
Satd. Flow (prot)	1736	1803	0	0	3159	0	0	1740	0	0	1855	1583
Flt Permitted	0.530				0.938			0.622			0.950	
Satd. Flow (perm)	968	1803	0	0	2969	0	0	1102	0	0	1770	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			121			13				38
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		550			143			414			627	
Travel Time (s)		12.5			3.3			9.4			14.3	
Peak Hour Factor	0.93	0.93	0.93	0.84	0.84	0.84	0.88	0.88	0.88	0.90	0.90	0.90
Heavy Vehicles (%)	4%	4%	4%	8%	8%	8%	5%	5%	5%	2%	2%	2%
Adj. Flow (vph)	187	492	48	11	213	121	181	231	78	30	371	14
Shared Lane Traffic (%)												
Lane Group Flow (vph)	187	540	0	0	345	0	0	490	0	0	401	14
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100		20	100	20
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		8
Detector Phase	2	2		6	6		4	4		8	8	8
Switch Phase												

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Minimum Initial (s)	7.0	7.0		7.0	7.0		6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	11.0	11.0		11.0	11.0		10.0	10.0		10.0	10.0	10.0
Total Split (s)	31.0	31.0		31.0	31.0		38.0	38.0		38.0	38.0	38.0
Total Split (%)	36.0%	36.0%		36.0%	36.0%		44.2%	44.2%		44.2%	44.2%	44.2%
Maximum Green (s)	27.0	27.0		27.0	27.0		34.0	34.0		34.0	34.0	34.0
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0			0.0			0.0			0.0	0.0
Total Lost Time (s)	4.0	4.0			4.0			4.0			4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.6	2.6		2.6	2.6		2.4	2.4		2.4	2.4	2.4
Recall Mode	Max	Max		Max	Max		None	None		None	None	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	27.0	27.0			27.0			34.0			34.0	34.0
Actuated g/C Ratio	0.39	0.39			0.39			0.49			0.49	0.49
v/c Ratio	0.49	0.76			0.28			0.89			0.46	0.02
Control Delay	21.4	26.8			9.8			37.9			13.7	1.2
Queue Delay	0.0	0.0			0.0			0.0			0.0	0.0
Total Delay	21.4	26.8			9.8			37.9			13.7	1.2
LOS	C	C			A			D			B	A
Approach Delay		25.4			9.8			37.9			13.2	
Approach LOS		C			A			D			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 86			
Actuated Cycle Length: 69			
Natural Cycle: 110			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.89			
Intersection Signal Delay: 23.2		Intersection LOS: C	
Intersection Capacity Utilization 91.4%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 3: Weston Rd/Weston Road & Central St



Lane Group	Ø9
Minimum Initial (s)	1.0
Minimum Split (s)	17.0
Total Split (s)	17.0
Total Split (%)	20%
Maximum Green (s)	15.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	0.2
Recall Mode	None
Walk Time (s)	4.0
Flash Dont Walk (s)	11.0
Pedestrian Calls (#/hr)	0
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

Intersection Summary

Part One: AM Proposed Short-Term Conditions

Lane Group	WBL	WBR	SEL	SET	NWT	NWR	Ø9
Lane Configurations							
Traffic Volume (vph)	91	234	100	487	343	109	
Future Volume (vph)	91	234	100	487	343	109	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	10	10	11	11	11	11	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.850			0.967		
Flt Protected	0.950			0.992			
Satd. Flow (prot)	1668	1492	0	1786	1724	0	
Flt Permitted	0.950			0.700			
Satd. Flow (perm)	1668	1492	0	1260	1724	0	
Right Turn on Red		No				No	
Satd. Flow (RTOR)							
Link Speed (mph)	30			30	30		
Link Distance (ft)	201			378	414		
Travel Time (s)	4.6			8.6	9.4		
Peak Hour Factor	0.85	0.85	0.91	0.91	0.90	0.90	
Heavy Vehicles (%)	1%	1%	2%	2%	3%	3%	
Adj. Flow (vph)	107	275	110	535	381	121	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	107	275	0	645	502	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(ft)	10			0	0		
Link Offset(ft)	0			0	0		
Crosswalk Width(ft)	16			16	16		
Two way Left Turn Lane							
Headway Factor	1.09	1.09	1.04	1.04	1.04	1.04	
Turning Speed (mph)	15	9	15			9	
Turn Type	Prot	Perm	Perm	NA	NA		
Protected Phases	8			6	2		9
Permitted Phases		8	6				
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5		20.0
Total Split (s)	31.0	31.0	79.0	79.0	79.0		20.0
Total Split (%)	23.8%	23.8%	60.8%	60.8%	60.8%		15%
Maximum Green (s)	26.5	26.5	74.5	74.5	74.5		15.5
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		
Total Lost Time (s)	4.5	4.5		4.5	4.5		
Lead/Lag							
Lead-Lag Optimize?							
Act Effct Green (s)	26.5	26.5		74.5	74.5		
Actuated g/C Ratio	0.20	0.20		0.57	0.57		
v/c Ratio	0.31	0.90		0.89	0.51		
Control Delay	47.1	83.0		41.3	19.0		
Queue Delay	0.0	0.0		0.0	6.6		
Total Delay	47.1	83.0		41.3	25.5		
LOS	D	F		D	C		

Lane Group	WBL	WBR	SEL	SET	NWT	NWR	Ø9
Approach Delay	72.9			41.3	25.5		
Approach LOS	E			D	C		

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 0 (0%), Referenced to phase 2:NWT and 6:SETL, Start of Green			
Natural Cycle: 100			
Control Type: Pretimed			
Maximum v/c Ratio: 0.90			
Intersection Signal Delay: 44.0		Intersection LOS: D	
Intersection Capacity Utilization 72.1%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 6: Weston Road & Linden Street

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	100	214	55	6	369	95	83	228	302	126	201	14
Future Volume (vph)	100	214	55	6	369	95	83	228	302	126	201	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.969			0.970			0.934				0.850
Flt Protected	0.950				0.999			0.993			0.981	
Satd. Flow (prot)	1770	1805	0	0	3396	0	0	1728	0	0	1845	1599
Flt Permitted	0.500				0.949			0.910			0.702	
Satd. Flow (perm)	931	1805	0	0	3226	0	0	1583	0	0	1321	1599
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		22			54			106				65
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		550			143			414			627	
Travel Time (s)		12.5			3.3			9.4			14.3	
Peak Hour Factor	0.90	0.90	0.90	0.95	0.95	0.95	0.91	0.91	0.91	0.93	0.93	0.93
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	2%	2%	2%	1%	1%	1%
Adj. Flow (vph)	111	238	61	6	388	100	91	251	332	135	216	15
Shared Lane Traffic (%)												
Lane Group Flow (vph)	111	299	0	0	494	0	0	674	0	0	351	15
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100		20	100	20
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		8
Detector Phase	2	2		6	6		4	4		8	8	8
Switch Phase												

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Minimum Initial (s)	7.0	7.0		7.0	7.0		6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	11.0	11.0		11.0	11.0		10.0	10.0		10.0	10.0	10.0
Total Split (s)	12.0	12.0		12.0	12.0		21.0	21.0		21.0	21.0	21.0
Total Split (%)	24.0%	24.0%		24.0%	24.0%		42.0%	42.0%		42.0%	42.0%	42.0%
Maximum Green (s)	8.0	8.0		8.0	8.0		17.0	17.0		17.0	17.0	17.0
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0			0.0			0.0			0.0	0.0
Total Lost Time (s)	4.0	4.0			4.0			4.0			4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.6	2.6		2.6	2.6		2.4	2.4		2.4	2.4	2.4
Recall Mode	Max	Max		None	None		None	None		None	None	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	8.0	8.0			8.0			17.0			17.0	17.0
Actuated g/C Ratio	0.24	0.24			0.24			0.52			0.52	0.52
v/c Ratio	0.49	0.66			0.60			0.78			0.52	0.02
Control Delay	20.3	19.8			13.3			14.5			8.6	0.1
Queue Delay	0.0	0.0			0.0			0.0			0.0	0.0
Total Delay	20.3	19.8			13.3			14.5			8.6	0.1
LOS	C	B			B			B			A	A
Approach Delay		20.0			13.3			14.5			8.2	
Approach LOS		B			B			B			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 50			
Actuated Cycle Length: 33			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay: 14.2		Intersection LOS: B	
Intersection Capacity Utilization 94.0%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 3: Weston Rd/Weston Road & Central St

Lane Group	Ø9
Minimum Initial (s)	1.0
Minimum Split (s)	17.0
Total Split (s)	17.0
Total Split (%)	34%
Maximum Green (s)	15.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	0.2
Recall Mode	None
Walk Time (s)	4.0
Flash Dont Walk (s)	11.0
Pedestrian Calls (#/hr)	0
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

Intersection Summary

Appendix G

Proposed Long-Term Intersection Level of Service Conditions

1. AM Proposed Long-Term Conditions
2. PM Proposed Long-Term Conditions

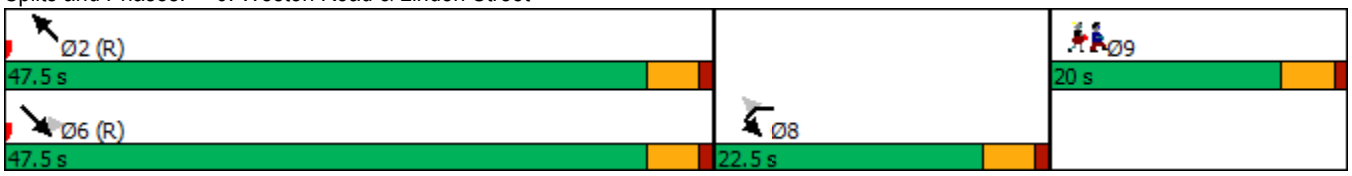
Part One: AM Proposed Long-Term Conditions

Lane Group	WBL	WBR	SEL	SET	NWT	NWR	Ø9
Lane Configurations							
Traffic Volume (vph)	21	149	140	460	487	92	
Future Volume (vph)	21	149	140	460	487	92	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	10	10	11	11	11	11	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.850			0.978		
Flt Protected	0.950			0.988			
Satd. Flow (prot)	1652	1478	0	1766	1749	0	
Flt Permitted	0.950			0.671			
Satd. Flow (perm)	1652	1478	0	1199	1749	0	
Right Turn on Red		No				No	
Satd. Flow (RTOR)							
Link Speed (mph)	30			30	30		
Link Distance (ft)	201			378	414		
Travel Time (s)	4.6			8.6	9.4		
Peak Hour Factor	0.78	0.78	0.87	0.87	0.88	0.88	
Heavy Vehicles (%)	2%	2%	2%	3%	3%	1%	
Adj. Flow (vph)	27	191	161	529	553	105	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	27	191	0	690	658	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(ft)	10			0	0		
Link Offset(ft)	0			0	0		
Crosswalk Width(ft)	16			16	16		
Two way Left Turn Lane							
Headway Factor	1.09	1.09	1.04	1.04	1.04	1.04	
Turning Speed (mph)	15	9	15			9	
Number of Detectors	1	1	1	2	2		
Detector Template	Left	Right	Left	Thru	Thru		
Leading Detector (ft)	20	20	20	100	100		
Trailing Detector (ft)	0	0	0	0	0		
Detector 1 Position(ft)	0	0	0	0	0		
Detector 1 Size(ft)	20	20	20	6	6		
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		
Detector 2 Position(ft)				94	94		
Detector 2 Size(ft)				6	6		
Detector 2 Type				Cl+Ex	Cl+Ex		
Detector 2 Channel							
Detector 2 Extend (s)				0.0	0.0		
Turn Type	Prot	Perm	Perm	NA	NA		
Protected Phases	8			6	2		9
Permitted Phases		8	6				
Detector Phase	8	8	6	6	2		

Lane Group	WBL	WBR	SEL	SET	NWT	NWR	Ø9
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		10.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5		20.0
Total Split (s)	22.5	22.5	47.5	47.5	47.5		20.0
Total Split (%)	25.0%	25.0%	52.8%	52.8%	52.8%		22%
Maximum Green (s)	18.0	18.0	43.0	43.0	43.0		15.5
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		
Total Lost Time (s)	4.5	4.5		4.5	4.5		
Lead/Lag							
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0
Recall Mode	None	None	C-Max	C-Max	C-Max		None
Walk Time (s)	7.0	7.0	7.0	7.0	7.0		
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0		
Pedestrian Calls (#/hr)	0	0	0	0	0		
Act Effct Green (s)	15.5	15.5		65.5	65.5		
Actuated g/C Ratio	0.17	0.17		0.73	0.73		
v/c Ratio	0.10	0.75		0.79	0.52		
Control Delay	30.7	54.0		17.5	7.5		
Queue Delay	0.0	0.0		0.0	1.6		
Total Delay	30.7	54.0		17.5	9.2		
LOS	C	D		B	A		
Approach Delay	51.1			17.5	9.2		
Approach LOS	D			B	A		

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 2:NWT and 6:SETL, Start of Green			
Natural Cycle: 130			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay: 18.7		Intersection LOS: B	
Intersection Capacity Utilization 78.6%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 6: Weston Road & Linden Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	174	458	45	9	179	102	159	203	69	27	334	13
Future Volume (vph)	174	458	45	9	179	102	159	203	69	27	334	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.987			0.947			0.979				0.850
Flt Protected	0.950				0.998			0.982			0.996	
Satd. Flow (prot)	1736	1803	0	0	3159	0	0	1740	0	0	1855	1583
Flt Permitted	0.545				0.902			0.693			0.952	
Satd. Flow (perm)	996	1803	0	0	2855	0	0	1228	0	0	1773	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8			121			17				55
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		550			143			414			627	
Travel Time (s)		12.5			3.3			9.4			14.3	
Peak Hour Factor	0.93	0.93	0.93	0.84	0.84	0.84	0.88	0.88	0.88	0.90	0.90	0.90
Heavy Vehicles (%)	4%	4%	4%	8%	8%	8%	5%	5%	5%	2%	2%	2%
Adj. Flow (vph)	187	492	48	11	213	121	181	231	78	30	371	14
Shared Lane Traffic (%)												
Lane Group Flow (vph)	187	540	0	0	345	0	0	490	0	0	401	14
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100		20	100	20
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		8
Detector Phase	2	2		6	6		4	4		8	8	8
Switch Phase												

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Minimum Initial (s)	7.0	7.0		7.0	7.0		6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	11.0	11.0		11.0	11.0		10.0	10.0		10.0	10.0	10.0
Total Split (s)	18.0	18.0		18.0	18.0		25.0	25.0		25.0	25.0	25.0
Total Split (%)	30.0%	30.0%		30.0%	30.0%		41.7%	41.7%		41.7%	41.7%	41.7%
Maximum Green (s)	14.0	14.0		14.0	14.0		21.0	21.0		21.0	21.0	21.0
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0			0.0			0.0			0.0	0.0
Total Lost Time (s)	4.0	4.0			4.0			4.0			4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.6	2.6		2.6	2.6		2.4	2.4		2.4	2.4	2.4
Recall Mode	Max	Max		Max	Max		None	None		None	None	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	14.0	14.0			14.0			21.0			21.0	21.0
Actuated g/C Ratio	0.33	0.33			0.33			0.49			0.49	0.49
v/c Ratio	0.58	0.91			0.34			0.81			0.46	0.02
Control Delay	21.5	39.0			8.1			23.2			9.5	0.2
Queue Delay	0.0	0.0			0.0			0.0			0.0	0.0
Total Delay	21.5	39.0			8.1			23.2			9.5	0.2
LOS	C	D			A			C			A	A
Approach Delay		34.5			8.1			23.2			9.2	
Approach LOS		C			A			C			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 43			
Natural Cycle: 110			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.91			
Intersection Signal Delay: 21.8		Intersection LOS: C	
Intersection Capacity Utilization 91.4%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 3: Weston Road & Central Street

Lane Group	Ø9
Minimum Initial (s)	1.0
Minimum Split (s)	17.0
Total Split (s)	17.0
Total Split (%)	28%
Maximum Green (s)	15.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	0.2
Recall Mode	None
Walk Time (s)	4.0
Flash Dont Walk (s)	11.0
Pedestrian Calls (#/hr)	0
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

Intersection Summary

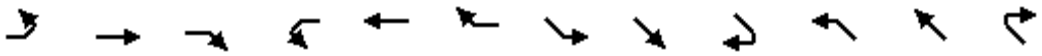
Part One: PM Proposed Long-Term Conditions

Lane Group	WBL	WBR	SEL	SET	NWT	NWR
Lane Configurations						
Traffic Volume (vph)	91	234	100	487	343	109
Future Volume (vph)	91	234	100	487	343	109
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	11	11	11	11
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.967	
Flt Protected	0.950			0.992		
Satd. Flow (prot)	1668	1492	0	1786	1724	0
Flt Permitted	0.950			0.847		
Satd. Flow (perm)	1668	1492	0	1525	1724	0
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	30			30	30	
Link Distance (ft)	201			378	414	
Travel Time (s)	4.6			8.6	9.4	
Peak Hour Factor	0.85	0.85	0.91	0.91	0.90	0.90
Heavy Vehicles (%)	1%	1%	2%	2%	3%	3%
Adj. Flow (vph)	107	275	110	535	381	121
Shared Lane Traffic (%)						
Lane Group Flow (vph)	107	275	0	645	502	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	10			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.09	1.09	1.04	1.04	1.04	1.04
Turning Speed (mph)	15	9	15			9
Number of Detectors	1	1	1	2	2	
Detector Template	Left	Right	Left	Thru	Thru	
Leading Detector (ft)	20	20	20	100	100	
Trailing Detector (ft)	0	0	0	0	0	
Detector 1 Position(ft)	0	0	0	0	0	
Detector 1 Size(ft)	20	20	20	6	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)				94	94	
Detector 2 Size(ft)				6	6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm	Perm	NA	NA	
Protected Phases	8			6	2	
Permitted Phases		8	6			
Detector Phase	8	8	6	6	2	

Lane Group	WBL	WBR	SEL	SET	NWT	NWR
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	
Total Split (s)	22.5	22.5	32.5	32.5	32.5	
Total Split (%)	40.9%	40.9%	59.1%	59.1%	59.1%	
Maximum Green (s)	18.0	18.0	28.0	28.0	28.0	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	C-Max	C-Max	C-Max	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0	
Act Effct Green (s)	14.5	14.5		31.5	31.5	
Actuated g/C Ratio	0.26	0.26		0.57	0.57	
v/c Ratio	0.24	0.70		0.74	0.51	
Control Delay	16.0	27.8		17.6	8.4	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	16.0	27.8		17.6	8.4	
LOS	B	C		B	A	
Approach Delay	24.5			17.6	8.4	
Approach LOS	C			B	A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 55			
Actuated Cycle Length: 55			
Offset: 0 (0%), Referenced to phase 2:NWT and 6:SETL, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 16.3		Intersection LOS: B	
Intersection Capacity Utilization 72.1%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 6: Weston Road & Linden Street



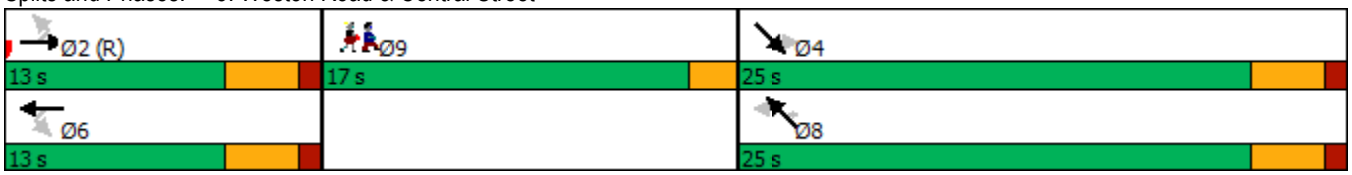
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	100	214	55	6	369	95	83	228	302	126	201	14
Future Volume (vph)	100	214	55	6	369	95	83	228	302	126	201	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.969			0.970			0.934				0.850
Flt Protected	0.950				0.999			0.993			0.981	
Satd. Flow (prot)	1770	1805	0	0	3396	0	0	1728	0	0	1845	1599
Flt Permitted	0.385				0.951			0.909			0.676	
Satd. Flow (perm)	717	1805	0	0	3233	0	0	1581	0	0	1272	1599
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		20			49			103				60
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		550			143			414			627	
Travel Time (s)		12.5			3.3			9.4			14.3	
Peak Hour Factor	0.90	0.90	0.90	0.95	0.95	0.95	0.91	0.91	0.91	0.93	0.93	0.93
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	2%	2%	2%	1%	1%	1%
Adj. Flow (vph)	111	238	61	6	388	100	91	251	332	135	216	15
Shared Lane Traffic (%)												
Lane Group Flow (vph)	111	299	0	0	494	0	0	674	0	0	351	15
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100		20	100	20
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		8
Detector Phase	2	2		6	6		4	4		8	8	8
Switch Phase												

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Minimum Initial (s)	7.0	7.0		7.0	7.0		6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	11.0	11.0		11.0	11.0		10.0	10.0		10.0	10.0	10.0
Total Split (s)	13.0	13.0		13.0	13.0		25.0	25.0		25.0	25.0	25.0
Total Split (%)	23.6%	23.6%		23.6%	23.6%		45.5%	45.5%		45.5%	45.5%	45.5%
Maximum Green (s)	9.0	9.0		9.0	9.0		21.0	21.0		21.0	21.0	21.0
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0			0.0			0.0			0.0	0.0
Total Lost Time (s)	4.0	4.0			4.0			4.0			4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.6	2.6		2.6	2.6		2.4	2.4		2.4	2.4	2.4
Recall Mode	C-Max	C-Max		None	None		None	None		None	None	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	15.0	15.0			15.0			32.0			32.0	32.0
Actuated g/C Ratio	0.27	0.27			0.27			0.58			0.58	0.58
v/c Ratio	0.57	0.59			0.54			0.70			0.48	0.02
Control Delay	36.5	25.5			20.0			8.1			8.9	0.0
Queue Delay	0.0	0.0			0.0			0.0			0.0	0.0
Total Delay	36.5	25.5			20.0			8.1			8.9	0.0
LOS	D	C			B			A			A	A
Approach Delay		28.5			20.0			8.1			8.5	
Approach LOS		C			B			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 55			
Actuated Cycle Length: 55			
Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.70			
Intersection Signal Delay: 15.5		Intersection LOS: B	
Intersection Capacity Utilization 94.0%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 3: Weston Road & Central Street



Lane Group	Ø9
Minimum Initial (s)	1.0
Minimum Split (s)	17.0
Total Split (s)	17.0
Total Split (%)	31%
Maximum Green (s)	15.0
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	0.2
Recall Mode	None
Walk Time (s)	4.0
Flash Dont Walk (s)	11.0
Pedestrian Calls (#/hr)	0
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

Intersection Summary

Appendix H

Road Safety Audit

ROAD SAFETY AUDIT

Weston Road from Linden Street to Central Street (Route 135) and Central Street (Route 135) from Weston Road to Cross Street

Town of Wellesley

August 8, 2023

Prepared For:
MassDOT

On Behalf Of:
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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 goal of an RSA is to identify safety issues and provide potential enhancements to improve safety for all roadway users. The potential enhancements are categorized by timeframe and cost, which helps responsible agencies to determine the responsibilities and when to make proposed enhancements.

Toole Design has conducted an RSA for Weston Road from Linden Street to Central Street (Route 135) and Central Street (Route 135) from Weston Road to Cross Street in Wellesley, Massachusetts. An RSA is a formal safety review of an existing or planned road or intersection. The Highway Safety Improvement Program (HSIP) pedestrian crash cluster for the years 2011-2020 encompasses the RSA study area including Weston Road from Linden Street to Central Street (Route 135), and Central Street (Route 135) from Weston Road to Cross Street. This indicates that the study area is within the top 5% of pedestrian crash locations in the Metropolitan Area Planning Council (MAPC) area. Historically, this study area was also part of the HSIP pedestrian cluster for years 2009-2018 and 2010-2019. In terms of intersections, Weston Road at Central Street falls within the HSIP top 5% intersection crash clusters for years 2018-2020. Additionally, the Weston Road at Linden Street intersection was found to have a motor vehicle crash rate (0.7 per million vehicles entering) that is above the MassDOT District 6 average crash rate for an unsignalized intersection (0.57 per million vehicles entering). According to the MassDOT Network Screening Crash Based Tool, based on historical data from 2013-2017, the segments Central Street (within the study area) have been identified as being within the Top 10% of segments with excess expected fatal & injury crash frequencies within the boundaries of the MAPC.

The RSA was conducted as part of mitigation commitments for the proposed residential development known as the Wellesley Square Residences, located at Delanson Circle. The proposed project is located approximately one quarter mile east of the intersection of Weston Road at Linden Street.

Project Data

Toole Design conducted the RSA on Tuesday, June 27, 2023. The audit was held at Wellesley Department of Public Works at 20 Municipal Way. Members of the audit team first met at the Wellesley Department of Public Works to discuss existing safety concerns and issues. The team then conducted a field visit to Weston Road from Linden Street to Central Street (Route 135) and Central Street (Route 135) from Weston Road to Cross Street, and identified additional safety concerns. The team then discussed countermeasures during the audit on the infrastructure and operating conditions of the subject intersections. The members of the audit team comprised of representatives from local and state agencies ranging from emergency responders to transportation planners and engineers. The audit team members and their affiliations are provided in **Table 1** and their contact information is provided in **Appendix B, RSA Audit Team Contact List**.

Table 1: Participating Audit Team Members

Audit Team Member	Agency/Affiliation
Dave Hickey	Wellesley – Department of Public Works
Nat Brady	Wellesley – Fire Department
Scott Showstead	Wellesley – Police Department
Julie Dombroski	Boston MPO - CTPS
Dakota DelSignore	MassDOT – Traffic and Safety Section
Jim Terlizzi	MassDOT – Traffic and Safety Section
Jonathan Stratter	MassDOT – District 6 Traffic
Julia Ubertini	MassDOT – District 6
Anna Fabian	MassDOT – District 6
Justin Paling	MBTA
Brendan Kearney	Walk Massachusetts
Daniel LaCivita	VAI
Peter Swenson	VAI
Taylor Dennerlein	Toole Design
Chris Bach	Toole Design

Audit team members received a meeting packet prior to the RSA including a meeting agenda **(Appendix A, RSA Meeting Agenda)**, study area details, crash data analysis, collision diagrams of the study area intersections, and an RSA prompt list. A collision diagram is a graphical representation of the crash data showing both the crash type and approximate crash location within a study area, as well as injury severity type and whether the crash occurred in daylight or nighttime conditions. The audit members were asked to review the packet and visit the RSA study area prior to the meeting. Safety issues were identified by the team at the beginning of the RSA, followed by a field visit to the study intersections. The audit team finished the meeting by determining appropriate short-, medium- and long-term countermeasures for the safety issues discussed.

Crash Data

Per crash records provided by the Wellesley Police Department (WPD) and supplemented with crashes provided by MassDOT, 95 crashes were recorded within the study area between 2017 to 2022. Of the reported 95 crashes between 2017 to 2022, 18% (17) resulted in injury. Of all the injury crashes, 65% (11) involved a pedestrian or bicyclist. The majority of crashes within the study area were rear-end, angle, or single vehicle crashes, representing 37% (35), 34% (32), and 18% (17) of the total collisions in the study area, respectively. 18 crashes (19%) occurred at the intersection of Weston Road at Linden Street, 36 crashes (38%) occurred at or near the intersection of Weston Road at Central Street (Route 135), and 41 crashes (43%) occurred on Central Street east of Weston Road and along the stretch of roadway from east of Central Street to Cross Street.

Crashes occurred fairly evenly throughout the day, with crashes most frequently in the daytime hours (6 AM – 6 PM, 81% of all crashes, 77 crashes). Of all crashes, most happened under clear weather conditions (72, 76%) and on a dry road surface (72, 77%), however 23% (22) occurred under dark roadway conditions. More than half (54%) of all crashes occurred in the months of November (14, 15%), December (15, 16%), January (10, 11%), and March (11, 12%).

Per crash records provided by the Wellesley Police Department (WPD) and supplemented with crashes provided by MassDOT, 16 crashes involving a vulnerable road users (person walking, biking, riding a scooter, etc.) were recorded within the study area between 2012 to 2022. Of the reported 16 crashes between 2012 to 2022, 75% (12) resulted in injury, with 1 resulting in a fatality. Within the time period studied, 2 crashes (13%) occurred at the intersection of Weston Road at Linden Street, 4 crashes (25%) occurred at or near the intersection of Weston Road at Central Street (Route 135), and 10 crashes (63%) occurred on Central Street east of Weston Road and along the stretch of roadway from east of Central Street to Cross Street.

Crashes involving vulnerable roadway users occurred mostly during the midday hours (12 PM – 2 PM, 38% of all crashes, 6 crashes). Of all crashes, most happened under clear weather conditions (15, 94%), on a dry road surface (14, 88%), under daylight conditions (14, 88%). Crashes were more prevalent in March (3, 19%) and August (3, 19%). Crashes were fairly even throughout the week, with majority occurring on Friday (4, 25%) and Wednesday (3, 19%).

Project Location and Description

Roadways

The study area includes Weston Road from Linden Street to Central Street (Route 135) and Central Street (Route 135) from Weston Road to Cross Street.

Weston Road

Within the study area, Weston Road is a two-way road with one vehicle lane in each direction, and a sidewalk on the eastern side of the street. There is no on-street parking on the roadway between Linden Street and Central Street. Some parking is provided on the east side of Weston Road south of Central Street. Additionally, Weston Road south of Central Street has a posted truck restriction of trucks over 2.5 tons. Weston Road is classified as an urban minor arterial under the Town of Wellesley jurisdiction, except at the bridge over the MBTA tracks, where it is MassDOT jurisdiction. Land use in the study is primarily residential on Weston Road.

Linden Street

Linden Street is a local roadway under the Town of Wellesley's jurisdiction. Generally, the roadway has one lane in each direction which opens up to two westbound lanes on approach to Weston Road: one westbound right turning lane and one westbound left turning lane. There is a sidewalk on both sides of the roadway and no on-street parking on both sides. There are no bicycle facilities provided.

Central Street

Within the study area, Central Street is an urban principal arterial under the jurisdiction of the Town of Wellesley. East of Weston Road, Central Street has one lane in each direction and parallel parking on both sides except on the approach to the intersection where two approach lanes are provided. There are sidewalks on both sides of the road at this segment of Central Street. West of Weston Road, Central Street is under MassDOT jurisdiction and has one lane in each direction, with an exclusive left turn lane provided in the eastbound direction, and an additional westbound through lane that merges into one lane approx. 200 feet west of the intersection. A sidewalk is provided on the south side of the street. Land use in the study area is primarily commercial fronting Central Street.

Cross Street

Cross Street is a local roadway under Town of Wellesley's jurisdiction, with one lane in each direction, parallel parking on both sides, and a sidewalk on both sides. Within the study area (between Central Street and Church Street) parking is restricted and there are two unmarked lanes on Cross Street northbound approaching Central Street. There are no bicycle facilities provided.

The average weekday traffic for Linden Street, east of Delanson Circle/MBTA commuter lot driveway in 2020 was 11,745 vehicles per day as counted by Vanasse & Associates, Inc. for the Transportation Impact Assessment (TIA) for the Terrazza residential development. Volume data was not available for Weston Road or Central Street. Within the vicinity of the study area, there are no posted speed limits, therefore the speed limit on Weston Road and Central Street is 30 mph based on MGL Chapter 90 Section 17. The exception to this is Central Street eastbound, which is posted at 30 mph just before the intersection with Weston Road. This is because the speed limit on Central Street leading into downtown from the west is 45 mph (per special speed regulation #539), so the speed limit is posted to alert drivers of the change. The study area is shown in **Figure 1** and described on the following pages.

Figure 1: Study Area

Intersections

Weston Road at Linden Street is a three-legged intersection located on the north end of the study area. Weston Road runs in the north-south direction while Linden Street intersects from the east. The Weston Road approaches are controlled by flashing yellow beacons. Linden Street is controlled by flashing red

beacons. The signal is solid red when a pedestrian pushes the button to indicate they are crossing either Linden Street or Weston Road. Travel lane assignments are marked on the Linden Street approach via pavement markings. The left turn only and right turn only lanes on the Linden Street approach are approximately 120 feet in length. The north and southbound approaches on Weston Road consist of one through lane in each direction with no turning lanes.

There are signal heads hung from a mast arm located on the western side of Weston Road. The Linden Street approach and the northbound Weston Road approach have secondary pole mounted signal heads located on either side of the southbound approach of Weston Road. In 2010, this signal equipment was installed to supplement the STOP sign control on the Linden Street approach and inform drivers on Weston Road (via flashing yellow indications) to slow and use caution when entering the intersection, as well as a means to stop all vehicle traffic to allow pedestrians to cross Linden Street or Weston Road without conflicts. The signal equipment acts as flashing beacons when in resting operation, with 8-inch yellow beacons at the bottom of 3-face signal heads facing Weston Road and 8-inch red beacons facing Linden Street to supplement the STOP sign. When pedestrians actuate the exclusive pedestrian phase at the push buttons on the supports for the pedestrian signal heads, there are 12-inch signal faces for yellow and red that illuminate within the vehicle signal heads facing all approaches. The walk indications then come up on the pedestrian signal heads. There is no crosswalk across the northbound approach of Weston Road, as there is no sidewalk on the western side of Weston Road south of the intersection. There are sidewalks provided on both sides of Linden Street, both sides of Weston Road to the north of the intersection, and on the east side of Weston Road to the south of the intersection. There are curb ramps with tactile warning panels at both sides of each crosswalk. There are no bike facilities provided at this intersection. There is no bus service at this intersection, but the Wellesley Square Commuter Rail stop is a few hundred feet down Linden Street to the east of the intersection. The proposed Terrazza development is located on the northern side of Linden Street across from the Wellesley Square parking lot.

For the Linden Street approach, there is a ‘NO TURN ON RED’ sign with a supplemental plaque stating conditionally ‘EXCEPT WHEN FLASHING’ mounted on the secondary pole on the west side of Weston Road. The northbound approach of Weston Road also has a ‘NO TURN ON RED’ sign mounted on the secondary pole at the northeast corner of the intersection. There are ‘BLIND DRIVEWAY’ warning signs posted along the southbound approach of Weston Road in advance of a residential driveway that is approximately 65 feet offset from Linden Street.

Figure 2: Weston Road at Linden Street

Weston Road at Central Street (Route 135) is a four-legged signalized intersection located on the west end of the study area. Central Street runs in the east-west direction with Weston Road running in the northwest-southeast direction. All approaches are controlled by a four-phase, fully actuated traffic signal. Central Street is also known as Massachusetts Route 135 and can be classified as an urban principal arterial under the Town of Wellesley jurisdiction within the study area. Travel lane assignments are marked on the eastbound approach of Central Street via pavement markings. The left turn only lane on this approach is approximately 400 ft in length. Central Street opens to two lanes on the westbound approach approximately 85 feet before the intersection. There are no pavement markings or signage for travel lane assignments. The north and southbound approaches of Weston Road are both single travel lanes. The northbound approach has a slip lane for right turns onto Central Street that is controlled by a stop sign.

The intersection is signalized with signal heads hung from two mast arms, one at the southwest corner of the intersection and one at the northwest corner. For the north and southbound approaches of Weston Road, there are secondary pole mounted signal heads located at the northeast and southeast corners of the intersection. Pedestrian signal heads are provided across the northbound approach of Weston Road and for a diagonal crosswalk running from the southwest to northeast corner of the intersection. There are sidewalks on both sides of Central Street as well as the northbound approach of Weston Road. The southbound approach of Weston Road is a bridge spanning MBTA Commuter Rail tracks with a sidewalk on the eastern

side. Apex style curb ramps are provided at each crosswalk. The curb ramps do not have tactile warning panels. There are no bicycle facilities provided at this intersection or on any of the approaches. The MBTA Commuter Rail tracks run parallel to Central Street at this intersection, with access to the station along Linden Street approximately 0.25 miles northeast of the intersection. There are no bus routes running through this intersection. To provide adequate clearance of Weston Road over the MBTA railroad tracks and to meet the elevations of Central Street and Linden Street, the Weston Road bridge span arches over the MBTA tracks with a vertical curve crest that limits sight distance on either side of the bridge.

On both Central Street approaches there are 'NO TURN ON RED' signs for cars turning right onto Weston Road. There are 'LEFT TURN YIELD ON GREEN' signs for the eastbound Central Street left turn and the southbound Weston Road left turn. There is also a 'NO BIKES ON SIDEWALK: WALK YOUR BIKE' sign posted on Central Street eastbound leading into the downtown area.

Figure 3: Weston Road at Central Street (Route 135)

Audit Observations and Potential Safety Enhancements

Following an introduction to the RSA process and a summary of existing geometry, signal operations and crash history data, the audit participants were asked to discuss safety concerns at the study area intersections. Audit team members then drove to the study area as a team, at which time observations were offered in the field. Several of the safety issues identified by the audit team were:

- Intersection geometry and operations
- Pavement markings and signage
- Pedestrian and bicyclist accommodations
- Traffic signal operations and equipment

Figure 4: Audit team members during the field visit

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), MassDOT and the Town of Wellesley 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.

Weston Road at Linden Street

Intersection Geometry and Operations

Observations

Linden Street intersects with Weston Road at a skewed angle. Weston Road is hilly and is downhill on both approaches to Linden Street. The horizontal and vertical deflections at the intersection obscure sightlines, especially for vehicles stopped at Linden Street and for vehicles coming down the hill on the Weston Road northbound approach. Audit members expressed that the sight distance at this intersection is a potential safety concern.

Audit members noted that drivers frequently do not come to a complete stop on Linden Street before turning onto Weston Road. Crashes between vehicles heading northbound coming down the hill and vehicles turning from Linden Street might be from drivers not coming to a complete stop at the stop sign and/or failing to yield right of way due to lack of visibility at the intersection due to the horizontal and vertical deflections or impatience (crashes 3, 10, 43, 47, 72, 75, 83, and 90). Notably, crash 83 occurred due to failure to judge gap of oncoming vehicles. Members also observed that vehicles turning right from Linden

Street onto Weston Road sometimes cannot see vehicles going northbound on Weston Road due to another vehicle in the left turn lane creeping into the intersection (Figure 5). This phenomenon may have contributed to crash 43.

Figure 5: Drivers from Linden Street creeping into the intersection to view oncoming traffic

Audit members discussed that the southbound left turns from Weston Road to Linden Street are heavy but there is no dedicated turn lane for this movement. Conflicts between vehicles waiting to turn left and vehicles looking to go through the intersection may be the cause for the four rear-end crashes observed in this intersection (crashes, 2, 9, 20, and 84). It was also noted that it was difficult to see oncoming traffic when attempting to turn left due to the vertical curve of the bridge.

Potential safety enhancements

- Consider additional advanced warning signage to alert drivers on Weston Road of Linden Street intersection approach.

- Evaluate if traffic volumes support adding a southbound left turn lane southbound on Weston Road.

- Evaluate countermeasures to lower vehicle speeds on Weston Road, especially during off peak hours, such as speed feedback signs and traffic calming.

- Evaluate the turning movements of design and control vehicles through the intersection in order to narrow curb radii and make the intersection less skewed for visibility for vehicles on Linden Street.

Pedestrian and Bicycle Accommodations and Accessibility

Observations

Audit members observed several people biking on the sidewalk on Weston Road during the field visit due to the lack of bicycle facilities in the area. Members also noted lack of signage alerting drivers to the potential of pedestrians crossing, especially given that the Crosstown Trail and Guernsey Path meet at this intersection, with signage directing people walking and biking to the local trail system nearby. The signal generally functions as a pedestrian signal. Lack of awareness for the signal and potential non-motorist users may have contributed to a pedestrian crash at this intersection (crash 57) as well as the fatal bicyclist crash (crash 1 on VRU diagram). Members also noted that the crossing time for pedestrians at this intersection may not be adequate since the crossings are long. In fact, during the field visit, a vehicle was observed continuing its right turn from Linden Street through the solid red indication as audit members were attempting to cross the north leg of the intersection.

Figure 6: Bicyclist riding on the sidewalk

Figure 7: Current trail wayfinding signage

Audit members also noted the termination of the short segment of sidewalk on the west side of Weston Road. This forces trail users to cross Weston Road and Linden Street to continue onto the Guernsey Path and to Wellesley College. During the field visit, a pedestrian was observed crossing this area uncontrolled.

Potential safety enhancements

- Evaluate the feasibility of providing bike facilities through the area through right of way (ROW) changes.

- Consider upgrading pedestrian signals to include audible warnings and improved pedestrian actuation buttons.

- Consider upgrading the wayfinding signage for the Crosstown Trail and Guernsey Path to be better visible for not only people using the trail system, but also drivers to be aware of their presence and to drive appropriately.
- Evaluate the structural feasibility of adding a sidewalk on the west side of the Weston Road bridge to create better pedestrian connectivity.

Traffic Signal Operations

Observations

The current traffic signal at this intersection operates only, unless stopped by an actuation and activation of the exclusive pedestrian phase. The signal also operates with a flashing red indication facing Linden Street to supplement the STOP sign. Audit members noted that there are plans to upgrade it to a full traffic signal with coordination of its signal controller with the one at the Weston Road at Central Street intersection. Audit members also noted the lack of adequate gaps for turning vehicles at this intersection, leading to risky behaviors of drivers turning left onto Linden Street from Weston Road. Additionally, vehicles were observed to be queued up on Weston Road southbound approaching Central Street, leaving no room for vehicles on Linden Street looking to turn left onto Weston Road. This can lead to driver frustration and courtesy crashes, such as crash 3. A fully signalized intersection would separate conflicting movements and eliminate the sight distance issues mentioned in a previous section, potentially alleviating the factors that contributed to crashes 10, 43, 47, 57, 66, 72, 75, 83, and 90. It may also reduce the likelihood of events leading to crash 3, in which a Weston Road vehicle stopped to allow a vehicle at Linden Street to turn even though the Weston Road vehicle had the right of way.

While out in the field, audit members observed that drivers at Linden Street were not complying to the "No Turn on Red" signs.

Figure 8: Vehicles queueing into the intersection from Central Street intersection

Potential safety enhancements

- Evaluate traffic signal warrants to support installing a full traffic signal at the intersection with signal coordination with Weston Road at Central Street.
- Assuming a full traffic signal is warranted, evaluate if traffic volumes support adding a southbound left turn lane with a protected signal phase.
- Consider the use of LED illuminated NO TURN ON RED so that drivers comply with the "No Turn on Red" sign.
- Consider providing retroreflective back plates to the existing traffic signal heads.

Weston Road at Central Street (Route 135)

Intersection Geometry and Operations

Observations

During the audit, many team members observed that the intersection roadway alignment of Weston Road at Central Street is skewed, which creates a wide intersection and large corner radii on the northern and southern corners. Audit members also noted that large trucks have difficulty turning right from Weston Rd onto Central Street westbound, and that they sometimes cross into the opposing lane. It was also observed that there was motorist confusion regarding lane assignments, right of way, and positioning. Speeding was another concern that audit members highlighted along Central Street, particularly in the eastbound direction approaching the study area due to the roadway context and the speed limit decreasing from 45 mph to 30 just west of this intersection, and on Weston Road southbound due downhill nature of the bridge deck. The confusion related to the intersection geometry and speeding may have contributed to the rear-end crashes (2, 22, 28, 37, 41, 44, 49, 51, 58, 88, 87).

Audit members noted that sight lines for motorists approaching Central Street westbound is limited by change in grade at Weston Road bridge segment. Sight lines for motorists on the northbound approach of Weston Road are obstructed due to the eastbound Central Street angle as it meets the intersection. Central Street eastbound approach sightline is also noted to be obstructed due to the change in grade and angle of

Figure 9: Skewed intersection and downhill grade at the study intersection

Weston Road and the vegetation on the northwest corner of the intersection. Poor visibility is a likely cause for the many angle crashes at this intersection (16, 18, 52, 63, 74, 79, 95), including the two crashes involving cyclists (60, 62).
The Central Street westbound approach widens out to two lanes approximately 90 feet before the intersection, only to merge back to one lane right after the intersection. This may cause confusion as to lane assignments and dedicated turn lanes. There is an advanced lane assignment sign, however given the short length of the second lane, drivers may not have enough time to see it and react. This may have contributed to crash 46, which occurred when a vehicle merging back down to one lane after the intersection.

Audit members also noted that the parallel parking spaces on the south leg of Weston Road are too close to the right turn slip lane, which could be a possible obstruction to drivers wishing to turn right onto Central Street.

Potential safety enhancements

- Evaluate if traffic volumes support adding a southbound left turn lane on Weston Road.
- Evaluate the feasibility of changing the geometry of the intersection (T-ing up the Weston Road approaches) so that approaches are more perpendicular and less skewed to improve sightlines. Analyze vehicle turning movements to assess if one or both approaches are warranted.
- Consider trimming vegetation on the northwest corner to improve sightlines.
- Consider removing the parking space closest to the slip lane on the north leg of Weston Road to prevent parked vehicles from obstructing the entrance to the slip lane.
- Consider a gateway treatment east of the intersection to slow vehicles speed and alert drivers they are entering a pedestrian rich environment.

Pavement markings and signage

Observations
Audit team members noted that the pavement markings were faded throughout these intersections, especially the left turn lane and skip line from Central Street eastbound onto Weston Road. This can lead to confusion given the wide nature of the intersection, even though a lane assignment sign is present. This confusion likely contributed to sideswipe crashes on Central Street (7, 14, 56). It was also observed that motorists were getting confused about where they need to be to execute left turns and who had the right of way as lane assignments weren't clear. The Central Street westbound approach widens out to two lanes approximately 90 feet before the intersection, only to merge back to one lane right after the intersection. This may cause confusion as to lane assignments and dedicated turn lanes. There is an advanced lane assignment sign, however given the short length of the second lane, coupled with the geometric deficiencies of the intersection, drivers may not have enough time to see it and react. This lack of pavement markings may have contributed to crash 58 (a vehicle straddling both lanes, attempting to turn right onto Weston Road, struck someone passing), while crash 46 occurred when merging back down to one lane after the intersection.

Figure 10: Drivers queueing side by side on Central Street eastbound

Potential safety enhancements

- Refresh all pavement markings, especially stop bars and turn lane symbols, to improve visibility and compliance.
- Evaluate the lane designation for the Central Street westbound approach and analyze turning movements to determine if changes to lane designations are appropriate. Potential lane assignments may include:
    - a single left/through lane and dedicated right turn lane or;
    - a single through/right lane and an exclusive left turn lane aligned opposite the eastbound left-turn lane. If a single through lane is determined to be sufficient, a wide shoulder departing the intersection may be implemented.

Pedestrian and Bicycle Accommodations

Observations

Audit team members noted that the crossing time for crosswalks at the intersection may be too short and not compliant with MUTCD standards. Members noted that there is no sidewalk on the west side of Weston Road between Central Street and Linden Street, but they are provided on both sides of Weston Road north of Linden Street. At the intersection, ramps are provided to access crosswalks, but audit members observed that none of the ramps have detectable warning pads.

The two crashes at this intersection involving pedestrians occurred in the crosswalk (crashes 2 and 8 on VRU map). Audit team members noted that the brick-style crosswalks may blend into the pavement and make it difficult for drivers to see and anticipate people crossing, especially when traveling from the west where the roadway context doesn't lend itself to high volumes of pedestrians.

There were two bicycle crashes (crashes 60 and 62) at the intersection involving an eastbound left turning vehicle at Central Street and a bicyclist heading west on Central Street. The lack of bicycle facilities through this area and the wide nature of the intersection may be a contributing factor for those crashes.

Figure 11: Long crosswalk with limited high visibility marking.

Potential safety enhancements

- Evaluate signal timing to provide adequate walk and clearance times for pedestrians using the crosswalk.
- Consider restriping the crosswalks in high visibility retroreflective markings.
- Consider extending the sidewalk on the western side of Weston Road from Linden Street to Central Street and the crosswalk connection across Weston Road at the intersection of Central Street.
- Consider installing detectable warning pads at all ramps at the intersection and evaluate for ADA compliance.
- Evaluate providing bicycle facilities on Central Street to connect to various attractions including Wellesley College and commercial areas east of the Central Street at Weston Road.

Traffic Signal Operations and Equipment

Observations

Similar to the Weston Road at Linden Street intersection, audit team members noted the need for a protected only left turn phase from Weston Road southbound towards Central Street (currently protected/permissive) given the skewed nature of the intersection. Members also discussed a need to look at signal timings to better accommodate pedestrians and motorists in the area. Some audit members mentioned that the yellow clearance interval for the Central Street phase may be too short given the wide nature of the intersection. Members also noted that existing traffic signals at the intersection does not have retroreflective back plates.

Additionally, there are signals for emergency vehicles to access the firehouse just east of the intersection. In the field, members observed that vegetation was blocking the post supported flashing yellow beacon of the fire station signal in the eastbound direction, and the mast arm supported beacons was functioning. Currently, these signals can only be triggered from inside the station.

Figure 12: Lack of retroreflective backplates on the signal heads

Potential safety enhancements

- Evaluate the need of a protected only left turn phase from Weston Road southbound.
- Evaluate the yellow and red clearance time for all phases and update per MUTCD guidance.
- Consider installing retroreflective back plates to all existing signals for improved visibility of the signals.
- Consider trimming vegetation to improve sightline for the eastbound flashing beacon, and repairing the other beacon by the fire station.
- Consider emergency preemption for the Central Street signal.

Central Street (Route 135) between Weston Road and Cross Street

Intersection Geometry and Operations

Observations

Audit team members noted many crashes occurred with parked vehicles (crashes 1, 8, 33, 35, 38, 50, 73, 91, 94). East of the downtown area, the effective roadway width widens significantly as the parking lanes drop in favor of vehicle travel lanes. This may cause higher vehicle speeds entering the downtown area, which has significant activity from pedestrians and people parking cars. During the audit, many team members observed that two approach lanes on Cross Street appeared excessive for the observed volumes, creating an unnecessary double threat. Additionally, audit members noted that there was a Shared Streets and Spaces pilot project during COVID that closed Cross Street between Central Street and Church Street to vehicles in favor of a pedestrian plaza that sparked interest in permanent changes to this intersection.

Sight distance from Cross Street at the stop bar was also limited due to parked vehicles, encouraging drivers to creep forward into the crosswalk to view oncoming traffic.

Figure 13: Near miss caused by driver rolling into the intersection, looking left to view oncoming traffic

Potential safety enhancements

- Consider changing Cross Street to be one lane in each direction and reallocating remaining space to the sidewalk for pedestrians, shortening the crossing distance. This can be accomplished by moving all vehicle traffic to the east side of the median island, allowing for the roadway on the western side of the median island to easily be reclaimed as sidewalk/pedestrian space.

- Consider installing a gateway treatment (roundabout, large curb extensions, signage, etc.) east of the study area, such as Central Street at Abbot Street or Central Street at Railroad Avenue, to slow vehicle speeds and alert drivers to the change in context.

Pedestrian and Bicycle Accommodations

Observations

Audit team members noted that there were several pedestrian crashes at the crosswalks (27, 31, 82). Additionally, multiple rear-ends occurred just before the crosswalks when motorists stopped for pedestrians on the crosswalk and the driver behind them did not stop (crashes 4, 12, 23, 32, 48). This may be due to the brick-style paver crosswalks blending into the asphalt and the lack of signage alerting drivers to the presence of the crosswalks. Some audit members observed a pedestrian stepping into the crosswalk on Central Street in order to view oncoming traffic, despite the curb extensions. This occurred due to high profile vehicles adjacent to the curb extension blocking the line of sight for both drivers and pedestrians.

Audit team members also noted that despite a wide curb to curb width (43 feet), bicycle facilities were not provided on Central Street. Bicycles were observed utilizing the bike parking on Central Street, noting a potential need for safer facilities.

Figure 14: Bike parked on Central Street

Potential safety enhancements

- Consider providing pedestrian crossing signage or Rectangular Rapid Flashing Beacon (RRFB), where feasible, to caution motorists of pedestrians on the crosswalk.
- Restripe all crosswalks with high visibility markings.
- Consider installing detectable warning pads at all curb ramps along Central Street and evaluate for ADA compliance.
- Evaluate installation of alternative materials in lieu of brick-style pavers for crosswalks on Central Street to enhance visibility.
- Consider restricting an additional parking space on the approach to crosswalks for better visibility. Alternatively, designating these spaces for compact car/motorcycle parking may also improve visibility.
- Consider installing dedicated bike facilities on Central Street, such as striping bike lanes or constructing sidewalk level bike lanes, which would have the added benefit of narrowing Central Street and slowing vehicle traffic.

Pavement markings and signage

Observations

Audit members noted that the stop sign on Cross Street is not at the stop line marking, potentially encouraging drivers to roll through the intersection. Additionally, wayfinding signage at the Cross Street intersection was hidden behind the street signs, which may cause confusion when navigating the area.

Figure 15: Stop sign set back from stop bar on the Cross Street approach to Central Street

Figure 16: Wayfinding signs obstructed by street signs

Potential safety enhancements

- Align the stop sign on Cross Street where the stop marking is installed.
- Consider reviewing all wayfinding signage for relevance and relocate as necessary for better visibility.

Summary of Road Safety Audit

Based on observations and discussions, the RSA team identified the issues and potential enhancements that could improve safety at the study intersections. The timeframe and costs are categorized below in **Table 2.**

Table 2: 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 3 lists each safety issue and the corresponding potential safety enhancements that were discussed at the audit and within the previous sections. The table includes the safety benefit, estimated timeframe for completion, estimated construction cost, and jurisdiction for each observed safety issue and potential safety enhancement. Safety payoff estimates are subjective and based on engineering judgement.

Table 3: Potential Safety Enhancement Summary

Safety Issue	Potential Safety Enhancement	Safety Payoff	Time Frame	Cost	Jurisdiction
Weston Road and Linden Street					
Intersection Geometry and Operations	Consider additional advanced warning signage to alert drivers on Weston Road of Linden Street intersection approach.	Low	Short-term	Low	Wellesley
Intersection Geometry and Operations	Evaluate if traffic volumes support adding a southbound left turn lane southbound on Weston Road.	High	Long-term	High	MassDOT/Wellesley
Intersection Geometry and Operations	Evaluate countermeasures to lower vehicle speeds, especially during off peak hours, such as speed feedback signs and traffic calming.	Medium	Mid-term	Medium	Wellesley
Intersection Geometry and Operations	Evaluate the turning movements of design and control vehicles through the intersection in order to narrow curb radii and make the intersection less skewed for visibility for vehicles on Linden Street.	Medium	Mid-Term	Medium	Wellesley
Pedestrian and Bicycle Accommodation and Accessibility	Evaluate the feasibility of providing bike facilities through the area through ROW changes.	High	Long-term	High	MassDOT/Wellesley
Pedestrian and Bicycle Accommodation and Accessibility	Consider upgrading pedestrian signals to include audible warnings and improved pedestrian actuation buttons.	Medium	Mid-term	Medium	Wellesley
Pedestrian and Bicycle Accommodation and Accessibility	Consider upgrading the wayfinding signage for the Crosstown Trail and Guernsey Path to be better visible for not only people using the trail system, but also drivers to be aware of their presence and to drive appropriately	Low	Short-term	Medium	Wellesley
Pedestrian and Bicycle Accommodation and Accessibility	Evaluate the structural feasibility of adding a sidewalk on the west side of the Weston Road bridge to create better pedestrian connectivity.	High	Long-term	High	MassDOT/Wellesley
Traffic Signal Operations	Evaluate traffic signal warrants to support installing a full traffic signal at the intersection.	High	Mid-term	Medium	Wellesley

Traffic Signal Operations	Assuming a full traffic signal is warranted, evaluate if traffic volumes support adding a southbound left turn lane with a protected signal phase.	High	Long-term	High	Wellesley
Traffic Signal Operations	Consider the use of LED illuminated NO TURN ON RED so that drivers comply with the “No Turn on Red” sign.	Medium	Short-term	Low	Wellesley
Traffic Signal Operations	Consider providing retroreflective back plates to the existing traffic signals.	Medium	Short-term	Low	Wellesley
Weston Road and Central Street (Route 135)					
Intersection Geometry and Operations	Evaluate if traffic volumes support adding a southbound left turn lane on Weston Road.	High	Long-term	High	MassDOT/Wellesley
Intersection Geometry and Operations	Evaluate the feasibility of changing the geometry of the intersection so that approaches are more perpendicular and less skewed to improve sightlines.	High	Long-term	High	MassDOT
Intersection Geometry and Operations	Consider trimming vegetation on the northwest corner to improve sightlines.	Low	Short-term	Low	Wellesley
Intersection Geometry and Operations	Consider removing the parking space closest to the slip lane on the north leg of Weston Road to prevent parked cars from obstructing the entrance to the slip lane.	Low	Short-term	Low	Wellesley
Intersection Geometry and Operations	Consider a gateway treatment to slow vehicles speed and alert drivers they are entering a pedestrian rich environment	Medium	Short/Mid-Term	Low/Medium	MassDOT/Wellesley
Pavement Markings and Signage	Refresh all pavement markings, especially stop bars and turn lane symbols, to improve visibility and compliance.	Low	Short-term	Low	Wellesley
Pavement Markings and Signage	Evaluate the lane designation for the Central Street westbound approach and analyze turning movements to determine if changes to lane designations are appropriate.	Medium	Mid-term	Medium	Wellesley

Pedestrian and Bicycle Accommodations	Evaluate signal timing to provide adequate walk and clearance times for pedestrians using the crosswalk.	High	Short-term	Low	Wellesley
Pedestrian and Bicycle Accommodations	Consider restriping the crosswalks in high visibility retroreflective markings	High	Short-term	Low	Wellesley
Pedestrian and Bicycle Accommodations	Consider extending the sidewalk on the western side of Weston Road from Linden Street to Central Street and the crosswalk connection across Weston Road at the intersection of Central Street.	Medium	Long-term	High	MassDOT/Wellesley
Pedestrian and Bicycle Accommodations	Consider installing detectable warning pads at all ramps at the intersection and evaluate for ADA compliance.	Medium	Short-term	Low	Wellesley
Pedestrian and Bicycle Accommodations	Evaluate providing bicycle facilities on Central Street to connect to various attractions including Wellesley College and commercial areas east of the Central Street at Weston Road.	High	Long-term	High	Wellesley
Traffic Signal Operations and Equipment	Evaluate the need for a protected only left turn phase on Weston Road southbound	Medium	Long-term	High	Wellesley
Traffic Signal Operations and Equipment	Evaluate the yellow and red clearance time for all phases and update per MUTCD guidance.	Medium	Short-term	Low	Wellesley
Traffic Signal Operations and Equipment	Consider upgrading signal timings at the intersection.	Medium	Short-term	Low	Wellesley
Traffic Signal Operations and Equipment	Consider installing retroreflective back plates to all existing signal heads for improved visibility of the signals.	Low	Short-term	Low	Wellesley
Traffic Signal Operations and Equipment	Consider trimming vegetation to improve sightline for the eastbound flashing signal, and	Low	Short-term	Low	Wellesley

	repairing the other signal beacon by the fire station.				
Traffic Signal Operations and Equipment	Consider emergency preemption for the Central Street signal, since it can only be triggered from inside the station currently.	Low	Short-term	Low	Wellesley
Central Street (Route 135) between Weston Road and Cross Street					
Intersection Geometry and Operations	Consider changing Cross Street to be one lane in each direction and reallocating remaining space to the sidewalk for pedestrians, thereby shortening the crossing distance.	High	Mid-term	Medium	Wellesley
Intersection Geometry and Operations	Consider installing a gateway treatment east of the study area to slow vehicle speeds and alert drivers to the change in context	High	Mid/Long-term	Medium/ High	Wellesley
Pedestrian and Bicycle Accommodations	Consider providing pedestrian crossing signage or RRFBs to caution motorists of pedestrians on the crosswalk.	High	Short/Mid-term	Low/Medium	Wellesley
Pedestrian and Bicycle Accommodations	Restripe all crosswalks with high visibility markings.	Medium	Short-term	Low	Wellesley
Pedestrian and Bicycle Accommodations	Consider installing detectable warning pads at all curb ramps along Central Street and evaluate for ADA compliance.	Low	Mid-term	Low	Wellesley
Pedestrian and Bicycle Accommodations	Consider restricting an additional parking space on the approach to crosswalks for better visibility. Alternatively, designating these spaces for compact car/motorcycle parking may also improve visibility.	Medium	Short-term	Low	Wellesley
Pedestrian and Bicycle Accommodations	Evaluate installation of alternative materials for crosswalks on Central Street to enhance visibility.	Medium	Mid-term	Medium	Wellesley
Pedestrian and Bicycle Accommodations	Consider installing dedicated bike facilities on Central Street, such as striping bike lanes or constructing sidewalk level bike lanes, which	Medium	Long-term	Medium	Wellesley

	would have the added benefit of narrowing Central Street and slowing vehicle traffic				
Pavement markings and signage	Align the stop sign on Cross Street where the stop marking is installed.	Low	Short-term	Low	Wellesley
Pavement markings and signage	Consider reviewing all wayfinding signage for relevance and relocate as necessary for better visibility.	Low	Short-term	Low	Wellesley

Appendix A. RSA Meeting Agenda

Agenda

Road Safety Audit

Wellesley, MA
Weston Rd between Linden St and Central St; Central St between Weston Rd and Cross St

Meeting Location: TBD
Tuesday, June 27th, 2023
1 PM – 4 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**
1:15 PM	**Discussion of Safety Issues** • Crash history– provided in advance • Existing Geometries and Conditions
2:00 PM	**Site Visit** • Drive to the study area. • As a group, identify areas for improvement
3:30 PM	**Discussion of Potential Improvements** • Return to Meeting Location • Discuss observations and finalize safety issue areas • Discuss potential improvements and finalize recommendations
4:00 PM	**Adjourn for the Day – but the RSA has not ended**

Instructions for Participants:

- **Before attending the RSA on June 27th, participants are encouraged to drive/walk 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. 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: June 27, 2023 Location: Wellesley DPW

Audit Team Members	Agency/Affiliation	Email Address
Dave Hickey	Wellesley – Department of Public Works	dhickey@wellesleyma.gov
Nat Brady	Wellesley – Fire Department	nbrady@wellesleyma.gov
Scott Showstead	Wellesley – Police Department	sshowstead@wellesleyma.gov
Julie Dombrosky	Boston MPO - CTPS	jdombrowski@ctps.org
Dakota DelSignore	MassDOT – Traffic and Safety Section	dakotah.d.delsignore@state.ma.us
Jim Terlizzi	MassDOT – Traffic and Safety Section	james.v.terlizzi@dot.state.ma.us
Jonathan Stratter	MassDOT – District 6 Traffic	jonathan.p.stratter@dot.state.ma.us
Julia Ubertini	MassDOT – District 6	julia.c.ubertini@dot.state.ma.us
Anna Fabian	MassDOT – District 6	anna.m.fabian@dot.state.ma.us
Justin Paling	MBTA	jpaling@mbta.com
Brendan Kearney	Walk Massachusetts	bkearney@walkboston.org
Daniel LaCivita	VAI	dlacivita@rdva.com
Peter Swenson	VAI	pswenson@rdva.com
Taylor Dennerlein	Toole Design	tdennerlein@tooledesign.com
Chris Bach	Toole Design	cbach@tooledesign.com

Appendix C. Detailed Crash Data

TOOLE DESIGN
2 Oliver Street, Suite 305, BOSTON, MA 02109
PHONE: 617.619.9910 FAX: 301.927.2800
www.tooledesign.com

COLLISION DIAGRAM

SYMBOLS
- Moving Vehicle
- Backing Vehicle
- Non-Involved Vehicle
- Pedestrian
- Bicycle
- Animal
- Parked Vehicle
- Fixed Object

TYPE OF CRASH
- Head on
- Rear End
- Angle
- Turning Movement
- Sideswipe
- Out of Control
- Twilight/Night Time Crash

SEVERITY
- Injury
- Fatal

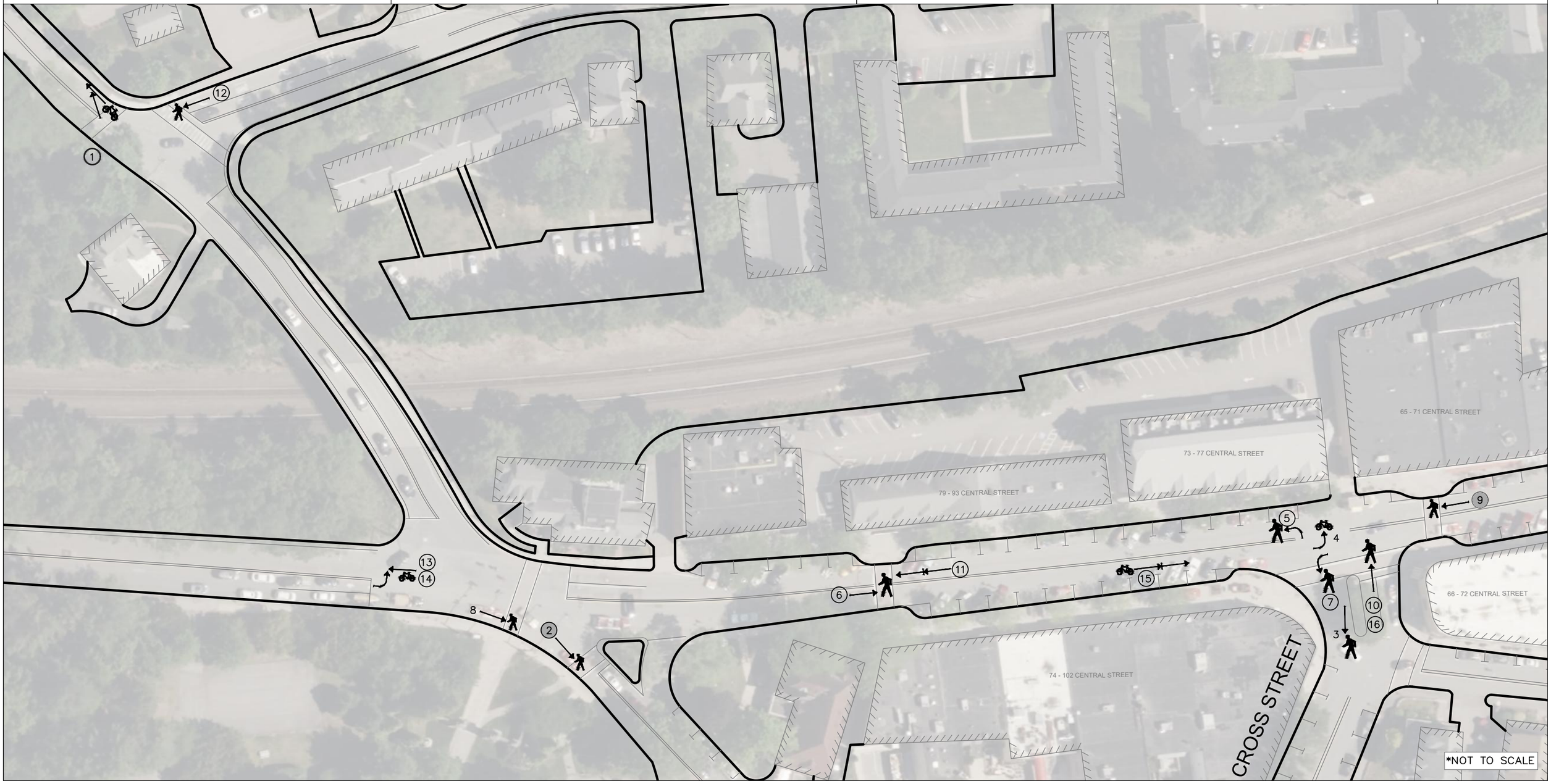
WELLESLEY, MA

REGION: MAPC
WESTON ROAD BETWEEN LINDEN STREET AND CENTRAL STREET
CENTRAL STREET BETWEEN WESTON ROAD AND CROSS STREET

TIME PERIOD ANALYZED: 2012-2022
SOURCE OF CRASH REPORTS: WELLESLEY PD, SUPPLEMENTED BY MASSDOT IMPACT PORTAL
DATE PREPARED: 6/7/2023
PREPARED BY: TOOLE DESIGN

*2021 AND 2022 ARE NOT CLOSED YEARS OF CRASH DATA

N



*NOT TO SCALE

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- Animal
- Parked Vehicle
- Fixed Object

TYPE OF CRASH
- Head on
- Rear End
- Angle
- Turning Movement
- Sideswipe
- Out of Control
- Twilight/Night Time Crash

SEVERITY
- Injury
- Fatal

TIME PERIOD ANALYZED: 2017–2022*

SOURCE OF CRASH REPORTS: WELLESLEY PD, SUPPLEMENTED BY MASSDOT IMPACT PORTAL

DATE PREPARED: 6/7/2023

PREPARED BY: TOOLE DESIGN

N

*2021 AND 2022 ARE NOT CLOSED YEARS OF CRASH DATA

WELLESLEY, MA

REGION: MAPC
WESTON ROAD BETWEEN LINDEN STREET AND CENTRAL STREET

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COLLISION DIAGRAM

SYMBOLS
- Moving Vehicle
- Backing Vehicle
- Non–Involved Vehicle
- Pedestrian
- Bicycle
- Animal
- Parked Vehicle
- Fixed Object

TYPE OF CRASH
- Head on
- Rear End
- Angle
- Turning Movement
- Sideswipe
- Out of Control
- Twilight/Night Time Crash

SEVERITY
- Injury
- Fatal

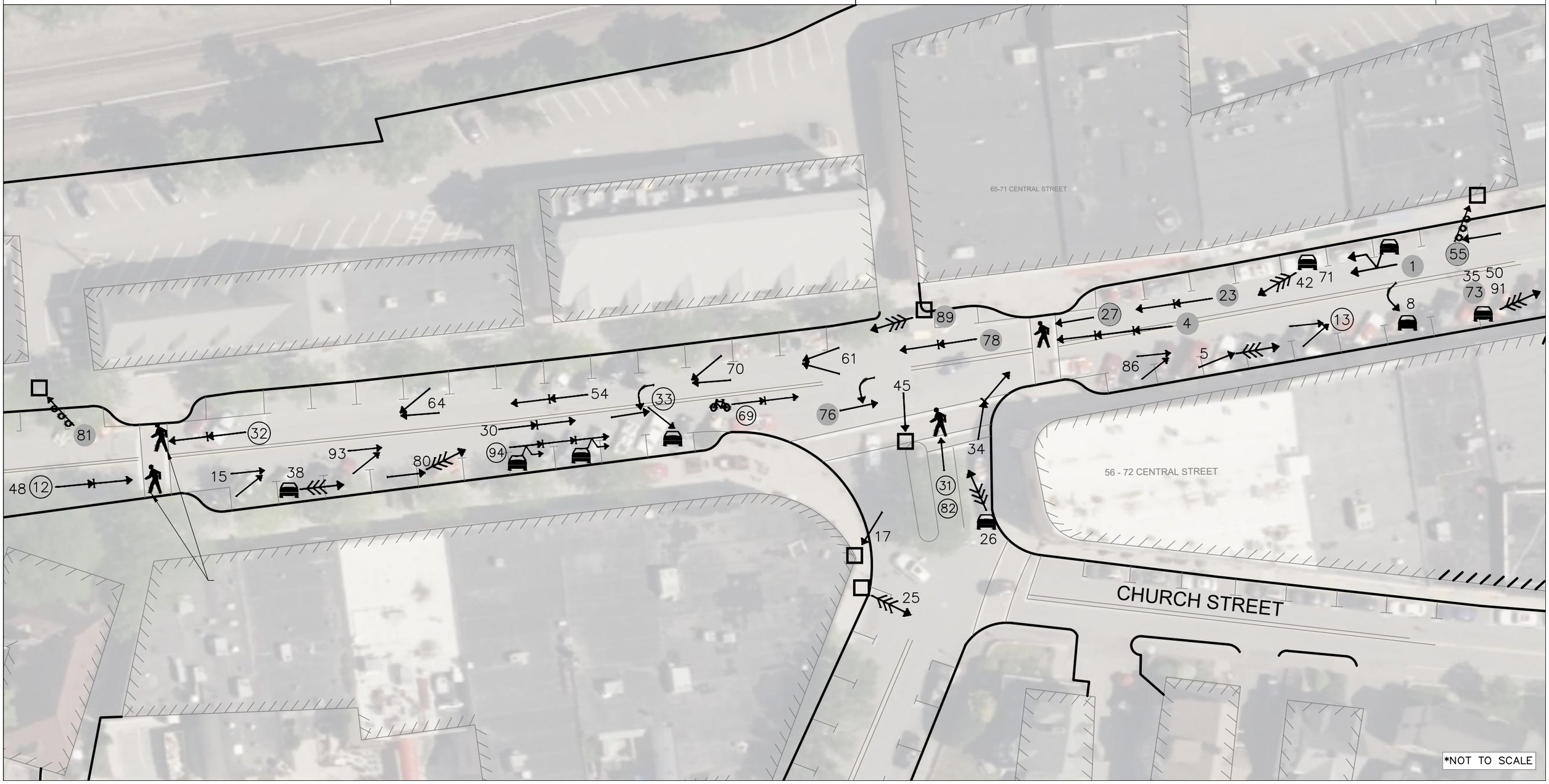
WELLESLEY, MA

REGION: MAPC
CENTRAL STREET BETWEEN WESTON ROAD AND CROSS STREET

TIME PERIOD ANALYZED: 2017–2022
SOURCE OF CRASH REPORTS: WELLESLEY PD, SUPPLEMENTED BY MASSDOT IMPACT PORTAL
DATE PREPARED: 6/7/2023
PREPARED BY: TOOLE DESIGN

*2021 AND 2022 ARE NOT CLOSED YEARS OF CRASH DATA

N



*NOT TO SCALE

Crash Data Summary Table (2017-2022)

Town of Wellesley: Weston Road between Linden Street and Central Street; Central Street between Weston Road and Cross Street

Crash Diagram #	Crash Date	Crash Day	Time of Day	Crash Severity	Manner of Collision	Light Condition	Weather Condition	Road Surface	Driver Contributing Code	D1 Age	D2 Age	D3 Age	D4 Age	Comment
1	1/19/2017	Thursday	6:56 PM	Property Damage Only (PDO)	Single vehicle crash	Dark - lighted roadway	Clear	Dry	Over-correcting/ over-steering	38	Unk	-	-	V2 was pulling out of a parking spot on the north side of Central St near 63 Central St when V2 struck the rear of V1, which was parked.
2	2/8/2017	Wednesday	5:43 PM	PDO	Rear-end	Dark - lighted roadway	Clear	Dry	Followed too closely	82	42	-	-	V1 was travelling SB on Weston Rd approaching the Linden St intersection. V1 slowed due to traffic and was rear-ended by V2.
3	3/16/2017	Thursday	3:49 PM	PDO	Angle	Daylight	Clear	Dry	Unknown	81	68	32	-	V1 stopped at the Weston Rd SB approach to let V2 make a left turn from the Linden St WB approach. V3 was travelling NB on Weston Rd when they struck V2, pushing V2 into V1.
4	3/31/2017	Friday	8:29 PM	PDO	Rear-end	Dark - lighted roadway	Snow/Sleet	Ice	Inattention	47	60	33	-	V1, travelling WB on Central St, stopped for a pedestrian in the Cross St crosswalk. V2 slowed behind V1, but V3 was unable to stop in time, rear-ending V2 and pushing V2 into V1.
5	4/26/2017	Wednesday	9:12 AM	PDO	Angle	Daylight	Rain	Wet	No improper driving	39	58	-	-	V1 was parked in a parallel parking space on the south side of Central St near 68 Central St. V2 was pulling out of a parking spot behind V1 and collided with V1 as V1 was backing up.
6	5/7/2017	Sunday	10:29 AM	PDO	Rear-end	Daylight	Clear	Dry	Distracted	37	18	-	-	V1 was stopped at a red light on the NB Weston St approach at the Weston St and Central St intersection when V2 rear-ended them. Operator of V2 was looking at their cell phone for GPS.
7	5/13/2017	Saturday	4:57 PM	PDO	Sideswipe, same direction	Daylight	Clear	Dry	Unknown	19	32	-	-	V1 was travelling EB on Central St before the Central St and Weston St intersection when V2 drifted into the left lane and struck V1.
8	5/26/2017	Friday	11:32 AM	PDO	Sideswipe, same direction	Daylight	Clear	Dry	Made an improper turn; Inattention	82	Unk	-	-	V2 made a u-turn around 61 Central St, crossing the double yellow lines and striking the left side of V1, which was legally parked and unoccupied on the south side of Central St.
9	6/18/2017	Sunday	3:54 PM	PDO	Rear-end	Dawn	Clear	Dry	Unknown	19	18	-	-	V1 was stopped due to traffic at the Weston Rd SB approach at the Linden St intersection when V2 rear-ended V1.
10	7/7/2017	Friday	4:27 PM	PDO	Angle	Daylight	Clear	Wet	Inattention	29	41	-	-	V1 was travelling NB on Weston Rd approaching the Linden St intersection when V2 attempted to make a right turn from Linden St onto Weston Rd and struck V1.
11	7/21/2017	Friday	12:58 PM	PDO	Single vehicle crash	Daylight	Clear	Dry	Unknown	23	-	-	-	V1 was making a right turn from Central St EB onto Weston Rd SB. V1 entered the intersection on a yellow light and was then struck in the side by a bicycle being walked by a pedestrian, who was crossing when the walk sign turned green.
12	7/28/2017	Friday	7:31 AM	Non-Fatal (NF)	Rear-end	Daylight	Cloudy	Dry	Followed too closely	16	59	-	-	V2 was travelling EB near 93 Central St and stopped at the crosswalk due to a pedestrian. V1 was unable to stop in time and rear-ended V2.
13	9/8/2017	Friday	6:59 AM	NF	Angle	Daylight	Clear	Dry	No improper driving	49	48	Unk	-	V1 was parked on Central St facing east. V2 was parked on Central St two spaces behind V1. V1 and V2 pulled into traffic and collided with each other, pushing V1 into V3, parked in front of V1.
14	9/8/2017	Friday	7:27 AM	PDO	Sideswipe, same direction	Daylight	Clear	Dry	Failed to yield right of way	48	53	-	-	V1 was travelling EB on Central St before the Central St and Weston St intersection when V2 drifted into the left lane and struck V1.
15	9/20/2017	Wednesday	9:10 AM	PDO	Angle	Daylight	Rain	Wet	Unknown	27	81	-	-	V1 was travelling EB near 98 Central St. V2 pulled out of a parallel parking space causing the vehicles to collide.
16	10/6/2017	Friday	12:54 PM	PDO	Angle	Daylight	Cloudy	Dry	Failed to yield right of way	65	48	-	-	V1 was travelling NB on Weston Rd through the Weston Rd and Central St intersection when V2, travelling SB on Weston Rd, attempted to make a left turn and struck V1. Both vehicles had a green signal.
17	10/26/2017	Thursday	1:40 PM	PDO	Single vehicle crash	Daylight	Clear	Dry	Inattention	47	-	-	-	V1 turned left from Central St onto Cross St, struck the side of a building at 74 Central St, and continued onto Cross St.
18	11/9/2017	Thursday	11:49 AM	PDO	Rear-end	Daylight	Cloudy	Dry	Followed too closely	84	52	20	44	V1 (truck with boat trailer) and V2 were travelling SB on Weston Rd approaching the Central St intersection. As V1 was turning right onto Central St, V2 hit the trailer of V1, causing the trailer to swing into V3 and V4 stopped at the Central St EB approach.
19	11/18/2017	Saturday	Unk	PDO	Single vehicle crash	Unknown	Unknown	Unk	Unknown	Unk	-	-	-	V1 was travelling EB on Central St before the Weston St intersection when a deer struck the vehicle.

Crash Data Summary Table (2017-2022)

Town of Wellesley: Weston Road between Linden Street and Central Street; Central Street between Weston Road and Cross Street

Crash Diagram #	Crash Date	Crash Day	Time of Day	Crash Severity	Manner of Collision	Light Condition	Weather Condition	Road Surface	Driver Contributing Code	D1 Age	D2 Age	D3 Age	D4 Age	Comment
20	12/3/2017	Sunday	5:09 PM	PDO	Rear-end	Dark - lighted roadway	Clear	Dry	Followed too closely	64	35	-	-	V1 was travelling SB on Weston Rd near the Linden St intersection. V1 slowed for traffic and was rear-ended by V2 who was unable to slow in time.
21	12/9/2017	Saturday	5:00 PM	PDO	Rear-end	Dark - lighted roadway	Snow	Snow	No improper driving	43	19	-	-	V1 was stopped at the Linden St approach to the Weston Rd intersection when V2 slowed as they approached the intersection but slid into V1 due to the snowy conditions.
22	12/11/2017	Monday	12:02 PM	PDO	Rear-end	Daylight	Clear	Dry	Followed too closely	59	40	-	-	V1 was travelling EB on Central St near the Weston Rd intersection when V2 rear-ended V1. Operator of V2 stated they were not expecting traffic to back up as it had and were unable to stop in time.
23	12/14/2017	Thursday	7:12 PM	PDO	Rear-end	Dark - lighted roadway	Clear	Dry	Inattention	44	18	-	-	V1 was stopped in traffic travelling WB near 63 Central St when V2 rear-ended V1.
24	12/21/2017	Thursday	8:52 AM	PDO	Single vehicle crash	Daylight	Clear	Dry	Operating defective equipment; Other improper action	38	-	-	-	V1 was travelling NB on Weston Rd when her brakes stopped working. She stated she turned right onto Linden St and then into the 20 Linden St lot to attempt to slow her vehicle. V1 struck the front steps and bushes at 20 Linden St.
25	12/22/2017	Friday	3:47 PM	PDO	Single vehicle crash	Daylight	Snow	Wet	Other improper action	35	-	-	-	V1, a school bus, parked on the sidewalk of Church St and went into a store. When operator of V1 returned, the school bus had rolled into a light pole at the intersection of Cross St and Church St.
26	1/5/2018	Friday	2:46 PM	PDO	Angle	Daylight	Clear	Snow	No improper driving	24	50	-	-	V1 was attempting to make a left turn onto Cross St from Church St and was unable to make the turn due to recent snowfall. V1 was backing up to readjust herself when she struck V2, parked on Cross St.
27	1/10/2018	Wednesday	5:25 PM	NF	Single vehicle crash	Dark - lighted roadway	Clear	Wet	Unknown	42	61	-	-	V1 stopped for a pedestrian in the crosswalk at 65 Central St but then proceeded forward and struck the pedestrian.
28	2/6/2018	Tuesday	10:46 AM	PDO	Rear-end	Daylight	Clear	Snow	No improper driving	39	50	-	-	V1 was stopped at a red light on the EB Central St approach to the Weston Rd intersection when V2 was unable to stop in time and rear ended V1.
29	2/10/2018	Saturday	9:25 AM	NF	Single vehicle crash	Daylight	Clear	Dry	Unknown	54	-	-	-	V1 attempted to make a left turn from Central St EB into a parking lot at 101 Central St but lost control of the vehicle and struck the corner of the building.
30	3/5/2018	Monday	2:38 PM	PDO	Rear-end	Daylight	Clear	Dry	Followed too closely	56	49	-	-	V1 was stopped in front of 84 Central St facing EB preparing to back into a parking spot when V2 rear-ended V1.
31	3/11/2018	Sunday	2:50 PM	NF	Single vehicle crash	Daylight	Clear	Dry	Failed to yield right of way	51	-	-	-	V1 was travelling north on Cross St and attempted to turn right onto Central St, striking a pedestrian in a crosswalk.
32	3/19/2018	Monday	3:35 PM	NF	Angle	Daylight	Clear	Dry	Disregarded traffic signs, signals, road markings; made an improper turn	22	77	Unk	-	V1 was travelling WB on Central St and attempted to make a U-turn, striking V2 travelling EB. The impact caused V2 to be pushed into V3, parked (unoccupied) along Central St.
33	3/19/2018	Monday	12:07 PM	NF	Rear-end	Daylight	Clear	Dry	Distracted	26	28	-	-	V1, travelling west, stopped for a pedestrian in a Central St crosswalk. V2 rear-ended V1, causing V1 to roll forward, hitting the pedestrian. V2 stated they were distracted by papers in their car.
34	3/19/2018	Monday	3:44 PM	PDO	Rear-end	Daylight	Cloudy	Dry	Followed too closely	63	77	-	-	V1 was turning right from Cross St onto Central St when they stopped for a pedestrian in the crosswalk. V2 believed V1 was going forward and rear-ended V1 while making the right turn. EB traffic was being rerouted down Weston Rd to Cross Street at time of this crash.
35	3/24/2018	Saturday	1:05 PM	PDO	Unknown	Daylight	Clear	Dry	Unknown	Unk	63	-	-	V1 was parked unoccupied facing EB around 60 Central St. A bystander left a note saying that V2 backed into V1 and left the scene.
36	4/5/2018	Thursday	12:30 PM	NF	Head-on	Daylight	Clear	Dry	Operating vehicle in erratic, reckless, careless, negligent or aggressive manner	56	31	Unk	-	V2 was travelling WB on Central St and took a left turn the wrong way in the right turn slip lane from Weston Rd. V2 struck V1 in the slip lane causing V1 to strike V3 parked on the east side of Weston Rd.
37	5/3/2018	Thursday	5:25 PM	PDO	Rear-end	Daylight	Clear	Dry	Followed too closely	25	59	46	-	V1, V2, and V3 were travelling SB on Weston Rd when V1 stopped for a red light at the Central St intersection. Operator of V2 stated that her vehicle lurched forward and struck V1. Operater of V2 then tried to reverse her vehicle and struck V3, stopped behind V2.
38	5/19/2018	Saturday	9:29 AM	Unknown	Rear-end	Daylight	Clear	Dry	Unknown	Unk	Unk	-	-	V1 was parked facing EB near 98 Central St. V2 backed into V1 while exiting their parking space.

Crash Data Summary Table (2017-2022)

Town of Wellesley: Weston Road between Linden Street and Central Street; Central Street between Weston Road and Cross Street

Crash Diagram #	Crash Date	Crash Day	Time of Day	Crash Severity	Manner of Collision	Light Condition	Weather Condition	Road Surface	Driver Contributing Code	D1 Age	D2 Age	D3 Age	D4 Age	Comment
39	5/30/2018	Wednesday	4:37 PM	PDO	Rear-end	Daylight	Clear	Dry	Followed too closely	59	78	-	-	V1 was travelling WB on Central St and stopped at the Weston Rd light. V2 rear-ended V1 at the light.
40	6/18/2018	Monday	2:13 PM	PDO	Rear-end	Daylight	Clear	Dry	Other improper action	56	26	-	-	V1 was stopped in traffic travelling WB near 93 Central St. V2 backed up to make room for a vehicle parking and backed into V1.
41	6/25/2018	Monday	7:36 AM	PDO	Rear-end	Daylight	Clear	Dry	Inattention	33	55	66	63	V1, V2, V3, and V4 were all travelling EB near 106 Central St approaching Weston Rd. Operator of V1 stated he was distracted and rear ended V2, causing V2 to strike V3 and V3 to strike V4.
42	7/14/2018	Saturday	10:10 PM	PDO	Rear-end	Daylight	Clear	Dry	Unknown	72	52	-	-	V2 was parked facing WB near 61 Central St when V1 backed into the front of V2 multiple times.
43	7/20/2018	Friday	5:01 PM	PDO	Angle	Daylight	Clear	Dry	Unknown	50	45	-	-	V1 was travelling NB on Weston Rd when V2 attempted to make a right turn from Linden St and struck the side of V1. Operator of V2 stated visibility was obstructed by a passing vehicle and did not see V1 approaching.
44	9/12/2018	Wednesday	1:00 PM	PDO	Rear-end	Daylight	Clear	Dry	No improper driving	75	-	-	-	V2 was stopped at a red light on the Weston St SB approach at the Central St intersection when V1 rear-ended V2.
45	9/26/2018	Wednesday	5:34 PM	PDO	Single vehicle crash	Daylight	Clear	Dry	Inattention	47	-	-	-	V1, a tractor trailer, was maneuvering into an alleyway across from Cross St and struck a municipal street sign.
46	11/10/2018	Saturday	6:36 PM	PDO	Sideswipe, same direction	Daylight	Clear	Dry	Inattention	44	88	-	-	V1 was travelling WB on Central St past the Weston Rd intersection when V2 tried to merge left and struck V1.
47	11/15/2018	Thursday	1:58 PM	PDO	Angle	Daylight	Clear	Dry	Failed to yield right of way	55	52	-	-	V1 was travelling NB on Weston Rd approaching the Linden St intersection when V2 attempted to make a right turn from Linden St onto Weston Rd and struck V1.
48	12/10/2018	Monday	7:55 AM	PDO	Rear-end	Daylight	Clear	Dry	Inattention	31	19	-	-	V1 was travelling EB near 100 Central St when they stopped for a pedestrian in a crosswalk. V2 was unable to stop in time and rear-ended V1.
49	12/17/2018	Monday	4:55 PM	PDO	Rear-end	Dark - lighted roadway	Clear	Dry	Operating vehicle in erratic, reckless, careless, negligent or aggressive manner	53	69	-	-	V1 was stopped at a red light on the EB Central St approach to the Weston Rd intersection when V2 rear-ended V1.
50	1/3/2019	Thursday	7:16 AM	PDO	Rear-end	Dawn	Rain	Wet	No improper driving	26	64	-	-	V1 was parked facing EB near 60 Central St when V2 backed into V1 while exiting a parking spot and continued travelling EB.
51	1/8/2019	Tuesday	8:04 AM	PDO	Rear-end	Daylight	Clear	Dry	Followed too closely	63	22	39	-	V2 and V3 were stopped on the EB Central St approach at the Weston Rd intersection when V1 rear-ended V2, pushing V2 into V3.
52	1/9/2019	Wednesday	5:15 PM	NF	Angle	Dark - lighted roadway	Clear	Dry	Failed to yield right of way	27	64	-	-	V1 was travelling WB on Central St through the Weston Rd intersection when V2 attempted to make a left turn from Central St EB onto Weston Rd and struck V1. Both vehicles claimed to have green signals.
53	1/21/2019	Monday	5:08 PM	PDO	Single vehicle crash	Dark - lighted roadway	Clear	Ice	No improper driving	51	-	-	-	V1 was travelling SB on Weston Rd towards the Central St intersection when they slid to the right due to ice on the roadway and struck the guardrail on the right side of the road.
54	1/29/2019	Tuesday	3:57 PM	PDO	Rear-end	Daylight	Clear	Dry	Unknown	19	53	-	-	V2 was stopped in traffic, facing WB near 73 Central Street, when V1 struck the rear of V2.
55	2/28/2019	Thursday	1:35 AM	NF	Sideswipe, opposite direction	Dark - lighted roadway	Snow	Snow	Failure to keep in proper lane or running off road	42	33	-	-	V1 was travelling EB near 57 Central St when he lost control of his vehicle in the snow, causing him to swerve into the WB lane and strike V2. After striking V2, V1 proceeded up onto the sidewalk, striking the façade of 57 Central St and benches and planters on the sidewalk.
56	3/5/2019	Tuesday	9:54 AM	PDO	Sideswipe, same direction	Daylight	Clear	Dry	Failure to keep in proper lane	30	61	-	-	V1 was travelling EB on Central St approaching the Weston Rd intersection. V2 was also travelling EB and attempted to change lanes, striking V1.
57	3/26/2019	Tuesday	7:39 AM	NF	Single vehicle crash	Daylight	Clear	Dry	No improper driving	50	-	-	-	V1, travelling west, was attempting to make a right turn from Linden St onto Weston Rd when they struck a pedestrian in the Linden St crosswalk. Pedestrian stated that he entered the crosswalk without activating the walk signal because he saw V1 was stopped.

Crash Data Summary Table (2017-2022)

Town of Wellesley: Weston Road between Linden Street and Central Street; Central Street between Weston Road and Cross Street

Crash Diagram #	Crash Date	Crash Day	Time of Day	Crash Severity	Manner of Collision	Light Condition	Weather Condition	Road Surface	Driver Contributing Code	D1 Age	D2 Age	D3 Age	D4 Age	Comment
58	7/25/2019	Thursday	9:46 PM	PDO	Sideswipe, same direction	Dark - lighted roadway	Clear	Dry	Failure to keep in proper lane	33	43	-	-	V2 was travelling WB on Central St, straddling the line between the through lane and right lane. V2 attempted to make a right turn onto Weston Rd and struck the side of V1 who was attempting to pass V2 in the Central St WB right turn lane.
59	8/9/2019	Friday	4:41 PM	PDO	Rear-end	Daylight	Clear	Dry	Inattention	58	Unk	-	-	V2 was parked facing WB near 97 Central St and backed into V1 causing minor damage.
60	8/27/2019	Tuesday	6:37 AM	NF	Angle	Daylight	Clear	Dry	Failed to yield right of way	52	-	-	-	A cyclist was traveling west on Central St when V1, travelling east, attempted to turn left onto Weston Rd, hitting the cyclist.
61	9/22/2019	Sunday	2:37 PM	PDO	Angle	Daylight	Clear	Dry	Operating vehicle in erratic, reckless, careless, negligent or aggressive manner	22	25	-	-	V1 was parked on Central St facing west. V1 began to pull out of their spot when V2 made a left turn out of Cross St and struck V1.
62	10/19/2019	Saturday	9:10 AM	NF	Angle	Daylight	Clear	Dry	Failed to yield right of way	48	-	-	-	A cyclist was traveling west on Central St when V1, travelling east, attempted to turn left onto Weston Rd, hitting the cyclist.
63	11/14/2019	Thursday	5:12 PM	PDO	Angle	Dark - lighted roadway	Clear	Dry	Failed to yield right of way	53	60	-	-	V2 was travelling WB on Central St through the Weston Rd intersection when V1 attempted to make a left turn From Central St EB onto Weston Rd NB and struck V2.
64	11/30/2019	Saturday	9:28 AM	PDO	Angle	Daylight	Clear	Dry	Failed to yield right of way	67	69	-	-	V1 (a truck) was travelling WB near 79 Central St when V2 attempted to pull out of a parking space and struck V1.
65	12/2/2019	Monday	6:10 PM	PDO	Angle	Dark - lighted roadway	Snow	Snow	Failure to keep in proper lane	43	26	-	-	V1, a plow truck, was turning right from Linden St onto Weston Rd NB. V1 took the turn too wide and struck V2, travelling SB on Weston Rd, in the side.
66	12/13/2019	Friday	12:06 PM	PDO	Rear-end	Daylight	Clear	Dry	Operating vehicle in erratic, reckless, careless, negligent or aggressive manner	53	17	-	-	V1 was stopped at the Linden St WB approach to the Weston Rd intersection waiting to turn left. Operator of V2 was behind V1 and thought they had turned already. V2 then moved forward and rear-ended V1.
67	12/17/2019	Tuesday	7:35 AM	PDO	Single vehicle crash	Daylight	Snow	Ice	No improper driving	26	-	-	-	V1 was travelling SB on Weston Rd approaching Linden St. V1 was unable to stop for traffic due to icy road conditions and swerved to the right, striking the curb.
68	3/2/2020	Monday	11:27 AM	PDO	Rear-end	Daylight	Clear	Dry	Inattention	50	64	73	-	V1 was travelling SB on Weston Rd approaching the Weston Rd/ Central St intersection when V1 rear-ended V2 and caused V2 to roll into V3.
69	8/28/2020	Friday	1:24 PM	NF	Single vehicle crash	Daylight	Clear	Dry	Unknown	35	-	-	-	V1 was travelling east at 72 Central St and stopped for a pedestrian in the crosswalk. A cyclist was behind V1 and was unable to stop in time, bumping into the car and falling off his bike.
70	10/17/2020	Saturday	1:29 PM	PDO	Sideswipe, same direction	Daylight	Clear	Dry	No improper driving	17	74	-	-	V1, travelling east, collided with V2 when V2 was pulling out of a parallel parking spot near 79 Central St.
71	1/13/2021	Wednesday	8:01 AM	PDO	Angle	Daylight	Clear	Dry	Unknown	34	35	-	-	V1 was parked facing WB near 65 Central St when V2 attempted to parallel park behind V1 and struck the rear bumper of V1.
72	4/15/2021	Thursday	8:56 PM	PDO	Angle	Dark - lighted roadway	Rain	Wet	Failed to yield right of way	53	29	-	-	V1, travelling NB on Weston Rd, struck V2 as V2 was turning left from Linden St onto Weston Rd.
73	6/5/2021	Saturday	8:54 PM	PDO	Angle	Dusk	Clear	Dry	Inattention	36	17	-	-	V1 was parked facing EB near 63 Central St. Operator of V1 was standing outside of his car and stated that V2 backed into V1.
74	7/25/2021	Sunday	8:46 PM	PDO	Angle	Dark - lighted roadway	Clear	Dry	Failed to yield right of way	16	25	-	-	V1, travelling SB on Weston Rd, struck V2, travelling NB on Weston Rd, while trying to make a left turn onto Central St.
75	9/15/2021	Wednesday	11:09 AM	PDO	Angle	Daylight	Clear	Dry	Failed to yield right of way; Inattention	58	30	-	-	V2 struck the rear passenger side of V1, travelling NB on Weston Rd, when trying to make a left turn from Linden St onto Weston Rd.
76	9/22/2021	Wednesday	7:26 PM	PDO	Angle	Dark - lighted roadway	Clear	Dry	Inattention	17	21	-	-	V2, travelling WB on Central St, attempted to turn left onto Cross St and struck V1, travelling EB on Central St.
77	11/12/2021	Friday	6:53 PM	PDO	Angle	Dark - lighted roadway	Cloudy	Wet	Other improper action	57	46	-	-	V2, a bus, was unable to clear a left turn from Central Street EB onto Weston Rd NB. V1, a postal truck, stopped at the light on Weston Rd SB, impacted the bus after rolling forward while attempting to reverse up the hill.

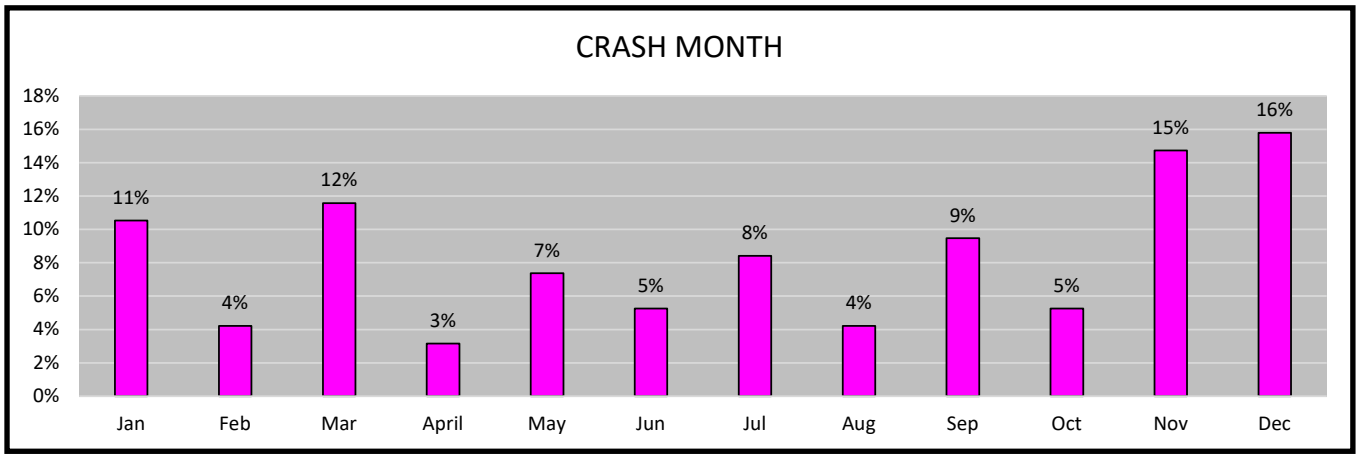
Crash Data Summary Table (2017-2022)

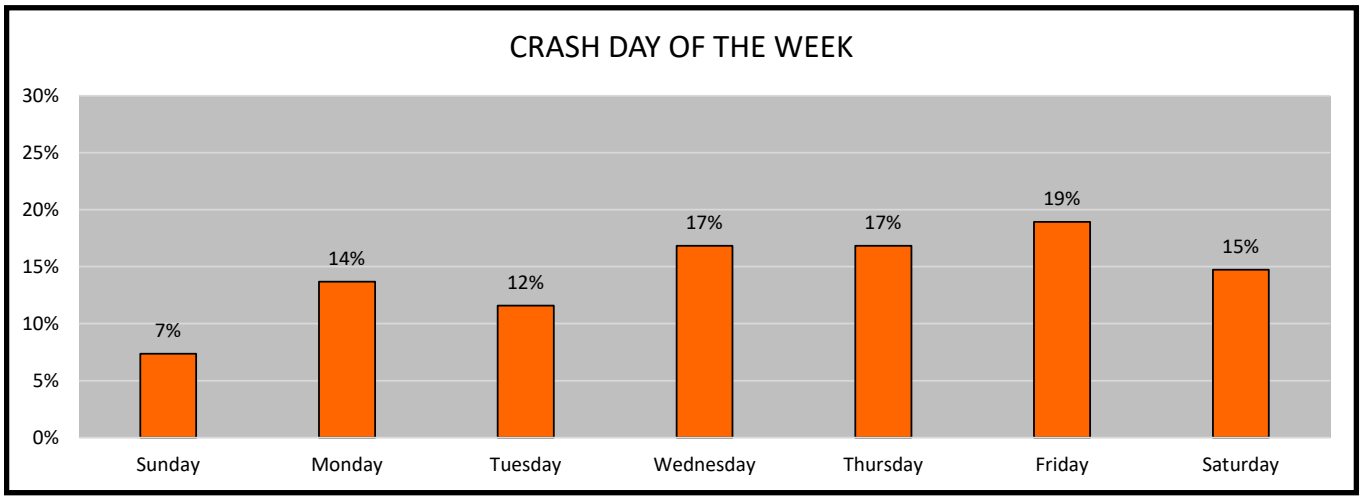
Town of Wellesley: Weston Road between Linden Street and Central Street; Central Street between Weston Road and Cross Street

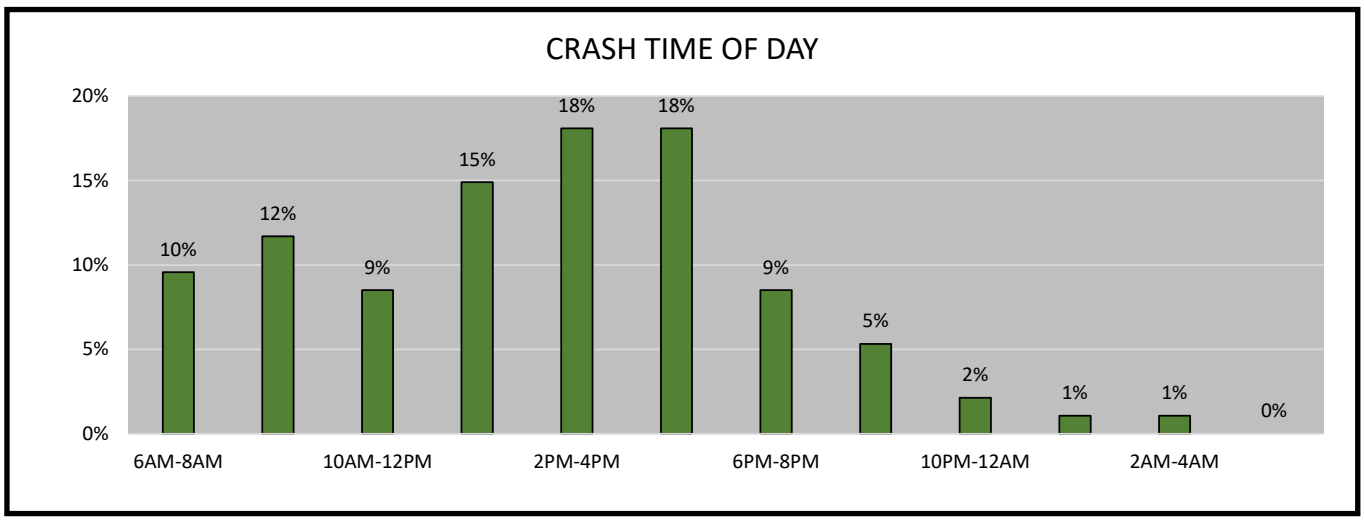
Crash Diagram #	Crash Date	Crash Day	Time of Day	Crash Severity	Manner of Collision	Light Condition	Weather Condition	Road Surface	Driver Contributing Code	D1 Age	D2 Age	D3 Age	D4 Age	Comment
78	11/16/2021	Tuesday	4:23 PM	PDO	Rear-end	Dusk	Clear	Dry	Followed too closely	60	47	-	-	V1, travelling west near 75 Central St, slowed and stopped due to traffic ahead, and V2 collided with the rear of V1 as they were unable to stop in time.
79	11/24/2021	Wednesday	11:45 PM	PDO	Angle	Dark - lighted roadway	Clear	Dry	Operating vehicle in erratic, reckless, careless, negligent or aggressive manner	46	25	-	-	V2 was travelling west on Central St when V1 attempted to make a left turn onto Weston Rd NB and collided with V2. Police dashcam confirms that V2 attempted to brake.
80	11/26/2021	Friday	2:17 PM	PDO	Rear-end	Daylight	Rain	Wet	No improper driving	56	Unk	-	-	V1 backed into V2 while backing out of a parking space near 94 Central St on the south side of the street.
81	1/23/2022	Sunday	3:26 AM	PDO	Single vehicle crash	Dark - lighted roadway	Clear	Dry	Operating vehicle in erratic, careless, negligent, or aggressive manner; over-correcting/ over-steering	33	-	-	-	V1 was traveling WB on Central St near 93 Central St when they stated to have lost control and crashed into two decorative light poles before coming to a stop.
82	5/4/2022	Wednesday	12:47 PM	NF	Single vehicle crash	Daylight	Rain	Wet	Unknown	Unk	-	-	-	Three pedestrians were in the Cross St crosswalk when V1, travelling NB, stopped at the stop sign, pulled forward, and struck all three of them.
83	6/7/2022	Tuesday	3:38 PM	PDO	Angle	Daylight	Clear	Dry	Failed to yield right of way	45	18	-	-	V2 was travelling north on Weston Rd when V1 collided with the passenger side of V2. V1 was stopped at the stop sign on Linden St and attempted to turn right when the crash occurred. Operator of V2 misjudged the gap between vehicles.
84	7/19/2022	Tuesday	2:02 PM	PDO	Rear-end	Daylight	Clear	Dry	Distracted	39	36	-	-	V2 rear-ended V1 as they were approaching the Linden St and Weston Rd intersection in the SB direction. V1 had slowed to let another MV turn left onto Weston Rd from Linden St. V2 was distracted by their radio and did not stop in time.
85	8/18/2022	Thursday	3:50 PM	PDO	Angle	Daylight	Clear	Dry	Failed to yield right of way	73	73	-	-	V1 was travelling west on Central St when V2, attemping to back out of a driveway, struck V1 near 103 Central St.
86	9/24/2022	Saturday	8:42 AM	PDO	Angle	Daylight	Clear	Dry	Failed to yield right of way	39	64	-	-	V2 was travelling EB on Central St when V1 pulled out of a parallel parking space and struck V2 near 66 Central St.
87	10/24/2022	Monday	10:41 AM	PDO	Rear-end	Daylight	Cloudy	Wet	Followed too closely	69	16	-	-	V1, travelling north, stopped at Central St/ Weston Rd light where V2 collided with rear of V1.
88	11/1/2022	Tuesday	6:23 PM	PDO	Rear-end	Dark - lighted roadway	Cloudy	Wet	Followed too closely	42	57	21	-	V1, 2, and 3 were travelling EB on Central St. V3 and V2 stopped for the traffic light at Weston Rd, but V1 was not able to stop in time, crashing into V2 and causing V2 to crash into V3.
89	11/2/2022	Wednesday	7:32 PM	PDO	Single vehicle crash	Dark - lighted roadway	Clear	Dry	Inattention	63	-	-	-	V1 struck a utility light bollard while backing out of a parallel parking spot (travelling EB) near 73 Central St.
90	11/9/2022	Wednesday	4:23 PM	PDO	Angle	Dusk	Clear	Dry	Failed to yield right of way	34	81	48	-	V2 attempted to make a left turn from Linden St onto Weston Rd when it struck V3. V3, travelling NB on Weston Rd, continued after the collision with V2 and struck V1 travelling SB on Weston Rd head-on.
91	11/11/2022	Friday	2:52 PM	PDO	Rear-end	Daylight	Cloudy	Dry	Inattention	Unk	51	-	-	V1 was parked facing EB near 60 Central St when V2 backed into the front end of V1.
92	12/15/2022	Thursday	3:43 PM	PDO	Angle	Daylight	Rain	Wet	Disregarded traffic signs, signals, road markings; made an improper turn	41	29	-	-	V1 attempted to make a left turn from Central St EB onto Weston Rd NB and collided with V2 travelling SB on Weston Rd.
93	12/16/2022	Friday	11:17 AM	PDO	Angle	Daylight	Rain	Wet	Failed to yield right of way	29	55	-	-	V2, travelling EB on Central St, collided with V1 as they were attempting to pull out of a parallel parking space.
94	12/24/2022	Saturday	1:12 PM	NF	Sideswipe, same direction	Daylight	Clear	Dry	Other improper action	85	Unk	Unk	Unk	V1, travelling east, approached the Cross St intersection and failed to stop, sideswiping parked V2, colliding with parked V3, pushing V3 into parked V4, and side-swiping V5 who was traveling in front of V1 before coming to a stop.
95	12/28/2022	Wednesday	8:53 AM	NF	Angle	Daylight	Clear	Dry	Failed to yield right of way	28	83	-	-	V2 was travelling SB on Weston Rd, attempting to turn left onto Central St with a green arrow. V1, travelling WB on Central St, struck driver side front end of V2 in the intersection.

Crash Data Summary Charts (2017-2022)

Town of Wellesley: Weston Road between Linden Street and Central Street; Central Street between Weston Road and Cross Street

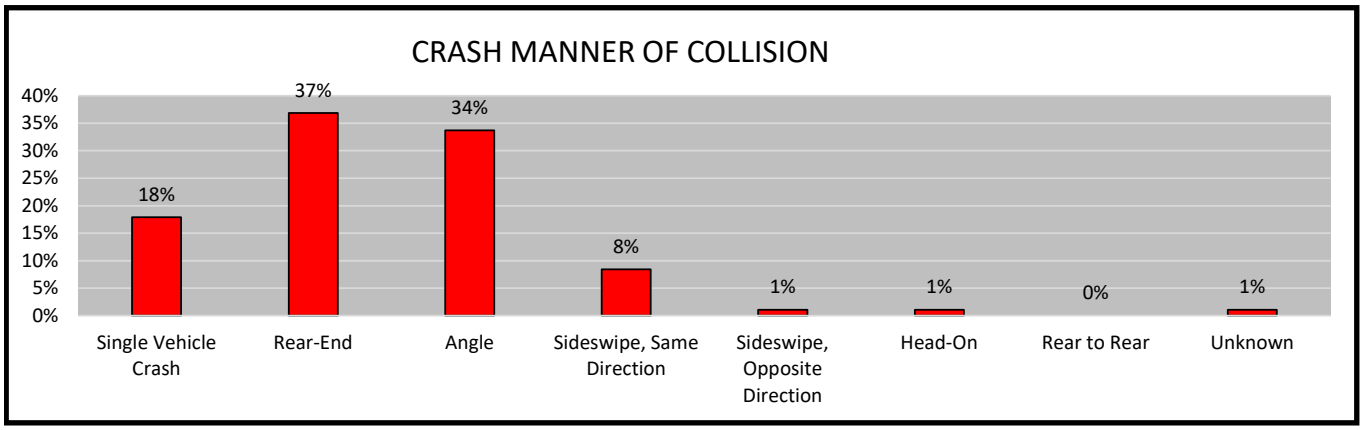


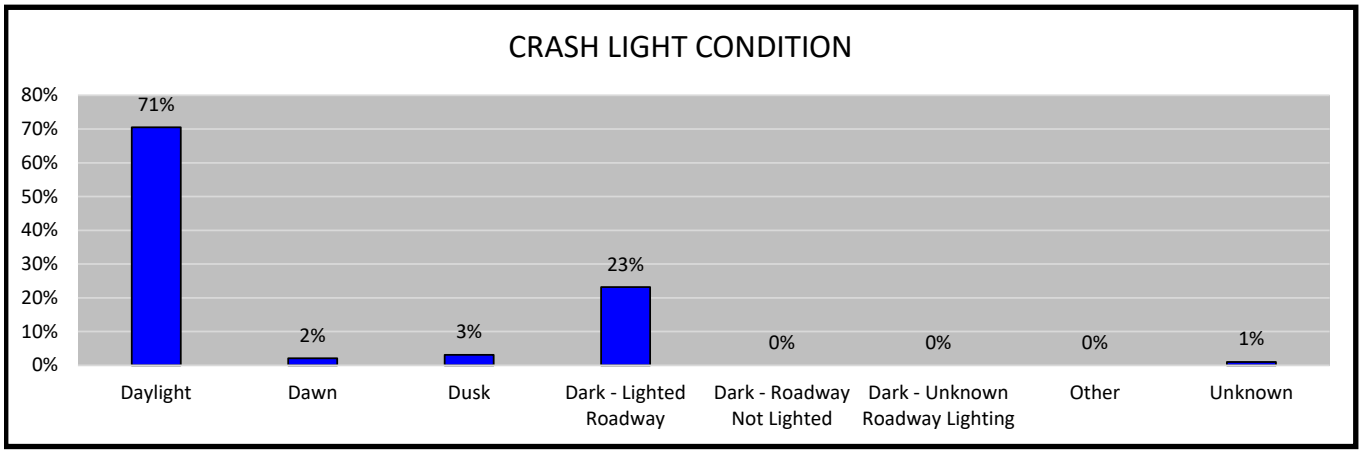


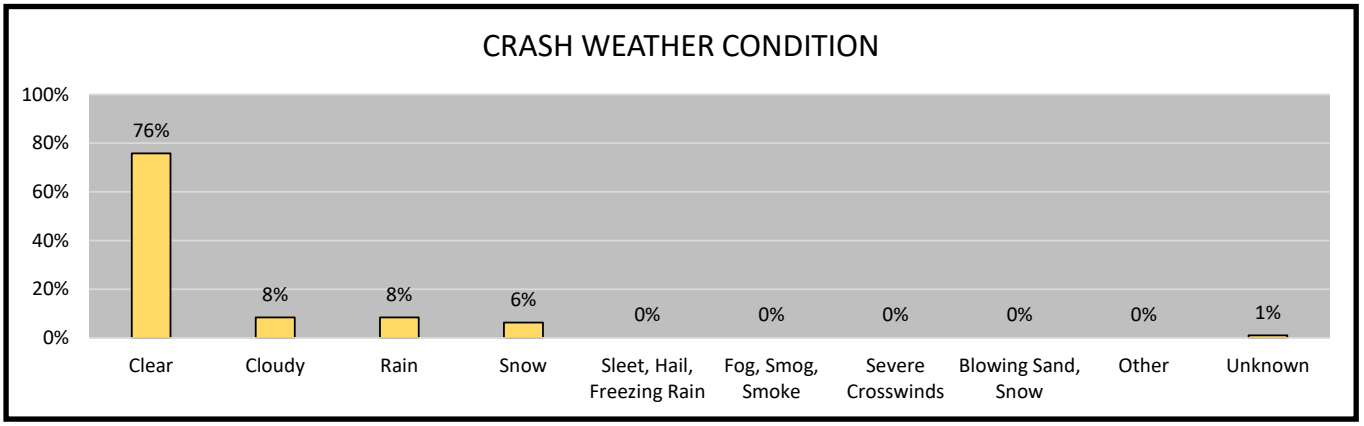


Crash Data Summary Charts (2017-2022)

Town of Wellesley: Weston Road between Linden Street and Central Street; Central Street between Weston Road and Cross Street

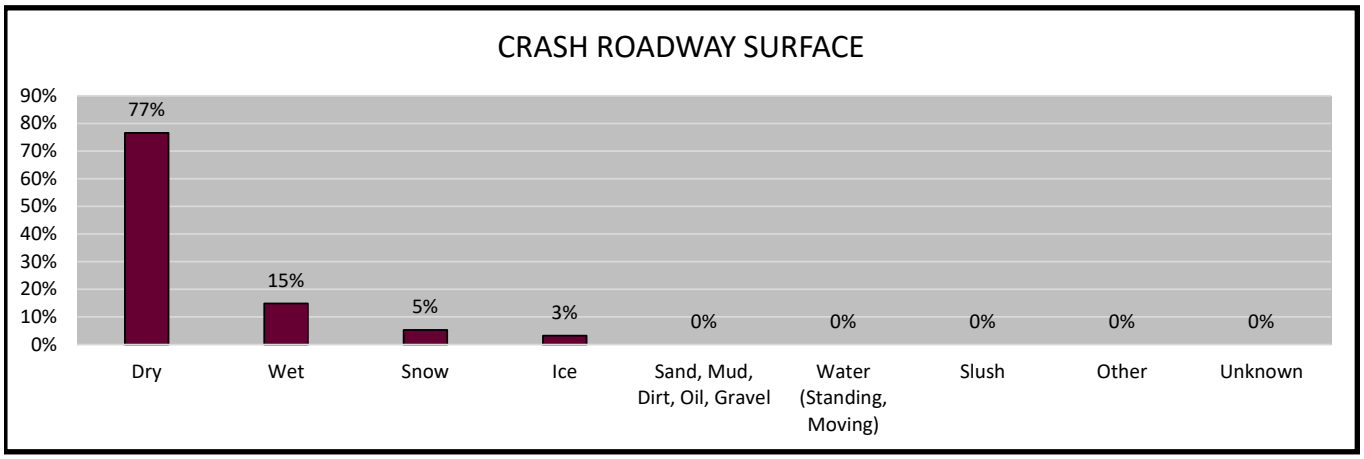


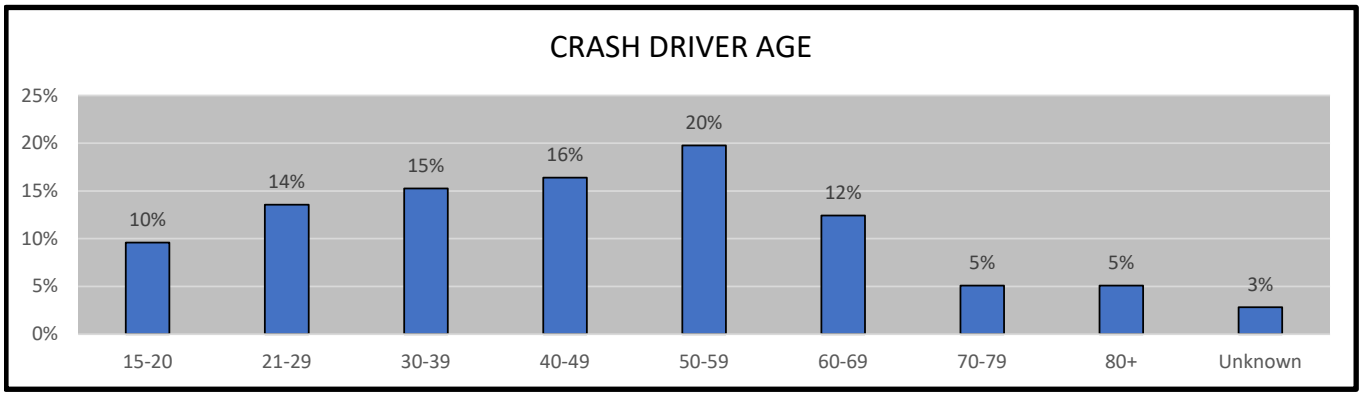




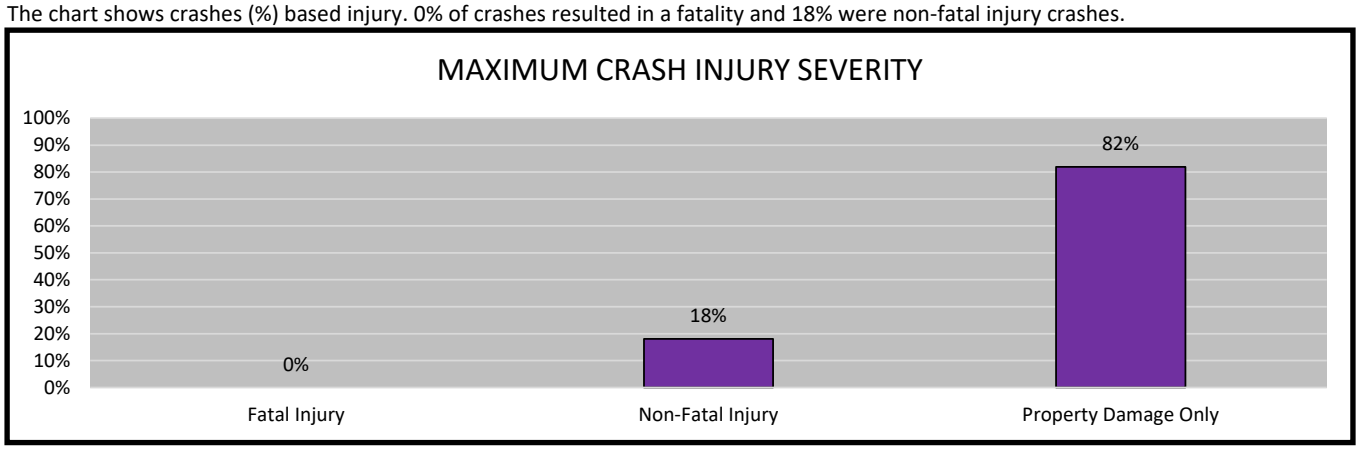
Crash Data Summary Charts (2017-2022)

Town of Wellesley: Weston Road between Linden Street and Central Street; Central Street between Weston Road and Cross Street





The chart shows crashes (%) based injury. 0% of crashes resulted in a fatality and 18% were non-fatal injury crashes.



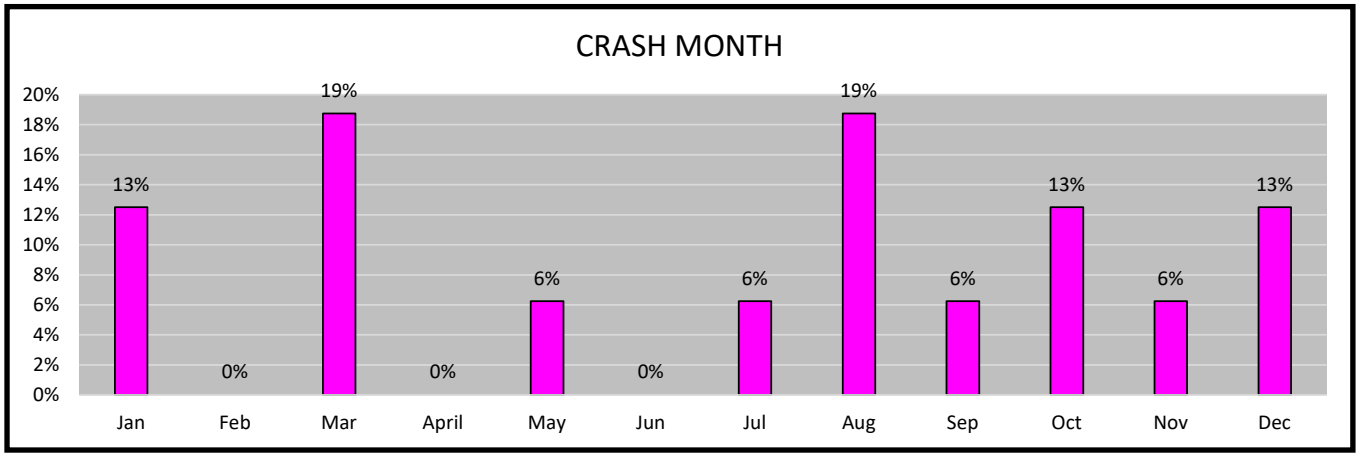
Crash Data Summary Table: Bicycle and Pedestrian Crashes (2012-2022)

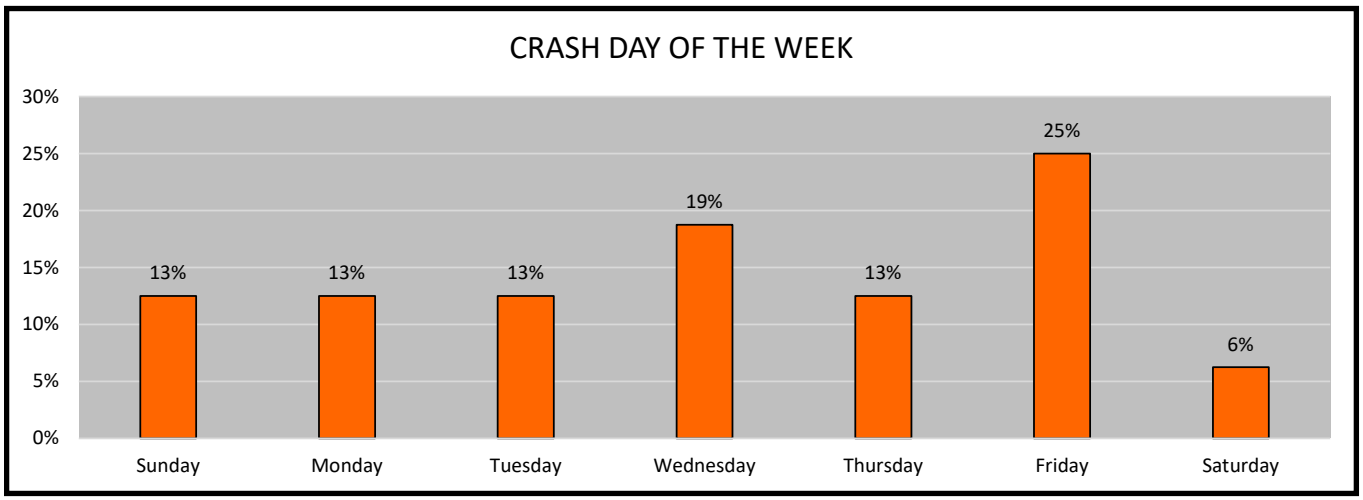
Town of Wellesley: Weston Road between Linden Street and Central Street; Central Street between Weston Road and Cross Street

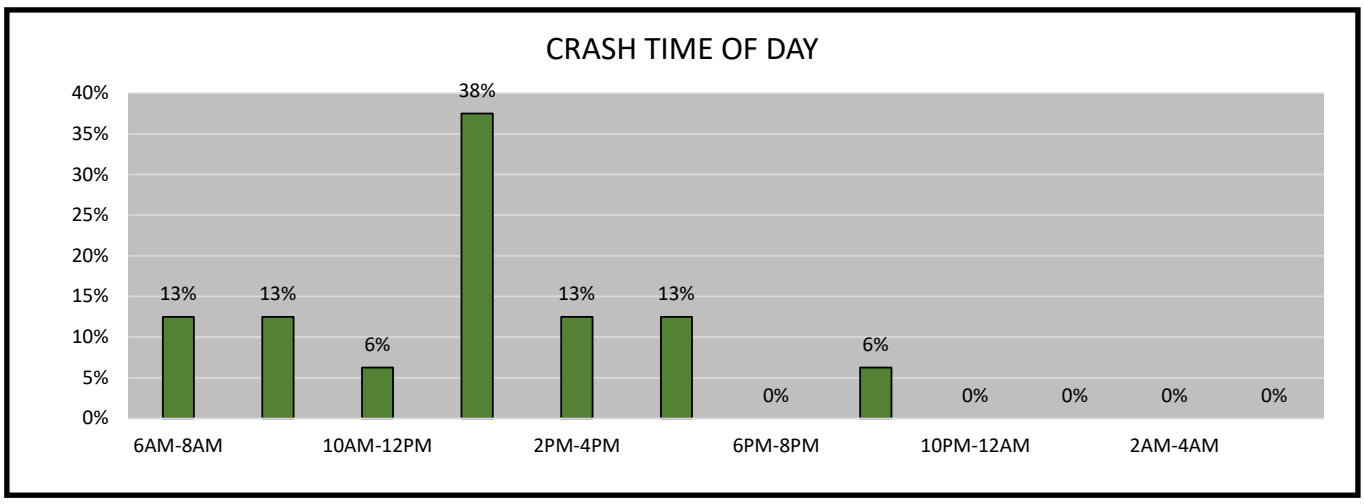
Crash Diagram #	Crash Date	Crash Day	Time of Day	Crash Severity	Manner of Collision	Light Condition	Weather Condition	Road Surface	Driver Contributing Code	D1 Age	D2 Age	D3 Age	D4 Age	Comment
1	8/24/2012	Friday	1:58 PM	Fatal Injury (F)	Single vehicle crash	Daylight	Clear	Dry	Inattention; Operating vehicle in erratic, reckless, careless, negligent, or aggressive manner	41	-	-	-	V1 (a large truck) and a cyclist were traveling side by side NB on Weston Rd by Linden Street. The truck struck the cyclist and was later pronounced dead due to injuries sustained.
2	12/4/2013	Wednesday	9:14 PM	Non-fatal injury (NF)	Single vehicle crash	Dark - lighted roadway	Clear	Dry	No improper driving	17	-	-	-	V1 was traveling SB through the Weston Rd/ Central St intersection when they struck a pedestrian in the Weston Rd crosswalk.
3	11/25/2013	Monday	9:52 AM	Property Damage Only (PDO)	Single vehicle crash	Daylight	Clear	Dry	No improper driving	20	-	-	-	V1 traveling SB on Cross Street when a pedestrian, who was walking WB on Church St began crossing Cross Street and was struck by V1.
4	9/17/2015	Thursday	5:13 PM	PDO	Single vehicle crash	Daylight	Clear	Dry	No improper driving	73	-	-	-	V1 was traveling EB on Central St and made a left turn into a driveway near #71 Central St. The operator of V1 stated that WB traffic was stopped, but a cyclist travelling WB collided with the front right portion of V1
5	1/14/2016	Thursday	11:03 AM	NF	Single vehicle crash	Daylight	Clear	Dry	Unknown	52	-	-	-	V1 stopped at the stop sign at Cross St, and attempted to make a left turn onto Central St. V1 struck a pedestrian that was crossing Central St out of the crosswalk.
6	10/2/2016	Sunday	1:26 PM	NF	Single vehicle crash	Daylight	Clear	Dry	Unknown	Unk	Unk	-	-	V1 was travelling east around 65 Central St and struck a pedestrian in a crosswalk.
7	12/2/2016	Friday	2:32 PM	NF	Single vehicle crash	Daylight	Clear	Dry	Unknown	77	-	-	-	V1 was traveling west on Central St and attempted to make a left turn onto Cross St. V1 failed to yield and struck a pedestrian in the crosswalk.
8	7/21/2017	Friday	12:58 PM	PDO	Single vehicle crash	Daylight	Clear	Dry	Unknown	23	-	-	-	V1 was making a right turn from Central St EB onto Weston Rd SB. V1 entered the intersection on a yellow light and was then struck in the side by a bicycle being walked by a pedestrian, who was crossing when the walk sign turned green.
9	1/10/2018	Wednesday	5:25 PM	NF	Single vehicle crash	Dark - lighted roadway	Clear	Wet	Unknown	42	61	-	-	V1, travelling west, stopped for a pedestrian in the crosswalk at 65 Central St but then proceeded forward and struck the pedestrian.
10	3/11/2018	Sunday	2:50 PM	NF	Single vehicle crash	Daylight	Clear	Dry	Failed to yield right of way	51	-	-	-	V1 was travelling north on Cross St and attempted to turn right onto Central St, striking a pedestrian in a crosswalk.
11	3/19/2018	Monday	12:07 PM	NF	Rear-end	Daylight	Clear	Dry	Distracted	26	28	-	-	V1, travelling west, stopped for a pedestrian in a Central St crosswalk. V2 rear-ended V1, causing V1 to roll forward, hitting the pedestrian. V2 stated they were distracted by papers in their car.
12	3/26/2019	Tuesday	7:39 AM	NF	Single vehicle crash	Daylight	Clear	Dry	No improper driving	50	-	-	-	V1, travelling west, was attempting to make a right turn from Linden St onto Weston Rd when they struck a pedestrian in the Linden St crosswalk. Pedestrian stated that he entered the crosswalk without activating the walk signal because he saw V1 was stopped.
13	8/27/2019	Tuesday	6:37 AM	NF	Single vehicle crash	Daylight	Clear	Dry	Failed to yield right of way	52	-	-	-	A cyclist was traveling west on Central St when V1, travelling east, attempted to turn left onto Weston Rd, hitting the cyclist.
14	10/19/2019	Saturday	9:10 AM	NF	Single vehicle crash	Daylight	Clear	Dry	Failed to yield right of way	48	-	-	-	A cyclist was traveling west on Central St when V1, travelling east, attempted to turn left onto Weston Rd, hitting the cyclist.
15	8/28/2020	Friday	1:24 PM	NF	Single vehicle crash	Daylight	Clear	Dry	Unknown	35	-	-	-	V1 was travelling east at 72 Central St and stopped for a pedestrian in the crosswalk. A cyclist was behind V1 and was unable to stop in time, bumping into the car and falling off his bike.
16	5/4/2022	Wednesday	12:47 PM	NF	Single vehicle crash	Daylight	Rain	Wet	Unknown	Unk	-	-	-	Three pedestrians were in the Cross St crosswalk when V1, travelling NB, stopped at the stop sign, pulled forward, and struck all three of them.

Crash Data Summary Charts: Bicycle and Pedestrian Crashes (2012-2022)

Town of Wellesley: Weston Road between Linden Street and Central Street; Central Street between Weston Road and Cross Street







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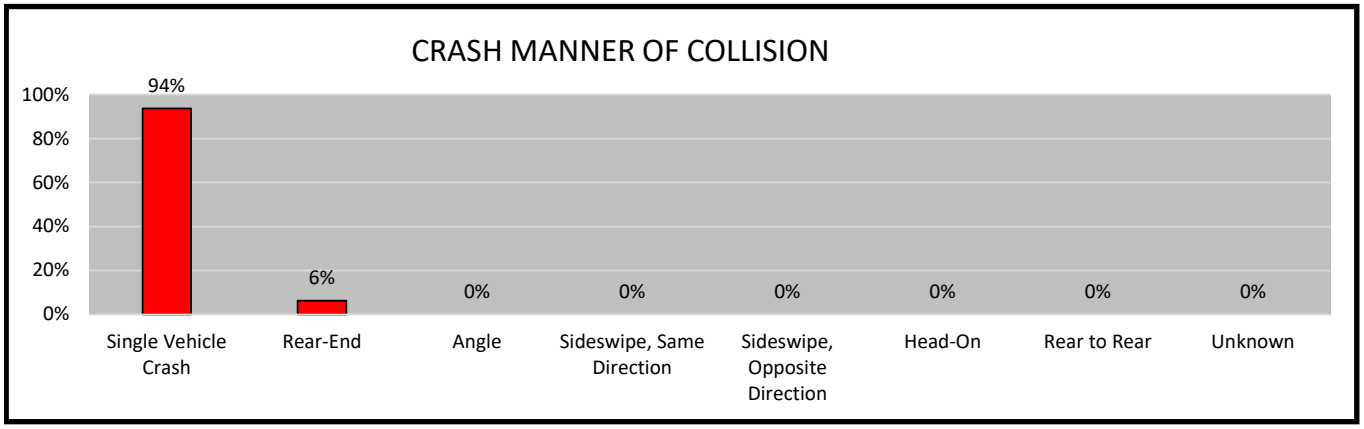

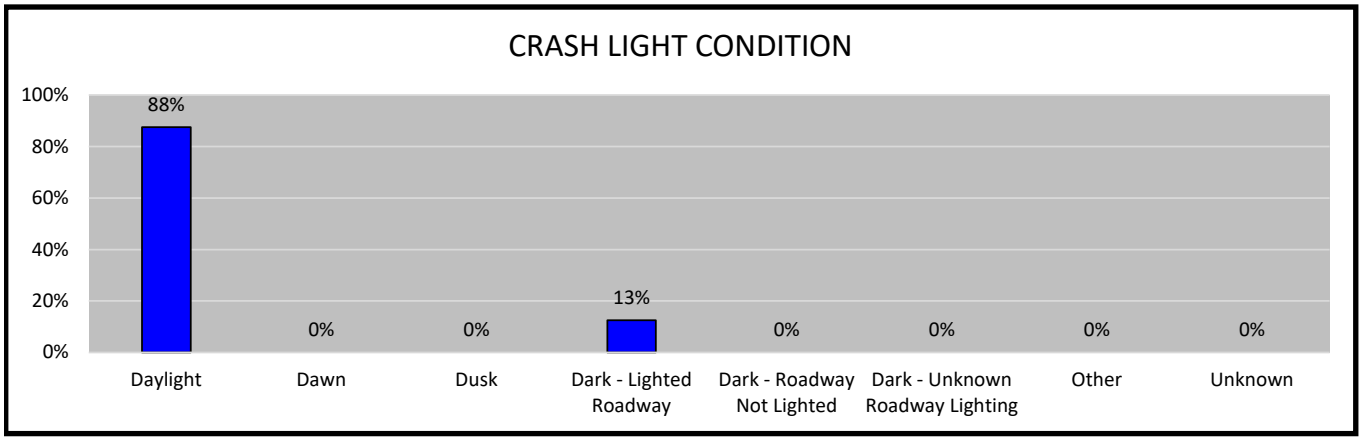

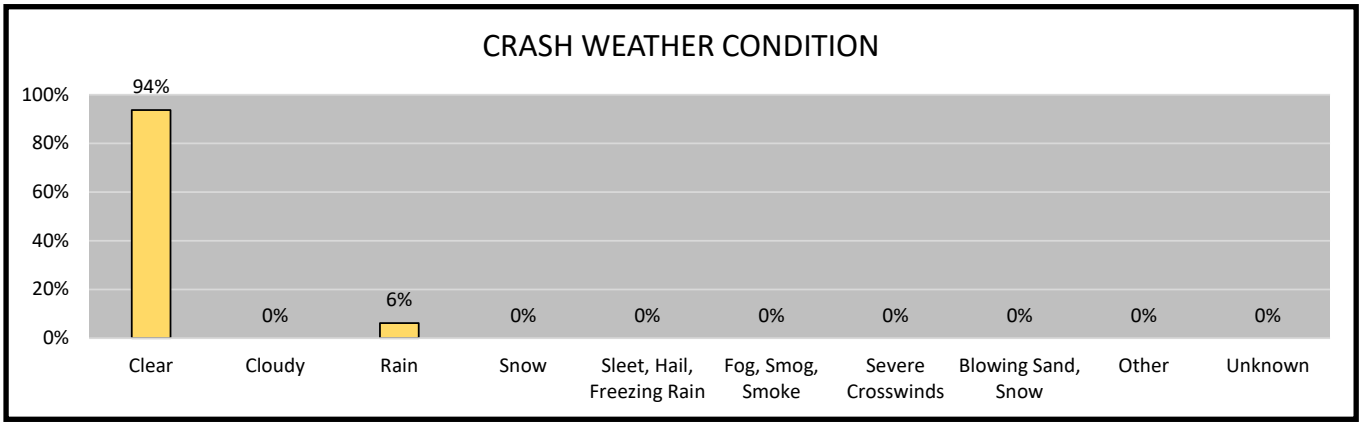

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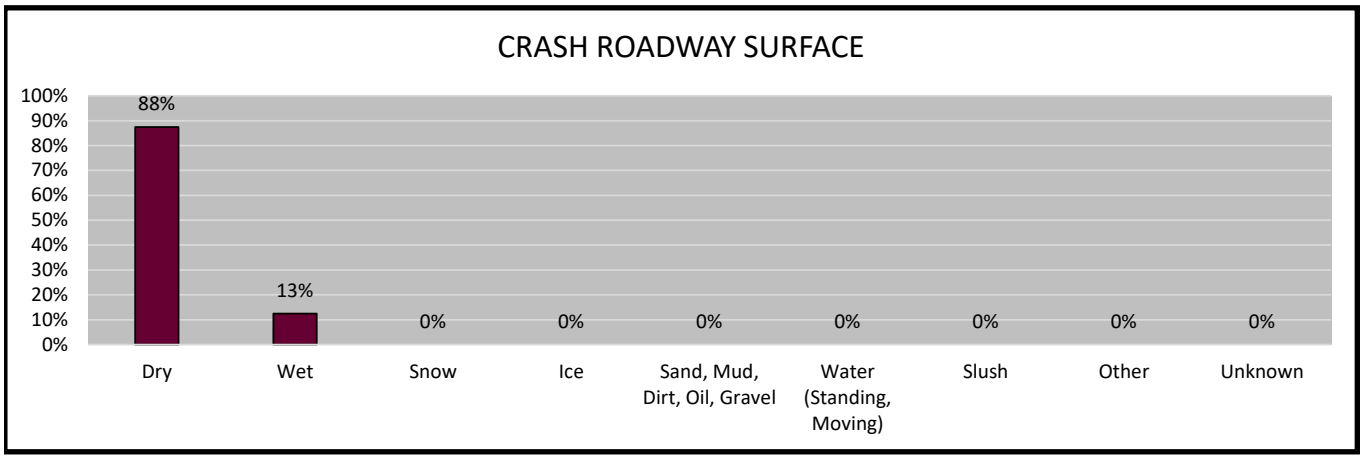

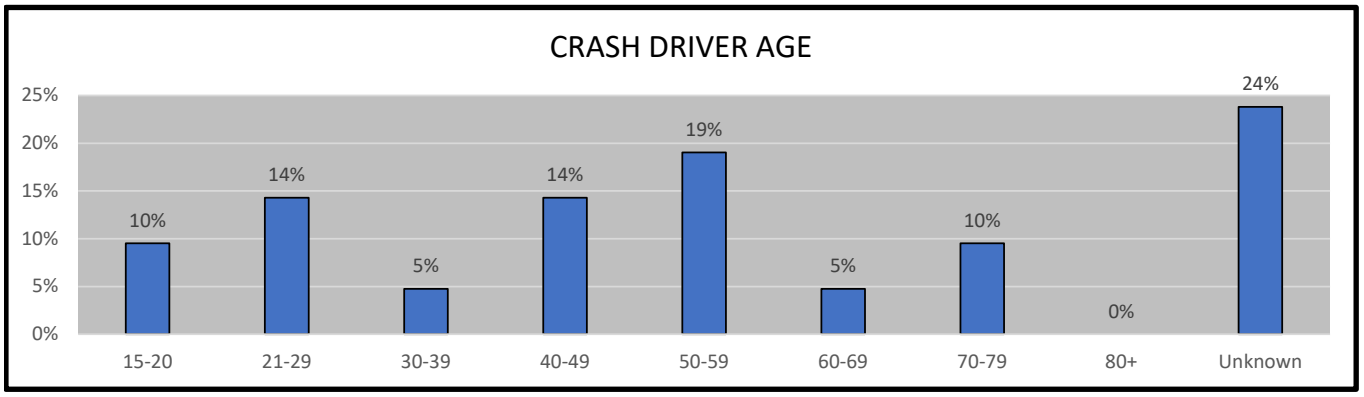

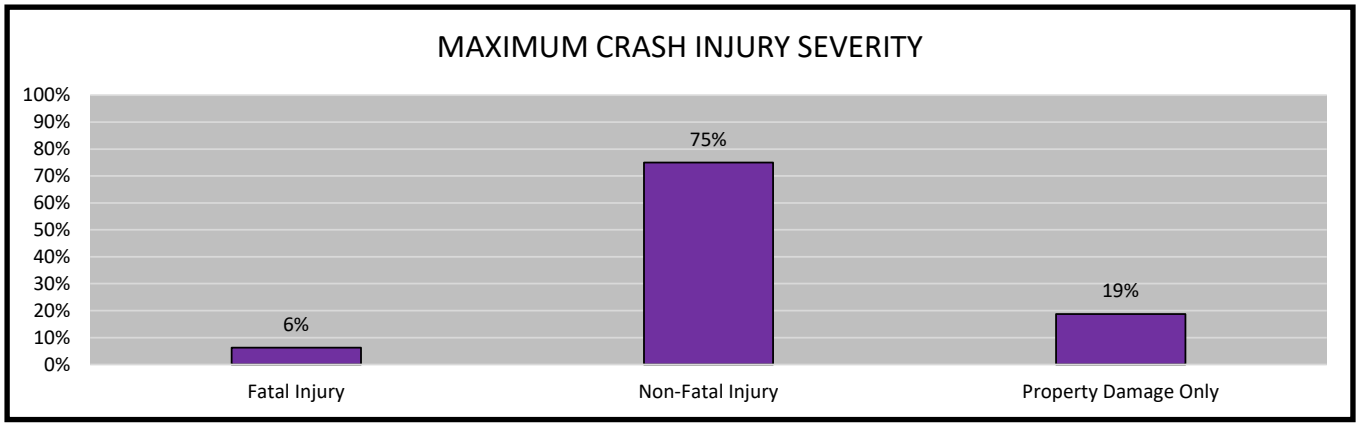

Appendix D. Road Safety Audit References

Road Safety Audit References

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